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**Case Number (if already assigned)** *PU12-2020-00235*

**Case Name (if known)** Application of Cavalier Solar A, LLC for Certificates of Public Convenience and Necessity for a solar generating facility totaling up to 240 MWac and associated interconnection facilities

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October 5, 2020

**By Electronic Filing**

Mr. Joel H. Peck, Clerk  
State Corporation Commission  
Document Control Center  
Tyler Building, First Floor  
1300 East Main Street  
Richmond, VA 23219

Re: ***Application of Cavalier Solar A, LLC  
For Certificates of Public Convenience and Necessity for a solar  
generating facility Totaling up to 240 MWac and associated  
interconnection facilities to be located in Surry County and Isle of  
Wight County, Virginia  
Case No. PUR-2020-00 235***

Dear Mr. Peck:

Enclosed for filing in the above-referenced proceeding please find the **PUBLIC VERSION** of the Application of Cavalier Solar A, LLC, for Certificates of Public Convenience and necessity for a solar generating facility totaling up to 240 MWac and associated interconnection facilities to be located in Surry County and Isle of Wight County, Virginia. Please note that Cavalier Solar A, LLC is filing a Motion for Protective Ruling under a separate cover.

Should you have any questions about this filing, please do not hesitate to contact me.

Sincerely,

/s/ Brian R. Greene

Brian R. Greene

**Enclosures**

c: William H. Chambliss, Esq.  
C. Meade Browder, Jr., Esq.  
Mr. Ben Saunders

**COMMONWEALTH OF VIRGINIA  
STATE CORPORATION COMMISSION**

**APPLICATION OF**

**Cavalier Solar A, LLC,**

**For Certificates of Public Convenience  
And Necessity for a solar generating  
facility totaling up to 240 MWac and  
associated interconnection facilities to be  
located in in Surry County and Isle of  
Wight County, Virginia**

**CASE NO. PUR-2020-00\_**

**APPLICATION**

**PUBLIC VERSION**

**Filed: October 5, 2020**

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**COMMONWEALTH OF VIRGINIA  
STATE CORPORATION COMMISSION**

**APPLICATION OF**

**Cavalier Solar A, LLC,**

**For Certificates of Public Convenience  
And Necessity for a solar generating  
facility totaling up to 240 MWac and  
associated interconnection facilities to be  
located in in Surry County and Isle of  
Wight County, Virginia**

**CASE NO. PUR-2020-00\_\_**

**APPLICATION**

Cavalier Solar A, LLC ("Applicant"), by counsel, submits this Application to the State Corporation Commission ("Commission") for Certificates of Public Convenience and Necessity ("CPCNs"), pursuant to §§ 56-46.1, 56-265.2 and 56-580 D of the Code of Virginia ("Code") and 20 VAC 5-302, for the construction and operation of: (1) a solar generating facility totaling up to 240 MWac in Surry County and Isle of Wight County (the "Solar Generating Facilities"); and (2) the necessary transmission lines to interconnect the Solar Generating Facilities to the transmission grid, which includes: (a) a 34.5 kV medium voltage feeder line ("Feeder Line") to interconnect the Solar Generating Facilities with the collector substation; and (b) a 500 kV generation-tie line ("Gen-Tie Line") to interconnect the collector substation to the transmission grid at the Septa Substation (the "Interconnection Facilities," and together with the Solar Generating Facilities, the "Project").

The attached Appendix 1 includes the information regarding the Solar Generating Facilities required pursuant to 20 VAC 5-302-20. The attached Appendix 2 includes the information regarding the Interconnection Facilities required pursuant to the Commission's "Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia."

In support of this Application, the Applicant states as follows:

**I. The Applicant**

The Applicant is a special-purpose entity responsible for developing, constructing, owning, and operating the Project. The Applicant is a Delaware limited liability company, and a direct, wholly-owned subsidiary of sPower Development Company, LLC, which is a wholly-owned direct subsidiary of sPower, LLC ("sPower"). AES Corporation (through AES Lumos Holdings, LLC) and Alberta Investment Management Corporation ("AIMCo") (through PIPS Lumos LLC) each own fifty percent (50%) of the common voting equity of sPower.

sPower and its subsidiaries have extensive experience in the development, construction, and operation of renewable generating facilities. sPower and its subsidiaries have a portfolio that includes 1,886 MW (direct current), and 1,561 MW (alternating current) of solar and wind projects in operation. Presently, sPower is one of the largest private owners of operating solar assets in the United States.<sup>1</sup> sPower is backed by AES Corporation (\$10.1 billion in revenues in 2019 and owns and manages \$32.5 billion in assets) and AIMCo (\$119 billion of assets under management).

More particularly to this Application, sPower and its subsidiaries have significant experience developing utility scale solar generating and interconnection facilities in Virginia. sPower and its subsidiaries have received CPCN orders approving the 500MW Spotsylvania Solar Energy Center<sup>2</sup> and approving the 320MW Skipjack Solar Center<sup>3</sup>. The Spotsylvania project is under construction

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<sup>1</sup> See Exhibit D for a list of operating projects.

<sup>2</sup> *Application of Pleinmont Solar, LLC, et al., For certificates of Public Convenience and Necessity for a nominal 500 MW Solar Generating Facility in Spotsylvania County pursuant to VA Code sections 56-46.1 et al.*, Case No. PUR-2017-00162, Order Granting Certificates (Aug. 8, 2018).

<sup>3</sup> *Application of Skipjack Solar Center LLC, et al., for Certificates of public convenience and necessity for solar generating facilities totaling up to 320 MWac in Charles City County, Virginia*, Case No. PUR-2019-00073, Order Granting Certificates (March 5, 2020).

and fifty percent (50%) complete, while the Skipjack facility is expected to break ground in October 2020.

The Applicant and sPower bring significant resources and expertise to support the successful development of the Project that will ensure that the Project is able to be brought to completion after obtaining all necessary approvals.

## **II. Nature of the Proposed Project**

The Project consists of solar generating facilities that will have a total nameplate capacity of up to 240 MWac and associated interconnection facilities.<sup>4</sup> The Project will be located in southeastern Surry County and northeastern Isle of Wight County. The Project will be developed, constructed, owned, and operated by Cavalier Solar A, LLC and is anticipated to be in-service on or before December 31, 2022.

### **1. Overall Description of the Project and the Project Site**

The Project will be constructed on approximately 1,776 acres, located in a rural area, on a compilation of parcels consisting of agricultural land and cleared forest and timber land (the "Project Site").

The Project Site within Surry County is currently zoned Agricultural Rural ("A-R") and is anticipated to be rezoned to Light General Industrial ("M-1"), consistent with Surry County's zoning ordinances for solar energy facilities. The Project Site within Isle of Wight County is currently zoned Rural Agricultural Conservation District ("RAC"), consistent with Isle of Wight County's zoning ordinances for solar energy facilities. The surrounding land use is primarily

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<sup>4</sup> There is potential for the Project to include an intelligent battery system at the Project Site for energy storage. To the extent that the Applicant would elect to move forward with a storage option, the Applicant would seek separate Commission approvals (or supplement then existing approvals), if necessary. At this time, the Applicant anticipates that any storage included in the Project would utilize the existing interconnection queue position and point of interconnection location.



silviculture with limited agricultural and rural residences. The Septa Substation, to which the Project will interconnect to the transmission system, is located adjacent to the southeast portion of the Project Site, in Isle of Wight County, on a parcel owned by the Virginia Electric and Power Company ("VEPCO").

The Project Site is traversed by several state routes. Access to the southern portion of the Project Site in Isle of Wight County is available from State Routes 621 and 626 (Burwells Bay Road and Mill Swamp Road, respectively). Access to the northern portion of the Project Site in Surry County is available from the State Route 617 (White Marsh Road) intersection with Route 626 (Beechland Road).

## **2. Solar Generating Facilities**

The Project will use photovoltaic ("PV") modules mounted on racking systems supported by a pile-driven foundation design. The racking configuration will be a single-axis tracking configuration with north-south trending rows that will track the sun from east to west over the course of the day. The modules will be electrically connected into strings that will be connected to combiner boxes located throughout the Solar Generating Facilities. The output power cables from the combiner boxes will be consolidated and feed the direct current ("DC") electricity to inverters which convert the DC to alternating current ("AC"). The AC output from the inverters will be routed through an AC collection system and consolidated within the system switchgear.

## **3. Interconnection Facilities**

The Project will include approximately two (2) miles of 34.5kV medium voltage Feeder Line and an approximately 0.35-mile 500 kV Gen-Tie Line to interconnect with the PJM transmission system at the Septa Substation. The 34.5 kV Feeder Line would begin 1.4 miles southeast of the intersection of Route 617 (White Marsh Rd.) and Route 626 (Beechland Rd.). From that point, it parallels Route 626 for 0.6 miles. The route then

continues 1.4 miles southeast, in parallel with the existing 500 kV electric transmission line right-of-way into the Project collector substation ("Cavalier Collector Substation"). The 500 kV Gen-Tie Line, traveling south from the Cavalier Collector Substation, runs east for 0.35 miles and enters the north side of the VEPCO Septa Substation property. Attached as Exhibit F is a layout of the routes for the proposed 34.5 kV and 500 kV lines.<sup>5</sup> All energy will be stepped up to 500 kV and then will be routed to the Septa Substation via the Gen-Tie Line from the Cavalier Collector Substation.

#### **4. Proposed Use of the Project**

The electricity, capacity and associated green attributes generated from the Project will be sold pursuant to a long-term power purchase agreement with an offtaker located in the transmission region operated by PJM Interconnection LLC ("PJM").

### **III. Applicant's Technical and Financial Fitness to Develop, Construct, Operate and Maintain the Proposed Facility**

As discussed above and throughout this Application, the Applicant, through its parent entity, sPower, possesses extensive experience in project development, construction, and operation and maintenance of energy generating facilities such as the Project. sPower and its subsidiaries have developed, financed, constructed, and are operating approximately 1,886 MW of renewable generating capacity. It is expected that the Project will be financed in a manner consistent with industry practices, and will include construction debt, permanent debt and tax equity.

### **IV. The Effects of the Facility on the Environmental and Economic Development**

#### **1. Overview of Environmental Impacts**

As described in detail in the Environmental Assessment included with this Application

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<sup>5</sup> See also Appendix 2.

(Exhibit G), there will be minimal adverse environmental effects associated with the Project and the Applicant will comply with all necessary conditions imposed by the regulatory agencies with oversight responsibilities for all environmental aspects of the Project to ensure protection of public health and the environment.

The Project is comprised of Solar Generation Facilities, with associated Interconnection Facilities, and consequently will not emit any pollutants during operation or require any air permits. The Project will use water during construction and may use water from time to time during operation, primarily for cleaning should natural precipitation not be sufficient. The Applicant will seek any necessary permits for water withdrawal. No permits for the discharge of process and/or wastewater will be required since no water is used in the energy generating process. Storm water discharges will be addressed in compliance with Surry and Isle of Wight County and Virginia Department of Environmental Quality requirements, both during construction and during operation of the Project. Potential impacts to wetlands would include conduit crossings and road crossings for construction and maintenance vehicles; however, the Applicant does not anticipate significant impacts to Waters of the United States. The Applicant does not expect any negative impacts to natural heritage resources or threatened endangered species as a result of the Project. The Project will obtain all necessary permits and approvals required for environmental impacts and anticipates that there will be minimal environmental impacts associated with the Project.

## **2. Overview of Economic Development Impacts**

It is expected that the Project will create approximately 787 full-time equivalent jobs in Surry and Isle of Wight Counties during the course of construction of the Project, and approximately nine (9) full time jobs with benefits when the Project is in operation. In addition, the Project will increase the tax base in Surry and Isle of Wight Counties and the

Commonwealth and will generate an increase in property taxes, as well as Commonwealth sales tax. The Project will also generate additional direct and indirect spending in the area from purchases from local merchants and vendors with an estimated \$10.6 million in cumulative county revenue over the 35-year life of the Project.

**V. Request for Commission Approval**

The Applicant seeks approval for the Project, pursuant to §§ 56-46.1 and 56-580 D of the Code – including approval of the Interconnection Facilities that will be constructed to support the Project, pursuant to §56-265.2 the Code. The Company respectfully requests that the Commission notice and proceed with its consideration of the Project at this time.<sup>6</sup>

**VI. Construction and Operation of the Proposed Facility Promotes the Public Interest.**

As required by § 56-580 D of the Code, the Project is not contrary to the public interest and will also promote the public interest by providing economic benefits to Surry and Isle of Wight Counties and the surrounding area. The Project will have no material adverse effect on the reliability of electric service provided by any regulated public utility and only relatively minor upgrades to the electric transmission system are required as a result of the Project. As a condition of interconnection with the interstate transmission system, the Applicant will be obligated to complete and/or pay for all required upgrades to the system in accordance with an Interconnection Services Agreement and Interconnection Construction Service Agreement that have been or will be entered into among the Applicant, PJM, and the transmission owner.<sup>7</sup> The Project will leverage the Commonwealth's existing infrastructure as it will utilize an existing

<sup>6</sup> The Applicant is not seeking approval for a battery system for energy storage at this time. In the event the Applicant elects to move forward with a storage option, the Applicant would seek separate Commission approvals (or supplement then-existing approvals).

<sup>7</sup> *Application of Pleinmont Solar, LLC, et al., For certificates of public convenience and necessity for a 500 MW solar generating facility in Spotsylvania County pursuant to §§ 56-46.1 and 56-580 D of the Code of Virginia*. Case No. PUR-2017-00162, Order Granting Certificates at 15 (Aug. 8, 2018).

switching station located on a nearby parcel. The Project requires no additional fuel or fuel transportation for operation and will be constructed and operated in a way to minimize any adverse environmental impact.

As the Applicant is not a regulated utility, the business risk associated with the Project will be borne solely by the Applicant, with no impact on the base rates paid by the ratepayers in Virginia. The Project will enhance the competitive market for wholesale electricity in the region by offering generation that will not be owned by an incumbent electric utility, will minimize any adverse environmental impacts, and will advance the goals of the Commonwealth by increasing in-state energy production to meet in-state demand with renewable generation sources.

Specifically, the Project promotes the recommendations set out in the 2018 Virginia Energy Plan, by providing additional renewable generating capacity in the Commonwealth. The 2018 Energy Plan set as a recommendation the Commonwealth's 8% renewable energy procurement target, established in 2015, be doubled to 16% by 2022.<sup>8</sup> Additionally, the Project supports the goals of the recently passed 2020 Virginia Clean Economy Act.<sup>9</sup> The Project's generation would enhance local reliability and meet rising consumer demand for energy generated from renewable sources. Additionally, because the Project will increase the availability of renewable energy in the Commonwealth, it will attract commercial and industrial opportunity as part of Virginia's new economy.

## **VII. Applicable Standard**

For generating facilities, such as the Solar Generating Facilities included in the Project,

<sup>8</sup> 2018 Virginia Energy Plan at 18-19, available at: <https://www.governor.virginia.gov/media/governorvirginiagov/secretary-of-commerce-and-trade/2018-Virginia-Energy-Plan.pdf>.

<sup>9</sup> 2020 Va. Acts of Assembly Ch. 1193.

that are not constructed and operated by a regulated entity whose rates are regulated pursuant to § 56-581.1 of the Code, § 56-580 D of the Code requires a finding that:

Such generating facility and associated facilities (i) will have no material adverse effect upon reliability or electric services provided by any regulated public utility... and (iii) are not otherwise contrary to the public interest.

This Application and attached exhibits (including the PJM interconnection studies<sup>10</sup>), together with the Applicant's testimony, show that the Project will have no material adverse effect upon the reliability of electric service provided by a regulated utility. In fact, the Application shows that the Project will help support the reliability of the region by providing additional in-state generation. Further, this Application demonstrates that, far from being contrary to the public interest, the Project is in fact in the public interest as it will provide significant economic benefits to the local area and will add to the competitive market for wholesale electricity in the region with renewable generation.

Further §§ 56-46.1 A and 56-580 D of the Code require that the Commission "shall give consideration to the effect of the facility and associated facilities on the environment" and that:

any valid permit or approval required for an electric generating plant and associated facilities issued or granted by a federal, state or local governmental entity charged by law with responsibility for issuing permits or approvals regulating environmental impact and mitigation of adverse environmental impact or for other specific public interest issues such as building codes, transportation plans, and public safety, whether such permit or approval is granted prior to or after the Commission's decision, shall be deemed to satisfy the requirements of this section with respect to all matters that (i) are governed by the permit or approval or (ii) are within the authority of, and were considered by, the governmental entity in issuing such permit or approval.

To the extent the Interconnection Facilities require separate approval pursuant to § 56-265.2 of

<sup>10</sup> Applicant has attached the completed PJM Feasibility Study, PJM System Impact Study and PJM Facility Study, as Exhibits H, I and J, respectively, to the Application.

the Code, the Interconnection Facilities are still required to meet the standards outlined in § 56-46.1 A.<sup>11</sup>

To assist the Commission and other reviewing agencies in satisfying this requirement, Appendices 1 and 2 review and include information related to all permits and approvals that must be obtained for the Project. As the Application shows, due to the design and operation of the Project, as well as the applicable regulatory requirements, the Project will have no or minimal adverse environmental effects.

Finally, § 56-46.1 A requires that:

the Commission (a) shall consider the effect of the proposed facility on economic development within the Commonwealth, including but not limited to furtherance of the economic and job creation objectives of the Commonwealth Energy Policy set forth in §§ 67-101 and 67-102, and (b) shall consider any improvements in service reliability that may result from the construction of such facility.

Similarly, § 56-596 A of the Code provides that, “[i]n all relevant proceedings pursuant to [the Virginia Electric Utility Regulation] Act, the Commission shall take into consideration, among other things, the goal of economic development in the Commonwealth.” As the Application shows, the Project will have a clear and beneficial impact on economic development in the Commonwealth and advances the goals set forth in the Commonwealth Energy Policy. Further, the Project will help support and will likely improve the reliability of electric service in the Commonwealth and PJM region by providing additional generation in the region.

For transmission facilities such as the Interconnection Facilities, § 56-46.1 B of the Code

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<sup>11</sup> See *Application of Foxhound Solar, LLC, for approval and certification of certain electrical facilities associated with a small renewable energy project*, Case No. PUR-2019-00107, Final Order at 4-5, 8 (Oct. 17, 2019).

states in part:

[N]o electrical transmission line of 13 8 kilovolts or more shall be constructed unless the State Corporation Commission shall, after at least 30 days' advance notice by (i) publication in a newspaper or newspapers of general circulation in the counties and municipalities through which the line is proposed to be built, (ii) written notice to the governing body of each such county and municipality, and (iii) causing to be sent a copy of the notice by first class mail to all owners of property within the route of the proposed line, as indicated on the map or sketch of the route filed with the Commission, which requirement shall be satisfied by mailing the notice to such persons at such addresses as are indicated in the land books maintained by the commissioner of revenue, director of finance or treasurer of the county or municipality, approve such line. Such notices shall include a written description of the proposed route the line is to follow, as well as a map or sketch of the route including a digital geographic information system (GIS) map provided by the public utility showing the location of the proposed route. The Commission shall make GIS maps provided under this subsection available to the public on the Commission's website.

The Applicant will provide notice as required and has included proposed language for publication in Appendix 2.

In addition to the applicable statutory requirements, the Project satisfies the Commission's minimum application requirements for CPCN applications of this nature. Appendix 1 contains all information regarding the Solar Generating Facilities required by 20 VAC 5-302-20. Appendix 2 contains all information regarding the Interconnection Facilities required by the Commission's "Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia."

