

**IN THE
SUPREME COURT OF OHIO**

In the Matter of the Application of : Case No. 2022-0053
Alamo Solar I, LLC for a Certificate of :
Environmental Compatibility and Public : Appeal from the Ohio Power Siting
Need : Board, Case No. 18-1578-EL-BGN
:
:

**SUPPLEMENT
SUBMITTED ON BEHALF OF THE
APPELLEE OHIO POWER SITING BOARD**

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June 6, 2022

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APPLICATION
TO THE
OHIO POWER SITING BOARD
FOR A
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED
FOR THE
ALAMO SOLAR FARM
Gasper and Washington Townships, Preble County
Case No. 18-1578-EL-BGN
December 2018

Prepared by: Alamo Solar I, LLC
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collection lines will be buried at a minimum depth of at least three (3) feet below grade. Similarly, the Project does not have stringent soil requirements because the Project Area is level and the solar panels will largely follow the existing terrain. Equipment installation will be designed avoid all known and active wells in addition to drainage tile. In the event that drainage tile is knowingly or inadvertently damaged during the construction or operation of the Project will be fixed or replaced with an equivalent or improved method of drainage.

Figure 9 depicts the location of the proposed Project, geological features of the proposed Project Area, and topographic contours. According to ODNR data, there are no existing gas and oil wells within or adjacent to the Project Area. Maps showing various subsurface features, including geologic features and topographic contours, are also included in the Geotechnical-Hydrogeology Report (see Exhibit F). There are no active oil and gas wells or injection wells in the immediate vicinity of the Project Area.

[4906-4-08(A)(5)(a)]

The site geology is highly suitable for the Project because the Project's subsurface impact will be very shallow, and bedrock is not expected to be encountered. Accordingly, there are no geology-related inadequacies to remedy in connection with the Project. Hull analyzed available information to estimate the depth to bedrock throughout the Project Area and concluded that it ranges from between approximately 45 to 140 feet below the surface. Little difficulty with bedrock is expected since the depth of the vast majority of the piles, and all the collection lines, will be less than eight (8) feet.

[4906-4-08(A)(5)(b)]

The soils in the Project Area, which consist primarily of silt loams with some gravel and clay 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. Importantly, the Project will necessitate only very limited grading and compaction, primarily in connection with the construction of the Substation and roads. The Project Area is very



TECHNICAL REPORT

Title: Existing Conditions Background Sound Survey
and Noise Impact Assessment

Project: Alamo Solar
Location: Preble County, OH
Prepared For: Alamo Solar, LLC/Open Road Renewables, LLC
Prepared By: David M. Hessler, P.E., INCE
Revision: 0
Issue Date: October 21, 2018
Reference No: TM-2115-101918-0

Attachments: Table T-2115-101818-0 Substation Sound Propagation Calculations

1.0 Introduction

A study has been carried out for Alamo Solar, LLC to evaluate the sound emissions from the proposed Alamo Solar Energy Project located southwest of Eaton in Preble County, Ohio in order to identify and quantitatively evaluate any possible community noise issues. Compared to other types of power generation facilities, potential noise impacts from a photovoltaic solar energy project are relatively few, relatively mild and, moreover, have the unusual characteristic of only occurring during the daylight hours when noise is much less likely to be an issue in the first place. In this case, any possible concerns about noise are largely confined to the step up transformer in the new substation, electrical inverters within the various solar fields and some short-lived activities during construction. In an effort to methodically evaluate the potential impact of the substation, a field survey was conducted to establish the current levels of background sound at the nearest residences to the proposed substation so that projections of future transformer sound could be evaluated within an appropriate context. This report summarizes the findings from that field survey and discusses the potential noise impacts associated with the project.

1.1 Executive Summary

A 14 day field survey of the existing ambient sound levels in the immediate vicinity of the future substation associated with the Alamo Solar Project has been carried out to establish the baseline



environmental conditions. The survey results indicate that the sound levels in the area are very quiet with an average daytime L90 sound level of only 34 dBA.

The sound power level of the step up transformer associated with the proposed substation was calculated from its expected maximum MVA rating of 95 and its far field sound pressure level frequency spectrum has been mathematically projected to the nearest residences to evaluate any potential noise impact using the modified Composite Noise Rating (CNR) methodology. This approach compares the frequency spectra of the existing background level to that of the proposed project to essentially gauge its audibility relative to the natural environmental sound level. Additional adjustments are made for such factors as time of day, tonal content and the community attitude towards to the project. The result of this analysis is that no adverse reaction is expected from the proposed substation at any of the nearest residences.

Beyond the substation, there will some sound from the electrical inverters distributed throughout the solar fields. While the sound emissions from this equipment are not negligible in overall magnitude and tonal in character close to these units, the higher frequency tonal aspect drops away very quickly with distance and field measurements indicate that inverter sound fades to insignificance relative to normal background levels at a distance of 150 ft. Moreover, inverter sound is rarely audible at the perimeter fence of typical solar fields so an adverse noise impact at the nearest residences beyond the project boundary appears to be highly unlikely from this equipment. In any event, options exist to mitigate inverter sound emissions should any problem arise.

In contrast to other forms of power generation, sound emissions during construction are expected to be dramatically lower in magnitude and duration. Some unavoidable disturbance is possible when the mounting posts are driven in but this activity will be fairly short-lived in any particular location. 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.

In general, the potential noise impacts from all aspects of the project are expected to minimal.

2.0 Existing Conditions Sound Survey

The new substation associated with the project is currently planned for a location roughly 1000 ft. north of Antioch Road just east of its intersection with Call Road. The nearest residences to the proposed site are the home of the landowner (of the substation property) and a neighbor to the west, with both residences are roughly equidistant from the probable transformer location. The next nearest homes are about a ½ mile away from the substation and far enough away that any kind of adverse noise impact can be ruled out, since the hum from a typical transformer of this size generally fades into the background and becomes largely imperceptible at a distance of roughly 500 ft. or less.



Figure 2.1.2
Sound Monitoring Equipment Looking SE towards the House

2.2 Survey Equipment and Measurement Parameters

A Norsonic N-140, ANSI S1.4-1983(R2006) Type 1 precision, 1/3 octave band frequency analyzer was used as the primary instrument for the survey along with a Rion Model NL-22, ANSI Type 2, environmental sound monitor for redundancy. Each instrument was field calibrated with a Brüel and Kjær Type 4230, ANSI S1.40-1984(R1990) Type 1 calibrator at the beginning and end of the survey and both meters exhibited an insignificant amount of drift (within +/-0.1 dB). Weather-treated 7 in. diameter windscreens were used to minimize self-generated distortion from wind. The microphones were fixed to temporary posts at a standard height of 1.2 m above local grade.

A variety of statistical sound levels, such as the minimum, average, maximum, etc. were measured in 10 minute increments over the 14 day survey period; however, the parameter of primary relevance and importance to this kind of survey is the “residual” or L90 percentile level, which is 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.



2.3 Survey Conditions

The weather conditions over the survey period were generally mild and conducive to the survey but there were several periods with gusty winds and rain. Most of these events were short-lived and only had a mild effect on the measurements; however, a storm on April 3 and 4 did significantly elevate the observed sound levels for an extended period, so all data collected during this period has been neglected.

3.0 Survey Results

The survey results, in terms of both the average ($L_{eq}(10 \text{ min.})$) and residual ($L_{90}(10 \text{ min.})$) sound levels are plotted below. Periods with elevated winds and/or precipitation are shaded in blue.

