

**BEFORE THE
PUBLIC SERVICE COMMISSION
OF MARYLAND**

In the Matter of the Application)	
of MD Solar 2, LLC for a)	
Certificate Of Public Convenience and)	Case No. 9463
Necessity to Construct a 27.5 MW Solar)	
Photovoltaic Generating Facility in)	
Charles County, Maryland)	

DIRECT TESTIMONY OF FREDERICK S. KELLEY

**ON BEHALF OF THE

MARYLAND DEPARTMENT OF NATURAL RESOURCES

POWER PLANT RESEARCH PROGRAM**

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May 24, 2018

1 **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

2 A. Frederick S. Kelley, Program Manager, Power Plant Research Program
3 (PPRP), Department of Natural Resources (DNR), Tawes State Office
4 Building, Annapolis, Maryland 21401.

5 **Q. WHAT IS YOUR POSITION WITH PPRP?**

6 A. I am a Program Manager for PPRP and responsible for the management,
7 oversight, and analysis of environmental impact assessments related to the
8 construction, operation, and maintenance of high voltage transmission lines
9 and power plants, including utility-scale solar facilities.

10 **Q. PLEASE DESCRIBE YOUR EXPERIENCE.**

11 A. I have been employed by PPRP since July 2012. In addition to managing
12 licensing projects I am also responsible for managing contracts that provide
13 Environmental Engineering Integrator support to the program, including to
14 assess cumulative environmental impacts to the State from energy-related
15 activities, as well as support research projects supported by PPRP, such as
16 the, Utility Tree Program and transmission line biological survey methods. A
17 brief statement of my educational background, occupational history, and
18 professional qualifications is attached to this testimony as Appendix A.

19 **Q. WHAT ARE YOUR RELEVANT RESPONSIBILITIES IN YOUR CURRENT**
20 **POSITION?**

21 A. I provide technical and administrative direction on a variety of environmental
22 assessment projects and tasks performed by PPRP staff and consultants related to
23 electricity generation projects. My responsibilities include directing the
24 evaluation and analyses necessary to provide a comprehensive assessment of

environmental and socioeconomic impacts associated with the construction and operation of electric generating facilities. As Program Manager, I am responsible for leading the Certificate of Public Convenience and Necessity (CPCN) licensing reviews of new electric generation projects before the Public Service Commission (PSC), in which I coordinate the project review with other State agencies, prepare written testimony, and serve as expert witness in CPCN proceedings.

Q. WHAT IS YOUR ROLE AS A PROJECT MANAGER IN THE CPCN PROCESS?

A. With respect to applications for a CPCN for new or modified transmission or generation facilities, I oversee a comprehensive independent environmental and socioeconomic review of such projects and coordinate the development of recommended license conditions that are submitted to the PSC. This process is described in Maryland's Power Plant Siting Act of 1971, Chapter 31 of the Laws of Maryland of 1971, which, along with Maryland's Environmental Policy Act, requires the PSC to consider a broad range of socioeconomic, environmental, health, safety, and system reliability impacts associated with proposed power plants, and new or modified overhead electric transmission lines in excess of 69,000 volts. PPRP coordinates the review of such projects with other units within DNR and other State agencies, including Maryland's Departments of Agriculture, Commerce, Environment, Planning (including the Maryland Historical Trust), and Transportation, and the Maryland Energy Administration (collectively, the "reviewing State agencies").

PPRP is supported by contractors that address economic (Exeter Associates), atmospheric (ERM, Inc.), biological (Versar, Inc.), and engineering (ERM, Inc.) issues. Under my direction, appropriate members of these staffs participated in the reviews and evaluations of the documents submitted by the Applicant and participated in field investigations.

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. The purpose of my testimony is to provide the PSC with a summary of the
3 findings and initial recommendations resulting from PPRP's evaluation of the
4 MD Solar 2, LLC (MD Solar 2) CPCN application to construct a solar
5 photovoltaic (PV) facility in Charles County, Maryland. This project is referred
6 to as the MD Solar 2 Project (Project). My testimony summarizes PPRP's
7 evaluation of the solar project, and the recommendations for the initial license
8 conditions that were prepared in coordination with the reviewing State agencies.

9 **Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE PROPOSED PROJECT.**

10 A. MD Solar 2 proposes to build a 27.5 megawatt (MW) alternating current (AC)
11 solar PV Project in Charles County, Maryland. The solar array will use single-
12 axis horizontal tracking system mounted on pile-driven post-support racking
13 system. In addition to the approximately 82,000 – 85,000 solar PV panels, the
14 facility components will also include DC to AC power inverters, medium-voltage
15 transformers, and other equipment necessary to interconnect to the Southern
16 Maryland Electric Cooperative, Inc. (SMECO) distribution system.

17 **Q PLEASE PROVIDE A BRIEF DESCRIPTION OF THE SITE FOR THE**
18 **PROPOSED PROJECT.**

19 A. The MD Solar 2 Project is located on a total of 256-acres of land located at 6795
20 Ripley Road in LaPlata, Maryland within Charles County. The limit of
21 disturbance of the Project is approximately 215 acres. The Project is located on
22 three parcels identified on Tax Map 31 as Parcel 25, Parcel 258, and Parcel 259.
23 The Applicant is under contract to purchase 256 acres from the current property
24 owners for the Project.

