COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

Reports to the Governor of the Commonwealth of Virginia,
the Chairman of the Senate Committee on Commerce and Labor,
the Chairman of the House Committee on Commerce and Labor,
and the Commission on Electric Utility Regulation
of the Virginia General Assembly

COMBINED REPORTS

INCLUDING:

Annual Report on Grid Modernization, Reliability,
and Integration of Renewables
Pursuant to Chapter 296 of the 2018 Virginia Acts of Assembly

Annual Report on the Transmission Line Undergrounding Pilot
Pursuant to Chapter 296 of the 2018 Virginia Acts of Assembly

Annual Report on Construction of new Solar and Wind Projects
Pursuant to Chapter 296 of the 2018 Virginia Acts of Assembly

Annual Report on Solar Demonstration Programs
Pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly

Biennial Report on Third-Party PPA Pilot Program
Pursuant to Chapter 382 of the 2013 Virginia Acts of Assembly

November 27, 2019

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

JOEL H. PECK
CLERK OF THE COMMISSION
P.O. BOX 1197
RICHMOND, VIRGINIA 23218-1197

November 27, 2019

TO: The Honorable Ralph S. Northam
Governor, Commonwealth of Virginia

The Honorable Glen H. Sturtevant, Jr.
Chairman, Senate Committee on Commerce and Labor

The Honorable Terry G. Kilgore
Chairman, House Committee on Commerce and Labor

The Honorable Thomas K. Norment, Jr.
Chairman, Commission on Electric Utility Regulation

Members of the Commission on Electric Utility Regulation

Members of the Joint Commission on Technology and Science

Ladies and Gentlemen:

Pursuant to Chapter 296 of the 2018 Virginia Acts of Assembly, please find enclosed the Combined Report of the State Corporation Commission, which includes the following:

- The Annual Report on Grid Modernization, Reliability and Integration of Renewables;
- The Annual Report on the Transmission Line Undergrounding Pilot; and
- The Annual Report on Construction of new Solar and Wind Projects.

The Combined Report also includes the Annual Report on Solar Demonstration Programs pursuant to Chapter 771 of the 2011 Acts of Assembly and the Biennial Report on the Third-Party PPA Pilot Program pursuant to Chapter 382 of the 2013 Virginia Acts of Assembly and Chapter 803 of the 2017 Virginia Acts of Assembly.

Please let us know if we may be of further assistance.

Respectfully submitted,

Judith Williams Jagdmann, Chairman

Mark C. Christie, Commissioner

Patricia L. West, Commissioner

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EXECUTIVE SUMMARY

This document contains the combined reports ("Report") of the Virginia State Corporation Commission pursuant to five provisions of law. The Commission has reviewed and investigated each of these areas or topics listed below, and reports as follows:

Grid Modernization, Reliability, and Integration of Renewables (2018 Acts of Assembly Chapter 296):

Chapter 296 directs the Commission to assess (i) the reliability of electrical transmission or distribution systems; (ii) integration of renewable resources onto the utility's distribution grid; (iii) the utility's level of investment in generation, transmission, and distribution; (iv) the need for more generation during times of peak demand; and (v) distribution system hardening projects and enhanced physical security measures.

Concerning reliability, Virginia electric utilities participate in regional transmission planning through PJM Interconnection, LLC ("PJM"), the entity that manages the electric grid primarily at transmission-level voltages. At the distribution level, the Commission monitors reliability in part through utility reports on measures related to tree-trimming and indices that measure frequency and duration of electricity service outages.

Utility-owned and third-party owned renewable generation resources are being added to the electric distribution grid. Before connecting utility-scale resources to the electric grid, owners must coordinate with the affected local utility and with PJM. Typically, the Commission also must grant approval for such projects. The Commission is revising its regulations for small electrical generators to interconnect to the electric grid.

Concerning grid security and hardening activities, the Commission has given approval for Dominion Energy Virginia to implement physical security controls at ten substations. Currently pending before the Commission is the company's proposal to harden parts of the distribution grid serving 12,578 customers and 61 critical services that form part of the bottom 12% of the company's recent reliability performance. Appalachian Power Company withdrew its first grid modernization petition and has not submitted any similar proposals for Commission approval.

Both Dominion Energy Virginia and Appalachian Power Company are expected to have sufficient capacity to meet peak energy demands in the near term, either through company-owned generation or market purchases. Both companies also continue to invest in generation, transmission, and distribution of electricity. During 2018, such annual investments were:

Company	Generation	Transmission	Distribution
Dominion Energy Virginia	$1,675.0M	$1,060.0M	$634.0M
Appalachian Power Company	$62.7M	$297.8M	$225.6M

Transmission Line Undergrounding Pilot (2018 Acts of Assembly Chapter 296):

Dominion Energy Virginia's Haymarket Project, specifically the I-66 Hybrid Route, is the first of up to two projects approved under this Pilot. The company reports this project is in the final engineering and construction phase, with estimated completion by the end of 2021. The cost estimate of $172 million is $5 million more than was projected at the time of Commission approval but has remained steady for the past year. The Commission has received no request for a second transmission line to be constructed underground pursuant to the Pilot.

Construction of New Solar and Wind Projects (2018 Acts of Assembly Chapter 296):

Chapter 296 directs the Commission to report on the need for and new construction and development of utility-owned and -operated renewable resources. Since July 1, 2018, Virginia utilities have placed in operation a total of 72 MW of solar facilities. Dominion Energy Virginia also has approximately 900 MW of solar generation under development, as well as a 12 MW off-shore wind pilot. Third-parties also are developing approximately 801 MW of solar facilities. Chapter 296 sets forth a goal of 5,000 MW of new solar facilities

Solar Demonstration Programs (2011 Acts of Assembly Chapter 771):

Chapter 771 directs the Commission to report annually on certain solar demonstration programs. Dominion Energy Virginia's Solar Purchase Program features tariffs designed to facilitate customer-owned distributed solar generation. As part of the Solar Partnership Program, qualifying commercial, industrial, high school, and university customers representing 11 solar projects were constructed, with a total capacity of 7.7 MW. Total capital expenditures to date are approximately $25 million of the $80 million program cap.

Third-Party PPA Pilot Programs (2013 Acts of Assembly Chapter 382, amended by 2017 Acts of Assembly Chapter 803):

Chapters 382 (from 2013) and 803 (from 2017) direct the Commission to review pilot programs whereby third parties may sell energy from certain renewable generation facilities to qualifying customers pursuant to power purchase agreements. In the service territory of Appalachian Power Company, the program limit of 7 MW is sufficient; currently, no one is participating in the program. In the service territory of Dominion Energy Virginia, the program total is 50 MW. The subscription level is 8.3 MW as of mid-November 2019. Nine providers at 144 facilities have submitted notices of intent to participate in this program; total expected capacity related to these notices is approximately 41.2 MW.

The Commission Staff has received multiple letters from companies, counties, and para-governmental organizations expressing interest in the program in Dominion Energy Virginia's service territory and who are concerned that the program limit will be reached before their specific projects can be approved for program participation. In the view of this growing interest, the Governor and General Assembly may wish to consider increasing the program limit for Dominion Energy Virginia.

INTRODUCTION

Statutory Background

This document contains the combined reports ("Report") of the Virginia State Corporation Commission ("Commission") pursuant to the referenced provision(s):

- Grid Modernization, Reliability, and Integration of Renewables: 2018 Virginia Acts of Assembly Chapter 296, Enactment Clause 19, directs the Commission to submit annual reports by December 1 of each year assessing: (i) the reliability of electrical transmission or distribution systems; (ii) the integration of utility or customer owned renewable electric generation resources with the utility's electric distribution grid; (iii) the level of investment in generation, transmission, or distribution of electricity; (iv) the need for additional generation of electricity during times of peak demand; and (v) distribution system hardening projects and enhanced physical security measures;

- Transmission Line Undergrounding Pilot: 2018 Virginia Acts of Assembly Chapter 296, Enactment Clause 2, directs the Commission to submit annual reports by December 1 of each year assessing the progress of the underground pilot program for electrical transmission lines of 230 kilovolts ("kV") or less;

- Construction of new Solar and Wind Projects: 2018 Virginia Acts of Assembly Chapter 296, Enactment Clause 14, directs the Commission to submit annual reports by December 1 of each year assessing: (i) the aggregate annual new construction and development of new utility-owned and utility-operated generating facilities utilizing energy derived from sunlight; (ii) the integration of utility-owned renewable electric generation resources with the utility's electric distribution grid; (iii) the aggregate additional utility-owned and utility-operated generating facilities utilizing energy derived from sunlight placed in operation since July 1, 2018; and (iv) the need for additional generation of electricity utilizing energy derived from sunlight in order to meet the objective of the General Assembly on or before July 1, 2028;

- Solar Demonstration Programs: 2011 Virginia Acts of Assembly Chapter 771 directs the Commission to submit annual reports on any demonstration programs approved pursuant to this act; and,

- Third Party Pilot Programs: 2013 Virginia Acts of Assembly Chapter 382 and 2017 Virginia Acts of Assembly Chapter 803 direct the Commission to review the pilot program in 2015 and every two years thereafter. In its review, the Commission shall determine whether the pilot program limitations should be expanded, reduced, or continued.

Background of the Grid Transformation and Security Act

In 2018, the Virginia General Assembly ("General Assembly") passed the Grid Transformation and Security Act ("GTSA" or "SB 966"),[1] which, among other things: (i) provided for triennial reviews of base rate earnings for Appalachian Power Company ("APCo") beginning in 2020 and for Dominion Energy Virginia ("DEV" or "Dominion") beginning in 2021; (ii) created a new rate adjustment clause option for these utilities to recover the costs of distribution grid transformation projects; and (iii) changed the timing for these utilities to file Integrated Resource Plans ("IRPs") with the Commission from annually to once every three years. Each utility now makes an IRP filing in the year before that utility files its triennial base rate review. Additionally, SB 966 directed the Commission to submit annual reports on the following three topics:

1. Grid Modernization, Reliability, and Integration of Renewables, to be submitted annually by December 1;
2. Transmission Line Undergrounding Pilot, to be submitted annually by December 1, through 2024; and
3. Construction of new Solar and Wind Projects, to be submitted annually by December 1, through 2028.

Background of Demonstration/Pilot Program Reports

Through this document the Commission is also providing reports related to Solar Demonstration Programs[2] and the Third-Party PPA Pilot Program[3] since the applicable laws do not specify a particular filing date for these reports and since the information provided in the reports corresponds with the information required by the GTSA reports listed above.

A glossary of terms used throughout the Report can be found in Appendix 1.

[1] 2018 Va. Acts ch. 296.
[2] 2011 Va. Acts ch. 771.
[3] 2013 Va. Acts ch. 382 and 2017 Va. Acts ch. 803.

GRID MODERNIZATION, RELIABILITY, AND INTEGRATION OF RENEWABLES

Under the GTSA, DEV and APCo are required to petition the Commission, not more than once annually, for approval of a plan for electric distribution grid transformation projects. According to Code of Virginia ("Code") § 56-585.1 A 6, the GTSA requires that "any plan for electric distribution grid transformation projects shall include both measures to facilitate integration of distributed energy resources and measures to enhance physical electric distribution grid reliability and security."

Utility GTSA Filings

On July 24, 2018, DEV filed its first GTSA petition with the Commission. In that petition, the company sought Commission approval that particular expenses for the first three-year phase ("Phase I") of a ten-year plan ("GT Plan") were reasonable and prudent.[4] Phase I included seven components: (i) smart meters; (ii) customer information platform; (iii) reliability and resilience; (iv) telecommunications infrastructure; (v) cyber and physical security; (vi) predictive analytics; and (vii) emerging technology. DEV's forecasted investment in the GT Plan was as follows:

Portion of GT Plan	Total Capital Investment	Operations/Maintenance Costs
Full 10-year GT Plan	$3.08 billion	$429.0 million
Phase I (2019-2021)	$816.3 million	$101.5 million

On January 17, 2019, the Commission issued its Final Order approving as reasonable and prudent only those proposed Phase I investments related to cyber and physical security, including the supporting telecommunications infrastructure.[5]

On September 30, 2019, DEV filed its second GTSA-related petition with the Commission, for what DEV calls Phase IB of its GT Plan, which covers the same period as the Phase I filing

[4] *Petition of Virginia Electric and Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2018-00100, Doc. Con. Cen. No. 190130074, Final Order (Jan. 17, 2019) ("2018 GT Plan Final Order").
[5] 2018 GT Plan Final Order at 6-7, 15.

(2019 through 2021) and which, as proposed, covers the following six categories: (i) advanced metering infrastructure; (ii) customer information platform; (iii) grid technologies and grid hardening projects; (iv) telecommunications infrastructure; (v) cyber security; and (vi) a smart charging infrastructure pilot.[6] This petition is currently pending before the Commission. Under the GTSA provisions, the Commission's Final Order on this petition must be entered no later than six months after the date of filing, which in this case would be no later than March 30, 2020.

APCo also filed its first plan for electric distribution grid transformation projects with the Commission on December 14, 2018. However, on March 12, 2019, the Company filed a motion to withdraw its petition and refile at a future date, and the Commission granted that motion on March 13, 2019.[7]

The GTSA directs that the Commission's annual report on Grid Modernization, Reliability, and Integration of Renewables should address five specific sub-topics, which will be discussed in the following sections. Where applicable, some historical information is also provided.

(i) Reliability of Electric Transmission or Distribution Systems

At transmission-level voltages, PJM Interconnection, LLC. ("PJM") is the Regional Transmission Entity ("RTE") that manages the electric grid and wholesale electricity market in Virginia and across 12 other states and the District of Columbia. As part of its role, PJM must maintain reliability of the transmission grid, which includes addressing transmission system constraints that impede electric power delivery, and properly adjusting the generation output of all generation within its footprint to meet electricity demand. PJM uses a planning process called the

[6] *Petition of Virginia Electric and Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A 6 of the Code of Virginia, and approval of an addition to the terms & condition applicable to electric service*, Case No. PUR-2019-00154, Doc. Con. Cen. No. 191010125, Order for Notice and Hearing (Oct. 4, 2019) ("2019 GT Plan").

[7] *Petition of Appalachian Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2018-00198, Doc. Con. Cen. No. 190320225, Order Granting Motion to Withdraw Petition (Mar. 13, 2019).

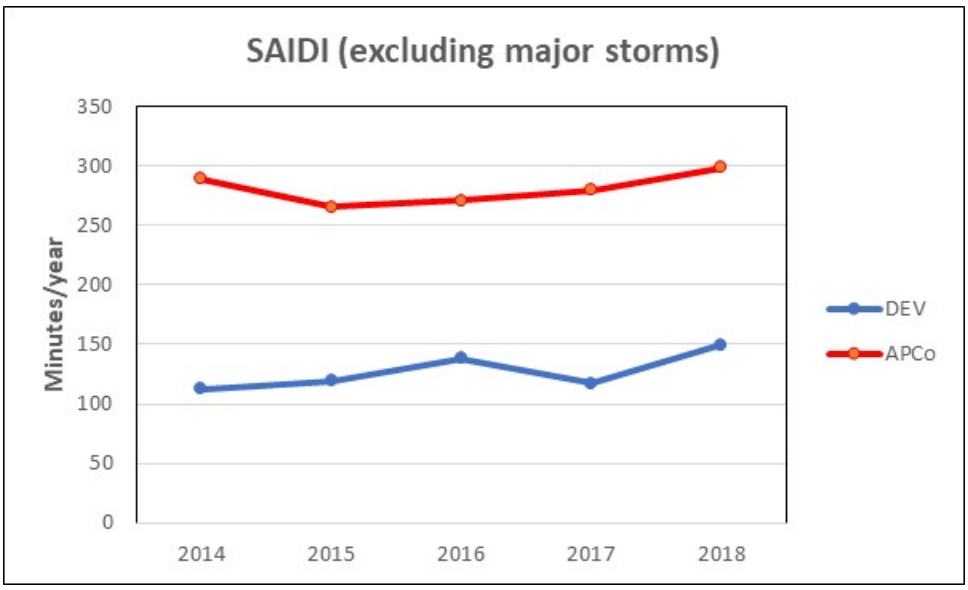
Regional Transmission Expansion Plan ("RTEP") to identify and evaluate changes to the electric grid that, if left unaddressed, would negatively impact reliability of the grid.