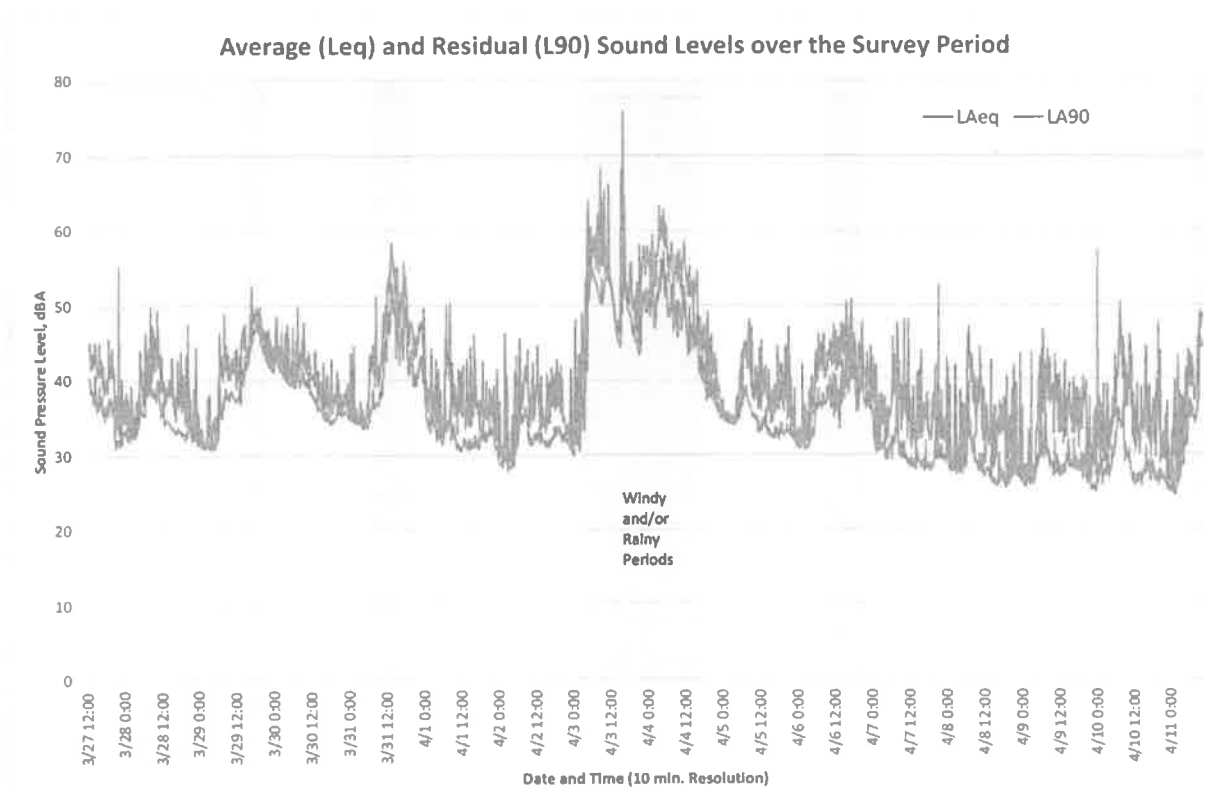


Figure 3.0.1

What these results generally show is that this environment is very quiet with sound levels typically in the 28 to 40 dBA range. Slightly higher, but still relatively low sound levels, occur when the

grasslands, isolated wooded lots, and wetland areas. Typical wildlife species observed during the field delineations included evidence of white-tailed deer and common woodland and grassland songbirds.

Typical construction-related impacts to wildlife include incidental injury and mortality of juvenile and/or slow moving animals (e.g., salamanders, turtles, etc.) due to construction activity and vehicular movement; construction-related silt and sedimentation impacts on aquatic organisms; habitat disturbance/loss associated with clearing and earthmoving activities; and displacement of wildlife due to increased noise and human activities. However, the Project has been sited to avoid and/or minimize such impacts. The Project has been designed locate the majority of infrastructure within active agricultural land, which only provides habitat for a limited number of wildlife species. The few birds and mammals that may forage within these fields should be able to vacate areas that are being disturbed by construction. On a landscape scale, there is abundant availability of similar agricultural fields within the Project Area and beyond.

Since impacts to wildlife are anticipated to be negligible or limited, no post-construction monitoring is proposed.

7.2.5 Threatened and Endangered Species

The Project Area and ¼-mile buffer are not known to provide permanent habitat for sensitive bird, bat, or freshwater mussel species.

Due to the lack of adequate habitat in the immediate Project Area, it is likely many of the individuals would opt for higher quality habitat nearby such as Wildlife Areas or State Parks for roosting, foraging and breeding. Alamo Solar has prioritized avoidance measures for sensitive habitats, such as minimizing habitat fragmentation, siting infrastructure in uplands rather than wetlands, and minimizing perennial stream crossings. Based on current Project designs, significant impacts to these habitats are not anticipated; therefore, no post-construction wildlife monitoring is proposed at this time.

7.2.6 Disposal of Plant-Generated Wastes

The storage and use of fuel, lubricants, and other fluids could create a potential contamination hazard during Project construction. Any spills or leaks of hazardous fluids could potentially contaminate soil and groundwater. The impact of leaks and spills will be minimized or avoided by restricting the location of refueling activities and by requiring immediate cleanup of spills and leaks of hazardous materials. Construction equipment will be maintained regularly, and the source of any leaks will be identified and repaired immediately. Any soil contaminated by fuel or oil spills would be removed and disposed of at an approved disposal site.

Temporary portable sanitary facilities would be installed during construction and sanitary wastes would be disposed of by a contractor.

Project construction will generate some solid waste, primarily plastic, wood, cardboard and metal packing/packaging materials, construction scrap, and general refuse. Construction waste will be collected and disposed of in dumpsters located at the laydown areas. A private contractor will empty the dumpsters on an as-needed basis and dispose materials at a licensed solid waste disposal facility. Waste volumes are expected to be minimal and will not affect local waste disposal facilities.

As indicated above, staff will monitor Project operations from an off-site location, and conduct periodic cleaning and on-site maintenance procedures, as needed. The minimal wastes generated from these activities will be removed from the Project site and disposed of in accordance with Federal, state, and local regulations. There will be no sanitary sewer waste generated by Project operations.



5.0 Sound Emissions from Other Sources

With the possible exception of substations, photovoltaic power projects generate very little environmental noise. The only other sound sources of any possible significance are the electrical inverters used to convert locally generated DC current into AC power that is then routed to the substation through underground collector cables. Typically these electrical cabinets are situated within and near the center of each solar field, or independent group of solar panels, so they are usually a considerable distance from the perimeter fence and potential neighbors beyond. Generally speaking, these electrical cabinets emit sound levels on the order of 60 to 70 dBA at 10 ft. due mostly to the cooling fans and, at this very close-in distance, the sound can be characterized as a hum sometimes with overlying ringing tones in the high frequencies. Since high frequency sound diminishes rapidly with distance the ringing aspect of the sound, if present, dies out very quickly and the sound at any significant distance consists of bland, broadband fan noise, if it is audible at all.

The precise make and model of the inverters for the Alamo project has not yet been selected so their sound emissions cannot be modeled or rigorously evaluated at this time. However, a field study of typical inverter sound emissions at several existing large-scale solar facilities - that was carried out for the Massachusetts Clean Energy Center, an agency of the State government, in 2012⁵ - indicates that any noise from these cabinets generally drops into the background level and becomes insignificant at a distance of 150 feet and that they are rarely audible at or beyond the perimeter fence. Consequently, it is expected that any conventional solar field layout will result in a situation where inverter noise is inconsequential at the project boundary making any adverse impact on neighbors highly unlikely. Nevertheless, if this sound source were to unexpectedly generate complaints, options, such as cabinet damping and ventilation silencers, would be available to retroactively mitigate noise from these devices and resolve any issue.

One other possible sound source might be the small motors that (very) slowly rotate the panels so that they track the sun over the course of each day. However, the sound emissions from these motors are thought to be inconsequential even immediately adjacent to them, so no significant community noise impact is anticipated.

During normal operation the facility does not require an operator or any full time staff, so there clearly wouldn't be any noise impacts from traffic. The site would only be occasionally visited by maintenance personnel.

⁵ Guldberg, P., Tech Environmental, "Study of Acoustic and EMF Levels from Solar Photovoltaic Projects", Prepared for the Massachusetts Clean Energy Center, Boston, Dec. 2012.

Ecological Assessment

Alamo Solar Project
Preble County, Ohio

Open Road Renewables, LLC

E317504900



The Celina silt loam series, approximately 10% of the Project Area, forms in loess of the underlying loamy till of high-lime content. This series consists of very deep, moderately well drained soils of moderately deep to dense till. Permeability is moderately slow above the dense till and very slow in the dense till. Soils are typically used for cultivation of crops such as corn, soybean, wheat, oats, and meadows of legumes or legume-grass mixtures. Native vegetation is deciduous forest, typically consisting of oak, maple, elm, hickory and ash.

4.3.1 Highly Erodible Soils / Steep Slopes

Based on a review of the NRCS Web Soil Survey, the Project Area soils are not classified as highly erodible soils, all with Wind Erodibility Group (WEG) ratings between 5 and 6 (1 being highly erodible; 8 being least erodible).

4.3.2 Hydric Soils

The poor draining qualities of hydric soils combined with local flat or bowl-shaped topography make these locations predisposed to containing wetland areas. The Project Area is composed of two hydric soils - the Kokomo silt loam series (15% of the Project Area) and the Kokomo silty clay series (6% of the Project Area) which both have a hydric rating of 90. The remaining soils found in the Project Area are either non-hydric or only partially hydric with all other soil series having a hydric rating less than 10.

4.4 Biological/Conservation

Information on the existing wildlife in the Project Area was obtained from a variety of sources, including observations during site surveys, and publicly available data from Federal and State agencies. Wildlife within the Project Area could potentially utilize it for foraging, migratory stopover, breeding and/or shelter. Based on the current land use, species present in the vicinity of the Project Area are primarily associated with agricultural fields, pasture grasslands, isolated wooded lots, and wetland areas. Few wildlife species were observed during the field delineations but included white-tailed deer, squirrels and common woodland and grassland songbirds. Major species, as defined by OAC Chapter 4906-17, are those species with recreational or commercial value, or are listed as Federal or State-listed threatened or endangered species. A discussion of potential rare, threatened, and endangered (RTE) species is found below in Section 4.4.3. Common game species in southwestern Ohio include cottontail rabbit, northern bobwhite (quail), Canadian geese, gray and fox squirrels, mallard and other ducks, mourning doves, ring-necked pheasants, ruffed grouse, white-tailed deer, and wild turkey.⁹ Other than the agricultural crops and livestock in the area, no commercially valuable species are anticipated to be present in the Project Area.

