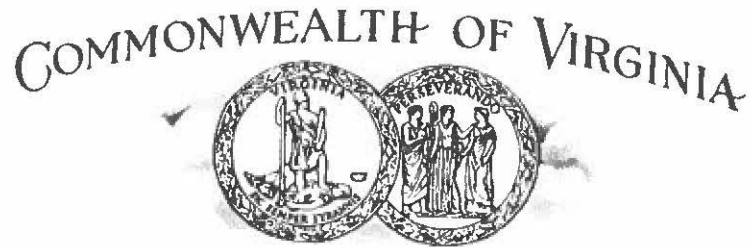


JEHMAL T. HUDSON
COMMISSIONER



BERNARD LOGAN
CLERK OF THE COMMISSION
P.O. BOX 1197
RICHMOND, VIRGINIA 23218-1197

STATE CORPORATION COMMISSION

September 29, 2023

The Honorable Glenn Younkin
Governor, Commonwealth of Virginia

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

The Honorable Kathy J. Byron
Chair, House Committee on Commerce and Energy

The Honorable Caren Merrick
Secretary of Commerce and Trade

The Honorable Travis A. Voyles
Secretary of Natural and Historic Resources

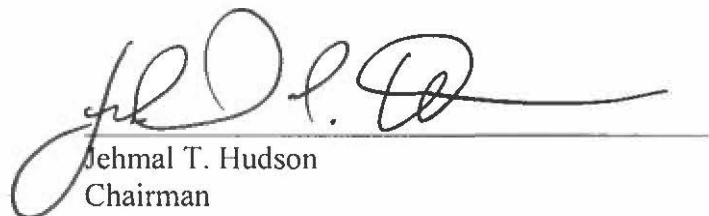
Members of the Virginia General Assembly

Ladies and Gentlemen:

Please find enclosed the Virginia State Corporation Commission's Annual Report on Energy Efficiency Programs and the Annual Report on the Feasibility of Achieving Energy Efficiency Goals pursuant to Chapter 1193 of the 2020 Virginia Acts of Assembly.

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

Respectfully submitted,



Jehmal T. Hudson
Chairman

Enclosure

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 Commerce and Energy,
the Secretary of Natural and Historic Resources, and
the Secretary of Commerce and Trade



COMBINED REPORTS

INCLUDING:

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

Annual Report on the Feasibility of Achieving Energy Efficiency Goals
Pursuant to Chapter 1193 of the 2020 Virginia Acts of Assembly

September 29, 2023

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EXECUTIVE SUMMARY

This document contains the combined reports ("Report") of the Virginia State Corporation Commission ("Commission") pursuant to Chapter 1193 of the 2020 Virginia Acts of Assembly.¹

The key highlights of this report include:

- In its third DSM application pursuant to the VCEA, Dominion filed for, and received approval of, five new energy efficiency programs. In addition, Dominion received approval of four program bundles. In its application, Dominion also presented its progress towards achieving the energy efficiency savings goals of the VCEA and the required proposed investment levels of the GTSA.²
- In calendar year 2022, APCo did not make an energy efficiency program filing.³ An APCo energy efficiency filing is expected in the fall of 2023.
- Calendar year 2022 was the first year in which the VCEA energy efficiency targets were in effect pursuant to Code § 56-596.2. The Commission received data related to the utilities' achievement of such targets in Dominion's third DSM application, as noted above, and in each utility's evaluation, measurement, and verification ("EM&V") reports.⁴

¹ Virginia Clean Economy Act ("VCEA"), 2020 Va. Acts chs. 1193, 1194. The VCEA explicitly references Phase I and Phase II utilities. For purposes of this report, the Commission will focus on Appalachian Power Company ("APCo") as a Phase I utility and Dominion Energy Virginia ("DEV" or "Dominion") as a Phase II utility. The Commission further notes that it has approved a requirement for Kentucky Utilities d/b/a Old Dominion Power Company ("KU/ODP") to file a comprehensive Demand-Side Management ("DSM") plan and surcharge by June 1, 2023. *Kentucky Utilities Company d/b/a Old Dominion Power Company - For an Adjustment of Electric Base Rates*, Case No. PUR-2021-00171, Doc. Con. Cen. No. 220540073, Final Order at 4 (May 5, 2022) ("2022 KU Final Order"). KU/ODP's plan is required to target at least a 0.02% decrease in total jurisdictional sales. *Id.* KU/ODP made the required filing on June 1, 2023, which was subsequently docketed as Case No. PUR-2023-00096. *Application of Kentucky Utilities Company d/b/a Old Dominion Power Company for Implementation of a Demand-Side Management Program and Cost-Recovery Adjustment Clause*, Case No. PUR-2023-00096, Doc. Con. Cen. No. 23030102, Order for Notice and Hearing (June 16, 2023).

² *Petition of Virginia Electric and Power Company, For approval of its 2022 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2022-00210, Doc. Con. Cen. No. 230810132, Final Order (August 4, 2023) ("2022 DSM Update Final Order").

³ In its most recent DSM filing in 2021 ("2021 EE-RAC Proceeding"), APCo requested and received approval to move to a biennial filing cadence for its energy efficiency program activities. *Application of Appalachian Power Company, For approval to continue rate adjustment clause, the EE-RAC, and for approval of a new energy efficiency program pursuant to §§ 56-585.1 A 5 c and 56-596.2 of the Code of Virginia*, Case No. PUR-2021-00236, Doc. Con. Cen. No. 220720034, Final Order at 5 (July 15, 2022).

⁴ APCo filed its most recent EM&V Report on May 1, 2023 in Case No. PUE-2014-00039 ("APCo's 2023 EM&V Report"). Dominion filed its most recent EM&V Report ("DEV's 2023 EM&V Report") on June 15, 2023 in Case No. PUR-2021-00247. The public version of documents filed with the Commission may be located on the

- According to its 2023 EM&V Report, Dominion anticipates having fallen short of the energy efficiency targets (1.23% achieved compared to the 1.25% target) in 2022 as measured on a "net"⁵ basis.⁶ This is a change from Dominion's projections presented in its third DSM proceeding, where it expected to meet the target in 2022 if measured on a "net" basis.
- Based on APCo's filings with the Commission, it expects to have met the energy savings targets in 2022 on a net basis and projects that it will be able to meet the 2023 goal on a net basis.⁷
- These results have not yet been subject to Commission review. The Commission will review these EM&V results as a part of each utility's upcoming energy efficiency filings and will provide additional data related to the feasibility of achieving these energy efficiency goals in future reports.

A glossary of terms is provided in Appendix 2.

Commission's website, [scc.virginia.gov/pages/Case Information](https://scc.virginia.gov/pages/Case-Information), by clicking "Docket Search," then clicking "Search by Case Information," and entering the appropriate case number in the appropriate box.

⁵ "Net" generally refers to changes in energy use that are induced by a particular energy efficiency program, *i.e.*, exclusive of free riders. A "free rider" is someone who would have installed an energy-efficiency measure absent any program incentive but receives the incentive anyway.

⁶ DEV'S 2023 EM&V Report at vii.

⁷ *See, e.g.*, APCo witness Diebel's direct testimony, Schedule 2, filed in APCo's 2021 EE-RAC Proceeding with its Petition. Note, however, the Commission has not made any determinations regarding APCo's "achieved" savings at this time. *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-2021-00236, Doc. Con. Cen. No. 211180097, Petition (filed November 30, 2021).

