SCC Commonwealth of Virginia
STATE CORPORATION COMMISSION

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December 1, 2021

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

The Honorable Richard L. Saslaw
Chair, Senate Committee on Commerce and Labor

The Honorable Jeion A. Ward
Chair, House Committee on Labor and Commerce

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 Virginia Acts of Assembly, the Annual Report on Energy Efficiency Programs pursuant to Chapter 1193 of the 2020 Virginia Acts of Assembly, and the Biennial Report on Third Party Power Purchase Agreement Pilot Program pursuant to Chapter 382 of the 2013 Virginia Acts of Assembly.

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

Respectfully submitted,

Judith Williams Jagdmann
Chair

Jehmal T. Hudson
Commissioner

Angela L. Navarro
Commissioner

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

Reports to the Governor of the Commonwealth of Virginia,
the Chair of the Senate Committee on Commerce and Labor,
the Chair of the House Committee on Labor and Commerce,
the Joint Commission on Technology and Science,
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

Annual Report on Energy Efficiency Programs
Pursuant to Chapter 1193 of the 2020 Virginia Acts of Assembly

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

December 1, 2021

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EXECUTIVE SUMMARY

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

Grid Modernization, Reliability, and Integration of Renewables (The Grid Transformation and Security Act ("GTSA"), 2018 Virginia Acts of Assembly Chapter 296):

Concerning reliability, Virginia electric utilities continue to participate in regional transmission planning through PJM Interconnection, L.L.C. ("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. Under certain circumstances, the projects are also subject to Commission approval.

Concerning grid security and hardening activities, the Commission has previously given approval for Virginia Electric and Power Company d/b/a Dominion Energy Virginia ("DEV" or "Dominion") to implement physical security controls at ten substations, and that activity is still ongoing.[1] The Commission has also previously approved three major components of a DEV proposal to harden parts of the distribution grid, primarily addressing the worst performing distribution feeders, as well as remote customer locations that face extended outages upon failure of critical substation equipment that lacks redundancy.

Both DEV and Appalachian Power Company ("APCo") 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 the generation, transmission, and distribution of electricity. During 2020, such annual investments were:

Company	Generation	Transmission	Distribution
Dominion Energy Virginia	-$2,762.0M[2]	$771.0M	$744.0M
Appalachian Power Company	$70.0M	$316.4M	$262.6M

[1] The ten substations that received Commission approval for enhanced physical security measures were substations proposed by Dominion; the Commission did not select those substations.

[2] The net decrease in DEV's generation plant in service was due to plant impairments recorded in 2020.

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

The GTSA established a pilot program for underground electric transmission lines ("Undergrounding Pilot"), consisting of two qualifying projects to be constructed in whole or in part underground. Dominion's Haymarket Project – specifically, its I-66 Hybrid Route – was the first project the Commission approved as part of the Undergrounding Pilot. According to DEV, this project is currently in the construction phase. DEV reports various issues encountered during the construction of this project, resulting in an extension of the estimated completion date from the original date of July 2021 to March 2022. The project's estimated cost has also increased from $171.9 million to $230 million, representing an approximately 34.8% increase.

The Commission also approved, on June 24, 2021, another DEV development as the second qualifying project in the Undergrounding Pilot. This second project is called Dominion's Partial Line #2010 230 kilovolt ("kV") Single Circuit Transmission Line Underground Pilot Project (Tysons-Future Spring Hill Substation). The project will be constructed in Fairfax County at a cost of approximately $30.4 million, and with a projected in-service date of December 31, 2025.

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

Between July 1, 2018, and June 30, 2021, Virginia utilities placed into operation solar facilities totaling 480 megawatts ("MW") of generation power in the Commonwealth. Dominion also has approximately 882 MW of solar generation and 2,632 MW of offshore wind generation off the Commonwealth's Atlantic shoreline under development.[3] APCo currently has 20 MW of solar energy under development. Third parties are also developing facilities that may provide approximately 2,322 MW of additional solar energy. facilities in the Commonwealth.

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

The Commission has approved two programs under this legislation. First, Dominion's Solar Purchase Program features a tariff designed to facilitate customer-owned distributed solar generation. Second, as part of Dominion's Solar Partnership Program, nine solar projects were constructed by qualifying commercial, industrial, high school, and university customers. These facilities continue to be operational, with a total capacity of 6.4 MW. Total capital expenditures to date represent approximately $26.4 million of the $80 million program cap.

Energy Efficiency Programs (2020 Virginia Acts of Assembly Chapter 1193):

Dominion and APCo have both applied for, and received approval for, energy efficiency programs pursuant to the Virginia Clean Economy Act ("VCEA"). Specifically, in 2021, Dominion received

[3] These figures refer to data provided by Dominion as of June 30, 2021. In next year's report, the Commission will update these amounts to include additional projects and PPAs proposed in Dominion's 2021 RPS Filing, Case No. PUR-2021-00146, filed on September 15, 2021.

approval to implement ten new programs and to modify several existing programs. According to DEV analysis, however, the company does not anticipate achieving the VCEA's energy savings targets beginning in 2023. APCo received approval for five new programs in 2021, as well as a three-year voltage conservation pilot program.

Since 2009, the Commission has approved a total of 76 energy efficiency programs and 12 peak shaving programs for Dominion and APCo, including programs filed pursuant to the VCEA. The cumulative total Commission-approved cost cap for these programs for both utilities is approximately $1.21 billion.

Additionally, on August 28, 2020, the Commission established a proceeding to address Dominion's methodologies for conducting evaluation, measurement, and verification of energy savings of approved energy efficiency measures. On October 27, 2021, the Commission issued a Final Order in this case which, among other things, established methodologies to measure and verify DEV's reported energy savings and adopted a dashboard-style summary of DEV's progress towards the goals of the GTSA and VCEA.

Third Party Power Purchase Agreement Pilot Program (2020 Acts of Assembly Chapter 1193):

Under the VCEA, the Third Party Power Purchase Agreement ("PPA") Pilot Program is underway for each investor-owned electric utility in Virginia. This program enables the owner or operator of a solar-powered or wind-powered electricity generation facility, located on premises owned or leased by an eligible customer-generator, to sell the electricity generated from such facility exclusively to the eligible customer-generator under a PPA. The pilot programs are limited to aggregated capacity not exceeding: (i) 500 MW for DEV's Virginia jurisdictional and non-jurisdictional customers and (ii) 40 MW for customers of APCo or Kentucky Utilities Company d/b/a Old Dominion Power Company ("ODP").

To date, the cumulative capacity of facilities participating in the Third Party PPA Pilot Program has not yet reached the participation caps for any utility. Notices of intent for each PPA program currently estimate about 70.7 MW, 1.8 MW, and 6.2 MW of solar generating capacity for DEV, APCo and ODP, respectively. It is worth noting that ODP has received notices of intent for almost 53% of its available capacity.

INTRODUCTION

COVID-19

Like all government agencies in the Commonwealth, the Commission has been impacted by the ongoing public health concern related to the spread of the coronavirus, or COVID-19. The Commission has implemented changes to its operating procedures to protect the public and Commission employees, including increased employee teleworking and increased use of electronic filings and remote hearings in Commission proceedings.

The Commission also provided relief for customers financially impacted by the health emergency. Through several orders, the Commission directed regulated electric, natural gas, and water companies in Virginia to suspend service disconnections through October 5, 2020, affording the General Assembly and the Governor time to address the economic impact on utility customers via legislation.[4] The General Assembly subsequently enacted legislation further extending utility shut-offs during the emergency, subject to certain conditions and limitations.[5]

The Commission also carried out the General Assembly's mandate to distribute $100 million of Virginia's portion of funds received under Public Law 116-136: Coronavirus Aid, Relief, and Economic Security Act to offset utility customer billing arrearages due to COVID-19.[6] Per the legislature's directives, these monies were allocated to electric, gas, water, and sewer

[4] *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: Temporary Suspension of Tariff Requirements*, Case No. PUR-2020-00048, 2020 S.C.C. Ann. Rept. 467, Order Suspending Disconnection of Service and Suspending Tariff Provisions Regarding Utility Disconnections of Service (Mar. 16, 2020); 2020 S.C.C. Ann. Rept. 467, Order Extending Suspension of Service Disconnections (Apr. 9, 2020); 2020 S.C.C. Ann. Rept. 469, Order on Suspension of Service Disconnections (June 12, 2020); 2020 S.C.C. Ann. Rept. 473, Order on Moratorium (Aug. 24, 2020); 2020 S.C.C. Ann. Rept. 475, Additional Order on Moratorium (Sept. 15, 2020).

[5] *See, e.g.*, House Bill 5005, 2020 Va. Acts, Special Session I, ch. 56; House Bill 1800, 2021 Va. Acts, Special Session I, ch. 552.

[6] *See* House Bill 1800, 2021 Va. Acts, Special Session I, ch. 552.

utilities, including municipal utilities, throughout the Commonwealth. At the direction of the General Assembly,[7] the Commission also is in the process of distributing $120 million, received through the American Rescue Plan Act,[8] to these utilities to further offset residential customer arrearages (over 60 days as of August 31, 2021).

Statutory Background

This document contains the Report of the Commission pursuant to the referenced provision(s):

- Grid Modernization, Reliability, and Integration of Renewables: Enactment Clause 19 of the GTSA[9] 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: Enactment Clause 2 of the GTSA directs the Commission to submit annual reports by December 1 of each year assessing the progress of the Undergrounding Pilot for electrical transmission lines of 230 kV or less;

- Construction of New Solar and Wind Projects: Enactment Clause 14 of the GTSA, as amended by 2020 Virginia Acts of Assembly Chapter 1190, 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; (iv) the need for

[7] *See* House Bill 7001, 2021 Va. Acts, Special Session II, ch. 1.

[8] H.R.1319 - 117th Congress (2021-2022): American Rescue Plan Act of 2021, H.R.1319, 117th Cong. (2021), https://www.congress.gov/bill/117th-congress/house-bill/1319.

[9] In 2018, the General Assembly passed the GTSA, which, among other things: (i) provided for triennial reviews of base rate earnings for APCo beginning in 2020 and for Dominion beginning in 2021; (ii) provided for Dominion and APCo to file, at their discretions and not more than once annually, for approval of a plan for electric distribution grid transformation projects; (iii) created a new rate adjustment clause option for these utilities to recover the costs of distribution grid transformation projects; and (iv) changed the timing for these utilities to file Integrated Resource Plans ("IRPs") with the Commission from annually to once every three years. As a result, each utility now makes an IRP filing in the year before that utility files its triennial base rate review.

