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**BEFORE THE OHIO POWER SITING BOARD**

<b>In the Matter of the Application of</b>	)	
<b>Angelina Solar I, LLC</b>	)	
<b>for a Certificate of Environmental</b>	)	<b>Case No. 18-1578-EL-BGN</b>
<b>Compatibility and Public Need</b>	)	

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**INITIAL POST-HEARING BRIEF OF ANGELINA SOLAR I, LLC**

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**I. INTRODUCTION**

Angelina Solar I, LLC (“Angelina”) requests that the Board issue a certificate of environmental compatibility and public need (“Certificate”) to Angelina, including the conditions recommended in the Joint Stipulation, for the Angelina Solar Project. The Board has been provided sufficient evidence to find and determine that the requirements of each of the eight subsections of R.C. 4906.10 are either met or inapplicable, and that the Board’s three-prong test for stipulations has been satisfied.

The Angelina Solar Project is a proposed solar-powered electric generation facility with a capacity of 80 megawatts (Angelina Ex. 1 at 1) (the “Project”). The Project will be located on approximately 827 acres of private land in Preble County, Ohio. (Angelina Ex. 1 at 3) (the “Project Area”). The Ohio Power Siting Board Staff (“Staff”) recommended in its Staff Report that the Board grant the Certificate subject to certain conditions. (Staff Ex. 1 at 33-37).

The Project has strong support from local authorities, Staff, and the Ohio Farm Bureau Federation, all of which entered into a stipulation recommending approval of the Project. Specifically, Angelina entered into a Joint Stipulation with Staff, the Preble County Commissioners, Preble County Engineer, Preble Soil & Water Conservation District, Board of Trustees of Dixon Township, Board of Trustees of Israel Township, the Preble County Planning

Commission, and the Ohio Farm Bureau Federation. (Joint Ex. 1 at 18-19) (the “Joint Stipulation”). The Joint Stipulation includes a number of conditions regulating the construction and operation of the Project, which supersede the conditions recommended in the Staff Report, and “which will continue to minimize [the Project’s] environmental impact.” (Staff Ex. 12 at 2).

Although local authorities support the Project, a small number of residents and private entities oppose the Project. One of these private entities is the “Concerned Citizens of Preble County, LLC” (“CCPC”).

The goal of CCPC and its members is obvious: to keep the Project out of Preble County. For example, as CCPC Witness Rachael Vonderhaar testified, she “oppose[s] putting solar panels on agricultural land,” but would “not oppose the Project Area being used for a large residential development.” (TR at 390). Thus, CCPC is resolutely opposed to the Project, despite the fact that its witness, a holder of a leadership position within CCPC, would not be opposed to a development with more extensive impacts. (CCPC Ex. 2 at 2). There is no condition or modification that can be made to the Project to satisfy CCPC or its members’ “concerns” regarding the Project. They simply are opposed to the Project.

In an attempt to support their opposition to the Project, CCPC and its members have submitted a laundry list of “concerns” in testimony before the Board. (CCPC Ex. 2 at 4-6). These concerns are not conclusions, and have no evidentiary value. (TR at 343). Moreover, CCPC and its members ignore the many benefits the Project will bring to Preble County, the surrounding region, and the State of Ohio.

These benefits include the generation of emission-free power, which will assist in the attainment of air quality goals in southwestern Ohio. (Angelina Ex. 1 at 41-42). The Project will also make payments to local government, including Preble County, Israel and Dixon Townships,



and the local school district, far in excess of the property taxes currently being paid on the parcels forming the Project Area. (TR at 57, 130). In general, payments to local government from the Project will be a minimum of \$560,000, and potentially up to \$720,000 per year. (Angelina Ex. 6 at 6-7; TR at 129-130).

In addition to this direct financial benefit, the Project will create approximately 518 to 1,076 direct and indirect construction-related jobs with corresponding payroll of \$25.4 million to \$55.6 million. (Angelina Ex. 1 at 31; Angelina Ex. 1 at Exhibit C). For the operation phase of the Project, depending on the percentage of locally sourced content for maintenance activities, the Project will create approximately 19 to 22 direct and indirect jobs with corresponding annual payroll of approximately \$630,000 to \$1 million. (Id.) The Project is expected to generate new economic output of approximately \$161.7 million during construction and \$1.5 million annually from operation. (Angelina Ex. 1 at 32).

The record not only supports these benefits, but also refutes concerns CCPC's members raised in their testimony. For example, the record establishes that:

- Local traffic, including agricultural vehicles, will continue to be able to use local roads during construction and operation. (Angelina Ex. 10 at 3-4).
- The area surrounding the Project Area will not see a negative impact from wildlife that has been excluded from the Project Area. (Angelina Ex. 13 at 7).
- Any electromagnetic fields that are generated by the Project will not impact the use of electrical devices. (Angelina Ex. 1 at 66; Angelina Ex. 19 at 2).
- Construction noise from the Project at any given location will be short in duration. (Angelina Ex. 1 at 57).

- Operational noise will be minimal, below the level approved by the Board in other certificate proceedings, and, if necessary, can be successfully mitigated to avoid any impact to area residents. (Angelina Ex. 1 at 58-59).
- Adequate drainage in the Project Area and surrounding properties will be maintained. (Angelina Ex. 8 at 4).
- There is no risk of soil or water contamination from the Project. (Angelina Ex. 6 at 16-17).
- The Project will not represent a burden on emergency services in the area, nor will the Project result in an increase in crime. (TR at 124).
- The Project will be decommissioned at the end of its useful life, and the Project Area may be returned to agricultural use at that time. (Angelina Ex. 6 at 13-14; Angelina Ex. 10 at 2-3).

Given the record in this case, Angelina has met its burden of proof as to the statutory criteria under R.C. 4906.10(A).

In addition, the Joint Stipulation satisfies the Board's three-pronged test. First, the Joint Stipulation is the product of serious bargaining among capable parties. (Angelina Ex. 7 at 2). Second, the Joint Stipulation does not violate any important regulatory principle or practice. (Id. at 5). Indeed, the Joint Stipulation represents a significant achievement given the number of public entities from Preble County that signed and support the Joint Stipulation. (Joint Ex. 1 at 18-19).

Finally, and most importantly, the Joint Stipulation is in the public interest. The Joint Stipulation recommends the construction of a project with substantial benefits to the public, including jobs and direct and indirect economic benefits. In addition, the Joint Stipulation

includes a number of conditions to ensure that the impact of the Project on the public is minimized, including conditions regarding setbacks, hours of construction, the maintenance of drain tile, vegetation and noxious weeds, traffic and road maintenance, training and equipping local emergency services, and decommissioning. (Joint Ex. 1 at 6-11).

Given the record in this proceeding, the Joint Stipulation should be approved without modification and a Certificate of Environmental Compatibility and Public Need issued to Angelina for the Project.

## **II. SUMMARY OF THE PROCEEDING**

On December 3, 2018, Angelina filed its Application (Angelina Ex. 1) and motion for certain waivers. Angelina also filed a motion for protective order to keep portions of the Application confidential, including cost information and other sensitive financial data.

Subsequent to the filing of the Application, a number of public and private entities intervened in this proceeding. Specifically, the Preble County Commissioners, the Preble County Engineer, the Preble Soil & Water Conservation District, the Board of Trustees of Dixon Township, the Board of Trustees of Israel Township, the Preble County Planning Commission, the Eaton Community School District, and the Ohio Farm Bureau Federation are parties to this proceeding.

Also parties are CCPC, as well as its members Robert Black, Marja Brandly, Campbell Brandly Farms, LLC, Michael Irwin, Kevin and Tina Jackson, Vonderhaar Family ARC, LLC, and Vonderhaar Farms Inc. (CCPC and its members are referred to, collectively, as “CCPC”).

## **III. PROPOSED FACILITY**

Angelina intends to build the Project as an 80 MW solar-powered generating facility in Preble County, Ohio. (Angelina Ex. 1 at 1, 2). The Project would consist of large arrays of

ground-mounted photovoltaic (“PV”) modules, commonly referred to as solar panels. The Project also includes associated support facilities, such as access roads, meteorological stations, buried electrical collection lines, inverter pads, and a substation. The Project would occupy up to 827 acres within a 934-acre project boundary. (Id. at 1).

The solar panels would be attached to metal racking. The racking would include piles driven or rotated into the ground. The solar panel arrays would be grouped in large clusters that would be fenced for public safety and equipment security, with locked gates at all entrances. (Angelina Ex. 1 at 7-8). The Project will use either crystalline or thin-film solar panels and either fixed-tilt or single-axis tracking racking. (Id. at 8). Both racking systems would accommodate either crystalline or thin-film solar panel modules. Angelina has not selected the specific module vendor, but intends to use a manufacturer that has the capability and experience to provide approximately 213,333 to 320,000 modules for this Project. (Id.)

Angelina will install an underground collector system made up of a network of electric and communication lines that would transmit the electric power from the solar arrays to a central location. (Angelina Ex. 1 at 9). Angelina proposes to install up to 10.6 miles of buried cable. (Id. at Exhibit G at Table 7-1). Installation of the cable would require an approximately 20-foot wide temporary work area along its entire length. The electricity from the solar panels would be generated in direct current (“DC”). DC power from the solar panels would be delivered to circuits, which would be routed through cable trays, then to combiner boxes. Power from the combiner boxes would be transmitted to groups of components, collectively called inverters, each of which would include a DC-to-alternating current (“AC”) inverter, a step-up transformer that would increase the voltage to 34.5 kV, and a cabinet containing power control electronics.

(Angelina Ex. 1 at 9). Each inverter would deliver AC power to a common substation through a system of buried electric lines and associated communication lines. (Id.)

The Project substation would occupy up to three acres of land 700 feet east of the proposed point of interconnection. The major components of the Project's substation would be collection line feeders and breakers, a 34.5 kV bus, a main power transformer to step up the voltage to 138 kV, a high-voltage breaker, metering/relaying transformers, disconnect switches, an equipment enclosure containing power control electronics, and a lightning mast that would be up to approximately 70 feet in height. (Angelina Ex. 1 at 9).<sup>1</sup>

#### **IV. STANDARD OF REVIEW**

##### **A. Statutory Criteria**

Pursuant to R.C. 4906.10(A), "The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generating facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters and under sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under

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<sup>1</sup> A short transmission line will connect the Project substation to the nearby point of interconnection. The section of this transmission line in Ohio will be the subject of a separate filing to the Board.

section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multi-modal planning and programs of the department of transportation under section 4561.341 of the Revised Code.

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

The evidentiary record in this matter supports a Board finding that the criteria under Section 4906.10, Revised Code are either not applicable or are satisfied.

#### **B. Stipulation Criteria**

Ohio Adm.Code 4906-2-24 authorizes parties to Board proceedings to enter into stipulations. Although not binding on the Board, pursuant to Ohio Adm.Code 4906-2-24(D), the terms of such an agreement are accorded substantial weight. The standard of review for considering the reasonableness of a stipulation has been discussed in a number of prior Board proceedings. See, e.g., *In re Hardin Wind LLC*, Case No. 13-1177-EL-BGN (Mar. 17, 2014). The ultimate issue for the Board's consideration is whether the stipulation, which embodies considerable time and effort by the signatory parties, is reasonable and should be adopted. In considering the reasonableness of a stipulation, the Board has used the following criteria:

- (1) Is the settlement a product of serious bargaining among capable, knowledgeable parties?
- (2) Does the settlement package violate any important regulatory principle or practice?
- (3) Does the settlement, as a package, benefit ratepayers and the public interest?

The evidentiary record in this matter supports a Board finding that this three-prong test has been satisfied.

**V. ARGUMENT**

The record in this proceeding supports the Board finding and determining that all eight of the statutory criteria under R.C. 4906.10(A) have been met. Angelina's witnesses are experienced and knowledgeable, and have a collective decades of experience working in their respective fields. The record includes their testimony, and provides adequate evidence for the Board to find that the Project will have a minimal environmental impact; that the Project will serve the interests of electric system economy and reliability; that the Project will comply with air pollution, solid and hazardous waste, water pollution, aeronautics, and water consumption statutes; that the Project will serve the public interest; that the Project will have a minimal impact on the viability of agricultural district land; and that the Project will incorporate maximum feasible water conservation practices. The record also includes adequate evidence for the Board to find that the Joint Stipulation satisfies the Board's three-pronged test, that the Joint Stipulation (1) is the product of serious bargaining among capable parties; (2) does not violate any important regulatory principle or practice; and (3) is in the public interest.