INTRODUCTION

The Commission appreciates the opportunity to provide this update to the Governor and the General Assembly on energy efficiency and DSM-related matters.⁸ The Commission has conducted energy efficiency and DSM-related proceedings that are detailed below. In addition, the Commission's Staff has participated as stakeholders in multiple stakeholder meetings over the last year as required by recent legislation and Commission Order.⁹ Energy efficiency meetings, required by SB 966,¹⁰ SB 1605,¹¹ and HB 2293,¹² were held on February 22, 2022, June 21, 2022, October 12, 2022, February 24, 2023, and June 20, 2023, for DEV and on April 25, 2022, October 17, 2022, December 15, 2022, March 9, 2023, and September 12, 2023, for APCo.

Statutory Background

The statutory bases for this Report of the Commission on energy efficiency and DSM-related matters are the following:

- Energy Efficiency Programs: The VCEA added language to Code § 56-585.1 A 5 c directing the Commission to monitor and report to the General Assembly annually on the performance of all programs approved pursuant to Code § 56-585.1 A 5 c;¹³ and,
- Feasibility of Energy Efficiency Goals: The VCEA added subsection B 3 to Code § 56-596.2. This subsection, among other things, directs that beginning October 1, 2022, and each year thereafter, the Commission shall review the feasibility of the energy efficiency program savings in Code § 56-596.2 and report to the Chairs of the House Committee on Commerce and Energy, the Senate Committee on Commerce and Labor, the

⁸ The Commission provides an update on Pandemic-related activities in Appendix 3 to this Report.

⁹ *Petition Of Virginia Electric and Power Company, For approval of its 2021 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia* Case No. PUR-2021-00247, 2022 S.C.C. Ann. Rept. 384, Final Order (August 10, 2022) ("2021 DSM Update Final Order").

¹⁰ 2018 Va. Acts ch. 296.

¹¹ 2019 Va. Acts ch. 398.

¹² 2019 Va. Acts ch. 397.

¹³ Prior to 2022, the Commission previously included this annual report as part of its December 1 Combined Reports.

Secretary of Natural and Historic Resources, and the Secretary of Commerce and Trade on such feasibility.

ENERGY EFFICIENCY PROGRAMS

The VCEA establishes energy efficiency savings targets for Phase I and Phase II utilities through 2025. After 2025, the Commission is directed to establish new energy efficiency targets.¹⁴ The targets through 2025 are as follows, expressed as a percentage of the average annual energy jurisdictional retail sales by that utility.

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 VCEA directs the Commission to award a margin for recovery on operating expenses for energy efficiency programs and pilot programs prior to January 1, 2022.¹⁵ After January 1, 2022, the VCEA directs the Commission to award a margin on energy efficiency program operating expenses in the applicable year if a Phase I or Phase II utility achieves total savings equal to the energy efficiency savings targets set forth above.¹⁶ Further, energy efficiency pilot programs

¹⁴ 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.

¹⁵ Code § 56-585.1 A 5 c.

¹⁶ *Id.*

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.¹⁷

The VCEA also directs the Commission to monitor and annually 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 the annual and lifecycle net and gross¹⁸ 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.

In this regard, the Commission notes that APCo has filed two applications for approval of DSM programs since the effective date of the VCEA (July 1, 2020) and DEV has filed three applications, which are discussed further below. Due to the time involved for DEV and APCo to prepare and file applications, for the Commission to conduct associated proceedings, and for each utility to roll out and implement the DSM programs, and subsequently collect EM&V data, the Commission does not expect to be able to verify all of the reporting data outlined above until 2024, after the expected DSM proceedings in 2023 and early 2024 conclude. The Commission, however, has included key metrics related to existing DSM programs from each utility's most recent EM&V Report below.

¹⁷ *Id.*

¹⁸ "Gross" refers to savings that are expected to occur independent of an energy efficiency program's implementation, *i.e.*, inclusive of free riders.

VCEA EE Programs

DEV

In its first DSM application pursuant to the VCEA ("2020 DSM Update"), Dominion filed for, and received approval of, nine energy efficiency ("EE") programs, one demand response program (collectively referred to as Dominion's "Phase IX Programs"), and a two-year extension of an existing demand response program.¹⁹ Additionally, the Commission approved a rooftop solar program application filed pursuant to legislation approved during the 2019 General Assembly Session.²⁰ The approved programs and associated cost caps are discussed below.

According to analysis provided by DEV in its 2020 DSM Update, DEV initially did not anticipate achieving the VCEA's energy savings targets beginning in 2023.²¹ As such, the Commission directed DEV to file, among other things, a long-term plan that included 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. The Commission also directed DEV to file a proposed plan and framework for consolidating, streamlining, and marketing the public-facing aspects of DEV's approved and proposed DSM programs to facilitate participation at the levels required to achieve the VCEA targets.²²

In its second DSM application pursuant to the VCEA ("2021 DSM Update"), Dominion filed for, and received approval of, nine EE programs (referred to as its Phase X Programs).²³ In

¹⁹ *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, 2021 S.C.C. Ann. Rept. 350, Final Order (September 7, 2021) ("2020 DSM Update Final Order").

²⁰ *Id.*; 2019 Va. Acts ch. 748 (House Bill 2789).

²¹ *See* 2020 DSM Update Final Order at 11.

²² *Id.* at 11-12.

²³ *Petition of Virginia Electric and Power Company, For approval of its 2021 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2021-00247, 2022 S.C.C. Ann. Rept. 384, Final Order (August 10, 2022) ("2021 DSM Update Final Order").

addition to its 2021 DSM Update, Dominion also presented a long-term plan ("Long Term Plan") to comply with the total energy savings targets in the VCEA and investment levels in the GTSA, among other things, as required by the 2020 DSM Update Final Order. As part of that Long Term Plan, Dominion proposed restructuring its DSM portfolio and programs into approximately seven major programs, with seven sub-categories for distinct components and pathways. Dominion also committed to an annual investment of \$2.5 million from 2022 to 2026 directed toward improving customer awareness and marketing.²⁴ The Commission approved Dominion's proposed reorganization and consolidations of its DSM Portfolio consistent with Dominion's long-term plan.²⁵

In its third DSM application pursuant to the VCEA ("2022 DSM Update"), Dominion filed for, and received approval of, five EE programs (referred to as its Phase XI Programs), as well as four "program bundles."²⁶ Dominion presented program bundles as a way to consolidate programs and program measures that would provide qualifying customers the opportunity to implement a wider variety of EE measures, with its goal being to provide a better customer experience and optimize participation in DEV's EE programs. Dominion also received approval to expand the eligibility of its Phase IX Agricultural Program to residential customers.

Regarding the implementation of the Long Term Plan, the Commission directed Dominion to provide an annual Project Management Plan detailing what DSM tasks were completed in the last twelve months, what tasks would be completed in the next twelve months, and what tasks remain to be completed, to fully implement the Long Term Plan. As discussed further below, as of its latest DSM proceeding, Dominion projected that it would not meet its 2023 VCEA-related

²⁴ Low program participation has historically served as a barrier to DSM program success.

²⁵ 2021 DSM Update Final Order at 6.

²⁶ 2022 DSM Update Final Order at 9-10.

savings goal on a net basis. However, as of the latest EM&V Report, Dominion no longer projects to meet the VCEA goals, including 2022, on a net basis.

APCo

In its first DSM application pursuant to the VCEA, APCo filed for, and received approval of, four EE programs, a demand response program, and a three-year voltage conservation pilot program.²⁷ Additionally, the Commission approved a five-year extension for two of APCo's existing DSM programs. The approved programs and associated cost caps are provided later in this Report.