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; and (v) the aggregate annual new construction or purchase of energy storage facilities;

- Solar Demonstration Programs: 2011 Virginia Acts of Assembly Chapter 771 directs the Commission to submit annual reports on any demonstration programs approved pursuant to that Act. However, the information required with regard to Solar Demonstration Programs corresponds with the information required in the GTSA reports listed above and therefore is included in that section of this consolidated report;

- Energy Efficiency Programs: The VCEA directs the Commission to monitor and report to the General Assembly annually on the performance of all programs approved pursuant to § 56-585.1 A 5 c of the Code of Virginia ("Code"), including: each utility's compliance with the total annual savings required by Code § 56-596.2; the annual and lifecycle net and gross energy and capacity savings, related emissions reductions, and other quantifiable benefits of each program; total customer bill savings that the programs produce; utility spending on each program, including any associated administrative costs; and each utility's avoided costs and cost-effectiveness results; and,

- Third Party PPA Pilot Program: 2013 Virginia Acts of Assembly Chapter 382 first directed 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 General Assembly passed the GTSA, which, among other things: (i) provided for triennial reviews of base rate earnings for APCo beginning in 2020 and for Dominion beginning in 2021; (ii) provided for Dominion and APCo to file, at their discretions and not more than once annually, for approval of a plan for electric distribution grid transformation projects; (iii) created a new rate adjustment clause option for these utilities to recover the costs of distribution grid transformation projects; and (iv) changed the timing for these utilities to file Integrated Resource Plans ("IRPs") with the Commission from annually to once every three years. As a result, each utility now makes an IRP filing in the year before that utility files its triennial base rate review. Additionally, the GTSA 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 the Solar Demonstration Report

Through this document, the Commission is also providing a report related to Solar Demonstration Programs. The applicable laws do not specify a particular filing date for this report. However, the information required with regard to Solar Demonstration Programs provided in the report corresponds with the information required in by the GTSA reports listed above.

Background of the Virginia Clean Economy Act

In 2020, the General Assembly passed the VCEA, which, among other things: (i) directs the Commission annually to monitor and report to the General Assembly on the performance of all energy efficiency programs approved pursuant to Code § 56-585.1 A 5 c, including each utility's compliance with the total annual savings required by Code § 56-596.2, as well as other related metrics; and (ii) requires the Commission to include the aggregate annual new construction or purchase of energy storage facilities within its existing report on the Construction of New Solar and Wind Projects.

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

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. Pursuant to 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 June 21, 2021, DEV filed its third petition with the Commission related to grid modernization. With its latest filing, DEV seeks approval of Phase II of its ten-year grid transformation plan ("GT Plan"), which covers the years 2022 to 2023.[10] The petition has been docketed as Case No. PUR-2021-00127.[11] As proposed, DEV's forecasted investment in Phase II of the GT Plan is as follows:

Portion of GT Plan	Total Capital Investment	Operations/Maintenance Costs
Phase II (2022-2023)	$666.5 million	$109.6 million
Full 10-year GT Plan	$2.88 billion	$ 345.4 million

In Phase II, DEV proposes 14 projects, including in the following areas: advanced metering infrastructure; the customer information platform; grid improvement (both grid

[10] The Commission has previously considered two GT Plan filings by DEV, consisting of Phase IA and Phase IB of DEV's GT Plan, respectively. *See 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, 2019 S.C.C. Ann. Rept. 234, Final Order (Jan. 17, 2019); *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 for approval of an addition to the terms and conditions applicable to electric service,* PUR-2019-00154, 2020 S.C.C. Ann. Rept. 318, Final Order (Mar. 26, 2020) ("Phase IB Final Order").

[11] *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-2021-00127, Doc. Con. Cen. No. 210720063, Order for Notice and Hearing (July 14, 2021).

infrastructure and grid technologies); physical security; cyber security; telecommunications; and customer education.[12] DEV represents that in Phase II, the primary focus leans more heavily into facilitating the integration of Distributed Energy Resources ("DERs"), while continuing to address the reality that reliability and security are vital to the success of DERs. Phase II of the GT Plan is currently under Commission consideration for a determination of reasonableness and prudence. By law, the Commission's final order must be entered no later than six months from the date of filing, which in this case would be no later than January 7, 2022.[13] No other grid transformation petitions were filed during the past year.

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

Reliability of Electric Transmission or Distribution Systems

At transmission-level voltages, PJM is the regional transmission organization 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. This 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 Regional Transmission Expansion Plan ("RTEP") to identify and evaluate changes to the electric grid that, if left unaddressed, could negatively impact the reliability of the grid.

[12] *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-2021-00127, Petition, supporting testimony and attachments (filed June 21, 2021) ("Phase II Petition").

[13] Code § 56-585.1 A 6.

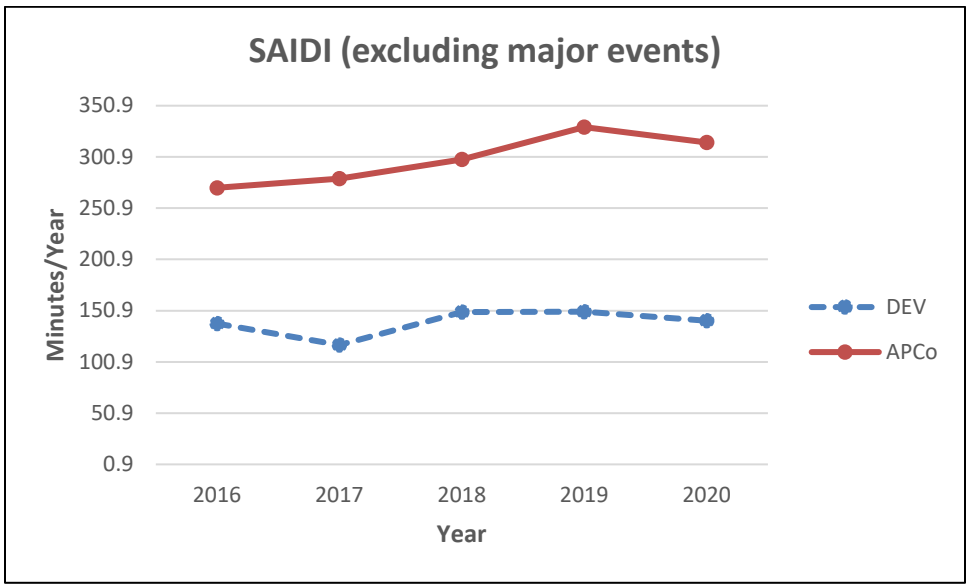
In addition to their participation in the PJM RTEP process, Virginia electric utilities seeking to construct transmission facilities that are not ordinary extensions are required to apply to the Commission for certificates of public convenience and necessity ("CPCNs") under Title 56 of the Code of Virginia. 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 based on a coordinated review conducted by the Department of Environmental Quality ("DEQ"), and the impact of the proposed facilities upon the reliability of electric service delivery within the Commonwealth. These transmission-related processes have maintained electric service reliability within the Commonwealth for many years.

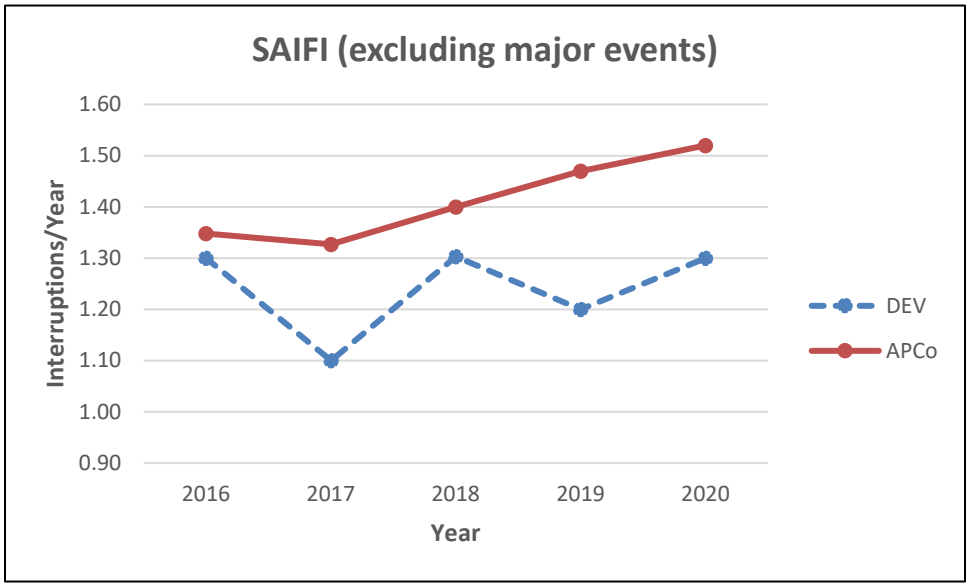
At the electric distribution level, the Commission monitors service reliability through a number of measures, including the Annual Reliability and Tree Trimming Report required from each of Virginia's three investor-owned electric utilities ("IOUs").[14] This report tracks various reliability indices including, but not limited to, System Average Interruption Frequency Index ("SAIFI")[15] and System Average Interruption Duration Index ("SAIDI").[16] The charts below show the Commonwealth's two largest IOUs, 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.

[14] Note that some provisions of the GTSA and the VCEA do not apply to one of Virginia's IOUs, ODP.

[15] 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.

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





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 the performance of one utility to another because these metrics do not account for differences in utility infrastructure (e.g., 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.

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

Background

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. These studies are 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. When applicable, the process also allocates the costs associated with addressing those issues among individual developers whose proposed projects contribute to the same electric reliability issues. Additionally, the Commission issues CPCNs for many 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 megawatts ("MW") capacity at

the transmission or distribution level also may apply and receive approval for a Permit by Rule ("PBR") from DEQ before constructing such facilities.[17] The PBR process requires that technical studies be performed by PJM or the affected electric utility to demonstrate that the proposed project causes no negative impact on electric reliability in the Commonwealth. A Commission-issued CPCN may also be required for construction of any generation or distribution tie lines from the renewable generation facility to the electric grid.