4.4.1 Vegetative Community

Vegetative communities within the Project Area were evaluated based on interpretation of aerial photography and field verification. Agricultural land and forestland are the dominant community types in the Project Area, with scattered developed/disturbed lands clustered along public roads. Successional communities (e.g., old fields and shrubland) do not occur to any significant extent. Brief descriptions are provided below for each of the ecological communities in the Project Area. All of the major plant communities found within the Project Area are common to Ohio. Surface waters and wetlands, including associated habitats such as riparian corridors and vernal pools, are described in Section 6.2.

4.4.1.1 Agricultural Land

Much of the acreage within the Project Area is used for agricultural production. The dominant crops produced on agricultural lands in the Project Area include soybeans and corn. During the winter months,

⁹ http://www.dnr.state.oh.us/Home/wild_resourcessubhomepage/ResearchandSurveys/WildlifePopulationStatusLandingPage/tabid/19230/Default.aspx

fields may be planted in a cover crop such as winter wheat (*Triticum aestivum*) to control erosion and restore soil nutrients. Small, maintained pastures for livestock (i.e. chickens, sheep, and goats) are also present within the Project Area. The Project Area consists of agricultural fields that are currently active or recently fallowed.

4.4.1.2 Forestland

Two types of forestland were observed within the Project Area, windrows and larger woodlots. The windrows consisted of narrow forested strips between cultivated areas, and likely served as property boundaries historically. Windrows typically ranged in depth from 30 to 60 feet, with the wider windrows often containing ditches or streams, improving drainage along the adjoining cultivated areas. Woodlots within the Project Area were often much deeper, but surrounded by cultivated areas or pasture along at least two sides. Larger woodlots are likely maintained for hunting opportunities as evidenced by the presence of tree stands, trail cameras and UTV trails through many. Some woodlots are kept as a buffer around larger surface water features.

4.4.1.3 Disturbed/Developed

Disturbed/developed lands are found in low densities throughout the Project Area. These areas are characterized by the presence of buildings, parking lots, paved and unpaved roads, and lawns/landscaped areas. Vegetation in these areas is generally either lacking or highly managed including ornamental plantings and managed lawns of tall fescue (*Festuca arundinacea*). In areas that are not intensely managed, weedy herbaceous species may develop.

4.4.2 Wildlife Resources

Wildlife resources such as, birds, bats, terrestrial, and aquatic organisms have the potential of being impacted with any utility-scale energy project. Project construction activities such as earthmoving, vehicular movements, and construction equipment are likely to displace wildlife using the habitat for foraging, breeding, and nesting. However, the Project is located within a primarily active agricultural area with limited use by wildlife species. Discussions on birds, raptors and bald eagles, and bats species in relation to the Project Area are provided below.

4.4.2.1 Birds

The National Audubon Society (2018) designates Important Bird Areas (IBA) around the globe as sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds' passageways. IBAs range from a few acres to thousands of acres in size, but usually they are discrete sites that stand out from the surrounding landscape. There are no recognized IBAs in the vicinity of the Project Area and the surrounding 40-mile radius.

Cardno also reviewed eBird (<http://ebird.org>), which provides a real-time online checklist program that aggregates basic bird abundance and distribution data made by recreational and professional bird watchers. The program was launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society. One eBird 'hotspots' were identified near the Project Area. The Woodland Trails Wildlife Area is located approximately 1 mile southwest of the southernmost Project Boundary. Since 2007, 72 bird species have been identified in this Wildlife Area. No federally or state listed-protected species were observed in this area.

The Woodland Trails Wildlife Area in relation to the Project Area is illustrated in Figure 5 of Appendix A.

No Federal or State-listed bird species or evidence of their habitat was observed during the field efforts conducted by Cardno. Based on a review of publically available data, the Project Area and ¼-mile buffer are not known to provide significant habitat for sensitive bird species. Due to this lack of adequate habitat in the immediate Project Area, it is likely many of the individuals would opt for higher quality habitat

6.1.1.2 Forestland

Two types of forestland were observed within the Project Area: windrows and woodlots. The windrows consisted of narrow forested strips between cultivated areas, and likely served as property boundaries historically. Windrows typically ranged in depth from 30 to 60 feet, with the wider windrows often containing man-made ditches which served to improve drainage along the adjoining cultivated areas. Woodlots within the Project Area were often larger in size, but surrounded by cultivated areas along at least two sides. Larger woodlots are likely maintained for hunting opportunities as evidenced by the presence of tree stands and vehicle trails. Some woodlots were maintained to serve as a buffer around larger surface water features.

Both the windrows and woodlots have a dominance of weedy vegetation along the edges including pokeweed, blackberry (*Rubus* spp.), and poison ivy (*Toxicodendron radicans*). Mature trees along windrows and within the interiors of the woodlots include: black walnut (*Juglans nigra*), oaks (*Quercus* sp.), cherry (*Prunus* sp.), pawpaw (*Asimina triloba*), American beech (*Fagus grandifolia*), Osage orange (*Maclura pomifera*) and a few shagbark hickories (*Carya ovata*). Size and maturity of trees in forestland varied greatly, with isolated individuals appearing to be relatively old.

6.1.1.3 Developed/Disturbed

Developed/disturbed lands are found in low densities throughout the Project Area, and are characterized by the presence of buildings, parking lots, paved and unpaved roads, and lawns/landscaped areas. Vegetation in these areas is generally either lacking or highly managed (i.e., ornamental plantings and managed lawns of tall fescue [*Festuca arundinacea*]). In areas that are not intensely managed, weedy herbaceous species such as dandelion (*Taraxacum officinale*), thistle (*Cirsium vulgare*), ragweed (*Ambrosia artemisiifolia*), and clover (*Trifolium* spp.) may develop.

6.1.2 Wildlife Observations

Wildlife observations during the field surveys were limited to common species in agricultural areas, including white tailed deer (*Odocoileus virginianus*) and gray squirrels (*Sciurus carolinensis*). Several forested areas were observed to have hunting stands/equipment which may be used to hunt white tailed deer or wild turkey (*Meleagris gallopavo*).

Visual reconnaissance surveys were conducted during the wetland and waterbody delineations and did not observe any RTE species. The modification of the majority of available habitat has likely degraded the quality and limited potential RTE habitat. Wooded areas in the Project Area were typically of moderate quality, with isolated occurrences of relatively large high quality trees surrounded by younger second growth forest and saplings. Many of the woodlots had vehicle paths through them, which were likely to allow farm equipment access to surrounding fields. The delineated waterbodies could potentially provide RTE species habitat, but at reduced quality due to the surrounding land use impacting the water chemistry (i.e., high sediment loading during storms and fertilizer in runoff). During the field surveys, Cardno staff observed minimal wildlife use in the Project Area and observed no RTE species due to the Project Area being relatively low quality and highly disturbed.

collection line (20 lf). A detailed frac out contingency plan for stream crossings to be completed via HDD is attached in Appendix F.

For features that will be crossed using traditional open cut, traditional excavation of the ditch will be involved for the collection line installation. If the stream has flowing water at the time of construction, work will be conducted using a dam and pump method. A dam will be constructed using materials to prevent sediment from entering the waterbody (i.e., sandbags or barrier). Equipment in the waterbody will be limited to only what is necessary to complete the crossing. Flow will be diverted using a pump to maintain flow upstream and downstream during in-water activities. During pumping operations, a construction representative would oversee the pump and generator to ensure aquatic resources are protected in the event of a spill. Energy dissipation devices will be used at the downstream outlet to prevent excessive scour or erosion of the streambed. At each open cut, the time between initial disturbance of the stream and final stabilization will be kept to a minimum (i.e., trenching, installing the line, restoring to pre-construction contours). Alamo Solar is committed to observing any potential temporal restrictions that may apply to these streams.

Final array and layout designs are not finalized, but based on preliminary work, up to 12.61 miles of new permanent gravel roads will be installed for construction, operation, and maintenance of the Project. The Project anticipates that one delineated stream reach may be affected due to construction of access roads. Construction of the Project access roads will likely require one stream crossing (culvert/open cut) for a total of 11 lf of temporary impact, and 19 lf of permanent impact. Alamo Solar will design the crossing to continue adequate flow in the stream and not affect the flow of water within the Project Area. All temporary and permanent crossings will be approved by Preble Soil & Water Conservation District prior to construction. Where feasible, Alamo Solar would use existing farm road crossings to minimize crossing impacts.