In its second DSM application pursuant to the VCEA, APCo filed for, and received approval of, one EE program.²⁸ Additionally, APCo requested, and received, approval to move to a biennial filing cadence for its energy efficiency program activities. APCo stated that it did not anticipate the immediate need to initiate any new programs in the interim. The Commission required APCo to file, in the 2021 EE-RAC Proceeding docket, an updated report on program costs, revenues, participation, and other relevant information on or before November 30, 2022, and required the same report to be filed in the next docketed EE-RAC case.²⁹

As noted above, APCo received Commission approval to move to a biennial filing cadence and, thus, did not file a DSM-related application in 2022. As directed by the Commission, the Company filed an updated report on program costs, revenues, participation, and other relevant

²⁷ *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, 2021 S.C.C. Ann. Rept. 325, Order Approving Rate Adjustment Clause (July 29, 2021).

²⁸ *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-2021-00236, S.C.C. Ann. Rept. 371, Order Approving Rate Adjustment Clause (July 15, 2022) ("APCo's 2021 EE-RAC Final Order").

²⁹ *Id.* at 2-3, 6.

information on November 30, 2022. It should be noted that as of the 2021 EE-RAC Proceeding, APCo is projected to meet all of the 2022-2025 VCEA-related savings goals, on a net basis.³⁰

KU/ODP

As mentioned previously, the Commission required KU/ODP to file a comprehensive DSM plan, with a required target of at least a 0.02% decrease in total jurisdictional sales.³¹ As part of developing its DSM plan, KU/ODP was directed to initiate stakeholder meetings. KU/ODP held stakeholder meetings on August 10, 2022, October 13, 2022, March 15, 2023, and April 21, 2023. On June 1, 2023, KU/ODP filed for approval of a DSM pilot-program designed to benefit low-income customers, with an associated DSM rate mechanism.³² The hearing on KU's DSM application is scheduled to start on October 11, 2023 with an opportunity for public witnesses to testify and to continue on October 12, 2023 with the evidentiary hearing. The Commission will be able to provide additional information on any approved KU/ODP programs in 2024, after the conclusion of this proceeding.

Previous DSM Activities

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

³⁰ See, e.g., APCo witness Diebel's direct testimony, Schedule 2, filed in APCo's 2021 EE-RAC Proceeding with its Petition. Note, however, the Commission has not made any determinations regarding APCo's "achieved" savings at this time. *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-2021-00236, Doc. Con. Cen. No. 211180097, Petition (filed November 30, 2021).

³¹ 2022 KU Final Order at 4.

³² As noted above, this case has been docketed as Case No. PUR-2023-00096.

Table 1.			
Dominion Energy Cases	Approved/Extended Programs		Cost Caps Approved (In Million \$)
	EE	Peak Shaving³³	
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 ³⁴
Case No. PUR-2019-00201	14	2	\$186.0
Case No. PUR-2020-00274	9	2	\$130.5
Case No. PUR-2021-00247	9		\$140.0
Case No. PUR-2022-00210	7	2	145.0
Totals	70	11	\$1,182.5MM³⁵
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
Case No. PUR-2017-00126	6		\$39
Case No. PUR-2019-00122	3		\$43.2
Case No. PUR-2020-00252	7	1	\$57.4
Case No. PUR-2021-00236	1		\$6.9
Totals	24	3	\$188.0MM³⁶

³³ Pursuant to Code § 56-576, peak-shaving "means measures aimed solely at shifting time of use of electricity from peak-use periods to times of lower demand by inducing retail customers to curtail electricity usage during periods of congestion and higher prices in the electrical grid."

³⁴ 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.

³⁵ Note that the \$870 million investment level set by the GTSA applicable to DEV includes only energy efficiency programs, and only spending starting July 1, 2018. The \$1,182.5MM shown in the table includes cost caps for peak shaving and energy efficiency programs from the time DEV first began offering such programs. The proposed program costs associated with the Residential Smart Thermostat EE, Smart Thermostat DR, and Residential Customer Engagement programs are only counted one time in the total.

Evaluation, Measurement, and Verification Proceeding

On August 28, 2020, the Commission issued an Order Initiating Proceeding to address Dominion's methodologies used for conducting evaluation, measurement, and verification of energy savings of approved energy efficiency measures.³⁷ 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, 2021.³⁸ The EM&V Proceeding Final Order adopted EM&V guidelines for Dominion's EE programs and implemented a dashboard that will provide a one-page overview of, among other things, Dominion's progress towards achieving 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.

On January 25, 2022, DEV and Commission Staff filed a joint letter regarding DEV's intent to conduct a study on the baseline savings assumptions used for measures included in two of DEV's DSM programs, as required by the EM&V Proceeding Final Order. DEV retained its EM&V

³⁶ Note that the \$140 million investment level set by the GTSA applicable to APCo includes only energy efficiency programs, and only spending starting July 1, 2018. The \$188.0MM shown in the table includes cost caps for peak shaving and energy efficiency programs from the time APCo first began offering such programs.

³⁷ *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 (August 28, 2020) ("EM&V Proceeding").

³⁸ *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, 2021 S.C.C. Ann. Rept. 260, Final Order (October 27, 2021) ("EM&V Proceeding Final Order").

contractor, DNV,³⁹ to conduct a study of the Phase VII Non-Residential Lighting Systems & Controls program and the Phase VII Residential New Construction program to be included in the 2023 EM&V Report.⁴⁰

DNV included the results of these studies in DEV's 2023 EM&V Report filed on June 15, 2023. In its reporting for the Non-Residential Lighting Systems & Controls program, DNV found that the baseline assumption for non-residential new construction lighting was 24% better than the Virginia Energy Conservation Code, and that the lighting baselines should be updated to reflect that difference. DNV also found that there is a high penetration of LED lighting and a market that has mostly transitioned to efficient lighting for new construction and retrofits.

In its reporting for the Residential New Construction program, DNV found that prior to the start of the program, only 5.4% of homes built in Virginia were ENERGY STAR certified and that participating builders stated they would have built 40% fewer ENERGY STAR certified homes, absent the program. DNV also found that many non-participating builders prioritize reducing upfront costs rather than energy efficiency, and that ENERGY STAR certified homes are typically marketed to high-income professionals or two-income households. DNV recommended that the program target non-participant builders to expand the program footprint and promotion of the program, and should use case studies and training materials show that benefits outweigh costs.⁴¹

³⁹ DNV is an energy consulting firm contracted to provide Dominion with DSM portfolio and program design services as well as to conduct EM&V for Dominion's DSM programs.

⁴⁰ The Phase VII programs were approved as part of *Petition Of Virginia Electric and Power Company, For approval to implement demand-side management programs and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUR-2018-00168, S.C.C. Ann. Rept, 285, Order Approving Programs and Rate Adjustment Clauses (May 2, 2019). A list of all approved programs for each Phase, including Phase VII, is provided in Table 1.

⁴¹ See DEV's 2023 EM&V Report at Appendix J.

DEV

Dominion's currently approved and operating programs are listed below:⁴²

Table 2.		
Dominion Energy Active DSM Programs		
Phase and Case No.	Program Name	Program Type
Phase II		
PUE-2011-00093	<i>Non-Residential Distributed Generation Program</i>	<i>Demand Response</i>
Phase IV		
PUE-2017-00071	<i>Residential Income and Age Qualifying Program*</i>	<i>Energy Efficiency</i>
Phase V		
PUE-2015-00089	<i>Non-Residential Small Business Improvement Program</i>	<i>Energy Efficiency</i>
Phase VI		
PUE-2016-00111	<i>Non-Residential Prescriptive Program</i>	<i>Energy Efficiency</i>
Phase VII		
PUR-2018-00168	<i>Residential Appliance Recycling Program*</i>	<i>Energy Efficiency</i>
	<i>Residential Efficient Products Marketplace Program</i>	<i>Energy Efficiency</i>
	<i>Residential Home Energy Assessment Program*</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Lighting Systems & Controls Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Heating & Cooling Efficiency Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Window Film Program*</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Small Manufacturing Program*</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Office Program*</i>	<i>Energy Efficiency</i>
Phase VIII		
PUR-2019-00201	<i>Residential Energy Efficiency Kits Program</i>	<i>Energy Efficiency</i>
	<i>Residential Electric Vehicle Program</i>	<i>Energy Efficiency</i>
	<i>Residential Electric Vehicle Program</i>	<i>Demand Response</i>
	<i>Residential Electric Vehicle Program</i>	<i>Peak Shaving</i>
	<i>Residential/Non-Residential Multi-Family Program</i>	<i>Energy Efficiency</i>
	<i>Residential New Construction Program</i>	<i>Energy Efficiency</i>
	<i>Residential Home Retrofit Program</i>	<i>Energy Efficiency</i>

⁴² 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.