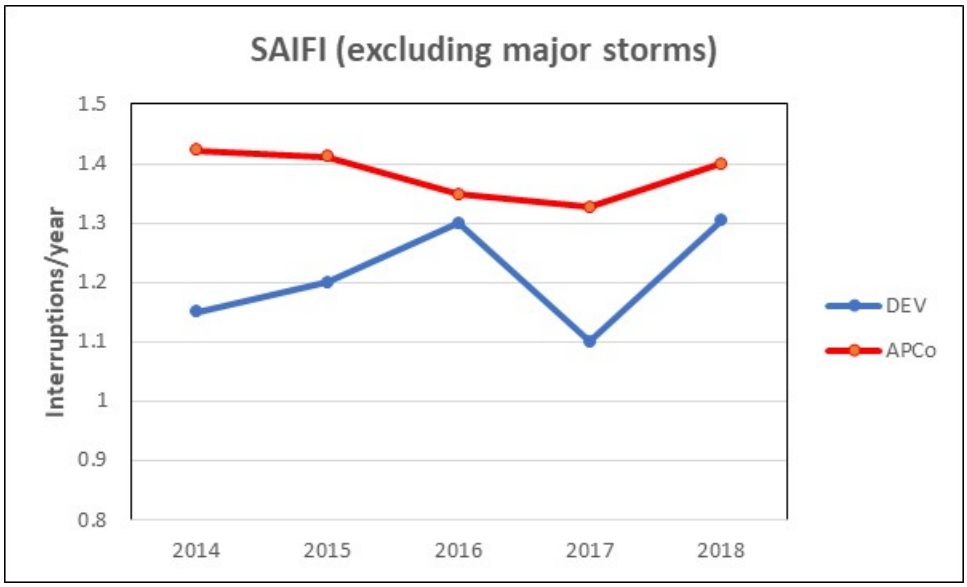
In addition to their participation in the PJM RTEP process, Virginia electric utilities seeking to construct transmission facilities that are not considered part of their ordinary course of business are required to apply at the Commission for Certificates of Public Convenience and Necessity ("CPCNs") under Title 56 of the Code of Virginia. During this type of proceeding, the Commission evaluates several factors, including the need for the project, the proposed project route, the project's environmental impact, and the impact of the proposed facilities upon the reliability of electric service delivery within the Commonwealth. These transmission-related processes have worked well for many years to maintain electric service reliability within the Commonwealth.

At the electric distribution level, the Commission monitors service reliability through a number of measures, including the Annual Reliability and Tree Trimming Report required from each of the three investor-owned utilities ("IOUs") in Virginia. This report tracks various reliability indices including, but not limited to, System Average Interruption Frequency Index ("SAIFI")[8] and System Average Interruption Duration Index ("SAIDI").[9] The charts below show DEV's and APCo's reliability indices over the past five years, based on data submitted by the companies in their annual reliability reports to the Commission.

[8] SAIFI, the "how often" index, is used by electric utilities as a measure of the frequency of electric outages and is defined as the average number of interruptions experienced per customer.

[9] SAIDI, the "how long" index, is commonly used by electric utilities as an indicator of the duration of electrical outages, defined as the average outage duration for each customer served. It should be noted that both SAIFI and SAIDI omit the impacts of major events, such a hurricanes or derechos, from their calculations.





While system-based metrics like SAIDI and SAIFI are universally used by the electric utility industry to monitor trends on a utility-specific basis, it is difficult to compare one utility to another because these metrics do not account for differences in utility infrastructure (underground vs. overhead), customer density, tree exposure, topography of utility service territories, weather incidents/patterns, and varying definitions of major storm/event. For example, APCo's service territory contains a great deal of mountainous, rural, and customer-sparse territory in the western part of Virginia, whereas DEV's territory in the eastern part of the state is generally flatter and includes large, customer-dense urban and suburban areas. Consequently, in a comparable situation

affecting both companies' distribution grids, fewer of APCo's customers may be affected, but service restoration may take longer when compared to the impact on customers in DEV's service territory.

Additionally, weather can vary considerably for one utility from year to year, or between utilities within the same year.

(ii) Integration of Utility- or Customer-Owned Renewable Electric Generation Resources with Utility's Electric Distribution Grid

DEV asserts that its proposed 2019 GT Plan will allow the Company safely and effectively to integrate customer-level distributed energy resources such as rooftop solar.[10] The company, however, has not proposed any programs to incentivize customer-owned distributed energy resources at this time.[11]

To facilitate the integration of small renewable resources on Virginia's distribution electric grid, on September 5, 2018, the Commission initiated a rulemaking proceeding[12] to update the Commission's existing "Regulations Governing Interconnection of Small Electrical Generators,"[13] last revised in May 2009. Since 2009, there have been numerous changes in applicable laws and Federal Energy Regulatory Commission ("FERC") guidelines, as well as technological changes in the power industry, that have rendered the existing Interconnection Regulations inadequate to support the proper integration of a growing number of renewables into the electric grid. During this rulemaking process, Commission Staff ("Staff") solicited comments from, and held meetings with, stakeholders and persons having an interest in the Commission's Interconnection Regulations

[10] 2019 GT Plan at 15.
[11] The total installed net metering capacity, as reported to the Commission by DEV, APCo, KU, and the Virginia electric cooperatives is approximately 83 megawatts ("MW"), as of July 1, 2019.
[12] *Ex parte: In the matter of revising the Commission's Regulations Governing Interconnection of Small Electrical Generators*, Case No. PUR-2018-00107, Order Initiating Rulemaking Proceeding (Sept. 5, 2018).
[13] 20 VAC 5-314-10 *et seq.* ("Interconnection Regulations") These regulations establish standardized interconnection and operating requirements for the safe operation of electric generating facilities with a rated capacity of 20 MW or less connected to electric utility distribution (and in certain cases transmission) systems in Virginia.

and the interconnection of small electrical generators within the Commonwealth. The Commission anticipates that it will issue procedural order formally setting out revised regulations for comment in the first half of 2020.

Before utility-scale generation resources can be integrated into Virginia's electric transmission or distribution grid, developers must submit any such project to PJM for a series of technical and cost studies designed, among other things, to assess the impact of the project's interconnection on the reliability of PJM's transmission grid. If such a project is being installed on the distribution system, PJM coordinates with the local utility to ensure that impacts to the distribution system are also studied. That process identifies any electric infrastructure upgrades needed to address potential reliability issues caused by integration of the proposed resource, and also, when applicable, assigns the costs associated with addressing those issues among individual developers whose proposed projects contribute to the same electric reliability issues. Additionally, the Commission must issue CPCNs for virtually all utility projects and for certain non-utility projects. In such proceedings, the Commission must determine whether the proposed project will negatively impact reliability of the electric grid. A project that may negatively impact grid reliability can nevertheless receive a CPCN if the developer funds grid upgrades found necessary to maintain reliability.

Private developers and utilities (the latter, subject to certain conditions) seeking to interconnect renewable energy generating resources of up to 150 MW capacity at the transmission or distribution level also may apply for a Permit by Rule ("PBR") from the Virginia Department of Environmental Quality ("DEQ") before constructing such facilities.[14] The PBR process requires that technical studies be performed by PJM or the electric utility to demonstrate no negative impact on electric reliability in the Commonwealth. A CPCN may also be required from the Commission

[14] *See* Code § 10.1-1197.5 *et seq*.

for construction of any generation or distribution tie lines from the renewable generation facility to the electric grid.

A further discussion of the integration of utility-owned renewable electric generation resources is presented later in this Report under "Construction of New Solar and Wind Projects."

(iii) Level of Investment in Generation, Transmission, or Distribution of Electricity

Electric utilities in Virginia continue to invest in generation, transmission, and distribution facilities used to serve their customers. The tables below show the cumulative and annual net investments in plant in service made by Virginia's two largest utilities, DEV and APCo, since 2014.

Dominion Energy Virginia
Cumulative and Annual Plant in Service Investment
(in Millions)

	Generation		Transmission		Distribution		Other[15]	
Year	Balance	Annual Investment	Balance	Annual Investment	Balance	Annual Investment	Balance	Annual Investment
2014	16,604.0		5,884.0		9,526.0		697.0	
2015	17,120.0	516.0	6,963.0	1,079.0	10,048.0	522.0	709.0	12.0
2016	18,684.0	1,564.0	7,871.0	908.0	10,573.0	525.0	745.0	36.0
2017	19,201.0	517.0	8,332.0	461.0	11,151.0	578.0	794.0	49.0
2018	20,876.0	1,675.0	9,392.0	1,060.0	11,785.0	634.0	821.0	27.0

Appalachian Power Company
Cumulative and Annual Plant in Service Investment
(in Millions)

	Generation		Transmission		Distribution		Other	
Year	Balance	Annual Investment	Balance	Annual Investment	Balance	Annual Investment	Balance	Annual Investment
2014	6,824.0		2,228.0		3,258.3		373.5	
2015	6,200.8	(623.2)	2,408.1	180.1	3,402.5	144.2	345.5	(28.0)
2016	6,332.8	132.0	2,796.9	388.8	3,569.1	166.6	373.5	28.0
2017	6,446.9	114.1	3,019.9	223.0	3,763.8	194.7	427.9	54.4
2018	6,509.6	62.7	3,317.7	297.8	3,989.4	225.6	485.8	57.9

[15] The category “Other" includes office furniture, transportation equipment, and other general plant that is not specific to the generation, transmission, or distribution functions.

(iv) Need for Additional Generation of Electricity During Times of Peak Demand

Virginia's two largest IOUs meet their peak energy demand[16] through a combination of company-owned generation and access to PJM's energy and capacity markets. Both DEV and APCo have had relatively flat-to-declining growth in their respective summer peak demand since 2011. Through 2022, both companies are expected to have sufficient capacity to meet their peak energy demands, either through company-owned generation or PJM's markets.[17]

(v) Distribution System Hardening Projects and Enhanced Physical Security Measures

Dominion's pending 2019 GT Plan petition includes the following programs that appear designed to address system hardening and enhance physical security: (i) Physical Security program; (ii) Grid Hardening program; and (iii) certain components of the Grid Technologies program.

Under the proposed Grid Technologies program, Dominion proposes to construct a "self-healing" grid that the company states would utilize "smart grid devices such as switches, reclosers, and line sensors; a communications network; and a control system that would automatically isolate outages to the smallest possible group of customers and reroute power to restore most customers in a matter of seconds or minutes. This type of system also provides details about the specific location of the fault, allowing crews to arrive and assess repair needs faster, speeding the restoration time for the remaining customers."[18]

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[16] "Peak energy demand" means the amount of energy used by each IOU's customers during the hour of the coincident summer peak that occurs in PJM. This hour is used to determine the amount of capacity for which an IOU is responsible in order to maintain reliability in the broader PJM system.

[17] *Petition of Virginia Electric and Power Company, For approval and certification of the proposed US-3 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider US-3, under § 56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2018-00101, Doc. Con. Cen. No. 190110182, Order Granting Certificates at 10 (Jan. 24, 2019) ("Any capacity need in the immediate short-term appears to be driven by the Company's election not to use certain of its existing generating units."). *In re: Appalachian Power Company's Integrated Resource Plan filing pursuant to § 56-597 et seq.,* Case No. PUR-2018-00058, Doc. Con. Cen. No. 181220151, Final Order at 4 (Dec. 18, 2018).

[18] 2019 GT Plan at 22.

Under the Grid Hardening program, DEV proposes to:[19]

- Harden mainline feeders;[20]
- Deploy targeted electric distribution line corridor improvement activities;[21]
- Proactively upgrade certain distribution system assets;[22] and,
- Mitigate "voltage islands."[23]

Under Phase IB of the 2019 GT Plan, DEV proposes to harden 11 feeders serving 12,578 customers and 61 critical services that form part of the bottom 12% of the company's reliability performance over the past 5 years.[24] According to the company's proposal, 61 miles of overhead mainline feeders would be strengthened, and an additional two miles converted from overhead to underground. The estimated capital costs of this program over the three years of Phase IB is approximately $47.9 million, and approximately $667.8 million over the ten-year period of the overall GT Plan.[25]

DEV's 2019 GT Plan does not request approval for any additional physical security projects as part of Phase IB. Instead, DEV plans to continue implementing the security programs that were approved by the Commission in the 2018 GT Plan, in which physical security controls would be implemented at ten substations along with all associated cybersecurity and telecommunications controls.[26] No other Virginia electric utility has submitted plans for system hardening or enhanced physical security measures.

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[19] 2019 GT Plan at 25-26.
[20] Per DEV, "hardening" activities would include physically strengthening infrastructure using newly-implemented stronger standards when rebuilding, relocating, or undergrounding targeted main feeder segments, and improving distribution system architecture and connectivity to provide feeder tie capabilities.
[21] Specifically, DEV proposes to remediate ash tree mortality and implement an herbicide program for ground floor maintenance.
[22] Equipment targeted includes substation transformers with poor health and high customer impact and service transformers that are overloaded or not providing voltage within the proper bandwidth.
[23] DEV describes "voltage islands" as areas within the company's service territory where a single substation transformer serves a population of customers without the support of available load transfer capability within the substation or through field tie switches to adjacent feeders, thereby exposing customers to the risk of an extended outage if the single substation transformer fails. Mitigation strategies would typically involve installation of a second transformer and feeder reconfiguration to provide alternate paths for power delivery upon failure of a transformer.
[24] 2019 GT Plan, Direct Testimony of company witness Wright at 24.
[25] 2019 GT Plan, Direct Testimony of company witness Wright, Schedule 1 at 9.
[26] 2019 GT Plan, Direct Testimony of company witness Bransky at 4.

TRANSMISSION LINE UNDERGROUNDING PILOT

Underground Pilot Program - Background

As part of the GTSA, the General Assembly established a pilot program requiring the construction of two qualifying electrical transmission lines of 230 kV or less in whole or in part underground ("Underground Pilot Program"). The GTSA directed the Commission to "report annually to the Commission on Electric Utility Restructuring, the Joint Commission on Technology and Science, and the Governor on the progress of the pilot program by no later than December 1 of each year that the GTSA is in effect" and to submit a final report no later than December 1, 2024.

Specifically, the GTSA directed the Commission to approve, as qualifying projects under the Underground Pilot Program: (i) a transmission line meeting the description of Dominion's Haymarket 230 kV double circuit transmission line and 230-34.5 kV Haymarket Substation[27] that uses the I-66 Hybrid Route;[28] and (ii) one additional qualifying project from among "applications submitted by public utilities for certificates of public convenience and necessity for the construction of electrical transmission lines of 230 kilovolts or less filed between the July 1, 2018, and July 1, 2020." For purposes of the GTSA, a project is qualified to be placed underground, in whole or in part, if it meets all the following criteria:

i) an engineering analysis demonstrates that it is technically feasible to place the proposed line, in whole or in part, underground;

ii) the governing body of each locality in which a portion of the proposed line will be placed underground indicates, by resolution, general community support for the project and that it supports the transmission line to be placed underground;

[27] *Application of Virginia Electric and Power Company, For approval and certification of Electric Facilities Haymarket 230 kV Double Circuit Transmission Line and 230-34.5 kV Haymarket Substation*, Case No. PUE-2015-00107, Doc. Con. Cen. No. 180620319, Order on Request to Participate in Pilot Program (Jul. 26, 2018).