**A. Angelina's Witnesses are Experienced and Knowledgeable about Solar Projects**

Angelina's witnesses have significant experience working with renewable generation, and with solar facilities in particular. They are knowledgeable, capable, and the Board should rely on their testimony in making the determination that the Project meets the required statutory criteria.

***1. Doug Herling – Project Manager***

Angelina witness Doug Herling has been working in wind and solar development since 2014, including work leading the development of large-scale projects. (Angelina Ex. 6 at 2). His educational background is well-suited to his position, having obtained both an MBA and an undergraduate geology degree. (Id.)

Mr. Herling’s role in development has been wide ranging, including, but not limited to,

“identifying prospective projects with suitable solar resources and electric transmission access; acquiring land rights; establishing and developing relationships with elected officials, regulators, and community opinion leaders to support project development; developing and managing project budgets; managing environmental studies and permitting processes; managing third party consultants; and supporting financial analysis and modeling of project economics.”

(Angelina Ex. 6 at 1).

In addition to his solar development experience, Mr. Herling also served a number of years in a volunteer emergency management services (“EMS”) organization, including responsibility for operations. (TR at 126).

Open Road Renewables, LLC, Mr. Herling’s employer, has a great deal of institutional knowledge regarding the operation of solar farms. (Angelina Ex. 6 at 1; TR at 44). In addition, Mr. Herling has spent time working in the local community to understand and try to address concerns. (TR at 44).

Mr. Herling’s written direct testimony is included in the record as Angelina Exhibit 6, his written supplemental direct testimony as Angelina Exhibit 7, his written rebuttal direct testimony as Angelina Exhibit 19, and his testimony at hearing can be found at transcript pages 12-135 and 487-496.



**2. Noah Waterhouse – Professional Engineer – Drainage and Drain Tile**

Noah Waterhouse is a licensed Professional Engineer with extensive experience evaluating drain and runoff and drain tile issues at more than 50 solar projects. (Angelina Ex. 8 at 1-2). He is the Director of Solar Civil at EVS, Inc. and his work has focused exclusively on solar projects for the past five years. (Id. at 1). His experience in Ohio includes acting as the engineer of record for the 20-megawatt Bowling Green solar project, which had an extensive drain tile network, as well as working on another 100 plus-megawatt project. (TR at 153).

Mr. Waterhouse’s written direct testimony is included in the record as Angelina Exhibit 8, his written supplemental direct testimony as Angelina Exhibit 9, and his testimony at hearing can be found at transcript pages 137-157.

**3. Mark Bonifas – Professional Engineer – Transportation**

Mark Bonifas is a Civil Engineering Practice Leader/Principal at Hull & Associates, Inc. (Angelina Ex. 10 at 1). Mr. Bonifas is a Professional Engineer and has been practicing as an engineering consultant for over 30 years, and he has been performing civil engineering services on renewable energy projects for over 10 years. (Id. at 2). Mr. Bonifas’ experience includes involvement in the construction of solar projects. (TR at 163).

Mr. Bonifas’ written direct testimony is included in the record as Angelina Exhibit 10, his written supplemental direct testimony as Angelina Exhibit 11, and his testimony at hearing can be found at transcript pages 159-169.

**4. David Hessler – Professional Engineer – Acoustics**

David Hessler has nearly 30 years’ experience working at Hessler Associates, Inc., which is an engineering consulting firm that specializes in the acoustical design and analysis of power generation and industrial facilities of all kinds, including solar energy projects. (Angelina Ex. 12

at 1). Mr. Hessler is a Professional Engineer and has been the principal acoustical designer and/or test engineer on hundreds of power station projects all over the world, roughly 70 wind energy projects and, more recently, a number of large-scale solar projects, including several in the State of Ohio. (Id. at 1-2). Mr. Hessler also regularly attends conferences and reviews trade journals on acoustics. (TR at 264-265).

Mr. Hessler's written direct testimony is included in the record as Angelina Exhibit 14 and his written rebuttal direct testimony as Angelina Exhibit 20, and his testimony at hearing can be found at transcript pages 236-272 and 497-505.

**5. *Ryan Rupprecht – Senior Project Manager – Environmental***

Ryan Rupprecht is a Senior Project Manager, Practice Lead for the Renewable Energy Group in the Northeast/Mid-Atlantic and Midwest regions, and a Practice Lead for the Eastern Region Siting and Licensing Group for Cardno, Inc. (Angelina Ex. 13 at 1). Mr. Rupprecht is responsible for developing, managing and performing consulting work involving environmental permitting, terrestrial and aquatic ecological resource studies, wetland and stream delineations, and surface water quality assessments. (Id.) As a Senior Project Manager, Mr. Rupprecht manages and participates in environmental permitting projects, overseeing technical experts in biology/ecology, wetland sciences, cultural resources, and rare, threatened and endangered (“RTE”) species habitat assessments. (Id.)

Mr. Rupprecht has over 15 years of professional environmental experience which encompasses environmental permitting, ecological and water resources studies, and project management. (Angelina Ex. 13 at 2). His areas of expertise include renewable energy, siting and licensing, water resources, fisheries, habitat and wildlife valuation/identification, and soil/sediment evaluation. (Id.) In addition, Mr. Rupprecht worked with a Cardno team during

field surveys and to develop information in the Application and in his testimony. (TR at 218, 222; Angelina Ex. 13 at 7).

Mr. Rupprecht's written direct testimony is included in the record as Angelina Exhibit 13, and his testimony at hearing can be found at transcript pages 209-235.

**6. Andrew Lines – Certified Real Estate Appraiser – Property Valuation**

Andrew Lines is a Principal of CohnReznick LLP's Valuation Advisory Group. (Angelina Ex. 15 at 1). In that role he oversees a staff of 30 appraisers and valuation experts in all types of real estate. (Id.) He has testified before numerous governmental bodies regarding proposed new developments, including solar power installations, and addressed community concerns regarding those proposed developments. (Id.) In addition, he has completed valuation impact studies on landfills, big box retail developments, electric power transmission lines, environmental stigma, view amenities, as well as solar farms. (Id. at 2).

Mr. Lines' written direct testimony is included in the record as Angelina Exhibit 15, and his testimony at hearing can be found at transcript pages 273-282.

**7. Matthew Robinson – Visualization Project Manager – Visual Impacts**

Matthew Robinson has a master's degree in landscape architecture and is a visualization project manager at Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. ("EDR"). (Angelina Ex. 12 at 1). In his role at EDR he is responsible for the oversight of all technical analyses associated with visual impact assessments. This includes identification of visually sensitive resources, field evaluation and documentation, visibility analyses, development of detailed and accurate visual simulations, determination of impacts, mitigation conceptual design and report production. (Id.) Mr. Robinson has previously overseen visual assessments, visual screening, and landscaping design for a number of solar

projects, including Mohawk Solar in New York State and the Battle Creek 1 Solar Project, Ryegate GLC Solar, and Otter Creek I & II Solar Projects in Vermont. (Id. at 1-2).

Mr. Robinson’s written direct testimony is included in the record as Angelina Exhibit 12, his written supplemental direct testimony as Angelina Exhibit 16, and his testimony at hearing can be found at transcript pages 178-208.

**8. *Matt Marquis – Professional Engineer – Surface Drainage***

Matt Marquis is a project engineer at Hull & Associates, Inc. responsible for managing projects related to storm water and hydrologic and hydraulic (“H&H”) studies. (Angelina Ex. 21 at 1). Mr. Marquis is a Professional Engineer and has a master’s degree in civil engineering. (Id. at 2). Mr. Marquis’s experience includes a wide range of H&H analyses, surface water management and erosion and sediment control design, and his employer, Hull & Associates, has experience working on solar projects. (Id.; TR at 513).

Mr. Marquis’s written rebuttal direct testimony is included in the record as Angelina Exhibit 21, and his testimony at hearing can be found at transcript pages 502-528.

**B. The Project is not an Electric Transmission Line or Gas Pipeline, therefore the Board is not required to determine the basis for need (4906.10(A)(1))**

The Project is an electric generation facility, not an electric transmission line or gas pipeline. (Angelina Ex. 1 at 1). Therefore, this statutory criteria is inapplicable.

**C. The Board has Adequate Evidence to Determine the Nature of the Probable Environmental Impact of the Project and to Determine that the Project Represents the Minimum Adverse Environmental Impact (4906.10(A)(2) and 4906.10(A)(3))**

Staff considered the Project’s socioeconomic impacts, ecological impacts, construction impacts and operational impacts as “environmental impacts” in the Staff Report of Investigation. (Staff Ex. 1 at 12-23.) After summarizing the impacts, Staff recommended to the Board that it

make a finding of determination as to the nature of the probable environmental impact and that the Project will have a minimum adverse environmental impact, subject to Staff's recommended conditions. The record supports these same findings under the conditions recommended in the Joint Stipulation.

**1. *The Board has Adequate Evidence to Find and Determine that the Socioeconomic Impacts are Minimal***

a. The Board has Adequate Evidence to Find that the Project's Impacts on Land Use will be Minimal

The Project will be located on previously disturbed land that has been mostly cleared for agriculture and is extremely level. (Angelina Ex. 6 at 3-4). Existing features in the Project Area include two electric transmission lines, public roads, single family homes and farm buildings, and the point of interconnection substation. The Project Area itself does not include any population centers, major industries or notable landmarks. (Id. at 4) Angelina anticipates relocating only one residence and associated farm structures to accommodate the Project, and potentially a limited number of other farm-related structures in poor condition. (Angelina Ex. 1 at 78). As Mr. Herling testified, the predominant industry in the Project Area is agriculture. (Angelina Ex. 6 at 3-4). The Project Area is rural, and is largely characterized by large-sized farms with a few pockets of trees. (Id. at 3). Population density in the townships composing the Project Area is 27 people/sq.mi. (Angelina Ex. 1 at Exhibit C at 10).

The Project is not expected to have any significant adverse effect on regional development, including housing, commercial and industrial development, schools, transportation system development, or other public services and facilities. (Angelina Ex. 1 at 81). The Project will, however, positively contribute to employment, as well as providing the secondary and

induced effects of increased wages. (Id.) Similarly, the Project will contribute significant new sums annually to the tax base for the County. (Id.)

The Project also advances goals espoused in Preble County's 2011 Comprehensive Economic Development Strategy and Land Use Plan. Specifically, the Project allows farms to diversify income, preserves land for future generations, increases township and county tax revenues, and creates temporary and permanent jobs in the County. (Angelina Ex. 1 at 80-81). As testified by Mr. Herling, there will not be any long-term impacts from the Project that would preclude its use for farming after the useful life of the Project. (Angelina Ex. 7 at 4).

Because of the limited impact on land resulting from the Project and the fact that the Project Area can be returned to its current use at the end of the Project's useful life, the Board has adequate evidence to find that the Project will have a minimal impact on land use.

b. The Board has Adequate Evidence to Find that the Project's Impacts on Cultural Resources will be Minimal

The Project will have minimal impact on cultural and historic resources. An analysis performed by Angelina identified registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance within two miles of the Project Area. (Angelina Ex. 6 at 9). No such resources occur within the Project Area itself. (Id. at 10). There will be no direct effects from construction or operation on any landmarks outside of the Project Area. (Angelina Ex. 1 at 84). To confirm the findings that have been made, Angelina will conduct a limited Phase 1 archaeological survey for those portions of the Project where substantial, direct ground disturbance is proposed to avoid any direct effects to below-grade resources. (Id.; Angelina Ex. 6 at 10).

Given the limited disturbance associated with Project, and the studies that Angelina has undertaken to date and will perform, the Board has adequate evidence to find that the Project will have a minimal impact on cultural resources in the Project Area and surrounding area.

c. The Board has Adequate Evidence to Find that the Project's Impacts on Visual Resources will be Minimal

Results of a Visual Resource Assessment (“VRA”) performed on Angelina’s behalf showed that solar panels could only be potentially visible from approximately 16.79% of the 5-mile visual study area, and the proposed substation could potentially be visible from only 9.7% of the study area. (Angelina Ex. 12 at 4). The Project will not be visible from the two communities in the general vicinity of the Project Area, Fairhaven and College Corner. (TR at 204-205). In fact, views of the Project will be minimal at distances beyond 0.5 miles. (Angelina Ex. 12 at 7). Mr. Robinson testified specifically that, beyond 0.5 miles, “discernible equipment starts to go away and you can't tell what it is; you can't see individual components anymore.” (TR at 206).