	<i>Residential HB2789 (Heating and Cooling/Health and Safety) Program*</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Midstream Energy Efficiency Products Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Small Business Improvement Enhanced Program</i>	<i>Energy Efficiency</i>
	<i>Residential Customer Engagement Program</i>	<i>Energy Efficiency</i>
	<i>Residential Smart Thermostat Management Program</i>	<i>Energy Efficiency</i>
	<i>Residential Smart Thermostat Management Program</i>	<i>Peak Shaving⁴³</i>
	<i>Residential Manufactured Housing Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential New construction</i>	<i>Energy Efficiency</i>
	<i>AC Cycling Extension</i>	<i>Peak Shaving</i>
Phase IX		
PUR-2020-00274	<i>Residential IAQHIP Program⁴⁴</i>	<i>Energy Efficiency</i>
	<i>Residential Smart Home Program</i>	<i>Energy Efficiency</i>
	<i>Residential Virtual Audit Program</i>	<i>Energy Efficiency</i>
	<i>Residential Water Savings</i>	<i>Energy Efficiency</i>
	<i>Residential Water Savings</i>	<i>Demand Response</i>
	<i>Non-Residential Agriculture Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Building Automation Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Building Optimization Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Engagement Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Prescriptive Program</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Distributed Generation Program Extension</i>	<i>Demand Response</i>
Phase X		
PUR-2021-00247	<i>Residential Income and Age Qualifying Home Energy Report</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Income and Age Qualifying Program for Health Care and Rental Property Owners</i>	<i>Energy Efficiency</i>
	<i>Small Business Behavioral</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Data Centers and Server Rooms</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Hotel and Lodging</i>	<i>Energy Efficiency</i>
	<i>Voltage Optimization</i>	<i>Energy Efficiency</i>
	<i>Enhancement of the Residential Income and Age Qualifying Home Improvement</i>	<i>Energy Efficiency</i>
	<i>Extension of the Non-residential Lighting Systems & Controls Program</i>	<i>Energy Efficiency</i>
Phase XI		
PUR-2022-00210	<i>Residential Customer Engagement</i>	<i>Energy Efficiency</i>
	<i>Residential Efficient Products Marketplace</i>	<i>Energy Efficiency</i>

*These programs have been rolled into the program bundles approved as part of Phase XI and will close at the end of 2023.

⁴³ 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 provides Dominion access to cycle the thermostat off during peak load events.

⁴⁴ The acronym "IAQHIP" stands for "Income and Age-Qualifying Home Improvement Program."

	<i>Residential Peak Time Rebate</i>	<i>Demand Response</i>
	<i>Residential Electric Vehicle Telematics Program</i>	<i>Demand Response</i>
	<i>Non-Residential Custom</i>	<i>Energy Efficiency</i>
	<i>Residential Income and Age Qualifying Bundle</i>	<i>Energy Efficiency</i>
	<i>Residential Home Retrofit Bundle</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Income and Age Qualified Bundle</i>	<i>Energy Efficiency</i>
	<i>Non-Residential Prescriptive Bundle</i>	<i>Energy Efficiency</i>

A summary of key findings of DEV's 2023 EM&V Report is reprinted and attached as Appendix 1 (Tables 2,3,4,5,6,7 DEV's 2023 EM&V Report).⁴⁵

APCo

APCo's currently approved and operating programs are listed below:⁴⁶

Table 3.		
Appalachian Power Active DSM Programs		
Case No.	Program Name	Program Type
PUE-2014-00026	<i>Low-Income Weatherization</i>	<i>Energy Efficiency</i>
	<i>Peak Reduction</i>	<i>Demand Response</i>
PUR-2017-00126	<i>eScore</i>	<i>Energy Efficiency</i>
	<i>Bring Your Own Thermostat</i>	<i>Demand Response</i>
	<i>Commercial and Industrial Lighting</i>	<i>Energy Efficiency</i>
	<i>Commercial and Industrial Standard</i>	<i>Energy Efficiency</i>
	<i>Small Business Direct Install</i>	<i>Energy Efficiency</i>
PUR-2019-00122	<i>Low Income Single Family</i>	<i>Energy Efficiency</i>
	<i>Low Income Multifamily</i>	<i>Energy Efficiency</i>
PUR-2020-00252	<i>Business Energy Solutions</i>	<i>Energy Efficiency</i>
	<i>Bring Your Own Thermostat Extension</i>	<i>Demand Response</i>
	<i>Home Performance</i>	<i>Energy Efficiency</i>
	<i>Efficient Products</i>	<i>Energy Efficiency</i>
	<i>Energy Efficiency Kits</i>	<i>Energy Efficiency</i>
	<i>Home Energy Reports</i>	<i>Energy Efficiency</i>
	<i>Small Business Direct Install Extension</i>	<i>Energy Efficiency</i>
	<i>Volt VAR Optimization Pilot Program</i>	<i>Energy Efficiency</i>

⁴⁵ This data was provided by DEV and has not yet been reviewed or validated by the Commission.

⁴⁶ The findings and determinations of the EM&V Proceeding discussed above are only applicable to DEV.

PUR-2021-00236	Commercial & Industrial Custom Pilot Program	Energy Efficiency
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A summary of the key findings from APCo's 2023 EM&V Report is reprinted below (Tables 1-3 and 1-4 for Residential and Commercial & Industrial ("C&I") Programs, respectively, from APCo's 2023 EM&V Report).⁴⁷

Table 1-3 Summary of Residential Portfolio Energy Savings

Program Name	Ex Ante kWh Savings	Ex Post Gross kWh Savings	Gross kWh Savings Realization Rate	Ex Post Net kWh Savings	Estimated Net-to-Gross Ratio	Lifetime Net Ex Post kWh Savings
Home Performance Program	2,253,209	1,357,239	60%	1,230,687	91%	17,114,782
Low-Income Single-Family Program	1,366,348	1,213,006	89%	1,213,006	100%	13,755,363
Low-Income Multifamily Program	961,822	564,165	59%	564,165	100%	5,596,150
Efficient Products Program	14,544,378	11,646,522	80%	8,326,219	71%	112,563,491
Energy Efficiency Kits Program	3,343,551	2,913,569	87%	2,733,029	94%	28,086,139
Home Energy Reports Program	23,102,091	26,612,523	115%	26,612,523	100%	26,612,523
Bring Your Own Thermostat Program	74,982	74,982	100%	189,881	253%	189,881
Residential Portfolio Totals	45,646,381	44,382,007	97%	40,869,510	92%	203,918,330

Table 1-4 Summary of Residential Portfolio Peak Demand Impacts

Program Name	Ex Ante Gross kW Savings	Ex Post Gross kW Savings	Gross Realization Rate	Ex Post Net kW Savings	Net-to-Gross Ratio
Home Performance Program	1,578.86	227.20	14%	210.05	92%
Low-Income Single Family-Program	438.75	221.72	51%	221.72	100%
Low-Income Multifamily Program	155.68	164.71	106%	164.71	100%
Efficient Products Program	1,444.86	1,074.53	74%	987.64	92%
Energy Efficiency Kits Program	195.13	243.77	125%	226.49	93%
Home Energy Reports Program	5,042.72	5,094.06	101%	5,094.06	100%
Bring Your Own Thermostat Program	5,608.84	5,608.84	100%	5,608.84	100%
Residential Portfolio Totals	14,464.84	12,634.83	87%	12,513.51	99%

⁴⁷ This data was provided by APCo and has not yet been reviewed or validated by the Commission.