[28] The I-66 Hybrid Route is a 230 kV double circuit electrical transmission line approximately 5.3 miles long, has both overhead and underground transmission facilities, includes an underground portionof approximately 3.1 miles in length, and will be constructed within or immediately adjacent to the right of way of interstate highway I-66 in Prince William County and the Town of Haymarket.

iii) a project has been filed with the State Corporation Commission or is pending issuance of a certificate of public convenience and necessity by July 1, 2020;

iv) the estimated additional cost of placing the proposed line, in whole or in part, underground does not exceed 2.5 times the cost of placing the same line overhead, assuming accepted industry standards for undergrounding to ensure safety and reliability; if the public utility, the affected localities, and the State Corporation Commission agree, a proposed underground line whose cost exceeds 2.5 times the cost of placing the line overhead may also be accepted into the pilot program;

v) the public utility requests that the project be considered as a qualifying project under this enactment; and

vi) the primary need of the project shall be for purposes of grid reliability, grid resiliency, or to support economic development priorities of the Commonwealth and shall not be to address aging assets that would have otherwise been replaced in due course.

Underground Pilot Project Selection Process

Pursuant to the GTSA, if a public utility requests that a transmission line project be considered as a qualifying project for the Underground Pilot Program, the Commission will consider such a request during a CPCN proceeding, along with the Commission's typical assessment of project need, proposed route, and environmental impacts. If the Commission approves a CPCN for the proposed transmission line project, the Commission would also rule on inclusion of the project in the Underground Pilot Program.

Progress of the Underground Pilot Program

Apart from Dominion's previously mentioned Haymarket Project, the Commission received two other potentially qualifying transmission line CPCN applications between November 1, 2018, and July 1, 2019. The filers of those applications did not request that those transmission line projects be considered under the Underground Pilot Program.

On July 2, 2018, Dominion filed a "Request to Participate in the Pilot Program Established by Enactment Clause 2 of the Grid Transformation and Security Act of 2018." The Company requested approval of the Haymarket Project, specifically the I-66 Hybrid Route, as a qualifying project under Section 2 of Enactment Clause 2 of SB 966. On July 26, 2018, the Commission

approved the Haymarket Project using the I-66 Hybrid Route as a pilot project. Appendix 2 of this Report provides a letter to DEV requesting a status update on the project. Appendix 3 provides the status update Dominion provided on the permitting, real estate, engineering and construction activities, cost, and schedule of the ongoing Haymarket Project. According to the update, all permits required for project construction have been obtained, with the exception of the Army Corps of Engineers permit. The final route alignment also has been determined, and Dominion is in the process of acquiring the necessary rights-of-way and easements along the route. The cost estimate of $172 million remains unchanged from 2018, approximately $5 million higher than the estimate at the conclusion of the Commission proceeding approving the Haymarket Project.

CONSTRUCTION OF NEW SOLAR AND WIND PROJECTS

Enactment Clause 14 of the GTSA states that it is the objective of the General Assembly that new utility-owned and utility-operated generating facilities, utilizing energy derived from sunlight and from wind with an aggregate capacity of 5,000 MW (including rooftop solar installations with a capacity of not less than 50 kilowatts ("kW")), and with an aggregate capacity of 50 MW, be placed in service on or before July 1, 2028.

The Commission must submit a report and make recommendations on or before December 1 of each year assessing: (i) the aggregate annual new construction and development of new utility-owned and utility operated generating facilities utilizing energy derived from sunlight; (ii) the integration of utility-owned renewable electric generation resources with the utility's electric distribution grid; (iii) the aggregate additional utility-owned and utility-operated generating facilities utilizing energy derived from sunlight placed in operation since July 1, 2018; and (iv) the need for additional generation of electricity utilizing energy derived from sunlight in order to meet

the objective of the General Assembly on or before July 1, 2028. The responses provided below include data as of July 1, 2019.[29]

(i) Aggregate Annual New Construction and Development of New Utility-Owned and Utility-Operated Generating Facilities Utilizing Energy Derived from Sunlight

New Construction by Virginia Utilities

Since the time of the Commission's last report on November 30, 2018, DEV has put two additional solar facilities into operation. These facilities are the Montross Solar Facility, a 20 MW facility[30] located in Westmoreland County that entered operation in December 2018, and the Gloucester Solar Facility, a 20 MW project located in Gloucester County that began commercial operation in April 2019. These facilities were approved through the DEQ's PBR process.

New Development

DEV has multiple solar facilities currently under development. The Colonial Trail West Solar Facility (142 MW) and the Spring Grove I Solar Facility (98 MW) have been approved by the Commission and remain under development.[31] Additionally, the Commission approved DEV's application to purchase power from the Water Strider (80 MW) solar facility through a power purchase agreement ("PPA"). [32] This facility is still under development. Additionally, DEV is

[29] While § 56-596.1 only requires the reporting of facilities utilizing sunlight, the objective within the Code section also refers to wind. Additionally, § 56-585.1:4 A of the Code requires "the construction or purchase by a public utility of one or more solar or wind generation facilities located in the Commonwealth or off the Commonwealth's Atlantic shoreline…having in the aggregate a rated capacity that does not exceed 5,000 megawatts." Code § 56-585.1 A 6 also makes multiple public interest declarations related to wind generation. Therefore, for the purposes of this report, wind generation facilities have been included within the reporting data. A "public utility" or "utility," as used in § 56-596.1 and § 56-585.1:4 A, is not specifically defined in Chapter 23 of Title 56. For the purposes of this report, data pertaining to electric cooperatives and merchant facilities has been provided., as well as data from the Commonwealth's IOUs.

[30] All MW provided in this section are alternating current (AC).

[31] *Petition of Virginia Electric and Power Company, For approval and certification of the proposed US-3 Solar Projects pursuant to §§ 56-580 D and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider US-3, under § 56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2018-00101, Doc. Con. Cen. No. 190110182, Order Granting Certificates (Jan. 24, 2019), and Doc. Con. Cen. No. 190420099, Order Approving Rate Adjustment Clause (Apr. 15, 2019).

[32] *Petition of Virginia Electric and Power Company, For a prudency determination with respect to the Water Strider Solar Power Purchase Agreement pursuant to § 56-585.1:4 F of the Code of Virginia*, Case No. PUR-2018-00135, Doc. Con. Cen. No. 181110152, Final Order (Nov. 2, 2018). While the Water Strider facility is not a utility-owned

seeking Commission approval of the Sadler Solar Facility (100 MW); this case remains pending.[33] DEV also continues to develop the Coastal Virginia Offshore Wind Project (12 MW) ("CVOW").

DEV also is pursuing certain "ring-fenced" projects (*i.e.*, projects whose costs and revenues are associated only with customers, such as governmental customers, not subject to the Commission's jurisdiction). Specifically, Dominion has notified the Staff that DEQ has approved development of the Grasshopper Solar (80 MW) project through the PBR process. The Commission is also aware of other ring-fenced facilities under development with DEV totaling 400 MW; data related to these facilities currently is confidential.

Northern Virginia Electric Cooperative has announced a 300 MW PPA with D.E. Shaw Renewable Investments, which will include multiple solar facilities, some of which will be located in Virginia. Because the precise locations for these facilities is still being determined, the number of megawatts attributable to Virginia is currently unknown.

In addition, merchant generators are continuing to develop approximately 801 MW of solar facilities, including a 500 MW solar facility approved by the Commission and being developed in Spotsylvania County by Pleinmont Solar, LLC, and others,[34] and other facilities that DEQ has approved through its PBR process.

A table reflecting the status of constructed and under development solar and wind projects as of July 1, 2019, is provided in Appendix 4.

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and utility-operated generation facility, it qualifies as a newly developed solar facility since July 1, 2018 pursuant to § 56-585.1:4 D.

[33] *Petition of Virginia Electric and Power Company, For approval and certification of the proposed US-4 Solar Project pursuant to § 56-580 D et al., and for approval of a rate adjustment clause, designated Rider US-4, under §56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2019-00105, Doc. Con. Cen. 190750095, Order for Notice and Hearing (Jul. 31, 2019).

[34] *Joint Application of Pleinmont Solar, LLC, et al. for certificates of public convenience and necessity for nominal 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, Doc. Con. Cen. No. 180820045, Order Granting Certificates (Aug. 8, 2018).

(ii) Integration of Utility-Owned Renewable Electric Generation Resources with the Utility's Electric Distribution Grid

DEV

DEV is studying integration of renewable energy facilities into its electric grid through several mechanisms. For example, DEV is utilizing its Solar Partnership Program to study the benefits and impacts of small-scale renewable electric generation resources on targeted distribution circuits.[35] Dominion's 12 MW CVOW pilot is a demonstration project to study offshore wind generation and how to transmit the generation produced miles out in the ocean onto land and into the company's electric grid.[36] As part of its proposed 2019 GT Plan currently pending before the Commission, Dominion plans to invest in advanced metering infrastructure, intelligent grid devices, and automated control systems. The company claims that its proposed investments will improve system reliability and resiliency by eliminating certain outage events and the associated voltage fluctuations that ripple across the distribution grid and will also ensure power is restored more quickly when it does go out. DEV refers to these investments as "transformational" and asserts that they will provide the company with increased situational awareness and control capabilities to manage grid operations and minimize disruptions to customers' business operations.[37]

Electric Cooperatives

Virginia's electric cooperatives regulated by the Commission continue to assess the viability of utility-owned renewable generation resources. The cooperatives have participated in

[35] *Application of Virginia Electric and Power Company, For approval of a Community Solar Power Program and for certification of proposed distributed solar generation facilities pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly, and §§ 56-46.1 and 56-580 D*, Case No. PUE-2011-00117, Order (Nov. 28, 2012). ("Solar Partnership Program")

[36] *Petition of Virginia Electric and Power Company, For a prudency determination with respect to the Coastal Virginia Offshore Wind Project pursuant to § 56-585.1:4 F of the Code of Virginia*, Case No. PUR-2018-00121, Doc. Con. Cen. No. 181110153, Final Order (Nov. 2, 2018).

[37] 2019 GT Plan at 6.

multiple working groups on these and other related topics and intend to be active in the Commission's rulemaking on Small Generator Interconnections.[38]

(iii) Aggregate Additional Utility-Owned and Utility-Operated Generating Facilities Utilizing Energy Derived from Sunlight Placed in Operation Since July 1, 2018

All Virginia utility-owned and utility-operated solar generation facilities placed in operation since July 1, 2018, are DEV facilities. These include:

- UVA Hollyfield Solar Facility, 17 MW, operational September 2018;
- UVA Puller Solar Facility, 15 MW, operational October 2018;
- Montross Solar Facility, 20 MW, operational December 2018; and,
- Gloucester Solar Facility, 20 MW, operational April 2019.

(iv) Need for Additional Generation of Electricity Utilizing Energy Derived from Sunlight to Meet the Objective of the General Assembly on or Before July 1, 2028

The table below shows the aggregate solar and wind facilities that have been constructed since July 1, 2018.

Aggregate Solar and Wind Facilities Constructed since July 1, 2018

Total Solar & Wind General Assembly Objective	MW
Objective:	**5,000**
Total IOU Owned/Operated Solar Constructed since July 1, 2018:	72
Total IOU Solar PPAs Constructed since July 1, 2018:	0
Total IOU Owned/Operated Wind Constructed since July 1, 2018:	0
Total IOU Wind PPAs Constructed since July 1, 2018:	0
Total Remaining to Meet Objective:	**4,928**

[38] As previously noted, a procedural order setting forth revised regulations for comment is expected in the first half of 2020.

SOLAR DEMONSTRATION PROGRAMS

Chapter 771 of the 2011 Virginia Acts of Assembly ("Chapter 771") directs the Commission to consider for approval petitions filed by a utility to construct and operate distributed solar generation facilities and to offer special tariffs to facilitate customer-owned distributed solar generation. Pursuant to Chapter 771, the Commission approved two such applications from DEV:

- An application to construct and operate distributed solar generation facilities (the Solar Partnership Program); and,
- An application for approval of tariffs designed to facilitate customer-owned distributed solar generation as an alternative to net metering (the Solar Purchase Program).[39]

The Solar Purchase Program has concluded, and no further data is being provided related to this program.[40] DEV continues to provide data annually related to the Solar Partnership Program. For this program, Dominion selected qualifying commercial, industrial, high school, and university customers with suitable facilities, located in select areas, to install solar projects between 2014 and 2017. These projects are used for demonstration and grid impact study purposes. DEV constructed eleven projects with a total capacity of 7.7 MW. Total capital expenditures from inception through May 31, 2019, are approximately $25 million of the $80 million cap originally authorized for this program.

THIRD-PARTY PPA PILOT PROGRAM

Pursuant to Chapter 382 of the 2013 Acts of Assembly ("Chapter 382"), the Commission has been conducting a pilot program ("Third-Party PPA Pilot Program") in DEV's service territory. Under this pilot, persons owning or operating a solar-powered or wind-powered electric generation

[39] *Application of Virginia Electric and Power Company, For approval of a special tariff to facilitate customer-owned distributed solar generation pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly*, Case No. PUE-2012-00064, 2013 S.C.C. Ann. Rept. 269, Order (Mar. 22, 2013).

[40] All annual reports related to this program can be found on the Commission's website at: http://www.scc.virginia.gov/docketsearch, by searching the case number (PUE-2012-00064).

facility, with a capacity between 50 kW and 1 MW, may sell the electricity generated from that facility to an eligible customer-generator through a power purchase agreement ("PPA"). The facility at issue must be located on premises owned or leased by the eligible customer-generator.[41] The Third-Party PPA Pilot Program is limited to 50 MW within DEV's service territory. Both jurisdictional and non-jurisdictional customers (those whose rates are not regulated by the Commission) may participate.[42]

On April 5, 2017, the General Assembly approved Chapter 803 of the 2017 Acts of Assembly ("Chapter 803"), amending and reenacting Chapter 382 to permit non-profit private institutions of higher education in APCo's service territory to participate in the Third-Party PPA Pilot Program as well, up to an overall limit of 7 MW until July 1, 2022.

Guidelines governing the pilot were established by the Commission on November 14, 2013,[43] and were updated on June 29, 2017, to implement pilot participation in APCo's service territory.[44] Pursuant to Chapter 382, the Commission is required to review the Third-Party PPA Pilot Program every two years and determine whether the program's size limitations should be expanded, reduced, or continued.

As of mid-November 2019, the Commission has received notices of intent from nine providers for installations at 144 facilities (including schools, churches, and banking institutions, among others) in DEV's service territory, to enter into third-party PPAs for the purchase of solar generating capacity. The total expected capacity of the generation facilities related to these notices is approximately 41,223.174 kW AC. Currently, forty-two of these solar facilities are operational

[41] The PPA may secure third-party financing of the costs of the renewable generation facility.
[42] The minimum project size requirement of 50 kW does not apply to certain non-profit entities.
[43] *Commonwealth of Virginia, ex rel., State Corporation Commission, Concerning the establishment of a renewable energy pilot program for third party power purchase agreements*, Case No. PUE-2013-00045, 2013 S.C.C. Ann. Rept. 404, Order Establishing Guidelines (Nov. 14, 2013). These guidelines and posted information on participating projects are located at: https://www.scc.virginia.gov/pue/pilot.aspx.
[44] *Commonwealth of Virginia, ex rel., State Corporation Commission, Concerning the establishment of a renewable energy pilot program for third party power purchase agreements*, Case No. PUE-2013-00045, 2017 S.C.C. Ann. Rept. 283, Order Updating Guidelines (Jun. 29, 2017).

and provide 8,304.65 kW AC of power, with many more of the 144 facilities expected to begin operation by the end of 2019. The Commission has not received any notices of intent to install pilot-related facilities in APCo's service territory.