In addition to the above-mentioned measures, Alamo Solar will cooperate with the state as part of the NPDES CGP, and prepare a SWPPP incorporating the most appropriate SESC measures and BMPs to ensure surface waters in proximity to Project disturbance areas are not impacted. Alamo Solar will restore all disturbed waterbodies from construction to pre-construction conditions within one growing season.

Surface waters within the Project Area will not be used during or for construction of the Project; however, water may be trucked to the Project Area or groundwater wells may be used if needed. To prevent adverse effects from construction-related stormwater runoff, Alamo Solar will obtain an NPDES general permit for construction activities over 1 acre and implement an SESC plan that contains appropriate stormwater quality and quantity control measures. Additionally, Alamo Solar will maintain needed controls for operations to prevent and minimize stormwater runoff.

There are no planned operations and/or maintenance facilities as part of this Project and no water and/or sewer requirements. As a result, the Project will not necessitate any water withdrawals or waste water discharges.

There are no impacts to other water users anticipated as a result of Project construction or operation.

Additional details on sequence of construction activities, construction methods (including crossing methods), and SESCOs (including inspection protocols) will be provided in Alamo Solar construction drawings (currently under development).

7.2.4 Aquatic and Wildlife Resources

The Project would not significantly impact wildlife or wildlife habitat. Information on the existing wildlife in the Project Area was obtained from a variety of sources, including observations during site surveys, and publicly available data from Federal and State agencies. Wildlife within the Project Area could potentially utilize the site habitat for foraging, migratory stopover, breeding, and/or shelter. Based on the current land use, species present in the Project vicinity are primarily associated with agricultural fields, pasture

FILE



Power Siting Board

Mike DeWine, Governor
Asim Z. Haque, Chairman

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

February 8, 2019

Doug Herling
Alamo Solar I, LLC
1105 Navasota Street
Austin, TX 78702

Application for Certificate of Environmental Compatibility and Public Need
Case: Alamo Solar Farm
Case Number: 18-1578-EL-BGN

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Dear Doug Herling:

This letter is to inform you that the above referenced application, filed with the Ohio Power Siting Board (Board) on December 10, 2018, has been found to comply with Chapters 4906-01, et seq., of the Ohio Administrative Code (OAC). This means the Board's Staff has received sufficient information to begin its review of this application. During the course of its investigation, the Staff may request additional information to ensure a full and fair assessment of this project.

Pursuant to Board rules, the certified application and supplements must now be filed with the Board in accordance with the provisions of OAC Rules 4906-3-06 and 4906-3-07. In summary form, these rules require:

1. Serving copies of the certified application upon appropriate government officials and public agencies. In this regard, please inform these officials in writing that if they wish to intervene in the proceedings they must file a notice of intervention with the Board within thirty days of being served a copy of the application.
2. Filing Proof of Service with the Board.

Upon completion of these requirements, you will be notified of the effective date of filing and the date and location of the public hearing.

Please be informed that under Section 4906.04 of the Ohio Revised Code (ORC), the applicant shall not commence to construct any portion of the facility prior to obtaining a certificate from the Board.

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Also be informed that to assist your company in meeting the provisions of Ohio Power Siting Board rules, the Board will serve as a clearinghouse for the distribution to and service of the application and supplements upon the following state agencies:

Public Utilities Commission of Ohio
Ohio Environmental Protection Agency
Ohio Department of Agriculture
Ohio Development Services Agency
Ohio Department of Health
Ohio Department of Natural Resources
Ohio Department of Transportation
Ohio Historical Society

Upon filing, pursuant to ORC Section 4906.06(F) and OAC Rule 4906-3-12, the amount of \$34,950.00 as an application fee is due.

Please file Proof of Payment in the Docket. Attachment A, with the date the check was mailed shall be considered sufficient proof.

The check should be designated by case number 18-1578-EL-BGN and be payable to:

Ohio Power Siting Board, Fund 5610

Please send the check along with Attachment A to:

Public Utilities Commission of Ohio (Power Siting)
Finance Department, 4th Floor
180 East Broad Street
Columbus, OH 43215



Power Siting Board

Mike DeWine, Governor
Asim Z. Haque, Chairman

Board Members

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

Depending on the complexity of the staff investigation, the application fee may not cover all costs associated with this case. Additional invoicing may be necessary.

If you have any questions regarding the above, please contact Ray Strom at (614) 466-7707 or Jon Whitis at 1-866-270-6772.

Sincerely,

Tamara Turkenton
Director, Rates and Analysis
Public Utilities Commission of Ohio
180 East Broad Street
Columbus, Ohio 43215
(614) 466-1825

cc: Jason Cross, Rates and Analysis



Power Siting Board

Mike DeWine, Governor
Asim Z. Haque, Chairman

Board Members
Director, Ohio Environmental Protection Agency
Director, Ohio Development Services Agency
Director, Ohio Department of Health
Director, Ohio Department of Natural Resources
Director, Ohio Department of Agriculture
Public Member
Ohio House of Representatives
Ohio Senate

ATTACHMENT A

Ohio Power Siting Board Application Filing Fee

Application for Certificate of Environmental Compatibility and Public Need

Case Number: 18-1578-EL-BGN

Project Name: Alamo Solar Farm

Application Fee: \$34,950.00

PLEASE INCLUDE THIS ATTACHMENT WITH YOUR PAYMENT

Make Checks Payable To:

Ohio Power Siting Board, Fund 5610
(Designated by Case Number)

Mailing Address:

Public Utilities Commission of Ohio (Power Siting)
Finance Department, 4th Floor
180 East Broad Street
Columbus, OH 43215

State of Ohio

Speed code	Deposit Unit	GL Unit	Fund	Deposit Unit	GL Unit
PUCPSITING	PUC01	STATE	5610	PUC01	STATE

Fund	Account Code	ALI	Department	Program	Agency Use	ISTV Xref
5610	425049	N/A	PUC701310	N/A	N/A	N/A

SKIP

BEFORE THE OHIO POWER SITING BOARD

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

AMENDED AND RESTATED JOINT STIPULATION AND RECOMMENDATION

I. INTRODUCTION

The undersigned parties (the “Parties”) submit this Amended and Restated Joint Stipulation and Recommendation (“Stipulation”) for adoption by the Ohio Power Siting Board (the “Board”). This Stipulation is intended by the Parties to resolve all matters pertinent to the certification and construction of the proposed Alamo Solar Farm.

Alamo Solar I, LLC (“Alamo” or, the “Applicant”) intends to build the Alamo Solar Farm as a 69.9 MW solar-powered generating facility in Preble County, Ohio. Alamo anticipates increasing the nameplate capacity of the facility to 89 MW within the current project footprint but that increase would be the subject of a future application to amend the certificate for the project. 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 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.

The Applicant has not yet selected the final solar panel technology to be utilized for this project, but has limited its consideration to two commonly used solar panel technologies that are substantially similar in function and outward design: crystalline or thin-film. Both types of

This Stipulation results from discussions among the Parties who acknowledge that this agreement is amply supported by the record and thus is entitled to careful consideration by the Board. Accordingly, the Parties recommend that the Board issue a Certificate of Environmental Compatibility and Public Need for the proposed Alamo Solar Farm.

III. STIPULATION AND RECOMMENDATION

A. Recommended Conditions

- (1) The Applicant shall install the facility, utilize equipment and construction practices, and implement mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation* (as modified by the Joint Amended and Restated Stipulation).
- (2) The Applicant shall conduct a preconstruction conference prior to the commencement of any construction activities. Staff, the Applicant, and representatives of the primary contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review. The Applicant may conduct separate preconstruction conferences for each stage of construction.
- (3) The Applicant shall submit one set of detailed engineering drawings of the final project design to Staff at least 30 days before the preconstruction conference. This final design shall include all conditions of the certificate and references at the locations where the Applicant and/or its contractors must adhere to a specific condition in order to comply with the certificate. The final project layout shall be provided in hard copy and as geographically-referenced electronic data. The final project layout shall reflect any road adjacent setbacks as measured from the edge of the right-of-way rather than the edge of the roadway. The final project layout shall reflect at least the following minimum setbacks: (1) 25 feet between the facility fence and any property line of a non-participating parcel or any edge of right-of-way of a public road; (2) 150 feet between the facility fence and any residence on a non-participating parcel; and (3) 500 feet between any central inverter and any residence on a non-participating parcel. The Applicant shall promptly retrofit any inverter as necessary to effectively mitigate any off-site noise issue identified during operation of the facility.