Table 1-3 Summary of C&I Portfolio Energy Savings

<i>Program Name</i>	<i>Expected kWh Savings</i>	<i>Gross Realized kWh Savings</i>	<i>Gross Realization Rate</i>	<i>Net Realized kWh Savings</i>	<i>Net-to-Gross Ratio</i>	<i>Net Lifetime kWh Savings</i>
Business Energy Solutions Program	10,683,944	9,836,076	92%	8,802,494	89%	130,532,318
Small Business Direct Install Program	1,737,018	1,512,611	87%	1,297,479	86%	15,268,271
Opt Out Customers	28,289,230	28,289,230	100%	28,289,230	100%	28,289,230
C&I Portfolio Totals	40,710,193	39,637,917	97%	38,389,203	97%	174,089,819

Table 1-4 Summary of C&I Portfolio Peak Demand Impacts

<i>Program Name</i>	<i>Expected kW Savings</i>	<i>Gross Realized kW Savings</i>	<i>Gross Realization Rate</i>	<i>Net Realized kW Savings</i>	<i>Net-to-Gross Ratio</i>
Business Energy Solutions Program	1,959.47	2,065.81	105%	1,652.32	80%
Small Business Direct Install Program	417.67	559.03	134%	420.54	75%
Opt Out Customers	-	-	N/A	-	N/A
C&I Portfolio Totals	2,377.14	2,624.84	110%	2,072.86	79%

FEASIBILITY OF ENERGY EFFICIENCY GOALS

Pursuant to Code § 56-596.2 B, a Phase I and Phase II utility must each implement energy efficiency programs and measures to achieve the following total annual energy savings:

For a Phase I utility:

- In calendar year 2022, at least 0.5 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2023, at least 1.0 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2024, at least 1.5 percent of the average annual energy jurisdictional retail sales by that utility in 2019; and
- In calendar year 2025, at least 2.0 percent of the average annual energy jurisdictional retail sales by that utility in 2019.

For a Phase II utility:

- In calendar year 2022, at least 1.25 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2023, at least 2.5 percent of the average annual energy jurisdictional retail sales by that utility in 2019;
- In calendar year 2024, at least 3.75 percent of the average annual energy jurisdictional retail sales by that utility in 2019; and
- In calendar year 2025, at least 5.0 percent of the average annual energy jurisdictional retail sales by that utility in 2019.

Additionally, for the time period 2026 through 2028, and for every successive three-year period thereafter, the Commission is directed to establish new energy efficiency savings targets.

The VCEA further directs the Commission to annually review the feasibility of the energy efficiency program savings in Code § 56-596.2 and report on such feasibility.⁴⁸

⁴⁸ Enactment Clause 4 of the 2021 Va. Acts of Assembly ch. 263 (Spec. Session 1) further provides that: "the State Corporation Commission may exclude energy jurisdictional retail sales related to zero-emission vehicles and hybrid electric vehicles from energy jurisdictional retail sales calculated pursuant to § 56-596.2 of the Code of Virginia."

As shown above, calendar year 2022 is the first year that the energy efficiency targets are in effect. Neither APCo nor DEV's results for 2022 have yet been subject to Commission review. The Commission will review these EM&V results as a part of each utility's upcoming energy efficiency filings and will provide additional data related to the feasibility of achieving these energy efficiency goals in future reports.

As noted above and discussed further below, as of its latest EM&V Report filing, Dominion does not currently project to meet its VCEA related savings goals on a "net" basis for any of the 2022-2025 years, or on a gross basis in 2024-2025. In the 2022 DSM Update proceeding, Dominion indicated, among other things, that "it has been unable to solicit enough cost-effective DSM programming from the market to cover the shortfalls in the Company's projected savings, making the path to achieving the VCEA goals substantially more difficult."⁴⁹ With regard to APCo, on a "net" basis, it projects to meet all of its annual VCEA related savings goals.

On the issue of whether net or gross savings should be used to measure compliance with the energy efficiency targets, the Commission's Final Order in Dominion's 2021 DSM Update found that:

Determining whether [Dominion] has achieved the 2022 total annual savings percentage in Code § 56-596.2 B will require a factual analysis based on a separate record, which has yet to be developed and which is not yet before us for such purpose. Under the statute, that required factual analysis is not articulated in terms of "gross" or "net" savings, which are neither referenced nor defined therein. Rather, Dominion has the burden to establish, on a factual basis, the "total combined kilowatt-hour savings achieved by" its energy efficiency and demand response programs and measures.

In this regard, the definition of "achieved" is: "1 a : to bring to a successful conclusion : carry out successfully : accomplish ... 2 : to get as the result of exertion : succeed in obtaining or gaining : win, reach, attain." Accordingly, based on the plain language thereof, when Dominion seeks findings on the savings achieved for purposes of this

⁴⁹ 2022 DSM Update Final Order at 11.

statute, [Dominion] must factually establish the amount of savings that occurred as the result of its programs and measures.

FN33: For example, to the extent the term "free riders" factually represents specific savings that can be reasonably identified, and that were *not* achieved as a result of Dominion's programs and measures, such savings do not fall within the plain language of this statute.⁵⁰

DEV

In its most recent EM&V Report, DEV provided data related to its expected achievement of the VCEA's energy efficiency goals. As demonstrated in column "DSM %," DEV does not currently project meeting the VCEA targets on a net basis in 2022-2025, nor on a gross basis in 2024-2025. That data is reprinted below:⁵¹

Table 1

Net at Meter	YEAR	VCEA Target MWh	VCEA Target %	DSM1-8 MWh	DSM9 MWh	DSM10 MWh	DSM11 MWh	DSM12 MWh*	Opt-Outs MWh	DSM%**
	2022	852,892	1.25%	776,335	4,154	-	-	-	58,754	1.23%
2023	1,705,783	2.50%	951,859	75,741	128,063	-	-	59,855	1.8%	
2024	2,558,675	3.75%	1,052,964	149,344	321,505	6,321	-	60,955	2.3%	
2025	3,411,567	5.00%	1,052,341	214,222	508,467	17,694	33,662	62,055	2.8%	

Table 2

Gross at Meter	YEAR	VCEA Target MWh	VCEA Target %	DSM1-8 MWh	DSM9 MWh	DSM10 MWh	DSM11 MWh	DSM12 MWh*	Opt-Outs MWh	DSM%**
	2022	852,892	1.25%	1,220,054	4,781	-	-	-	58,754	1.9%
2023	1,705,783	2.50%	1,414,902	87,751	154,418	-	-	59,855	2.5%	
2024	2,558,675	3.75%	1,518,443	176,763	372,158	6,321	-	60,955	3.1%	
2025	3,411,567	5.00%	1,516,260	255,015	570,460	17,694	40,228	62,055	3.6%	

⁵⁰ 2021 DSM Update Final Order at 8-9.

⁵¹ *Evaluation Measurement and Verification Report For Virginia Electric and Power Company*, Case No. PUR-2021-00247, page vii, (June 15, 2023). This report may be located on the Commission's website, [scc.virginia.gov/pages/Case Information](http://scc.virginia.gov/pages/Case%20Information), by clicking "Docket Search," then clicking "Search by Case Information," and entering the case number, PUR 2021-00247, in the appropriate box.