25 The Project site is zoned Rural Conservation ("RC"). As such, the Project must

1 apply for and receive a Special Exception from Charles County as specified in the
2 Charles County Zoning Ordinance. The Applicant has granted a Special
3 Exception by the Charles County Board of Appeals on May 8, 2018, which will
4 allow the construction of utility scale solar generation facilities on RC-zoned
5 properties.

6 The Project site is located in a rural setting and is surrounded primarily by
7 forested land with minimal residential land use. Ripley Road bisects the site,
8 running on a northeast-southwest trajectory. The smaller portion of the site is
9 located on the northwest side of Ripley Road, and the larger portion is located on
10 the east-northeast side of Ripley Road. The Project site is bordered by forested
11 and agricultural lands along the eastern, southern, and western portions of the
12 site. A small number of residences are located near the northern border of the
13 Project. One residence and/or commercial property is also located just outside
14 the boundary of the northwest corner of the Project site.

15 The 256-acre Project site consists generally of rolling forested land, with some
16 areas of steeper gradients. Based on the Project site layout, a significant amount
17 of tree clearing, and grading will be required to develop the solar project. The
18 Applicant has indicated that it will comply with Charles County's Forest
19 Conservation Ordinance. In doing so, they will establish a Forest Conservation
20 Easement (FCE) on the Property in part, to meet Forest Conservation Act (FCA)
21 mitigation requirements. .

22 Several wetlands have been identified within the wooded areas, predominantly
23 at the base of steeper slopes. As currently planned, the project will avoid any
24 impacts to wetlands and wetland buffers based on the array design and include
25 an additional setback from the drip line of the trees forming the outer edge of the
26 wetland buffer.

27 The Project site is located outside of the Critical Area is not within designated

1 flood plain areas, and will not impact any wetlands or wetland buffers. Based on
2 information provided in the CPCN Application, jurisdictional wetlands
3 identified on the Project site are not within areas where solar panels will be
4 placed. The Maryland Department of the Environment (MDE) visited the Project
5 site on October 28, 2017 and confirmed the location of wetlands on the property,
6 and the project's avoidance of those areas.

7 With regard to cultural resources, per the Applicant's communication with the
8 Maryland Historic Trust (MHT), the Project site is not located in an area of
9 interest.

10 **Q. HOW DOES THE APPLICANT PLAN TO DELIVER ELECTRICITY TO THE**
11 **POWER GRID?**

12 A. The Project is located in the SMECO service territory. The Project will connect to
13 the SMECO transmission system at an open 69kV bay at the existing SMECO
14 Ripley switching station, which interconnects to the existing Hawkins Gate 69 kV
15 substation.

16 **Q. HAS THE APPLICANT PROVIDED ANY DOCUMENTS CONTAINING ITS**
17 **ENVIRONMENTAL AND SOCIOECONOMIC ANALYSIS OF THE**
18 **PROPOSED PROJECT?**

19 A. Yes. MD Solar 2 described its environmental and socioeconomic analyses of the
20 potential effects of the proposed Project in its CPCN application, direct
21 testimony, and in responses to PPRP data requests. MD Solar 2 also provided an
22 Environmental Review Document (ERD) prepared in conjunction with H&B
23 Solutions, LLC in Selbyville, Maryland.

24 **Q. HAS PPRP PERFORMED AN INDEPENDENT ENVIRONMENTAL AND**
25 **SOCIOECONOMIC EVALUATION OF THE PROPOSED PROJECT?**

1 A. Yes. PPRP has performed an independent environmental and socioeconomic
2 evaluation of the proposed Project by reviewing application materials and
3 testimony provided by MD Solar 2. PPRP gathered information necessary to
4 verify the evaluations that MD Solar 2 included in its application. PPRP also
5 participated in a field review of the Project site on August 28 and December 11,
6 2017.

7 **Q. WHAT IS THE STATUS OF PPRP'S ENVIRONMENTAL AND**
8 **SOCIOECONOMIC EVALUATION OF THE PROPOSED PROJECT?**

9 A. This filing represents a summary of the technical and environmental analyses of
10 the proposed Project completed to date, as well as conclusions and initial
11 recommendations.

12 **Q. ARE PPRP AND OTHER INTERESTED STATE AGENCIES FILING INITIAL**
13 **RECOMMENDED LICENSE CONDITIONS WITH THE PUBLIC SERVICE**
14 **COMMISSION AND THE PARTIES OF RECORD FOR THIS**
15 **PROCEEDING?**

16 A. Yes, PPRP is including the initial recommended license conditions along with the
17 Secretarial Letter, which is PPRP Exhibit __ (FSK-2) and is being filed along
18 with my direct testimony. PPRP developed these recommended conditions in
19 coordination with the reviewing State. These initial recommended conditions
20 have been approved by the Secretaries and Director of the reviewing State
21 agencies. These initial recommended license conditions may be amended, added
22 to, or deleted in the final recommended conditions submitted by PPRP to the
23 PSC, as necessary, to address any issues and impacts that may arise as a result of
24 the hearings. However, unless additional issues arise requiring such
25 modifications, the proposed initial license conditions submitted in PPRP Exhibit
26 __ (FSK-2) will serve as the State's final recommended conditions to be
27 incorporated into any order issuing a CPCN in this case.