ACCORDINGLY, for the reasons set forth in this Application, the Applicant respectfully requests that the Commission grant Certificates of Public Convenience and Necessity to construct and operate the Project, including the Solar Generating Facilities and the Interconnection Facilities, and any other relief that the Commission deems necessary or



appropriate.

Respectfully Submitted,

CAVALIER SOLAR A, LLC

By Counsel

/s/ Brian R. Greene

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*Counsel for Cavalier Solar A, LLC*

Date: October 5, 2020

**CERTIFICATE OF SERVICE**

I certify that on this 5<sup>th</sup> day of October, a true copy of the foregoing Application for  
Certificates of Public Convenience and Necessity was delivered electronically to the  
following:

C. Meade Browder, Jr., Esq.  
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/s/ Brian R. Greene

**APPENDIX 1 TO STATE CORPORATION COMMISSION  
FOR APPROVAL AND CERTIFICATION OF sPower Solar Facility Project**

Information Required Pursuant to 20 VAC 5-302-20<sup>1</sup>

Applicant proposes to construct a solar generating facility producing a total of approximately 240 Megawatts ("MWac") in Isle of Wight and Surry Counties, Virginia (the "Project").

1. Legal Name of applicant as well as any trade names

Cavalier Solar A, LLC (the "Applicant").

2. The Applicant's authorized business structure

Applicant is organized as follows:

Cavalier Solar A, LLC is a Delaware limited liability company, with a certificate of registration as a foreign limited liability company issued by the Commission on July 13, 2020.

3. Name and business addresses of all principal corporate officers, directors, or LLC members

Applicant is a wholly-owned indirect subsidiary of sPower, LLC, a Delaware limited liability company ("sPower"). Specifically, Applicant is a wholly-owned direct subsidiary of sPower Development Company, LLC, which is a wholly-owned direct subsidiary of sPower. A chart describing the upstream ownership of Applicant is attached as Exhibit A.

Applicant's and sPower's principal place of business is 2180 South 1300 East, Suite 600, Salt Lake City, Utah 84106.

4. Financial information

sPower has raised over \$4.7 billion in committed capital, including \$1 billion in tax equity and \$3.3 billion in debt commitments to date to support its 1.8 GW of operational projects.

The audited financial statements of sPower, LLC for 2019 fiscal year is attached as EXTRAORDINARILY SENSITIVE Exhibit B.

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<sup>1</sup> The Applicant is providing the information required by 20 VAC 5-302-20 for the purpose of supporting its application for a CPCN for its solar generating facility (the "Solar Generating Facilities"), pursuant to Virginia Code §§ 56-46.1 and 56-580 D. To the extent the information requested is not applicable or currently unavailable, the Applicant has so noted herein. Appendix 1 contains information regarding the 34.5 kV "Feeder Line" and 500 kV "Gen-Tie Line" (collectively, the "Interconnection Facilities") only to the extent that these transmission lines are "associated facilities" pursuant to §§ 56-46.1 and 56-580 D and that 20 VAC 5-302-20 seeks information regarding interconnection requirements and facilities. For information regarding the Interconnection Facilities required by the Commission's "Guidelines for Transmission Line Applications Filed Under Title 56 of the Code of Virginia," please refer to Appendix 2.

5. Pre-filed testimony in support of the application

Applicant's request for approval and certification of the Project is supported by the prepared direct testimony of Benjamin Saunders attached as Exhibit C.

6. Discussion of Applicant's Qualifications

- (a) *Summary of other projects developed and managed by the applicant: location, status and operational history.*

sPower, LLC, has a portfolio that includes over 1,500 MW (AC) of solar and wind projects in operation or under construction, most of which were developed and built by sPower subsidiaries. Presently, sPower is one of the largest private owners of operating solar assets in the United States. Please see the chart of operating assets attached as Exhibit D.

Additionally, sPower and its subsidiaries have significant experience developing utility scale solar in Virginia. sPower and its subsidiaries have received CPCN orders for the 500MW Spotsylvania Solar Energy Center (PUR-2017-00162 -August 2018) and for the 320MW Skipjack Solar Center (PUR-2019-00073 – March 2020). The Spotsylvania project is under construction and 50% complete while the Skipjack facility is expected to break ground in October 2020.

- (b) *Detailed description of organizational structure of the applicant, including division of ownership, if applicable*

Applicant is a wholly owned indirect subsidiary of sPower. AES Corporation (through AES Lumos Holdings, LLC) and Alberta Investment Management Corporation (through PIP5 Lumos LLC) each own fifty percent (50%) of the common voting equity (for a cumulative total of one hundred percent (100%)) of sPower, LLC. A chart showing the ownership of Applicant and its relationship with sPower is attached as Exhibit A.

- (c) *Description of any affiliation or affiliations with incumbent electric utility in Virginia:*

None.

7. Specific Information about the site for the proposed facility (the "Project")

- (a) *Written description of the location that is suitable for newspaper publication and for identification of affected areas*

The Project will be located in Surry County and Isle of Wight Counties, Virginia, on the border between the counties, and the intersection of Beechland Road (route 626) and White Marsh Road (route 617) bordering the northwest part of the Project. The Project will interconnect to VEPCO's Septa Substation located on Mill Swamp Road (route 626).

The Project will be constructed on approximately 1,766 acres (the "Project Site"), and will support generating capacity of up to 240 MWac in size.

- (b) *Description of the site: (depiction on topographic maps of the site)*

**Public Version**

The Project Site is located in a rural, harvested forest and on timber land as well as agricultural land. Currently the land is zoned Agriculture Rural ("A-R") in Surry County and Rural Agricultural Conservation (RAC) in Isle of Wight County. The Applicant anticipates the Surry County parcels will be rezoned to General Industrial (M-1) as required by the Surry County Solar Ordinance. The surrounding land use is primarily silviculture with some agricultural use and rural residences. The Septa Substation is located next to and directly east of the eastern most portion of the Project Site on a parcel owned by Virginia Electric and Power Company ("VEPCO").

The Project Site is traversed by several state routes. Access to the southern portion of the Project Site in Isle of Wight County is available from State Routes 621 and 626 (Burwells Bay Road and Mill Swamp Road respectively). Access to the northern portion of the Project Site is available from State Route 617 (White Marsh Road) intersection with Route 626 (Beechland Road). Attached as Exhibit E is a preliminary layout of the Project.

(c) *Status of the site acquisition*

Currently Sustainable Property Holdings, LLC, a Delaware limited liability company ("Holdings") and wholly owned subsidiary of sPower and the Applicant hold option contracts with the property owners for the purchase or lease of land for the entire Project Site.

(d) *Description of any applicable local zoning or land use approvals required, and status of such approvals*

Solar energy facilities in Surry County are permitted in areas designated as General Industrial (M-1) and in Isle of Wight are permitting in Agricultural (A-1) with issuance of a conditional use permit ("CUP"). As noted, the Applicant anticipates the parcels in Surry County will be rezoned to M-1. The approval process in Surry County requires a re-zoning, comprehensive plan amendment and CUP. In Isle of Wight County only a CUP is required. Applications have been submitted to both counties and the process for approvals are expected to be completed by March 31, 2021.

8. Specific Information about the proposed facility

(a) *Description of all major systems, facility configuration and expected suppliers of major components*

The Solar Generating Facilities will utilize solar photovoltaic ("PV") modules mounted on racking systems supported by a pile-driven foundation design. The racking configuration is expected to be a single-axis tracking configuration with north-south trending rows that will track the sun from east to west over the course of the day.

Modules will be electrically connected into strings that will be connected to combiner boxes located throughout the solar generating facility. The output power cables from the combiner boxes will be consolidated and feed the direct current ("DC") electricity to inverters which convert the DC to alternating current ("AC"). Each inverter will be fully enclosed, pad mounted, and stand approximately 95 inches in height. The AC output from the inverters will be routed through an AC collection system and consolidated within the system switchgear. The final output from the solar generating facility will be processed through a step-up transformer to match the interconnection voltage.

## Public Version

There is the potential for the Project to include a battery system at the Project Site for energy storage. To the extent that the Applicant would elect to move forward with a storage option, the Applicant would seek separate Commission approvals (or supplement then existing approvals). At this time, the Applicant anticipates that any storage included in the Project would utilize the existing interconnection queue position and point of interconnection location.

The Project will be designed with a comprehensive Supervisory Control and Data Acquisition ("SCADA") system for remote monitoring of facility operations and/or remote control of critical components. Within the Project Site, the fiber optic or other cabling required for the monitoring system will be installed throughout the solar generating facility leading to centrally located (or a series of appropriately located) SCADA system cabinets. The telecommunications connections to the SCADA system cabinets may be wireless or hard wired.

The Project will include a meteorological ("met") data collection system. The met station will have the following weather sensors: a pyranometer for measuring solar irradiance, a thermometer to measure air temperature, a barometric pressure sensor to measure atmospheric pressure, and two wind sensors to measure speed and direction. These sensors will be connected to a data logger to compile the data for transmission to the Data Collection Center.

All energy will be routed to the Project collector substation (the "Cavalier Collector Substation"), located on property adjacent to the VEPCO Septa Substation, at which point all energy from the Project will be stepped up to 500 kV. The Cavalier Collector Substation includes the main circuit breaker and utility metering equipment and would be enclosed separately, and pad mounted together with the generator step-up ("GSU") transformer. Both the GSU and the primary switchgear stand approximately 8 feet in height with conductors that increase the total height to approximately 27 feet. Lighting masts for security will stand approximately 65 feet in height. Additional information regarding the Interconnection Facilities is included in Appendix 2.

An operations and maintenance facility will be located on-site to store maintenance equipment and vehicles, safety equipment, replacement components, and other items deemed necessary for Project operations. The Applicant is in the process of finalizing arrangements with suppliers of major Project components.

- (b) *Nameplate capacity, gross dependable capacity, net dependable capacity, and expected seasonal heat rates*

The Project will have a total nameplate capacity of up to 240 MWac; seasonal heat rates are not applicable as the Project does not utilize fossil fuels to generate electricity. It is expected that up to 240 MWac of the Project capacity will be online by December 31, 2022.

- (c) *estimated costs, and schedule for construction, testing and commercialization*

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The Project is expected to start construction in March 2021, with substantial completion of the facility by December 2022. Testing and commissioning will take place between October through December 2022.

The Project is estimated to cost [BEGIN EXTRAORDINARILY SENSITIVE] [END EXTRAORDINARILY SENSITIVE].

The schedule is dependent on VEPCO's completion of construction of interconnection facilities pursuant to the Project's Interconnection Construction Services Agreement.

The following table includes key target milestones that are associated with the development, engineering, construction, and commissioning of the Project. The estimated completion dates for these milestones are based on the most recent information and are subject to the Commission's approval of this Application.

Development Milestone	Estimated Completion Date
Conditional Use Permit Approvals	Q1 2021
Submission of CPCN	September 2020
Selection of EPC	December 2020
Engineering Design	January 2021
State Corporation Commission Approval	March 2021
Building Permit	March 2021
Site Clearing	April 2021
Construction	April 2021
Commissioning	October - December 2022
Commercial Operation Date	December 2022

9. Description of fuel supply arrangement for the proposed facility

(a) *Fuel type, quality and source or sources*

The Project is a solar generating facility and its fuel source is the sun.

(b) *Transportation, Fuel Storage, Fuel Delivery*

There is no proposed transportation, fuel storage or fuel delivery related to this project.

(c) *identification of all new pipeline facilities, if any, needed to serve the proposed facility*

Not Applicable.

(d) *ownership of such facilities*

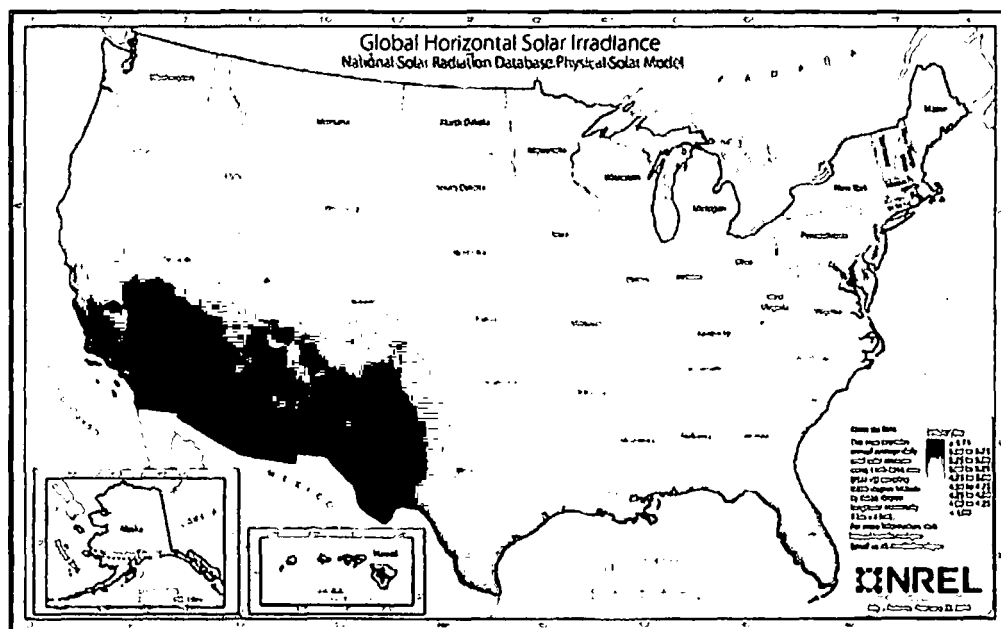
Not Applicable.

(e) *plans for constructing such facilities*

Not Applicable.

- (f) *location and routing of any such facilities*  
Not Applicable.
- (g) *size of such facilities*  
Not Applicable.
- (h) *whether such facilities will be utilized to provide or enhance fuel supplies to other entities*  
Not Applicable.
- (i) *identification of the pipeline or gas distribution company, rate schedule the applicant intends to utilize in order to serve the proposed generating facility. if service is firm or interruptible*  
Not Applicable.
- (j) *if applicant is to be served by firm capacity from an interstate pipeline, identification of whether capacity is to be acquired through the construction of new facilities, via capacity that is currently unsubscribed, or through capacity purchased on the secondary market*  
Not Applicable.
- (k) *if pipeline capacity is to be constructed, identification of the FERC docket Number or an open season that has been held by the interstate pipeline*  
Not Applicable.
- (l) *if pipeline capacity is to be purchased on the secondary market, identification of the availability of secondary market capacity in the plant's market area during days that the plan intends to operate*  
Not Applicable.
- (m) *identification of the proposed in-service date of any facilities to be constructed*  
Not Applicable.
- (n) *in general terms, description of the availability of fuel supplies required to serve the proposed facility*  
The average monthly solar radiation level in Richmond, Virginia is 4.83 kilowatt hours per square meter per day (kWh/m<sup>2</sup>/day).





10. Discussion of economic impacts, both positive and negative, of the project. [discussion should address the tax and employment implications of the project]

The Project will:

- Create new job opportunities in Surry and Isle of Wight Counties, with approximately 787 full time equivalent jobs during construction and approximately nine (9) full time jobs with benefits following the completion of construction
  - Increase the tax base in the counties and the Commonwealth, and an increase in property taxes as well as other taxes (converting the land use of the Project Site from agriculture to industrial will increase the assessed value and increase the tax revenue without requiring additional services from the County)
  - Generate additional direct and indirect spending from purchases from local merchants and vendors
11. List of other local, state, or federal government agencies whose requirements must be met in connection with the construction or operation of the project and a statement of the status of approval procedures for each of these agencies

- (a) *Surry and Isle of Wight Counties:*

The Project requires approval of a CUP by each of the Surry and Isle of Wight Counties' respective Board of Supervisors. Applications have been submitted to both counties and the process for approvals are expected to be completed by March 31, 2021.

The Project also requires building permits from both counties for construction of the Project. The Applicant anticipates receiving building permits in March 2021.

(b) *Department of Environmental Quality:*

The Project will comply with the Virginia Stormwater Management Program administered by the Virginia Department of Environmental Quality ("DEQ") and requires a Stormwater Construction General Permit. A Stormwater Construction General Permit will be acquired prior to construction of the Project.

The Project requires identification and delineations of wetlands and Waters of the United States. Depending on the type and amount of impacts, a Section 401 Permit may be required by the Virginia DEQ. The Project will be designed to minimize impacts to Waters of the United States.

The Project will use water during construction and may use water from time to time during operation, primarily for cleaning should natural precipitation not be sufficient. The Applicant will seek any necessary permits for water withdrawal. No permits for the discharge of process and/or wastewater will be required, however, as no water is used in the generating process.

(c) *Department of Historic Resources:*

The Project will comply with the general requirements of the Virginia Department of Historic Resources and Section 106 of the National Historic Preservation Act. See Exhibit Q - Phase IA Cultural Resource Assessment.

(d) *Department of Transportation:*

The Project requires entrance permits from the Virginia Department of Transportation for construction of driveways off State roadways. The Applicant anticipate entrance permits in March 2021.

(e) *Federal Energy Regulatory Commission:*

The Project will file for market-based rate authority (FERC §205) and exempt wholesale generator status on or about May of 2021.

(f) *US Army Corps of Engineers:*

The Project requires identification and delineations of wetlands and Waters of the United States. Depending on the type and amount of impacts, a Section 404 Permit may be required by the US Army Corps of Engineers ("USACE"). The Project will be designed to minimize impacts to Waters of the United States.

12. Analysis of the Environmental Impact. § 56-46.1, 56-580D.

See the "Environmental Assessment" attached as Exhibit G for required information and analysis regarding the environmental impact of the Project.

13. General discussion of reliability impacts including:

- (a) *Description of transmission interconnection requirements and needed interconnection facilities*

See Appendix 2 – Transmission Line Application.

- (b) *Description of the potential impact of the proposed facility on the interconnected transmission system. Discussion should identify and summarize any system impact studies or proposed studies.*

The Project is identified as number AC1-161 in the PJM Interconnection L.L.C. (“PJM”) generation queue. It is subject to PJM Open Access Transmission Tariff and to the Dominion Energy Facility Connection Requirements. As such, it completed the “Generation Interconnection Feasibility Study Report for PJM Generation Interconnection Request Queue Position AC1-161, Septa 500kV, 168.2 MW Capacity/240 MW Energy,” dated May 2017 (“Feasibility Study”) – attached as Exhibit H – and the “Generation Interconnection System Impact Study Report for PJM Generation Interconnection Request Queue Position AC1-161, Septa 500kV, 168.2 MW Capacity/240 MW Energy,” dated December 2017/Revised June 2020 (“System Impact Study”). This report is attached as Exhibit I. The “Generation Interconnection Facility Study Report For PJM Generation Interconnection Request Queue Position AC1-161 Septa 500kV 168.2 Capacity/240 MW Energy,” dated June 2020, (the “Facility Study”) is attached as Exhibit J.

The Facility Study examined the contributions to previously identified overloads, contributions to previously identified system reinforcements, and potential congestion due to local energy deliverability. The impacts were found to result in the following estimated interconnection costs (expressed in millions of dollars):

Attachment Facilities	\$ 2.55
Direct Connection Network Upgrades	\$ 0.00
Non-Direct Connection Network Upgrades	\$ 3.93
<u>Contribution for Previously Identified Upgrades</u>	<u>\$ 00.079</u>
<u>Allocation of New System Upgrades</u>	<u>\$ 00.054</u>
Total	\$ 6.613

- (c) *Description of anticipated services (ancillary services, re-dispatch, energy imbalance, etc.) that may be provided to any transmission service provider.*

Applicant may need to request point-to-point transmission capacity if part, or all, of the project output has a power purchase agreement (“PPA”) contract with external (non-PJM) offtakers.