APCo

In APCo's 2021 EE-RAC Proceeding, it provided the below data related to its expected achievement of the VCEA energy efficiency goals based on net savings:⁵²

<u>Net Savings</u>								
Year	2015-2020 Persistent Savings	Previous Programs	C&I Customer Pilot	Opt Out Customer	Total DSM Forecast MWh	DSM % MWh	VCEA Target MWh	VCEA Target % MWh
2022	153,187	141,915		37,734	332,836	460.6%	72,260	0.5%
2023	148,610	227,389	11,964	37,734	425,697	294.6%	144,521	1.0%
2024	143,033	305,926	23,929	37,734	510,622	235.5%	216,781	1.5%
2025	136,745	373,956	35,893	37,734	584,328	202.2%	289,041	2.0%

In APCo's 2021 EE-RAC Proceeding, the Commission approved APCo's request to extend the period between EE-RAC filings from one to two years.⁵³ APCo was, however, required to provide "updated reporting on program costs, revenues, participation, and other relevant information, on or before November 30, 2022."⁵⁴ APCo submitted this letter on November 30, 2022, as required. The Commission expects to receive updated data on the utility's progress towards achieving the VCEA targets in its upcoming DSM proceeding expected this year. According to APCo's 2023 EM&V Report, for program year 2022, APCo reports achieving, on a net basis, approximately 40,869 megawatt-hours ("MWh") in residential energy savings and 38,389 MWh in non-residential savings, for a total of 79,258 MWh.

⁵² These are APCo's estimates provided in APCo's witness Diebel's direct testimony, Schedule 2, in APCo's 2021 EE-RAC Proceeding and have not been determined by the Commission to be the "achieved" savings at this time. *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-2021-00236, Doc. Con. Cen. No. 211180097, Petition (filed November 30, 2021).*

⁵³ APCo's 2021 EE-RAC Final Order at 5.

⁵⁴ *Id.* at 4.

CLOSING

The Commission appreciates the opportunity to provide this update to the Governor and the General Assembly on energy efficiency and DSM-related matters. The Commission has conducted energy efficiency and DSM-related proceedings that are detailed herein. In particular, in 2023, the Commission approved five new programs for DEV as well as four program bundles. In addition, the Commission's Staff has participated as stakeholders in multiple stakeholder meetings over the last year as required by recent legislation and Commission Order. The Commission also includes herein information related to the utilities' progress towards the energy efficiency targets contained in Code § 56-596.2. The Commission will review these EM&V results as a part of each utility's upcoming energy efficiency filings and will provide additional data related to the feasibility of achieving these energy efficiency goals in future reports.

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

DEV EM&V Tables

Table 1. Virginia program avoided costs in Program Year 2022

Avoided Costs			Avoided T&D Demand Costs					
Average (\$/kWh)	Capacity (\$/kW-year)	Reserve Margin Forecast Pool Requirement (FPR) (%)	Transmission			Distribution		
			Avoided Transmission Cost (\$/kW-year)	Avoided Transmission Summer Split (%)	Avoided Transmission Winter Split (%)	Avoided Distribution Cost (\$/kW-year)	Avoided Transmission Summer Split (%)	Avoided Transmission Winter Split (%)
\$0.03	\$31.94	10%	\$31.95	0%	100%	\$18.14	50%	50%

Table 2. Virginia summary program metrics - participation and financial of residential and income and age qualified programs (cumulative through December 31, 2022)^{9, 10, 11, 12}

Program	Program Operation Years	Participation		Financial					
		Participants (in 1,000's)	No. Measures (in 1,000's)	Expenditures (\$M)	Administrative Expenditures (\$M)	Budget (\$M)	Spending as % of Budget	Program cost per participant	
Residential Energy Services	Appliance Recycling	4	5.03	5.03	\$1.78	\$0.08	\$6.52	27%	\$355
	Home Energy Assessment	4	19	1,039	\$16	\$0.73	\$16	98%	\$835
	Customer Engagement	3	303	303	\$3.93	\$0.17	\$3.84	102%	\$13
	Manufactured Housing	3	0.01	0.05	\$1.32	\$0.06	\$2.86	46%	\$219,920
	Multifamily	3	1.64	10	\$1.43	\$0.06	\$3.95	36%	\$869
	Home Retrofit	3	0.15	0.55	\$1.78	\$0.08	\$3.18	56%	\$11,914
	Virtual Energy Audit	2	2.15	84	\$0.67	\$0.03	\$4.21	16%	\$312
Residential Efficient Products	Efficient Products Marketplace	4	14,810	14,810	\$31	\$1.39	\$30.57	102%	\$2.10
	Electric Vehicle Energy Efficiency and Demand Response	3	0.30	0.30	\$0.57	\$0.03	\$0.74	78%	\$1,920
	Kits	3	55	109	\$2.59	\$0.11	\$3.88	67%	\$47
	Smart Home	2	0.02	0.09	\$0.73	\$0.03	\$2.05	36%	\$48,657
	Water Savings	2	0.06	0.06	\$0.27	\$0.01	\$0.79	34%	\$4,306
Residential New Construction	Thermostat Purchase and WeatherSmart	3	11	12	\$2.25	\$0.10	\$2.37	95%	\$196
	New Construction	3	3.58	3.58	\$3.92	\$0.17	\$8.78	45%	\$1,096
Residential Sub-Total			15,212	16,376	\$68.35	\$3.05	\$90	76%	\$4.49
Income & Age Qualifying	HVAC Health and Safety	3	7.00	12	\$21	\$0.94	\$22	98%	\$3,046
	Income and Age Qualifying Energy Efficiency	2	4.73	28	\$5.87	\$0.25	\$7.43	79%	\$1,240
	Income and Age Qualifying Solar	2	0.01	0.01	\$0.21	\$0.01	\$11	1.97%	\$29,589
Income and Age Qualifying Home Improvement Sub-Total			12	40	\$27	\$1.19	\$40	69%	\$2,334

Table 3. Virginia summary program metrics - participation and financial of non-residential programs (cumulative through December 31, 2022)

Program	Program Operation Years	Participation		Financial					
		Participants (in 1,000's)	No. Measures (in 1,000's)	Expenditures (\$M)	Administrative Expenditures (\$M)	Budget (\$M)	Spending as % of Budget	Program cost per participant	
Non-Residential General Products & Services	Prescriptive	6	2.84	522	\$33	\$1.68	\$29	115%	\$11,712
	Prescriptive Enhanced	2	0.37	15	\$5.69	\$0.24	\$4.23	134%	\$15,535
	Heating and Cooling Efficiency	4	0.13	1.75	\$2.82	\$0.13	\$6.83	41%	\$22,574
	Lighting Systems & Controls	4	0.99	129	\$11	\$0.50	\$8.95	121%	\$11,012
	Small Manufacturing	4	0.02	0.20	\$1.68	\$0.07	\$4.57	37%	\$83,766
	Window Film	4	0.07	102	\$1.15	\$0.05	\$1.64	70%	\$16,641
	Midstream Energy Efficiency Products	3	0.12	0.64	\$1.38	\$0.06	\$3.79	36%	\$11,499
Non-Residential Targeted Sector	Small Business Improvement Enhanced	3	0.90	16	\$5.95	\$0.26	\$7.22	82%	\$6,621
	Agricultural Energy Efficiency	2	0.00	15	\$0.49	\$0.02	\$0.91	54%	\$163,950
	New Construction	3	0.00	0.00	\$1.11	\$0.05	\$2.29	48%	N/A
	Multifamily	3	0.01	0.35	\$0.40	\$0.02	\$0.90	45%	\$80,803
Non-Residential Building Automation & Controls	Office	4	0.08	0.92	\$2.10	\$0.09	\$4.28	49%	\$25,883
	Building Optimization	2	0.002	0.10	\$0.51	\$0.02	\$1.10	46%	\$255,199
	Building Automation System	2	0.00	0.00	\$0.43	\$0.02	\$0.96	45%	N/A
	Engagement	2	0.00	0.00	\$0.61	\$0.03	\$1.54	40%	N/A
Non-Residential Sub-Total			5.51	803	\$68	\$3.24	\$78	88%	\$12,408
Total			15,229	17,219	\$164	\$7.48	\$208	79%	\$11