As Mr. Robinson testified, the VRA is a conservative analysis of visibility. (TR at 182). The results of the VRA take into account both topography and vegetation, and are not generally dependent on deciduous trees having foliage, because hedgerows that are thicker than one tree trunk will provide some screening. (Id. at 188). In addition, Mr. Robinson clarified that the use of the term “visible”, in context of the VRA, and particularly with respect to visibility outside of 2.5 miles, “it's not individual Project equipment that you can discern or see with your naked eye, but you may be able to make out some type of line against the background or something like that; but being able to tell it's a solar Project from that far away or discern any type of Project equipment is very difficult.” (TR at 203).

Despite the modest visibility of the Project, Angelina still intends to implement visual mitigation measures to minimize any potential impact, including impact to locations adjacent to the Project Area. These mitigation measures include the proposed use of vegetative buffers to screen portions of the Project. (Angelina Ex. 12 at 5).

As required by the Joint Stipulation, a landscape plan will be included as part of the final design for the Project and will be submitted to Staff prior to the start of construction. (Joint Ex. 1 at 7, Condition 11). As testified by Mr. Robinson, the landscape plan will include the use of various screen modules EDR has developed, including those that provide, as appropriate: 1) roadside pollinator habitat by utilizing native seed, 2) vertical softening of views through clustered arrangements of native shrubs and trees, or 3) adjacent resource screening that creates a hedgerow of mixed deciduous and evergreen native material, depending on the character and sensitivity of the adjacent land use. (Angelina Ex. 16 at 2). Use of native shrubs and plantings will not completely screen views of the Project, but instead would serve to soften the overall visual effect of the Project and help to better integrate the Project into the surrounding landscape. (Id.) As Mr. Robinson testified, 100% screening is not the goal because it “often looks awkward” and “does not fit the character of the landscape ...” (TR at 199-200).

Plantings would be selected based on aesthetic properties, to match or complement the existing vegetation at a given location. (Angelina Ex. 12 at 6). In addition to helping to blend the Project into the surrounding landscape, use of native plant species would also provide environmental benefits to the local animal and insect communities. (Id.)

Based on the results of the VRA, as well as Angelina’s commitment to mitigation of visual impact, the Board has sufficient evidence to find that the Project will have minimal impact on visual resources.



## 2. *Ecological Impacts*

Angelina identified the ecological impacts of the Project in its Application and through direct testimony at the evidentiary hearing. Ecological impacts may be broadly divided into five categories: surface waters, threatened and endangered species, other wildlife, vegetation and noxious and invasive weeds, and soil and water impacts. Angelina's Application, the Staff Report of Investigation and the testimony in this proceeding provide sufficient evidence to allow for a finding that the Project will have a minimal ecological impact. The Project is proposed to be primarily built on land that has already been disturbed seasonally/annually for agriculture. The Project's most significant impact will come from the conversion of land used for agriculture to land used for the solar panel arrays. Mr. Rupprecht testified that Angelina has designed the Project to avoid and minimize impacts to wetlands, waterbodies, woodlots, and aquatic and terrestrial wildlife species where possible. (Angelina Ex. 13 at 8).

### a. The Board has Adequate Evidence to Find that the Project's Impacts on Surface Waters will be Minimal

The Project will have a minimal impact on surface waters. There are 1.19 acres of wetland located within the Project Area, but there will be no wetland impacts resulting from the Project. (Angelina Ex. 13 at 5). A total of six non-wetland waterbodies are located in the Project Area. There will be no impacts to these waterbodies, due in part to the use of mitigation measures, such as horizontal directional drilling ("HDD"). (Id. at 5-6).

The Board has adequate evidence to find that the Project's impact on surface waters will be minimal.

b. The Board has Adequate Evidence to Find that the Project's Impacts on Threatened and Endangered Species will be Minimal

The Project will not have a significant impact on any RTE species. Based on a review of publicly available data, the Project Area and the surrounding area within a ¼-mile buffer are not expected to provide significant or permanent habitat for any listed or other RTE species, as testified by Mr. Rupprecht. (Angelina Ex. 13 at 4). During Cardno's November 2017 and April 2018 field surveys, no RTE species were identified. (Id.; TR at 209-210). The historic range of the endangered Indiana bat and threatened northern long-eared bat, state threatened Sloan's crayfish, and federal threatened/state endangered eastern massasauga rattlesnake includes the Project Area. (Staff Ex. 1 at 18).

As testified by Mr. Rupprecht, "the Project has no proposed tree clearing that would affect [Indiana bat] habitat." (TR at 215). This is because the Project will only involve clearing 0.07 acres of trees, which "will not represent a change in the habitat for bats." (Id.) However, to avoid any possible adverse impact to the Indiana bat or northern long-eared bat, and in compliance with Joint Stipulation Condition 19, Angelina will "adhere to seasonal cutting dates ... unless coordination with ... ODNR and USFWS allows a different course of action." (Joint Ex. 1 at 9). No impact to either the Sloan's crayfish or eastern massasauga rattlesnake is anticipated from the Project due to the absence of impact to surface waters and wetlands. (Staff Ex. 1 at 18).

Based on the RTE evaluations performed for the Project, the Board has adequate evidence to find that the Project's impact on RTE species will be minimal.

c. The Board has Adequate Evidence to Find that the Project's Impacts on Other Wildlife will be Minimal

In addition to avoiding impact to RTE species, Angelina also evaluated what impact the Project would have on other wildlife in the area. Angelina's consultant Cardno "found that the Project would not significantly impact wildlife or wildlife habitat." (Angelina Ex. 13 at 6). The Project has been designed to locate the majority of infrastructure within active agricultural land, which only provides habitat for a limited number of wildlife species. (Id.)

Mr. Rupprecht testified that on a landscape scale, there is abundant availability of similar agricultural fields within the Project Area and surrounding area that can be used as similar habitat. (Angelina Ex. 13 at 6). In addition, the Project Area and ¼-mile buffer are not known to provide significant habitat for sensitive bird species. (Id.) The few birds and mammals that may forage within these fields would likely avoid these areas that are being disturbed by construction of the Project. (Id.). Due to this lack of adequate habitat in the immediate Project Area, it is likely many birds and wildlife will opt for higher quality habitat nearby for roosting, foraging and breeding.

Mr. Rupprecht also led a multi-person Cardno team, including wildlife biologists and statisticians, which determined that deer in the area surrounding the Project Area would increase by less than 5%, or 0.01 deer per acre, as a result of construction of the Project, and assuming that all deer are excluded from the Project Area. (Angelina Ex. 13 at 2, 7; TR at 218, 222).

In arriving at that conclusion, Cardno conducted a detailed study. Cardno first determined that sufficient information on deer population was available to perform such an analysis because deer are a resource managed by the Ohio Department of Natural Resources. (TR at 218). Having determined that, Cardno next identified a study area of two miles, because

the home range of deer ranges from ½ mile to two miles, based on Cardno’s research. (TR at 219).<sup>2</sup>

Inside the two mile study area, Cardno used the federal National Land Cover Database to identify the various land uses within the study area, including the Project Area. (Id.) After identifying the land uses in the study area, Cardno assigned each land use a “habitat utilization factor,” which is a measure of how intensely a deer actually uses a particular land use type. (Id.) Cardno developed the habitat utilization factors for this study based on its own research and using its experience on other energy projects, including projects in Ohio, North Carolina, and Virginia. (TR at 219, 222).

As an example of the assignment of habitat utilization factors, a wooded area would receive a habitat utilization factor of 1 (or 100%), because it is a “home area” for deer. (Id. at 219-220). Other types of land uses, such as residential lawns or agricultural areas, were assigned different (less intensive or lower) habitat utilization factors. (TR at 220).

Simultaneous with the determination of the habitat utilization factors, Cardno also determined the overall average density of deer in Preble County, using data from the U.S. Department of Agriculture. (TR at 220). Using this data, Cardno determined that there were approximately 15 deer per square mile in Preble County. (Id. at 221). To confirm that this number was accurate, Cardno reviewed ODNR deer data. (Id.) ODNR does not directly report deer population on a county by county basis, but has estimated that, state-wide, there are 725,000 deer in Ohio. (TR at 221). Dividing 725,000 deer by the 44,000 square miles in Ohio gives an

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<sup>2</sup> In his testimony, Mr. Rupprecht initially referred to a 5 mile home range and 5 mile study area, but then corrected his misstatement later in his testimony, testifying that “I’m correcting that our analysis was for 2 miles, not 5 miles; I misspoke. So the range of deer ranges quite a bit. There’s a lot of literature out there that say deer may range quite a bit, but we’ve found the home bounding of deer is between a half mile and 2 miles, not 5 miles, so I just want to make sure that is clear. And so, therefore, the calculations that we did as far as the land use and everything, this analysis was for 2 miles.” (TR at 234-235).

estimated state-wide deer density of 16 deer per square mile. (Id.) Based on ODNR hunting data, Cardno determined that Preble County is actually on the lower end of deer density in Ohio, thus, Cardno felt that the 15 deer per square mile estimate from the U.S. Department of Agriculture was accurate. (TR at 221-222).

Using the 15 deer per square mile density estimate combined with the habitat utilization factors and the land use information, Cardno conducted an analysis using:

the number of deer that you believe are in that [2]-mile radius and then you determine how many deer are inside the actual buildable area. Then you take out that buildable area, which is 827 acres of agricultural land, and then redistribute those deer within the [2-mile radius], still keeping the original density there and saying what is that increase in density, what is that increase or change from the Project Area no longer being [available] for forage. In this particular case, we got a result of less than 5 percent.

(TR at 222-223).

When Cardno performed this analysis, it did not assume that deer would be evenly distributed into the area surrounding the Project Area. Instead, Cardno's analysis assumed "more deer went into the wooded areas or more deer went into other agricultural areas as those received higher utilization factors versus factors related to lower or medium-density areas." (Id. at 224). The less than 5% increase is consistent across the various land uses in the 2-mile study area because "when we calculated the total number of deer in the [Project Area], it was based on the habitat utilization. When you redistribute them, you're redistributing them at the same rate so, therefore, the percent change would be identical for all those different categories." (Id.)

In addition, Mr. Rupprecht testified that the displacement that would be caused by the construction of the Project would be no different from the displacement that deer currently experience during the annual tilling and harvesting of the agricultural fields

composing the Project Area. (TR at 226-227). Thus, in the short-term, areas closest to the Project Area may experience a similar effect from deer that they already experience, but in the long-term, there will not be an issue from deer displacement. (Id. at 227). The overall density estimate described above does not vary with the season, but, as Mr. Rupprecht testified, “when you think about year to year and throughout entire seasons, developing an average to say what the deer population is at any given time, I think, is a fair estimate and a fair assumption.” (TR at 230).

Mr. Rupprecht further testified that even though Cardno used deer population as the basis for its less than 5% increase estimate, other wildlife, including coyotes, would likely have the same reaction as deer to the construction of the Project, and thus the conclusion could be applied to other terrestrial species. (TR at 231).

Thus, because the Project Area is composed of relatively low quality wildlife habitat, the actual increase in wildlife that is displaced into the surrounding area will be minimal, despite the fact that the Project Area is largely surrounded by similar habitat.

The Board has adequate evidence to find that the Project’s impact on non-RTE wildlife will be minimal.

- d. The Board has Adequate Evidence to Find that the Project’s Impacts on Vegetation will be Minimal and that the Project will not contribute to Noxious and Invasive Weeds

Construction of the Project will only involve a minimal amount of tree clearing, conservatively estimated to be 0.07 acres. (Angelina Ex. 1 at Exhibit G at 3-1; Staff Ex. 1 at 18). The vast majority of the trees in the Project Area, especially the woodlots, will not be disturbed by the construction of the Project. (Angelina Ex. 1 at 73). Mr. Rupprecht testified

that “the estimate of .07 acres is probably an overestimate of the total amount of clearing, so I would say the amount of clearing is extremely minimal.” (TR at 215).