Rulemakings

Among other things, the VCEA, in Code § 56-585.5 E, requires APCo and Dominion to petition the Commission by 2035 for approval to construct or acquire 400 MW and 2,700 MW, respectively, of new utility-owned energy storage resources (collectively "Energy Storage Targets"). Additionally, Code § 56-585.5 E 5 provides in part that by January 1, 2021, the Commission shall adopt regulations to achieve the deployment of energy storage for the Commonwealth, including regulations that set interim targets and update existing utility planning and procurement rules. In its Order Adopting Regulations issued December 18, 2020, the Commission approved regulations related to the Energy Storage Targets, with an effective date of January 1, 2021.[18]

Task Force

Pursuant to the VCEA, the Commission was also charged with creating a task force to evaluate and analyze the regulatory, market, and local barriers to the deployment of distribution and transmission-connected bulk energy storage resources. The task force's mandated objectives were to: (i) help integrate renewable energy into the electrical grid; (ii) reduce costs for the

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

[18] *Commonwealth of Virginia, ex rel. State Corporation Commission, Ex Parte: In the matter of establishing rules and regulations pursuant to § 56-585.5 E 5 of the Code of Virginia related to the deployment of energy storage*, Case No. PUR-2020-00120, 2020 S.C.C. Ann. Rept. 562, Order Adopting Regulations (Dec. 18, 2020).

electricity system; (iii) allow customers to deploy storage technologies to reduce their energy costs; and, (iv) allow customers to participate in electricity markets for energy, capacity, and ancillary services. The task force established by the Commission was led by a third party facilitator and comprised of a diverse group of stakeholders. The task force met 13 separate times from February 2021 to September 2021 to discuss the topics specified by the statute, as well as others recommended by the Commission. The Commission submitted a copy of the task force's evaluation and analysis to the General Assembly as required on October 1, 2021.[19]

Utility Proposals

The Commission previously approved a limited deployment of Dominion's proposed Hosting Capacity Analysis ("HCA") in connection with Phase IB of Dominion's GT Plan. The HCA defines the amount of DER that can be connected to each segment of the distribution grid without causing voltage or loading issues; it indicates to customers whether distribution grid investments may be necessary to integrate their DER. Under this program, DEV was to perform HCA for both utility-scale and net metering DER. To further facilitate the deployment of DER within the Commonwealth, the Commission directed Dominion to publish the results using online interactive maps. DEV launched the HCA tool in January 2021.[20] DEV subsequently launched the web-based Virginia Queue Status Report tool, which provides interconnection status information for Virginia distribution-level interconnections.[21] This tool provides information that will help inform renewable energy resource developers on the volume, location, and queue

[19] The report is available at: https://www.scc.virginia.gov/getattachment/7414bf55-7570-4b3a-bd55-cddc9812e976/Va-Energy-Storage-Task-Force-Rept.pdf.

[20] The HCA tool may be found at: https://www.dominionenergy.com/projects-and-facilities/electric-projects/energy-grid-transformation/hosting-capacity-tool.

[21] *See* https://www.dominionenergy.com/virginia/large-business-services/using-our-facilities/parallel-generation-and-interconnection.

positions of projects in DEV's interconnection queue. APCo also has a public web-based Virginia Interconnection Queue, which it launched on July 30, 2021.[22]

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."

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 plant in service investments made by Virginia's two largest IOUs, DEV and APCo, since 2014.

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

	Generation		Transmission		Distribution		Other[23]	
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	20,522.0	1,321.0	9,391.0	1,059.0	11,771.0	620.0	820.0	26.0
2019	21,240.0	718.0	10,229.0	838.0	12,095.0	324.0	825.0	5.0
2020	18,478.0	(2,762.0)[24]	11,000.0	771.0	12,839.0	744.0	845.0	20.0

[22] *See* https://www.appalachianpower.com/business/builders/generating-equipment.

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

[24] The net decrease in DEV's generation plant in service was due to plant impairments recorded in 2020.

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)[25]	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
2019	6,563.7	54.1	3,584.1	266.4	4,201.7	212.3	571.3	85.5
2020	6,633.7	70.0	3,900.5	316.4	4,464.3	262.6	627.2	55.9

Need for Additional Generation of Electricity During Times of Peak Demand

Virginia's two largest IOUs meet their peak energy demands[26] 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 demands since 2011. PJM requires load serving entities to procure capacity to meet their annual proportionate share of the PJM summer peak demand, either through the PJM capacity market or the Fixed Resource Requirement Alternative ("FRR").[27] As required of members of PJM, both companies have met their expected capacity needs through May 2023, either through company-owned generation or PJM's markets.[28]

[25] APCo's negative generation investment in 2015 is attributable to generation plant impairments recorded in 2015.

[26] "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.

[27] Both companies participate in the PJM capacity market using the FRR, which permits certain entities to supply their own capacity within PJM's capacity market design. APCo has always participated through the FRR, while Dominion's recent FRR election will be effective for the 2022/2023 Delivery Year, which commences June 1, 2022. Prior to such election, Dominion procured its capacity obligation through PJM's annual capacity auction.

[28] *See* http://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2022-2023/2022-2023-base-residual-auction-report.ashx.

Additionally, both companies are subject to the renewable energy portfolio standard program ("RPS") provisions of the VCEA, which require both companies to produce a certain amount of annual electric energy from non-fossil or nuclear energy resources.[29]

Distribution System Hardening Projects and Enhanced Physical Security Measures

The Commission previously approved the following components as part of Phase IB of Dominion's GT Plan that are designed to address distribution system hardening: (i) Mainfeeder Hardening Program (Phase IB cost: $112.4 million); (ii) Targeted Corridor Improvement Program (Phase IB cost: $12.5 million); and (iii) Voltage Island Mitigation Program (Phase IB cost: $15.7 million).[30]

According to DEV, the Mainfeeder Hardening Program is expected to improve reliability and resiliency for poorly performing feeder sections through a combination of: (1) rebuilding in connection with newly implemented stronger design and material standards, and (2) relocating feeder sections, converting them to underground systems, or constructing feeder ties.[31]

Dominion reports that the Targeted Corridor Improvement Program would: (i) remediate ash tree mortality caused by emerald ash borer beetles; and (ii) introduce an herbicide program for ground floor maintenance.[32] Finally, the Voltage Island Mitigation Program, Dominion asserts, would address portions of the distribution grid. It would typically serve remote communities, as these areas have no available system redundancy to address failure of the single substation

[29] Code § 56-585.5.

[30] Phase IB Final Order at 17. All costs include financing costs.

[31] Phase IB Petition, Direct Testimony of Company witness Wright at 20.

[32] Phase IB Petition, Direct Testimony of Company witness Wright at 27-28.

transformer. For Phase IB, DEV would mitigate two voltage islands serving about 2,600 customers who otherwise would face extended outages in the event of such equipment failure.[33]

On May 24, 2021, DEV filed a motion seeking limited adjustments to one of the eleven previously approved Phase IB mainfeeder projects, and one of the two previously approved voltage island projects. Through this motion, DEV sought to substitute the earlier-approved projects with new, comparable projects. DEV cited easement acquisition, land acquisition, and permitting issues it had encountered since the Final Order was issued approving the previous projects. The Commission granted both requests on June 14, 2021.[34] As of May 31, 2021, DEV has completed hardening work on two of the eleven mainfeeders. Work on the two voltage island projects remains ongoing to date. Additionally, DEV has completed physical security upgrades, approved in Phase IA, at one critical substation and anticipates that physical security upgrades at three additional substations will be completed by the end of 2021.

As part of its pending Phase II proposal, DEV requests approval, among other things, to continue its Targeted Corridor Improvement Program (total cost: $38.5 million; Phase II: $16.3 million); address four additional voltage islands (total cost: $40.5 million; Phase II: $11.4 million); and enhance physical security at twelve critical distribution substations (total cost: $143.9 million; Phase II: $37.3 million).[35]

[33] Phase IB Petition, Direct Testimony of Company witness Wright at 33-34.

[34] *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 for approval of an addition to the terms and conditions applicable to electric service*, PUR-2019-00154, Doc Con. Cen. No. 210630055, Order Granting Motion (June 14, 2021).

[35] Phase II Petition, Rebuttal Schedule 1 of Company witness Woomer.

TRANSMISSION LINE UNDERGROUNDING PILOT

Undergrounding Pilot - 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, to be constructed in whole or in part underground ("Undergrounding Pilot"). 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 comprehensive final report no later than December 1, 2024.

During its 2020 Session, the General Assembly amended the Undergrounding Pilot to, among other things, specify the requirements for the second qualifying electrical transmission line and to extend the deadline for submitting applications for qualifying projects from July 1, 2020, to October 1, 2020.[36] Specifically, Code § 56-585.1:5 directs the Commission to approve, as qualifying projects under the Undergrounding Pilot: (i) a transmission line meeting the description of Dominion's Haymarket 230 kV double circuit transmission line and 230-34.5 kV Haymarket Substation[37] (which uses the I-66 Hybrid Route);[38] and (ii) one additional qualifying project that shall be the relocation or conversion of an existing 230 kV overhead line to an underground line. The additional qualifying project is to be selected from among "applications submitted by public

[36] *See* Code § 56-585.1:5

[37] *Application of Virginia Electric and Power Company, For approval and certification of electric transmission 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 (July 26, 2018).

[38] The I-66 Hybrid Route is a 230 kV double circuit electrical transmission line approximately 5.3 miles long. The route has both overhead and underground transmission facilities and includes an underground portion of approximately 3.1 miles in length. It 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.

utilities for certificates of public convenience and necessity for the construction of electrical transmission lines of 230 kilovolts or less filed between July 1, 2018, and October 1, 2020."[39]

Undergrounding Pilot Selection Process

Pursuant to Code § 56-585.1:5, if a public utility requests that a transmission line project be considered as a qualifying project for the Undergrounding Pilot, 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 Undergrounding Pilot.

Progress of the Undergrounding Pilot

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." Dominion requested approval of the Haymarket Project – specifically, 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 approved the Haymarket Project's I-66 Hybrid Route as the first pilot project, in Case No. PUE-2015-00107. Subsequently, on June 24, 2021, Dominion's Partial Line #2010 230 kV Single Circuit Transmission Line Underground Pilot Project (Tysons-Future Spring Hill Substation) received Commission approval as the second qualifying underground pilot project, in Case No. PUR-2020-00198.[40] Appendix 2 of this Report provides a letter from Commission Staff ("Staff") to DEV requesting a status update on these projects. Appendix 3 provides the status update, dated

[39] A project is qualified to be placed underground, in whole or in part, if it meets all the criteria found in Code § 56-585.1:5 D.

[40] *Application of Virginia Electric and Power Company, For approval and certification of Electric Transmission Facilities: Partial Line #2010 230 kV Single Circuit Transmission Line Underground Pilot Project (Tysons-Future Spring Hill Substation)*, Case No. PUR-2020-00198, Doc. Con. Cen No. 210640186, Final Order (Jun 24, 2021). ("Line #2010 Underground Relocation Project").

September 22, 2021, that Dominion provided on the permitting, real estate, engineering, construction activities, cost, and schedule of these two projects.