To date, the cumulative capacity of facilities participating in the Third-Party PPA Pilot Program has not reached or exceeded the capacity participation caps of either DEV (50 MW) or APCo (7 MW), and the pilot is utilizing only solar facilities. The Commission will continue to monitor the Third-Party PPA Pilot Program and maintain its website listing of participants.

Though the above statistics would seem to indicate that the Third-Party PPA Pilot Program has plenty of room for growth, Commission Staff recently has been made aware of increased pilot-related customer and vendor interest and activity in past year. The Commission Staff has received multiple letters from companies, counties, and para-governmental organizations expressing interest in the program in DEV's service territory and who are concerned that the program limit will be reached before their specific projects can be approved for program participation.[45] Additionally, these letters suggest that negotiations regarding potential pilot projects may be hampered by the current project size limitations established in the pilot's enabling legislation. Generally, the letters request increasing program capacity from 50 MW to 500 MW for DEV, and from 7 MW to 30 MW for APCo. The letters also request that individual project size caps be increased from 1 MW to at least 3 MW.

Specific examples of growing interest in the Third Party PPA Pilot Program include Fairfax County's recently issued Request for Proposals ("RFP"). The RFP was for over 100 sites estimated to represent 30 to 40 MW of potential new solar projects that may, individually, qualify for inclusion in the pilot but would cumulatively push the program beyond the 50 MW limitation for

[45] *See* Appendix 5.

DEV's service territory.[46] Additionally, the Northern Virginia Regional Commission recently adopted a resolution in support of expanding the Third-Party PPA Pilot Program limit and individual project size limit. The Metropolitan Washington Council of Governments ("COG") also endorses the expansion of the Third-Party PPA Pilot Program limit and individual project size limit. The COG believes that the Third-Party PPA Pilot Program limits are independent of the capacity limits provided in 2019 legislation establishing a municipal net metering pilot program[47] and suggests that this issue may need clarification.

The current program capacity limitations are established by law in Chapters 382 and 803 of the 2013 and 2017 Acts of Assembly, respectively. These Acts direct the Commission to review the program limitations biennially and determine whether any changes may be warranted. Based on the information contained in this Report, the Governor and General Assembly may wish to consider increasing the program limit for Dominion Energy Virginia.

In Staff's view, any legislative decision to permit further energy choice options, such as expanding the availability of PPAs, net metering, aggregation, renewable resources, etc., should not be done in a vacuum, but rather considered comprehensively with regard to the impact on energy rates and customer's energy bills throughout the Commonwealth.

[46] A planned second phase RFP for Fairfax County would likely double such potential.
[47] Chapter 746 of the 2019 Virginia Acts of Assembly.

APPENDIX 1

GLOSSARY OF TERMS

APCo	Appalachian Power Company
CPCN	Certificate of Public Convenience and Necessity
Code	Code of Virginia
Commission	Virginia State Corporation Commission
DEQ	Virginia Department of Environmental Quality
DEV	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
Dominion	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
FERC	Federal Energy Regulatory Commission
GT Plan	Grid Transformation Plan
GTSA	Grid Transformation and Security Act, Chapter 296 of the 2018 Acts of Assembly
General Assembly	Virginia General Assembly
IOU	Investor-owned electric public utility
IRP	Integrated Resource Plan
Interconnection Regulations	Regulations Governing Interconnection of Small Electrical Generators
kV	Kilovolt
kW	Kilowatt
MW	Megawatt
O&M	Operations and maintenance
PBR	Permit by Rule
PJM	PJM Interconnection, LLC
PPA	Power Purchase Agreement
Phase I	First three years of ten-year Grid Transformation Plan
Underground Pilot Program	Pilot Program requiring the construction of the qualifying electrical transmission lines of 230 kV or less in whole or in part underground
RFP	Request for proposal
RTE	Regional Transmission Entity
RTEP	Regional Transmission Expansion Plan
Report	Combined reports of the Virginia State Corporation Commission
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SB 966	Grid Transformation and Security Act, Chapter 296 of the 2018 Acts of Assembly
Staff	State Corporation Commission Staff
Third-Party PPA Pilot Program	Third Party Power Purchase Agreement Pilot Program pursuant to Chapter 382 of the 2013 Virginia Acts of Assembly

APPENDIX 2

Letter to Dominion Requesting an Update on the Haymarket Project

COMMONWEALTH OF VIRGINIA

William F. Stephens
Director
(804) 371-9611
FAX (804) 371-9350

PO Box 1197
Richmond, Virginia 23218-1197

STATE CORPORATION COMMISSION

Division of Public Utility Regulation

September 27, 2019

Mark S. Allen, P.E.
Director - Project Development and Execution
Dominion Energy
10900 Nuckols Road, 4th Floor
Glen Allen, VA 23060

Dear Mr. Allen:

As you are aware, Senate Bill 966 ("SB966") was enacted during the 2018 Session of the Virginia General Assembly. Among other provisions, SB966 established a pilot program to construct two qualifying electrical transmission line projects of 230 kilovolts ("kV") or less in whole or in part underground. The Haymarket I-66 Hybrid Route Project was approved as the first pilot project pursuant to the Commission's July 26, 2018, Order On Request to Participate In Pilot Program in Case No. PUE-2015-00107. To date, no other applications have been received by the Commission in which the applicant is seeking consideration for the pilot program. SB966 also directed the SCC to submit an annual report to the Commission on Electric Utility Restructuring ("CEUR"), the Joint Commission on Technology and Science, and the Governor on the progress of the pilot program by no later than December 1 of each year.

Accordingly, to assist in the development of the annual report, the Staff requests that the Company provide a progress report on the construction activities of the Haymarket I-66 Hybrid Route and any other relevant information related to the aforementioned pilot program. Please provide the progress report to me by November 1, 2019.

Thank you for your assistance and please contact me if you have any questions or concerns with this request.

Very truly yours,

Timothy R. Faherty
Deputy Director

APPENDIX 3

Dominion's Status Update on the Haymarket Project

Dominion Energy Virginia Dominion Energy North Carolina
Electric Transmission
PO Box 26666, Richmond, VA 23261
DominionEnergy.com

October 30, 2019

Timothy R. Faherty
Deputy Director, Division of Public Utility Regulation
State Corporation Commission of Virginia
1300 E. Main Street, Tyler Building
Richmond, VA 23219

Status Report Regarding Activities Related to
§56-585.1:5 Pilot Program for Underground Transmission Lines

Dear Mr. Faherty,

The following presents a status report, pursuant to Enactment Clause 2 of SB966, which required, among other things, that the Virginia State Corporation Commission (Commission) report annually to the Commission on Electric Utility Restructuring, the Joint Commission on Technology and Science, and the Governor on the progress of the pilot program by no later than December 1 of each year that §56-585.1:5 is in effect.

> *§ 56-585.1:5.F. The Commission shall report annually to the Commission on Electric Utility Restructuring, the Joint Commission on Technology and Science, and the Governor on the progress of the pilot program by no later than December 1 of each year that this section is in effect. The Commission shall submit a final report to the Commission on Electric Utility Restructuring, the Joint Commission on Technology and Science, and the Governor no later than December 1, 2024, analyzing the entire program and making recommendations about the continued placement of transmission lines underground in the Commonwealth. The Commission's final report shall include, but not be limited to, analysis and findings of the costs of underground construction and historical and future consumer rate effects of such costs, effect of underground transmission lines on grid reliability, operability (including operating voltage), probability of meeting cost and construction timeline estimates of such underground transmission lines, and aesthetic or other benefits attendant to the placement of transmission lines underground.*

As such, Dominion Energy Virginia (the Company) is responding to your September 27, 2019, request to assist the Commission in developing the annual report.

Sincerely,

Mark Allen
Director
Electric Transmission Project Development and Execution

Background

On March 1, 2018, the Virginia General Assembly passed legislation, specifically, Enactment Clause 2 of the Grid Transformation and Security Act of 2018 (GTSA), Chapter 296 of the 2018 Virginia Acts of Assembly (codified as Va. Code § 56-585.1:5), creating a pilot program to further the understanding of certain underground electric transmission lines in regard to electric reliability, construction methods and related cost and timeline estimating, and the probability of meeting such projections (the "Pilot Program"). The Governor signed the Pilot Program into law on March 9, 2018. The Pilot Program was effective July 1, 2018.

Consistent with this legislation, and subsequent to the Commission's June 12, 2018 Order on Remand in the Haymarket case (PUE-2015-00107), on July 2, 2018, the Company requested participation in the Pilot Program. Specifically, the Company requested approval of the proposed Haymarket 230 kV double circuit transmission line and 230-34.5 kV Haymarket Substation using the I-66 Hybrid Route as a qualifying project under Section 2 of Enactment Clause 2 of the GTSA.

On July 26, 2018, the Commission issued its Order on Request to Participate in the Pilot Program and approved Dominion Energy Virginia's request for the Haymarket Project using the I-66 Hybrid Route to participate in the Pilot Program. In so doing, the Commission also issued a Certificate of Public Necessity and Convenience ("CPCN") for the Haymarket Project.

Haymarket Project: I-66 Hybrid Route

The I-66 Hybrid Route is a 230 kilovolt (kV) double circuit electrical transmission line approximately 5.3 miles long; has both overhead and underground transmission facilities, includes an underground portion which is approximately 3 miles in length; and will be constructed within or immediately adjacent to the right of way of interstate highway I-66 in Prince William County and the Town of Haymarket.

Status Update

Since the Commission's July 26, 2018 approval of the Company's participation in the Pilot Program using the Haymarket I-66 Hybrid Route, the Company moved into the final engineering and construction phase of the project in earnest. Planning and construction of the Haymarket Project includes, among other things, the 230 kV double circuit transmission line, the construction of the new 230-34.5 kV Haymarket Substation, and an overhead/underground transition station known as the Heathcote Station. As such, the Company is providing the following status update.

Permitting Activities

All permits to begin limited construction activities have been obtained. At the time of this report, the Army Corps of Engineers permit required to begin construction along 100% of the route is outstanding but issuance is expected soon.

Obtaining and satisfying any additional permitting needs required for certain construction activities, such as county noise ordinance waivers or VDOT-related wire pulling permits, is progressing and ongoing on an as-needed basis.

Pursuant to the provisions of the Pilot Program, Dominion Energy Virginia will be proceeding with construction of the Haymarket Project and its associated facilities (Haymarket Substation and Heathcote Station) at this time with the understanding that compliance with Prince William County's local zoning ordinances, such as, but not limited to, Public Facility Reviews (15.2-2232 reviews), Special Use Permits, or Site Plans, are deemed satisfied and with Prince William County concurrence.

Real Estate Activities

Since VDOT's approval and a finalized route alignment was determined, surveying has been completed and final plats have been compiled.

Along the route, the Company needs to acquire right of way through a total of 13 parcels, represented by 11 property owners: two parcels owned by home owner associations; two parcels owned by Prince William County; one parcel owned by an individual; and, eight parcels owned by commercial entities. The overhead segment right of way requires easements through two parcels. The underground segment right of way requires easements through 11 parcels.

Along the length of the right of way for both the overhead and underground portions (5.25 miles), the company needs to acquire easements of approximately 2.14 miles, or 40.76%, of the route. The remainder, 3.11 miles, or 59.24%, of the route is obtained via VDOT permit.

The underground segment (2.96 miles) specifically requires easements from private landowners along approximately 1.68 miles, or 56.8%, with the remainder via VDOT permit along 1.28 miles or 43.2%.

As of October 15, 2019, the Company has spent $3,144,168 on easements. We have completed acquiring the right of way through the two parcels along the overhead segment, and four of the 11 along the underground segment.

The Company has also competed the transaction for the Heathcote transition station for $6,250,000.

The Company continues to be in active negotiation regarding the outstanding parcels needed to complete the right of way for the underground portion of the project.

Engineering

General

The final design of the underground portion of the Haymarket Project incorporates: two parallel 230 kilovolt (kV) circuits; two cables per phase; 5000kcmil enameled compact segmental copper

conductor with 900 mils of XLPE insulation, embedded fiber, and a copper sheathing; integrated communication and distributed temperature sensing (DTS) fiber; 14 precast concrete vaults; and ten fiber handholes.

The cable system design process included evaluation of items such as: cable construction, section lengths, route selection, elevation, circuit separation, mutual heating, load factor, dielectric loss, proximity to existing utilities, skin effect, proximity effect and backfill design. Balancing these components have all been optimized to limit the impact on local residence, meeting VDOT specifications, meeting the required power transfer capability, and staying within the bounds of the SCC's final CPCN order as well as relevant factors stipulated by the Pilot Program. Although final VDOT approvals were granted to move into final design, there remains additional design and construction-related items to complete as the project moves forward as noted below.

Underground Cable Installation Parameters

The company and its design consultants initially intended to leverage three different types of underground installation methods: open trench; horizontal directional drill (HDD); and jack and bore. However, close coordination with VDOT has allowed for the removal of any jack and bore type installations from the underground scope. As a result, the underground portion of work will be comprised of only HDD and open trench type installations.

Approximately 2.15 miles of the overall underground route will be open trenched and installed within a thermal concrete encased duct bank beneath varying amounts of fluidized thermal backfill (FTB).

Approximately 0.81 miles of the overall underground route will be installed via HDD. The depths along the HDD segment may very but should not deviate more than +/-10' horizontally and +/-5' vertically. The company plans to work closely with VDOT throughout the HDD installation lifecycle to vigilantly avoid any impacts to VDOT assets.

Final Alignment

The final alignment along the underground segment was inherently iterative. Multiple stages of information gathering, VDOT coordination and permitting, redesign, and communication were necessary to deliver a quality product that balanced all considerations.

An in-depth analysis of historical records, surveys, and utility maps was initially performed to route both circuits from the Heathcote Transition Station to the Haymarket Substation. Additional field studies were then required to analysis the terrain and existing conditions. Finally, input from VDOT, coordination with concurrent construction projects, and local residence input were taken into consideration. Minor adjustments to vault locations and circuit alignment along the route were completed after each step. Numerous iterations of the afore mentioned "cable system design process" were also completed after each adjustment to evaluate any potential impacts to either circuits' current carrying capability.

Design

A subsurface exploration study was required to evaluate existing conditions. Twelve bore samples were taken along the general path of the circuit route. Initial findings revealed “weather rock” and “rock” as shallow as five feet and 15 feet, respectively. It should be noted that while rock can be advantageous in mitigating tunnel collapse and inadvertent returns (IR’s), it has inherently poor thermal properties and has historically led to prolonged construction and increased costs.

The overall makeup of the initial samples warranted further subsurface exploration. Therefore, six additional bores were taken to a depth of approximately 70’ below grade. Lab results of the additional bores identified dense rock formations with a maximum compressive strength of 18,940 PSI in the general vicinity of either HDD path.

As a result, further review of both horizontal directional drills was necessary. An evaluation of the conduit size and material type, casing, and spacer design is currently underway. The company is in the final stages of coordination efforts with the cable manufacturer, its consultants, and its contractors to finalize each drill design.

Geothermal analysis was also conducted on bore samples. The results of which identified areas with thermal resistivity as high as 120°C-cm/W at 3% moisture content, twice that of ideal conditions.

Unfavorable thermal conditions, the presence of dense rock, and the potential of mutual heating at “pinch points” deemed it necessary to: increase the cable size from 3500 to 5000 kcmil, incorporate enameled conductor into the cable design, and compliment the duct bank with varying types approved thermal backfills to achieve the required 1047MVA power transfer capability.