Angelina also will be adding vegetation to the Project Area, as testified by Mr. Robinson. Plantings may include 1) roadside pollinator habitat by utilizing native seed, 2) vertical softening of views through clustered arrangements of native shrubs and trees, or 3) adjacent resource screening that creates a hedgerow of mixed deciduous and evergreen native material, depending on the character and sensitivity of the adjacent land use. (Angelina Ex. 16 at 2). In addition, as noted by Mr. Waterhouse, areas inside of the Project Area will be planted with vegetative ground cover. (TR at 150).

Angelina is committed to the control of noxious weeds, primarily through mechanical means (as opposed to the widespread use of commercially-available herbicides). (Angelina Ex. 6 at 8; Angelina Ex. 1 at 75). Angelina, like others near the Project Area, will also be bound by Ohio law requiring the removal or destruction of noxious weeds upon notice. R.C. 5579.05. In addition, the Joint Stipulation requires Angelina, to the extent practicable, to purchase seed stock from a vendor recommended by the Ohio Seed Improvement Association. (Joint Ex. 1 at 9, Condition 18). Condition 18 in the Joint Stipulation is expansive, and reads as follows:

Prior to the preconstruction conference, the Applicant shall submit a vegetation management plan to Staff for review and confirmation that it complies with this condition. The plan would identify all areas of proposed vegetation clearing for the project, specifying the extent of the clearing, and describing how such clearing work would be done as to minimize removal of woody vegetation. The plan shall describe how trees and shrubs along access routes, at construction staging areas, during maintenance operations, and in proximity to any other project facilities would be protected from damage. The plan shall also describe the implementation and maintenance of pollinator-friendly plantings and describe any planned herbicide use. **The plan shall also describe the steps to be taken to prevent establishment and/or further propagation of noxious weed identified in OAC 901:5-37 during implementation of pollinator-friendly plantings.** The Applicant shall consult with the Ohio Seed Improvement Association prior to purchase of seed stock regarding the names of reputable vendors of seed stock

and shall purchase seed stock used on this project from such recommended sources to the extent practicable and to the extent seed stock is available from such vendor(s).

(Joint Ex. 1 at 9) (emphasis added).

Based on the small amount of tree clearing associated with the Project, as well as the Project's commitments regarding ground cover and the control of noxious weeds, the Board has adequate evidence to find that the Project will have a minimal impact on vegetation and will not contribute to noxious or invasive weeds.

e. The Board has Adequate Evidence to Find that the Project's Impacts on Soil and Water will be Minimal

There is no risk of either soil or water contamination from the panels to be used for the Project, as described in Mr. Herling's testimony. The panels are composed primarily of readily recyclable materials such as glass, aluminum, and copper. (Angelina Ex. 6 at 16). While there are some chemicals used in the panel manufacturing process, suppliers of solar panels that will be used for the Project have demonstrated that their products pass U.S. EPA's "Toxicity Characteristic Leaching Procedure" qualifying them as routine "solid" waste. (Id.; TR at 16). This includes Ohio-made solar panels based on cadmium telluride chemistry. (Angelina Ex. 6 at 16).

In his testimony, Mr. Herling explained that cadmium telluride is used "as a conductive material as a fine substrate in the panel itself." (TR at 45). Mr. Herling went on to note that cadmium telluride is a compound which, though it does contain the element cadmium, is a different substance with radically different properties than cadmium, specifically, cadmium telluride "has about three times the melting point and is non-water soluble or available." (TR at 46). Additionally, as testified by Mr. Herling, even though a solar panel, depending on design,



may contain lead, that lead is “not [a toxic material] when encapsulated in layers of plastic and glass in the solar panel.” (TR at 46).

In response to questions from counsel for CCPC at hearing, Mr. Herling testified regarding the frequency of tornados in Preble County, noting that the occurrence of tornados was “vanishingly rare.” (Id. at 47). In his direct testimony, Mr. Herling stated that:

“even if damaged by breakage or fire, solar panels are manufactured and constructed to be exceedingly unlikely to release any material to the environment necessitating soil or water remediation. Solar panels contain no liquids that can spill, and the semi-conducting material is full[y] encapsulated in tempered glass. Additionally, given the low profile of the Project, its components are not generally susceptible to high winds. While tornado-force winds may cause damage to the panels, that damage should not result in the release of anything to the environment which could cause negative impacts.”

(Angelina Ex. 6 at 16).

Based on the benign nature of the panels, the Board has adequate evidence to find that the Project will have a minimal impact on soil and water.

### **3. *Public Services, Facilities, and Safety***

#### **a. The Board has Adequate Evidence to Find that the Project’s Impacts on Traffic will be Minimal**

Once operational, the Project will not significantly contribute to traffic on local roads. (Angelina Ex. 1 at 76). State and local roads in the vicinity of the Project Area will experience increased traffic during Project construction due to the delivery of materials and equipment. (Angelina Ex. 1 at 36). As noted by Mr. Bonifas in his testimony, only a very small percentage of the loads to be brought to the Project Area will be overweight or oversized loads, which are those that exceed measurements established by the Ohio Department of Transportation (“ODOT”), and will require a special permit. (TR at 162, 165).

A preliminary route evaluation study was performed for the Project by Hull & Associates. (Angelina Ex. 1 at 36). Interstate 70 and U.S. Route 127 will be the primary roads to access the Project Area vicinity. (Angelina Ex. 1 at Exhibit D at 7). Local roadways are generally in good condition, (Angelina Ex. 1 at 36). Angelina will work with local officials to repair any damage to roads resulting from construction. (Id.) The Route Evaluation Study concluded that

“For the majority of the delivery vehicles that are of legal dimensions, no delays to local traffic should be experienced except where the delivery vehicles may need to travel on narrow roadways (less than 2 lanes in width). **However, the delays to local traffic should be minimal due to the low traffic volume in the Project Area.** When delivery vehicles are travelling on narrow roadways or when there is an occasional oversized vehicle, traffic control will be utilized to manage local traffic.”

(Angelina Ex. 1 at Exhibit D at 7) (emphasis added).

Angelina will also work with the Preble County Engineer, the Trustees for the impacted townships, and ODOT to ensure that any impacts to road surface conditions and traffic flow are accounted for and rectified. (Angelina Ex. 1 at 36). Where possible, deliveries on single lane roads to the Project will be limited despite low traffic volumes in and around the Project Area. (Id.)

Summarizing the Project’s impact on traffic, Mr. Bonifas testified that:

“[b]ased on the results of the Route Evaluation Study and my experience, I would not expect the construction or operation of the Project to have a negative effect on the travelling public. I would also not expect the construction or operation of the Project to have a negative effect on the condition of the local roadways that could not be maintained during construction or restored post-construction.”

(Angelina Ex. 10 at 4).

In addition to the completed Route Evaluation Study, Angelina intends to implement a traffic management plan, as required by Joint Stipulation Conditions 25 and 26. (Joint Ex. 1 at

10). Mr. Bonifas testified as to how the traffic management plan would handle movement of oversize vehicles:

“an oversize load would need to get a permit, through ODOT, to transport that load and that permit would require there to be a route evaluated for that, a specified route. The oversize loads, depending on the size, would need to have escort vehicles and potentially other means of traffic control like flagging. **So if an oversize load, for the Project, were to encounter a piece of farm equipment at the same time, that should be avoided by the traffic plan, the escort vehicle, and the flagging.**

\* \* \*

when they're moving an oversize load down the road, they're going to have a flagger go ahead and make sure the road is clear and they'll go to the next intersection and they'll hold traffic up until that vehicle gets to that point and then they'll leapfrog to the next intersection.”

(TR at 167) (emphasis added).

Mr. Bonifas acknowledged that even with the traffic management plan, construction of the Project may result in delays for other traffic on the road, but indicated that “it would typically be a very short duration. It's just the time to move the truck down the road.” (Id. at 167-168).

Based on the record, the Board has adequate evidence to find that the Project’s impact on traffic will be minimal.

b. The Board has Adequate Evidence to Find that Construction Noise associated with the Project will have a Minimal Impact

Mr. Hessler, in his Noise Report produced for the Project, concluded that in contrast to other forms of power generation, sound emissions during construction of the Project are expected to be dramatically lower in magnitude and duration. (Angelina Ex. 1 at Exhibit E at 15). Some unavoidable disturbance is possible when the mounting posts are driven in but this activity will be fairly short-lived in any particular location. (Id.). Other sounds from trenching and road

building will also be brief in duration and will progress from place to place avoiding prolonged exposure at any specific location. (Id.)

In his testimony, Mr. Herling estimated that installation of posts throughout the **entirety** of the Project Area, not in any single location, would take 3-4 months. (TR at 63). Mr. Herling further estimated that a single crew of post installers would be able to install approximately 100-200 posts every day, and that the actual installation of a single post would take under a minute. (Id. at 67, 130). The **majority** of the time in post installation is spent relocating machinery between post locations. (Id. at 130). Mr. Herling also noted that multiple crews would be at work installing posts at a given time. (TR at 69-70).

Although there are existing intermittent sources of noise as a result of agricultural operations near the Project Area, Angelina will mitigate construction noise by employing best management practices, including limiting the hours of construction, maintaining vehicles in proper working condition, and working with the local community to advise residents of those periods when sustained construction activity is expected to take place in relatively close proximity to their homes. (Angelina Ex. 1 at 59).

The Project will not involve extensive excavation or other earth-moving work or construction of significant concrete foundations. (Angelina Ex. 1 at 57). Although numerous piles will be driven, they likely will be only to a depth of less than ten (10) feet and the activity will be relatively brief at any particular location. (Id.) Table 6.0.1 of the Noise Report provides representative sound levels from construction equipment at 50 feet, which may be conservatively interpreted as the site property boundary. (Id.) In general, the Noise Report concluded that construction-related noise would be modest and intermittent, and would result in only minimal, unavoidable impacts. (Id.)

In addition to the mitigation and temporary duration of construction noise described above, the Joint Stipulation requires that:

General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. **Impact pile driving shall be limited to the hours between 9:00 a.m. and 7:00 p.m. Monday through Friday**; hoe ram and blasting operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm. Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.

(Joint Ex. 1 at 7, Condition 10) (emphasis added).

Mr. Hessler testified that “[t]hese time limitations and the fact that construction activities move around the site and are not concentrated in any one area for a long period of time should reasonably minimize any impact.” (Angelina Ex. 20 at 4).

Given the short duration of construction and the limitations on the time for construction activities (including pile driving), the Board has more than adequate evidence to find that the Project’s construction noise will have a minimal impact.

c. The Board has Adequate Evidence to Find that Operational Noise associated with the Project will have a Minimal Impact

The Board may also make a finding that operational noise from the Project will have a minimal impact on the surroundings. In all of Mr. Hessler’s experience, he has “never heard of any complaints of a solar project. I can’t even think of any papers or anything, anybody even talking about solar projects at acoustics conferences.” (TR at 265). Mr. Hessler has nearly 30 years of acoustics experience, regularly attends conferences and reviews trade journals related to acoustics, and has worked on solar projects other than the Project. (Id. at 264-265).

The only significant source of operational noise from the Project will be the substation and associated transformer. (Angelina Ex. 1 at 58). Modeling performed by Mr. Hessler concluded that, at the nearest non-participating residences to the substation location, modeled noise levels from the substation would be “comparable to or below the existing environmental sound level, which means in qualitative terms that there will be no, or no significant, change in what is audible at the houses.” (Angelina Ex. 14 at 3).<sup>3</sup>

In conducting his modeling, Mr. Hessler compared projected noise emissions from the transformer with the daytime L90 (near minimum) sound level in the area, which he determined via field survey to be 31 dBA. (Angelina Ex. 1 at Exhibit E at 2). Mr. Hessler also determined that the daytime Leq (average) for the Project was 39 dBA. (Angelina Ex. 20 at 5). “Daytime”, for the purposes of Mr. Hessler’s evaluation, is from 7:00 a.m. to 10:00 p.m. (TR at 263). Mr. Hessler conducted his background sound measurements to capture the existing sounds levels in the immediate vicinity of the proposed site of the Project substation. (Angelina Ex. 20 at 5). At the time Mr. Hessler performed his sound survey, “no transformers were present in [the point of interconnection substation], which appeared to be a switching station, nor were there any audible sound emissions from it at the monitoring location.” (Id.)