Q. IN DEVELOPING THE INITIAL RECOMMENDED LICENSE CONDITIONS, WHAT IMPACTS OF THE PROPOSED PROJECT DID PPRP CONSIDER?

A. PPRP has examined the potential environmental impacts of the proposed Project on vegetation resources; wildlife; and rare, threatened and endangered species. Also, PPRP has examined the potential socioeconomic impacts of the Project to economic and fiscal issues, transportation, land use, historic and archaeological sites, public services and safety, and property values. In addition, PPRP examined the visual impacts, and the noise and electromagnetic field impacts from the proposed Project.

Q. BASED ON PPRP'S EVALUATION, WHAT ARE YOUR CONCLUSIONS REGARDING THE VIABILITY OF THE PROPOSED PROJECT?

A. PPRP believes that the proposed Project is viable for the following reasons. Maryland has several policies that encourage the deployment of solar energy systems. The first is the State's Renewable Portfolio Standard (RPS) that calls for 25 percent renewable energy by 2022, including 2.5 percent that must come from solar energy sources. Accordingly, utilities must purchase solar generation or face penalties of up to \$350 per MWh (declining through time), providing a financial incentive to homeowners, business, and independent developers to install solar renewable energy systems. The RPS is not the lone policy mechanism providing incentives for the development of solar power in Maryland. Also available are State tax credits, grants, loans, and rebate programs.

Currently, there are two primary solar electricity generating technologies — solar PV and concentrating solar power (CSP). The proposed Project will utilize solar PV technology. A solar PV system consists of the solar modules (also known as

panels), a mounting system (in this case a ground mount system), and an inverter to convert the direct current (DC) electrical current to AC for household or commercial consumption. MD Solar 2 would install 82,000 – 85,000 PV panels on approximately 215 acres of land for the Project. The Project will generate 27.5 MW of AC solar PV power. MD Solar 2 will deliver its produced electricity to the PJM power grid by connecting to the Hawkins Gate 69 kV substation on the SMECO distribution system.

Solar PV projects require open land free from shading impacts caused by nearby trees and high buildings. The proposed property contains sufficient land area and is not affected by tall buildings. Clearing and grading of the site will be required to create space for the panels and eliminate shading due to tree cover. The solar PV technology is sound and well tested, with thousands of megawatts of electricity being generated via solar PV technology throughout the United States. Assuming that the remaining approvals and financing are successfully obtained, the MD Solar 2 Project appears to be a viable project in support of the Maryland RPS.

Environmental Impact Assessment

Q. PLEASE DESCRIBE THE EXISTING VEGETATION ON THE PROJECT SITE.

A. The majority of the Project site is currently forested in mixed deciduous forest, and has been harvested for timber in the past. The Applicant has acknowledged that the site is primarily forested, but indicated that it consists primarily of beech and oak trees of fair quality with little understory or habitat diversity. The Applicant has also indicated that there are a total of 44 specimen trees onsite (defined as larger than 30 inches diameter at breast height [dbh]).

However, during the PPRP site visit on August 28, 2017, PPRP observed that many areas of the forest possess habitats with large, mature trees. Many of the

existing trees on the site average roughly 10 to 20 inches dbh; some of the largest trees approach 30 inches dbh. The largest onsite trees tend to be on the steepest slopes and in the most inaccessible areas. The onsite forest is generally open, with sparse shrub and herbaceous layers (indicative of the previous timbering).

There are several areas of forested wetland along the stream segments on the property, but are outside of the areas of project development as currently planned.

Q. WOULD CONSTRUCTION AND OPERATION OF THE PROJECT RESULT IN IMPACTS TO VEGETATION RESOURCES?

A. Yes. The Applicant plans to clear approximately 215 acres of this property of its forest resources. A significant amount of grading will be unavoidable in dealing with clearing, grubbing, and preparing the site for construction. Additionally, during the operation of this Project, only low-growing grass species will be allowed to grow underneath the solar panels.

Q. DOES PPRP RECOMMEND ANY LICENSING CONDITIONS WITH RESPECT TO SITE CLEARING AND GRADING?

A. Yes. PPRP Recommended Licensing Condition No. 18 states that the Applicant shall provide PPRP and the PSC Engineering Staff with copies of all plans that MD Solar 2 submits to Charles County in connection with the Project for grading the site, and all permits received for such grading, within fifteen (15) calendar days of submitting such plans or receiving such permits. As further stated, in no case shall such plans include removal of topsoil from the site.

DOES PPRP RECOMMEND ANY LICENSING CONDITIONS WITH RESPECT TO VEGETATION MANAGEMENT?

A. Yes. PPRP recommends a vegetation management program for the array portion

of the Project that, while being consistent with the goals and purpose of the Project, can preserve the natural resources of the site, create wildlife and pollinator habitat, and protect any stream resources. PPRP has recommended several licensing conditions that specify that the areas beneath and between the solar panels be planted with vegetation suitable for growth in this setting, and that a grounds management plan be prepared (Initial Recommended Licensing Condition No. 14). The plan is to include a description of the species to be planted, the mowing schedule and grass height, and a protocol for managing invasive species. Restricting mowing during some periods and maintaining grass height will also create nesting habitat for some birds and provide cover and food for other animal species found in a natural grasslands ecological community.