Applicant will not be providing ancillary services in PJM.

- (d) *Discussion of existing and expected generation reserves in the region and the impact of the proposed facility on such reserves.*

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The Project may support procurement needs led by the Commonwealth of Virginia's newly enacted Virginia Clean Energy Act (2020) and of Fortune 50 and Fortune 100 commercial and industrial clients, with a specific requirement of renewable energy only, with delivery in the Virginia market.

14. Proposed Facility is not contrary to the public interest.

- The Project will promote the public interest by providing economic benefits to Surry and Isle of Wight Counties and the surrounding area, including, providing 787 full time equivalent employment opportunities during construction, up to nine (9) high-paying operating positions, and estimated \$10.6 million in cumulative county revenue over the expected life of the Project. *See, e.g. Application of Virginia Electric and Power Company, for approval and certification of the proposed Greensville County Power Station and related transmission facilities pursuant to §§ 56-580 D, 56-265.2, and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider GV, pursuant to § 56-585.1 A 6 of the Code of Virginia, PUE-2015-00075, Final Order at 10-11 (March 29, 2016), finding that "[t]here will be direct and indirect economic benefits related to the construction and operation of the facility, including job creation and increases in local and state tax revenues," and Application of CPV Warren, LLC, For a certificate of public convenience and necessity for electric generation facilities in Warren County, Virginia, Case No. PUE-2002-00075, Final Order at 17, (March 13, 2003), finding that the facility is not contrary to the public interest as it would provide economic benefits.*

See Exhibit M, the Mangum Report, for information on the potential impacts from the Project.

- The Project will have no material adverse effect on the reliability of electric service provided by any regulated public utility. *See Va. Code § 56-580D. PJM has completed feasibility, system impact, and facilities analyses and has identified certain upgrades to the transmission system that are required to accommodate the Project's reliable interconnection. The Applicant, as a condition of its interconnection with the transmission system, will be obligated to complete and/or pay for these project upgrades and the required upgrades will be installed in accordance with an Interconnection Services Agreement and Interconnection Construction Service Agreement entered into among the Project, PJM, and VEPCO. Accordingly, the Project will have no material adverse effect on the reliability of electric service provided by any regulated public utility consistent with the Commission's finding in Application of Pleinmont Solar, LLC et al., For certificate of public convenience and necessity for a 500 MW solar generating facility in Spotsylvania County pursuant to § 56-46.1 and 56-580 D of the Code of Virginia, Case No. PUR-2017-00162, Order Granting Certificates at 15 (Aug. 8, 2018).*
- The Project promotes the goals set out in the 2020 Virginia Clean Energy Act.
- The Project will leverage the Commonwealth's existing infrastructure as it will utilize an existing switching station located on an adjacent parcel. The Project requires no additional fuel or fuel transportation for operation.
- The Project meets rising demand in the Mid-Atlantic region with appropriate, environmentally responsible technology. The Project's generation would enhance local

reliability and meet rising consumer demand for energy generated from renewable sources. Additionally, because the Project will increase the availability of renewable energy in the region, it will attract commercial and industrial opportunity as part of Virginia's new economy.

- As the Applicant is not a regulated utility, the business risk associated with the project will be borne solely by the Applicant, with no impact on the rates paid by the ratepayers in Virginia. *See CPV Application*, Final Order at 17, finding that the facility is not otherwise contrary to the public interest in that "rates for the regulated public utility will not be impacted."
- The Project will be constructed and operated in a way to minimize any adverse environmental impact as more fully described in the Environmental Assessment provided in responses to Section (12) above.
- The Project is being designed to comply with all local, state, and federal regulation pertaining to the environment. Impacts to the Waters of the United States will be avoided as much as possible, with the main impact relating to conduits and road crossings. Additionally, a Stormwater Management Program will be implemented, threatened and endangered species will be protected, buffer areas along wetlands will be maintained, and best management practices will be implemented to avoid erosion and impacts to local water resources. A major goal of the Project is to avoid and minimize impacts to natural and cultural resources to the maximum extent possible. The Applicant will work closely with regulatory agencies and subcontractors to ensure all mitigation measures are properly implemented and maintained throughout construction and operation of the Project.

15. How facility will further goal of electric competition in Virginia

The Project will enhance the competitive market for wholesale electricity in the region. As Staff has found in previous applications, "competition is benefited by the construction and operation of generation that is owned or controlled by a company other than an incumbent electric utility...[S]uch capacity has a desirable effect on competition." *Application of CPV Warren, LLC*, Hearing Examiner's Report (Nov. 25, 2002)

*See also Application of Tenaska*, Order at 15 (Jan. 16, 2002), finding that "the proposed facility should help develop wholesale competition in the region which, in turn, should help advance the goal of competition in the Commonwealth."

**APPENDIX 2 TO STATE CORPORATION COMMISSION FOR APPROVAL AND CERTIFICATION OF  
SPOWER INTERCONNECTION FACILITIES ASSOCIATED WITH SPOWER SOLAR FACILITY PROJECT**

**Information Required Pursuant to the Commission's "Guidelines for Transmission Line Applications  
Filed Under Title 56 of the Code of Virginia"<sup>1</sup>**

**I. NECESSITY FOR THE PROPOSED PROJECT**

- A. State the primary justification for the proposed project (for example, the most critical contingency violation including the first year and season in which the violation occurs). In addition, identify each transmission planning standard(s) (of the Applicant, regional transmission organization ("RTO"), or North American Electric Reliability Corporation) projected to be violated absent construction of the facility.**

The 34.5 kV Feeder Line and the 500 kV Gen-Tie Line are required to interconnect the Solar Generating Facilities to the transmission grid. Specifically, the 34.5 kV Feeder Line will interconnect the various solar generation equipment comprising the Solar Generating Facilities to the Project's collector substation (the "Cavalier Collection Substation"), and the 500kV Gen-Tie Line will interconnect the Project's Cavalier Collection Substation with the Virginia Electric and Power Company ("VEPCO") Septa 500 kV Substation.

- B. Detail the engineering justifications for the proposed project (for example, provide narrative to support whether the proposed project is necessary to upgrade or replace an existing facility, to significantly increase system reliability, to connect a new generating station to the Applicant's system, etc.). Describe any known future project(s), including but not limited to generation, transmission, delivery point or retail customer projects, that require the proposed project to be constructed. Verify that the planning studies used to justify the need for the proposed project considered all other generation and transmission facilities impacting the affected load area, including generation and transmission facilities that have not yet been placed into service. Provide a list of those facilities that are not yet in service.**

In addition to the information provided in Section I.A. above, the Interconnection Facilities are to be used exclusively for interconnecting the Project's Solar Generating Facilities to the transmission grid. To the extent that the Project subsequently adds battery storage, it is not anticipated that such storage will affect the necessary Interconnection Facilities described herein, and will not increase the interconnection capacity at the point of interconnection with transmission system at the Septa Substation.

- C. Describe the present system and detail how the proposed project will effectively satisfy present and projected future electrical load demand requirements. Provide pertinent load growth data (at least five years of historical summer and winter peak demands and ten years of projected summer and winter peak loads where applicable). Provide all assumptions inherent within the projected data and describe why the existing system cannot**

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<sup>1</sup> The Applicant is providing the information required by the Guidelines for the purpose of supporting its application for CPCNs for the 34.5 kV "Feeder Line" and 500 kV "Gen-Tie Line," pursuant to Virginia Code § 56-265.2. To the extent the information requested in the Guidelines is not applicable or currently unavailable, the Applicant has so noted herein. For information regarding the Project required pursuant to 20 VAC 5-302-20, please refer to Appendix 1.

adequately serve the needs of the Applicant (if that is the case). Indicate the date by which the existing system is projected to be inadequate.

The Applicant does not operate a present system. Please see the answers to Sections I.A and B. above regarding the justification and need for the Interconnection Facilities with respect to new Solar Generating Facilities.

- D. If power flow modeling indicates that the existing system is, or will at some future time be, inadequate under certain contingency situations, provide a list of all these contingencies and the associated violations. Describe the critical contingencies including the affected elements and the year and season when the violation(s) is first noted in the planning studies. Provide the applicable computer screenshots of single-line diagrams from power flow simulations depicting the circuits and substations experiencing thermal overloads and voltage violations during the critical contingencies described above.**

Not applicable.

- E. Describe the feasible project alternatives, if any, considered for meeting the identified need including any associated studies conducted by the Applicant or analysis provided to the RTO. Explain why each alternative was rejected.**

The Application includes the studies issued by the PJM Interconnection, LLC ("PJM"). The Interconnection Facilities are a necessary component of the Project and required for the interconnection of the Solar Generating Facilities to the transmission grid.

- F. Describe any lines or facilities that will be removed, replaced, or taken out of service upon completion of the proposed project, including the number of circuits and normal and emergency ratings of the facilities.**

Not applicable.

- G. Provide a system map, in color and of suitable scale, showing the location and voltage of the Applicant's transmission lines, substations, generating facilities, etc., that would affect or be affected by the new transmission line and are relevant to the necessity for the proposed line. Clearly label on this map all points referenced in the necessity statement.**

The Applicant has no existing transmission lines, substations or generating facilities that would affect or be affected by the proposed Interconnection Facilities.

- H. Provide the desired in-service date of the proposed project and the estimated construction time.**

The current schedule for breaking ground for the entire Project, including the Interconnection Facilities, is April 2021, with Project commissioning (including back feed power) starting in October 2022, and Project commercial operation in December 2022. A more detailed study for the Interconnecting Facilities is contained in the June 2020 Facility Study Report (see Exhibit J).

- I. Provide the estimated total cost of the project as well as total transmission-related costs and total substation-related costs. Provide the total estimated cost for each feasible alternative considered. Identify and describe the cost classification (e.g. "conceptual cost," "detailed cost," etc.) for each cost provided.**

The Applicant respectfully requests waiver of the requirement to provide such information.

As the Applicant is not a regulated utility, the business risk associated with the Project, including the Interconnection Facilities, will be borne solely by the Applicant, with no impact on the electricity rates paid by the ratepayers in Virginia. The Applicant bears all the business risk associated with the Project, not the electric ratepayers of the Commonwealth. Thus, the business risk associated with constructing, owning, and operating the Project, which will not provide retail electric service in the Commonwealth and will not be included in the rate base of any incumbent electric utility, rests solely with the Applicant. *See, Application of CPV Warren, LLC, For a certificate of public convenience and necessity for electric generation facilities in Warren County, Virginia, Case No. PUE-2002-00075, Final Order at 17 (March 13, 2003). See also, Application of C4GT, LLC, For certification of an electric generating facility in Charles City County pursuant to § 56-580 D of the Code of Virginia, Case No. PUE-2016-00104, Final Order at 11 (May 3, 2017).*

The anticipated attachment and network upgrades resulting from the interconnection of the Interconnection Facilities to the existing transmission grid are set forth in the Facilities Study.

- J. If the proposed project has been approved by the RTO, provide the line number, regional transmission expansion plan number, cost responsibility assignments, and cost allocation methodology. State whether the proposed project is considered to be a baseline or supplemental project.**

The Applicant has an active PJM queue position for the solar generating facility: AC1-161. An Interconnection Service Agreement Among PJM Interconnection, L.L.C., and Cavalier Solar A, LLC and Virginia Electric and Power Company was executed by the Applicant on August 24, 2020 (see Exhibit L). The cost responsibility and description of the attachment facilities and network upgrades are set forth in the June 2020 Facility Study Report (see Exhibit J).

- K. If the need for the proposed project is due in part to reliability issues and the proposed project is a rebuild of an existing transmission line(s), provide five years of outage history for the line(s), including for each outage the cause, duration and number of customers affected. Include a summary of the average annual number and duration of outages. Provide the average annual number and duration of outages on all Applicant circuits of the same voltage, as well as the total number of such circuits. In addition to outage history, provide five years of maintenance history on the line(s) to be rebuilt including a description of the work performed as well as the cost to complete the maintenance. Describe any system work already undertaken to address this outage history.**

Not applicable.

- L. If the need for the proposed project is due in part to deterioration of structures and associated equipment, provide representative photographs and inspection records detailing their condition**

Not applicable.

- M. In addition to the other information required by these guidelines, applications for approval to construct facilities and transmission lines interconnecting a Non-Utility Generator ("NUG") and a utility shall include the following information:**



1. **The full name of the NUG as it appears in its contract with the utility and the dates of initial contract and any amendments;**

Cavalier Solar A, LLC

2. **A description of the arrangements for financing the facilities, including information on the allocation of costs between the utility and the NUG;**

The Facilities Study includes information on the Applicant's cost responsibility for the attachment facilities and network upgrades. It is expected that the Project will be financed in a manner consistent with industry practices, and will include construction debt, permanent debt and tax equity.

3. **a. For Qualifying Facilities ("QFs") certificated by Federal Energy Regulatory Commission ("FERC") order, provide the QF or docket number, the dates of all certification or recertification orders, and the citation to FERC Reports, if available;**

Not applicable.

**b. For self-certificated QFs, provide a copy of the notice filed with FERC;**

Not applicable.

4. **Provide the project number and project name used by FERC in licensing hydroelectric projects; also provide the dates of all orders and citations to FERC Reports, if available; and**

Not applicable.

5. **If the name provided in 1 above differs from the name provided in 3 above, give a full explanation.**

Not applicable.

- N. **Describe the proposed and existing generating sources, distribution circuits or load centers planned to be served by all new substations, switching stations and other ground facilities associated with the proposed project.**

There are no existing generating sources, distribution circuits or load centers affected by the Project.

The Project is new facility and is comprised of Solar Generating Facilities that will generate electricity only from sunlight and employ single-axis tracking technology. In addition to the Solar Generating Facilities, the Applicant will undertake the construction and use of the Interconnection Facilities (the Feeder Line and the Gen-Tie Line) described herein.

## II. **DESCRIPTION OF THE PROPOSED PROJECT**

All of the information provided in response to this Section II is based on conceptual designs and is subject to change based on final engineering design. Distance and measurements are approximate.

- A. **Right-of-way ("ROW")**

**1. Provide the length of the proposed corridor and viable alternatives.**

**500 kV Line ("Gen-Tie Line")**

The route is approximately 0.35 miles in length. Traveling south from the Cavalier Collector Substation, the line runs east for 0.35 miles and enters the north side of the VEPCO Septa Substation property. No alternative routes are proposed for the Project.

**34.5 kV Line ("Feeder Line")**

The Feeder Line is approximately two (2) miles in length and runs from the southern portion of the Project travelling southeast towards the Cavalier Collector Substation. The route starts 1.4 miles southeast of the intersection of Route 617 (White Marsh Rd.) and Route 626 (Beechland Rd.). From that point, it parallels Route 626 for 0.6 miles. The route then continues 1.4 miles southeast paralleling the existing 500 kV electric transmission line right of way into the Project collector substation. No alternative routes are proposed for the Project.

**2. Provide color maps of suitable scale (including both general location mapping and more detailed GIS-based constraints mapping) showing the route of the proposed line and its relation to: the facilities of other public utilities that could influence the route selection, highways, streets, parks and recreational areas, scenic and historic areas, open space and conservation easements, schools, convalescent centers, churches, hospitals, burial grounds/cemeteries, airports and other notable structures close to the proposed project. Indicate the existing linear utility facilities that the line is proposed to parallel, such as electric transmission lines, natural gas transmission lines, pipelines, highways, and railroads. Indicate any existing transmission ROW sections that are to be quitclaimed or otherwise relinquished. Additionally, identify the manner in which the Applicant will make available to interested persons, including state and local governmental entities, the digital GIS shape file for the route of the proposed line.**

**500 kV Line**

Please see Exhibit F – Proposed Feeder Line and Gen-Tie Line Routes. The Applicant will make the GIS shape file available upon request.

**34.5 kV Lines**

Please see Exhibit F – Proposed Feeder Line and Gen-Tie Line Routes. The Applicant will make the GIS shape file available upon request.

**3. Provide a separate color map of a suitable scale showing all the Applicant's transmission line ROWs, either existing or proposed, in the vicinity of the proposed project.**

Not applicable.

4. **To the extent the proposed route is not entirely within existing ROW, explain why existing ROW cannot adequately service the needs of the Applicant.**

The Applicant does not own any existing nearby ROWs and the nearby non-Applicant ROW is not large enough to accommodate additional electric transmission facilities.

5. **Provide drawings of the ROW cross section showing typical transmission line structure placements referenced to the edge of the ROW. These drawings should include:**

- a. **ROW width for each cross section drawing;**

500 kV Line - See Exhibit L - II.A.5.a

34.5 kV Line - See Exhibit L - II.A.5.b

- b. **Lateral distance between the conductors and edge of ROW;**

500 kV Line - See Exhibit L - II.A.5.a

34.5 kV Line - See Exhibit L - II.A.5.b

- c. **Existing utility facilities on the ROW; and**

500 kV Line - See Exhibit L - II.A.5.a

34.5 kV Line - See Exhibit L - II.A.5.b

- d. **For lines being rebuilt in existing ROW, provide all of the above (i) as it currently exists, and (ii) as it will exist at the conclusion of the proposed project.**

Not applicable.

6. **Detail what portions of the ROW are subject to existing easements and over what portions new easements will be needed.**

500 kV Line:

The 500kV line will cross a parcel that is subject to an existing option as well as an easement for the entire ROW.

34.5 kV Line:

New easements will be required for the entire ROW. An encroachment agreement will be required to cross the VEPCO 500 kV ROW. A VDOT Land Use permit will be required to cross Route 621.

**7. Detail the proposed ROW clearing methods to be used and the ROW restoration and maintenance practices planned for the proposed project.**

All clearing will comply with local, state and federal regulations to minimize impacts on the environment.

The ROW will be cleared and maintained using hand cutting and herbicide to control woody growth. The Applicant will follow DEQ recommendations for all clearing and other work conducted in or around wetlands.

Additionally, if applicable, danger trees located outside of the ROW that are tall enough to impact aboveground facilities may also need to be cut.

**8. Indicate the permitted uses of the proposed ROW by the easement landowner and the Applicant.**

500 kV Line:

The easement will only permit the installation of electric transmission facilities.

34.5 kV Line:

The VDOT permit and easement will only permit the installation of electric transmission facilities associated with the proposed solar facility.

**9. Describe the Applicant's route selection procedures. Detail the feasible alternative routes considered. For each such route, provide the estimated cost and identify and describe the cost classification (e.g. "conceptual cost," "detailed cost," etc.). Describe the Applicant's efforts in considering these feasible alternatives. Detail why the proposed route was selected and other feasible alternatives were rejected. In the event that the proposed route crosses, or one of the feasible routes was rejected in part due to the need to cross, land managed by federal, state, or local agencies or conservation easements or open space easements qualifying under §§ 10.1-1009 – 1016 or §§ 10.1-1700 – 1705 of the Code (or a comparable prior or subsequent provision of the Code), describe the Applicant's efforts to secure the necessary ROW.**

The Applicant has reviewed potential routes for the 34.5 kV and 500 kV lines, and based on that review, the Applicant chose the routes with the most direct access to the Project site and the Septa Station for which landowner approval could be obtained. The Applicant respectfully requests that it not be required to provide the estimated cost,

identify and describe the cost classification, or describe the Applicant's efforts in considering the feasible alternatives.