The L90 level determined by Mr. Hessler represents the “sound level exceeded 90% of the time over each measurement period. Put another way, this level captures the quietest (not necessarily consecutive) 1 minute of each 10 minute interval making it a conservative measure of the near-minimum background sound level.” (Angelina Ex. 1 at Exhibit E at 4). The L90 is distinct from the Leq, which is the average background sound level in an area, and is a higher number than the L90. (Id. at Exhibit E at 5). The Leq is considered to be “a more typical or

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<sup>3</sup> There is also a participating residence (the home of the owner of the property on which the substation is to be located) 400 feet away from the proposed substation location. (Angelina Ex. 1 at Exhibit E at 2).

more commonly observed level.” (Angelina Ex. 20 at 5). With respect to the substation, Mr. Hessler concluded that “no significant adverse reaction is expected from the proposed substation at any of the nearest [non-participating] residences.” (Angelina Ex. 1 at Exhibit E at 15).

In addition to the noise from the substation, Mr. Hessler also testified, with respect to the inverters to be located at the Project, that “this sound is only perceptible at short distances and it is highly unlikely to be significant or problematic at any residences, which would all generally be hundreds of feet from any given inverter.” (Angelina Ex. 14 at 4). Noise from inverters is “not at all” a legitimate concern. (Angelina Ex. 20 at 2).

Mr. Hessler specifically testified that:

“DC/AC inverters are simply electrical cabinets sitting near the middle of the panel arrays typically hundreds of feet from anyone’s residence or from the boundaries of non-participating properties. In their standard configuration some ventilation fan noise, roughly comparable in qualitative terms to the **sound of a domestic air conditioning condenser unit**, is present near the unit but **this sound dies out quickly with distance and will most likely be inaudible, or at worst only faintly perceptible, at any given site boundary**. Irrespective of the specific inverter model eventually selected for the project **it is important to understand that the sound emissions from these units are not fixed and largely unavoidable, but rather can be easily mitigated on a retrofit basis in the unlikely event that any sort of noise issue should arise**. The cooling air intake and discharge could be fitted with an acoustical hood or small silencer and any electrical hum radiated from the cabinet could be abated in a matter of minutes with peel and stick damping sheet. Moreover, it should not be forgotten that **the inverters are only active during the daytime and are completely inert and silent at night when sensitivity to noise is much greater**. Lastly, in addition to being a normal state of affairs at this point in the development of a solar project, the fact that the final locations have not yet been worked out is actually an advantage because it allows the inverters to be sited to ensure that there is no adverse impact as committed to by Angelina Solar in its application (page 58).”

(Angelina Ex. 20 at 3-4) (emphasis added).

Mr. Hessler also testified that, at the inverter he measured at a solar farm in New York, “people lived across the street from the fence of the project and I’m not aware of any problems there.” (TR at 270). Mr. Hessler’s testimony is also supported by Mr. Herling’s personal

observations from visiting operational solar farms around the country. (TR at 71). Mr. Herling testified that:

Any time I see [a solar project], I pull over and check it out. I go right to the fence, unless I'm trespassing, and listen, because I get this question from every landowner that I talk to. So that's certainly -- that's certainly one part of it. The racking, if we use a tracking module, moves so imperceptibly slow. The motors are so small there really is no perceptible noise from that. And with inverters being the one part of the Project that, during day and not the night would make any sound when placed sufficiently far away, as described in the Application, they would be -- you wouldn't be able to hear them at neighboring residences above just typical background noise.

(TR at 71).

In a study performed for the Massachusetts Clean Energy Center relied on by Mr. Hessler, and included in the record as CCPC Exhibit 1 (the "Massachusetts Study"), noise from inverters approached the measured background levels at 150 feet from the inverter pad.

(Angelina Ex. 1 at Exhibit E at 13; CCPC Ex. 1 at iii). In Mr. Hessler's testimony at hearing regarding the Massachusetts Study, he noted that the study "essentially said that the inverters were inaudible around the boundaries of all the projects and any kind of tone or character to the noise was not audible at the boundaries of these projects." (TR at 245).

The Massachusetts Study, which evaluated three separate solar sites, reported background L90 sound levels (dBA) at the three sites of 43.9, 49.6, and 42.5, respective. The Massachusetts Study also reported L90 sound levels (dBA) 150 feet from an inverter at the three sites of 41.0-45.2, 46.2, and 41.8-43.9, respectively. (CCPC Ex. 1 at 9, 10, 17, 18, 25, 26).

At all three sites, sound levels at 150 feet from an inverter approached background levels. (TR at 250). This means that there was sufficient background noise at that measurement point that any inverter sound could not be discerned. (TR at 254-255). To put these numbers into context, a noise level of 40 dBA is equivalent to an empty theater or library. (CCPC Ex. 1 at A-



3). A noise level of 50 dBA is equivalent to a dishwasher in the next room. (Id.) Thus, even at the levels in the Massachusetts Study, inverters are very quiet at a distance of 150 feet.

In addition, Mr. Hessler testified that “40 dBA ... is the minimum absolute threshold any project would ever need to be designed to because that sound level is so low that complaints are extremely rare even when there is no significant background masking noise present in the environment.” (Angelina Ex. 20 at 5-6). Again, as discussed above, a noise level of 40 dBA is equivalent to an empty theater or library. (CCPC Ex. 1 at A-3).

Given Mr. Hessler’s testimony and the evidence showing how quickly inverter sound goes to background levels, the Board should find that Angelina has adequately evaluated operational sound from the Project.

Supporting that conclusion is that if there is a concern or complaint regarding sound from an inverter, “options, such as cabinet damping and ventilation silencers, would be available to retroactively mitigate noise from these devices and resolve any issue.” (Angelina Ex. 1 at Exhibit E at 13). Mr. Hessler testified at hearing that based on his personal observations of an inverter at a solar project,

**“it would be very simple to dramatically reduce the noise from [an inverter]. It was just built for electrical purposes without any thought to noise whatsoever, but it could easily be retrofitted to just take it off the table as to the noise source. On [the inverter Mr. Hessler examined], the noise was coming from cooling fans from the intake and discharge through some louvers. You could very easily retrofit an acoustical hood on there, which is just a hood that's lined with absorptive fiberglass material, and it would soak up that noise. And then in the Massachusetts study, some of those units had a very high-frequency whine to them. That could also be very easily taken care of by adding damping, a damping sheet to the inside of the cabinet panels. All that is is a plastic sheet. You just peel the cover off and stick it on and it dampens the panel. **But for any one of these, I'm sure, it could be dramatically attenuated very easily and inexpensively.**”**

(TR at 266-267) (emphasis added).

Further, and most importantly, the Project is committed to “site the inverters within the solar fields to ensure they do not cause material, adverse impacts to any sensitive, off-site receptors.” (Angelina Ex. 1 at 58).

Operational noise will not be an issue for the Project and operational noise has been adequately evaluated for the Board to consider the impacts from the Project. As Mr. Hessler ultimately concluded, “I would not expect the operational sound emissions from the Project in general to have any negative impact on the surrounding community.” (Angelina Ex. 14 at 5). Mr. Hessler’s testimony, as well as the remainder of the record, supports the Board finding that there will be minimal impact from operational noise from the Project.

d. The Board has Adequate Evidence to Find that the Project’s Electromagnetic Fields will be Minimal

Any electromagnetic field (“EMF”) generated by the Project will dissipate rapidly within short distances and will not impact signals or electronic devices. (Angelina Ex. 1 at 66). EMF “is the combination of an **electric field** and a **magnetic field**.” (CCPC Ex. 1 at B-2) (emphasis in original). Mr. Herling provided uncontroverted testimony regarding EMF at hearing, relying in part on the Massachusetts Study. (TR at 96-97). The Massachusetts Study evaluated EMF with respect to inverters, and concluded that “electric fields near the inverters were also not elevated above background levels....” (CCPC Ex. 1 at 33). The Massachusetts Study also identified magnetic fields “a few feet from inverters, in the range of 150 to 500 mG. At a distance of 150 feet from these utility-scale inverters, these fields drop back to very low levels of 0.5 mG or less, and in many cases to background levels (<0.2 mG).” (Id. at 34). Thus, electric fields from inverters are essentially nonexistent, and even magnetic fields that may exist in close proximity to inverters are well below applicable standards, and rapidly drop to near background levels. (CCPC Ex. 1 at 34, B-3).

Accordingly, the Board may find that EMF from the Project will have no impact on the area surrounding the Project Area.

- e. The Board has Adequate Evidence to Find that the Project will be Appropriately Decommissioned

Given the modest impact of construction of the Project, it will be relatively easy to decommission. (Angelina Ex. 1 at 37). Angelina will prepare a decommissioning plan in compliance with Joint Stipulation Condition 29. (Joint Ex. 1 at 11). The decommissioning plan will outline a schedule of fewer than 12 months, will specify responsible parties, require restoration of the Project Area, and require proper disposition of all project components. (Id.; Angelina Ex. 1 at 38).

The decommissioning plan also will require that the Project Area be restored to use for cultivation, unless circumstances prevailing shortly in advance of the start of decommissioning indicate that another use is more appropriate or explicitly desired by the land owner. (Angelina Ex. 1 at 39). Restoration will include a return to the same or functionally similar preconstruction drainage patterns, including farm drainage tiles, decompaction of soil, and seeding with an appropriate, low-growing vegetative cover, such as clover, to stabilize soil, enhance soil structure, and increase soil fertility. (Id.)

Prior to construction, Angelina will, if applicable, post financial security, e.g. a decommissioning bond, to ensure that funds are available to pay for the net decommissioning costs. Angelina will retain an independent and registered professional engineer to calculate the net decommissioning costs, which shall be incorporated into the plan and reflected in the financial security. This net decommissioning estimate shall be recalculated at least every five years by an engineer retained by Angelina and the financial security adjusted to reflect any

increase in the net decommissioning costs. (Joint Ex. 1 at Condition 29; Angelina Ex. 1 at 39-40).

As testified by Mr. Bonifas, Condition 29 “ensures that an effective plan can be put into place for the appropriate decommissioning of the Project so that the Project Area can be returned to another use after the end of the Project’s useful life.” (Angelina Ex. 11 at 3).

The Board had adequate evidence to find that the Project will be decommissioned, and the decommissioning will have minimal impact.

f. The Board has Adequate Evidence to Find that the Project’s Impacts on Drainage, Runoff, and Drain Tile will be Minimal

Preliminary investigation conducted by Angelina has concluded that “the soils in the Project Area, which consist primarily of poorly-to-moderately well-draining silt loams, is suitable for grading, compaction and drainage for the Project, and there are no soil-related inadequacies to remedy in connection with the Project.” (Angelina Ex. 1 at 63). Angelina is currently engaged in an evaluation process, with its consultant Noah Waterhouse, to evaluate drainage and drain tile in the Project Area.

As discussed above, Mr. Waterhouse is a licensed professional engineer with extensive experience evaluating drain and runoff and drain tile issues at more than 50 solar projects, including projects in Ohio. (Angelina Ex. 8 at 1-2; TR at 180-181, 209). His experience in Ohio includes acting as the engineer of record for the 20-megawatt Bowling Green solar project, which had an extensive drain tile network, as well as working on another 100-plus megawatt project. (TR at 153). Outside of Ohio, Mr. Waterhouse has worked on over fifteen projects with a capacity greater than 50 megawatts, some upwards of 250 megawatts, approximately half of which had drain tile networks. (Id.)

As described below, the Board has sufficient evidence to determine that the impact of the Project on drainage, runoff, and drain tile will be minimal.

*i. Drainage and Runoff*

In his direct testimony, Mr. Waterhouse concluded that:

**“The Project should not have an impact on drainage, nor should it result in an increase in runoff from the Project Area.** Although the solar panels and some of the ancillary equipment are impervious, the large gaps between panel arrays to prevent shading and other open areas, combined with the vegetation surrounding and beneath each panel, means that drainage and runoff characteristics should not be dissimilar from a farmed field with crops growing on it. **In my experience, the construction and operation of similar projects to the Project has not led to drainage issues, or an increase in runoff.** In fact, when compared to a fallow field, I would expect the Project to have superior drainage and runoff characteristics, due to the year-round vegetation maintained in and around the Project Area.”

