

PART 4

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PART D

Summary of the Testimony of Andrew T. Boehnlein

- 1 My testimony includes the following findings and recommendations:
- 2 1. Staff recommends that the Commission require the Company to provide additional
3 modeling incorporating only the Category 1 savings, i.e. the savings generated by programs
4 that have been approved, for Plans B and E, in future IRP proceedings.
- 5 2. To the extent that the Commission determines that a generating unit is uneconomic based
6 on the Net Present Value included in the Company's cash-flow analysis, the Commission
7 could consider the cost of that unit to be unreasonable in future cost recovery proceedings.

**PREFILED TESTIMONY
OF
ANDREW T. BOEHNLEIN
VIRGINIA ELECTRIC AND POWER COMPANY'S
2023 INTEGRATED RESOURCE PLAN FILING
PURSUANT TO § 56-597 ET SEQ.
CASE NO. PUR-2023-00066**

1 **Q. PLEASE STATE YOUR NAME AND POSITION WITH THE STATE**
2 **CORPORATION COMMISSION ("COMMISSION").**

3 **A.** My name is Andrew T. Boehnlein, and I am a Manager with the Commission's Division of
4 Public Utility Regulation.

5 **Q. WHAT ARE YOUR PRESENT DUTIES AND RESPONSIBILITIES?**

6 **A.** My primary functions as a Manager include analyzing utility integrated resource plans
7 ("IRPs"), demand side management ("DSM") plans, public utility certificate, and rate case
8 applications with regards to costs of service, terms and conditions of service, and rate
9 design. I am also responsible for presenting testimony as a witness for the Staff of the
10 Commission ("Staff") and making alternative recommendations and proposals to the
11 Commission as appropriate.

12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

13 **A.** My testimony will include the following:

- 14 ▪ A review of the DSM adjustment the Virginia Electric and Power Company
15 ("Dominion" or "Company") made to its 2023 Load Forecast contained in the 2023
16 IRP.
- 17 ▪ A review of the Company's Net Present Value ("NPV") analysis for its coal-fired,
18 biomass-fired, and gas combined cycle generation resources.
19

DSM Adjustment

1 **Q. PLEASE DESCRIBE THE DSM ADJUSTMENT IN THE COMPANY'S 2023**
2 **LOAD FORECAST.**

3 **A.** The Company develops its load forecast, discussed in more detail by Staff witness Johnson,
4 and then makes a post model adjustment to account for energy savings attributable to DSM.
5 This adjustment contains two categories. "Category 1" savings capture the energy savings
6 associated with identified DSM sources, i.e., Commission-approved and on-going DSM
7 programs. "Category 2," or "generic" energy savings, are described by the Company as
8 "unidentified" programs and measures "designed to meet (i) the energy savings targets in
9 the Virginia Clean Economy Act ("VCEA") for 2022 through 2025; (ii) a 5% energy
10 savings target for 2026 and beyond; (iii) the Grid Transformation and Security Act
11 requirement to propose \$870 million in [energy efficiency ("EE")] programs by 2028; and
12 (iv) at least 15% of DSM costs allocated to programs designed to benefit low-income,
13 elderly, or disabled individuals or veterans".¹

14 **Q. ARE THE SAME ADJUSTMENTS MADE TO ALL OF THE ALTERNATIVE**
15 **PLANS IN THE 2023 IRP?**

16 **A.** No. Plan A, which is the Company's least-cost plan, is only adjusted by incorporating the
17 Category 1 savings.² Alternative Plans B through E include both Category 1 and Category
18 2 savings adjustments.³ The practical effect of these adjustment is to shift the load curve

¹ 2023 IRP at 50.

² *Id.*

³ *Id.*

1 downwards. The focus of the following discussion will be on subparts (i) and (ii) of the
2 Category 2 adjustments.

3 **Q. FIRST, WHAT ARE THE EE GOALS INCLUDED WITHIN THE VCEA?**

4 **A.** Section 56-596.2 B 2 of the Code of Virginia ("Code") requires a Phase II utility to achieve
5 certain levels of energy savings per year through EE programs, based on the utility's 2019
6 sales.⁴ Those savings percentages and their corresponding savings targets are reproduced
7 below:

Year	Target Savings %	Target MWh ⁵
2022	1.25%	852,892
2023	2.50%	1,705,783
2024	3.75%	2,558,675
2025	5.0%	3,411,567

8 § 56-596.2 B 3 provides that:

9 For the time period 2026 through 2028, and for every successive
10 three-year period thereafter, the Commission shall establish new
11 energy efficiency savings targets. In advance of the effective date of
12 such targets, the Commission shall, after notice and opportunity for
13 hearing, initiate proceedings to establish such targets. As part of
14 such proceeding, the Commission shall consider the feasibility of
15 achieving energy efficiency goals and future energy efficiency
16 savings through cost-effective programs and measures. The
17 Commission shall annually review the feasibility of the energy
18 efficiency program savings in this section and report to the Chairs
19 of the House Committee on Labor and Commerce and the Senate
20 Committee on Commerce and Labor and the Secretary of Natural
21 and Historic Resources and the Secretary of Commerce and Trade
22 on such feasibility by October 1, 2022, and each year thereafter.