- (11) At least seven days prior to the start of facility operation, the Applicant shall notify via mail affected property owners and tenants who were provided notice of the public informational meeting, as well as anyone who has requested updates regarding the project, and all intervening parties to the certification process. This notice will provide information about the start of operation and describe how the public can contact the facility.
- (12) During the construction and operation of the facility, the Applicant shall submit to Staff a complaint summary report by the fifteenth day of April, July, October, and January of each year for the first five years of operation. The report should include a list of all complaints received through the Applicant's complaint resolution process, a description of the actions taken toward a resolution of each complaint, and a status update if the complaint has yet to be resolved.
- (13) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving shall be limited to the hours between 9:00 a.m. and 7:00 p.m. Monday through Friday; hoe ram and blasting operations, if required, shall be limited to the hours between 10:00 a.m. and 4:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary. The Applicant shall notify property owners or affected tenants within the meaning of Ohio Adm. Code 4906-3-03(B)(2) of upcoming construction activities including potential for nighttime construction.
- (14) If the resulting survey work from the Historic Resource Survey Research Design for the project dated January 14, 2020 and the Phase 1 Archeological Survey Research Design for the project dated January 16, 2020, each as approved by the Ohio Historic Preservation Office (OHPO) by letter dated February 19, 2020, discloses a find of cultural, archaeological, or architectural significance, or a site that could be eligible for inclusion on the National Register of Historic Places, then the Applicant shall submit a modification, or mitigation plan detailing how such site(s) will be avoided or impacts minimized. Any such mitigation effort, if needed, shall be developed in coordination with the OHPO and submitted to Staff for review and acceptance.
- (15) Prior to commencement of construction, the Applicant shall prepare a landscape and lighting plan in consultation with a landscape architect licensed by the Ohio Landscape Architects Board that addresses the aesthetic and lighting impacts of the facility with an emphasis on any locations where an adjacent non-participating parcel contains a residence with a direct line of sight to the project area and also include a plan describing the methods to be used for fence repair. The plan shall include measures such as fencing, vegetative screening or good neighbor agreements. Unless alternative mitigation is agreed upon with the owner of any such adjacent, non-participating parcel containing a residence with a direct line of sight to the fence of the facility, the plan shall provide for the planting of vegetative screening designed by the landscape architect to enhance the view from the

BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application of)	
Alamo Solar I, LLC)	
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DIRECT TESTIMONY OF RYAN RUPPRECHT

1 **Q.1. Please state your name, title and business address.**

2 **A.1.** My name is Ryan Rupprecht. I am a Senior Project Manager, Practice Lead for
3 the Renewable Energy Group in the Northeast/Mid-Atlantic and Midwest regions, and a
4 Practice Lead for the Eastern Region Siting and Licensing Group for Cardno. My
5 business address is 121 Continental Drive, Suite 308, Newark, Delaware 19713.

6 **Q.2. What are your duties as a Senior Project Manager?**

7 **A.2.** I work for Cardno’s Science and Environment Division, focusing on permitting
8 and compliance for various energy projects in the Northeast and Midwest. I am
9 responsible for developing, managing and performing consulting work involving
10 environmental permitting, terrestrial and aquatic ecological resource studies, wetland and
11 stream delineations, and surface water quality assessments. As a Senior Project Manager,
12 I manage and participate in environmental permitting projects, overseeing technical
13 experts in biology/ecology, wetland sciences, cultural resources, and rare, threatened &
14 endangered (“RTE”) species habitat assessments. As a Practice Lead, I coordinate and
15 market Cardno’s services for permitting, compliance, and siting and licensing. My duties
16 also include overall quality assurance for projects, keeping current with relevant laws,

1 regulations, rules, policies and guidelines, and adapting our practices to trends and
2 changes in the environmental consulting field.

3 I served as Cardno's Project Manager for the Alamo Solar Project ("Project"). For
4 Alamo Solar, I am responsible for coordinating field efforts for the wetland delineations
5 and habitat assessments, drafting and reviewing the Ecological Assessment ("EA"), and
6 providing overall coordination between Open Road and EDR for the Project application
7 filed. I am responsible for the staffing, budgeting, invoicing, and quality control of
8 Cardno's work for the Project. I also support several other renewable (both solar and
9 wind) projects in the Mid-west and Eastern states, as well as manage projects with regard
10 to Clean Water Act compliance, specifically, NPDES permit applications for industrial
11 clients in the Northeast.

12 **Q.3. What is your educational and professional background?**

13 **A.3.** I earned a Bachelor's of Science degree in biological oceanography from
14 Millersville University in 2000. I have over 15 years of professional environmental
15 experience which encompasses environmental permitting, ecological & water resources
16 studies, and project management. My areas of expertise include renewable energies,
17 siting and licensing, water resources, fisheries, habitat & wildlife valuation/identification,
18 and soil/sediment evaluation. I have designed, implemented, and/or managed numerous
19 sampling and monitoring programs, including field resource surveys (i.e. wetlands, RTE
20 species habitat), benthic sampling studies, fish sampling studies, sediment
21 characterization studies, aquatic remote sensing/geophysical surveys, and cultural
22 resource studies. Prior to working at Cardno for the past 12+ years, I worked for the
23 URS Corporation for over 2 years in the Water Resources group, primarily involved in

1 to map and characterize ecological communities; and to screen for potential occurrence of
2 RTE species.

3 **Q.7. What was your role in the studies conducted for the Application?**

4 **A.7.** My role was to provide senior-level management of the studies including planning,
5 scheduling, organization, and oversight of the field and desktop investigations, to perform
6 review and quality assurance on the study products (e.g., reports, figures, tables, and
7 written analysis), and to provide communications with the Applicant regarding the studies'
8 progress, results and project implications.

9 **Q.8. What were Cardno's results from the assessment of endangered species in the Project**
10 **Area?**

11 **A.8.** Cardno's assessment did not identify any State- or Federal-listed threatened or
12 endangered plant or animal species in the Project Area. Based on a review of publicly
13 available data, the Project Area identified in the Application and the surrounding area
14 within a ¼-mile buffer are not expected to provide significant or permanent habitat for any
15 listed or other RTE species. During Cardno's November 2017, April 2018, and October
16 2018 field surveys, no RTE species were identified. Alamo Solar has prioritized avoidance
17 measures for sensitive habitats. Such measures include minimizing habitat fragmentation,
18 siting infrastructure in uplands rather than wetlands, and minimizing perennial stream
19 crossings. Based on current Project designs (which include the measures I reference),
20 significant impacts to these habitats are not anticipated.

21 **Q.9. Did you make any findings or observations relating to any aquatic resources?**

22 **A.9.** A total of thirteen wetlands were delineated during field surveys, for a total of 4.71
23 acres within the Project Area. Eleven of the wetlands were identified as palustrine

1 Exhibit G would no longer be necessary. Instead, three collection lines will be bundled
2 together to cross under WB-004 via horizontal direction drill (HDD) at a single location.
3 Therefore, no impact to WB-004 is anticipated. Additionally, the Applicant will also use
4 HDD to avoid impacts to two other streams (WB-003 and WB-030). The two other stream
5 crossings (WB-014 and WB-002) will be crossed via traditional open cut, as these are
6 intermittent/ephemeral waterbodies.

7 During the field surveys, the Cardno team also surveyed for and documented the presence
8 or absence of freshwater mussels within the field-delineated streams, and Cardno observed
9 no individuals or populations of freshwater mussel species.

10 **Q.10. Did you make any findings or observations related to birds or other wildlife?**

11 **A.10.** Yes. We found that the Project would not significantly impact wildlife or wildlife
12 habitat. The Project has been designed to locate the majority of infrastructure within active
13 agricultural land, which only provides habitat for a limited number of wildlife species. The
14 few birds and mammals that may forage within these fields would likely avoid these areas
15 that are being disturbed by construction. On a landscape scale, there is abundant
16 availability of similar agricultural fields within the Project Area and surrounding area that
17 can be used as similar habitat.

18 In addition, the Project Area and ¼-mile buffer are not known to provide significant habitat
19 for sensitive bird species. Due to this lack of adequate habitat in the immediate Project
20 Area, it is likely many birds and wildlife will opt for higher quality habitat nearby for
21 roosting, foraging and breeding.

22 **Q.11. Will the Project cause a negative impact on surrounding properties from any**
23 **distribution of local wildlife?**

1 **A.11.** No. The Project Area is largely already in use for agriculture, and the change in
2 use resulting from the construction of the Project will not displace wildlife to surrounding
3 properties in numbers that would cause a negative impact. Using deer as a proxy, Cardno
4 evaluated whether development of the Project would increase wildlife population density
5 in areas surrounding the Project. We determined that deer in the surrounding area would
6 increase by less than 5%, or less than 0.01 deer per acre. This slight increase in deer, or in
7 the population of other wildlife potentially displaced by the Project, should not have a
8 negative effect on surrounding properties.

9 **Q.12. What permits related to construction disturbance in or near surface waters need to**
10 **be obtained?**

11 **A.12.** The Project is not anticipated to impact any wetland areas. Permits need to be
12 obtained prior to construction of the Project in or near surface waters, all of which are
13 related to surface water impacts. Prior to the start of construction, the Applicant currently
14 expects to obtain the following permit:

- 15 • The Ohio NPDES construction storm water general permit, Ohio EPA Permit No.
16 OHC000005.
- 17 • A “Nationwide Permit” issued by the U.S. Army Corps of Engineers under
18 Section 404 of the Clean Water Act for crossings of certain waters of the United
19 States, along with a Section 401 Water Quality Certification from Ohio EPA if
20 required.