In addition, PPRP Recommended Licensing Condition No. 16 specifically addresses the establishment of long-term pollinator habitat and the development of a Pollinator Habitat Plan.

Q. DOES THE FOREST CONSERVATION ACT APPLY TO THE PROJECT?

A. Yes. Under the requirements of the Maryland's Forest Conservation Act (FCA; Md. Code, Sections 5-1602(b)(5) and 5-1603 of the Natural Resources Article), a site proposed for development encompassing 40,000 square feet (approximately 1 acre) or greater is subject to FCA and will require a Forest Conservation Plan prepared by a licensed forester, licensed landscape architect, or other qualified professional. The developer must submit to the reviewing authority (in this case, Charles County) a Forest Stand Delineation and a Forest Conservation Plan.

Q. WHAT ARE PPRP'S RECOMMENDATIONS WITH RESPECT TO FOREST CONSERVATION?

A. PPRP recommends a license condition (Initial Recommended Licensing

Condition No. 10) that the Applicant will comply with the Charles County Forest Conservation Ordinance implementing the Maryland FCA. In addition, notwithstanding the amount of forest conservation mitigation required under the Charles County Forest Conservation Ordinance, PPRP recommends Licensing Condition No. 12 that the Applicant shall, at a minimum, provide for 1:1 mitigation for the amount of forest cleared for the Project. If the amount of forest conservation mitigation required by the County is less than 1:1, the Applicant, in coordination with PPRP, shall establish additional conservation easements to achieve 1:1 mitigation. If the amount of forest conservation mitigation required by the County is greater than 1:1, the County's requirement shall be met in full.

The Applicant has indicated a willingness to comply with the Charles County Forest Conservation Ordinance by placing forested resources in the vicinity of the Project Site into permanent Forest Conservation Easements (FCEs). In fact, in combination with the FCEs established for the nearby proposed MD Solar 1 facility, as well as an additional easement established elsewhere in the Nanjemoy Creek watershed, the Applicant has more than exceeded the requirement of Condition No. 12; however, the County's review of the project is pending.

Q. PLEASE DESCRIBE THE IMPACTS TO WILDLIFE THAT WOULD RESULT FROM CONSTRUCTION AND OPERATION OF THE PROJECT.

A. The proposed Project site is nearly completely forested, and likely provides wildlife habitats of at least moderate quality. Habitats are present for common regional woodland mammals such as white-footed mouse, red and gray foxes, gray squirrel, white-tailed deer, woodchuck, raccoon, and opossum. Habitats are also currently present for many common forest birds including red-bellied woodpecker, pileated woodpecker, downy and hairy woodpeckers, Acadian flycatcher, eastern wood pewee, Carolina chickadee, and many others. Loss of the site forest would have negative impacts on all of these wildlife species.

During the operational lifetime of the Project, PPRP anticipates that the Applicant's plan to establish a permanent grass cover throughout the site below and between the solar panels will encourage use by grassland species.

Q. ARE THERE ANY KNOWN LISTED THREATENED AND ENDANGERED SPECIES PRESENT ON OR ADJACENT TO THE SITE?

A. In response to a letter from the Applicant requesting environmental review of the proposed Project, the Maryland Department of Natural Resources Wildlife and Heritage Service (WHS) indicated in a July 5, 2017 letter that wetlands near Mill Run/Poorhouse Swamp in the southeast corner of the Project site support occurrences of the state Rare/Watchlist plant Primrose-willow (*Ludwigia decurrens*). The WHS record describes populations of the plant as growing along the edges of swamp habitat here.

The U.S. Fish and Wildlife Service (USFWS) indicated in a July 7, 2017 response letter to the Applicant that there are no Federal records for rare, threatened, or endangered (RTE) species within the Project area.

Q. WILL CONSTRUCTION AND OPERATION OF THE PROJECT RESULT IN IMPACTS TO RTE SPECIES?

A. The Applicant has indicated that by using construction practices with low impact disturbances, Environmental Site Design (ESD) practices, and other sediment and erosion controls, water quality in the vicinity of the site and downstream will “not be impacted and protected” and the habitat for the Primrose-Willow will not be impacted.

Q. DOES PPRP RECOMMEND ANY LICENSING CONDITIONS WITH RESPECT TO RTE SPECIES?

A. Yes. PPRP has recommended that if the Primrose-Willow or any other RTE

species is identified in the Project area prior to or during construction, the Applicant should coordinate with WHS to institute appropriate avoidance and/or minimization measures, such as fencing or flagging, the presence of an environmental monitor, or appropriate time of year restrictions (Initial Recommended Licensing Condition No. 17).

Q. PLEASE DESCRIBE THE WETLAND AND STREAM RESOURCES ON OR NEAR THE PROJECT SITE.

A. The Project site is located in the Lower Potomac River watershed; it is drained by Mill Run, which flows into the Nanjemoy Creek, and ultimately drains into the Lower Potomac River. The Applicant's ERD states that Nanjemoy Creek/Lower Potomac River is protected as a Class IP Use (Use IP: Water Contact Recreation, and Protection of Aquatic Life, and Public Water Supply; COMAR 26.08.02.08). Additionally, the proposed Project is located upstream of a Tier II segment of Mill Branch. Tier II waters are defined by the MDE as high quality streams, where water quality is better than the minimum standards specified by State water quality standards, where this high water quality will be maintained.