⁴ The Company's 2019 retail sales were 68,231,332 MWh. See *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, Doc. Con. Cen. No. 230640027, Evaluation, Measurement and Verification Report for Virginia Electric and Power Company (June 15, 2023) at iii ("2022 EM&V Report").

⁵ Megawatt-hours ("MWh").

1 **Q. HOW DOES THE COMPANY ENDEAVOR TO MEET THE GOALS IN § 56-**
2 **596.2 B 2?**

3 **A.** Broadly speaking, the Company develops and then petitions the Commission for approval
4 of voluntary DSM programs consisting of energy efficiency and peak shaving programs.
5 Approved programs are implemented and administered by third-party program vendors.
6 Program energy and demand savings are determined each year by the Company's third-
7 party evaluation, measurement, and verification ("EM&V") vendor and filed with the
8 Commission annually as the Company's EM&V Report. The energy savings are tabulated
9 and compared to the benchmarks set forth in § 56-596.2 B 2.

10 **Q. WHAT IS THE COMPANY'S PROGRESS MADE TOWARDS MEETING THE**
11 **GOALS IN § 56-596.2 B 2?**

12 **A.** The table below recreates the information found on page iii of the Company's 2022 EM&V
13 Report:⁶

Table 1				
Year	VCEA Target (MWh)	VCEA Target %	Cumulative Reported Savings (MWh)	Savings as % of 2019 Retail Sales
2022	852,892	1.25%	839,243	1.23%
2023	1,705,783	2.50%	1,215,245	1.78%
2024	2,558,675	3.75%	1,591,089	2.33%
2025	3,411,567	5.00%	1,888,441	2.77%
2022	852,892	1.25%	1,283,589	1.88%
2023	1,705,783	2.50%	1,713,926	2.51%
2024	2,558,675	3.75%	2,134,640	3.13%
2025	3,411,567	5.00%	2,461,772	3.61%

⁶ 2022 EM&V Report at iii.

1 As shown above, the Company does not project to meet any of the VCEA goals on
 2 a net basis.⁷ The Company does not project to meet the 2024 and 2025 goals on a gross
 3 basis.⁸ The Commission has not yet made a determination as to whether net or gross
 4 numbers are more appropriate for reporting purposes.⁹

5 **Q. HOW IS THIS RELEVANT TO THE DSM MODELING WITHIN THE IRP?**

6 **A.** Category 1 savings are based on what DSM programming has been approved by the
 7 Commission and is generating savings, and the prospective savings of recently-approved
 8 DSM programs. Category 2 savings represent savings from unidentified, not yet approved
 9 DSM programs and measures, and "fill in the gap" between what the Category 1 programs
 10 and measures are actually achieving (or expected to actually achieve) in EE savings, and
 11 the EE savings required by the Code. This is demonstrated on Figure 4.1.3.1 found on
 12 page 51 of the IRP. Notably, there are two peaks observed in the Category 2 savings trend.
 13 The first peak occurs in 2026, and represents the peak of the increasing Category 2 savings
 14 required to meet the difference between the 5% VCEA target and the projected savings
 15 achieved by the approved Phase I-X DSM programs in 2026. The measures in the Phases

⁷ "Net" savings are adjusted for market effects, such as a reduction in EE savings that are attributable to "free riders" that would have occurred regardless of the DSM Program. It should be noted that the Company does not incorporate the savings attributable to free riders in either the Category 1 or Category 2 savings, thus reducing the total MWh adjustment made to the load curve. See 2023 IRP at 107 and Company's Response to Staff Interrogatory No. 10-201. All referenced Interrogatories are attached as part of ATB-1.

⁸ "Gross" savings are unadjusted for market effects, such as a reduction for any energy efficiency savings that are attributable to "free riders" that would have occurred regardless of the DSM Programs.

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. Annual Report 386-387, Final Order, (Aug. 10, 2022).