21 **Q.13. What is your overall assessment of the potential environmental impacts of the Alamo**
22 **Solar Project?**

BEFORE THE OHIO POWER SITING BOARD

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

DIRECT TESTIMONY OF NOAH WATERHOUSE

1 **Q.1. Please state your name, title and business address.**

2 **A.1.** My name is Noah Waterhouse. I am the Director of Solar - Civil Engineering for
3 EVS, Inc. My business address is 10025 Valley View Road, Suite 140, Eden Prairie, MN
4 55344.

5 **Q.2. What are your duties as the Director of Solar – Civil Engineering?**

6 **A.2.** As the Director of Solar Civil at EVS, my role is to lead a group of engineers in
7 providing civil design for solar projects. That leadership includes developing design
8 procedures, establishing scopes with clients, overseeing project execution, and educating
9 staff on Solar Civil specific design principles.

10 **Q.3. What is your educational and professional background?**

11 **A.3.** I have a Bachelor of Science in Civil Engineering from the University of
12 Minnesota. I am a licensed Professional Engineer in the State of Minnesota. I have
13 worked as a Civil Engineer at EVS continuously for the past 15 years, and have been
14 doing work exclusively for solar projects for approximately five years. I became Director
15 of Solar Civil at EVS in 2017. During my career I have been the site design engineer for
16 both government, including military, and commercial projects. I have performed project
17 management and design duties, including field work, regarding grading and drainage,
18 stormwater management, utilities, erosion control, pavement design, and demolition

1 design. I have also prepared permit applications for a number of projects, including
2 water discharge permits and various local permits for grading, driveway connections, and
3 stormwater management. I have extensive experience evaluating drainage and runoff
4 issues and/or drain tile at dozens of sites, including more than 50 solar projects.

5 **Q.4. On whose behalf are you offering testimony?**

6 **A.4.** I am testifying on behalf of the Applicant, Alamo Solar I, LLC, in support of its
7 application filed in Case No. 18-1578-EL-BGN.

8 **Q.5. What is the purpose of your testimony?**

9 **A.5.** The purpose of my testimony is to describe the methodology of the Drain Tile
10 Assessment (“DTA”) my firm will complete on behalf of the Applicant and to summarize
11 the projected impacts of the Alamo Solar Project (“Project”) on drain tile, drainage, and
12 runoff in the area in which the Project will be located (“Project Area”). I will also
13 address Condition 16 in the Joint Stipulation filed July 5, 2019, which I have reviewed.

14 **Q.6. Please describe the study that you and your firm will complete on behalf of the**
15 **Applicant.**

16 **A.6.** The DTA will include both desktop and onsite physical evaluation of the Project
17 Area to locate drain tile. Specific measures to be undertaken include evaluation of aerial
18 images, location of inlets and outlets, soil subsidence, and topography, all of which can
19 provide indications of the location of drain tile. Following these measures, physical
20 exploration allowing drain tile routes to be marked and surveyed would be used. These
21 physical measures could include:

- 22 • Using an excavator or other small piece of equipment to dig trenches perpendicular to
23 the suspected drain tile route until the pipe is exposed, where it can be marked and
24 surveyed.

BEFORE THE OHIO POWER SITING BOARD

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SUPPLEMENTAL TESTIMONY OF NOAH WATERHOUSE

1 **Q.1. Please state your name, title and business address.**

2 **A.1.** My name is Noah Waterhouse. I am the Director of Solar - Civil Engineering for
3 EVS, Inc. My business address is 10025 Valley View Road, Suite 140, Eden Prairie, MN
4 55344.

5 **Q.2. On whose behalf are you offering testimony?**

6 **A.2.** I am testifying on behalf of the Applicant, Alamo Solar I, LLC.

7 **Q.3. Did you previously provide testimony on behalf of the Applicant?**

8 **A.3.** Yes, on July 17, 2019.

9 **Q.4. What is the purpose of your supplemental testimony?**

10 **A.4.** To address the changes made to Condition 16 in the Amended and Restated Joint
11 Stipulation and Recommendation filed on July 30, 2020 (“Amended Joint Stipulation”).

12 **Q.5. Have you reviewed the Amended Joint Stipulation?**

13 **A.5.** Yes.

14 **Q.6. Do you support Condition 16 in the Amended Joint Stipulation?**

15 **A.6.** Yes. I previously testified in support of Condition 16 in the Joint Stipulation and
16 Recommendation that was filed in this proceeding on July 5, 2019 (the “Joint
17 Stipulation”). The Amended Joint Stipulation clarifies and expands the scope of
18 Condition 16. First, it clarifies that the determination of the benchmark conditions of the

BEFORE THE OHIO POWER SITING BOARD

In the Matter of the Application of)	
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Compatibility and Public Need)	

SUPPLEMENTAL TESTIMONY OF DAVID HESSLER

1 **Q.1. Please state your name and business address.**

2 **A.1.** My name is David M. Hessler and I am the vice president of Hessler Associates,
3 Inc. The address of my company’s administrative offices is 38329 Old Mill Way, Ocean
4 View, Delaware 19970, and my personal office is located at 5096 N. Silver Cloud Dr., St.
5 George, Utah 84770.

6 **Q.2. Did you previously present direct testimony in this proceeding?**

7 **A.2.** Yes. I previously provided direct testimony in this proceeding.

8 **Q.3. On whose behalf are you offering testimony?**

9 **A.3.** I am filing supplemental testimony on behalf of the Applicant, Alamo Solar I,
10 LLC.

11 **Q.4. What is the purpose of your supplemental testimony?**

12 **A.4.** To address Condition 3 of the Amended and Restated Joint Stipulation and
13 Recommendation filed on July 30, 2020 (“Amended Joint Stipulation”) as it relates to
14 operational sound emanating from the Project’s inverters.

15 **Q.5 Have you reviewed the Amended Joint Stipulation?**

16 **A.5.** Yes.

17 **Q.6. Can you please describe the revisions to Condition 3 in the Amended Joint**
18 **Stipulation?**

1 affected drainage systems includes measuring both surface and subsurface drainage
2 systems. Second, it requires the Applicant to investigate the location of various
3 waterways, not only by survey, but also by contacting the adjacent landowners and
4 requesting pertinent information. I continue to support Condition 16 for the reasons
5 stated in my prior testimony as well as for the clarification and expansion of scope of
6 landowner contacts.

7 **Q. 7. Is Condition 16 in the Amended Joint Stipulation in the public interest?**

8 **A.7.** Yes. Condition 16 continues to benefit the public interest by ensuring the
9 protection of drain tile and existing drainage in the Project Area.

10 **Q.8. Does this conclude your supplemental direct testimony?**

11 **A.8.** Yes, it does.

1 **A.6.** Condition 3 generally relates to the Project’s layout and setbacks. With respect to
2 sound, the Amended Joint Stipulation now includes a minimum setback of “500 feet
3 between any central inverter and any residence on a non-participating parcel.”

4 **Q.7. Have you conducted an analysis of the operational sound levels expected as a result**
5 **of the 500 foot setback from the inverters?**

6 **A.7.** Yes.

7 **Q.8 Can you please describe that analysis?**

8 **A.8.** We developed a computer noise model of the Project, using conventional
9 Cadna/A[®] software, that includes not only the substation but also all of the inverters
10 using the preliminary layout attached to Mr. Herling’s testimony. In general, acoustical
11 performance information on inverters for solar facilities is not readily available: however,
12 the Applicant was able to obtain a highly detailed sound test report from the manufacturer
13 of a common inverter model, the SMA SC4600-UP, that is, or is representative of, the
14 type of inverter likely to be used for this Project. In contrast to the limited information
15 typically provided by inverter suppliers, SMA carried out a shop test at its manufacturing
16 facility in Germany in accordance with DIN EN ISO 9614-2 "Determination of sound
17 power levels of noise sources using sound intensity", Part 2: "Measurement by permanent
18 scanning", which determined the sound power level spectrum of the unit in 1/3 octave
19 band resolution. This result gives not only the precise overall sound power level but also
20 quantifies any hums or tones present in the frequency spectrum. The model results are
21 summarized graphically in **Exhibit DMH-S1** to my testimony, which shows the sound
22 contours from the Project during normal operation on a sunny day projected out to an
23 extremely quiet sound level of 35 dBA. This figure shows that all non-participating

1 residences are either close to or, in the vast majority of cases, outside the 35 dBA
2 contour.

3 **Q.9. Based on your experience, would an operational sound level of 35 dBA at a nearby**
4 **residence lead to noise complaints?**

5 **A.9.** No. Such a sound level is so low in absolute terms that it is generally considered
6 inconsequential even in rural environments where the background sound level is
7 essentially negligible.