According to DEV's update, the Haymarket Project recently has resolved previous obstacles and moved into its final engineering and construction phase. All permits and easements required for project construction have been obtained.

Since active construction of the Haymarket Project began in the fall of 2019, Dominion reports that both duct bank and horizontal directional drilling ("HDD") operations have experienced challenges, resulting in project delays, cost increases, and engineering re-work. Dominion's report states that initial HDD activities resulted in several inadvertent releases of drilling mud to the surface due to pockets of highly fractured rock ("frac-outs"). As a result, Dominion had to redesign the HDD routes and make several engineering changes to address this problem. The redesign led to the abandonment of a 12-inch drilled hole and a 36-inch drilled hole. The 36-inch hole was grouted (*i.e.*, filled with concrete) due to the size of the hole and its depth under highway I-66. The new design also increased the HDD depth by approximately 15 feet on each of the drill crossings. In order to reduce the risk of further frac-outs, Dominion states it was required to clear mud and other cutting material from the drill path to keep pressures low. Further, the Manassas Battlefield challenged the United States Army Corps of Engineers' finding of no adverse impact on the Battlefield, which led to an approximately 10-week delay in HDD operations near the Heathcote Transition Station.

According to Dominion, additional work and redesign was also needed at several stations related to the Haymarket Project. At the Heathcote Transition Station and Haymarket Substation, duct banks were used for cable installation, as opposed to direct burial. Dominion states that the duct bank method of installation would facilitate easier cable replacement in the event of a future cable failure. At the Gainesville and Loudoun Substations, work was required to maintain

networked service to a Northern Virginia Electric Cooperative ("NOVEC") delivery point. In addition to these engineering challenges, Dominion states that it encountered several utility lines located in unanticipated places that interfered with the construction of the project and which needed to be resolved prior to drilling.

The foregoing issues resulted in delays and cost increases to the Haymarket Project. The new scheduled completion date for the Haymarket Project is March 2022, which equates to an approximately eight-month delay beyond the originally projected completion date of July 2021. The current cost estimate for the Haymarket Project is $230 million. This figure is approximately $50 million higher than the $180 million anticipated in 2020 (27.8% cost increase) and approximately $58.1 million higher than the $171.9 million cost estimate provided at the conclusion of the Commission proceeding approving the Haymarket Project (34.8% cost increase).

Relative to the second pilot project, the Line #2010 Underground Relocation Project, Dominion states that this project has moved into the final engineering and pre-construction phase. Accordingly, no significant developments were provided in the status update.

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; (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; and (v) the aggregate annual new construction or purchase of energy storage facilities. The responses provided below include data as of June 30, 2021.[41]

(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, DEV's Spring Grove I Solar Facility (98 MW)[42] was put into operation in November 2020.[43] The Water Strider Solar Facility (80 MW), a facility subject to a PPA with DEV, was also put into operation in May 2021.[44] Two of DEV's "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) also went into operation, Grasshopper Solar (80 MW) and Belcher Solar (88.2 MW).

[41] While Code § 56-596.1 requires only the reporting of facilities utilizing sunlight, the objective within the Code section also refers to wind. 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 Code § 56-596.1 and Code § 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.

[42] All MW values provided in this section are alternating current ("AC").

[43] *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, 2019 S.C.C. Ann. Rept. 239, Order Granting Certificates (Jan. 24, 2019), and 2019 S.C.C. Ann. Rept. 248, Order Approving Rate Adjustment Clause (Apr. 15, 2019).

[44] The Commission approved DEV's petition for a prudency determination with respect to this PPA. *See 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, 2018 S.C.C. Ann. Rept. 517, Final Order (Nov. 2, 2018).

Both Community Electric Cooperative and Shenandoah Valley Electric Cooperative ("SVEC") have installed solar plus storage facilities at their respective headquarters, totaling approximately 0.08 MW. Moreover, merchant generators have put into operation an additional 160 MW of solar capacity.

In January 2021, DEV put its Coastal Virginia Offshore Wind ("CVOW") pilot project (12 MW) into operation.

New Development

DEV has multiple solar facilities currently under development. The Sadler Solar Facility (100 MW) is one such location.[45] Additionally, the Commission approved, through DEV's 2020 RPS proceeding,[46] several projects described by DEV as the "CE-1 facilities." These projects, including Grassfield Solar (20 MW), Norge Solar (20 MW), and Sycamore Creek Solar (42 MW), are also currently under development. DEV has informed Staff that it has the Dulles Solar (100 MW), Merry Point Solar (100 MW), and Moon Corner Solar (60 MW) facilities under development as well. DEV also continues to develop approximately 2,632 MW of offshore wind through its commercial CVOW project.

DEV further is pursuing certain additional "ring-fenced" solar projects. Specifically, Dominion has notified Staff that DEQ has approved development of DEV's Fort Powhatan (150 MW), Bedford Solar (70 MW), Maplewood Solar (120 MW), Rochambeau Solar (20 MW), and Pumpkinseed Solar (59.6 MW) projects through the PBR process. With respect to energy storage, DEV has four battery storage pilots, totaling 16 MW, under development.

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[45] *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, 2020 S.C.C. Ann. Rept. 290, Order Granting Certificate (Jan. 22, 2020).

[46] *Commonwealth of Virginia, ex rel., State Corporation Commission, Ex Parte: Establishing 2020 RPS Proceeding for Virginia Electric and Power Company*, Case No. PUR-2020-00134, Doc. Con. Cen. No. 210440236, Final Order (Apr. 30, 2021).

APCo has a 5 MW solar facility in Amherst, Virginia currently under development. In March 2021, APCo issued a request for proposals for additional utility-owned assets of up to 300 MW for solar and/or wind generation resources.

NOVEC has announced a 300 MW solar 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 are still being determined, the number of MW attributable to Virginia is currently unknown. Central Virginia Electric Cooperative ("CVEC") has signed PPAs with Midway Solar (8.4 MW) and Cunningham Solar (5 MW), and these facilities are currently under development. SVEC has a 0.009 MW solar plus storage facility under development called the Blue Ridge Parkway Facility. With respect to energy storage, Rappahannock Electric Cooperative has a 2 MW facility under development.

In addition, merchant generators are developing approximately 2,322 MW of solar facilities, including three solar facilities approved by the Commission,[47] and other facilities that DEQ has approved through its PBR process.

A table reflecting the status of constructed and under development solar, wind, and energy storage projects as of June 30, 2021 is provided in Appendix 4.[48]

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[47] *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, 2018 S.C.C. Ann. Rept. 310, Order Granting Certificates (Aug. 8, 2018); *Joint Application of Skipjack Solar Center, LLC, et al., For certificates of public convenience and necessity for solar generating facilities totaling 320 MW in Charles City County*, Case No. PUR-2019-00073, 2020 S.C.C. Ann. Rept. 262, Order Granting Certificates (Mar. 5, 2020); *Application of Cavalier A Solar, LLC, For approval of a 240 MW Solar Facility in Surry and Isle of Wight Counties*, Case No. PUR-2020-00235, Doc. Con. Cen. No. 210550139, Final Order (May 27, 2021).

[48] The Commission's Annual Report on the Construction of New Solar and Wind Projects provides data responsive to each requirement through June 30 of the filing year. The Commission notes, however, that since June 30, 2021, DEV has filed its 2021 RPS proceedings pursuant to the VCEA. DEV's RPS proceeding is docketed as Case No. PUR-2021-00146. DEV's proposed RPS plan includes proposals for further construction and development of solar and wind projects in the future. More detail on this pending proceeding can be found on the Commission's website by searching the relevant case number at: scc.virginia.gov/DocketSearch.

(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.[49] Dominion's 12 MW CVOW pilot project 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 Dominion's electric grid.[50]

Electric Cooperatives

Virginia's electric cooperatives regulated by the Commission continue to assess the viability of cooperative-owned renewable generation resources. The cooperatives have participated in multiple working groups on these and other related topics.

(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 (and as of June 30, 2021), 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;
- Gloucester Solar Facility, 20 MW, operational April 2019;
- Colonial Trail West Facility, 142.2 MW, operational December 2019;
- Spring Grove I Facility, 98 MW, operational November 2020;
- Grasshopper Solar Facility, 80 MW, operational October 2020;
- Belcher Solar Facility, 88.2 MW, operational June 2021;

[49] *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 of the Code of Virginia*, Case No. PUE-2011-00117, 2012 S.C.C. Ann. Rept. 328, Order (Nov. 28, 2012).

[50] *Petition of Virginia Electric and Power Company, For a prudency determination with respect to the Coastal Virginia Offshore Wind Project pursuant to Virginia Code § 56-585.1:4 F*, Case No. PUR-2018-00121, 2018 S.C.C. Ann. Rept. 491, Final Order (Nov. 2, 2018).

- Water Strider Solar Facility, 80 MW, operational May 2021; and,
- CVOW Facility, 12 MW, operational January 2021.

(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 by Virginia's IOUs since July 1, 2018, as well as the number of additional facilities needed to meet the General Assembly's objective.[51]

Aggregate Solar and Wind Generating Facilities Constructed by IOUs since July 1, 2018

Total Solar & Wind General Assembly Objective	MW
GTSA Objective:	**5,000**
Total IOU Owned/Operated Solar Constructed since July 1, 2018:	480.6
Total IOU Solar PPAs Constructed since July 1, 2018:	80
Total IOU Owned/Operated Wind Constructed since July 1, 2018:	12
Total IOU Wind PPAs Constructed since July 1, 2018:	0
Total Remaining to Meet Objective:	**4,427**

(v) Aggregate Annual New Construction or Purchase of Energy Storage Facilities

No utilities have reported the construction or purchase of new energy storage facilities, although several continue to be under development as noted above.

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

[51] As noted in Enactment Clause 14 of the GTSA, it is the General Assembly's objective that the construction and development of 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 kW, and with an aggregate capacity of 50 MW be placed in service on or before July 1, 2028.

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).[52]

The Solar Purchase Program has concluded, and no further data is being provided related to this program.[53] 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. Solar projects were installed at these sites between 2014 and 2017. These projects are used for demonstration and grid impact study purposes. DEV has nine operational projects with a total capacity of 6.4 MW under the Solar Partnership Program. The cumulative revenue requirement from inception through December 31, 2020, is approximately $26.4 million of the $80 million cap originally authorized for this program.

ENERGY EFFICIENCY PROGRAMS

The VCEA establishes energy efficiency savings targets through 2025. After 2025, the Commission is directed to establish new energy efficiency targets.[54] The targets through 2025 are as follows:

[52] *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).