1 I-X DSM¹⁰ programs reach the end of their useful lives in 2038, with decreasing EE savings
2 observed as the 2038 drop off point is approached. The second peak in Category 2 savings
3 therefore occurs in 2038, representing the peak of the increasing Category 2 savings needed
4 to fill in the difference between the 5% VCEA goal and the Phase I-X savings in 2038.

5 **Q. DOES STAFF BELIEVE IT IS REASONABLE TO ASSUME THAT THESE**
6 **CATEGORY 2 SAVINGS WILL FILL THE GAP BETWEEN THE COMPANY'S**
7 **APPROVED AND FUTURE DSM PROGRAMS, AND THEREFORE MEET THE**
8 **GOALS OF THE VCEA?**

9 **A.** No, Staff does not believe this is a reasonable modeling assumption, for three reasons, as
10 explained below.

11 **Q. WHAT IS THE FIRST REASON STAFF WHY BELIEVES THAT THIS IS NOT A**
12 **REASONABLE MODELING ASSUMPTION?**

13 **A.** First, there is a question of magnitude regarding the savings the Company can reasonably
14 achieve through the current DSM paradigm. As noted by the Hearing Examiner in his
15 Report in Case No. PUR-2022-00210, "[i]t appears the Company may miss the VCEA
16 savings targets in 2024 and 2025."¹¹ As reported in the Company's 2022 EM&V Report,
17 the Company has a projected shortfall of approximately 1,523,123 MWh against the 2025
18 goal of 5%.¹² To contextualize this number, the total reported savings attributable to

¹⁰ A DSM Phase is an annual portfolio of programs that the Company has implemented. For example, the next DSM case the Company files will be considered Phase XII.

¹¹ *Virginia Electric and Power Company, For approval of its 2022 DSM Update pursuant to VA Code section 56-585.1 A 5*, Case No. PUR-2022-00210, Doc. Con. Cen. No. 230640028, Report of Michael D. Thomas, Senior Hearing Examiner (June 16, 2023) at 90 ("Hearing Examiner's Report").

¹² See 2022 EM&V Report at iii.

1 Phases I-X in 2022 was 839,243 MWh. The Company would need almost double the
 2 combined output of savings from ten different DSM phases in order to meet the 2025 goal
 3 of 5%. Staff does not believe that it is reasonable to assume that the identification and
 4 implementation of DSM programs capable of achieving this amount of savings will occur,
 5 particularly in the short term through the end of 2025.

6 **Q. WHAT IS THE SECOND REASON WHY STAFF BELIEVES THAT THIS**
 7 **ASSUMPTION IS NOT A REASONABLE MODELING ASSUMPTION?**

8 **A.** As previously mentioned, the Category 2 savings represent theoretical future savings that
 9 the Company will achieve after it identifies and implements future theoretical DSM
 10 programs. Staff believes that the Company faces significant headwinds in identifying and
 11 implementing future DSM programs.

12 First, in Case No. PUR-2022-00210, Staff discussed the issue of "declining
 13 potential," *i.e.*, the limited amount of future available DSM savings as an effect of
 14 technological and economic changes, as described by Cadmus¹³ in the Company's Long-
 15 Term Plan ("LTP").¹⁴ Cadmus also made these additional findings in the LTP:¹⁵

- 16 ▪ Dominion Energy already offers all residential measures with economic
 17 potential in its current residential program portfolio.
- 18 ▪ The measures in Dominion Energy's existing programs represent 80% of
 19 available economic potential in the non-residential sector. Only two

¹³ Cadmus is a third-party services Company retained by the Company to assist in developing DSM.

¹⁴ *Virginia Electric and Power Company - For approval of its 2022 DSM Update pursuant to VA Code section 56-585.1 A 5*, Case No. PUR-2022-00210, Doc. Con. Cen. No. 230430114, Prefiled Testimony of Andrew T. Boehnlein (June 16, 2023) at 11-12 ("Boehnlein Direct").

¹⁵ *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, Doc. Con. Cen. No. 211220151, Direct Testimony of Company witness Terry M. Fry (Dec. 14, 2021) at 38, Sched. 1.

1 measures—ENERGY STAR® servers and server power management—
 2 account for nearly all untapped economic potential. Dominion Energy intends
 3 to offer these measures through its Phase X programs.