(Angelina Ex. 8 at 4) (emphasis added).

At hearing, Mr. Waterhouse reiterated this, testifying that:

**“Our visual inspection of the Project Area to confirm that most of the Project Area is currently used for cultivated farming, with the understanding that the ultimate project conditions will convert that bare farmland to vegetation, tells us that that change in land use will result in a reduction of stormwater runoff. So even without doing calculations, we know that a typical project of this nature will ultimately see a reduction of runoff, not an increase, based on that change in land use.”**

(TR at 150) (emphasis added).

Mr. Waterhouse’s testimony with respect to drainage in the Project Area is corroborated by the testimony, both written direct and during cross-examination at hearing, of Matt Marquis, another licensed professional engineer with experience in hydrology and hydraulics. Mr. Marquis testified that “vegetation, grasses post-construction, and grass is a great best-management practice for managing erosion and sediment runoff and managing stormwater runoff from a project site.” (TR at 515). Mr. Marquis also testified that “[b]ased on my experience in watershed models, doing hydrologic studies of watersheds that range in size from 1 acre to 60 square miles,

and after reviewing the Application, **the proposed changes to land use in this project in my experience, in my opinion, do not - would not result in an increase in runoff.**” (TR at 525) (emphasis added).

In addition to the testimony of Mr. Marquis and Mr. Waterhouse, CCPC Witness Rachael Vonderhaar **agreed** that “[g]rass or any kind of plant can slow down surface water runoff.” (TR at 373).

Mr. Marquis also testified specifically to refute the concern of CCPC Witness Walter Mast that construction of the Project could result in flooding in certain areas. (CCPC Ex. 5 at 3). Mr. Marquis testified that:

**the project area only contributes 0.2% of the entire watershed area to the Village of Fairhaven and Mr. Mast’s property ....** The fact that such a small percentage of the watershed is affected by the project area means that there is no increase in flood risk by the project to both Mr. Mast’s property and the Village of Fairhaven.

(Angelina Ex. 21 at 5; TR at 507) (emphasis added).

At hearing, Mr. Marquis provided additional detail why there will not be an increase in drainage from the Project Area into Four Mile Creek that could cause increased flooding in the area that concerns Mr. Mast:

The watershed in a hydrologic study is characterized by a lot of different factors. One being the size of the drainage area, which in this case is not changing. The Project Area is within a drainage area. That drainage area is not getting bigger or smaller as a result of the Project being constructed. Another is the shape of the watershed, which, again, is not changing. They're not changing drainage divides or appreciably changing the size or shape of the watershed. Another being the soils, the site soils, which can have an influence on infiltration which is part of how water interacts with the earth and, again, the soils are not changing. **The land cover is really the only thing that's changing of all of those characteristics here, and the land cover is, again, being converted from farmland and cropland use to vegetation which would actually result, in most cases, in a reduction of runoff if not the same amount of runoff.** So for those reasons and especially the fact that we're only talking about .2 percent of the entire watershed

that there's actually a land use change, with all of the other parameters the same, it doesn't seem reasonable to assume there would be any increase in runoff.

(TR at 522-523) (emphasis added).

Given Mr. Waterhouse's wealth of experience with drainage on solar projects, the Board should credit his uncontroverted testimony, also supported by Mr. Marquis, regarding drainage and find that the Project's impacts on drainage and runoff will be minimal, if any.

*ii. Drain Tile*

As testified by Mr. Waterhouse, there are two basic types of drain tile, main tile and lateral (also referred to as pattern) tile. (TR at 152). Main tile is a "trunk" that serves other drain tiles. (Id.) Lateral tile generally connects only to a main tile or directly off-site to surface conditions. (Id.) Main tiles are generally readily identifiable and landowners typically know where the main tiles on their properties are located. (TR at 152).

Angelina is currently engaged, with Mr. Waterhouse, in a process to identify all drain tile in the Project Area. (TR at 139). Mr. Waterhouse testified regarding the progress of this process. Specifically, efforts undertaken to date include: 1) working with the Preble County Engineer and the Preble Soil & Water Conservation District to obtain maps of any drain tile in the Project Area, 2) discussions with landowners in the Project Area to identify drain tile locations, and 3) conducting an on-site review to identify drain tile indicators visually. Prior to construction, additional analysis of data gathered will be reviewed and an action plan determined for each property in the Project Area. (Angelina Ex. 8 at 6).

Angelina is committed, both in the Application as well as Condition 16 in the Joint Stipulation, to avoid damage to drain tile in the Project Area, whether main or lateral, where possible, and if any tile in the Project Area is in fact damaged, to repair it promptly no later than 30 days after such damage is discovered. (Angelina Ex. 1 at 91-92; Joint Ex. 1 at 8, Condition

16). Importantly, CCPC Witness Rachael Vonderhaar testified that issues currently exist in at least one field in the Project Area. (TR at 385). She agreed that if drainage is improved within the Project Area, including repair of the existing issue, it would benefit the community. (Id. at 389). Ms. Vonderhaar also acknowledged both that “promptly repaired” is synonymous with “as soon as the opportunity exists” and that she considered the outside deadline of 30 days established in Condition 16 in the Joint Stipulation to be reasonable. (TR at 380).

The promptness requirement in the Joint Stipulation is also reasonable in light of the drain tile repair practices currently followed on the farms in the area surrounding the Project Area. In fact, Ms. Vonderhaar testified that some repairs to drain tile on the farms in the vicinity of the Project Area may be delayed during the growing season. In response to cross-examination, Ms. Vonderhaar testified as follows:

Q. Now, if a crop is planted and a drainage issue arises after planting, you may not go over the crop to make the repair, correct?

A. We have gone over crop depending upon how bad the situation is. It's all about the choice of the landowner.

Q. And so you may go over a crop, for example, if the hole was enough to be a concern for the equipment going into harvest, correct?

A. Correct.

Q. And that's exercised, for example, where the hole is big enough the track could potentially – the wheel could go into the hole, create a serious incident.

A. Correct. Or if you think it's going to end up being an impact to a larger part of the crop. Protect the crop as best you can.

**Q. Now, some of your neighbors don't go over the crop to repair tile, correct?**

**A. It's all personal choice.**

(TR at 377) (emphasis added).

Thus, drain tile is not always immediately repaired. (TR at 378-379). As Ms. Vonderhaar testified, there are a number of circumstances that go into how quickly a damaged drain tile is repaired, including the time of year. (TR at 379). Ms. Vonderhaar specifically testified that drainage repairs are scheduled “depending upon the greatest risk which creates the



order for the repairs in your farm operation.” (Id.) Ms. Vonderhaar also testified that whether a landowner consults with adjacent landowners on tile repair also depends on the type of repair being made. (TR at 392).

Finally, Ms. Vonderhaar testified about the wide variety of equipment that can be used to perform a drain tile replacement. (TR at 375). Ms. Vonderhaar testified that a mini backhoe/excavator 4 to 5 feet in width, or even a hand shovel, could be used. (Id.) Notably, a mini-excavator, or potentially even larger equipment, could be used to repair or replace drain tile, because there is 12-16 feet of space between rows of solar panels. (Id.; Angelina Ex. 1 at Exhibit G at 1-5).

Mr. Waterhouse testified that in his experience (over 50 solar projects), he had not encountered any issues of tile breakage or drainage resulting from construction at a solar farm. (TR at 154-155). Mr. Waterhouse would expect that if any project he worked on had a drainage issue, the project owner would reach out to his company to discuss that issue. (Id. at 156-157). Despite this, in all of Mr. Waterhouse’s experience with solar projects he has only had a single instance in which a post-construction issue arose. (Id. at 156). In that one instance, an off-site issue was causing the problem on the solar site. (TR at 156).

The Board has adequate evidence to determine that the impact of the Project on drain tile will be minimal.

**D. The Board has Adequate Evidence to Determine that the Project is Consistent with Regional Plans for Expansion of the Electric Power Grid and will serve the Interests of Electric System Economy and Reliability (4906.10(A)(4))**

PJM analyzed the bulk electric system, with the Project modeled as if it were interconnected to the bulk power system, for compliance with NERC reliability standards and PJM reliability criteria. The PJM system studies indicated that no reliability violations would

occur during single and multiple contingencies. (Staff Ex. 1 at 25). In addition, no potential violations were found during the short circuit analysis. (Id.) Therefore, the Project is consistent with regional plans for expansion of the regional power system, and will serve the interests of electric system economy and reliability.

**E. The Board has Adequate Evidence to Determine that the Project will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters and under sections 1501.33, 1501.34, and 4561.32 of the Revised Code. (4906.10(A)(5))**

The Project will comply with Chapters 3704 (air pollution control), 3734 (solid and hazardous waste control), and 6111 (water pollution control) of the Revised Code, and all rules and standards adopted under those chapters. The Project will also comply with R.C. Chapter Section 4561.32 (aeronautics), and R.C. 1501.33 and R.C. 1501.34 (water consumption), to the extent that they are applicable. A discussion of each of these areas follows.

***1. The Project will Comply with R.C. Chapter 3704 and all rules and standards adopted thereunder***

Small amounts of fugitive dust will be generated during construction and, therefore, the fugitive dust rules set forth in Chapter 3704, Revised Code, may be applicable. Angelina will use best management practices to minimize emissions. Those practices will include (1) retention of licensed construction firms that are knowledgeable about the importance of minimizing dust creation during construction activities; (2) maintenance of construction vehicles in proper working condition; and (3) use of water and/or dust suppressant on unpaved roads as needed to reduce dust creation. (Angelina Ex. 1 at 43).

Because the Project will generate electricity without releasing pollutants into the atmosphere, air-related regulations are not triggered during operation. The Project does not require any air permits. (Id. at 42).

Staff concluded that both construction and operation of the Project, as described and as subject to the conditions set forth by the Staff, will be in compliance with air emission regulations in Chapter 3704, Revised Code, and the rules and laws adopted thereunder. (Staff Ex. 1 at 27).

Accordingly, the Board may find that the Project will comply with the requirements of Chapter 3704, Revised Code and the regulations adopted under that chapter.

**2. *The Project will Comply with R.C. Chapter 3734 and all rules and standards adopted thereunder***

The Project Area is relatively free of debris and solid waste already. (Angelina Ex. 1 at 48). During construction, some solid waste will be generated, but it will be minimal. (Id. at 49). Primarily, this may include package-related materials, such as crates, nails, boxes, containers, and packing materials, damaged or otherwise unusable parts or materials, and occasional litter and miscellaneous debris generated by workers. (Id.) Waste that cannot be re-used or recycled will be disposed of in a municipal landfill. (Angelina Ex. 1 at 49).

During operation, only exceedingly small amounts of waste will be generated, which will be of the same general nature as the waste generated during construction. (Angelina Ex. 1 at 50). No licenses or permits will be required for waste generation, storage, treatment, transportation and disposal. (Id. at 50). The Staff concluded that, with Angelina's planned measures, all solid waste generated will comply with solid waste disposal requirements in R.C. Chapter 3734, and the rules and laws adopted under that chapter. (Staff Ex. 1 at 27).

Based on the record, the Board may conclude that the Project will comply with all solid waste disposal requirements.

3. ***The Project will Comply with R.C. Chapter 6111 and all rules and standards adopted thereunder***

Construction and operation of the Project will require virtually no water. (Angelina Ex. 1 at 47-48). Although it will cover a relatively large area, construction will involve only limited activities requiring the management of storm-water related pollutants. (Id. at 46). Construction will necessitate little earth-moving and grading because the Project Area is relatively level. (Id.) Construction will include only the occasional clearing of trees, and the Project's design will avoid the need to clear large blocks of active wildlife habitat. (Id.) Construction also will necessitate little excavation, which will be limited primarily to the creation of road beds and efficient trenching for collection lines. (Angelina Ex. 1 at 46). Nevertheless, the Project will obtain Ohio National Pollutant Discharge Elimination System ("NPDES") permits for general stormwater and construction discharge, including a Stormwater Pollution Prevention Plan ("SWPPP") for erosion control and the management of stormwater. (Id. at 45-46).

As testified by Mr. Rupprecht, **there will be no impacts resulting from the Project on the 1.19 acres of wetlands or the six other waterbodies located within the Project Area.** (Angelina Ex. 13 at 5-6).