- 10. Describe the Applicant's construction plans for the project, including how the Applicant will minimize service disruption to the affected load area. Include requested and approved line outage schedules for affected lines as appropriate.**

The Applicant will work with VEPCO and PJM to schedule the proper time for local outages in order to construct the connection to the substation. This outage will not result in service disruptions. The Applicant will follow good utility practices and will be in compliance with the NESC, NEC, and IEEE standards related to the facility design and construction.

- 11. Indicate how the construction of this transmission line follows the provisions discussed in Attachment 1 of these Guidelines.**

In general, the proposed routes for the 34.5 kV and 500 kV lines follow the guidelines by paralleling existing electric transmission and transportation corridors to minimize impacts to nearby residents and the environment.

The Applicant has communicated with the Army Corps of Engineers prior to filing this application consistent with Guidelines.

The Applicant will follow FERC construction methods for installation of the facilities (Guideline Nos. 8, 10, 11, 15, 16, 18, 22, 34). Additionally, the Applicant will utilize FERC guidelines in the clearing of ROW, constructing facilities and maintaining ROW after construction and will follow Guideline Nos. 25, 52 and 57.

- 12. a. Detail counties and localities through which the line will pass. If any portion of the line will be located outside of the Applicant's certificated service area: (1) identify each electric utility affected; (2) state whether any affected electric utility objects to such construction; and (3) identify the length of line(s) proposed to be located in the service area of an electric utility other than the Applicant; and**

The Gen-Tie Line will be located entirely within Isle of Wight County and the Feeder Line will be located in Isle of Wight and Surry Counties, VA. The Applicant does not have a service area, however, the Feeder lines will be located in the service territories of Prince George Electric Cooperative and the Community Electric Cooperative. The Gen-tie line is located in VEPCO electric transmission service territory. Both Cooperatives and VEPCO have been notified about the Project and the Applicant will provide additional information on their respective positions on the Project when known.

- b. Provide three (3) color copies of the Virginia Department of Transportation "General Highway Map" for each county and city through which the line will pass. On the maps show the proposed line and all previously approved and certificated**

facilities of the Applicant. Also, where the line will be located outside of the Applicant's certificated service area, show the boundaries between the Applicant and each affected electric utility. On each map where the proposed line would be outside of the Applicant's certificated service area, the map must include a signature of an appropriate representative of the affected electric utility indicating that the affected utility is not opposed to the proposed construction within its service area.

See Exhibit K - General Highway Map. Once the lines are approved by the Commission, the General Highway Map will be signed by each of the co-operatives given the location of the Interconnection Facilities in their service territories.

## **B. Line Design and Operational Features**

- 1. Detail the number of circuits and their design voltage, initial operational voltage, any anticipated voltage upgrade, and transfer capabilities.**

500 kV Line:

One circuit operated at 500 kV with capacity to carry approximately 835 MWac at a power factor of 0.95 lead/lag. Voltage upgrades are not anticipated.

34.5 kV Line:

Collection lines operated at 34.5 kV with the capacity to carry approximately 360 MWac (each circuit at approximate 60 MWac) at a power factor of 0.95 lead/lag. Voltage upgrades are not anticipated.

- 2. Detail the number, size(s), type(s), coating and typical configurations of conductors. Provide the rationale for the type(s) of conductor(s) to be used.**

500 kV Line:

The Applicant anticipates using three-phase twin bundled 954 ACSR type conductor and two fiber optic shield wires and continues to undertake the engineering to determine the additional details for the conductor. This conductor and configuration is selected due to the increased voltage level of the line and the transfer capacity requirements.

34.5 kV Line:

Contingent on final line design, the Applicant is considering for each circuit segment of the line, the use of three phase 1272 ACSR type overhead conductors and one fiber optic shield wire. The conductor is selected to ensure adequate capacity with limited losses due to the voltage level. Layout of cables/conductors to be finalized based on physical constraints, optimal structure/line design, and thermal ampacity requirements.

3. With regard to the proposed supporting structures over each portion of the ROW for the preferred route, provide diagrams (including foundation reveal) and descriptions of all the structure types, to include:

- a. mapping that identifies each portion of the preferred route;
- b. the rationale for the selection of the structure type;
- c. the number of each type of structure and the length of each portion of the ROW;
- d. the structure material and rationale for the selection of such material;
- e. the foundation material;
- f. the average width at cross arms;
- g. the average width at the base;
- h. the maximum, minimum and average structure heights;
- i. the average span length; and
- j. the minimum conductor-to-ground clearances under maximum operating conditions.

500 kV Line - See Exhibit L - II.A.5.a (including narrative answers to the requested information)

34.5 kV Line - See Exhibit L - II.A.5.b (including narrative answers to the requested information)

4. With regard to the proposed supporting structures for all feasible alternate routes, provide the maximum, minimum and average structure heights with respect to the whole route.

Not applicable.

5. For lines being rebuilt, provide mapping showing existing and proposed structure heights for each individual structure within the ROW, as proposed in the application.

Not applicable.

6. Provide photographs for typical existing facilities to be removed, comparable photographs or representations for proposed structures, and visual simulations showing the appearance of all planned transmission structures at identified historic locations within one mile of the proposed centerline and in key locations identified by the Applicant.

There are no existing facilities to be removed.

The Applicant respectfully requests that it not be required to provide visual simulations.

- C. Describe and furnish plan drawings of all new substations, switching stations, and other ground facilities associated with the proposed project. Include size, acreage, and bus configurations. Describe substation expansion capability and plans. Provide one-line diagrams for each.**

The Applicant's Cavalier Collector Substation will be a 34.5/500 kV step-up substation. It will be built to accommodate the Project's anticipated 240 MWac. There will be one transformer that will have the appropriate MVA rating to carry the capacity of the project and meet power factor and VAR requirements. There will be one low-side, 34.5 kV bus. Each 34.5 kV feeder circuit coming into the Cavalier Collector Substation will be protected with a 34.5 kV feeder breaker. A 500 kV line will be run to VEPCO's property through private easements to the point of interconnection at the Septa Substation.

The Applicant will provide the Project's Cavalier Collector Substation single line diagrams and general arrangements as they become available and upon request.

### **III. IMPACT OF LINE ON SCENIC, ENVIRONMENTAL, AND HISTORIC FEATURES**

- A. Describe the character of the area that will be traversed by this line, including land use, wetlands, etc. Provide the number of dwellings within 500 feet, 250 feet and 100 feet of the centerline, and within the ROW for each route considered. Provide the estimated amount of farmland and forestland within the ROW that the proposed project would impact.**

The Project will be constructed on approximately 1,776 acres, located in a rural area, on a compilation of parcels consisting of agricultural land and cleared forest and timber land (the "Project Site"). The Project Site is located in a rural area, on a compilation of parcels consisting of agricultural land and cleared forest and timber land. The Project Site is currently zoned Agricultural Rural ("A-R") and is anticipated to be rezoned to Light General Industrial ("M-1"), consistent with Surry County's zoning ordinances for solar energy facilities. The Project Site within Isle of Wight County is currently zoned Rural Agricultural Conservation District ("RAC"), consistent with Isle of Wight zoning ordinances for solar energy facilities. The surrounding land use is primarily silviculture with limited agricultural and rural residences. There are a significant amount of mainly forested wetlands scattered throughout the project site.

There are no houses located within the ROWs of either proposed line.

#### **Dwellings Near the Lines:**

500 kV Line - 500ft (0 Dwellings), 250ft (0 Dwellings), 100ft (0 Dwellings)  
34.5 kV Line - 500ft (2 Dwellings), 250ft (1 Dwellings), 100ft (0 Dwellings)

The 500 kV line is estimated to impact approximately 5.3 acres of forest land within the ROW. The 34.5 kV line is estimated to impact approximately 12 acres of forest land within the ROW.

- B. Describe any public meetings the Applicant has had with neighborhood associations and/or officials of local, state or federal governments that would have an interest or responsibility with respect to the affected area or areas.**



The Applicant has held two open houses in September 2019 and is holding additional open houses in October 2020. The Applicant has also had numerous meetings and conversations with Isle of Wight and Surry County Administrators, Supervisors and Planning Commissioners.

- C. Detail the nature, location, and ownership of each building that would have to be demolished or relocated if the project is built as proposed.**

No buildings will be demolished or relocated.

- D. Identify existing physical facilities that the line will parallel, if any, such as existing transmission lines, railroad tracks, highways, pipelines, etc. Describe the current use and physical appearance and characteristics of the existing ROW that would be paralleled, as well as the length of time the transmission ROW has been in use.**

The 500kV Line and the 34.5 kV line parallel both the existing 500 kV VEPCO Transmission Line and Route 626 (Beechland Road). The 500 kV VEPCO Transmission Line consists of lattice cor-ten towers.

- E. Indicate whether the Applicant has investigated land use plans in the areas of the proposed route and indicate how the building of the proposed line would affect any proposed land use.**

The Applicant is in the process of obtaining all necessary local land authorizations from both Isle of Wight and Surry Counties, and such authorizations include the Interconnection Facilities.

- F. Government Bodies**

- 1. Indicate if the Applicant determined from the governing bodies of each county, city and town in which the proposed facilities will be located whether those bodies have designated the important farmlands within their jurisdictions, as required by § 3.2-205 B of the Code.**

The Applicant determined that Isle of Wight has designated important farmlands within the county. Surry County has not designated important farmlands.

- 2. If so, and if any portion of the proposed facilities will be located on any such important farmland:**

- a. Include maps and other evidence showing the nature and extent of the impact on such farmlands;**

See Exhibit P that shows the potential impact to farmland which is limited.

- b. Describe what alternatives exist to locating the proposed facilities on the affected farmlands, and why those alternatives are not suitable; and**

The Applicant has reviewed potential routes for the 34.5 kV and 500 kV lines. Based on that review, the Applicant chose the routes with the most direct access to the other Project site and the Septa Station for which landowner approval could be obtained.

- c. Describe the Applicant's proposals to minimize the impact of the facilities on the affected farmland.**

The proposed facilities will have a minimal impact on existing farmland as the land in ROW will still be able to be farmed.

**G. Identify the following that lie within or adjacent to the proposed ROW:**

- 1. Any district, site, building, structure, or other object included in the National Register of Historic Places maintained by the U.S. Secretary of the Interior;**

There are no district, site, building, structure, or other objects included in the National Register of Historic Places within or adjacent to the Feeder Line or Gen-tie ROW. See Exhibit Q - Phase IA Cultural Resource Assessment of the Cavalier Solar Project Area.

- 2. Any historic architectural, archeological, and cultural resources, such as historic landmarks, battlefields, sites, buildings, structures, districts or objects listed or determined eligible by the Virginia Department of Historic Resources ("DHR");**

There is one home listed as eligible by DHR (VDHR ID# 046-0064) approximately 5,800 ft from the Gen-tie ROW. Due to topography, existing transmission line development and existing forested areas there is no anticipated visual impact to this property.

- 3. Any historic district designated by the governing body of any city or county;**

There are no historic districts within or adjacent to the ROWs.

- 4. Any state archaeological site or zone designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body;**

There are no state archaeological sites or zones designated by the Director of the DHR, or its predecessor, and any site designated by a local archaeological commission, or similar body within or adjacent to the ROWs.

- 5. Any underwater historic assets designated by the DHR, or predecessor agency or board;**

There are no underwater historic assets designated by the DHR, or predecessor agency or board within or adjacent to the ROWs.

- 6. Any National Natural Landmark designated by the U.S. Secretary of the Interior;**

There are no National Natural Landmarks designated by the U.S. Secretary of the Interior within or adjacent to the ROWs.

- 7. Any area or feature included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation ("DCR");**

There are no areas or features included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation within or adjacent to the ROWs.

- 8. Any area accepted by the Director of the DCR for the Virginia Natural Area Preserves System;**

There are no areas or features included in the Virginia Registry of Natural Areas maintained by the Virginia Department of Conservation and Recreation within or adjacent to the ROWs.

- 9. Any conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code (or a comparable prior or subsequent provision of the Code);**

There is no known conservation easement or open space easement qualifying under §§ 10.1-1009 – 1016, or §§ 10.1-1700 – 1705, of the Code within or adjacent to the ROWs.

- 10. Any state scenic river;**

There is no state scenic river within or adjacent to the ROWs.

- 11. Any lands owned by a municipality or school district; and**

There are no lands owned by a municipality or school district within or adjacent to the ROWs.

- 12. Any federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facility. Features, sites, and the like listed in 1 through 11 above need not be identified again.**

There are no federal, state or local battlefield, park, forest, game or wildlife preserve, recreational area, or similar facilities within or adjacent to the ROWs.

- H. List any registered aeronautical facilities (airports, helipads) where the proposed route would place a structure or conductor within the federally-defined airspace of the facilities. Advise of contacts, and results of contacts, made with appropriate officials regarding the effect on the facilities' operations.**

None.

- I. Advise of any scenic byways that are in proximity to or that will be crossed by the proposed transmission line and describe what steps will be taken to mitigate any visual impacts on such byways. Describe typical mitigation techniques for other highways' crossings.**

There are no scenic byways in proximity to the proposed facilities. The proposed facilities only cross one road (Rt 621) and will minimize visual impacts by being located directly adjacent to the existing 500 kV line road crossing.

- J. Identify coordination with appropriate municipal, state, and federal agencies.**

For information regarding coordination with municipal, state and federal agencies, please refer to Appendix I.

- K. Identify coordination with any non-governmental organizations or private citizen groups.**

The Applicant has met with the Surry Chamber of Commerce on multiple occasions as well as the Friends of Surry County private citizens group.

- L. Identify any environmental permits or special permissions anticipated to be needed.**

For a list of environmental permits and special permissions, please refer to Appendix I.

#### **IV. HEALTH ASPECTS OF ELECTROMAGNETIC FIELDS ("EMF")<sup>2</sup>**

- A. Provide the calculated maximum electric and magnetic field levels that are expected to occur at the edge of the ROW. If the new transmission line is to be constructed on an existing electric transmission line ROW, provide the present levels as well as the maximum levels calculated at the edge of ROW after the new line is operational.**

The Applicant respectfully requests waiver of the requirement to provide such information.

- B. If the Applicant is of the opinion that no significant health effects will result from the construction and operation of the line, describe in detail the reasons for that opinion and provide references or citations to supporting documentation.**

The Applicant respectfully requests waiver of the requirement to provide such information.

- C. Describe and cite any research studies on EMF the Applicant is aware of that meet the following criteria:**

- 1. Became available for consideration since the completion of the Virginia Department of Health's most recent review of studies on EMF and its subsequent report to the Virginia General Assembly in compliance with 1985 Senate Joint Resolution No. 126;**

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<sup>2</sup> The Applicant respectfully requests waiver of the requirement to provide information related to the health aspects of EMFs due to the short distance of the transmission line in question and the fact that the transmission line largely parallels the existing 500 kV electric transmission line.

The Applicant respectfully requests waiver of the requirement to provide such information.

- 2. Include findings regarding EMF that have not been reported previously and/or provide substantial additional insight into findings; and**

The Applicant respectfully requests waiver of the requirement to provide such information.

- 3. Have been subjected to peer review.**

The Applicant respectfully requests waiver of the requirement to provide such information.

## **V. NOTICE**

- A. Furnish a proposed route description to be used for public notice purposes. Provide a map of suitable scale showing the route of the proposed project. For all routes that the Applicant proposes to be noticed, provide minimum, maximum and average structure heights.**

The Project will include approximately two (2) miles of 34.5 kV medium voltage feeder line and an approximately 0.35-mile 500 kV generation-tie line to interconnect with the transmission system at the Septa Substation. Attached is a layout of the routes for the proposed 34.5 kV and 500 kV lines.

The proposed route for the 34.5 kV feeder line begins 1.4 miles southeast of the intersection of Route 617 (White Marsh Rd.) and Route 626 (Beechland Rd.). From that point, it parallels Route 626 for 0.6 miles. The route then continues 1.4 miles southeast, in parallel with the existing 500 kV electric transmission line right-of-way into the Project collector substation. The minimum structure height for the 34.5 kV feeder line route is 45 feet. The maximum structure height is 70 feet. The average structure height is 55 feet.

The proposed route for the 500 kV generation-tie begins at the Project collector substation. Traveling south, the route runs east for 0.35 miles and enters the north side of the VEPCO Septa Substation property. The minimum structure height for the 500 kV generation-tie line route is 95 feet. The maximum structure height is 105 feet. The average structure height is 100 feet.

See Exhibit R - Notice Map for a map of the project area and routes.

- B. List Applicant offices where members of the public may inspect the application. If applicable, provide a link to website(s) where the application may be found.**

The public may inspect the Application at the Applicant's office located at 4200 Innslake Drive Suite 302. Glen Allen, VA 23060.

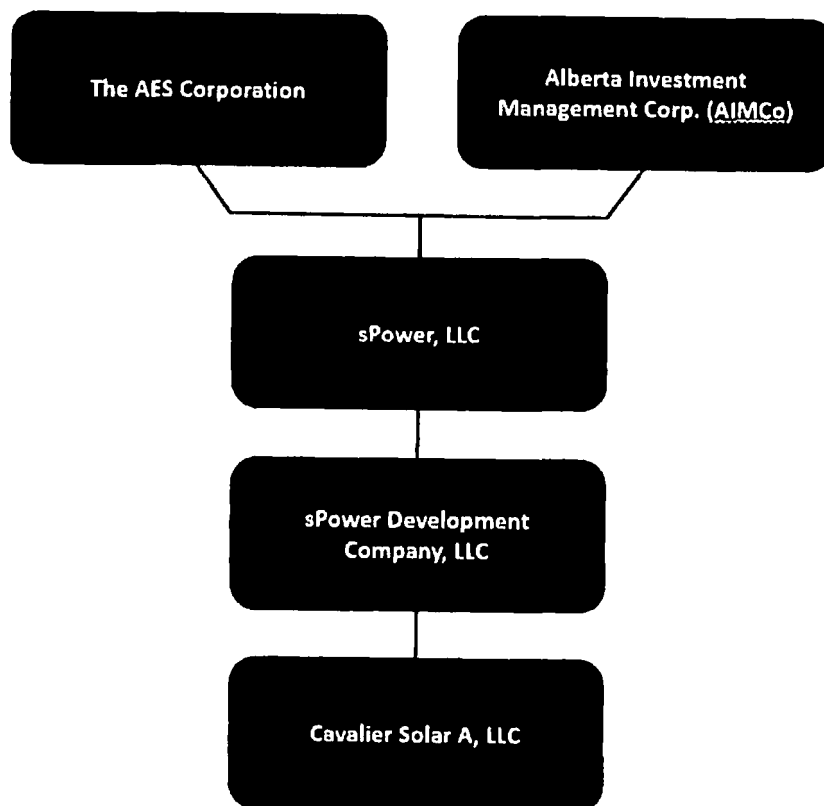
- C. List all federal, state, and local agencies and/or officials that may reasonably be expected to have an interest in the proposed construction and to whom the Applicant has furnished or will furnish a copy of the application.**

Surry County Board of Supervisors  
 Isle of Wight County Board of Supervisors  
 Virginia Department of Environmental Quality  
 Virginia Department of Historic Resources  
 Virginia Department of Transportation  
 U.S. Army Corps of Engineers

- D. If the application is for a transmission line with a voltage of 138 kV or greater, provide a statement and any associated correspondence indicating that prior to the filing of the application with the SCC the Applicant has notified the chief administrative officer of every locality in which it plans to undertake construction of the proposed line of its intention to file such an application, and that the Applicant gave the locality a reasonable opportunity for consultation about the proposed line (similar to the requirements of § 15.2-2202 of the Code for electric transmission lines of 150 kV or more).**

The Applicant notified the Isle of Wight County Administrator on September 28<sup>th</sup>, 2020 by both phone call and email regarding the intention to file an application with the Commission for the 500 kV transmission line. See Exhibit O - Isle of Wight Email Notification. Additionally, the Applicant has held numerous meetings with County personnel and filed the CUP application for the Project which includes the mapped location of the 500 kV Gen-Tie Line as well as descriptions of the Gen-Tie Line.