New Technology

Despite **HDD’s** recent prevalence in the underground transmission industry it only constitutes a very small portion of Dominion Energy’s previous underground transmission installations. Implementation and analysis of this newer technology not only helps to overcome the new and ever-changing challenges inherent to large, complex underground transmission projects but also furthers the Company’s understanding of its usage and installation, the permitting process, cost, routing, design, and overall system risk.

Distributed Temperature Sensing (DTS) technology is a relatively new application to the underground transmission industry. The system allows for early detection of potentially harmful “hot spots.” It can serve as verification to the ampacity simulations run in the early stages of the design process, as well as provide justification for potentially uprating existing circuits and produce real-time feedback in a dynamic rating situation.

Enameled Copper Wires incorporated into a conductor design insulate each stand from those around it, reducing the impact of the skin effect and thus increasing the currently carrying capability of the system. Traditionally, the first step in increasing the ampacity of a conductor is to enlarge its cross-section. However, manufacturing and installation limitations only allow for a maximus cross section of approximately 5000kcmil. If additional ampacity is required, ancillary conductors or enameling are the only recourse.

Cost

The current cost estimate is approximately $172 million. The estimated cost breakdown is shown below. The associated costs remain as estimates and subject to change based on actual procurement costs, the construction contractor bid process and other items.

To date, the company has spent approximately $29,761,077 on project-related activities.

Activity	Current Cost Estimate	Totals
Transmission Line Costs		$ 118,992,659
Overhead	$17,793,401	
Underground	$101,199,258	
Station Costs		$53,008,579
Haymarket Substation (new)	$17,952,646	
Heathcote Transition Station (new)	$31,030,849	
Gainesville Substation	$1,978,716	
Loudoun Substation	$2,046,368	
Total		**$172,001,238**

Timeline

Preliminary timeline to complete the Haymarket Project by the end of July 2021 has remained unchanged at this time.

Initial work – site access, right of way clearing, etc. – began in October 2019 along the underground portion of the project. Work along the overhead segment is preliminary scheduled to begin in the first or second quarters of 2020.

A more detailed schedule will be developed once a construction contractor has been selected and the Army Corps of Engineers permit is issued.

Conclusion

Since the Commission's July 26, 2018 approval of the Company's participation in the Pilot Program using the Haymarket I-66 Hybrid Route, the Company has completed final engineering and moved into the initial construction phase of the project in earnest. However, at the time of

this report, remaining real estate activities and coordination with the Army Corps of Engineers is ongoing.

APPENDIX 4

Table of Solar and Wind Construction and Development Status

Investor Owned Utilities

Status of Solar and Wind Facilities
Constructed or Under Development

As of June 30, 2019*	IOU Owned/ Operated - Jurisdictional	MW	IOU Jurisdictional PPAs	MW	IOU Owned/ Operated - Ring Fenced	MW	Totals
Solar Constructed since July 1, 2018:							
Dominion Energy Virginia:	N/A		N/A		Hollyfield (9/6/18)	17	
					Puller (10/31/18)	15	
					Montross (12/12/18)	20	
					Gloucester (4/22/19)	20	
	SubTotal:	0	SubTotal:	0	SubTotal:	72	72
Solar Under Development since July 1, 2018:							
Dominion Energy Virginia:	Colonial Trail West (US3	142	Water Strider	80	Grasshopper Solar	80	
	Spring Grove I (US3)	98			Multi. Confidential Sites	400	
	Sadler Solar (US4)	100					
	SubTotal:	340	SubTotal:	80	SubTotal:	480	900
Solar Constructed & Under Development Totals:		340		80		552	972
Wind Constructed since July 1, 2018:							
	N/A		N/A		N/A		
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Wind Under Development since July 1, 2018:							
Dominion Energy Virginia:	Coastal Virginia Offshore Wind Project	12	N/A		N/A		
	SubTotal:	12	SubTotal:	0	SubTotal:	0	12
Wind Constructed & Under Development Totals:		12		0		0	12
Solar & Wind Operational & Under development since July 1, 2018:							984

*This data is provided informally to Staff as of June 30, 2019. This data does not include any projects announced after June 30, 2019.
**The MW indicated are alternating current (AC).

Electric Cooperatives

Status of Solar and Wind Facilities Constructed or Under Development

As of June 30, 2019*	Cooperative Owned/ Operated - Jurisdictional	MW	Cooperative Jurisdictional PPAs	MW	Cooperative Owned/ Operated - Ring Fenced	MW	Totals
Solar Constructed since July 1, 2018:							
	N/A		N/A		N/A		
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Solar Under Development since July 1, 2018:							
NOVEC:			D.E.S.R.I. 300 MW PPA, amt. of VA facilities TBD				
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Solar Constructed & Under Development Totals:		0		0		0	0
Wind Constructed since July 1, 2018:							
	N/A		N/A		N/A		
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Wind Under Development since July 1, 2018:							
	N/A		N/A		N/A		
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Wind Constructed & Under Development Totals:		0		0		0	0
Solar & Wind Operational & Under development since July 1, 2018:							0

*This data is provided informally to Staff as of June 30, 2019. This data does not include any projects announced after June 30, 2019.

**The MW indicated are alternating current (AC).

Others

Status of Solar and Wind Facilities
Constructed or Under Development

As of June 30, 2019*	Other Owned/ Operated	MW	Totals
Solar Constructed since July 1, 2018:			
	N/A		
	SubTotal:	0	0
Solar Under Development since July 1, 2018:			
Pleinmont Solar LLC:	Pleinmont Solar	500	
Cypress Creek Renewables:	Turner Solar	20	
	Mt. Jackson Solar I	16	
Strata Solar Development LLC:	Danville Farm	12	
Carolina Solar Energy LLC:	Powells Creek Farm Solar	70	
	Sunnybrook Farm Solar	51	
SolUNesco LLC/Madison Solar LLC:	Sol-Madison Solar	63	
New Energy Ventures:	Rives Road Solar	20	
SolSystems:	Sol Leatherwood Solar	20	
NextEnergy:	Gardy's Mill Solar	14	
North Ridge Resources:	Pamplin Solar	16	
	SubTotal:	801	801
Solar Constructed & Under Development Totals:		801	801

Wind Constructed since July 1, 2018:			
	N/A		
	SubTotal:	0	0
Wind Under Development since July 1, 2018:			
	N/A		
	SubTotal:	0	0
Wind Constructed & Under Development Totals:		0	0
Solar & Wind Operational & Under development since July 1, 2018:			801

*This data is from the DEQ's website found at:
https://www.deq.virginia.gov/Programs/RenewableEnergy/PermittingCompliance.aspx
**This data includes facilities where a PBR has been issued by DEQ

APPENDIX 5

Third-Party PPA Pilot Program Letters

David Eichenlaub

From: Hannah Wiegard <hannah.wiegard@ipsunsolar.com>
Sent: Friday, June 21, 2019 12:14 PM
To: David Eichenlaub
Subject: Comment from Ipsun Solar on PPA Pilot
Attachments: Comment on VA PPA Pilot Program on Ipsun Solar Letterhead (2).pdf

Dear Mr. Eichenlaub,

Please find attached a comment from Ipsun Solar regarding the pending matter before you of the nearing pilot program cap for solar energy PPAs in Virginia.

Respectfully,

Hannah Wiegard for Ipsun Solar

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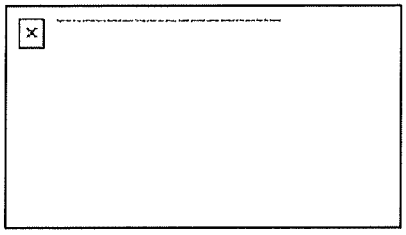


HANNAH WIEGARD
Marketing Manager

Work: 866-48-IPSUN x711
Cell: 804-536-5598
ipsunsolar.com

IPSUN SOLAR

1826 Jefferson Pl NW, Washington, DC 20036
1 (866) 48-IPSUN
info@ipsunsolar.com

June 24, 2019

Dear Mr. Eichenlaub,

We are reaching out to you as a solar contractor that provides both residential and commercial photovoltaic installations in Virginia. We comprise a staff of over 22 full-time personnel and we are primarily constructing distributed solar.

We were concerned to hear that Virginia is likely to reach its aggregate solar third-party Power Purchase Agreement (PPA) pilot program cap by the end of this year. Just as we are poised to put our company's recent increase in experienced, capable field installation technician staff to use toward working on larger PPA-structured projects, our industry is potentially running up against a limit that now in our eyes seems arbitrary and unconstructive.

Now that awareness of this issue is spreading through our industry, market uncertainty has begun to impact us. Partners are expressing concern that this segment of projects would soon grind to a stop. To address this situation, we hope to see the PPA pilot program cap raised or removed, and swiftly. We would also be strongly supportive of increasing the per-project size limit up to 3 MW.

Our prospects to work with schools, churches, and other kinds of larger non-residential buildings for risk-averse entities in Virginia are bright, and we hope that this year and next, while the Federal Tax Credit remains as high as 26%, we can take advantage of that incentive and the prime climate for PPA projects.

Sincerely,
Herve Billiet, Co-Founder and CEO
Joseph Marhamati, Co-Founder and VP

Ipsun Solar, 2817 Dorr Avenue, Suite D, Fairfax, Virginia 22031

David Eichenlaub

From:	Tony Smith <tony@securefutures.solar>
Sent:	Monday, June 24, 2019 8:01 AM
To:	David Eichenlaub
Cc:	Hurlocker, Eric W.; Eric Wallace; Rachel Smucker; Erik Curren; Hugh Stoll; Maggie Davison
Subject:	PPA Pilot Program comments and request to raise the PPA cap
Attachments:	PPA Comments to SCC.Secure Futures.6-24-19.pdf

Good morning Dave,

Attached please find the final draft of our comments on the PPA Pilot Program. Please disregard the previous draft.

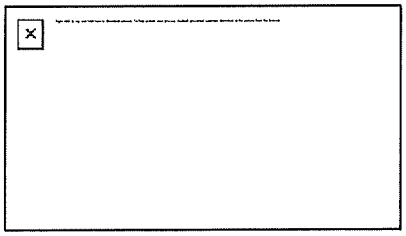
You will note that we respectfully request that the Commission raise the Dominion PPA cap from 50 MW to 500 MW, so as to accommodate the exponential growth before the next two year review. We also request that the APCo cap be raised to 30 MW, and that PPA projects sizes be raised to 3 MW.

We also ask that the Commission hold public hearings if it chooses to consult with stakeholders.

Thanks, and

Best regards,
Tony

Anthony E. Smith, PhD
President and CEO
Secure Futures, LLC
11 E Beverley St, Suite 19
Staunton, VA 24401
toll-free number: 877-333-3008, x0
www.securefutures.solar
cell: 540-255-1404
fax: 815-425-8728



SECURE FUTURES
Resilient Solar Solutions®

MEMORANDUM

TO: Dave Eichenlaub
FROM: Tony Smith
DATE: June 24, 2019

RE: Solar PPA Pilot Programming Recap – Comments from Secure Futures LLC

Overview

Since the codification of Virginia's first PPA Pilot Program in 2013, Secure Futures LLC (SFLLC) has led the way in developing the PPA market in Virginia, with 1.3 megawatts (MW AC) placed in service, and another 3.6 MW underway in the SCC notification program. Sun Tribe Solar has 2 MW placed in service, and another 9.5 MW underway, with other companies making up the balance of the 20 MW registered notifications. This report makes the case that, based on current trends, the balance of 30 MW will be reached well before June 2020, and will approach 500 MW before the end of 2022, such that the Commission should exercise its legislative authority to raise the Dominion PPA cap to at least 500 MW as part of the 2019 bi-annual review, to avoid market uncertainty and disruption of the fastest growing industry in Virginia's economy this year and for the next two years before the Commission revisits the program.

For the first three years of the program, SFLLC was the only participant in the program. In October 2016, in partnership with the Virginia Community Capital, SFLLC led a one-day training for other Virginia solar companies on how to develop PPA projects, including Sun Tribe Solar, Alt Energy, Sigora Solar, and two others. As a certified B Corp, we sought to strengthen the Virginia-based solar industry, knowing there was more than enough solar potential for all, so that the PPA legislation we helped to sponsor in 2013 would help reduce barriers to solar for all market participants.

It is thus no coincidence, that starting in 2016, solar PPA's have increased at an exponential rate — see Table 1 on page 3. Recently there has been a large increase in the number of new notifications of intent, bringing the total PPA MW to nearly 20 MW of notifications as of June 12, 2019, with approximately 30 MW remaining before the cap established in 2013 is broached. Between Secure Futures and Sun Tribe Solar, the two principal developers in Virginia to date, we anticipate that the remaining 30 MW cap will be exceeded well before June of 2020. This does not include the recently announced Fairfax County RFP for 117 sites, that we estimate to represent at least 30 MW to 40 MW of potential new solar projects. We foresee significant market uncertainty over the next 12 months as developers assume increasing development risk in racing to submit their notifications before the cap is reached, just as Fairfax County projects more than close the gap.

Despite market uncertainty and regulatory and utility challenges in Virginia, SFLLC anticipates increasing our activity in the Pilot PPA program up to an additional 10 MW to 20 MW of solar projects in 2019-20. Due the impending cap limit, we anticipate being limited to 10 MW before the cap is reached.

Every 20 MW of solar will generate the following estimated economic benefits for the state and for Virginia residents, according to the Jobs and Economic Development Impact model developed by the U.S. Department of Energy, National Renewable Energy Laboratory:

- $11.2 million economic output (regionals benefits) in Virginia;
- $5.4 million in earnings in Virginia (salary and wages resulting from project); and
- 85 full-time equivalent job years (1 FTE = 2080 hours) in Virginia.

Market Viability Leads to Job Creation and Increased Economic Output

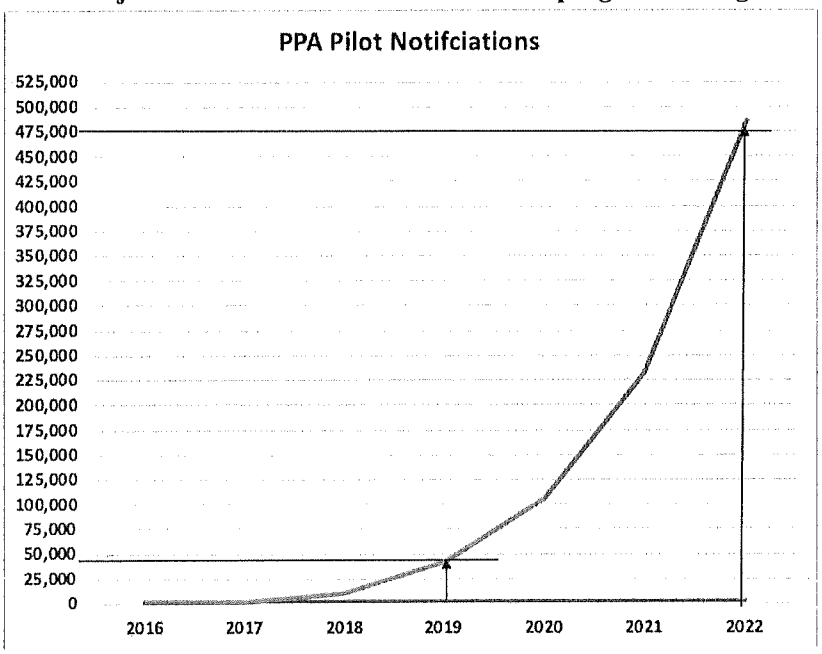
Integrating on-site solar has a profound financial impact for cash-strapped tax-entities, like school systems, that are able to see on average $1-2 million dollars in net energy savings over the 20-25 year life of the system on a net present value basis. Utilizing a valuable financial mechanism like a PPA is essential to making these projects financially viable for school communities and other non-profits.