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

[54] Subject to certain conditions, the Commission is prohibited from approving construction of any new utility-owned generating facilities that emit carbon dioxide as a by-product of combusting fuel to generate electricity unless the utility has already met the energy savings goals prescribed above and the Commission finds that supply-side resources are more cost-effective than demand-side or energy storage resources. Code § 56-585.1 A 5.

Year	Phase I Utility	Phase II Utility
2022	0.5%	1.25%
2023	1.0%	2.5%
2024	1.5%	3.75%
2025	2.0%	5.0%

The Commission expects that several of the VCEA's requirements will necessitate more extensive evaluation, measurement, and verification ("EM&V") to be performed for all approved energy efficiency programs.

The VCEA directs the Commission to award a margin for recovery on operating expenses for energy efficiency programs and pilot programs prior to January 1, 2022. After January 1, 2022, the Phase I and Phase II utilities can receive a margin for recovery on operating expenses for energy efficiency programs if they achieve total savings equal to the energy efficiency savings targets set forth above. Further, energy efficiency pilot programs are to be found in the public interest if they are of a limited scope, cost, and duration and intended to determine whether a new or substantially revised program is cost-effective.

As noted previously, the VCEA also directs the Commission to monitor and annually report to the General Assembly the performance of all energy efficiency programs approved pursuant to Code § 56-585.1 A 5 c, including each utility's compliance with the total annual savings required by Code § 56-596.2, as well as the annual and lifecycle net and gross energy and capacity savings, related emissions reductions, and other quantifiable benefits of each program; total customer bill

savings that the programs produce; utility spending on each program, including any associated administrative costs; and each utility's avoided costs and cost-effectiveness results.[55]

VCEA EE Programs

In its first application pursuant to the VCEA, Dominion filed for, and received approval of, nine energy efficiency ("EE") programs, one demand response program, and a two-year extension of an existing demand response program.[56] Additionally, the Commission approved a rooftop solar program filed pursuant to legislation approved by the 2019 General Assembly Session.[57] The approved programs and associated cost caps are discussed below.

According to analysis provided by DEV, the company does not anticipate achieving the VCEA's energy savings targets beginning in 2023.[58] As such, the Commission has directed DEV to file, among other things, a long-term plan that includes proposed Program savings and budgets for the five-year period beginning January 1, 2022, sufficient to comply with the total energy savings targets in the VCEA and investment levels in the GTSA as well as a proposed plan and framework for consolidating, streamlining, and marketing the public-facing aspects of its approved and proposed DSM programs to facilitate participation at the levels required to achieve the VCEA targets.[59] The Commission has required this plan to be included in DEV's next DSM filing, anticipated before year-end 2021.

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[55] Currently, the Commission does not possess all of the data required pursuant to Code § 56-585.1 A 5 c, for all currently approved Demand-Side Management ("DSM") programs approved to date but expects to be able to provide more of this information to the extent it is collected in future DSM proceedings.

[56] *Petition of Virginia Electric and Power Company, For approval of its 2020 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2020-00274, Doc. Con. Cen. No. 210920009, Final Order (Sept. 7, 2021) ("2020 DSM Update Final Order").

[57] *Id.*; 2019 Va. Acts ch. 748 (House Bill 2789).

[58] *See* 2020 DSM Update Final Order at 11.

[59] *Id*. at 11-12.

In its first application pursuant to the VCEA, APCo filed for, and received approval of, four energy efficiency programs, a demand response program, and a three-year voltage conservation pilot program.[60] Additionally, the Commission approved a five-year extension for two of APCo's existing DSM programs. The approved programs and associated cost caps are discussed below.

Previous DSM Activities

Historically, the Commission has approved, allowed for the modification of, or extended numerous DSM programs for both Dominion and APCo. A brief summary of those activities is provided below:

Dominion Energy Cases	**Approved/Extended Programs**		**Cost Caps Approved (In Million $)**
	EE	**Peak Shaving**	
Case No. PUE-2009-00081	4	1	$102.3
Case No. PUE-2011-00093	6	1	$149.2
Case No. PUE-2012-00100	1	1	$75.2
Case No. PUE-2013-00072	4		$71.6
Case No. PUE-2014-00071	2		$20.0
Case No. PUE-2015-00089	1	1	$23.5
Case No. PUE-2016-00111	1	1	$40.8
Case No. PUR-2017-00129	1		$12.6
Case No. PUR-2018-00168	11		$225.8[61]
Case No. PUR-2019-00201	14	2	$186.0
Case No. PUR-2020-00274	9	2	$130.5
Totals	**53**	**9**	**1,037.5MM**
Appalachian Power Cases			
Case No. PUE-2014-00026	1	1	$7.1
Case No. PUE-2014-00039	5		$27.3
Case No. PUR-2017-00094	1	1	$7.1

[60] *Petition of Appalachian Power Company, For approval to continue rate adjustment clause, the EE-RAC, and for approval of new energy efficiency programs pursuant to §§ 56-585.1 A 5 c and 56-596.2 of the Code of Virginia*, Case No. PUR-2020-00251, Doc. Con. Cen. No. 210730134, Order Approving Rate Adjustment Clause (July 29, 2021).

[61] Three programs (Smart Thermostat EE, Smart Thermostat DR, and Residential Customer Engagement) were approved for cost recovery by the Commission in Case No. PUR-2018-00168 and later withdrawn by Dominion. Dominion then reapplied for these same programs in Case No. PUR-2019-00201, and the Commission reapproved them.

Case No. PUR-2017-00126	6		$39
Case No. PUR-2019-00122	3		$43.2
Case No. PUR-2020-00252	7	1	57.4
Totals	**23**	**3**	**181.1MM**

Evaluation, Measurement, and Verification Proceeding

On August 28, 2020, the Commission issued an Order Initiating Proceeding to address Dominion's methodologies for conducting evaluation, measurement, and verification of energy savings of approved energy efficiency measures.[62] The EM&V Proceeding was also designed to address the creation of a "dashboard" to standardize the presentation of energy savings found in the utility's annual DSM EM&V reporting. Following a public hearing and the issuance of a Hearing Examiner's Report, the Commission issued its Final Order in the EM&V Proceeding on October 27, 2021.[63] The Final Order adopted EM&V guidelines for Dominion's energy efficiency programs and implemented a dashboard that will provide a one-page overview of, among other things, Dominion's progress towards the goals of the GTSA and VCEA, and its data concerning customer participation, energy savings, and customer bill savings. Additionally, the Commission required Dominion to evaluate the baselines used in the EM&V savings formulas and to increase coordination between Dominion's EM&V contractor and energy efficiency program designers. The EM&V proceeding will be applicable to Dominion's currently approved and operating DSM

[62] *Commonwealth of Virginia ex rel. State Corporation Commission, Ex Parte: In the matter of baseline determination, methodologies for evaluation, measurement, and verification of existing demand-side management programs, and the consideration of a standardized presentation of summary data for Virginia Electric and Power Company*, Case No. PUR-2020-00156, Doc. Con. Cen. No. 200830148, Order Initiating Proceeding (Aug. 28, 2020) ("EM&V Proceeding").

[63] *Commonwealth of Virginia ex rel. State Corporation Commission, Ex Parte: In the matter of baseline determination, methodologies for evaluation, measurement, and verification of existing demand-side management programs, and the consideration of a standardized presentation of summary data for Virginia Electric and Power Company*, Case No. PUR-2020-00156, Doc. Con. Cen. No. 211040204, Final Order (Oct. 27, 2021).

programs, as well as any future DSM programs filed by Dominion pursuant to the VCEA. Dominion's currently approved and operating programs are listed below:[64]

Dominion Energy Active DSM Programs

Phase and Case No.	Program Name	Program Type
Phase I		
PUE-2009-00081	*Residential AC Cycling Program*	*Peak Shaving*
Phase II		
PUE-2011-00093	*Non-Residential Distributed Generation Program*	*Demand Response*
Phase IV		
PUE-2017-00071	*Residential Income and Age Qualifying Program*	*Energy Efficiency*
Phase V		
PUE-2015-00089	*Non-Residential Small Business Improvement Program*	*Energy Efficiency*
Phase VI		
PUE-2016-00111	*Non-Residential Prescriptive Program*	*Energy Efficiency*
Phase VII		
PUR-2018-00168	*Residential Appliance Recycling Program*	*Energy Efficiency*
	Residential Efficient Products Marketplace Program	*Energy Efficiency*
	Residential Home Energy Assessment Program	*Energy Efficiency*
	Non-Residential Lighting Systems & Controls Program	*Energy Efficiency*
	Non-Residential Heating & Cooling Efficiency Program	*Energy Efficiency*
	Non-Residential Window Film Program	*Energy Efficiency*
	Non-Residential Small Manufacturing Program	*Energy Efficiency*
	Non-Residential Office Program	*Energy Efficiency*
Phase VIII		
PUR-2019-00201	*Residential Energy Efficiency Kits Program*	*Energy Efficiency*
	Residential Electric Vehicle Program	*Energy Efficiency*
	Residential Electric Vehicle Program	*Demand Response*
	Residential Electric Vehicle Program	*Peak Shaving*
	Residential/Non-Residential Multi-Family Program	*Energy Efficiency*
	Residential New Construction Program	*Energy Efficiency*

[64] It should be noted that there is a lag between when a new program is approved, and when EM&V reporting for the approved program becomes available.

	Residential Home Retrofit Program	*Energy Efficiency*
	Residential HB2789 (Heating and Cooling/Health and Safety) Program	*Energy Efficiency*
	Non-Residential Midstream Energy Efficiency Products Program	*Energy Efficiency*
	Non-Residential Small Business Improvement Enhanced Program	*Energy Efficiency*
	Residential Customer Engagement Program	*Energy Efficiency*
	Residential Smart Thermostat Management Program	*Energy Efficiency*
	Residential Smart Thermostat Management Program	*Peak Shaving*[65]
	Residential Manufactured Housing Program	*Energy Efficiency*
	Non-Residential New construction	*Energy Efficiency*
	AC Cycling Extension	*Peak Shaving*
Phase IX		
PUR-2020-00274	*Residential IAQHIP Program*[66]	*Energy Efficiency*
	Residential Smart Home Program	*Energy Efficiency*
	Residential Virtual Audit Program	*Energy Efficiency*
	Residential Water Savings	*Energy Efficiency*
	Residential Water Savings	*Demand Response*
	Non-Residential Agriculture Program	*Energy Efficiency*
	Non-Residential Building Automation Program	*Energy Efficiency*
	Non-Residential Building Optimization Program	*Energy Efficiency*
	Non-Residential Engagement Program	*Energy Efficiency*
	Non-Residential Prescriptive Program	*Energy Efficiency*
	Non-Residential Distributed Generation Program Extension	*Demand Response*

The EM&V Proceeding is not explicitly applicable to currently approved and operating DSM programs of APCo. APCo's currently approved and operating programs are listed below:

Appalachian Power Active DSM Programs

Case No.	Program Name	Program Type
PUE-2014-00026	*Low-Income Weatherization*	*Energy Efficiency*
	Peak Reduction	*Demand Response*
PUR-2017-00128	*eScore*	*Energy Efficiency*
	Bring Your Own Thermostat	*Demand Response*
	Appliance Recycling	*Energy Efficiency*
	Commercial and Industrial Lighting	*Energy Efficiency*

[65] Concerning the Residential Smart Thermostat Management Program, the energy efficiency component is the smart thermostat's ability to automatically adjust heating and cooling temperature settings in the home for optimal performance. The peak shaving component allows Dominion access to cycle the thermostat off during peak events.