## Exhibit A: Upstream Ownership of Applicant

**Exhibit A: Upstream Ownership of Applicant**



**Exhibit B: EXTRAORDINARILY SENSITIVE Audited Financials of  
sPower, LLC  
*Not Included in Public Version***

**Exhibit C: Direct Testimony of Benjamin Saunders on Behalf of  
Cavalier Solar A, LLC**

**Benjamin Saunders**  
**Summary of Direct Testimony**

My direct testimony in this proceeding provides an overview of the Company's Application for Certificates of Public Convenience and Necessity ("CPCN") for the construction and operation of a solar generating facility totaling up to 240 MW in Surry and Isle of Wight Counties, Virginia (the "Project"):

- I describe the location of the Project to be constructed on approximately 4,707 acres of land which consists primarily of cleared forest, timber and agriculture land. Of the 4,707 acres approximately 1,766 acres will be used for construction.
- I explain the technology that will be used at the facility. The Project will employ photovoltaic solar arrays on racking systems supported by a pile-driven foundation design.
- I explain the additional interconnection infrastructure that needs to be constructed for the Project. The Project will require a two (2) mile 34.5kv Feeder Line and a 0.35 mile 500 kV Gen-Tie Line from the southeast corner of the Project Site to the Septa Switching Station owned by the Virginia Electric and Power Company.
- I describe the minimal environmental impacts expected from the construction of the Project and the permits that the Company is in the process of obtaining.
- I describe the economic benefits of the Project and that it is in the public interest to construct the Project. Specifically:
  - It is expected that the Project will create approximately 787 construction jobs and approximately nine (9) full time jobs with benefits when the Project is in operation.
  - The Project will convert the land on the Project Site from agricultural/timber to industrial, increasing the tax base in both counties and the Commonwealth by increasing property taxes as well as other taxes.
  - The Project will enhance local reliability and meet rising consumer demand for energy generated from renewable sources, while reducing the Commonwealth's reliance on the import of energy.

20102011

**DIRECT TESTIMONY  
OF  
BEN SAUNDERS  
ON BEHALF OF  
CAVALIER SOLAR A, LLC  
BEFORE THE  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2020-00\_\_**

1   **Q.**    Please state your name and current position.

2    A.    My name is Ben Saunders, and I am a Senior Manager, Project Development with  
3           sPower, LLC.

4   **Q.**    What is your educational and professional background?

5    A.    I graduated from Sewanee: The University of the South in 2003 with a Bachelor  
6           of Arts in Political Science. I also obtained a Master of Science in Environmental  
7           Studies from Virginia Commonwealth University in 2007. I joined the Company's  
8           Permitting group in September 2018 as a Senior Permitting Project Manager and  
9           transitioned to a Senior Manager, Development role in July 2020. Prior to joining the  
10          Company, I worked at Virginia Electric & Power Company ("VEPCO") in the Electric  
11          Transmission Department as a Senior Siting and Permitting Specialist from February  
12          2014 to August 2018. At VEPCO, I also worked as an Environmental Auditor in the  
13          Auditing Department from June 2010 to February 2014.

14   **Q.**    Have you previously testified before the Commission?

15    A.    Yes. I have previously testified before the Commission in *Application of Virginia*  
16           *Electric and Power Company for approval and certification of electric transmission*  
17           *facilities: Poland Road 230 kV Double Circuit Transmission Line Loop and 230-34.5 kV*  
18           *Poland Road Substation* (Case No. PUE-2015-00053) and *Application of Virginia*  
19           *Electric and Power Company for approval and certification of electric transmission*

1 *facilities: Yardley Ridge 230 kV Double Circuit Transmission Line Loop and 230 kV*  
2 *Yardley Ridge Switching Station (Case No. PUE-2015-00054), in Application of Virginia*  
3 *Electric and Power Company for approval and certification of electric transmission*  
4 *facilities: transmission line rebuild of Belvoir-Gum Springs double circuit 230 kV lines*  
5 *#204 and #220 (PUE-2015-00133), and in Application of Skipjack Solar Center, LLC et.*  
6 *al. for certificates of public convenience and necessity for solar generating facilities*  
7 *totaling up to 320 MWac in Charles City County, Virginia (PUR-2019-00073).*

8 **Q. What are your responsibilities for the Company?**

9 A. I am a project manager and developer, and I lead Cavalier Solar A, LLC's (the  
10 "Company") development efforts in Virginia.

11 **Q. What is the purpose of your testimony in this proceeding?**

12 A. I will provide an overview of the Company's Application for Certificates of Public  
13 Convenience and Necessity in this proceeding and sponsor the Company's Application,  
14 Appendix 1, Appendix 2 and exhibits.

15 **Q. What is the Company requesting in this Application?**

16 A. The Company or the "Applicant" is requesting Certificates of Public Convenience and  
17 Necessity ("CPCN") for the construction and operation of a 240 MW solar generating  
18 facility in Surry and Isle of Wight Counties, Virginia, as well as the transmission  
19 facilities necessary to interconnect the solar generating facilities to the transmission grid  
20 at the VEPCO Septa Substation (collectively, the "Project").

21 **Q. Where will the Project be located?**

22 A. The Project is to be located in Surry and Isle of Wight Counties and constructed on  
23 approximately 1,766 acres (the "Project Site"). The Project Site is located in a rural

1 area, on a parcel consisting of primarily cleared forest and timber land, and agricultural  
2 land, and is zoned Agricultural. The Project will be located in Surry County and Isle of  
3 Wight Counties, Virginia, on the border between the counties, and the intersection of  
4 Beechland Road (route 626) and White Marsh Road (route 617) bordering the northwest  
5 part of the project. The project will interconnect to VEPCO's Septa Substation located  
6 on Mill Swamp Road (route 626).

7 **Q. Can you describe the Project and the technology to be employed?**

8 A. The Solar Generating Facilities of the Project will utilize solar photovoltaic ("PV")  
9 modules mounted on racking systems supported by a pile-driven foundation design. The  
10 racking configuration is expected to be a single-axis tracking configuration with north-  
11 south trending rows that will track the sun from east to west over the course of the day.  
12 The modules will be electrically connected into strings that will be connected to  
13 combiner boxes located throughout the solar generating facility. The output power cables  
14 from the combiner boxes will be consolidated and feed the direct current ("DC")  
15 electricity to inverters which convert the DC to alternating current ("AC"). Each inverter  
16 will be fully enclosed, pad mounted, and stand approximately 95 inches in height. The  
17 AC output from the inverters will be routed through an AC collection system and  
18 consolidated within the system switchgear. The final output from the solar generating  
19 facility will be processed through a step-up transformer to match the interconnection  
20 voltage.

21 There is the potential for the Project to include a battery system at the Project Site for  
22 energy storage. To the extent that the Company would elect to move forward with a  
23 storage option, the Company would seek separate Commission approvals (or supplement

1 then existing approvals), if necessary. At this time, the Company anticipates that any  
2 storage included in the Project would utilize the existing interconnection arrangements  
3 and point of interconnection setup.

4 The Project will be designed with a comprehensive Supervisory Control and Data  
5 Acquisition ("SCADA") system for remote monitoring of facility operations and/or  
6 remote control of critical components. Within the Project Site, the fiber optic or other  
7 cabling required for the monitoring system will be installed throughout the solar  
8 generating facility leading to centrally located (or series of appropriately located)  
9 SCADA system cabinets. The telecommunications connections to the SCADA system  
10 cabinets may be wireless or hard wired.

11 The Project will include a meteorological ("met") data collection system. The met station  
12 will have the following weather sensors: a pyranometer for measuring solar irradiance, a  
13 thermometer to measure air temperature, a barometric pressure sensor to measure  
14 atmospheric pressure, and two wind sensors to measure speed and direction. These  
15 sensors will be connected to a data logger to compile the data for transmission to the Data  
16 Collection Center.

17 All energy will be routed to the Project switchgear, located adjacent to the Septa  
18 Switching Station, at which point all energy from the Project will be stepped up to 500  
19 kV. The primary switchgear includes the main circuit breaker and utility metering  
20 equipment and would be enclosed separately and pad mounted together with the  
21 generator step-up ("GSU") transformer. Both the GSU and the primary switchgear stand  
22 approximately 8 feet in height with conductors that increase the total height to  
23 approximately 27 feet in height.

1 An operations and maintenance facility will be located on-site to store maintenance  
2 equipment and vehicles, safety equipment, replacement components, and other items  
3 deemed necessary for Project operations.

4 **Q. How will the Project interconnect with the transmission system in the area?**

5 A. A 34.5 kV medium voltage feeder line ("Feeder Line") would be constructed to connect  
6 the solar panels and inverters internally. The 34.5kV Feeder Line would begin 1.4 miles  
7 southeast of the intersection of Route 617 (White Marsh Rd.) and Route 626 (Beechland  
8 Rd.). From that point, it parallels Route 626 for 0.6 miles. The route then continues 1.4  
9 miles southeast, in parallel with the existing 500kV electric transmission line right-of-way  
10 into the Project collector substation ("Cavalier Collector Substation").

11 Additionally, a 500kv gen-tie line ("Gen-Tie Line") will be constructed from the Cavalier  
12 Collector Substation (located in the southeast corner of the site) to the Septa Switching  
13 Station owned by the Virginia Electric and Power Company ("VEPCO"). The 500 kV  
14 Gen-Tie Line would travel south from the Cavalier Collector Substation, run east for 0.35  
15 miles and enter the north side of the VEPCO Septa Substation property. Attached as  
16 Exhibit F to the Application is a layout of the routes for the proposed 34.5 kV and 500  
17 kV lines.

18 PJM has completed feasibility, system impact, and facilities analyses and has identified  
19 certain upgrades to the transmission system that are required to accommodate the  
20 Project's reliable interconnection. The Applicant will be obligated to complete and/or  
21 pay for the required upgrades, and they will be installed in accordance with an  
22 Interconnection Services Agreement and Interconnection Construction Service  
23 Agreement entered into among the Company, PJM, and VEPCO. According to the  
24 Feasibility Study, the interconnection upgrades identified are used to maintain the



1 reliability of PJM's system. Therefore, the Project will not have an adverse effect on the  
2 reliability of electric service provided by the interconnected utility if all required  
3 upgrades are built.

4 **Q. Can you briefly describe the environmental impacts of the Project?**

5 A. As described in detail in the Environmental Assessment included with the Company's  
6 Application, there will be minimal adverse environmental effects, and the Company will  
7 comply with all necessary conditions imposed by the regulatory agencies with oversight  
8 responsibilities for all environmental aspects of the Project to ensure protection of public  
9 health and the environment.

10 The Project is a solar generation facility, with necessary transmission interconnection  
11 facilities. Accordingly, it will not emit any pollutants during operation and does not  
12 require any air permits. The Project will use water during construction and may require  
13 permits for water withdrawal. Storm water discharges will be addressed in compliance  
14 with Surry County, Isle of Wight County and Virginia Department of Environmental  
15 Quality requirements, both during construction and during operation of the facility.  
16 Potential impacts to wetlands would include road crossings for construction and  
17 maintenance vehicles; however, the Company does not anticipate significant impacts to  
18 waters of the United States. The Company does not expect significant impacts to  
19 wetlands or other bodies of water, nor are impacts to natural heritage resources or  
20 threatened or endangered species expected as a result of the Project.

21 The Project will obtain all necessary permits and approvals required for environmental  
22 impacts, and the Company anticipates that there will be minimal environmental impacts  
23 associated with the Project.

1    **Q.    What economic benefits will be associated with the Project?**

2    A.    The Project will provide a positive economic impact to the region through increased tax  
3           revenue, employment, and use of local businesses. Converting the land use of the Project  
4           Site from agriculture to industrial will increase the assessed value and increase the tax  
5           revenue without requiring additional services from the County.

6           It is expected that the Project will create approximately 787 full time equivalent jobs in  
7           Isle of Wight and Surry County during the course of construction of all phases of the  
8           Project, and approximately nine (9) full time jobs with benefits when the full Project is in  
9           operation.

10          The Project will increase the tax base in both counties and the Commonwealth, and  
11          increase property taxes as well as State sales tax and other taxes. The Project will also  
12          generate additional direct and indirect spending from purchases from local merchants and  
13          vendors and add to the mix of competitive wholesale renewable power available for the  
14          entire region.

15   **Q.    Is approval of the Project in the public interest?**

16   A.    Yes. As I have described, the Project will promote the public interest by providing  
17          economic benefits to Surry and Isle of Wights Counties and the surrounding area,  
18          including increasing the tax base, providing employment opportunities during  
19          construction, and patronage to local merchants and vendors. Further, the Project will  
20          meet demand in the Mid-Atlantic region with renewable generation.

21          The Project will leverage the Commonwealth's existing infrastructure as it will utilize an  
22          existing switching station located on an adjacent parcel.

1 The Project's generation will enhance local reliability and meet rising consumer demand  
2 for energy generated from renewable sources. Additionally, because the Project will  
3 increase the availability of renewable energy in the region, it will attract commercial and  
4 industrial opportunity as part of Virginia's new economy.

5 Because the Applicant is not a regulated utility, the business risk associated with the  
6 Project will be borne solely by the Applicant, with no impact on the rates paid by the  
7 ratepayers in Virginia.

8 The Project promotes the recommendations set out in the 2018 Virginia Energy Plan by  
9 providing additional renewable generating capacity in the Commonwealth. The 2018  
10 Energy Plan set as a recommendation that the Commonwealth's eight percent renewable  
11 energy procurement target, established in 2015, be doubled to sixteen percent by 2022.  
12 Additionally, the Project promotes the goals of Virginia's newly enacted Virginia Clean  
13 Energy Act (2020) with a specific requirement of renewable energy only, with delivery in  
14 the Virginia market. The Project will reduce the Commonwealth's reliance on the import  
15 of energy while achieving strategic growth in renewable generation.

16 The Project will have no material adverse effect on the reliability of electric service  
17 provided by any regulated public utility, as is required by Va. Code § 56-580D.

18 Overall environmental impacts from the Project will be minimal and addressed by  
19 permits and oversight by federal, state and local regulatory agencies. Air emissions will  
20 be far below those produced by facilities using other fossil fuels. Environmental impacts  
21 from this expansion at an existing facility will be smaller than those from equivalent  
22 generation at a greenfield site. The Project requires no additional fuel or fuel  
23 transportation for operation. Approval of the Project is in the public interest.

- 1    **Q.    Have you reviewed the Confidential/Extraordinarily Sensitive version of the**  
2       **Application?**
- 3    A.    Yes.
- 4    **Q.    Is the Confidential/Extraordinarily Sensitive Information contained in the**  
5       **Application true and correct, to your knowledge?**
- 6    A.    Yes
- 7    **Q.    Does this conclude your testimony?**
- 8    A.    Yes, it does.

**Exhibit D: Projects in Operation Over 10 MW by the Company**

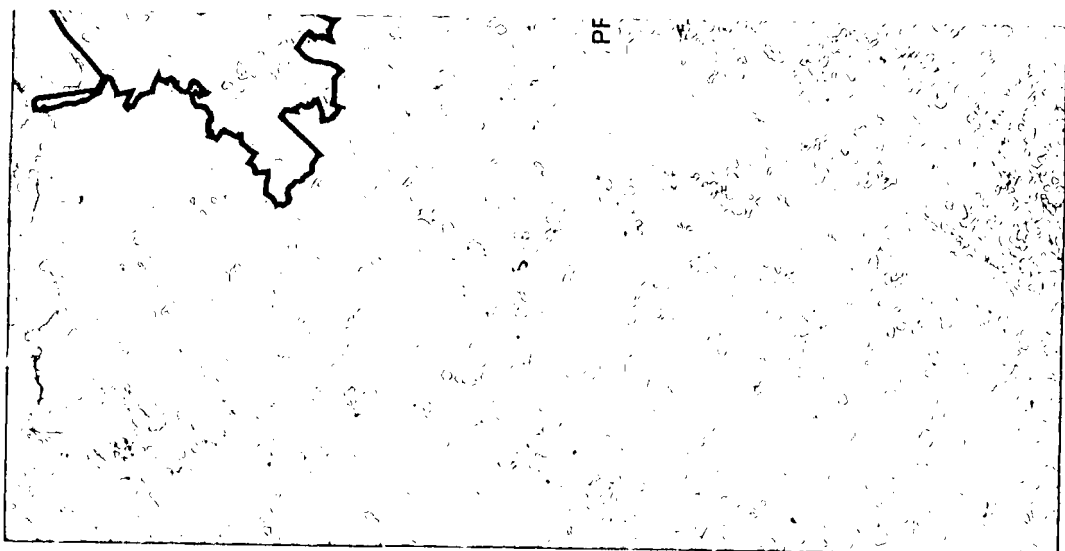
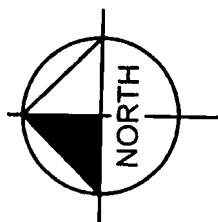
**Exhibit D: Projects in Operation Over 10 MW by the Company**

<b>Project Name</b>	<b>Location</b>	<b>MW<sub>DC</sub>*</b>
Antelope Cluster	CA	225.1
Beacon Cluster	CA	183.3
San Pablo Raceway	CA	132
Solverde 1	CA	106.3
Pioneer Wind*	WY	85
Bayshore Solar Cluster	CA	75
Western Antelope Cluster	CA	62.5
FLS Eden	NC	62.1
Latigo Wind Park LLC*	UT	62
Sandstone Solar LLC	AZ	57.5
ID Solar I	ID	54.6
Elevation C	CA	51.1
Summer Solar Cluster	CA	33.4
Hayworth	CA	33.3
Adera	CA	26.5
Antelope DSR3	CA	25
SEPV Mojave West	CA	25
Riverhead Solar	NY	22.9
Central Antelope Dry Ranch C	CA	22.5
Sierra Solar Greenworks	CA	22.5
North Lancaster Ranch	CA	22.4
Redcrest	CA	20.9
Woodmere	CA	18.8
Leavenworth Greenworks	NY	14.3
MCE Solar One	CA	13
Aspiration Solar G	CA	11.7
SEPV Palmdale East LLC	CA	11.5
Victor Dry Farm Ranch Cluster	CA	11.2
Green Beanworks Cluster	CA	11.2
100+ Distributed Generation Projects	Various	118.7