The MDE Nontidal Wetlands Division has reviewed the Project site and has determined that jurisdictional nontidal wetlands are present, but that no wetlands will be impacted owing to the proposed 35-foot setback from the drip line of the remaining trees on the site.

Q. WOULD CONSTRUCTION AND OPERATION OF THE PROJECT RESULT IN IMPACTS TO WETLANDS OR STREAMS?

A. Yes, the clearing of 215 acres of forested land could potentially have significant impacts to streams and wetlands in the vicinity of the Project site. The loss of forest is likely to increase sedimentation in the streams, increase water temperature, and alter the hydrology of the watershed. In addition,

approximately 10 acres of new impervious surfaces will be added to the existing site. This impervious surface could potentially alter stormwater flow, also impacting streams and wetlands in the vicinity of the Project site.

The Applicant's ERD states that the implementation of ESD practices when considering stormwater flow, including bioretention, swales, disconnection credits and other ESD practices will enable the Project site to function hydrologically as a forested site. PPRP agrees that the water quality leaving the site may be acceptable if appropriate ESD practices are applied, however, it is likely that the site will perform more like a grassland or meadow than a forest. Thus, there will be slower runoff and less surface evaporation than with an agricultural field, but not the deeper, longer water storage associated with tree root systems of a forest community.

Q. DOES PPRP RECOMMEND ANY LICENSING CONDITIONS WITH RESPECT TO STREAM RESOURCES?

A. Yes. PPRP has recommended a licensing condition that the Applicant employ erosion and sediment control best management practices (BMPs) standards and actions (Initial Recommended Licensing Condition No. 8). PPRP has recommended a license condition that requires assessment of all impacts to streams and their 100-year floodplains, and specifies that, if required, a copy of the federal/state Joint Wetlands and Waterways Permit Application be provided to PPRP for review before the start of construction (Initial Recommended Licensing Condition No. 9) Additionally, PPRP has recommended a license condition that states the construction of the Project shall not disturb or remove vegetation within the proposed 50-foot Resource Protection Zone established by the County for non-tidal wetlands and waterways located in the Project area. (Initial Recommended Licensing Condition No. 9a).

Q. DOES PPRP RECOMMEND ANY LICENSING CONDITIONS

SPECIFICALLY ADDRESSING PROTECTION TO TIER II STREAMS?

A. Yes. PPRP has recommended Initial Licensing Condition No. 13 as a means to protect the water quality in the Tier II portion of Mill Run, downstream of the Project Site. This condition specifically states that the Applicant shall implement Best Management Practices as identified in the Enhanced Best Management Practices for Tier II Waters provided by MDE. This licensing condition also requires that no permanent impacts shall occur within 100 feet of stream resources and that forest conservation mitigation measures shall be prioritized within the Mill Run watershed.

Additionally, PPRP Initial Recommended Licensing Condition 13d states that the Applicant shall conduct biological monitoring immediately downstream of the Project site in accordance with guidelines set forth by the MDE Environmental Assessment and Standards Program. The Applicant shall provide post-construction results reports to both MDE and PPRP.

PPRP Initial Recommended Licensing Condition No. 13e states that the Applicant shall provide a report to MDE and PPRP that demonstrates the social and economic need for the project and justifies a potential lowering of the water quality within the Tier II stream segment. The report shall include a detailed description of the alternatives analysis process used to determine the avoidance and mitigation practices.

Q. PLEASE DESCRIBE THE ENVIRONMENTAL CONTEXT OF THE TRANSMISSION INTERCONNECTION FOR THE PROJECT.

A. The Applicant has indicated that the interconnection for the Project will be to the Hawkins Gate 69 kV Substation via the SMECO transmission system at an open 69 kV bay within the existing SMECO 69 KV Ripley switching station. In response to PPRP Data Request No. 1-5, the Applicant states that the Project's

interconnection generation tie line will be under ground and constructed via directional drilling on Project owned land. To eliminate or minimize wetland impacts, the Applicant has proposed rising directly into the substation, a riser pole just outside of the substation inside the wetlands if required by SMECO for good utility practice, or, a riser pole outside of the wetlands, if feasible. The Applicant is still in the process of working with SMECO to determine the ultimate connection configuration, equipment locations for the Project and for SMECO, and width of required SMECO footprint and right-of-way (ROW), if any. The Applicant and SMECO are working together to eliminate or minimize wetland impacts for the Project.

Q. WOULD CONSTRUCTION AND OPERATION OF THE TRANSMISSION INTERCONNECT RESULT IN ANY BIOLOGICAL IMPACTS?

A. As currently designed, the transmission interconnection for the project would entail clearing forest for the substation and other electrical interconnection equipment.

Q. PLEASE SUMMARIZE THE IMPACT OF THE CONSTRUCTION AND OPERATION OF THE PROJECT ON NATURAL RESOURCES.

A. The clearing of 215 acres of forest resources is the single largest biological impact due to the construction and operation of this site. Clearing this forest not only impacts the vegetation resources of the site, but also could potentially impact wildlife habitat and stream water quality.

Of utmost concern are the impacts associated with the Tier II portion of Mill Run, downstream of the Project site. The Applicant states that they will use appropriate ESD practices and install appropriate BMPs in order to minimize impacts to downstream water quality.