8 **Q.10. You mentioned that the SMA sound test report contained information on the**
9 **frequency content of this inverter model. Does this allow you draw any conclusions**
10 **about the audibility and potential impact of tones at the nearest non-participants?**

11 **A.10.** Yes. The 1/3 octave band sound power level spectrum of the unit is smooth and
12 a-tonal for the most part, but there are peaks in the 3150 and 6300 Hz 1/3 octave bands
13 that are about 11 dB above the neighboring bands. While this indicates that the unit
14 emits prominent tones, it is very important to understand that in a sound intensity test the
15 measurements are taken with a special probe inches from the surface of the test subject
16 and the spectrum shape does not remain the same with increasing distance. In fact, the
17 higher frequencies, where the two peaks are, diminish very rapidly with distance and at
18 the minimum 500 foot setback distance would lose their prominence relative to adjoining
19 frequencies and would have values in the 20's dB. Such low levels would be buried in
20 the background sound level and can essentially be regarded as negligible and inaudible.

21 **Q.11. Are any non-participating residences actually located 500 feet from an inverter in**
22 **the preliminary layout?**

1 **A.11.** No. The nearest non-participating residence as things currently stand is
2 approximately 600 feet from an inverter while the next nearest homes are generally more
3 than 675 feet away. Even if this distance decreased to the minimum 500 ft. setback, the
4 Project sound level would remain low at about 38 dBA. Such a level, were it to occur,
5 would still be negligible, if not totally inaudible, even in this quiet environment.
6 Moreover, it is important to add, this sound only exists during day.

7 **Q.12. Are there any other changes to the Amended Joint Stipulation that relates to noise?**

8 **A.12.** Yes. Condition 3 has also been revised to state that “The Applicant shall
9 promptly retrofit any inverter as necessary to effectively mitigate any off-site noise issue
10 identified during operation of the facility.”

11 **Q.13. Do you believe the inverters could be retrofitted in a practical manner to reduce**
12 **noise?**

13 **A.13.** Yes. The mid-frequency sound audible at moderate distances generally comes
14 from the cooling air intakes and discharges, which could be fitted with acoustical hoods,
15 louvers or silencers, in the unlikely event mitigation is necessary. As indicated above, I
16 don’t believe the sound emissions from the inverters in this Project are likely to result in
17 any kind of community disturbance, but this proviso effectively serves as a backup to
18 ensure that noise will not be a problem.

19 **Q.14. Given the results of your modeling, is there flexibility to make changes in the**
20 **preliminary layout as a result of final project engineering and avoid adverse noise**
21 **impacts at non-participating residences?**

22 **A.14.** Yes. With an inverter setback of 500 feet or more from any non-participating
23 residences their exact location is immaterial from a noise impact perspective.

BEFORE THE OHIO POWER SITING BOARD

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SUPPLEMENTAL TESTIMONY OF MATHEW ROBINSON

1 **Q.1. Please state your name, title and business address.**

2 **A.1.** My name is Matthew Robinson. I am a Visualization Project Manager at
3 Environmental Design & Research, Landscape Architecture, Engineering &
4 Environmental Services, D.P.C (“EDR”). My business address is 217 Montgomery
5 Street, Suite 1000, Syracuse, New York 13202.

6 **Q.2. On whose behalf are you offering testimony?**

7 **A.2.** I am testifying on behalf of the Applicant, Alamo Solar I, LLC.

8 **Q.3. Did you previously provide testimony on behalf of the Applicant?**

9 **A.3.** Yes, on July 18, 2019.

10 **Q.4. What is the purpose of your supplemental testimony?**

11 **A.4.** To address Condition 3 and Condition 15 in the Amended and Restated Joint
12 Stipulation and Recommendation filed on July 30, 2020 (“Amended Joint Stipulation”).

13 **Q.5. Have you reviewed the Amended Joint Stipulation?**

14 **A.5.** Yes.

15 **Q.6. Do you support Condition 3 in the Amended Joint Stipulation?**

16 **A.6.** Yes. Condition 3 has been revised to provide for minimum distances for specific
17 setbacks that will allow for greater screening of the Project from residences.

1 **Q.7. How will the changes to Condition 3 in the Amended Joint Stipulation affect the**
2 **visual impact of the Project?**

3 **A.7.** Specific to my testimony, Condition 3 has been revised to require a minimum
4 setback of 150 feet between the facility fence and any residence on a non-participating
5 parcel. The prior setback to a residence on a non-participating parcel was 100 feet from
6 the above-ground equipment to the residence. By incorporating these expanded setbacks,
7 the perceived scale of the Project will be reduced. The proposed landscape mitigation
8 design, although designed to work within the original setbacks of the proposed layout
9 will benefit from the increased space which will further allow the proposed modules to
10 achieve the goals set forth in the Landscape Mitigation Plan.

11 **Q.8. How does the addition of the proposed minimum setbacks make screening or**
12 **mitigation more effective?**

13 **A.8.** Providing additional setback distance enhances the overall goals of the Landscape
14 Mitigation Plan. The setbacks do this by allowing for greater options and flexibility when
15 determining specific vegetation material and placement within the proposed modules.
16 The larger setback provides more room for vegetation to grow and become an established
17 part of the existing landscape. This allows the proposed landscape mitigation to be more
18 fully-integrated with the surrounding vegetation and landscape character, providing a
19 more natural appearance that blends the Project into the background. Further, the
20 increased setbacks operate to decrease the Project's perceived scale to viewers on the
21 non-participating parcel, within the existing landscape. Decreasing scale through a larger
22 setback allows for further integration into the existing view, because of the minimization
23 of perceived scale, and no longer is the single dominant feature.

BEFORE THE OHIO POWER SITING BOARD

- - -

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

- - -

PROCEEDINGS

before Jay S. Agranoff and Lauren L. Augostini,
Administrative Law Judges, at the Public Utilities
Commission of Ohio, 180 East Broad Street, Room 11-D,
Columbus, Ohio, called at 9:00 a.m. on Thursday, July
18, 2019.

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VOLUME II

- - -

ARMSTRONG & OKEY, INC.
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- - -

1 A. It's my Direct Testimony.

2 Q. And was that prepared by you or at your
3 direction?

4 A. It was.

5 Q. And do you have any changes or revisions
6 to that testimony today?

7 A. One minor change and that is on page 4 in
8 Answer 10. On the second line it should read, after
9 the word "benign" there should be a period and then
10 we want to strike the rest of that sentence down to
11 after the word "place."

12 Q. Okay. And why are you making that change
13 today, sir?

14 A. Part of that sentence says that the
15 Project won't create any noise whatsoever at night,
16 and it's come to my attention that that might not be
17 the case in that the step-up transformer in the
18 substation may still be energized and still have some
19 kind of hum to it, so I just want to be accurate in
20 the testimony.

21 Q. And with that fact, do your conclusions
22 as to operational noise for the Project remain the
23 same?

24 A. Absolutely.

25 Q. And why is that?

1 A. Because the sound emissions from the
2 substation are negligible at the distances of concern
3 here, whether it's during the day or at night.

4 Q. All right. Do you have any other changes
5 to your testimony?

6 A. No.

7 Q. If I asked you the questions in your
8 testimony, would your answers be the same as you have
9 revised and discussed today with me?

10 A. Yes, they would.

11 MR. SETTINERI: Thank you.

12 Your Honor, the witness is available for
13 cross-examination.

14 ALJ AGRANOFF: Thank you.

15 Could you please, just one more time,
16 repeat where that correction was?

17 THE WITNESS: After the word "benign"
18 we're striking the rest of that sentence.

19 ALJ AGRANOFF: And that was on?

20 THE WITNESS: Page 4, in Answer 10,
21 starting on the second line.

22 ALJ AGRANOFF: Okay. So from "benign" to
23 the end of that sentence?

24 THE WITNESS: Yeah, where the word
25 "place" is. We'll keep the period.

1 Q. If you had not made the correction from
2 98 dBA to 92 dBA, what would the decibel level at
3 Residence DP-1 have been instead of 23?

4 A. It would have been 29, which is also an
5 extremely quiet level.

6 Q. Let's talk about the inverters. I assume
7 you know what an inverter is relative to a solar
8 project; is that right?

9 A. It's a device that takes DC current,
10 generated by the solar cells, and converts it to AC.

11 Q. Have you ever measured the sound from an
12 inverter?

13 A. Yes.

14 Q. Okay. On how many occasions have you
15 done that?

16 A. Only once. Noise doesn't come up in
17 solar projects a lot, so I haven't had hundreds of
18 cases to draw on.

19 Q. And what was the reason why you measured
20 the sound from that inverter?

21 A. Because I was working on the development
22 of an adjacent project and was able to get access to
23 this site so I could see for myself what inverter
24 noise was all about. I inspected it, took
25 measurements of it. It's barely audible. Right near

1 it there's a cooling fan; you walk away, it
2 disappears.