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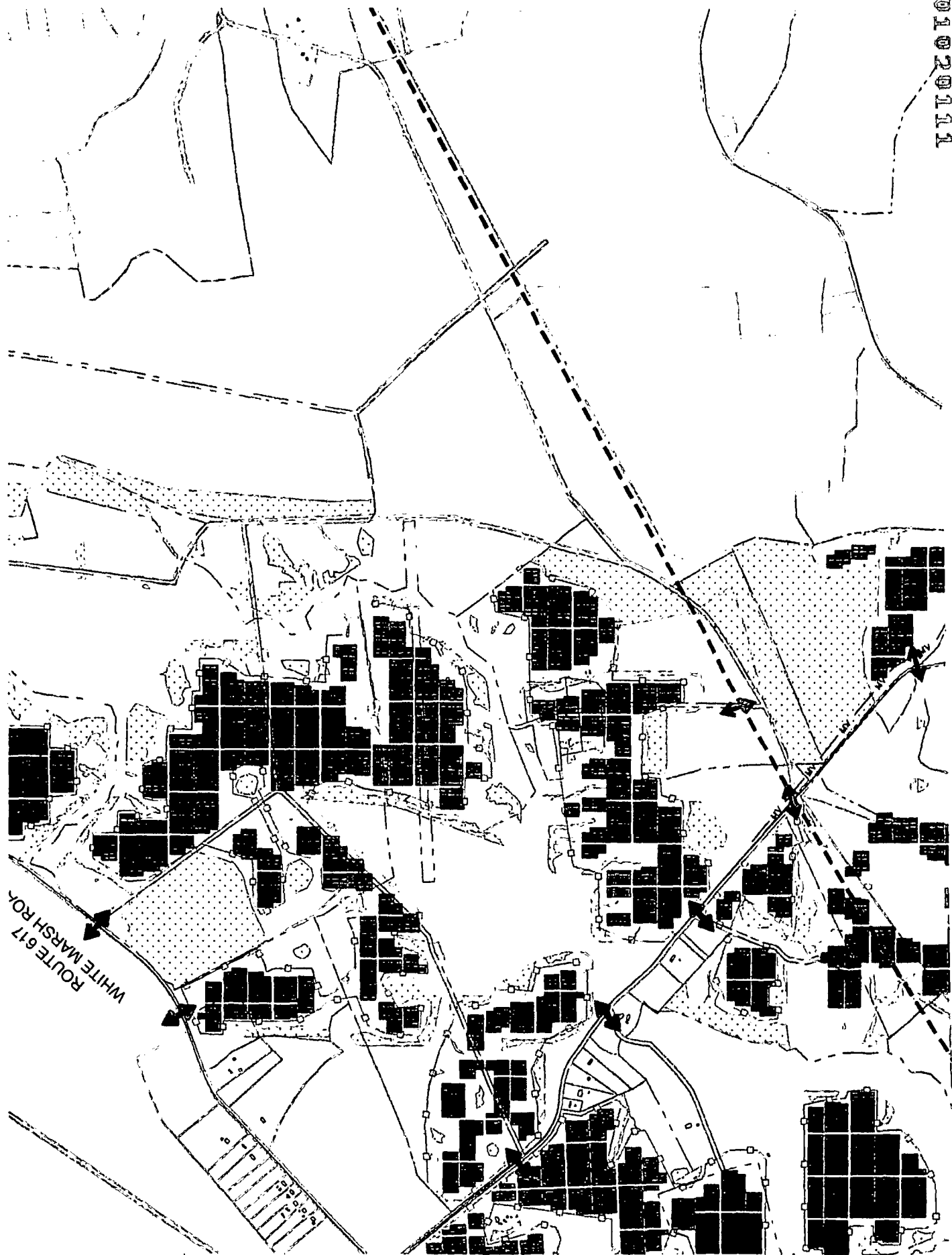
## **Exhibit E: Preliminary Layout of the Project**

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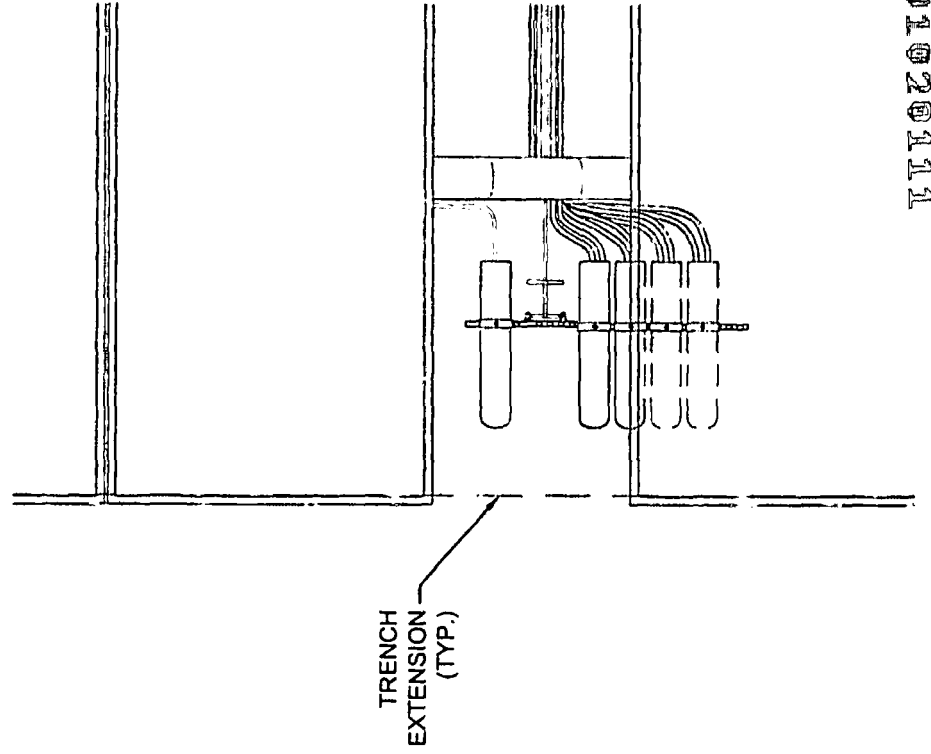
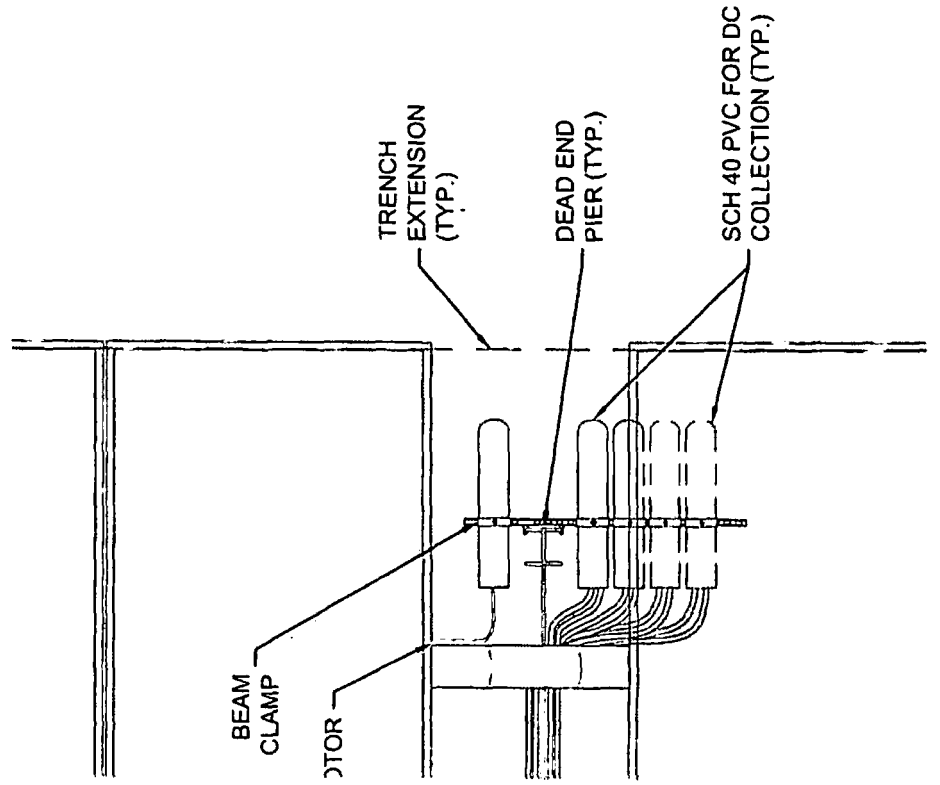


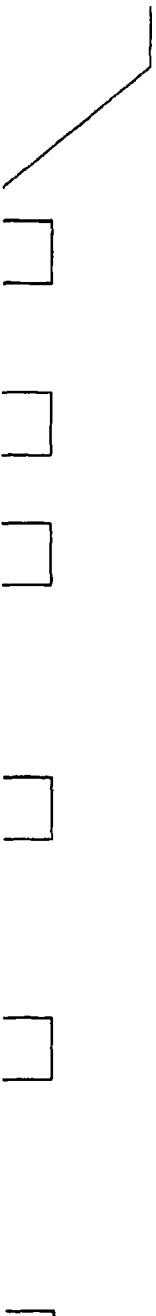


# TRENCH FROM CAB 1311 MODEL ENLARGED SIDE VIEW WITH DISCONNECT

SCALE: NTS

1





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2. THE LOCATIONS AND SIZES OF THE CABLE TAKEN INTO ACCOUNT FOR THE FOUNDATI

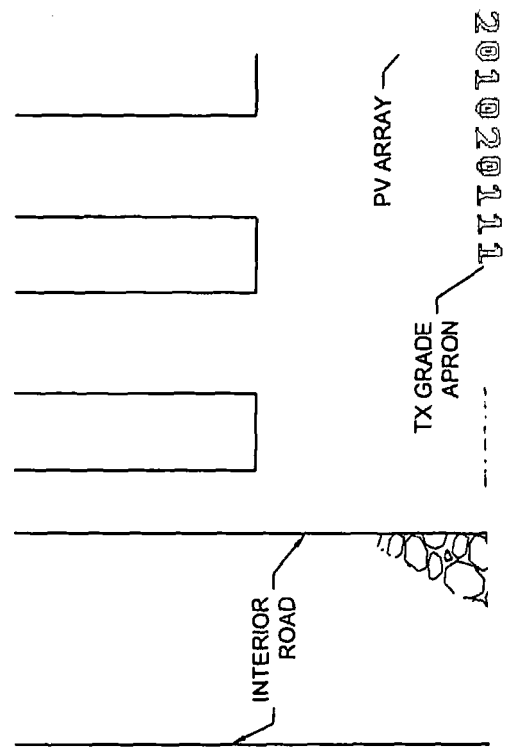
# ELECTRICAL EQUIPMENT SKID ENLARGED DETAIL WITH FLOOD PLAIN

1

SCALE: NTS  
ELEVATION VIEW

## NOTES:

1. THE TOTAL WEIGHT C
2. THE TURNKEY STATIC CAPACITY OF THE BE CAPACITY, THE BEAR SOLID AND FLAT, WIT
3. TOP OF PILE ELEVATI
4. CONSTRUCT AN AUXI
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7. FOUNDATIONS; THE F
8. DETAIL ABOVE IS FOF
9. INCLUDING PILE EMBI
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11. BUILDING CODE SPE
12. EARTHEN ACCESS EA
13. DESIGN SHALL BE ME



## **Exhibit F: Proposed Feeder Line and Gen-Tie Line Routes**



**Exhibit G: Environmental Assessment  
Attachment 1 - USGS Map**

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CAVALIER SOLAR A, LLC  
ENVIRONMENTAL ASSESSMENT

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**Attachments**

**Attachment 1**

**USGS Topographic Map of Project Location**

## CAVALIER SOLAR A, LLC, ENVIRONMENTAL ASSESSMENT

### **PROJECT SUMMARY**

Cavalier Solar A, LLC (the "Applicant") is pleased to submit this environmental assessment for the proposed construction and operation of solar generating facility, which, when complete, will have capacity of up to 240 MW (the "Project"). The Project will be constructed in southern Surry County and northern Isle of Wight County, Virginia. This Environmental Assessment is submitted to satisfy the requirements of Virginia Code § 56-46.1. The Project will provide additional solar generation capacity to Virginia and will provide reliability to the regional electric system.

Regulatory agencies with oversight of environmental impacts have been engaged in reviewing and permitting the Project and ensuring that any environmental impact is minimized. Specific information is provided below.

#### **Project Description**

- Size: 240 Megawatts AC (nominal)
- Technology: Approximately 634,000 solar photovoltaic modules.
- Proposed Site: The proposed area for development of the Project (Project Site) currently is rural, cropland, cleared forest and timber land located in Surry County and Isle of Wight County, Virginia. The Site is centrally located at 37.031052 and -76.771800° and generally bounded by White Marsh Road to the north, Beechland Road to the west, and Mill Swamp Road to the south.
- Transmission: A 34.5 kV medium voltage feeder line running through the middle of the Site to the Project Substation in Isle of Wight County, and a 500 kV generation-tie line from the Project Substation to the Septa Substation.

#### **Proposed Schedule**

- Commence Site Preparation: March 2021
- Commence Equipment Construction and Installation: March 2021
- Commence Commissioning: October 2022
- Commercial Operations: December 2022

This Environmental Assessment facilitates the Commission's consideration of the effect of that facility on the environment and conditions that may be desirable or necessary to minimize adverse environmental impacts to satisfy the requirements of Va. Code 56-46.1(A). The permitting

processes conducted by other agencies having regulatory authority over environmental aspects of the Project will consider these same impacts and the requirements and restriction imposed in the permits required for this Project will avoid, minimize and mitigate the environmental impacts.

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CAVALIER SOLAR A, LLC, et al.

ENVIRONMENTAL ASSESSMENT

I. INTRODUCTION

The Applicant is pleased to submit this Environmental Assessment to assist the State Corporation Commission ("SCC") in meeting its obligation to assess environmental impacts from electric utility facilities under Virginia Code § 56-46.1. This Environmental Assessment addresses the proposed construction and operation of solar generating facilities, which, when complete, will have capacity of up to 240 MW (the "Project"). The Project will be constructed in Surry County and Isle of Wight County, Virginia. The Project will provide additional solar generation capacity to Virginia. The Project has been designed to comply with applicable requirements. The Project is regulated by Federal, State, and local agencies with responsibility for protecting Virginia's environment and natural resources.

This Assessment, Attachment 1, and the referenced exhibits provide: (1) a description of the proposed construction of the Project; (2) a description of the environmental setting; (3) an assessment of environmental effects and applicable permits that address any such impacts; and (4) a summary of this Assessment.

The Virginia General Assembly has provided in Virginia Code § 56-46.1 that,

A. Whenever the Commission is required to approve the construction of any electrical utility facility, it shall give consideration to the effect of that facility on the environment and establish such conditions as may be desirable or necessary to minimize adverse environmental impact. In order to avoid duplication of governmental activities, any valid permit or approval required for an electric generating plant and associated facilities issued or granted by a federal, state or local governmental entity charged by law with responsibility for issuing permits or approvals regulating environmental impact and mitigation of adverse environmental impact or for other specific public interest issues such as building codes, transportation plans, and public safety, whether such permit or approval is granted prior to or after the Commission's decision, shall be deemed to satisfy the requirements of this section with respect to all matters that (i) are governed by the permit or approval or (ii) are within the authority of, and were considered by, the governmental entity in issuing such permit or approval, and the Commission shall impose no additional conditions with respect to such matters.

The Applicant is in the process of consulting with numerous regulatory agencies and will obtain all necessary permits within the jurisdiction of those agencies. To the extent available, applications or other communications with these agencies have been incorporated into this assessment so that reviewing agencies can avoid unnecessary duplication of effort as directed in the statute.

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## II. DESCRIPTION OF PROPOSED PROJECT

### A. Introduction.

The Applicant proposes to construct and operate a solar generating facility totaling up to 240 MW AC in Surry County and Isle of Wight County, Virginia (the "Project"). The Project involves the construction and installation of up to 240 MW AC, approximately 634,000 solar photovoltaic modules.

### B. Location and Plot Plan.

Attachment 1 is a U.S. Geological Survey ("USGS") topographic map showing the location of the solar generating facility and the surrounding area. See Exhibit E to this Application for a conceptual site plan.

### C. Equipment and Operations.

The Project will utilize solar photovoltaic ("PV") modules mounted on racking systems supported by a pile-driven foundation design. The racking configuration is expected to be a single-axis tracking configuration with north-south trending rows that will track the sun from east to west over the course of the day.

The modules will be electrically connected into strings that will be connected to combiner boxes located throughout the solar generating facility. The output power cables from the combiner boxes will be consolidated and feed the direct current ("DC") electricity to inverters which convert the DC to alternating current ("AC"). Each inverter will be fully enclosed, pad mounted, and stand approximately 95 inches in height. The AC output from the inverters will be routed through an AC collection system and consolidated within the system switchgear. The final output from the solar generating facility will be processed through a step-up transformer to match the interconnection voltage.

There is potential for the Project to include an intelligent battery system at the Site for energy storage. To the extent that the Applicant would elect to move forward with a storage option, the Applicant would seek separate Commission approvals (or supplement then existing approvals). At this time, the Applicant anticipates that any storage included in the Project would utilize the existing interconnection queue position and point of interconnection location.

The Project will be designed with a comprehensive Supervisory Control and Data Acquisition ("SCADA") system for remote monitoring of facility operations and/or remote control of critical components. Within the Site, the fiber optic or other cabling required for the monitoring system will be installed throughout the solar generating facility leading to centrally located (or series of appropriately located) SCADA system cabinets. The telecommunications connections to the SCADA system cabinets may be wireless or hard wired.

The Project will include a meteorological ("met") data collection system. The met station

will have the following weather sensors; a pyranometer for measuring solar irradiance, a thermometer for measuring air temperature, a barometric pressure sensor to measure atmospheric pressure, and two wind sensors to measure speed and direction. These sensors will be connected to a data logger to compile the data for transmission to the Data Collection Center.

All energy will be routed to the Project switchgear, located adjacent to the Project Substation, at which point all energy from the Project will be stepped up to 230 kV. The primary switchgear includes the main circuit breaker and utility metering equipment, and would be enclosed separately and pad mounted together with the generator step-up ("GSU") transformer. Both the GSU and the primary switchgear stand approximately 8 feet in height with conductors that increase the total height to approximately 27 feet in height. Lighting masts for security will stand approximately 65 feet in height.

An operations and maintenance facility may be located on-site to store maintenance equipment and vehicles, safety equipment, replacement components, and other items deemed necessary for Project operations.

The design, layout and operation of this facility may undergo additional optimization to make it safer, easier to operate and more cost effective. Any relevant changes will be reviewed with the Virginia Department of Environmental Quality ("DEQ") to verify that no adverse environmental impacts result from such changes.

#### D. Natural Gas and Electrical Transmission Lines.

The Project will require an approximately two (2) mile 34.5 kV medium voltage feeder line ("Feeder Line") between the northern area of the site to the Project Substation. The MV gen-tie line to connect the northern and western portions of the Project Site to the Project substation will utilize private easements with landowners. The 34.5 kV Feeder Line will generally travel south from the northern portion of the Project Site south of Route 617 (White Marsh Road) using private easements until it reaches the Project Substation on the 476, LLC property. Additionally, an approximately 0.35 miles of a 500 kV generation-tie line ("Gen-Tie Line") will be required to interconnect the Project with the transmission system. The Transmission gen-tie line will be constructed from the Project Substation to the Septa Substation. See Exhibit F to the Application for a layout of the 34.5 kV Feeder Line and 500 kV Gen-Tie Line routes.

### III. DESCRIPTION OF ENVIRONMENTAL SETTING

The Project will be constructed on approximately 1,776 acres, located in a rural area, on a compilation of parcels consisting of agricultural land and cleared forest and timber land (the "Project Site"). The Project Site is located in a rural area, on a compilation of parcels consisting of agricultural land and cleared forest and timber land. The Project Site is currently zoned Agricultural Rural ("A-R") and is anticipated to be rezoned to Light General Industrial ("M-1"), consistent with Surry County's zoning ordinances for solar energy facilities. The Project Site within Isle of Wight County is currently zoned Rural Agricultural Conservation District ("RAC"), consistent with Isle of Wight zoning ordinances for solar energy facilities. The surrounding land use is primarily silviculture

with limited agricultural and rural residences.