In addition, the Applicant will mitigate the loss of the forest resources by the

1 establishment of FCEs that meet what is required by both Charles County and
2 PPRP.

3 **Economic, Demographic, and Fiscal Issues**

4 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE ECONOMIC,**
5 **DEMOGRAPHIC AND FISCAL IMPACTS OF THE PROPOSED PROJECT?**

6 A. Construction will occur over an approximately 6-month period beginning in
7 winter 2018. During the peak construction period, the Project will create
8 approximately 60-80 direct design, management and construction jobs on site or
9 at remote locations. Most construction activities are not expected to require
10 highly specialized skills. As a result, the Project is likely to source many
11 construction jobs from the local labor pool if area subcontractors competitively
12 bid the work. This will have a positive effect on the local economy from
13 construction worker payrolls and subsequent consumption expenditures, local
14 purchases of common construction materials, and associated multiplier effects.
15 Not all benefits will accrue to Maryland since specialized components,
16 particularly PV panels, are manufactured elsewhere and will be imported into
17 the State.

18 With most of the construction workforce within daily commuting distance, the
19 Project will have no effect upon population and housing, or on population-
20 related public service provision. With public service levels largely unaffected,
21 the net benefit of Project construction will be positive for Charles County and
22 Maryland.

23 The Project will have no on-site operations or maintenance (O&M) facilities, nor
24 will it have a permanent O&M workforce. Fiscal benefits will be in the form of
25 corporate income tax revenues to the State, and utility property tax or Payment
26 in Lieu of Taxes (PILOT) revenues to Charles County.

Land Use

Q. WHAT ARE YOUR CONCLUSIONS REGARDING LAND USE IMPACTS DUE TO THE PROPOSED PROJECT?

A. The Project will be located in an unincorporated part of Charles County near the Town of La Plata. The Project will consume about 215 acres of a mostly forested tract totaling 256 acres. Forest surrounds the three Project parcels, although a residential subdivision lies immediately to the north. None of the area within the Project's limit of disturbance is classified as prime farmland.¹ The Project is not located within the County's Priority Preservation Area or the Chesapeake Bay Critical Area. The Project site is not within a Priority Funding Area nor is it dependent on State infrastructure funding.

The subject is zoned RC – Resource Conservation. Charles County permits large solar energy systems as a Special Exception in all zones provided the project meets certain requirements. PPRP notes that the Project was granted Special Exception by the Charles County Board of Appeals on May 8, 2018. The Board of Appeals review is necessary to ensure that the final site plan complies with all existing local laws, regulations and ordinances, and provides a basis for the issuance of building and grading permits. PPRP is recommending a license condition requiring the Applicant to design the facility in substantial conformity to Charles County site plan requirements, and has received site plan approval and all required local permits prior to the commencement of construction (Initial Recommended License Condition No. 19).

Construction will involve clearing and grading of forested areas. Site preparation will be consistent with plans approved by the Charles County Soil Conservation District Office. Post-construction, the land uses of other properties

¹ Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses.

in the area will not change if the Applicant adopts all PPRP recommended license conditions.

Transportation

Q. WHAT ARE YOUR CONCLUSIONS REGARDING TRANSPORTATION IMPACTS FROM THE PROPOSED PROJECT?

A. Transportation impacts on nearby roads will be limited to the construction period. Construction workers and trucks will access the Project site from temporary entrances off Ripley Road. Construction worker traffic will increase background traffic volumes at the beginning and end of each workday, primarily on weekdays. With 60-80 total jobs during peak construction activities, no more than 60 or so automobiles or light trucks will be added daily to local roads. PPRP does not expect additional construction worker traffic will reduce the level of service (LOS) on roads near the Project, even if coincident with morning and evening peak hour traffic.

During early stages of construction, large excavation equipment and cranes will be delivered to the site. The Applicant estimates panel delivery for a Project of this size will probably require approximately 100 deliveries using 53-foot combination vehicle trailers, and between 500 and 600 total truck deliveries. The Applicant has proposed a Traffic Management Plan to Charles County in its Special Exception Application, which limits the duration and number of trucks on-site, and constrains truck deliveries to times that mitigate disruptions to existing commuter traffic. PPRP has concluded that truck traffic will not affect existing motor vehicle traffic near the Project site. Post construction, the Project will not be a significant traffic generator. Most traffic to the site during operations will be light vehicles.

The Applicant has stated there will be no oversize or overweight vehicles

necessary for material delivery to the Project. During construction, some loads transporting site preparation equipment to or from the Project site could be oversize or overweight. The State Highway Administration (SHA) requires hauling permits for transporting oversize or overweight loads on Maryland highways. Charles County does not have a specific “heavy haul” permit, but grants oversize/overweight permits through its blanket permitting process. PPRP has included a recommended license condition requiring the Applicant to comply with all permit requirements for use, crossing and occupancy of State and Charles County roads (Initial Recommended License Condition No. 20).

Q. ARE THERE ANY OTHER MATTERS WITH REGARD TO POTENTIAL TRANSPORTATION IMPACTS FROM THE PROPOSED PROJECT?

A. Yes. Federal Regulation Title 14 Part 77 provides the Federal Aviation Administration (FAA) with the authority to conduct aeronautical studies of proposed activities that could affect airspace. These studies review physical incursions of proposed structures into airspace, interference with radar communications and any other conditions such as glare that might negatively affect air traffic. Off-airport solar Projects in the vicinity of an airport have the responsibility to inform the FAA about proposed Projects so that the agency can determine if the Project presents any safety or navigational problems.