Program Success Calls for Program Expansion

The program has been one of the largest drivers of solar installations in the Commonwealth and has been so successful, in fact, the program is now in danger of hitting its aggregate program cap before June 2020.

- As of June 12, 2019, there were 20 MW of solar projects registered with the SCC notification site.
- The projected growth in 2022 to a cumulative 500 MW is consistent with the year over year rate of doubling growth from the previous year, and adding 50% of the anticipated Fairfax Solar RFP (15 MW). See Chart 1 below.

Chart 1: Projected KW Trends in Dominion PPA program through 2022



- The total capacity of PPA projects in Dominion at end of 2018 was 10.5 MW, up from 2.1 MW in 2017, which in turn was up from 1.2 KW in 2016. .
- These projections are backed by SFLCC projections of 10 to 20 MW of PPA's in 2019, and SunTribe Solar (ST) has a similar pipeline.
- Both SFLCC and ST had significant growth in PPA's in 2018 over 2017 and together account for 85% of the PPA market in Virginia.
- The Fairfax County RFP adds yet another 30 MW to 40 MW of projects that will enter the notification process starting Q4 in 2019.

It is crucial that the Commission increase the cap for the PPA Pilot Program to allow for future PPA project development in the Commonwealth, to ensure the state capitalizes on the job-creation and local economic growth associated with commercial-scale solar projects.

Table 1: Growth of actual PPA notifications and projections

	Solar PPA KW notifications		
Year	Actual	Projected	Cumulative
2013	-		
2014	-		
2015	-		
2016	1,188	1,188	1,188
2017	948	948	2,136
2018	8,343	8,343	10,479
2019	7,920	31,686	42,165
2020		63,371	105,536
2021		126,743	232,279
2022		253,485	485,764
Notes:			
2019 actual is through June, 2019			
Projected 2019 = doubling of 2018 + 50% of Fairfax RFP (15 MW)			
Projected 2020 and beyond = doubling of previous year			

Solar Investment in Virginia

The solar industry is the fastest growing industry in the U.S., creating jobs and investment – and at a rate nearly 20 times higher than the employment growth of the overall economy. Neighboring states have embraced this industry and are experiencing dramatic growth in jobs and investment. As of 2018, the solar industry generated:

- 242,343 jobs nationwide (159% increase from 2010)
- 7% expected employment growth in 2019

To date, Virginia employs 3,890 solar workers. In 2018 alone, Virginia saw a 9% increase in solar jobs with 325 new solar jobs created,[1] a majority of which are associated with installation jobs.

Each year, residential and commercial-scale solar projects consistently create more jobs and local investment than utility-scale projects, and the PPA Pilot Program in Virginia is vital to this equation. Most recently, the 2018 National Solar Jobs Census conducted by *The Solar Foundation* found that 86 percent of solar jobs were in the residential and commercial market segments, while only 14 percent were in the utility-scale market segment[2].

Yet Virginia remains on the sidelines in experiencing the economic benefits of solar energy. The technology and business models are available to drive solar markets, yet in Virginia, the limitations are in place to significantly stampede on industry growth.

The Commission's Legislative Authority to Raise the PPA Cap

The 2013 Pilot Program legislation in Chapter 382 of the Acts of Assembly, as amended in 2017, authorizes the Commission to raise the cap for the PPA Pilot program as follows:

> ***1.*** *§ 1. b. The aggregated capacity of all generation facilities that are subject to such third party power purchase agreements at any time during the pilot program shall not exceed* ***50 megawatts****.*
>
> *1. § 1. c. A solar-powered or wind-powered generation facility with a capacity of* ***no less than 50 kilowatts and no more than one megawatt*** *shall be eligible for a third party power purchase agreement...*
>
> *§ 2. The Commission shall review the pilot program established pursuant to § 1 of this act in 2015 and every two years thereafter during the pilot program. In its review,* ***the Commission shall determine whether the limitations in subdivisions b and c of § 1 should be expanded, reduced, or continued****.*

We recommend that the Commission raise the Dominion PPA cap from 50 MW to 500 MW, and the APCo PPA cap from 7 MW to 30 MW, on or before December 2019 so as to avoid market uncertainty and disruption of the distributed solar industry, the fastest growing industry in Virginia. We further recommend that the Commission raise the cap for individual projects from 1 MW to 3 MW to better accommodate the needs of public school districts and other entities that have larger facilities. Finally, assuming the Commission elects to consult with various stakeholders, we respectfully request that such consultation be conducted under a docketed public hearing process so that all stakeholders, including solar industry and customers have an opportunity to have their voices heard.

---

[1] *National Solar Jobs Census 2018*. The Solar Foundation. https://solarstates.org/#state/virginia/counties/solar-jobs/2018

[2] *National Solar Jobs Census 2018*. The Solar Foundation. https://www.thesolarfoundation.org/wp-content/uploads/2019/02/Infographic-Solar-Jobs-Census-2018.pdf

VA Solar Portfolio Composition: PPAs and Solar SGAs
SFLLC has 1.3 MW of solar projects placed in service with the SCC PPA Pilot Notification website, and another 4.1 MW of solar projects placed in service under Customer Self Generation Agreement (Solar SGAs) or leases, for a total of 5.4 MW AC of solar projects currently operating in Virginia.

The PPA projects are made possible, in part, by legislation in 2013 that provided for third- party owned PPAs in Dominion utility territory, with regulations enacted by the VA SCC.

The Solar SGA projects reflect a strong demand by commercial scale customers for third- party owned distributed solar, notwithstanding utility opposition to PPAs, other than Dominion.

Why Maryland and North Carolina are succeeding well beyond Virginia
This is not a matter of deregulated vs. regulated states, or more sun vs. less sun. While Maryland represents a competitive electricity market, North Carolina represents a regulated market, similar to Virginia. Yet both of those states are among the most attractive solar markets in the U.S.

This is the result of policies embracing the economic benefits of solar energy. Both states implement the following policies, removing barriers to solar development and generating avenues for industry success:

- Mandatory renewable and energy efficiency portfolio standards
- State tax credits
- Sales and use tax exemptions (Maryland)
- State property tax exemptions
- Power Purchase Agreements (PPAs)
- Maryland provides unlimited access to retail PPAs
- Aggregate net-metering (Maryland)

While North Carolina does include limitations to PPA development at retail and still experiences economic growth, the state leans heavily on a state Investment Tax Credits (ITC), to reduce cost even further.

The case for third-party service models (utility owned vs. investor owned)
The cost of solar equipment has dropped dramatically. In fact, Dominion's 2018 Integrated Resource Plan (IRP) recognizes solar as the only generation asset assuming a continuous price decrease over the next fifteen years.

Nationwide, the single most critical factor for the rapid rise in solar over the past five years has been the widespread adoption of innovative financial models and incentives for solar. Among the most innovative changes occurred in 2002, when SunEdison and Wells Fargo Bank introduced the solar Power Purchase Agreement (PPA) as a new business model.

While technology costs continue to decrease, the upfront capital in purchasing solar equipment remains a significant investment, drawing the payback period out to approximately 8-12 years. Third-party owned and distributed generation and utility scale generation business models, using solar PPA business models, represent two alternatives that enable the retail electric customer to avoid the high upfront capital and maintenance costs.

Third-party owned and distributed generation

Third-party owned and distributed solar offers significant benefits for retail electric customers, as follows:

- Providing clean, renewable energy at a fixed cost for periods averaging 20 years
- No capital cost
- No maintenance cost
- No technology learning curve
- No risk of performance
- Hedge against price uncertainty of grid costs and surcharges
- Sustainability thought leadership (branding)
- Often a lower cost from solar electricity than from the grid.

This latter benefit becomes especially true for commercial electric customers who pay relatively high demand charges, in the range of $10 to $22 per KW. Solar offers a path towards consistently and reliably reducing those costs.

Third party PPA service agreements enable customers to achieve the above benefits, by monetizing and passing along the value of the federal investment tax credits for tax- exempt entities that are ineligible for tax benefits.

Utility scale solar generation

Utility owned and operated solar represents a rate-based cost to all ratepayers, yet another way that enables customers to indirectly benefit from renewable energy. In most cases that we are aware of, the customer still purchases grid electricity, even when solar is installed on the customer's property. Customers can choose to pay for renewable energy from the basket of renewable sources permitted under Virginia law, which can include out-of-state hydro, research and development, and bio-gas.

Regulated electric utilities cannot absorb the tax credits and rapid depreciation the same way that for-profit companies can. Instead, utilities are required to take the tax credits and depreciation benefits over the life of the system, vs. the 5-year depreciation schedule available to non-utility owners of generation. Utility ownership of solar generation results in added costs that are passed on to ratepayers, and thus represents an inefficient use of capital.

Third party owned service models or PPAs with utilities, that are owned and operated by investors, place the cost and risk onto these investors, eliminating any risk and price increases to ratepayers.

David Eichenlaub

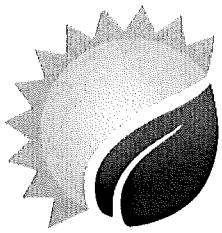
From: Autumn Tedesco <autumn@convert-solar.com>
Sent: Tuesday, July 16, 2019 1:44 PM
To: David Eichenlaub
Subject: Incease of Solar PPA Caps
Attachments: SCC Solar PPA Cap Increase Request.docx

Good afternoon Deputy Director Eichenlaub,

As a local provider of distributed solar energy in the Hampton Roads area of Virginia, we respectfully submit the attached letter setting forth the specifics of and support for our request for an increase of the current solar PPA caps.

Thank you in advance for your time and consideration.

Convert Solar, LLC
Virginia Beach, VA



CONVERT SOLAR
WWW.CONVERT-SOLAR.COM
757-285-9772 | VIRGINIA BEACH, VA

David Eichenlaub
State Corporation Commission
Division of Public Utility Regulation
P.O. Box 1197
Richmond, Virginia 23218

July 15, 2019

In re: Necessity for PPA Pilot Program Cap Increase

Deputy Director Eichenlaub:

The Solar PPA Pilot Program has been an undeniable success since its inception in 2013. The past five years in particular, has seen an exponential growth in the use of solar PPA's in making solar energy accessible for commercial, non-profit, and municipal markets, including tight-budgeted school systems, churches, and other non-profit organizations. In fact, it is because if this program's success that we are quickly approaching its limits as last set in 2017 and ask those limitations be increased so that the foreseeable market uncertainty does not stifle this growing solar industry and the jobs and investments it brings to Virginia.

Among the many substantial benefits that make the third-party owned and distributed solar attractive to the retail electric customers are:

- Providing clean, renewable energy at a fixed cost for terms averaging 20 years
- Often a lower cost than electricity from the grid, curbing uncertainty of grid costs and surcharges
- No capital cost
- No maintenance cost
- No technology learning curve
- No risk of performance

The solar industry is the fastest growing industry in the U.S. Here in Virginia, although large, well-known companies such as Secure Futures, LLC and Sun Tribe make up 85% of the current 20MW of solar projects registered with the SCC, this program is a key tool for allowing smaller local companies such as ourselves to grow in this market, bringing more jobs and investments to our local economies. In the past five years, Convert Solar has grown to be the largest local solar energy provider in the Hampton Roads area. Reflective of the industry growth, our installations have grown yearly and so have the number of solar installers we employ, more than tripling in the past year alone. The PPA finance model has made possible the installation for schools, such as Norfolk Academy, places of worship, such as Renaissance Unity Church, and the Norfolk Solar QOZ Fund, which brings solar energy to low income area businesses for which it may not otherwise be feasible. To date, we can account for 9MW of registered projects and 5MW in the pipeline.

The projected continuation of this trend suggests a high likelihood that the current cap will be reached before June of 2020, even without consideration for the recent Fairfax County RFP for 117 sites that may well represent at least 30 MW of potential new solar projects. For this reason, we suggest that the SCC increase the Dominion PPA cap from 50MW to 500MW, the APCo cap from 7MW to 30MW, and the individual project cap from 1MW to 3MW on or before December 2019 in order to accommodate schools and other larger facilities and avoid disruption of the fastest growing industry in Virginia. Additionally, we respectfully request that should the Commission choose to consult with various stakeholders in the matter, that such consultation be conducted via a docketed public hearing so as to include the participation of the solar industry and its customers.

Thank you for your consideration of this request.

Sincerely,

The Convert Solar Team

David Eichenlaub

From:	Ruth McElroy Amundsen <rma@cox.net>
Sent:	Saturday, July 20, 2019 3:18 PM
To:	David Eichenlaub
Cc:	Ann Phillips; Rebecca Richardson; Jay Beekman; Matthew Strickler
Subject:	Request to consider increase of Virginia Solar PPA cap
Attachments:	SCC Solar PPA Cap Increase Request - NSQOZF.pdf

Dear Deputy Director Eichenlaub,

Attached please find my letter requesting consideration of increasing the current Virginia solar PPA 50 MW cap. Please contact me if you have questions or would like more information.

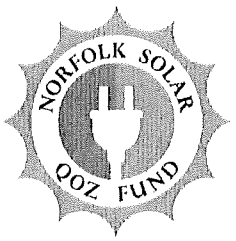
Sincerely,
Ruth

Ruth McElroy Amundsen
5614 Shenandoah Ave.
Norfolk VA 23509

cell 757-478-3024
hub.the-mcelroys.com/

Solar financing
https://nam02.safelinks.protection.outlook.com/?url=http%3A%2F%2Fsolar.the-mcelroys.com%2F&data=02%7C01%7Cdavid.eichenlaub%40scc.virginia.gov%7Cbc5fb112e3ad49c3ed8f08d70d46fa56%7C1791a7f12629474f8283d4da7899c3be%7C0%7C1%7C636992471515255009&sdata=xIBbni0Z2jzIgrvN%2B7yOkex3OWPFtRD%2BUdUeqxHIXmQ%3D&reserved=0

Norfolk Solar QOZFund
https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.norfolksolar.org%2F&data=02%7C01%7Cdavid.eichenlaub%40scc.virginia.gov%7Cbc5fb112e3ad49c3ed8f08d70d46fa56%7C1791a7f12629474f8283d4da7899c3be%7C0%7C1%7C636992471515255009&sdata=nsQZ21Lm0m4wkSj0%2FiKKR0Mmp9U57N6HBZv2DGHNOk8%3D&reserved=0



David Eichenlaub
State Corporation Commission
Division of Public Utility Regulation
P.O. Box 1197
Richmond, Virginia 23218
David.Eichenlaub@scc.virginia.gov

July 20, 2019

Re: Request to Raise PPA Program Cap

Dear Deputy Director Eichenlaub,

I am writing in support of the June 24 letter you received from Secure Futures, as well as letters you have received from other affected companies, asking the SCC to raise the current legislative 50 MW cap on Power Purchase Agreements (PPAs).

I am the founder of a Qualified Opportunity Zone Fund, Norfolk Solar Qualified Opportunity Zone Fund, LLC, https://www.norfolksolar.org. This Opportunity Zone Fund is dedicated to installing solar on businesses and non-profits in Virginia Qualified Opportunity Zones (QOZs), at no out-of-pocket cost to the institution receiving solar. We also provide a benefit to the communities by hiring residents of the Opportunity Zones as solar installers, training them and providing employment for them in this fast-growing field.

I was also recently successful in leading an effort to install 660 kW of solar at a local private school, Norfolk Academy, at no cost to the school and no long-term cost to the parents involved (7 year full payback). This kind of action can be replicated on many non-profits, and thus save schools and churches thousands of dollars on their utility bills.