With the permit measures and mitigation efforts planned by Angelina, the Staff concluded that construction and operation of the Project will comply with the requirements of Chapter 6111, and the rules and laws adopted under this chapter. (Staff Ex. 1 at 27).

Given these facts, the Board may conclude that with the above measures, construction and operation of the Project will comply with the requirements in Chapter 6111, Revised Code, and the rules adopted under that chapter.

**4. *The Project will Comply with R.C. 1501.33 and 1501.34 and all rules and standards adopted thereunder, to the extent they are applicable***

R.C. 1501.33 and R.C. 1501.34 impose permitting requirements on facilities that will result in a new or increased consumptive use of more than two million gallons per day. R.C. 1501.33(A). Because the Project has near zero water consumption requirements, no such permit will be required. The Project will comply with these statutory sections, to the extent they are applicable.

**5. *The Project will Comply with R.C. 4561.32 and all rules and standards adopted thereunder***

The highest point of the Project will be a single lightning mast located at the Project Substation, which will be up to approximately 70 feet in height. (Angelina Ex. 1 at 82). The solar panels themselves will be no more than 15 feet above ground level. (Id.) There are no public use airports, helicopter pads, or landing strips within five (5) miles of the Project Area. (Id. at 51). The closest airport, Norris Field, is located approximately 2.5 miles from the Project Area. (Angelina Ex. 1 at 52). The closest public use airport is the Richmond Indiana Municipal Airport, approximately 6.5 miles away from the Project Area. (Id. at 53). Because the Project Area is well outside the vicinity of Richmond Indiana Municipal Airport, an aeronautical study regarding glare is not warranted (14 CFR 77.17(a)(2)). (Staff Ex. 1 at 27).

In addition, Mr. Robinson testified that glare from the Project is not a concern. (Angelina Ex. 12 at 6-7). In fact, the potential for reflectivity or glare from solar panels is generally lower than the glare and reflectance generated by common surfaces in the surrounding environment, including, grasslands, water and glass. (Id. at 7).

The evidence demonstrates that Section 4906.10(A)(5), Revised Code, has been met.

**F. The Board has Adequate Evidence to Determine that the Project will Serve the Public Interest, Convenience and Necessity (4906.10(A)(6))**

As addressed above, the Board has adequate evidence to determine that the Project will have minimal environmental impacts. In addition, the Board has adequate evidence to find that the Project is in the public interest and will not have a negative impact on the local community. The Board has adequate evidence to determine that the Project will have no effect on property values in the local area around the Project and that the Project will have no negative impact on emergency services, and will not result in an increase in crime.

**1. Public Interaction**

Angelina has involved the public in the development of the Project. Angelina has met with a variety of public officials, including township and county officials, and attended public meetings, beginning in early 2017, as testified by Mr. Herling. (TR at 38-39). Angelina also reached out to area landowners to gauge interest in participating in the Project or to attempt to understand any concerns related to the Project, beginning in late 2016 and continuing through 2018. (Id. at 40). As a part of the Ohio Power Siting Board process, Angelina held a public information meeting in November 2018 (Angelina Ex. 1 at 22). Angelina also made public notice mailings and newspaper publications regarding the Project (Angelina Ex. 4; Angelina Ex. 5).

These efforts support a finding that the Project is in the public interest.

**2. Property Values**

Angelina commissioned Andrew Lines of CohnReznick LLP to evaluate the potential impact of the Project on property values in the area surrounding the Project. (Angelina Ex. 15 at 2-3). Mr. Lines is a designated Member of the Appraisal Institute with over 16 years of real estate appraisal experience. (Id. at 1). He is also a Certified General Real Estate Appraiser with

active licenses in 9 states. (Id. at 1-2). CohnReznick conducted an in-depth study of other large-scale solar farms to determine what impact, if any, the Project may have on the value of surrounding properties. (Angelina Ex. 15 at 3). Mr. Lines, in testimony at hearing, stated that the study included an evaluation of the effects of one project larger than the Project, as well as two others of similar capacity (TR at 277). Mr. Lines also provided testimony regarding the variety of sales that were evaluated in the study to determine if a trend could be observed:

[Sites of properties included in the study were] I would say, at the low end, 100 feet [from a solar project]. I've had other studies that were a little bit closer than that, but as low as 100 feet and then some going up to 420 feet ... some had partial views, some had full views, and others had some areas that were somewhat mitigated with either fencing or scrub growth or trees that were planted that might be in between a direct view from the house and an existing pad.

(TR at 278-279).

As testified by Mr. Lines, the study determined that “no consistent and measurable negative impact had occurred to adjacent property that could be attributed to proximity to the adjacent, commercial-scale, solar energy use, with regard to unit sale prices or other influential market indicators such as marketing time.” (Angelina Ex. 15 at 6).

The results of the study performed have been corroborated by a study of a Minnesota project performed by a local county assessor using a different methodology from that used by Mr. Lines. (Angelina Ex. 15 at 7). Mr. Lines ultimately concluded in his testimony that “I would not expect the Project to be the cause of a decrease in property values in the project area.” (Id.)

Mr. Lines’ expert testimony and the study his firm conducted provide the Board with sufficiently information to find that the Project will not have an impact on local property values.

### *3. Safety and Emergency Services*

The fields hosting solar arrays for the Project will be enclosed with fencing and locked gates. (Angelina Ex. 1 at 8). Mr. Herling also testified to the safety measures that would be in place at the Project. For example, periodic security checks will be conducted. (TR at 93). In addition, all personnel working at the Project “whether it's operations or maintenance, is trained to report anything they see that's unusual; so whether it's their distinct task to be doing security for the Project, or they're driving by and something is amiss, then they -- then that's reported.” (Id. at 92). The Project could use nighttime security checks or other methods to ensure security at night. (Id.)

Angelina intends to develop an emergency response plan for local officials and emergency personnel. (Angelina Ex. 1 at 55). The Joint Stipulation also commits Angelina to provide training, ongoing safety meetings, and any specialized equipment to local fire and EMS service providers. (Joint Ex. 1 at 11, Condition 28). These safety meetings will be held on an ongoing basis. (TR at 123). These safety meetings will be effective in ensuring that local first responders are adequately prepared to respond to any issue at the Project.

As Mr. Herling, a former EMT and operations director for a local volunteer EMS testified:

“from my experience ... safety meetings would be adequate as the way -- in the way I've described them as kind of a refresher. Any department is going to constantly be training their members and the Director will certainly keep -- the Director of Emergency Response will certainly keep a record and add to how they respond, in their general response plans, how to respond to any incident at the Solar Project....”

(TR at 123-124).

In addition to the ongoing safety meetings, Angelina will offer, as required by the Joint Stipulation, an initial training. This initial training would be “situational training specific to solar



energy facilities [and] will include in such training any emergency procedures which may be specific to the solar array model used for the project.” (Joint Ex. 1 at 11, Condition 28).

The Project Area is located in an area in which the predominant industry is agriculture. (Angelina Ex. 6 at 3-4). As testified by Ms. Vonderhaar, farmers already store hazardous substances such as diesel, gasoline, pesticides, and herbicides on their farms. (TR at 371). Ms. Vonderhaar further testified that grass fires can occur on farms, and that serious injuries can occur during farming. (Id. at 380-381). The Project will not be introducing any new types of risks to the local community that it does not already face through the presence of farming operations, and may in fact reduce them.

Finally, there is no evidence in the record, beyond mere conjecture or the “concerns” of CCPC, that the Project will somehow lead to an increase in crime in the Project Area. (CCPC Ex. 2 at 6). Ms. Vonderhaar testified that significant amounts of equipment are already stored in barns and outbuildings in the area surrounding the Project Area, but raised no concern about crime occurring at farming operations. Additionally, Mr. Herling testified that he’s not aware of copper theft involving a solar project. (TR at 95). CCPC’s concerns about crime are conjecture only.

The Board has adequate evidence in the record to determine that the Project will not have a negative impact on emergency services in the local area and no impact on crime, and thus will serve the public interest.

**G. The Board has Adequate Evidence to Determine the Project’s Impact on The Viability of Agricultural District Land (4906.10(A)(7))**

There will be no impact from the Project on agricultural district land, because **there is no agricultural district land in the Project Area.** (Angelina Ex. 1 at 91).

In addition, after the conclusion of the Project's useful life, the Project will be decommissioned and will be restored to potential use as an agricultural area. The Project will have only modest impacts to the Project Area. (Angelina Ex. 6 at 14). Specifically, the solar panels and racking will be installed on simple posts driven or rotated into the ground, likely to a depth of less than ten feet. (Angelina Ex. 1 at 37). Inverters and pyranometers will be installed on gravel pads, or on prefabricated foundations, which can be lifted out of place. (Id.) The Project's substation will be installed on poured concrete, but will not cover a large area. (Id.) Roads will be constructed of aggregate material or covered in grass, not paved, and participating land owners may choose to retain roads for their own use following decommissioning. (Angelina Ex. 1 at 37-38). There will not be any long-term impacts from the Project that would preclude its use for farming after the useful life of the Project. (Angelina Ex. 1 at 91).

Furthermore, the decommissioning plan to be developed by Angelina also will require that the Project Area be restored to use for cultivation, unless circumstances prevailing shortly in advance of the start of decommissioning indicate that another use is more appropriate or explicitly desired by the land owner. (Angelina Ex. 1 at 39). Mr. Herling testified as to the decommissioning process, stating that restoration will include a return to the same or functionally similar preconstruction drainage patterns, including farm drainage tiles, decompaction of soil, and seeding with an appropriate, low-growing vegetative cover, such as clover, to stabilize soil, enhance soil structure, and increase soil fertility. (Angelina Ex. 6 at 15).

Finally, the Joint Stipulation requires not only that the Project be decommissioned, but also that the Project avoid damage to drain tile in the Project Area where possible, and repair tile that is damaged. (Joint Ex. 1 at 8-9, Condition 16).

Given the information in the application and witness testimony, the Board may find, as Staff did, that the impact of the Project on the viability of existing agricultural land in agricultural districts has been determined, and is minimal.

**H. The Board has Adequate Evidence to Determine that the Project Incorporates Maximum Feasible Water Conservation Practices (4906.10(A)(8))**

During operation, the Project will only use an extremely small volume of water for occasional cleaning of solar panels. (Angelina Ex. 1 at 11). No wastewater discharge is expected from the Project, and there will be no impacts to water quality due to construction or operation of the Project. (Angelina Ex. 1 at 45). Because of the minimal water demands for the Project, the Project incorporates maximum feasible water conservation practices.

**I. The Board has Adequate Evidence to Determine that the Joint Stipulation Meets the Board's Criteria for Approval**

The Joint Stipulation satisfies the Board's three-pronged test. The Joint Stipulation (1) is the product of serious bargaining among capable parties; (2) does not violate any important regulatory principle or practice; and (3) is in the public interest.

***1. The Joint Stipulation is the Product of Serious Bargaining Among Capable, Knowledgeable Parties***

The Joint Stipulation was the product of negotiations that all parties to this proceeding participated in, all of whom were represented by Counsel. (Angelina Ex. 7 at 2). Evincing the serious nature of the bargaining that led to the Joint Stipulation, the signatories to the Joint Stipulation all agreed to modify some of the conditions recommended by Staff, and to add new conditions that were not present in the Staff Report. (Angelina Ex. 7 at 2; *compare* Staff Ex. 1 at 33-37 to Joint Ex. 1 at 6-11).

**2. *The Joint Stipulation does not Violate any Important Regulatory Principle or Practice***

As detailed above, the Project as described in the Application, Staff Report, and testimony, meets the criteria for issuance of a Certificate under R.C. 4906.10. Thus, the Joint Stipulation, in recommending conditions on the Project, furthers the regulatory principles and practices of the Ohio Power Siting Board. As testified by Mr. Herling, the Joint Stipulation does not violate any important regulatory principle or practice. (Angelina Ex. 7 at 5). Indeed, the Joint Stipulation represents a significant achievement given the number of public entities from Preble County that signed and support the Joint Stipulation. (Joint Ex. 1 at 18-19).