Table 4. Virginia summary program metrics - benefit cost ratios of residential and income and age qualified programs (cumulative through December 31, 2022)¹³

Program	Benefit Cost Ratios				Filing Year	
	Participant	Utility	TRC	RIM		
Residential						
Residential Energy Services	Appliance Recycling	19.22	0.98	0.90	0.22	2023
	Home Energy Assessment	25.06	8.46	5.94	0.35	2023
	Customer Engagement	12.87	1.80	1.41	0.40	2023
	Manufactured Housing	1.48	0.12	0.11	0.09	2023
	Multifamily	1.48	0.66	0.35	0.26	2023
	Home Retrofit	7.05	2.48	1.92	0.44	2023
	Virtual Energy Audit	61.15	4.07	8.08	0.26	2023
Residential Efficient Products	Efficient Products Marketplace	++	15.83	18.74	0.27	2023
	Electric Vehicle Energy Efficiency and Demand Response	0.66	0.11	0.06	0.08	2023
	Kits	++	0.45	2.03	0.17	2023
	Smart Home	1.54	0.35	0.21	0.15	2023
	Water Savings	4.98	1.22	1.04	0.25	2023
	Thermostat Purchase and WeatherSmart	3.72	1.34	0.89	0.38	2023
Residential New Construction	New Construction	3.33	2.09	1.21	0.40	2023
Residential Demand Response	Smart Cooling Rewards	++	0.42	1.00	0.42	2021
	Electric Vehicle Rewards	136.42	1.31	2.22	1.31	2019
	Smart Thermostat Rewards	9.37	0.47	0.59	0.46	2023
	Water Savings Demand Response	4.99	1.79	1.60	0.33	2020
Income and Age Qualifying						
Income & Age Qualifying	HVAC Health and Safety	2.34	0.29	0.37	0.18	2023
	Income and Age Qualifying Energy Efficiency	++	0.73	0.73	0.27	2023
	Income and Age Qualifying Solar	++	0.20	0.20	0.13	2023

Table 5. Virginia summary program metrics - benefit cost ratios of non-residential programs (cumulative through December 31, 2022)¹⁴

Program	Benefit Cost Ratios				Filing Year	
	Participant	Utility	TRC	RIM		
Non-Residential						
Non-Residential General Products & Services	Prescriptive	1.08	0.20	0.15	0.14	2020
	Prescriptive Enhanced	4.88	2.21	2.21	0.62	2023
	Heating and Cooling Efficiency	18.92	39.23	18.27	1.14	2023
	Lighting Systems & Controls	29.77	11.09	9.12	0.56	2022
	Small Manufacturing	20.59	6.16	5.76	0.48	2023
	Window Film	2.97	0.80	0.59	0.32	2023
Non-Residential Targeted Sector	Midstream Energy Efficiency Products	1.62	3.92	1.68	1.11	2023
	Small Business Improvement Enhanced	2.62	0.76	0.60	0.29	2023
	Agricultural Energy Efficiency	1.10	0.21	0.16	0.15	2023
	New Construction	2.84	1.21	1.20	0.50	2019
Non-Residential Building Automation & Controls	Multifamily	4.76	1.77	1.39	0.41	2023
	Office	10.55	1.46	1.56	0.30	2023
	Building Optimization	17.88	6.61	5.95	0.65	2023
	Building Automation System	7.91	5.83	4.92	1.27	2020
Non-Residential Demand Response	Engagement	++	1.90	3.07	0.85	2020
	Distributed Generation	++	0.86	2.56	0.82	2023

Table 6. Virginia summary program metrics - energy impacts of residential and income and age qualified programs (cumulative through December 31, 2022)

Program	Energy Impacts								
	Gross Impacts				Net Impacts				
	Total Annualized Gross Energy Savings (MWh/yr)	Cumulative Gross Energy Savings (MWh)	Lifetime Gross Energy Savings (MWh)	Total Summer Gross Peak Demand Reductions (MW)	Total Annualized Net Energy Savings (MWh/yr)	Cumulative Net Energy Savings (MWh)	Lifetime Net Energy Savings (MWh)	Total Summer Net Peak Demand Reductions (MW)	
Residential Energy Services	Appliance Recycling	3,591	6,982	28,739	0.54	2,155	4,189	17,243	0.32
	Home Energy Assessment	40,230	53,204	502,980	2.85	11,357	13,253	141,991	0.83
	Customer Engagement	111,682	101,814	113,652	0.00	13,741	12,056	14,068	0.00
	Manufactured Housing	1.23	1.11	15	0.00	1.10	1.00	13	0.00
	Multifamily	429	324	10,962	0.11	386	291	9,866	0.10
	Home Retrofit	335	304	7,204	0.10	302	273	6,484	0.09
	Virtual Energy Audit	1,973	600	27,038	0.16	1,184	360	16,223	0.10
Residential Efficient Products	Efficient Products Marketplace	443,638	739,516	7,360,182	41	252,747	458,307	4,193,557	23
	Electric Vehicle Energy Efficiency and Demand Response	40	26	396	0.00	32	21	317	0.00
	Kits	6,883	5,880	41,391	0.60	4,130	3,528	24,835	0.36
	Smart Home	8.09	1.78	50	0.00	6.87	1.51	43	0.00
	Water Savings	98	14	1,156	0.01	88	13	1,041	0.01
Residential New Construction	Thermostat Purchase and WeatherSmart	3,275	2,369	21,375	0.50	2,689	1,896	17,100	0.47
	New Construction	7,101	4,996	161,789	3.17	6,178	4,346	140,756	2.76
Residential Sub-Total		619,282	916,033	8,276,930	49	294,995	498,536	4,583,537	28
Income & Age Qualifying	HVAC Health and Safety	2,341	2,073	30,780	0.39	1,872	1,658	24,624	0.32
	Income and Age Qualifying Energy Efficiency	3,096	1,093	63,727	0.69	2,477	874	50,982	0.55
	Income and Age Qualifying Solar	35	2.29	763	0.01	28	1.83	610	0.01
Income and Age Qualifying Home Improvement Sub-Total		5,471	3,168	95,270	1.10	4,377	2,534	76,216	0.88

Table 7. Virginia summary program metrics - energy impacts of non-residential programs (cumulative through December 31, 2022)