#### IV. ASSESSMENT OF ENVIRONMENTAL EFFECTS

##### A. Air Emissions.

###### 1. Emissions.

The Project is a solar facility and will not emit any pollutants during operations.

###### 2. Applicable Permit Requirements.

The Project does not require any air permits, would not emit pollutants during operations, and does not need emissions offsets or allowances.

###### 3. Ambient Air Quality Effects.

The Project will have no ambient air quality effects.

##### B. Water Use, Wastewater Discharge, and Storm Water Management.

###### 1. Water Use.

The Project may require permits for water withdrawal. During construction, wells may be installed and utilize up to 100,000 – 150,000 gallons per day. During operations, the project would not require significant use of water. Applicable permits will be obtained from Surry County, Isle of Wight County and DEQ. Potable water would not be required for the Project.

###### 2. Wastewater Discharge.

The Project will have no wastewater discharge.

###### 3. Storm Water.

The DEQ, Surry County and Isle of Wight County will regulate storm water discharges from the Site. Storm water discharges during construction of the Project will be addressed through a general permit for construction storm water discharges, as well as implementation of an Erosion and Sediment Control Plan and a Storm Water Pollution Prevention Plan ("SWPPP") as required by Surry County, Isle of Wight County and the DEQ. Storm water control measures will include Best Management Practices ("BMPs") such as retention, extended detention, and low impact design ("LID").

BMPs for the Site will be designed and implemented in accordance with the requirements of the Virginia Stormwater BMP Clearinghouse. LID is

expected to be implemented by conserving and limiting use of natural resources, minimizing concentrated runoff, allowing water to percolate and directing runoff to natural areas. During the development process turbidity levels will be controlled with the use of silt fences, stabilization matting and phasing to limit disturbed areas for extended periods of time.

Storm water discharges during operation of the Project will be addressed through the Project design, which will not allow storm water to come in contact with potentially polluting industrial materials. All lubricating and hydraulic oils, and any other small quantities of chemicals that may be located on-site, will be maintained under roof or within the equipment enclosures. Where there is potential storm water coming in contact with oils, oil water separators are being designed into the management system for additional insurance. The Applicant anticipates that any applicable storm water permit requirements will be imposed through a general permit.

C. Wetlands and Waters of the United States.<sup>1</sup>

Identification of tidal and non-tidal wetlands will be completed during the field investigation and delineations of wetlands and Waters of the United States. Depending on the type and amount of impacts, a Section 404 Permit may be required by the U.S. Army Corps of Engineers ("USACE") and/or a Section 401 Permit or Certification issued by the Virginia DEQ.

Potential impacts to wetlands would include conduit and road crossings for construction and maintenance vehicles. The amount of impacts will not be known until final design of the Project has been completed, and a final wetlands delineation report has been prepared and accepted by the USACE. The Project will likely be seeking a Nationwide Permit for utility line and/or road crossings; the 401 certification will be part of this permit.

D. Impact of Solid and Hazardous Waste on water resources

The Project will implement a Waste Management Plan and an Emergency Response Plan and comply with the Virginia Stormwater Management Plan ("VSMP") to prevent impacts from solid and hazardous waste on local water resources. Potential impacts to local water resources from solid and hazardous wastes, while not anticipated, have potential to occur during construction of the Project.

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<sup>1</sup> Subject to revision based on results of field investigation and completion of final design.



Construction waste is mostly related to packaging and unused material that is discarded during the construction of the solar energy facility. Construction waste mostly consists of recyclable materials such as cardboard, steel, and electrical wiring. Waste and recycled materials will be separated and stored in large containers at the Site, and then hauled to an off-site facility for recycling and proper disposal.

The Applicant's Engineering, Procurement, and Construction ("EPC") contractor will carefully disassemble and recycle material and equipment packaging to minimize solid waste impacts. The EPC contractor will contract with a waste and recycling service provider to ensure all waste generated from construction of the Project is disposed of in accordance with federal and State regulations. The EPC contractor will store, collect, and dispose of solid waste in such a manner as to prevent fire and health hazards, rodent harborage, insect breeding, accidents, and offensive odors. The EPC contractor will ensure that no littering of the Site or neighboring properties will occur during construction.

Construction of the Project would involve small quantities of commonly used hazardous materials, such as fuels and oils, to operate construction equipment. The use, storage, and disposal of hazardous materials and wastes would be governed according to regulations established by the Occupational Safety and Health Administration ("OSHA") and the DEQ. This regulatory structure would ensure that safety measures and precautions are implemented, thereby reducing potential impacts associated with an accidental spill or release of hazardous materials.

The Applicant will prepare and implement an Emergency Response Plan for the Project that outlines safety procedures in the event of an accidental spill or release of hazardous materials. Key personnel will be designated to train all employees working on the Project and will be responsible for administering safety procedures in the event of an accidental spill or release of hazardous materials. Safety procedures will be clearly displayed in all construction trailers, along with contact information for emergency services and treatment facilities.

E. Threatened and Endangered Species.

The Applicant has reviewed the Virginia Department of Game and Inland Fisheries ("VDGIF"), Virginia Fish and Wildlife Information Service ("VaFWIS"), VDGIF's Wildlife Environmental Review Map Service ("WERMS"), VDGIF's Northern Long-Eared Bat ("NLEB") Winter Habitat and Roost Trees Application, VDGIF's Little Brown Bat ("MYLU") and Tri-colored Bat ("PESU") Winter Habitat and Roosts Application, Department of Conservation and Recreation ("DCR") Natural Heritage Data Explorer ("NHDE"), and US Fish and Wildlife Service ("USFWS") Information for Planning and Conservation ("IPAC") databases for an analysis of potential impacts to natural heritage resources and threatened and endangered species. The analysis concluded that the only critical habitat potentially impacted by the Project is the following:

- Clontz Place Conservation Site – this site is located  $\pm 0.5$  mile southeast of Study

Area A and has a biodiversity significance ranking of B5 (general significance). Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*, G3G4T3/S2/N1/LE) is associated with this site. This species is state listed as endangered and is found roosting in hollow trees, abandoned structures and bridges. This species may also be found in large, older growth bald cypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*), and swamp black-gum (*Nyssa biflora*) associated with bottomland hardwood wetland/swamp systems.

- Moonlight Sinkholes Ponds Conservation Site – this site is located  $\pm 1.5$  miles east of the Project Site and has a biodiversity significance ranking of B2 (very high significance). The Coastal Plain Seasonal Pond (Swamp Tupelo-Overcup Oak Type, G1G2/S1S2/NL/NL) is associated with this site. This resource is characterized by seasonal ponds that are typically flooded up to 100 cm deep for a significant part of the year. These ponds can be isolated or occur in complexes.
- Route 617 East of Mill Swamp Conservation Site – this site is located  $\pm 0.2$  mile north of the Project Site and has a biodiversity significance ranking of B5 (general significance). Barking tree frog (*Hyla gratiosa*, G5/S1/NL/LT), which is state listed as threatened, is associated with this site.
- Pouches Creek Stream Conservation Unit (SCU) – this site is located within 2 miles downstream of the study area. This SCU has a biodiversity ranking of B4 (moderate significance). This stream is documented as “healthy” and contributes to high biological integrity within the watershed. Threats to this resource include point and non-point pollution, water withdrawal and introduction of non-native species.
- Coastal Plain Depression Swamps and Ponds – this site is identified within the Project Site and is found within portions of the parcels identified by Parcel No. 10-01-028 (177 ac) and Beaverdam Airpark. Coastal Plain Depression Swamps and Ponds (G2/SNR/NL/NL) are poorly-drained wetlands with fluctuating, seasonally perched water tables. The wetlands are sinkhole features that are often seasonally flooded. VDCR noted that 20-30 possible pond features are located within the Project Site. Coastal Plain depression swamps and ponds provide habitat for the following species:
  - Chicken turtle (*Deirochelys reticularia*) – is state listed as endangered. This species is a freshwater turtle and in Virginia are found interdunal swamps. There are only two known locations of chicken turtle populations in Virginia - First Landing in Virginia Beach and the Cat Ponds in Isle of Wight.
  - Mabee’s salamander (*Ambystoma mabeei*, G4/S1S2/N1/LT) – is state listed as threatened. This species is found in borrows at edges of bogs and ponds and in low wet ponds and swamps.
  - Eastern tiger salamander (*Ambystoma tigrinum*, G5/S1/N1/LE) – is state listed as endangered. The terrestrial habitat for this species consist of bottomland hardwood forests, conifer forests and open fields and the breeding habitat consists of limestone sinkhole ponds and coastal plain vernal pools.

- Barking tree frog (*Hyla gratiosa*, G5/S1/NL/LT) – state listed as threatened
- Harper's Fimbristylis (*Fimbristylis perpusilla*, G2/S1/SOC/LE) – is state listed as endangered. This species is an annual, grass-like herb found in depressional ponds.
- Pondspice (*Litsea aestivalis*, G2/S1/NL/NL) – is rare plant but not listed. This species is a shrub in the laurel family and is found in margins and hummocks of depressional ponds, limesink ponds, low wet woodlands, and swamps.

The Project will implement erosion and sediment control measures during construction to further prevent potential impacts to the vernal pools and perform any required field surveys to determine presences at any wetland impact locations. Therefore, no impacts to critical habitat are anticipated as a result of the Project.

VDGIF's NLEB Winter Habitat and Roost Trees Application was reviewed to identify winter habitats within 0.25 miles of the Site or known maternity roost trees within 150 feet of the Site (accessed August 4, 2020). No known NLEB winter hibernaculum or maternity roost trees were identified with the proposed Project area, referenced ranges of 2-mile radius. Therefore, no impacts to NLEB are anticipated as a result of the Project.

In addition to the Joint Application review by VDCR and VDGIF, agency personnel evaluated vernal pools identified within the Project Site directly in the field. The field evaluation by the agency provided site specific best management practices for avoiding impacts to the vernal pool habitats within the site.

The Project will implement the following measures to avoid and minimize potential impacts to threatened and endangered species:

- The Site has been configured to minimize impacts to wetlands and waters. A 100-foot buffer will be provided around all low quality vernal pools and a 300-foot buffer or wildlife corridor to the larger wetland complex surrounding the Project Site (Passenger Swamp) will be implemented. In addition, there will be no impacts to isolated wetlands, stream features or bottomland hardwood wetland systems.
- Connection to solar fields will be achieved via directional drill or overhead lines for upland to upland in wetland areas. All construction staging will be located in uplands.
- Erosion and sediment controls will be utilized and maintained throughout construction.

F. Erosion and Sediment Control

As discussed with regard to storm water management for the Project, all requirements for storm water management will be complied with as required by Surry County, Isle of Wight County and the DEQ, including implementation of an Erosion and Sediment Control Plan and a SWPPP.

G. Cultural and Historical Resources

Impacts to cultural and historical resources are reviewed and regulated by the Virginia Department of Historic Resources ("VDHR"), Surry County and Isle of Wight County. A Phase I cultural resource survey, including shovel testing, was completed in July 2020 to all accessible areas within the Project Site. (See Exhibit Q – Phase IA Cultural Resource Assessment.) Additional shovel testing surveys maybe required to expanded areas of the Project Site if/when access becomes available. The Applicant has consulted with VDHR and will continue to consult with VDHR as necessary. The Applicant will attempt to avoid or minimize any impacts to any National Register-eligible archaeological properties or archaeological properties manifested by above-ground remains, through design changes. If National Register-eligible architectural properties are identified in the areas of potential direct impacts or may be indirectly affected, a similar approach will be taken. Indirect impacts would most likely involve visual changes affecting the setting, feeling, or character of the historic property, and minimal treatment such as the introduction of visual screening will be sufficient.

H. Wildlife Resources

There are no anticipated impacts to wildlife resources associated with the Project and it is anticipated that there will be minimal impact to wildlife habitat based on a minimal amount of forest clearance required. Additionally, raised wildlife fencing may be installed to all wildlife passage through the site.

I. Agricultural, Forest and Recreational Resources

Based on a review of the Natural Resources Conservation Service ("NRCS"), soils at the Site are a mix of soils designated as Prime Farmland, Prime Farmland if drained, Not prime farmland, all areas are Prime Farmland and Farmland of Statewide Importance, and either protected from flooding or not frequently flooded during the growing season. However, the Site will be developed without any Federal agency financing, land acquisition, property management or technical assistance and therefore, the Farmland Protection Policy Act does not apply and a Land Evaluation and Site Assessment ("LESA") will not be conducted by the NRCS. It should be noted that the Site is currently silviculture and is undergoing extensive clearing after which the Site has the potential to be converted to a solar generating facility. Such clearing is being conducted by current rights holders for

commercial purposes.

The Site does not contain any federal, local, state, or private parks and recreation areas. The Site is not visible from any federal, local, state, or private parks.

Therefore, the Project would not impact natural forest resources within public lands, or impact federal, local, state, or private parks.

#### J. Noise

Noise impacts are assessed and regulated by Surry County and Isle of Wight County. The Applicant will consult with Surry County and Isle of Wight County as necessary and will comply with applicable noise limitations.

#### V. Pesticides and Herbicides

There is potential for use of herbicides to maintain vegetation at the Site. The contractor or Project personnel shall use herbicides in accordance with local, state, and federal regulations. Workers who apply herbicides shall have appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Herbicides shall be mixed and applied in conformance with the manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water bodies, herbicides shall not be applied directly to wildlife. Products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied if it is raining at the Site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

#### VI. Geology

No adverse effects are anticipated regarding geology/mineral resources. At this time, no known caves are present on the Site. If during the geotechnical investigation the Site is considered to have karst conditions, all reasonable means possible will be implemented to reduce the amount of water entering the soil to reduce the chance of future sinkholes.

Additionally, the Project would not prevent future access to mineral resources once the Project is decommissioned.

#### VII. Transportation Infrastructure

Access to and from the Project Site will generally be provided from State Route

617 (White Marsh Road ) to the north and Route 626 (Beechland Road) to the west. Traffic will increase in the vicinity of the Site during construction of the Project and would resume as normal during operations. The transportation infrastructure in the region currently handles large logging, aggregate, and refuse hauling trucks throughout the year, and can therefore support large deliveries of materials to the Site during construction.

A Transportation Management Plan ("TMP") will be implemented during construction of the Project to mitigate traffic impacts on the local transportation infrastructure. Measures in the TMP may include, but are not limited to, enforced speed limits, carpool programs, schedule of deliveries during off-peak hours, and construction with local emergency providers. On-site parking will be provided to workers during construction.

#### VIII. Emergency Planning.

The Project is not anticipated to have any significant impact on emergency planning requirements in Surry County and Isle of Wight County.

#### IX. Socioeconomic Impacts.

A combination of minimal environmental effects and significant economic benefits from the Project serves the public interest.

The Project is in the public interest for the following reasons:

- Overall environmental impacts from the Project will be minimal and addressed by permits and oversight by federal, state and local regulatory agencies.
- The Project will promote the public interest by providing economic benefits to Surry County and Isle of Wight County and the Eastern Virginia region, enhancing the competitive market for wholesale renewable power in Virginia, and providing future generating capacity within the Commonwealth. The economic benefits primarily will arise through the increased tax base from property taxes as well as state sales taxes and other taxes, approximately 787 employment opportunities during construction, and purchases from local merchants and vendors. The Project also will contribute to the ability to retain 9 existing permanent jobs at the facility. The business risk associated with the Project will be borne solely by the Applicant.
- The Project will contribute to electric system reliability in Virginia.

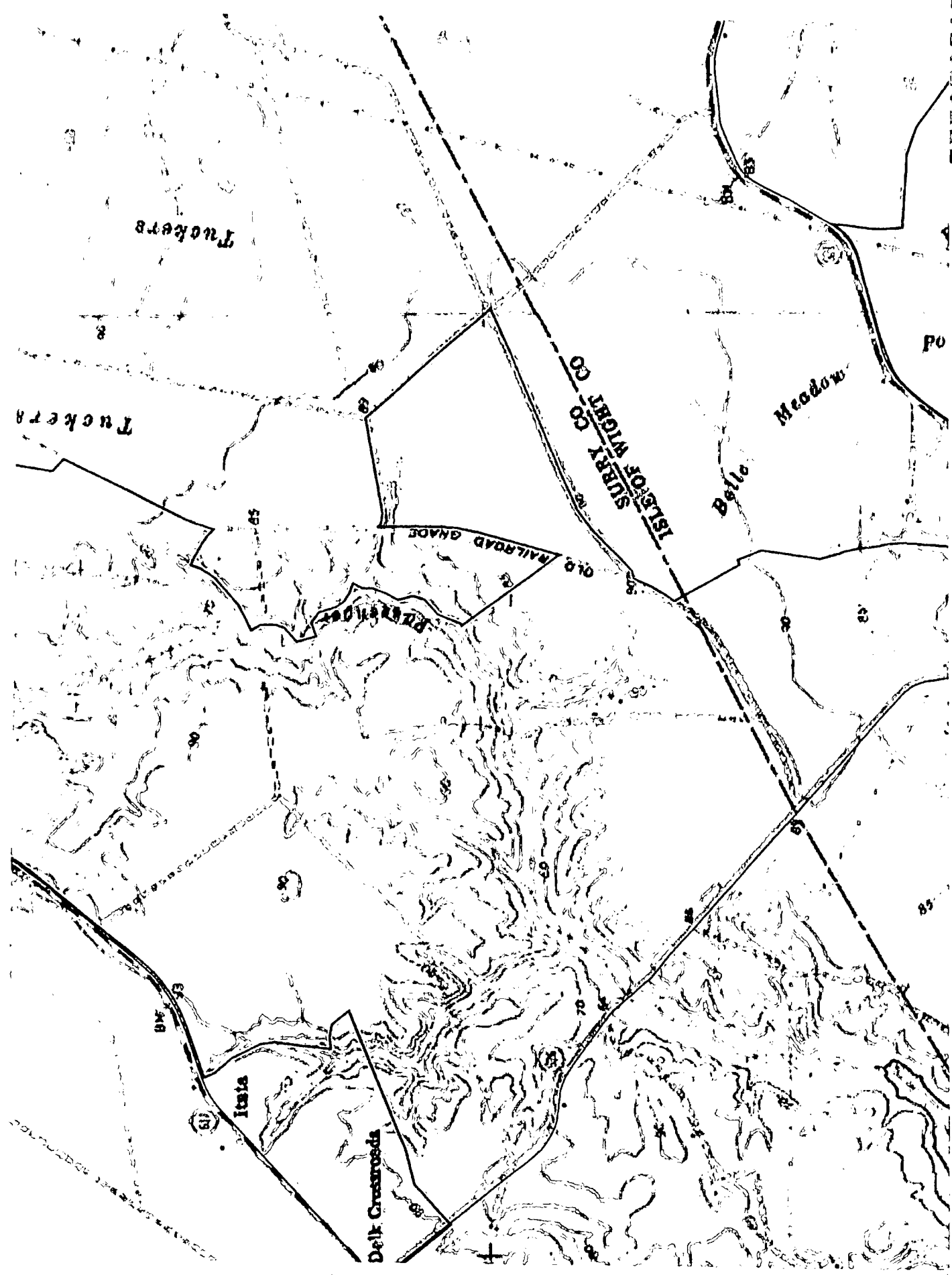
#### X. "No-Action" Alternative.

If the Project is not completed, there would be a slightly higher risk of brownouts,

blackouts and higher electricity costs to the consumer during periods of peak demand or reduced fuel supply. Construction of merchant plants such as the one proposed by the Applicant are a major goal, if not a mandate, of legislation enacted by the Virginia General Assembly for re-regulating the electric generating industry. Increasing demand for electricity, unalleviated by clean power sources such as the one proposed, may result in construction of facilities with greater adverse impacts on the environment than the Project. Construction of the Project also contributes to the Commonwealth's legislative mandated goal of 100% clean energy by 2050 and giving rural low-income Virginian communities access to energy efficiency programs with the Virginia Clean Economy Act.