[66] The acronym "IAQHIP" stands for "Income and Age-Qualifying Home Improvement Program."

	Commercial and Industrial Standard	*Energy Efficiency*
	Small Business Direct Install	*Energy Efficiency*
PUR-2019-00122	*Low Income Single Family*	*Energy Efficiency*
	Low Income Multifamily	*Energy Efficiency*
	ENERGY STAR® Manufactured Homes	*Energy Efficiency*
PUR-2020-00252	*Business Energy Solutions*	*Energy Efficiency*
	Bring Your Own Thermostat Extension	*Demand Response*
	Home Performance	*Energy Efficiency*
	Efficient Products	*Energy Efficiency*
	Energy Efficiency Kits	*Energy Efficiency*
	Home Energy Reports	*Energy Efficiency*
	Small Business Direct Install Extension	*Energy Efficiency*
	Volt VAR Optimization Pilot Program	*Energy Efficiency*

Conclusion

The Commission will address the specific performance of the DSM programs in the Commonwealth and incorporate this data in future Commission reports. Due to the time constraints of filing, investigating, and approving DSM programs, along with implementing and collecting EM&V data, any programs approved under the VCEA may not have data to report until 2023.

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 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 PPA. The facility at issue must be located on premises owned or leased by the eligible customer-generator.[67] The Third Party PPA Pilot Program was initially limited to 50 MW within DEV's service territory. Both jurisdictional and

[67] The PPA may secure third party financing of the costs of the renewable generation facility.

non-jurisdictional customers (those whose rates are not regulated by the Commission) may participate.[68]

On April 5, 2017, the General Assembly approved Chapter 803 of the 2017 Acts of Assembly, 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, and increasing the limitation on the aggregated capacity of all generation facilities that are subject to such third party PPAs in APCo's service territory up to an overall limit of 7 MW until July 1, 2022.

On April 11, 2020, the General Assembly approved the VCEA, which, among other things, amends and reenacts § 1 of the first enactment clause of Chapters 358 and 382 of the Acts of Assembly of 2013 and Chapter 803 of the Acts of Assembly of 2017. Effective July 1, 2020, these changes modified the existing pilot programs of DEV and APCo and expanded the relevant area to include the service territory of ODP. Under the VCEA, the maximum size of eligible facilities increased to 3 MW each.[69] Further, the VCEA expanded the participation limits to not exceed either: (i) 500 MW for DEV's Virginia jurisdictional and non-jurisdictional customers; or, (ii) 40 MW for customers of APCo or ODP. The VCEA also expanded the exemption from the minimum size requirement to include low-income entities.

Guidelines governing the Third Party PPA Pilot Program were established by the Commission on November 14, 2013,[70] and were updated on June 29, 2017, to implement pilot

[68] The minimum project size requirement of 50 kW does not apply to certain non-profit entities.

[69] In addition, the aggregated capacity of such facilities constitutes a portion of the existing limit of six percent of each pilot utility's adjusted Virginia peak-load forecast for the previous year that is available to eligible customer-generators pursuant to the net metering provisions of Code § 56-594 E.

[70] *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.

participation in APCo's service territory.[71] The Guidelines were further updated on May 29, 2020, to implement pilot participation in ODP's service territory and to reflect additional program limitations.[72]

As of October 29, 2021, the Commission has received notices of intent from seventeen providers in DEV's service territory to enter into third party PPAs for the purchase of solar generating capacity. The proposed projects encompass installations at 234 facilities, including schools, churches, and banking institutions, among other locations. The total expected capacity of the generation facilities related to these notices is approximately 70,654.862 kW AC. Currently, 114 of these solar facilities are operational and provide 24,472.95 kW AC of power. Among the current notices of intent, approximately 38.5% are from jurisdictional customers within DEV's program, while 61.5% are from non-jurisdictional customers within DEV's program.

The Commission has received five notices of intent from four providers to install pilot-related facilities and enter into third party PPAs for the purchase of solar generating capacity in APCo's service territory. The total expected capacity of the generation facilities related to these notices is approximately 1,813.4 kW AC. Approximately 20% of the current notices of intent are from jurisdictional customers within APCo's program. To Staff's knowledge, one of these solar facilities recently became operational and provides 520 kW AC of power.

Similarly, the Commission has received 13 notices of intent from four providers to install pilot-related facilities and enter into third party PPAs for the purchase of solar generating capacity

404, Order Establishing Guidelines (Nov. 14, 2013). These guidelines and posted information on participating projects are located at: https://www.scc.virginia.gov/pages/Renewable-Energy-Pilot-Program.

[71] *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 (June 29, 2017).

[72] *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, 2020 S.C.C. Ann. Rept. 210, Order Updating Guidelines (May 29, 2020).

in ODP's service territory. The total expected capacity of the generation facilities related to these notices is approximately 6,192 kW AC. Approximately 7.7% of the current notices of intent were filed by jurisdictional customers within ODP's program. To Staff's knowledge, none of these solar facilities are yet operational.

As referenced above, the Third Party PPA Pilot Program limitation on the aggregated capacity of such facilities, including both jurisdictional and non-jurisdictional customers, constitutes a portion of the existing limit of six percent of each Pilot Utility's adjusted Virginia peak-load forecast for the previous year that is available to eligible customer-generators pursuant to Code § 56-594 E. The corresponding pilot program limitations for 2021 are: 838,370 MW for DEV; 40,000 MW for APCo; and 11,731 MW for ODP. These limits will be revised annually to be effective on January 1.

To date, the cumulative capacity of facilities participating in the Third Party PPA Pilot Program has not reached or exceeded the program's capacity participation caps for any utility. However, it is worth noting that ODP has received notices of intent for almost 53% of its available capacity. The Commission will continue to monitor the Third Party PPA Pilot Program and maintain its website listing of participants.

CLOSING

The Commission continues to monitor each of the specified areas for reporting and stands ready to provide any additional information or assistance if requested.

APPENDIX 1

GLOSSARY OF TERMS

AC	Alternating Current
APCo	Appalachian Power Company
CEC	Community Electric Cooperative
Chapter 382	Chapter 382 of the 2013 Virginia Acts of Assembly
Chapter 771	Chapter 771 of the 2011 Virginia Acts of Assembly
CPCN	Certificate of Public Convenience and Necessity
Code	Code of Virginia
Commission	Virginia State Corporation Commission
CVEC	Central Virginia Electric Cooperative
CVOW	Coastal Virginia Offshore Wind
DEQ	Virginia Department of Environmental Quality
DER	Distributed Energy Resource
DEV	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
Dominion	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
DSM	Demand Side Management
EE	Energy Efficiency
EM&V	Evaluation, Measurement and Verification
FRR	PJM's Fixed Resource Requirement Alternative
GT Plan	Grid Transformation Plan
GTSA	Grid Transformation and Security Act, Chapter 296 of the 2018 Acts of Assembly
General Assembly	Virginia General Assembly
HCA	Hosting Capacity Analysis
HDD	Horizontal Directional Drilling
IAQHIP	Income and Age-Qualifying Home Improvement Program
IOU	Investor-owned electric public utility
IRP	Integrated Resource Plan
kV	Kilovolt
kW	Kilowatt
MW	Megawatt
NOVEC	Northern Virginia Electric Cooperative
ODP	Kentucky Utilities Company d/b/a Old Dominion Power Company
PBR	Permit by Rule
PJM	PJM Interconnection, L.L.C.
PPA	Power Purchase Agreement
REC	Rappahannock Electric Cooperative
RPS	Renewable Energy Portfolio Standard
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
Staff	State Corporation Commission Staff
SVEC	Shenandoah Valley Electric Cooperative
VCEA	Virginia Clean Economy Act, Chapters 1193 and 1194 of the 2020 Acts of Assembly

APPENDIX 2

Letter to Dominion Requesting an Update on the Haymarket Project

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

COMMONWEALTH OF VIRGINIA

PO Box 1197
Richmond, Virginia 23218-1197

STATE CORPORATION COMMISSION
DIVISION OF PUBLIC UTILITY REGULATION

August 27, 2021

Mark S. Allen, P.E.
Director – Project Development and Execution
Power Delivery Group
Dominion Energy Virginia
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. Dominion's Haymarket I-66 Hybrid Route Project was approved as the first pilot project pursuant to the State Corporation Commission's ("SCC") July 26, 2018, Order On Request to Participate In Pilot Program in Case No. PUE-2015-00107. Subsequently, Dominion's Partial Line #2010 230 kV Single Circuit Transmission Line Underground Pilot Project (Tysons-Future Spring Hill Substation) was also approved by the Commission on June 24, 2021, as the second qualifying project in Case No. PUR-2020-00198.

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.

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, Tysons-Future Spring Hill Substation, and any other relevant information related to the aforementioned pilot program. Please provide the progress report to me by September 24, 2021.

Thank you for your assistance, and please contact me if you have any questions.

Very truly yours,

David N. Essah, Ph.D.
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

September 22, 2021

David Essah, Ph.D.
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. Essah,

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 transmission underground 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 August 27, 2021, 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.

The Pilot Program was amended during the 2020 General Assembly Session, passing on February 24, 2020 and signed into law on March 4, 2020. The reporting requirements were substantially left unchanged.

On June 24, 2021, the Commission issued its Final Order on the Line 2010 230 kV Underground Relocation project (PUR-2020-00198). The Company, as part of its application for approval, requested that the Project be approved by the Commission as a project that qualifies as a line to be placed underground, in part, because the Project met all of the statutory requirements set forth in Va. Code § 56-585.1:5 for the Underground Pilot Program (as amended in 2020). As part of the Commission's Final Order, the Project was approved as part of the Pilot Program.