**3. *The Joint Stipulation is in the Public Interest***

The Joint Stipulation was a product of extensive negotiation among the parties to this proceeding. Recommended conditions in the Joint Stipulation require the Project to take steps and meet certain requirements during the construction and operation of the Project to minimize impacts of the Project. Thus, the Joint Stipulation is in the public interest.

a. The Joint Stipulation is in the Public Interest because it would Approve a Project with Many Public Benefits

The Joint Stipulation is in the public interest because, through it, a Project with substantial benefits would be constructed. These benefits include the generation of emission-free power, which will assist in the attainment of air quality goals in southwestern Ohio. (Angelina Ex. 1 at 41-42). The Project will also make payments to local government, including Preble County, Dixon and Israel Townships, and the local school district, far in excess of the property taxes currently being paid on the parcels forming the Project Area. (TR at 57). In general, payments to local government from the Project will be a minimum of \$560,000 per year, and potentially up to \$720,000. (Angelina Ex. 6 at 6-7; TR at 129-130).

In addition to this direct financial benefit, the Project will create approximately 518 to 1,076 direct and indirect construction-related jobs with corresponding payroll of \$25.4 million to \$55.6 million. (Angelina Ex. 1 at 31; Angelina Ex. 1 at Exhibit C). For the operation phase of the Project, depending on the percentage of locally sourced content for maintenance activities, the Project will create approximately 19 to 22 direct and indirect jobs with corresponding annual payroll of approximately \$630,000 to \$1 million. (Id.) The Project is expected to generate new economic output of approximately \$161.7 million during construction and \$1.5 million annually from operation. (Angelina Ex. 1 at 32).

b. The Joint Stipulation is in the Public Interest because it increases setback distances from public roadways (Condition 3)

The Joint Stipulation revised Staff’s recommended conditions so that setbacks will be measured from road right-of-ways rather than the edge of roadways (compare Staff Ex. 1 at 33, Recommended Condition 3, to Joint Ex. 1 at 6, Condition 3). This change will result in larger setbacks from roadways and will address any concerns raised about visibility at crossroads, to the extent that this is a legitimate concern. (Angelina Ex. 7 at 3). Ms. Vonderhaar testified that, currently, corn is grown up to edge of the road right-of-way and that “corn at full height can sometimes block intersections.” (TR at 373). Ms. Vonderhaar also testified that, with respect to certain intersections near the Project Area “[i]t’s just hard to see ... crop or no crop.” (Id. at 406). Thus, the Project as planned would have no impact on the current motorist visibility in the area, which can be affected by the presence of crops, and which may already be impaired by the current design of the intersections.

As testified by Mr. Robinson, Condition 3 also benefits the public interest by allowing “more space [to] install [the vegetation modules discussed above] and gives the vegetation more room to grow and become an established component of the landscape thereby improving

screening. Increased distance between the plantings and the project allows shorter vegetation to provide more effective screening.” (Angelina Ex. 16 at 2).

In his direct testimony, Mr. Robinson summarized that Condition 3 benefits the public interest by improving Angelina’s ability to effectively screen the Project and integrate it into the landscape, thereby lowering the visual impact, as well as improving motorist visibility.

(Angelina Ex. 16 at 3).

c. The Joint Stipulation is in the Public Interest because it Limits the Hours of Construction Activities (Condition 10)

In his testimony, Mr. Hessler stated that “[c]onstruction noise in general would be brief in duration and would only occur during the daytime.” (Angelina Ex. 14 at 4). Condition 10 of the Joint Stipulation reinforces this by limiting the hours of construction. (Joint Ex. 1 at 7). These limits are in the public interest because they prevent any noise-producing construction from occurring after daylight hours, when it may be more noticeable to nearby receptors.

d. The Joint Stipulation is in the Public Interest because it requires the Preparation of a Landscape and Lighting Plan and Maintenance of Fencing in Good Repair (Condition 11)

The Joint Stipulation requires that Angelina develop a landscape and lighting plan to address “the aesthetic and lighting impacts of the facility where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area ... [including] measures such as fencing, vegetative screening or good neighbor agreements.” (Joint Ex. 1 at 7, Condition 11). As discussed above, these measures will soften the visual impact of the Project. (Angelina Ex. 16 at 2).

The Joint Stipulation also includes a requirement to submit a plan describing methods of fence repair and also a requirement to maintain perimeter fencing for the Project. (Joint Ex. 1 at 7, Condition 11). This requirement will help to ensure the security of the Project, as well as

minimizing any negative visual impact that may be created by a damaged fence. (Angelina Ex. 7 at 3).

- e. The Joint Stipulation is in the Public Interest because it requires Angelina to Avoid and Minimize Damage to, and Repair Drain Tile in the Project Area (Condition 16)

The Joint Stipulation also includes detailed language on drainage systems (both publicly and privately maintained) and requires consultation with the County Engineer or Staff prior to repairing county maintenance/repair ditches (Joint Ex. 1 at 8-9, Condition 16). Specifically, Condition 16 requires that Angelina “avoid, where possible, or minimize to the extent practicable, any damage to functioning surface and subsurface field tile drainage systems and soils resulting from the construction, operation, and/or maintenance of the facility in agricultural areas, whether such drainage systems are publicly or privately maintained.” (Id.) Through that condition, Angelina commits that “[d]amaged field tile systems shall be promptly repaired no later than 30 days after such damage is discovered, and be returned to at least original conditions or their modern equivalent at the Applicant’s expense.” (Id.)

As testified by Mr. Waterhouse, the original Condition 16 as recommended by Staff was adequately protective of drainage and drain tile, but the revised language of Condition 16 will assist in ensuring that drain tile in the Project Area is avoided where possible, maintained in good working order, and, if damaged during construction of the Project, is adequately repaired. (Angelina Ex. 9 at 2). Condition 16 also requires Angelina to engage with the Preble County Engineer. (Id.)

Given that Condition 16 puts measures in place to help ensure that surrounding properties are not impacted by the Project (Angelina Ex. 9 at 3), the condition is in the public interest and supports approval of the Joint Stipulation.

- f. The Joint Stipulation is in the Public Interest because it Requires Angelina to develop a Vegetation Management Plan, Minimize, to the Extent Practicable, the Clearing of Wooded Areas, and Take Steps to Avoid the Propagation of Noxious Weeds (Conditions 18 and 24)

Construction of the Project will only involve a minimal amount of tree clearing, conservatively estimated to be 0.07 acres. (Angelina Ex. 1 at Exhibit G at 3-1; Staff Ex. 1 at 18). Even beyond this minimal amount of tree clearing, the Joint Stipulation commits Angelina to “minimize, to the extent practicable, the clearing of wooded areas...” (Joint Ex. 1 at 10, Condition 24). As testified by Mr. Herling, the specific area identified for potential clearing is “[t]he .07 acres ... for a collection line in the southern wooded area along the edge of the gap about two-thirds of the way west in the most southern woodlot.” (TR at 82).

The Joint Stipulation also requires that Angelina develop a plan that includes “the steps to be taken to prevent establishment and/or further propagation of noxious weed identified in OAC 901:5-37 during implementation of pollinator-friendly plantings.” (Joint Ex. 1 at 9, Condition 18). Finally, the Joint Stipulation requires Angelina, to the extent practicable, to purchase seed stock from a vendor recommended by the Ohio Seed Improvement Association. (Id.) These changes are in the public interest.

- g. The Joint Stipulation is in the Public Interest because it Requires Angelina to Develop a Traffic Management Plan and enter into a Road Use Maintenance Agreement with Local Authorities (Conditions 25 and 26)

The Joint Stipulation requires that Angelina develop a transportation management plan (also referred to as a final traffic plan). (Joint Ex. 1 at 10, Condition 25). As detailed above, the transportation management plan “would determine the routes that can be used by the contractor that’s building the Project, and that would be shared with all of the local ... authorities, as well as submitted to the Staff.” (Id.).



The Joint Stipulation also requires that Angelina enter in a road use agreement with the appropriate local authorities. (Joint Ex. 1 at 10, Condition 26). The road use agreement obligates Angelina to return county and township roads to the same or better condition they were in prior to construction, to avoid any impact to the public from the Project's use of those roads. (Id.)

As testified by Mr. Bonifas, the Joint Stipulation ensures that the Project will not have a negative impact on local roads after Project construction and decommissioning. (Angelina Ex. 11 at 2). The road use agreement is required to be in place prior to construction and will address both construction and decommissioning of the project. (Id.)

Road use agreements are a very common practice often used for similar projects, and, as testified to by Mr. Bonifas, are effective at minimizing damage to local roads and ensuring that any repairs are done in a timely manner. (Angelina Ex. 11 at 2). Mr. Bonifas ultimately concluded that Condition 26, included the changes proposed to Staff Condition 26, were in the public interest. (Id. at 3).

h. The Joint Stipulation is in the Public Interest because it requires Angelina to Train Local EMS and Fire Organizations and Provide Specialized Equipment (Condition 28)

The Joint Stipulation added Condition 28 to the conditions recommended by Staff. (Joint Ex. 1 at 11; Angelina Ex. 7 at 3). Condition 28 obligates Angelina to provide opportunities for training to local first responders, as well as any specialized equipment, if needed. (Angelina Ex. 7 at 3-4). As Mr. Herling testified, offering this training and equipment will help to ensure that local fire and EMS service providers are familiar with the Project and are able to effectively respond to any emergency at the Project. (Id. at 4). Angelina is also committed, under Condition 28, to hold safety meetings with fire and EMS service providers on an on-going basis. The addition of Condition 28 will assist local fire and EMS service providers in being prepared

to respond to any emergency at the Project. (Id.) Mr. Herling’s testimony is especially credible on this subject because of his years of volunteer EMS experience. (TR at 126).

- i. The Joint Stipulation is in the Public Interest because it requires Angelina to Implement a Decommissioning Plan, including Financial Assurance Requirements (Condition 29)

Angelina had already committed in its Application to put a decommissioning plan in place. (Angelina Ex. 1 at 38-40). But the Joint Stipulation expressly requires the creation and implementation of a decommissioning plan, including financial assurance requirements. (Joint Ex. 1 at 11, Condition 29). As Mr. Herling testified, this will ensure the Project does not become an inconvenience to the surrounding community at the end of its useful life, and will allow the Project Area to be converted to another use, including potentially returned to agricultural production. (Angelina Ex. 7 at 4). As described in Mr. Bonifas’ testimony, the inclusion of a decommissioning plan condition “ensures that an effective plan can be put into place for the appropriate decommissioning of the Project so that the Project Area can be returned to another use after the end of the Project’s useful life” and will benefit the public interest. (Angelina Ex. 11 at 3).

- j. The Joint Stipulation is in the Public Interest because its Signatories are the Elected Officials and Appointed Bodies that Represent the Public in the Project Area

While CCPC seeks to stop the Project, CCPC’s local public representatives have recognized the benefits to the public, and, in recognition of those benefits, are signatories to the Joint Stipulation. (Joint Ex. 1 at 18-19). The public entities that have signed the Joint Stipulation are:

- (1) The Preble County Commissioners;
- (2) The Preble County Engineer;

- (3) The Preble Soil & Water Conservation District;
- (4) The Board of Trustees of Dixon Township;
- (5) The Board of Trustees of Israel Township; and
- (6) The Preble County Planning Commission.

(Id.) Their support and signing of the Joint Stipulation is indicative of the balancing of interests in the negotiations about the Project. The Joint Stipulation is in the public interest, and being the result of extensive negotiations and not violating any regulatory principle or policy, should be approved.

## **VI. CONCLUSION**

The Project is supported by six separate local government entities. It is supported by the Ohio Farm Bureau Federation. It is supported by Staff. It is supported by the hundreds of pages of information that Angelina introduced into the record through the Application and associated exhibits, and the testimony of expert witnesses with years of experience in their respective fields. All of which supports a finding by the Board that Angelina has provided evidence satisfying each of the criteria set forth in Section 4906.10(A), Revised Code, and that the Joint Stipulation meets the Board's three-prong test. Angelina's application for a Certificate should be granted subject to the recommended conditions contained in the Joint Stipulation, without modification.

Respectfully submitted,

/s/ Michael J. Settineri

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**CERTIFICATE OF SERVICE**

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served upon the persons below via electronic mail this 18th day of October 2019.

/s/ Michael J. Settineri \_\_\_\_\_

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**Case No(s). 18-1579-EL-BGN**

Summary: Brief Initial Post-Hearing Brief electronically filed by Mr. Michael J. Settineri on behalf of Angelina Solar I, LLC