#### XI. ASSESSMENT SUMMARY

The Project will provide economic benefits and enhanced reliability with minimal adverse environmental effects. The Applicant have already or will apply for all required permits, which will impose all necessary conditions to ensure protection of public health and the environment. Regulatory agencies with oversight responsibilities for all environmental aspects of the Project will continue to be engaged in the review of this Project, exercising oversight and applying permitting or regulatory requirements on the construction and operation of the Project as required. Due to the design and operation of the Project, as well as the applicable regulatory requirements, the Project will have no or minimal adverse environmental effects.





## **Exhibit H: Feasibility Study**

***Generation Interconnection  
Feasibility Study Report***

***For***

***PJM Generation Interconnection Request  
Queue Position AC1-161***

***Septa 500kV  
168.2 MW Capacity / 240 MW Energy***

**Revised May / 2017**

## Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, 36.2, as well as the Feasibility Study Agreement between FTS Devco, LLC, the Interconnection Customer (IC) and PJM Interconnection, LLC (PJM), Transmission Provider (TP). The Interconnected Transmission Owner (ITO) is Virginia Electric and Power Company (VEPCO).

## Preface

The intent of the Feasibility Study is to determine a plan, with high level estimated cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the IC. The IC may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the IC may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the Impact Study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The IC is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by ITO, the costs may be included in the study.

## General

The IC has proposed a solar generating facility located in Isle of Wight County, VA. The installed facilities will have a total capability of 240 MW with 168.2 MW of this output being recognized by PJM as capacity. The proposed in-service date for this project is 10/01/2019. **This study does not imply an ITO commitment to this in-service date.**

## Point of Interconnection

AC1-161 will interconnect with the ITO transmission system at one of the following points of interconnection:

Option 1 will connect into Septa 500kV substation.

Option 2 will connect via a new three breaker ring bus switching station that connects on the Smithfield – Surry 230kV line # 223.

### **Cost Summary**

The AC1-161 interconnection request will be responsible for the following costs:

Description	Total Cost
Attachment Facilities	\$2,200,000
Direct Connection Network Upgrades	\$1,500,000
Non Direct Connection Network Upgrades	\$1,500,000
<b>Total Costs</b>	<b>\$5,200,000</b>

In addition, the AC1-161 project may be responsible for a contribution to the following costs:

Description	Total Cost
New System Upgrades	\$0
Previously Identified Upgrades	\$255,650,000
<b>Total Costs</b>	<b>\$255,650,000</b>

Cost allocations for these upgrades will be provided in the System Impact Study Report.

Note: PJM Open Access Transmission Tariff (OATT) section 217.3A outline cost allocation rules. The rules are further clarified in PJM Manual 14A Attachment B. For New System Upgrades, the cost allocation rule differ depending on whether the minimum amount of upgrades to resolve a single reliability criteria violation will cost less than \$5,000,000. For upgrades estimated to cost less than \$5,000,000 the allocation of costs will not occur outside of the Queue in which the need for the Network Upgrade was identified. Cost allocation within the Queue will be contingent each Queue projects Distribution Factor on the overloaded facility. For upgrades estimated to cost \$5,000,000 or greater the allocation of costs will start with the first Queue project to cause the need for the upgrade. Later queue projects will receive cost allocation contingent on their contribution to the violation and are allocated to the queues that have not closed less than 5 years following the execution of the first Interconnection Service Agreement which identifies the need for this upgrade.

## Attachment Facilities

Generation Substation: Install metering and associated protection equipment. Estimated Cost \$700,000.

Transmission: Build 0.5 miles of 500 kV Line. Estimated Cost \$1,500,000.

The estimated total cost of the Attachment Facilities is \$2,200,000. It is estimated to take 18-24 months to permit (VA CPCN required) and complete this work. These preliminary cost estimates are based on typical engineering costs. A more detailed engineering cost estimates are normally done when the IC provides an exact site plan location for the generation substation during the Facility Study phase. These costs do not include CIAC Tax Gross-up. The single line is shown below in Attachment 1.

## Direct Connection Cost Estimate

Substation: Add an additional 500 kV Breaker at Septa 500 kV Switching Station may require substation expansion/re-arrangement. Estimated cost \$1,500,000 and is estimated to take 30-34 months to permit and construct.

## Non-Direct Connection Cost Estimate

Transmission: rearrange existing lines, Estimated Cost \$1,500,000.

Remote Terminal Work: During the Facilities Study, ITO's System Protection Engineering Department will review transmission line protection as well as anti-islanding required to accommodate the new generation and interconnection substation. System Protection Engineering will determine the minimal acceptable protection requirements to reliably interconnect the proposed generating facility with the transmission system. The review is based on maintaining system reliability by reviewing ITO's protection requirements with the known transmission system configuration which includes generating facilities in the area. This review may determine that transmission line protection and communication upgrades are required at remote substations.

## Contribution to Previously Identified System Reinforcements

Reinforcement: Skiffes Creek – Kingsmill – Pennimann – Waller 230 kV line # 209: wreck and rebuild the line to a rating of 1047 MVA. Estimated cost \$28,200,000 and it is estimated to take 30-36 months to permit (VA CPCN required), engineer and construct.

Reinforcement: Lightfoot– Waller 230 kV line # 2113: wreck and rebuild the line to a rating of 1047 MVA. Estimated cost \$15,200,000 and it is estimated to take 30-36 months to permit (VA CPCN required), engineer and construct.

Reinforcement: Carson - Midlothian 500 kV: replace wave trap at both North Anna Substations. This will increase emergency rating by 31% to 2403 MVA. Estimated cost \$500,000 and it is estimated to 12-16 months to engineer and construct.

Reinforcement: Elmont – Chickahominy 500 kV line #557: replace wave trap at both Elmont and Chickahominy Substations. This will increase line rating by 22% to 3424 MVA. Estimated cost \$500,000 and it is estimated to 14-16 months to engineer and construct.

Reinforcement: Brister - Chance 500kV: Wreck and rebuild the line since overload exceeds conductor rating of 2913 MVA by 3.1% to new line rating of 4300 MVA. It is estimated to cost \$73,000,000 and it is estimate to take 36-48 months to engineer, permit and construct.

Reinforcement: Elmont – Ladysmith 500kV: Wreck and rebuild the existing line since overload exceeds conductor rating of 2913 MVA by 3.1% new line rating 4300 MVA. VA CPCN is required. Estimated cost is \$88,000,000 and it is estimated to take 36 – 48 months to engineer, permit and construct.

Reinforcement: Ladysmith – Chancellor 500kV line #581: Wreck and rebuild the existing line since overload exceeds conductor rating of 2913 MVA by 3.1% new line rating 4300 MVA. A Virginia CPCN is required. It is estimated to cost \$50,000,000 and it is estimate to take 36-48 months to engineer, permit and construct.

Reinforcement: Midlothian – North Anna 500 kV line #576: replace wave trap at both North Anna Substations. This will increase emergency rating by 31% to 2403 MVA. Estimated cost \$250,000 and it is estimated to 12-16 months to engineer and construct.

Outage scheduling and coordination will impact the actual completion dates for the various identified network upgrades.

## **Interconnection Customer Requirements**

ITO's Facility Connection Requirements as posted on PJM's website

<http://www.pjm.com/~media/planning/plan-standards/private-dominion/facility-connection-requirements1.ashx>

An Interconnection Customer entering the New Services Queue on or after October 1, 2012 with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

**Voltage Ride Through Requirements** - The Customer Facility shall be designed to remain in service (not trip) for voltages and times as specified for the Eastern Interconnection in Attachment 1 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low voltage conditions, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

**Frequency Ride Through Requirements** - The Customer Facility shall be designed to remain in service (not trip) for frequencies and times as specified in Attachment 2 of NERC Reliability Standard PRC-024-1, and successor Reliability Standards, for both high and low frequency condition, irrespective of generator size, subject to the permissive trip exceptions established in PRC-024-1 (and successor Reliability Standards).

Reactive Power - The Generation Interconnection Customer shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading to 0.95 lagging measured at the generator's terminals.

## **Revenue Metering and SCADA Requirements**

### **PJM Requirements**

The IC will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for IC's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Sections 24.1 and 24.2.

## Option One

### Network Impacts

The Queue Project AC1-161 was evaluated as a 240.0 MW (Capacity 168.2 MW) injection at the Septa 500kV substation in the ITO area. Project AC1-161 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AC1-161 was studied with a commercial probability of 53%. Potential network impacts were as follows:

### Contingency Descriptions

The following contingencies resulted in overloads:

Contingency Name	Description
57602	CONTINGENCY '57602' /*NORTH ANNA OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /*MIDLOTHIAN TO NORTH ANNA (LINE 576) OPEN BRANCH FROM BUS 314914 TO BUS 314322 CKT 1 /*MIDLOTHIAN 500-230 (TX#2) OPEN BRANCH FROM BUS 314918 TO BUS 314232 CKT 1 /*NORTH ANNA 500-230 (TX#5) END
557T574	CONTINGENCY '557T574' /* ELMONT OPEN BRANCH FROM BUS 314908 TO BUS 314903 CKT 1 /*ELMONT TO CHICKAHOMINY (LINE 557) OPEN BRANCH FROM BUS 314903 TO BUS 314214 CKT 1 /*CHICKAHOMINY 500-230 (TX#1) OPEN BRANCH FROM BUS 314911 TO BUS 314908 CKT 1 /*ELMONT TO LADYSMITH (LINE 574) END
563T576	CONTINGENCY '563T576' /*MIDLOTHIAN OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /*MIDLOTHIAN TO NORTH ANNA (LINE 576) OPEN BRANCH FROM BUS 314914 TO BUS 314322 CKT 1 /*MIDLOTHIAN 500-230 (TX#2) OPEN BRANCH FROM BUS 314914 TO BUS 314902 CKT 1 /*MIDLOTHIAN TO CARSON (LINE 563) END
H2T557	CONTINGENCY 'H2T557' /* ELMONT OPEN BRANCH FROM BUS 314908 TO BUS 314903 CKT 1 /*ELMONT TO CHICKAHOMINY (LINE 557) OPEN BRANCH FROM BUS 314903 TO BUS 314214 CKT 1 /*CHICKAHOMINY 500-230 (TX#1) OPEN BRANCH FROM BUS 314908 TO BUS 314218 CKT 2 /*ELMONT 500-230 (TX#2) END



Contingency Name	Description
LN 557	CONTINGENCY 'LN 557' OPEN BRANCH FROM BUS 314214 TO BUS 314903 CKT 1 /* 6CHCKAHM 230.00 - 8CHCKAHM 500.00 OPEN BRANCH FROM BUS 314903 TO BUS 314908 CKT 1 /* 8CHCKAHM 500.00 - 8ELMONT 500.00 END
LN 563	CONTINGENCY 'LN 563' OPEN BRANCH FROM BUS 314902 TO BUS 314914 CKT 1 /* 8CARSON 500.00 - 8MDLTHAN 500.00 END
LN 567	CONTINGENCY 'LN 567' OPEN BRANCH FROM BUS 314903 TO BUS 314924 CKT 1 /* 8CHCKAHM 500.00 - 8SURRY 500.00 END
LN 573	CONTINGENCY 'LN 573' OPEN BRANCH FROM BUS 314918 TO BUS 314934 CKT 1 /* 8NO ANNA 500.00 - 8SPOTSYL 500.00 END
LN 574	CONTINGENCY 'LN 574' OPEN BRANCH FROM BUS 314908 TO BUS 314911 CKT 1 /* 8ELMONT 500.00 - 8LDYSMTH 500.00 END
LN 576	CONTINGENCY 'LN 576' OPEN BRANCH FROM BUS 314322 TO BUS 314914 CKT 1 /* 6MDLTHAN 230.00 - 8MDLTHAN 500.00 OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /* 8MDLTHAN 500.00 - 8NO ANNA 500.00 END
LN 594	CONTINGENCY 'LN 594' OPEN BRANCH FROM BUS 314916 TO BUS 314934 CKT 1 /* 8MORRSVL 500.00 - 8SPOTSYL 500.00 END
SPOTSHIT9033	CONTINGENCY 'SPOTSHIT9033' /*SPOTSYLVANIA OPEN BRANCH FROM BUS 314934 TO BUS 314916 CKT 1 /*SPOTSYLVANIA TO MORRISVILLE (LINE 9033) OPEN BRANCH FROM BUS 314934 TO BUS 314755 CKT 1 /*SPOTSYLVANIA 500/115 (TX#1) END
WT576	CONTINGENCY 'WT576' /*NORTH ANNA OPEN BRANCH FROM BUS 314914 TO BUS 314918 CKT 1 /*MIDLOTHIAN TO NORTH ANNA (LINE 576) OPEN BRANCH FROM BUS 314914 TO BUS 314322 CKT 1 /*MIDLOTHIAN 500-230 (TX#2) OPEN BRANCH FROM BUS 314918 TO BUS 314232 CKT 2 /*NORTH ANNA 500-230 (TX#6) END

## Summer Peak Analysis - 2020

### Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

#	Contingency Type	Name	Affected Area	Facility Description	Bus		Circuit	Power Flow	Loading %		Rating		MW Contribution
					From	To			Initial	Final	Type	MVA	
1	N-1	LN 567	DVP - DVP	6SKIFF CREEK-6KINGS M 230 kV line	314209	314386	1	DC	97.51	101.08	ER	442	15.75

### Multiple Facility Contingency

(Double Circuit Tower Line contingencies were studied for the full energy output. The contingencies of Line with Failed Breaker and Bus Fault will be performed for the Impact Study.)

#	Contingency Type	Name	Affected Area	Facility Description	Bus		Circuit	Power Flow	Loading %		Rating		MW Contribution
					From	To			Initial	Final	Type	MVA	
2	LFFB	H2T557	DVP - DVP	8MDLTHAN-8NO ANNA 500 kV line	314914	314918	1	DC	99.01	101.27	LD	3144	73.82

### Short Circuit

(Summary of impacted circuit breakers)

New circuit breakers found to be over-duty:

None

Contributions to previously identified circuit breakers found to be over-duty:

None

### Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

#	Contingency		Affected Area	Facility Description	Bus		Cir.	Power Flow	Loading %		Rating		MW Contribution	Ref
	Type	Name			From	To			Initial	Final	Type	MVA		
3	N-1	LN 557	DVP - DVP	6SKIFF CREEK-6KINGS M 230 kV line	314209	314386	1	DC	150.42	153.61	ER	442	14.1	1
4	N-1	LN 557	DVP - DVP	6PENNIMAN-6WALR209 230 kV line	314296	314415	1	DC	138.11	141.3	ER	442	14.1	2
5	N-1	LN 557	DVP - DVP	6KINGS M-6PENNIMAN 230 kV line	314386	314296	1	DC	141.98	145.17	ER	442	14.1	3
6	N-1	LN 557	DVP - DVP	6WALR209-6LIGH209 230 kV line	314415	314391	1	DC	122.33	125.52	ER	442	14.1	4
7	N-1	LN 557	DVP - DVP	8CARSON-8MDLTHAN 500 kV line	314902	314914	1	DC	118.9	121.05	ER	2442	52.59	5
8	LFFB	557T574	DVP - DVP	8CARSON-8MDLTHAN 500 kV line	314902	314914	1	DC	112.72	115.14	LD	3144	78.92	
9	LFFB	H2T557	DVP - DVP	8CARSON-8MDLTHAN 500 kV line	314902	314914	1	DC	104.41	106.76	ER	3144	76.74	
10	N-1	LN 576	DVP - DVP	8CHCKAHM-8ELMONT 500 kV line	314903	314908	1	DC	123.72	126.17	ER	2442	59.77	6
11	N-1	LN 563	DVP - DVP	8CHCKAHM-8ELMONT 500 kV line	314903	314908	1	DC	119.03	121.38	ER	2442	57.37	
12	LFFB	563T576	DVP - DVP	8CHCKAHM-8ELMONT 500 kV line	314903	314908	1	DC	107.84	110.49	LD	3144	85.29	
13	LFFB	WT576	DVP - DVP	8CHCKAHM-8ELMONT 500 kV line	314903	314908	1	DC	107.84	110.49	LD	3144	85.28	

#	Contingency		Affected Area	Bus		Cir.	Power Flow	Loading %		Rating		MW Contribution	Ref
	Type	Name		From	To			Initial	Final	Type	MVA		
14	LFFB	57602	DVP - DVP	314903	314908	1	DC	107.84	110.49	LD	3144	85.28	
15	N-1	LN 594	DVP - DVP	314905	314900	1	DC	117.09	117.66	ER	2442	31.97	7
16	N-1	LN 573	DVP - DVP	314905	314900	1	DC	111.79	112.35	ER	2442	31.39	
17	N-1	LN 576	DVP - DVP	314908	314911	1	DC	142.96	143.95	ER	2442	53.99	8
18	N-1	LN 563	DVP - DVP	314908	314911	1	DC	133.55	135.47	ER	2442	46.82	
19	LFFB	57602	DVP - DVP	314908	314911	1	DC	118.31	119.35	ER	3351	77.01	
20	LFFB	WT576	DVP - DVP	314908	314911	1	DC	118.31	119.34	LD	3351	77.01	
21	LFFB	563T576	DVP - DVP	314908	314911	1	DC	118.23	119.27	LD	3351	77.04	
22	N-1	LN 573	DVP - DVP	314911	314905	1	DC	107.99	108.52	ER	2738	32.47	9
23	N-1	LN 594	DVP - DVP	314911	314905	1	DC	105.28	105.78	ER	2738	31.28	
24	LFFB	SPOTSHIT 9033	DVP - DVP	314911	314905	1	DC	100.3	100.92	LD	3351	46.13	
25	LFFB	557T574	DVP - DVP	314914	314918	1	DC	115.7	118.08	LD	3144	77.6	10

#	Contingency		Affected Area	Facility Description	Bus		Cir.	Power Flow	Loading %		Rating		MW Contribution	Ref
	Type	Name			From	To			Initial	Final	Type	MVA		
26	N-1	LN 557	DVP - DVP	8MDLTHAN-8NO ANNA 500 kV line	314914	314918	1	DC	106.84	108.84	ER	2442	48.79	
27	N-1	LN 574	DVP - DVP	8MDLTHAN-8NO ANNA 500 kV line	314914	314918	1	DC	107.11	109.09	ER	2442	48.27	

### Steady-State Voltage Requirements

*(Summary of the VAR requirements based upon the results of the steady-state voltage studies)*

To be determined during Impact Study

### Stability and Reactive Power Requirement for Low Voltage Ride Through

*(Summary of the VAR requirements based upon the results of the dynamic studies)*

To be determined during Impact Study

### New System Reinforcements

*(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)*

Violation #	Overloaded Facility	Upgrade Description	Network Upgrade Number	Upgrade Cost
# 1	6SKIFF CREEK-6KINGS M 230 kV line	Wreck and rebuild the Skiffes Creek – Kingsmill – Pennimann – Waller 230 kV line to a rating of 1047 MVA. (Va CPCN Required). Estimated time: 30 – 36 months.	Pending	\$28,200,000
# 2	8MDLTHAN-8NO ANNA 500 kV line	Replace wave trap at both North Anna Substations. This will increase emergency rating by 31% to 3424 MVA. Estimated time 12 – 16 months.	Pending	\$250,000
Total New Network Upgrades				\$28,450,000