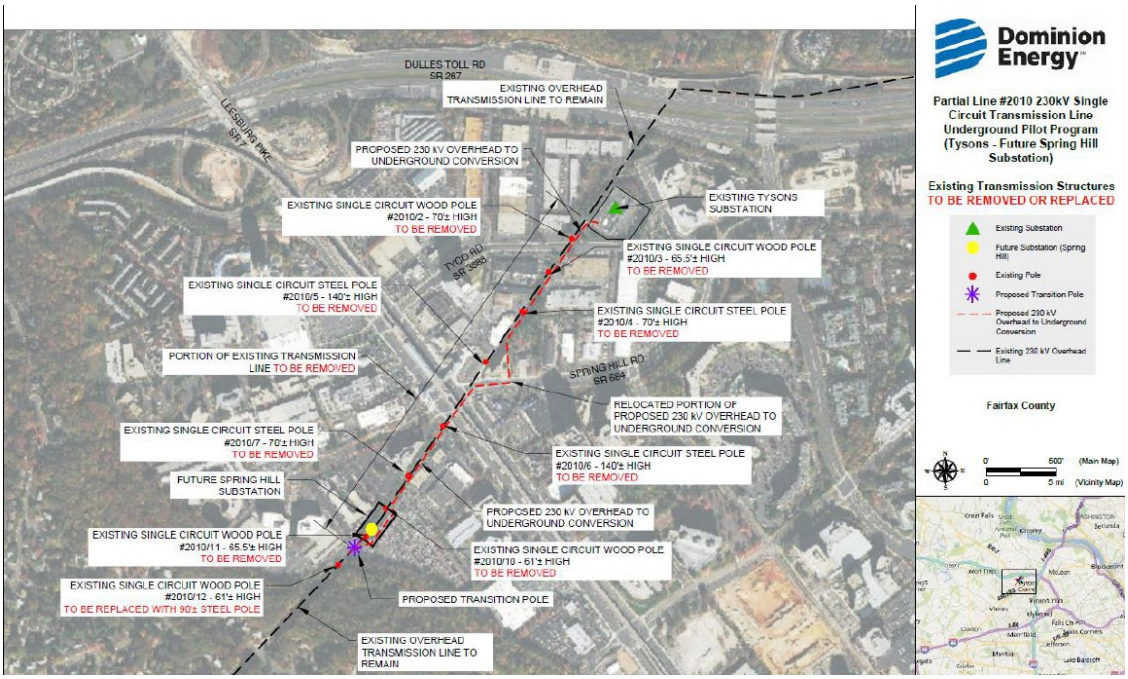
As such, the number of qualifying projects for inclusion in the Pilot Program (as enumerated in Code § 56-585.1:5.A) have been reached. Reporting on the Haymarket Project and now the Line 2010 Underground Project will be included in the Company's annual submission as requested by the Commission.

Line 2010 230 kV Underground Relocation Project

The Project includes:

1) to remove an approximate 0.56 mile segment of its existing overhead 230 kilovolt ("kV") Reston-Tysons Line #2010 from the Tysons Substation to just south of the site for the future Spring Hill Substation and to relocate and replace the line underground;
2) to complete work at the Tysons Substation to allow this segment of Line #2010 to be relocated underground; and

3) to construct a transition pole just south of the future Spring Hill Substation to transition Line #2010 from an underground line to an overhead line.



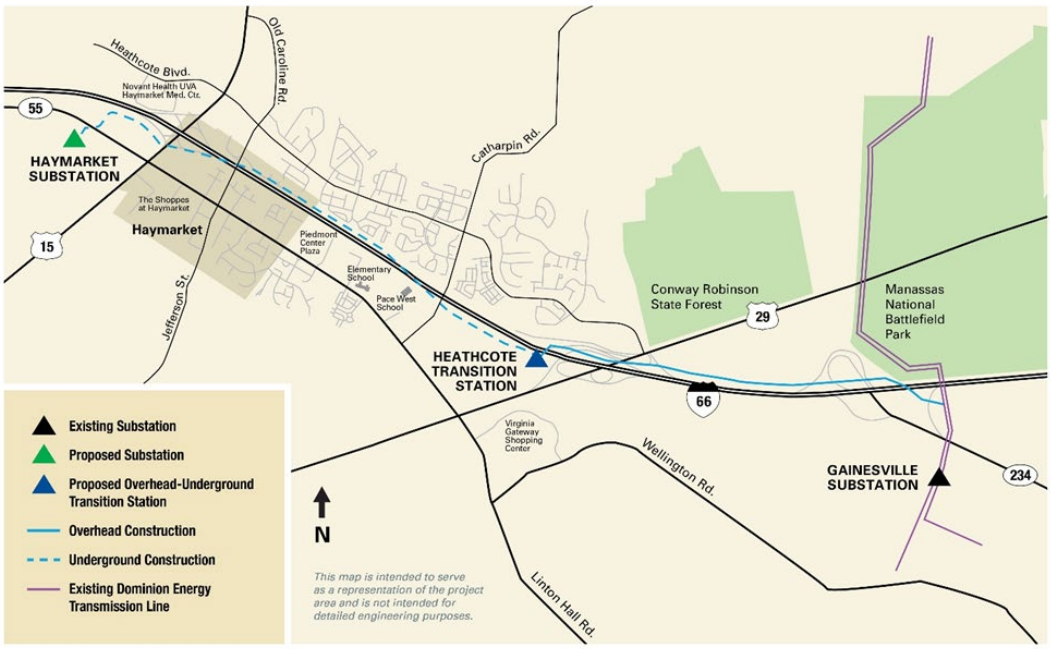
Status Update

Since the Commission's June 24, 2020 approval of the Company's Project and participation in the Pilot Program, the Company has moved into the final engineering and pre-construction phase of the project. As such, the Company has no meaningful developments to report. The in-service date (December 31, 2025), beginning of construction (January 1, 2023) and cost estimate ($30.4 million) as put forward in the case remain accurate at the time of this report.

The Company plans to have a more complete and comprehensive project status report for the December 2022 timeframe if so asked for by the Commission.

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. 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.

The project has been in active construction for about 24 months. As such, the Company is providing the following status update.

Permitting Activities

All permits have been obtained and will remain active to enable project completion in 2022.

Real Estate Activities

All easements have been obtained. Final costs related to Real Estate activities are $6,243,106.17.

Construction Progress Update

Haymarket Substation:

The Haymarket substation remains under construction. The high side station equipment is installed including the underground cables, terminations, bus work, switch and breakers. The buildout of the low side of the station will be complete by the end of 2021.

Heathcote Station:

Heathcote Substation was completed in October 2020. Since that time, cables have been installed from the first manholes outside the station to the terminal structures inside the station. At this time only one of the underground circuits are fully terminated inside Heathcote. We anticipate the second circuit will be terminated by mid-October 2021.

Overhead Line Heathcote to Cushing Road and related station work:

Overhead lines and work at both Loudoun Substation and Gainesville were completed in October 2020.

Project Challenges Overview

Since active construction began in fall of 2019, both duct bank and Horizontal Directional Drilling operations have experienced challenges that resulted in project delays, cost increases and engineering re-work. These challenges and consequences are detailed below.

The Company has had to overcome a number of unexpected setbacks, which have resulted in delays to the Project schedule and increases to the conceptual cost estimates set forth in the Commission filings. Many of the challenges have been detailed in the Company's 2020 report, however the below enumerates the costs associated with each setback:

- After the completion of a competitive bidding process for the underground construction portion of the project, the bids for the underground work were approximately $20 million higher than originally estimated.

- In order for the Company to obtain the necessary right-of-way on a future Home Depot parcel, this portion of the Project had to be accelerated and therefore was excluded from the larger competitive bid described above. This work was further complicated by the developer in that the Company was required to install the duct bank around future utilities needed for the development of that parcel. This resulted in an additional cost of approximately $3.06 million.

- Four weeks into the first phase of construction, the Company encountered a SummitIG fiber line that was not located within its easement and conflicted with the Company's route of excavation. This issue took approximately eight weeks to resolve and required a different means of excavation.

- The first HDD installation in February 2020 was delayed due to the Company's second encounter with a SummitIG fiber line that was not located within its easement and conflicted with the Company's route of excavation. The relocation of this fiber line was necessary prior to starting the drill path at this I-66 crossing. Resolving this fiber line conflict with SummitIG added approximately 75 days to the schedule and resulted in a cost impact of approximately $1.838 million.

- Deeper drill redesign of the horizontal directional drilling routes was required for three of the four drills underneath I-66 to prevent inadvertent release of the drilling mud (commonly referred to as a "frac-out"). The Company ceased drilling operations for approximately one month while re-engineering these three crossings. During this time, the Company evaluated new depths for the drilling process, took additional geotechnical samples, and discussed work methods to reduce pressure in order to prevent frac-outs from reoccurring. The new design increased the HDD depth by approximately 15 feet on each of the drill crossings. This redesign resulted in an additional cost of approximately $700,000.

- The Company incurred an additional estimated $600,000 in standby costs while drill redesigns were being completed.

- The redesign required the Company to abandon a 12-inch drilled hole and a 36-inch drilled hole. Based on evaluation and coordination with VDOT, the Company determined that the 36-inch hole should be grouted (*i.e.*, filled with concrete) due to the size of the hole and depth under I-66. Structural grouting of the abandoned hole took longer than expected, which resulted in an additional cost of approximately $2.1 million. Three days of structural grouting were estimated in the construction plans, but unfortunately it took ten days due to the unanticipated difficulty in filling the 36-inch hole with a 12-inch drill pipe.

- The redesign described above required additional construction oversight and verification of the as-builts confirming the redesign was effective in maintaining appropriate depth and separation between the circuits, while also resolving the frac-outs and challenges faced during original installation of the lines. This oversight and verification resulted in an additional cost of approximately $4.0 million.

- In addition to the redesign, the Company began conditioning (referred to as "tripping") the HDD holes to keep pressures low in the hole by clearing mud and other cutting material from the drill path. This resulted in an additional cost of approximately $7 million. This was a recommendation of a Company consultant hired to work with the drilling contractor in an effort to prevent future frac-outs.

- Additional drilling mud additives to reduce the risk of frac-outs resulted in an additional cost of approximately $250,000.

- Due to the significant amount of ground water encountered during installation of the underground duct bank at Heathcote Transition Station, the Company was required to install a well point system at this location, which delayed installation by approximately 30 days and resulted in an additional cost of approximately $200,000.