The closest airport is Ty-Ti-To Airport, a private use facility with a turf runway, about one-half mile from the Project. Maryland Airport in Indian Head is the closest public use airport², approximately 4.25 miles north.

PPRP undertook a glare study on the flight paths into nearby airports. In no case was glare from the Project predicted. PPRP has concluded the Project will not

² A public use airport is an airport available for use by the general public without a requirement for prior approval of the airport owner or operator. FAA standards and notification requirements for objects affecting navigable airspace apply only to public use airports, military airports, and heliports.

have an adverse effect upon air navigation.

Visual Quality

Q. WHAT ARE PPRP'S CONCLUSIONS REGARDING THE PROPOSED PROJECT'S VISUAL IMPACTS?

A. The terrain of the Project property is moderately rolling. Mature forest blocks views of the interior of the site from the Project perimeter. Sitting between one and seven feet above ground, the solar arrays will have a low visual profile.

The Project's site plan shows a 50-foot setback between Project structures and property line. A 6-foot chain link fence will enclose a 26-foot unpaved grass-covered roadway. Except where Ripley Road bisects the Project area, existing woods between the property line and perimeter fence screen the Project from adjoining properties. Along both sides of Ripley Road, the site plan shows a 25-foot landscape buffer between the road's right-of-way and perimeter fence.

PPRP has concluded that Charles County site plan review will ensure landscaping and buffer yard requirements will fully screen the Project from adjoining properties and Ripley Road, enhance the appearance of the Project and reduce incompatibilities between other land uses in the Project area.

Buffer yard requirements in Charles County Zoning Regulations include inspection, bonding and ongoing maintenance requirements to achieve the intended purposes of landscaping. PPRP has recommended a license condition requiring the Applicant to certify to the PSC and to PPRP that it has executed a bonding and buffer yard maintenance agreement that conforms to County regulations (Initial Recommended License Condition No. 21).

The Project has no lighting requirements, although outdoor lighting may be necessary for security, or to satisfy OSHA statutory requirements for worker

safety. Exterior lighting standards are codified in the Charles County Code. PPRP has concluded that the Project will not create a new source of substantial light if its lighting plan satisfies the County's exterior lighting standards.

PPRP undertook a glare analysis of the Project estimating the intensity, time-of-day and duration of glare upon nearby residences and public roads. In no case is glare cast upon any observation point. While the Charles County Code includes a clause empowering the Board of Appeals to impose performance guaranties and conditions to mitigate effects, including glare, on surrounding properties, PPRP is requiring the Applicant to develop a process to document and address complaints related to potential solar reflections (Initial Recommended License Condition No. 23).

Cultural and Aesthetic Resources

Q. WHAT ARE YOUR CONCLUSIONS REGARDING IMPACTS ON HISTORICAL AND CULTURAL RESOURCES FROM THE PROPOSED PROJECT?

A. No property on the National Register of Historic Places is within one mile of the Project site. One property on the Maryland Inventory of Historic Properties is within one mile, but outside the Project's area of potential effect. The Maryland Historical Trust (MHT) holds no easement within one mile of the Project. In its review of the Project, the MHT determined there are no historic properties in the APE. The County archeologist has determined no archeological work is required for the Ripley Road property. PPRP has recommended a license condition requiring the Applicant, in consultation with and as approved by the MHT, to develop and implement a plan for avoidance and protection, data recovery, or destruction without recovery of such relics or sites (Initial Recommended License Condition No. 24).

The Project is not within the Southern Maryland Heritage Area. MD 225, which connects Ripley Road to the regional highway network, is a SHA-designated bicycle trail. It is also a segment of the Religious Freedom Tour, a Maryland Scenic Byway. Because of the road's favorable geometry, PPRP does not expect the additional traffic generated by the Project during construction will adversely affect cyclists or motorists following the Religious Freedom Tour. Ripley Road is not a scenic or historic road.

Public Services and Safety

Q. WHAT ARE YOUR CONCLUSIONS REGARDING IMPACTS ON PUBLIC SERVICES AND SAFETY FROM THE PROPOSED PROJECT?

A. During construction and operation, no additional public services will be required to support the Project under normal conditions. In the event of a fire or accident at the facility, the Division of Communications within the Charles County Department of Emergency Services (DES) will dispatch emergency responders. The nearest fire station is the 10th District Volunteer Fire Department (VFD) in Pisgah, about three road-miles from the Project site. DES provides career Emergency Medical Technicians and Paramedic personnel and a hazardous material response and mitigation capability on land and water. The Charles County Sheriff's Office is the primary law enforcement agency in County.

Post-construction, the risk of fire from ground-mounted photovoltaic systems is low if site preparation and maintenance has removed potential fuels from under and around the arrays. Fire prevention guidance for ground-mounted PV installations is contained within the National Fire Protection Association's NFPA 1 Fire Code Handbook and NFPA 70 National Electrical Code. PPRP has recommended a license condition requiring the Applicant to design, install and maintain the Project to meet the minimum standards set forth in NFPA 1 and NFPA 70 (Initial Recommended License Condition No. 25).