Program	Energy Impacts								
	Gross Impacts				Net Impacts				
	Total Annualized Gross Energy Savings (MWh/yr)	Cumulative Gross Energy Savings (MWh)	Lifetime Gross Energy Savings (MWh)	Total Summer Gross Peak Demand Reductions (MW)	Total Annualized Net Energy Savings (MWh/yr)	Cumulative Net Energy Savings (MWh)	Lifetime Net Energy Savings (MWh)	Total Summer Net Peak Demand Reductions (MW)	
Non-Residential General Products & Services	Prescriptive	82,173	191,312	526,765	17	41,761	104,720	267,505	12
	Prescriptive Enhanced	8,848	932	86,689	5.60	7,963	839	78,020	5.04
	Heating and Cooling Efficiency	13,237	8,941	198,577	3.28	9,266	6,259	139,004	2.29
	Lighting Systems & Controls	68,319	111,966	695,668	9.80	38,122	62,477	388,183	4.50
	Small Manufacturing	4,998	1,396	61,644	0.61	4,498	1,256	55,479	0.54
	Window Film	510	813	5,104	0.08	408	650	4,084	0.06
	Midstream Energy Efficiency Products	1,690	438	32,751	2.04	1,521	394	29,476	1.83
Non-Residential Targeted Sector	Small Business Improvement Enhanced	7,549	6,130	77,044	1.53	6,622	5,373	67,597	1.19
	Agricultural Energy Efficiency	4,981	2,012	298,905	0.79	4,831	1,952	289,938	0.77
	New Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Multifamily	166	6.28	1,408	0.02	149	5.65	1,267	0.02
Non-Residential Building Automation & Controls	Office	5,552	3,050	38,875	0.07	4,997	2,745	34,987	0.06
	Building Optimization	1,798	129	8,994	0.05	1,618	116	8,095	0.04
	Building Automation System	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Engagement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-Residential Sub-Total		199,821	327,126	2,032,424	41	121,757	186,787	1,363,633	29
Total		824,574	1,246,327	10,404,624	91	421,130	687,857	6,023,386	58

Table 8. Virginia summary program metrics - other impacts of residential and income and age qualified programs (cumulative through December 31, 2022)

Program	Other Impacts				
	Bill Savings (\$M/year)	Carbon Emissions Avoided (Metric Tons CO ₂ /yr)	O&M NEIs (\$M/year)	Water Savings (Mgal/year)	
Residential Energy Services	Appliance Recycling	\$0.18	2,073	\$0.00	0.00
	Home Energy Assessment	\$1.58	23,405	\$3.34	2.62
	Customer Engagement	\$6.47	66,336	\$0.00	0.00
	Manufactured Housing	\$0.00	0.71	\$0.00	0.00
	Multifamily	\$0.05	247	\$0.15	0.00
	Home Retrofit	\$0.01	192	\$0.00	0.01
	Virtual Energy Audit	\$0.24	1,158	\$0.32	6.57
Residential Efficient Products	Efficient Products Marketplace	\$18	235,126	\$8.32	30.52
	Electric Vehicle Energy Efficiency and Demand Response	\$0.00	23	\$0.00	0.00
	Kits	\$0.43	4,158	\$0.09	2.43
	Smart Home	\$0.00	4.84	\$0.00	0.00
	Water Savings	\$0.01	57	\$0.00	0.00
	Thermostat Purchase and WeatherSmart	\$0.22	1,911	\$0.00	0.00
Residential New Construction	New Construction	\$0.65	4,158	\$0.00	0.00
Residential Sub-Total		\$28	338,849	\$12.22	42
Income & Age Qualifying	HVAC Health and Safety	\$0.12	1,331	-\$0.01	0.00
	Income and Age Qualifying Energy Efficiency	\$0.39	1,801	\$0.04	1.99
	Income and Age Qualifying Solar	\$0.00	21	\$0.00	0.00
Income and Age Qualifying Home Improvement Sub-Total		\$0.51	3,153	\$0.04	1.99

Table 9. Virginia summary program metrics - other impacts of non-residential programs (cumulative through December 31, 2022)

Program	Other Impacts				
	Bill Savings (\$M/year)	Carbon Emissions Avoided (Metric Tons CO ₂ /yr)	O&M NEIs (\$M/year)	Water Savings (Mgal/year)	
Non-Residential General Products & Services	Prescriptive	\$0.03	49,337	\$0.00	0.00
	Prescriptive Enhanced	\$0.92	5,246	\$0.00	0.00
	Heating and Cooling Efficiency	\$0.63	7,612	-\$0.47	0.00
	Lighting Systems & Controls	\$1.85	40,422	\$0.08	0.00
	Small Manufacturing	\$0.41	2,864	\$0.00	0.00
	Window Film	\$0.01	309	\$0.00	0.00
	Midstream Energy Efficiency Products	N/A	992	-\$0.55	1.06
Non-Residential Targeted Sector	Small Business Improvement Enhanced	\$0.61	4,661	\$0.17	0.00
	Agricultural Energy Efficiency	\$0.61	2,891	\$1.28	0.00
	New Construction	N/A	0.00	\$0.00	0.00
Non-Residential Building Automation & Controls	Multifamily	\$0.02	95.67	\$0.00	0.00
	Office	\$0.49	3,155	\$0.00	0.00
	Building Optimization	\$0.10	1,003	\$0.00	0.00
	Building Automation System	N/A	0.00	\$0.00	0.00
	Engagement	N/A	0.00	\$0.00	0.00
Non-Residential Sub-Total		\$5.69	118,588	\$0.52	1.06
Total		\$34.53	460,589	\$13	45

APPENDIX 2

GLOSSARY OF TERMS

APCo	Appalachian Power Company
Code	Code of Virginia
Commission	Virginia State Corporation Commission
DEV	Virginia Electric and Power Company d/b/a Dominion Energy Virginia
DNV	An energy consulting firm under contract with Dominion
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
General Assembly	Virginia General Assembly
GTSA	Grid Transformation and Security Act, Chapter 296 of the 2018 Acts of Assembly
IAQHIP	Income and Age-Qualifying Home Improvement Program
MWh	Megawatt-hour
Staff	State Corporation Commission Staff
VCEA	Virginia Clean Economy Act, Chapters 1193 and 1194 of the 2020 Acts of Assembly

Pandemic-related Activities

The Commission has previously reported on its response to the public health concern related to the spread of the coronavirus, or COVID-19. Through several orders, the Commission directed regulated electric, natural gas, and water and sewer 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 legislatively.⁵⁵ Thereafter, in a November 2020 Special Session, the General Assembly enacted budget legislation further prohibiting utility shut-offs during the then state of emergency declared by the Governor, subject to certain conditions and limitations.⁵⁶ This budget legislation also directed the Commission to distribute \$100 million of Virginia's portion of the coronavirus relief funds ("CRF") received under Public Law 116-136: Coronavirus Aid, Relief, and Economic Security Act, to electric, natural gas, and water and sewer utilities, including municipal utilities, throughout the Commonwealth to offset utility customer billing arrearages due to COVID-19.⁵⁷ Relatedly, budget legislation enacted by the General Assembly during a 2021 Special Session directed the Commission, in coordination with the Department of Housing and Community Development, to distribute \$120 million of additional coronavirus relief funds received by Virginia under Public Law 117-2: American

⁵⁵ *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 (March 16, 2020); 2020 S.C.C. Ann. Rept. 467, Order Extending Suspension of Service Disconnections (April 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 (August 24, 2020); 2020 S.C.C. Ann. Rept. 475, Additional Order on Moratorium (September 15, 2020).

⁵⁶ *See*, House Bill 5005, 2020 Va. Acts, Special Session I, ch. 56 (Item 4-14)

⁵⁷ *See*, House Bill 5005, 2020 Va. Acts, Special Session I, ch. 56 (Item 479.10). *See also*, House Bill 1800, 2021 Va. Acts, Special Session I, ch. 552 (modifying pertinent provisions in Item 479.10).

Rescue Plan Act of 2021 ("ARPA").⁵⁸ These funds were also distributed to Virginia's utilities (as identified above) to offset utility customer billing arrearages due to COVID-19. The Commission and its Staff continue to provide oversight of these CRF and ARPA distributions. Additionally, and at the General Assembly's direction, the Commission since 2020 has submitted annual reports to the General Assembly and the Executive Branch detailing current utility customer billing arrearages and utility service disconnections.⁵⁹ The annual submission of these reports will continue through 2023.

⁵⁸ *See*, House Bill 7001, 2021 Va. Acts, Special Session II, ch. 1 (Item 479.20).

⁵⁹ *See*, House Bill 5005, 2020 Va. Acts, Special Session I, ch. 56 (Item 4-14).