3 Q. Where did you take those measurements?
4 Where was that project located?

5 A. It was in New York State.

6 Q. And tell us the results of your sound
7 measurements in dBA and at what distances.

8 A. I don't have those facts with me.

9 Q. Generally speaking, how far from the
10 inverter did you take measurements?

11 A. Starting at 1-inch away from the air
12 intakes and discharges and walking back to 100 feet
13 probably.

14 Q. Can you give us an estimate of what the
15 sounds were at 200 feet?

16 A. Well, I didn't go that far, but I think
17 at 100 feet all I was measuring was background noise.

18 Q. Let's go to page 2 of your report which
19 is Company Exhibit 2. I'd like you to take a look at
20 the third paragraph on that page and go down to the
21 fourth and the fifth lines where it states that the
22 "inverter sound fades to insignificance relative to
23 normal background levels at a distance of 150 feet."
24 Do you see that?

25 A. Yes.

1 Q. What is the decibel level from the
2 inverter expected to be at 150 feet away?

3 A. Well, this information comes from a study
4 that was done for the -- I think it was called the
5 Massachusetts Clean Energy Commission, measuring
6 inverter noise at a number of sites, and they
7 concluded, at 150 feet, noise from any kind of
8 inverter is not significant anymore. There's no
9 specific level associated with that. It just means
10 that it's down in the normal background level.

11 Q. Well, the normal background level varies
12 from site to site, correct?

13 A. Right.

14 Q. And do you recall whether that report
15 stated that the inverter sound faded to
16 insignificance relative to the normal background
17 levels at that site?

18 A. I believe it was a number of sites that
19 were measured and the conclusion was, once you got to
20 that distance, you could no longer detect it.

21 Q. Maybe we should have you explain for the
22 record what role the background sound level plays in
23 either allowing or preventing a person from hearing a
24 new source of sound in that area.

25 A. Well, generally speaking, the background

1 questions. I tender the witness for
2 cross-examination.

3 ALJ AGRANOFF: Thank you.

4 Mr. Van Kley.

5 MR. VAN KLEY: Thank you, Your Honor.

6 - - -

7 CROSS-EXAMINATION

8 By Mr. Van Kley:

9 Q. I'm going to ask you some questions about
10 your Direct Testimony that's just been marked as an
11 exhibit, and if you would also get in front of you
12 Exhibit G to the Application, that will also help you
13 to answer some of my questions.

14 Let's start with your answer to Question
15 10 in your Direct Testimony. I'd like to refer you
16 to the text of your answer, starting with line 12,
17 where it states "The Project has been designed to
18 locate the majority of infrastructure within active
19 agricultural land, which only provides habitat for a
20 limited number of wildlife species. The few birds
21 and mammals that may forage within these fields would
22 likely avoid these areas that are being disturbed by
23 construction." Did I read that correctly?

24 A. Yes.

25 Q. What's the basis of your statement that

1 there are few birds in the Project area?

2 A. The statement is not directed to a few
3 birds in the Project area. It's the statement of few
4 birds are utilizing the agricultural fields as living
5 habitat. These fields are disturbed on a regular
6 basis from activities from agriculture; therefore,
7 they're not homes and steady areas for birds to
8 inhabit.

9 Q. Well, the Project Area is primarily
10 agricultural, correct?

11 A. That's correct.

12 Q. So your statement would apply to the
13 agricultural fields within the Project Area.

14 A. That's correct.

15 Q. In your view, would it also apply to the
16 agricultural fields outside of the Project Area?

17 A. It would.

18 Q. So what was the basis for your statement
19 that there are few birds in those agricultural
20 fields?

21 A. These are from direct observations of our
22 field teams during the survey, as well as general
23 information and literature.

24 Q. Now, when you refer to "few birds" in
25 line 14 in your testimony on page 6, are you

1 that the LiDAR has picked up in a hedgerow so there's
2 an opening in the hedgerow and this one resource
3 could see one panel, it could be more than that, but
4 "visibility" does not mean the entire project is
5 visible from that area.

6 Q. Thank you.

7 In response to some of Mr. Van Kley's
8 questions, you indicated the visual simulations in
9 Exhibit I were based on a panel height of 8 feet.
10 Why were they based on a panel height of 8 feet?

11 A. So when we start the Project, we would
12 like to be in a worst-case scenario when we go out
13 into the field, so we run our viewshed on a higher
14 height and, at that point in time, 14 feet was what
15 was a typical height for a fixed solar panel at that
16 time.

17 As we moved along in the process, we
18 really like to make sure our simulations are as
19 accurate as they can be to what is proposed.

20 So by the time we got to making the
21 simulations, the Company was leaning further towards
22 using a single-axis tracker and, at that point in
23 time, the technology that was available was the
24 single-axis trackers were 8-feet in height. So
25 that's why there's a difference between those two.

1 Q. If you conducted those visual simulations
2 with the panel height of 14-feet, would it change any
3 of the conclusions?

4 A. It would not.

5 Q. Why is that?

6 A. We're still introducing a contrast into
7 the landscape.

8 MR. TAYLOR: Thank you, Your Honors. No
9 further questions.

10 ALJ AUGOSTINI: Any recross?

11 MR. VAN KLEY: Yeah.

12 - - -

13 REXCROSS-EXAMINATION

14 By Mr. Van Kley:

15 Q. With regard to Figure 7, I'm looking at
16 Sheet 2 of 4 in Figure 7.

17 A. Okay.

18 Q. Just to recap, this is the figure showing
19 the viewshed analysis as affected by topography,
20 vegetation, and structures, right?

21 A. Correct.

22 Q. Now, if you were to redo this figure
23 today, based on the more advanced knowledge that you
24 have, how would it turn out or do you even know?

25 MR. TAYLOR: Objection, Your Honor. The

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PROCEEDINGS

before Jay S. Agranoff and Lauren L. Augostini,
Administrative Law Judges, conducted via WebEx video
conference, called at 10:00 a.m. on Monday, October
26, 2020.

- - -

VOLUME IV

- - -

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- - -

1 that's mounted on the panel racks, and the report
2 that I obtained from SMA for I think it was a
3 150-kilowatt unit said that the sound pressure level
4 at 1 meter away was less than 65 dBA which is less
5 than the level of a conversation, a normal
6 conversation. They're very, very quiet. And that
7 test report showed that the frequency content didn't
8 have any tones or whines in it at all.

9 Q. Did you model in that case -- in that
10 case did you model the sound from the string
11 inverters at any other distances?

12 A. Yeah. I used the sound power that was in
13 the report from SMA for each string inverter and then
14 we put that into a model, similar to the one that was
15 done for Alamo here, to model that project in its
16 entirety.

17 Q. And what were the results that were
18 modeled in that project for the string inverters by
19 distance?

20 A. Well, I don't have the exact sound levels
21 as a function of distance but, as I recall, the
22 predicted sound level at any houses there was really
23 low, in the 30 dBA, something like that.

24 Q. And how far were those residences from
25 the locations of the string inverters?

1 sound for daytime level for the Project Area?

2 A. It was 39 dBA during the day.

3 Q. Okay. And for nighttime, what was the
4 Leq average ambient?

5 A. I didn't calculate it because the
6 inverters don't even operate at night so it's not
7 really relevant.

8 Q. So in regard to the average ambient Leq,
9 that is very close to what you noted would be the
10 nearest sound contour level at a non-participating
11 property boundary, correct?

12 MR. VAN KLEY: Objection, leading.

13 MR. SETTINERI: That's fine. I'll
14 rephrase.

15 Q. In regards to a sound level of 40 dBA,
16 the Leq ambient, how does the Leq ambient background
17 of 39 dBA compare?

18 A. They're almost the same value. The
19 background level is almost equivalent to the Project
20 level at that property line which means that the
21 Project would be hardly audible if audible at all.

22 MR. SETTINERI: All right. No further
23 questions, Your Honors. Thank you.

24 ALJ AUGOSTINI: Mr. Van Kley, do you have
25 recross?

1 A. I do.

2 Q. Okay. Do you have any disagreement with
3 the information in that sentence?

4 A. I disagree with the conclusion of that
5 sentence after -- after the words "do require." I
6 agree that the elevated panels alter the volume,
7 velocity, and discharge pattern, much like other
8 types of impervious surfaces you would install on a
9 large site like this such as gravel roads, rooftops,
10 stuff like that. However, the vegetation coverage
11 beneath the panels in many cases is more than
12 adequate to mitigate for --

13 (Off the record.)

14 (Record read.)

15 THE WITNESS: Would you like me to
16 continue the answer then from that previous question?

17 ALJ AUGOSTINI: Yes, please.

18 THE WITNESS: Okay. So to finish that
19 thought, the vegetation beneath the panels is more
20 than adequate for the management of stormwater.

21 MR. VAN KLEY: Okay. I had another
22 question after that which the witness answered. I
23 can re-ask it or I can just withdraw it. Based on
24 the answer that I got, it probably doesn't matter
25 anyway. Does the Bench have a preference?

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing **Supplement**, submitted on behalf of Appellee Ohio Power Siting Board, was served by electronic mail upon the following parties of record this 6th day of June, 2022.

/s/ Werner L. Margard III

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