- A challenge by the Manassas Battlefield to the United States Army Corps of Engineers ("USACE") finding of no adverse impact on the Battlefield impacted the eastern work on

the underground routes. The only access to the Heathcote Transition Station was blocked pending the ruling from the USACE. As a result, the horizontal directional drilling on the eastern crossing was delayed by 60 shifts, or ten weeks, resulting in an additional estimated $1.2 million in standby costs. Fortunately, the Company had not mobilized its civil contractor for the clearing and grading of the Heathcote Transition Station until after the approval was received. After receiving approval, the Company expedited the civil construction work at Heathcote Transition Station, which required extended hours and weekends to be worked. The cost of the accelerated Heathcote work was approximately $575,000.

- Stream and ravine crossings and access issues required extra mat rental and installation along with drill pad expansions around drainage ditches in compliance with VDOT permit requirements, which resulted in additional costs of approximately $1.4 million.

- The Company's original substation design for Heathcote Transition Station and Haymarket Substation called for cable installation inside the substation to be direct buried. Engineering felt it was necessary to install duct banks inside the substation, which would facilitate easier cable replacement process in the event of failures in the future. This work resulted in additional cost of approximately $1.1 million.

- Additional work was required at the Company's existing Gainesville and Loudoun Substations. First, additional work was required at the Gainesville and Loudoun Substations in order to maintain networked service to a Northern Virginia Electric Cooperative ("NOVEC") delivery point ("DP"). The new overhead portion of the route could not be energized until such time as the underground portion was energized. This work allowed the NOVEC DP to maintain networked service during the construction delays of the underground portion of the route. Second, there were existing overhead distribution feeds at Gainesville Substation that required relocation underground beneath a railway. Third, a temporary line within right-of-way was required at Gainesville Substation to maintain service to critical customers during construction, which further complicated work at this location. This substation-related work resulted in an additional cost of approximately $3.0 million.

- At the Haymarket Substation, Prince William County required the installation of a decorative wall surrounding the substation footprint. This resulted in an additional cost of approximately $1.3 million.

- In order for VDOT to assume maintenance responsibilities for Jordan Lane, Prince William County required the Company to grade and pave Jordan Lane to current VDOT standards once the Company's underground work was completed. This resulted in an additional cost of approximately $500,000.

- The Company experienced material challenges based on COVID-19 factory shutdowns, which caused a delay of 45 days due to conduit shortages and resulted in an additional cost of approximately $500,000.

- As a cumulative result of the delays and additional costs, there was a corresponding increase in allowance for funds used during construction of approximately $9.0 million.

- As a result of the redesign and deeper routes for the HDD crossings, revisions were required to the thermal grouting procedure and the installation of the pipe bundles was altered. This plan took several months to develop and evaluate with engineering resources before approval and resulted in an additional cost of approximately $1.4 million.

- Real estate costs for the Heathcote Transition Station and underground right-of-way exceeded the original estimate by approximately $3.2 million.

- Other miscellaneous charges spread across various professional services agencies and internal resources in support of this Project resulted in an additional cost of approximately $5.18 million.

- These increases in underground costs were partially offset by an underrun in the overhead construction costs – approximately $10 million in cost savings.

Cost

The current cost estimate is approximately $230 million, revised from the Company's 2020 update of $180 million (which was revised from the $172 million estimate included in the proceeding). The associated costs remain as estimates and subject to change.

Increased costs are predominately due to the construction of the underground portion of this project. Most of these costs are associated with the delays and challenges specific to the HDD crossings, as noted above.

To date, the company has spent approximately $194,390,755 on project-related activities.

Timeline

As communicated in the Company's 2020 report, scheduled energization date for this project is March 2022 (and the Company is seeking Commission approval of this extension from December 31, 2021 in-service date as Ordered).

Conclusion

As discussed in the Pilot Program Request, the Company was aware that a high level of coordination with VDOT and property owners along the I-66 Hybrid Route would be required. The Company also acknowledged that there would be challenges related to the Project, particularly as to the underground portion of the Project, where engineering, soil condition assessments, and existing subsurface utility locating activities were still ongoing at the time the Pilot Program Request was filed. With those considerations in mind, the Company reasonably believed that a December 31, 2021 in-service date was achievable. Although the Company and

its contractors planned for the inevitable challenges that occur while underground transmission lines, since construction has commenced, the project has experience unexpected challenges above what was anticipated. As a result, the completion date has been delayed, and estimated project costs have been increased.

APPENDIX 4

Table of Solar and Wind Construction and Development Status

Investor Owned Utilities

Status of Solar, Wind, Energy Storage Facilities
Constructed or Under Development

As of June 30, 2021*	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:	Colonial Trail West (US3) (12/26/19)	142	Water Strider (5/15/21)	80	Hollyfield (9/6/18)	17	
	Spring Grove I (US3) (11/24/20)	98			Puller (10/31/18)	15	
					Montross (12/12/18)	20	
					Gloucester (4/22/19)	20	
					Grasshopper Solar (10/30/20)	80	
					Belcher Solar (6/30/21)	88.2	
	SubTotal:	240.4	SubTotal:	80	SubTotal:	240	560.6
Solar Under Development since July 1, 2018:							
Dominion Energy Virginia:	Sadler Solar (US4)	100	Westmoreland	20	Fort Powhatan	150	
	CE1 - Grassfield Solar	20			Bedford Solar	70	
	CE1 - Norge Solar	20			Maplewood Solar	120	
	CE1 - Sycamore Creek Solar	42			Rochambeau Solar	20	
	Dulles	100			Pumpkinseed Solar	59.6	
	Merry Point	100					
	Moon Corner	60					
Appalachian Power Company:	Amherst	5	Depot Solar	15			
	SubTotal:	447	SubTotal:	35	SubTotal:	420	901.6
Solar Constructed & Under Development Totals:		687.4		115		660	1462

Investor Owned Utilities

Status of Solar, Wind, Energy Storage Facilities Constructed or Under Development

Wind Constructed 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 Under Development since July 1, 2018:							
Dominion Energy Virginia:	CVOW Commercial	2632	N/A		N/A		
	SubTotal:	2656	SubTotal:	0	SubTotal:	0	2656
Wind Constructed & Under Development Totals:		2668		0		0	2668
Energy Storage Constructed since July 1, 2018:							
	N/A	0	N/A		N/A		
	SubTotal:	0	SubTotal:	0	SubTotal:	0	0
Energy Storage Under Development since July 1, 2018:							
Dominion Energy Virginia:	Scott 1 Battery Storage Pilot - AC Syste	10	N/A		N/A		
	Scott 1 Battery Storage Pilot - DC Syste	2					
	Correctional Battery Storage Pilot	2					
	Hanover Battery Storage Pilot	2					
	SubTotal:	16	SubTotal:	0	SubTotal:	0	16
Energy Storage Constructed & Under Development Totals:		16		0		0	16
Solar, Wind, & Energy Storage Operational & Under development since July 1, 2018:							4146

*This data is provided informally to Staff as of June 30, 2021. This data does not include any projects announced after June 30, 2021.

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

Electric Cooperatives

Status of Solar, Wind, Energy Storage Facilities
Constructed or Under Development

As of June 30, 2021*	Cooperative Owned/ Operated - Jurisdictional	MW	Cooperative Jurisdictional PPAs	MW	Cooperative Owned/ Operated - Ring Fenced	MW	Totals
Solar Constructed since July 1, 2018:							
CEC:	Solar + Storage facility at headquarters	0.052					
SVEC:	2 Solar +Storage facilities at headquarters	0.028	N/A		N/A		
	SubTotal:	0.080	SubTotal:	0	SubTotal:	0	0.08
Solar Under Development since July 1, 2018:							
CVEC:			Midway Solar	8.4			
			Cunningham Solar	5			
SVEC:	Blue Ridge Parkway Facility	0.009					
NOVEC:			D.E.S.R.I. 300 MW PPA, amt. of VA facilities TBD				
	SubTotal:	0.009	SubTotal:	13.4	SubTotal:	0	13.41
Solar Constructed & Under Development Totals:		0.089		13.4		0	13.489

Electric Cooperatives

Status of Solar, Wind, Energy Storage Facilities Constructed or Under Development

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

Energy Storage Constructed since July 1, 2018:								
	N/A		0	N/A			N/A		
		SubTotal:	0		SubTotal:	0	SubTotal:	0	0
Energy Storage Under Development since July 1, 2018:								
REC:	REC facility		2	N/A			N/A		
		SubTotal:	2		SubTotal:	0	SubTotal:	0	2
Energy Storage Constructed & Under Developmen			2			0		0	2
Solar, Wind, & Energy Storage Operational & Under development since July 1, 2018:									15.489

*This data is provided informally to Staff as of June 30, 2021. This data does not include any projects announced after June 30, 2021.

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

Others

Status of Solar and Wind Facilities
Constructed or Under Development

As of June 30, 2021*	Other Owned/ Operated	MW	Totals
Solar Constructed since July 1, 2018:			
TWE Myrtle Solar Project, LLC	Myrtle Solar	15	
Altavista Solar:	Altavista Solar	80	
Savion:	Greensville Co. Solar Project	80	
	SubTotal:	175	175
Solar Under Development since July 1, 2018:			
Pleinmont Solar LLC:	Pleinmont Solar	500	
Skipjack Solar Center LLC:	Skipjack Solar	180	
Cavalier Solar LLC:	Cavalier Solar	240	
Cypress Creek Renewables:	Turner Solar	20	
	Mt. Jackson Solar I	16	
	Powhatan Solar I	18	
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	
Caden Energix:	Caden Energix Hickory	32	
Brookfield Renewable:	Otter Creek Solar	60	
Foxhound Solar:	Foxhound Solar	83	
Urban Grid:	Crystal Hill Solar	65	
	Alton Post Office Solar	75	
	Spring Grove Solar II	150	
Apex Clean Energy Holdings LLC:	Rivanna Solar	13	
	Moody Creek Solar	150	

Others

Status of Solar and Wind Facilities Constructed or Under Development

Solar Under Development since July 1, 2018:			
Nokesville Solar:	Nokesville Solar	20	
Engie:	Whitehorn Solar	50	
Caden Energix:	Caden Energix Wytheville	20	
Greenwood Solar:	Greenwood Solar I	100	
Wythe County Solar Project LLC:	Wythe County Solar Project	75	
Algonquin Power Co.:	Carvers Creek Solar	150	
Pleasant Hill Solar LLC:	Pleasant Hill Solar	20	
Watlington Solar LLC:	Watlington Solar	20	
	SubTotal:	2322	2322
Solar Constructed & Under Development Totals:		2497	2497

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:			2497

*This data is from the DEQ's website found at:
https://www.deq.virginia.gov/permits-regulations/permits/renewable-energy/renewable-energy-project-status
**This data includes facilities where a PBR has been issued by DEQ