Although the likelihood of fire is low, there are unique challenges facing firefighters at PV facilities. Charles county fire and rescue is a mostly volunteer system where standard operating procedures or guidelines may not currently address operations at PV facilities. PPRP has recommended a license condition requiring the Applicant to contact the 10th District VFD VFC and the Charles County Department of Emergency Services to develop appropriate protocols for addressing on-site emergencies (Initial Recommended License Condition No. 27).

Property Values

Q. WHAT ARE YOUR CONCLUSIONS REGARDING IMPACTS ON PROPERTY VALUES FROM THE PROPOSED PROJECT?

A. With a minimal vertical profile and both existing and proposed buffering along parts of the perimeter of the site, the Project will be largely out of sight from nearby properties. The Project's operation will not emit significant traffic, noise, air or water pollutants, nor will it generate any hazardous waste that could potentially affect public health. At the end of the facility's useful life, a decommissioning plan will return the Project site to its original state. That the proposed facility will have a moderately benign local presence once the facility is operational suggests that property values will be unaffected by the Project.

Noise Impact Assessment

Q. WHAT ARE YOUR CONCLUSIONS REGARDING NOISE IMPACTS FROM THE PROPOSED PROJECT?

A. Noise generally consists of many frequency constituents of varying loudness. Three decibels (dB) is approximately the smallest change in sound intensity that can be detected by the human ear. A tenfold increase in the intensity of sound is expressed by an additional 10 units on the dB scale, a 100-fold increase by an additional 20 dB. Because the sensitivity of the human ear varies according to

1 the frequency of sound, a weighted noise scale is used to determine impacts of
2 noise on humans. This A-weighted decibel (dBA) scale weights the various
3 components of noise based on the response of the human ear. However, sound
4 energy dissipates with increasing distance from the noise source. For every
5 doubling of the distance, the sound pressure level produced by a given noise
6 source decreases by approximately 6 dBA.

7 Operational noise from PV facilities is typically low. The PV panels and support
8 equipment do generate some noise, primarily associated with the power
9 inverters and electrical transformers. While there is some audible noise
10 associated with the motors in the solar panel tracking mechanism, a 2013 report
11 from Argonne National Laboratory concluded that such mechanical noise was
12 not a significant source of noise for off-site receptors. Measured noise levels
13 from the PV arrays are expected to decline to ambient background noise levels at
14 distances between 50 and 150 feet. Based on shows the proposed conceptual
15 layout for the Project, the distance from the inverter pad to the nearest residential
16 property line is approximately 700 feet. At this distance, noise generated by the
17 solar facility will be well below ambient background noise levels and therefore
18 will have no significant impact at residential receptors. Construction of the solar
19 facility will generate noise during daytime hours; this will be a temporary
20 impact.

21 PPRP's recommended Condition No. 4j would require that the construction and
22 operation of the proposed solar facility comply with applicable regulatory
23 standards. Charles County Code Chapter 260-3 establishes allowable noise levels
24 of 60 dBA (day) and 50 dBA (night) at residential property lines. Under State
25 noise regulations, daytime construction cannot create noise levels that 90 dBA
26 (COMAR 26.02.03). PPRP anticipates that, based on the available information,
27 the Project will meet these construction and operational noise limits.

Electromagnetic Field Impact Assessment

Q. WILL THE PROJECT CREATE ANY HUMAN HEALTH IMPACTS DUE TO ELECTROMAGNETIC FIELDS (EMF)?

A. EMF levels, in particular magnetic field levels, from the proposed Project are projected to fall below threshold human health standards at a distance of 3 feet, therefore the 50-foot buffer from the solar panels to the property line is sufficient so that EMF levels from the Project are not anticipated to pose a potential health risk to nearby residents.

Q. DOES THAT CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes, it does.

APPENDIX A:
STATEMENT OF QUALIFICATIONS
for Frederick S. Kelley

Frederick S. Kelley has served as a project manager with the Maryland Power Plant Research Program (PPRP) since July 2012. Mr. Kelley is responsible for management, oversight and analysis of environmental impact assessments related to construction, operations, and maintenance of high voltage transmission lines and electrical generating facilities. Additional activities have included review and editing of Environmental Review Documents for transmission lines and power plants; managing contracts for projects supported by PPRP; editing and publishing PPRP's biennial Cumulative Environmental Impact Report (CEIR-17).

As an environmental consultant, Mr. Kelley has over 25 years of experience managing projects related to the siting, construction and operation of power plants with emphasis on potential impacts to terrestrial and aquatic resources including wetlands and streams, forests, wildlife and vegetation, and rare, threatened, and endangered species. He also managed and conducted research projects on power plant generation and transmission facilities affecting environmental resources in Maryland. Mr. Kelley has conducted environmental impact assessments in accordance with regulations implementing the National Environmental Policy Act (NEPA). For numerous federal clients, Mr. Kelley prepared NEPA documents including Environmental Assessments (EA) and Environmental Impact Statements (EIS) that evaluated potential impacts to environmental resources including noise, air quality, biological, aquatic, hydrologic, geologic, cultural and historic, and socioeconomic resources.

Education: B.S. Biology, University of Maryland, College Park, MD. 1989.