Both of these activities can have far-reaching long-term economic benefits for Virginia, as well as improving our position in terms of amount of renewable energy installed in the state. I have given over 20 presentations to other organizations that are interested in replicating these financing methods to install solar on additional facilities. Several non-profits have already installed solar after seeing these presentations.

However, these financing methods depend on the use of Power Purchase Agreements (PPAs) to make the investment feasible. With the current 50 MW cap on PPAs in Virginia, this financing method may not be available to other institutions that would otherwise install solar. In fact, there are many large Opportunity Zone investors that are in contact with myself and my QOZ Fund Manager, Alden Cleanthes, that are interested in replicating our process for installing solar on

businesses and non-profits in Virginia Qualified Opportunity Zones. We have already identified $117M of potential solar install sites in just Norfolk and Virginia Beach that are of interest to these investors. Using PPAs, investors can install in the QOZs at no cost to the institutions that receive the solar, and receive a reasonable rate of return while still passing the ownership of the solar systems to the receiving institutions within 12 years. Without PPAs, none of this is possible. If the PPA cap remains at 50MW, we cannot in good conscience advise these investors to invest in solar in the Virginia QOZs, as there would be no feasible financing method once the cap is reached.

Looking at the recent increase of solar PPAs in Virginia, and the ones projected for the near future, I believe the current PPA cap will be full by December of this year. That could not only put some solar installers out of business and severely depress the overall Virginia solar market, it would also move interested QOZ investors to other states. If we have not succeeded in deploying all the funds in my QOZ Fund by then, it could jeopardize my Fund's business model for the remaining installs. Current Virginia solar installers could also decide to move to other states, to benefit from the full range of financing methods available there.

Currently, Virginia ranks below our neighboring states on many aspects of solar policy. We are also behind neighboring states as far as amount of installed solar per capita. If the current cap on PPAs can be lifted or removed, there would be a steady increase in the amount of installed solar in our state. There would also be a related increase in number of solar jobs. For the QOZ Fund, we hire and train residents of the QOZs themselves as solar technicians and installers. So not only are we adding jobs in Virginia, we are adding jobs in the most at-risk neighborhoods with the highest poverty and unemployment rates, and we are setting them on a path to success by training them in the fastest-growing energy sector job there is. We have completed one solar install to date, and we have already hired and trained three QOZ residents. With several more solar installs in the queue to happen in the next month, we expect to be hiring more QOZ residents. Of course, if the PPA cap is lifted, and the larger QOZ investors come into the local Hampton Roads market to complete some of the $117M in additional potential solar installations, this could lead to many more solar installation jobs created locally.

In a related issue, the original intent of the Norfolk Solar QOZ Fund was to mitigate the energy burden of low-income home owners. But because of the current limitation on Power Purchase Agreements (PPAs) in Virginia, we cannot install on private homes via a PPA. Removal of that limitation, and clarification that PPAs are legal with all customers, would allow us to better serve the most affected residents as far as crushing utility bills (utility costs being a much higher percentage of income for low-income residents than for middle- and high-income). It would also bring us in line with other states. Allowing the owners of multi-unit housing to install solar and sell to the tenants would also open up that option for our installations in the Opportunity Zones.

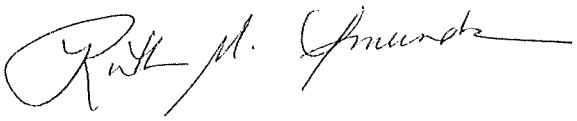
Many states are setting aggressive goals for what fraction of their power can come from renewable sources just a few years from now. I would hate to see Virginia left behind, tied to fossil fuel infrastructure that will drag down our economy for decades to come. Good, high-tech, stable jobs in renewable energy fields will be the result of investing in renewables today, and to do that we need to have a robust statewide solar policy. Raising the PPA cap is an important component of that policy.

I have lived and worked in Virginia for 29 years, I feel deep ties to this state, and I would love to see changes in policy that would more strongly support the development of solar.

Please consider raising the cap on PPAs in Virginia, so that many more organizations can take advantage of this method of financing, install more solar PV in the state, and help make us a leader in solar technology and solar employment. The economic benefits include bringing the funding from large QOZ investors to the state, the training and employment of QOZ residents, the creation of more high-value solar technology jobs, and the reduction of utility bills of local businesses and non-profits (making them more solvent and allowing them to spend a higher fraction on local hiring and infrastructure development). In addition, the carbon emission rates in the state would be reduced by increasing our percentage of renewable energy production in this way. Especially in Hampton Roads, as the area second only to New Orleans in terms of risk from sea level rise, decreasing carbon emission by developing a cleaner energy mix is critical.

Please feel free to contact me with any questions. Thank you for your time and attention to this matter.

Sincerely,



Ruth McElroy Amundsen
Manager, Norfolk Solar Qualified Opportunity Zone Fund, LLC

5614 Shenandoah Ave.
Norfolk VA 23509
cell 757-478-3024
hub.the-mcelroys.com/
www.norfolksolar.org/

As background, here are some related links:
Virginian Pilot article on Norfolk Solar Qualified Opportunity Zone Fund:
https://pilotonline.com/news/local/environment/article_e03d2f8c-7665-11e9-954a-d320d458785f.html
Related op-ed:
https://pilotonline.com/opinion/columnist/guest/article_a4131c8c-8c87-11e9-ad34-6bad289efbcd.html
Case study on using QOZ Funds:
https://www.yesvirginiabeach.com/business-districts/Documents/Norfolk%20Solar%20QOZ%20Case%20Study-Final.pdf

Virginian Pilot article on Norfolk Academy:
https://pilotonline.com/business/consumer/article_02cff14a-4035-11e9-abb7-0b02da8a4c1b.html

David Eichenlaub

From:	Christopher Hawk <chawk@pecva.org>
Sent:	Thursday, August 29, 2019 9:25 AM
To:	David Eichenlaub
Cc:	UtilityReg; John McCarthy; Miller, Christopher G.
Subject:	Solar Power Purchase Agreement Letter
Attachments:	Solar PPA Increase - Piedmont Environmental Council (August 2019).pdf

Good Morning Mr. Eichenlaub,

Based on the status of renewable energy, especially solar energy, in the Commonwealth, the Piedmont Environmental Council (PEC) respectfully submits the attached letter.

PEC looks forward to hearing from you, in hopes to create an avenue for an update to the PPA cap. Thank you in advance for your assistance.

Best Regards,
Chris

--
Christopher Hawk
Land Use Representative
Piedmont Environmental Council
(804)337-6716

Piedmont Environmental Council

August 29, 2019

Commonwealth of Virginia
State Corporation Commission
Division of Public Utility Regulation
Dave Eichenlaub, Deputy Director
PO Box 1197
Richmond, Virginia 23218
(Transmitted via email)

Re: Solar Energy PPA Pilot Program

Dear Mr. Eichenlaub,

At a time when renewable energy, especially solar energy, is experiencing enormous growth in the Commonwealth, it is appropriate to increase the solar energy power purchase agreements (PPA) cap. Currently, approximately 10-15 megawatts (MW) of PPA are currently permitted in the Commonwealth. The current PPA cap (50 MW) is no longer adequate to address the Virginia Energy Plan or the increasing renewable energy structure. Fairfax County's proposal to install solar on approximately 100 buildings via PPA is estimated to result in an additional 30-40 MW, consuming the remainder of the 50 MW PPA cap. The State Corporation Commission's (SCC) duty is not only to regulate businesses and promote economic interests, but also to protect the general public's health, safety, and welfare. Increasing the PPA cap from 50 MW to 500 MW will help to continue the implementation of the Governor's goal to reach 5,500 MW of renewable energy by 2022, in addition to promoting energy sustainability and more financially secure and resilient local governments.

According to a recent email submitted to Secure Futures, LLC, regarding an increase to the PPA cap, you stated:

> *Upon advice of legal counsel, this legislation does not, in Staffs view, authorize the Commission to change these limitations. These Acts direct the Commission to biennially review these limitations and determine whether any changes may be Warranted.*

Piedmont Environmental Council

As a part of the biennial review of the PPA limitations, the Piedmont Environmental Council urges the State Corporation Commission to recommend the PPA Pilot Program change its solar/wind cap from 50 MW to 500 MW. Given that the legislative power to increase the PPA cap lies within the General Assembly, lawmakers and policy advocates could save time and money by relying on an SCC determination that the PPA cap is insufficient and should be increased to 500 MW.

Due to the PPA cap limitations, less than 1% of the Commonwealth's energy mix is available for PPA solar, leaving rural communities to struggle continuously with utility-scale solar applications that consume not only valuable lands necessary for carbon sequestration and food production, but take up time for public officials, elected bodies, and volunteer commissions. When properly sited, these facilities have a positive impact on the local economy and environment. However, utility-scale solar facilities are typically sited on greenfield sites, which may actually add to the greenhouse gas crisis (i.e., replacing carbon sequestration sources with solar panels is counterproductive).

As utility-scale solar facilities continue to develop, it will become increasingly difficult to properly site them. Though smaller utility-scale solar facilities are much easier to site than their larger counterparts, rooftop-mounted and ground-mounted PPA systems are far easier to site. If the present PPA cap is left in place, the Commonwealth will lose an opportunity to work with businesses and communities that are eager to do their part to address the climate crisis. An increase in the PPA will allow for (1) economic benefit to the general public and (2) environmental benefit to the planet, based on the following:

1. **Economic Benefit**
    - Non-profit entities, such as public schools, libraries, churches, grassroot organizations, are the typical users of PPAs, as they:
        - Cannot utilize the federal solar tax credit for solar panels due to their tax exempt status; and
        - Tend to be strapped-for-cash and do not have the funds to acquire, administer, or maintain the upfront cost of solar panels.
    - PPAs can include roof replacement and maintenance activities throughout the lifetime of the project, resulting in freed-up operation and maintenance funds that can be reallocated for higher quality education and other governmental needs
        - At the end of the day, increasing the amount of available funds for public schools could alleviate the tax implications associated with school required tax implications.
2. **Environmental Benefit**

Piedmont Environmental Council

- PEC is an advocate for solar energy, particularly distributed solar power generation - small scale solar (usually rooftop) primarily designed to meet the immediate demands of the property in which it is located. In comparison, the size and nature of utility-scale solar facilities create challenges for localites to protect important resources and the public health, safety, and welfare of the community.
- Increasing the allocated PPA cap from 50 MW to 500 MW will allow for non-profit organizations to utilize onsite power production that would result in the protection of greenspaces associated with utility-scale solar facilities.

We appreciate the SCC's role in organizing a well-maintained business mix in the Commonwealth, and ask that the PPA cap is increased from 50 MW to 500 MW. Though the regulatory authority does not lie within the SCC to implement his amendment, the SCC's biennial review would serve as a public service announcement to the General Assembly and policy makers that an increase in the PPA cap is necessary to implement the Virginia Energy Plan.

Best Regards,

Christopher Hawk
Land Use Representative
The Piedmont Environmental Council
45 Horner Street
Warrenton, Virginia 20186

David Eichenlaub

From: Renae Carter
Sent: Tuesday, September 3, 2019 10:06 AM
To: David Eichenlaub
Subject: As discussed
Attachments: DOC006.pdf

Here is the letter, per our discussion.

Renae

Renae Carter
Legal Advisor to Commissioner Jagdmann
Virginia State Corporation Commission
1300 East Main Street
Richmond, VA 23219
804-371-9601

THE FAIRFAX COUNTY SCHOOL BOARD

8115 Gatehouse Road, Suite 5400, Falls Church, VA 22042

Fairfax County
Public Schools

571.423.1075
www.fcps.edu

Karen L. Corbett Sanders
Chairman
Mount Vernon District

Tamara Derenak Kaufax
Vice Chairman
Lee District

Sandra S. Evans
Mason District

Pat Hynes
Hunter Mill District

Karen Keys-Gamarra
Member At Large

Ryan L. McElveen
Member At Large

Megan O. McLaughlin
Braddock District

Ilryong Moon
Member At Large

Dalia A. Palchik
Providence District

Elizabeth L. Schultz
Springfield District

Jane K. Strauss
Dranesville District

Thomas A. Wilson
Sully District

Scott S. Brabrand
Division Superintendent

Student Representative
Kimberly Boateng

August 16, 2019

RECEIVED

AUG 30

JWJ
Commissioner

Mark C. Christie, Commissioner
Judith Williams Jagdmann, Commissioner
Patricia L. West, Commissioner
Virginia State Corporation Commission
P.O. Box 1197
Richmond, VA 23218

Dear Commissioners Christie, Jagdmann, and West,

On behalf of the Fairfax County School Board, I'm writing to request that during the State Corporation Commission's biennial review of the Renewable Energy Pilot Program in accordance with the Order Establishing Guidelines under Commission Case Number PUE-2013-00045 you please consider expanding the statutory limitation of generation facilities included in the pilot from 50 megawatts to 500 megawatts in Dominion territory as well as increasing the size limit for individual projects from 1 megawatt to 3 megawatts.

We know that the Pilot Program Capacity Management Summary currently shows an installed capacity of only 5.5 megawatts for Dominion territory which seems to be well below the current 50-megawatt cap. However, our understanding from solar industry experts in our area is that based on the accelerating rate of Power Purchase Agreement (PPA) use by schools, universities, churches, and other customers the 50-megawatt cap will likely be met by the end of this year. Reaching the cap would be of great concern as our Board has identified environmental sustainability as a priority legislative position, and as a part of that priority we are interested in installing solar PPAs at several of our school sites.

We, along with the Fairfax County Government, the Fairfax County Park Authority, and the Fairfax County Redevelopment and Housing Authority, have jointly issued a request for proposal (RFP) to include up to 116 sites in phase one of a solar PPA. A second phase of the RFP would potentially expand the number of sites involved in the project by as many as 100 or more. It is conceivable that bidders will propose PPAs for this project alone which would (in aggregate) total well beyond the current 50-megawatt limitation. It is the intent of Fairfax County Public Schools to participate in the pilot program by entering into one or more PPAs with the successful Offeror(s).

Our hope is that with an increased limit to the pilot program set by the SCC, we will have the flexibility we would need to fully realize our desire to lower the district's carbon footprint and to save taxpayer dollars. Every kilowatt hour we get from solar would replace electricity we would otherwise have to buy from the grid, which in Virginia still comes almost

entirely from fossil fuel and nuclear sources. The PPA financing mechanism is the most practical method available to the Fairfax County Public Schools to meet our dual goals of being both good stewards of taxpayer funds as well as good environmental stewards. In conclusion, we are asking that you please open a public docket for this year's review of the Renewable Energy Pilot Program and consult with stakeholders, including the solar industry and potentially affected customers.

Thank you for considering our request. Please feel free to follow up with us for further information about our planned projects.

Sincerely,

Karen Corbett Sanders
Mount Vernon District
Chairman

Tammy Derenak Kaufax
Lee District
Vice Chairman

Megan O. McLaughlin
Braddock District

Jane K. Strauss
Dranesville District

Pat Hynes
Hunter Mill District

Sandra S. Evans
Mason District

Dalia A. Palchik
Providence District

Thomas A. Wilson
Sully District

Karen Keys-Gamarra
Member At Large

Ryan L. McElveen
Member At Large

Ilryong Moon
Member At Large

cc: William F. Stephens, Director, Division of Public Utility Regulation
Virginia State Corporation Commission

David Eichenlaub

From: Robert Lazaro <rlazaro@novaregion.org>
Sent: Wednesday, August 14, 2019 1:50 PM
To: David Eichenlaub
Subject: Letter re: Increasing Solar PPA Cap
Attachments: David Eichenlaub.pdf

Dear Mr. Eichenlaub,

On behalf of the Northern Virginia Regional Commission attached please find a letter regarding the aforementioned subject matter.

Many thanks for your kind consideration.

Regards,

Bob

Robert W. Lazaro, Jr.
Executive Director
Northern Virginia Regional Commission
3040 Williams Drive, Suite 200
Fairfax, VA 22031
www.novaregion.org
703.642.0700
540.238.7715 (cell)

Follow us on: 

3040 Williams Drive, Suite 200
Fairfax, Virginia 22031
www.novaregion.org

Northern Virginia Regional Commission

Voice: 703-642-0700
Fax: 703-642-5077

August 14, 2019

Mr. Dave Eichenlaub
Deputy Director
State Corporation Commission
Tyler Building
1300 East Main Street
Richmond, Virginia 23219-3630

Dear Mr. Eichenlaub,

On behalf of the Northern Virginia Regional Commission please accept this letter in support of the proposal to increase the cap for solar Power Purchase Agreements (PPA) as established in 2013 in both the Dominion Energy (50 MW) and APCo (7 MW) service territories.

It is clear with the continued reduction in the cost of solar that PPAs are not only cost competitive with the electricity market but also save taxpayer dollars. As we look at the State Corporation Commission's (SCC) own web site, there are some 20 MW of PPA projects that have submitted registered notifications. In Northern Virginia, Arlington County Public Schools have entered into a PPA agreement with Sun Tribe Solar for five locations that will save taxpayers approximately $4 million over the 25-year term of the contract.

As you know, most recently Fairfax County has issued an RFP covering up to 117 sites that could result in an estimated 30 to 40 MW of projects in the County alone. We believe based upon recent conversations that other local government entities in the region will be pursuing PPA projects on their own or possibly ride the Fairfax County agreement when it is finalized. As such, as these projects progress our local governments will be stymied by the cap which artificially impedes the free market and prevents projects from moving forward.

It is clear when we compare ourselves to the solar markets in both Maryland and North Carolina our Commonwealth has been at a significant disadvantage. Tools such as State supported investment tax credits, rebates and mandatory renewable portfolio standards just to name a few have had a significant positive impact on the growth of solar in those states. We believe that raising the cap in the Commonwealth will help to continue to fuel the growth in our communities with significant environmental and financial benefit to our residents.

As you are aware, according the Solar Foundation there were 325 new solar jobs created in Virginia in 2018 representing 9.1% growth. It is projected that there will be 5.3% growth in solar jobs in 2019. Lifting the cap on the solar PPA program will help continue that positive growth for our Commonwealth. I have attached a related Solar Foundation fact sheet.

We respect the SCC's position that it does not have the authority to raise the cap on its own. With that said, it is our understanding the SCC will be making recommendations to the General Assembly with respect to this and other related issues. As such, we want to go on record to respectfully request on behalf of the 13 jurisdictions of the Northern Virginia Regional Commission representing more than 2.5 million residents that the following recommendations be included in the SCC's report:

1. The cap for PPAs in the Dominion Energy service territory be raised to a minimum of 500 MW.
2. The cap for PPAs in the APCo service territory be raised to 30 MW.
3. Project size be increased from 1 MW to 3 MW.

Many thanks for your kind consideration of this request.

Sincerely,

Robert W. Lazaro, Jr.
Executive Director

cc: Honorable Members of the Northern Virginia Regional Commission
Honorable Ralph Northam, Governor of the Commonwealth of Virginia
Honorable Members of the Northern Virginia Delegation of the General Assembly

The SOLAR FOUNDATION

VIRGINIA

SOLAR JOBS CENSUS 2018

There are 242,343 Americans working in solar as of 2018, according to The Solar Foundation's latest *National Solar Jobs Census*. Visit SolarStates.org to view an interactive map of solar jobs in 2018 by state, county, metro area, and congressional district.

Virginia's solar workforce grew in 2018 to reach nearly 4,000 jobs. Future job growth is expected as the state's community solar ramps up and more corporations invest in renewable energy projects.

STATE SOLAR JOBS: 3,890

20 STATE RANKING FOR SOLAR JOBS

34 STATE RANKING FOR SOLAR JOBS PER CAPITA

325 New Solar Jobs, 2018

9.1% Solar Jobs Growth, 2018

11 State Rank by Net Solar Jobs Added, 2018

5.3% Projected Jobs Growth, 2019

4.8% Percentage of State Solar Workers Who Are **Veterans**

SOLAR JOBS BY SECTOR

INSTALLATION

2,903
(9% increase)

MANUFACTURING

288
(10% decrease)

WHOLESALE TRADE & DISTRIBUTION

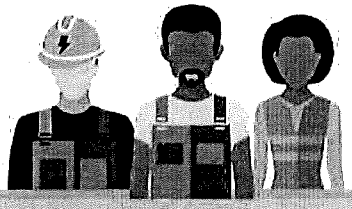
280
(12% decrease)

OPERATIONS & MAINTENANCE

223

OTHER

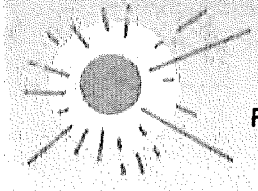
196
(26% decrease)



SOLAR INDUSTRY CONTEXT

731 MW
CUMULATIVE INSTALLED SOLAR CAPACITY[1]

17 STATE RANKING FOR INSTALLED SOLAR CAPACITY[1]



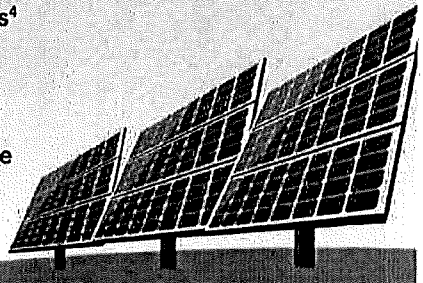
ENOUGH SOLAR TO POWER **82,314** HOMES[12]

253
Solar Companies[2]

30
K-12 Solar Schools[4]

1.0%
K-12 Schools Have Gone Solar[4]

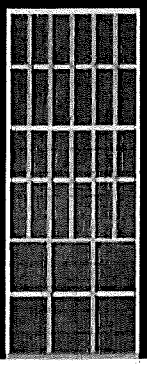
1.03%
of State's Electricity Generation from Solar[3]



Learn more at SolarStates.org

TOP METROPOLITAN STATISTICAL AREAS FOR SOLAR JOBS

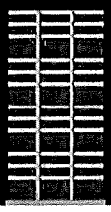
4,212
Washington-Arlington-Alexandria



732
Richmond

625
Virginia Beach-Norfolk-Newport News

409
Charlottesville



DID YOU KNOW?

A Virginia Tech team won the International Solar Decathlon for building FutureHAUS, a house entirely powered by solar that took over six years of research and hard work by over 100 faculty and students.[5]

VIRGINIA

SOLAR POLICY CONTEXT

C
Net Metering Policy Grade[6]

A
Interconnection Policy Grade[6]

Residential solar installations up to 20 kW, non-residential solar installations up to 1 MW, and agricultural solar installations up to 200 kW receive compensation for solar sent back to the grid at the retail rate. The number of systems covered under net metering is set at 1% of utility's adjusted peak-load forecast for the previous year. Residential systems greater than 10 kW must pay a monthly standby charge.

STATE INSTALLER LICENSING REQUIREMENTS[7]

State PV Specialty License

RENEWABLE PORTFOLIO STANDARD[10]

15%
by 2025 *(voluntary)*

RENEWABLE PORTFOLIO STANDARD CARVEOUTS[10]

Solar receives a 2x multiplier toward overall goal

COMMUNITY SOLAR[8]

Legislation Enacted

COMMUNITY CHOICE AGGREGATION STATUS[9]

CCA Enabling Legislation

LEGAL STATUS OF THIRD PARTY OWNERSHIP[10]

Authorized by state, at least in certain jurisdictions

PROPERTY ASSESSED CLEAN ENERGY FINANCING (PACE) STATUS[11]

PACE-enabling Legislation; Active Commercial PACE Programs

10%
Employers Reporting It Was "Very Difficult" to Hire Qualified Employees

30
STATE RANKING
FOR AVERAGE ELECTRICITY PRICE[3]
(Highest to Lowest)

9.58
CENTS/kWh
AVERAGE ELECTRICITY PRICE[3]

1 Wood Mackenzie, Limited and Solar Energy Industries Association (SEIA), *U.S. Solar Market Insight*
2 SEIA, National Solar Database
3 U.S. Energy Information Administration
4 The Solar Foundation, SEIA, and Generation 180, *Brighter Future: A Study on Solar in U.S. Schools, 2nd Edition*
5 https://www.digitaltrends.com/cool-tech/virginia-tech-futurehaus-solar-decathlon/#/6
6 *Freeing the Grid 2015*, a joint project of Vote Solar, Interstate Renewable Energy Council, and EQ Research
7 *National Solar Licensing Map*, Interstate Renewable Energy Council
8 Shared Renewables HQ, an initiative of Vote Solar in partnership with Lee Barken
9 Local Energy Aggregation Network
10 North Carolina Clean Technology Center at North Carolina State University, *Database of State Incentives for Renewables and Efficiency*
11 PACENation, available at pacenation.us/pace-programs/
12 SEIA

David Eichenlaub

From: Robert Lazaro <rlazaro@novaregion.org>
Sent: Friday, September 27, 2019 9:29 AM
To: David Eichenlaub
Subject: NVRC Resolution in Support of Expanding Solar PPA Cap
Attachments: Res P20-1 Solar PPA.pdf

Dear Mr. Eichenlaub,

As a follow up to my letter of August 14, 2019, attached please find a resolution unanimously adopted by the Commission last evening in support of expanding the solar PPA cap and project size cap.

Would sincerely appreciate your sharing with appropriate SCC staff and the Commissioners.

Many thanks.

Bob

Robert W. Lazaro, Jr.
Executive Director
Northern Virginia Regional Commission
3040 Williams Drive, Suite 200
Fairfax, VA 22031
www.novaregion.org
703.642.0700
540.238.7715 (cell)

Follow us on: 

Northern Virginia Regional Commission

RESOLUTION

Resolution No. 20-01

PATRON: Robert W. Lazaro, Jr.
Executive Director
DATE: September 26, 2019

RESOLUTION EXPRESSING SUPPORT FOR AN INCREASE IN THE CAP ON SOLAR POWER PURCHASE AGREEMENTS FROM 50MW TO A MINIMUM OF 500MW AND INCREASE PROJECT SIZE FROM 1MW TO 3MW

WHEREAS, the General Assembly passed into law in 2013 legislation that created a solar power purchase agreement (PPA) pilot program with an aggregate cap of 50MW in Dominion Energy's service territory; and

WHEREAS, the 2013 Pilot Program legislation in Chapter 382 of the Acts of Assembly, as amended in 2017, authorized the State Corporation Commission (SCC) to review changes to the PPA Pilot Program; and

WHEREAS, the SCC has opined that the General Assembly is empowered to raise the cap and that it would be making recommendations to the members of the General Assembly; and

WHEREAS, as of June 2019 there were 20MW of proposed projects with approximately 30MW remaining before the cap is reached; and

WHEREAS, Fairfax County has recently issued an RFP for solar PPA projects that if adopted would represent some 30 to 40MW of new solar PPA projects therefore exceeding the cap in the Dominion Energy service territory; and

WHEREAS, the program created by the General Assembly has been a success and more local government entities are moving forward with PPA proposals that not only help create jobs in the Commonwealth, but also save taxpayers money.

THEREFORE, BE IT RESOLVED the Northern Virginia Regional Commission supports increasing the cap on solar PPAs from 50MW to a minimum of 500MW and recommends the cap on individual projects from 1MW to 3MW; and

THEREFORE, BE IT FURTHER RESOLVED the Executive Director of the Commission be directed to submit a copy of this resolution to the State Corporation Commission for its consideration and to the members of the Northern Virginia delegation of the General Assembly.

SEAL 1969

CERTIFICATION

The undersigned certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Northern Virginia Regional Commission on September 26, 2019.

ROBERT W. LAZARO, JR., CERTIFYING OFFICER

David Eichenlaub

From: Maia Davis <mdavis@mwcog.org>
Sent: Friday, September 27, 2019 12:59 PM
To: David Eichenlaub
Cc: Stephen Walz; Jeffrey King; Timothy Masters
Subject: MWCOG CEEPC Solar PPA CAP Comment Letter
Attachments: MWCOG CEEPC - VA SCC Solar PPA Cap Comment Letter - 9-25-2019 - Signed.pdf

Importance: High

Mr. Eichenlaub:

The attached letter was adopted earlier this week by the Metropolitan Washington Council of Governments' Climate, Energy and Environment Policy Committee in support of expanding the solar PPA cap and project size cap. We request that you please distribute to appropriate SCC staff and the Commissioners. We would also appreciate it if you could please confirm your receipt of the letter.

Thank you for your time and attention.

Maia A. Davis
Senior Environmental Planner
Metropolitan Washington Council of Governments
777 North Capitol Street NE Suite 300
Washington DC 20002
mdavis@mwcog.org
202-962-3227

Metropolitan Washington
Council of Governments

September 25, 2019

Mr. Dave Eichenlaub
Deputy Director
State Corporation Commission
Tyler Building
1300 East Main Street
Richmond, Virginia 23219-3630

Dear Mr. Eichenlaub:

The Climate, Energy and Environment Policy Committee of the Metropolitan Washington Council of Governments supports an increase in the cap for solar Power Purchase Agreements (PPA) in the Dominion Energy service territory to 500 megawatts (MW). We also request that the cap on individual project size be increased to at least 3 MW per site.

PPAs are not only cost competitive with the electricity market but also save ratepayers dollars. Solar, particularly when partnered with energy storage, can provide value to and lower costs to all ratepayers. Increasing the cap is necessary now to facilitate planning of future projects. According to the SCC web site, there are around 20 MW of PPA projects that have submitted registered notifications. The 50 MW cap established in 2013 will soon be eclipsed by customer demand.

We would also hope the Commission will confirm that the utility-specific PPA caps are separate from the capacity provided for in 2019 legislation establishing municipal net metering. Our reading of the 2019 legislation finds that the General Assembly expressly counted the municipal net metering in the one percent utility cap but were silent as to it being covered in the PPA cap.

Allowing for expanded solar PPAs and net metering will save taxpayers money across Virginia. Arlington County Public Schools have entered into a PPA agreement with Sun Tribe Solar for five locations that will save taxpayers approximately $4 million over the 25-year term of the contract. Most recently Fairfax County issued an RFP that could result in 30 to 40 MW of projects in the County alone. We understand that other local government entities in Northern Virginia are pursuing PPA projects on their own or may ride the Fairfax County agreement when it is finalized. As such, as these projects progress our local governments will be stymied by any caps that impedes the free market and prevents projects from moving forward.

Regulatory barriers like the cap on PPAs puts the Commonwealth at a significant disadvantage in comparison to the solar markets in both Maryland and the District of Columbia. Raising the cap in the Commonwealth will help to continue to fuel the growth in our communities with significant environmental and financial benefit to our residents.

Growth of solar system installation has also supported economic development in Virginia. The Solar Foundation reports that there was a 9.1% growth in solar jobs created in Virginia in 2018. It is projected that there will be an additional 5.3% growth in solar jobs in 2019. Lifting the cap on the solar program will help continue that positive growth for our Commonwealth.

Dave Eichenlaub
September 25, 2019

We respect the State Corporation Commission's (SCC) position that it does not have the authority to raise the cap on its own. Therefore, we ask the SCC to include in its recommendations to the General Assembly regarding distributed generation that the utility PPA caps be increased.

Thank you for considering this request. Please contact Steve Walz at COG (202-962-3211 or swalz@mwcog.org) if you have questions.

Sincerely,

The Honorable Daniel Sze
Chair, Climate, Energy and Environment Policy Committee