- 4 ▪ Very few measures offer marginally cost-effective additional energy savings
 5 potential.
 6

7 In that proceeding, Staff concluded that "[i]n short, there are fewer remaining EE
 8 measures available to program, and the measures that do exist are saving less energy than
 9 they used to."¹⁶ Company witness Nathan J. Frost agreed with this point in his rebuttal
 10 testimony.¹⁷

11 Second, the Inflation Reduction Act ("IRA") may hinder the Company's ability to
 12 generate EE savings in the future. Dominion objected to a Staff interrogatory asking the
 13 Company to explain how it anticipates the IRA may impact the Company's progress
 14 towards achieving the EE targets in § 56-596.¹⁸ Subject to the Company's objection,
 15 Dominion also provided the following answer:

16 The Inflation Reduction Act and Infrastructure Investment and Jobs Act do
 17 not directly enable the Company to meet the targets contained within Va.
 18 Code § 56-596. However, vendors who participate in the Company's
 19 contractor network supporting DSM projects in the income-qualifying
 20 space may be able to take advantage of opportunities enabled by the
 21 legislation, thereby potentially reducing future available efficiency savings.

22 The Company states in the IRP at page 65 that "additional guidance from the IRS
 23 will be required for the Company to fully analyze the impact, if any, most of these
 24 provisions will have on the Company." Staff is in general agreement with the Company

¹⁶ See Boehnlein Direct at 13.

¹⁷ *Application of Virginia Electric and Power Company - for approval of its 2022 DSM Update pursuant to VA Code section 56-585.1 A 5*, Case No. PUR-2022-00210, Doc. Con. Cen. No. 23005510127, Rebuttal Testimony of Nathan J. Frost on Behalf of Virginia Electric and Power Company (May 3, 2023) at 11.

¹⁸ Company's Response to Staff Interrogatory No. 2-68, Attachment ATB-1.

1 on this specific point. Additional information will be needed as to when and how these
2 IRA programs will be implemented, and if there is also likely to be competition in the low-
3 income DSM space, given some of the program details that are known today. However,
4 Staff would also note that the High-Efficiency Electric Homes and Rebates Act is limited
5 to households with incomes of up to 150% Area Median Income,¹⁹ so it is not exclusively
6 within the low-income programs that the Company may see future competition.

7 These explain Staff's belief that the Company faces significant headwinds in
8 identifying and implementing new DSM programs in the future.

9 **Q. WHAT IS THE THIRD REASON WHY STAFF BELIEVES THAT ASSUMING**
10 **THE CATEGORY 2 SAVINGS WILL FILL THE GAP BETWEEN THE**
11 **COMPANY'S ACHIEVED DSM SAVINGS AND THE GOALS OF THE VCEA IS**
12 **NOT A REASONABLE MODELING ASSUMPTION?**

13 **A.** The third reason is an issue of timing. As discussed above, the Company is in a deficit
14 when it comes to meeting the goals stipulated in the Code; one that looks, today, to be
15 insurmountable. Assuming a normal filing cadence, the Company's annual December
16 DSM filing will be the last opportunity to add programs and measures that will be counted
17 towards the goals of the VCEA. Given the magnitude of the EE savings necessary to
18 comply with the 2025 goal, and the relatively short timeframe available to the Company to
19 receive Commission approval, it does not seem reasonable to include "unidentified" DSM
20 savings into the model in the short term, through the end of 2025.

¹⁹ Inflation Reduction Act Rebates and Tax Credits, Virginia Department of Energy,
<https://www.energy.virginia.gov/energy-efficiency/Inflation-Reduction-Act.shtml> (last visited Aug. 3, 2023).

1 In the long term, there are significant headwinds to finding and developing new
2 DSM programs and measures that will generate 5% savings through the life of the IRP
3 Planning Period. Given the ambiguity of where future DSM savings will come from, and
4 the Company's track record of converting plans into participation,²⁰ it does not seem
5 reasonable to rely on "unidentified" DSM programs contributing savings in the future,
6 through 2038.

7 **Q. WHAT IS THE RISK TO RATEPAYERS IN MAKING THIS MODELING**
8 **ASSUMPTION?**

9 **A.** DSM savings are effectively a "substitute good." Every MWh saved through DSM
10 substitutes for, or replaces the need for, a corresponding MWh of generation. Additionally,
11 DSM savings can substitute the cost of a renewable energy credit to pair with that MWh
12 of generation for purposes of meeting the Renewable Portfolio Standard.²¹ If the Company
13 makes inaccurate assumptions regarding the Company's ability to save energy via DSM in
14 its modeling, *e.g.*, through the Company modeling an achievement of the energy savings
15 goals established in Code § 56-596.2 B 2, then the costs associated with *not* actually saving
16 that quantity of energy are effectively hidden from view, at least initially. It is only when
17 those projected savings do not come to fruition at some point in the future, and the
18 Company purchases the required substitutes, that ratepayers pay for those costs. In

²⁰ See Hearing Examiner's Report at 43. Later in his report, the Senior Hearing Examiner stated "[t]ime is running out for the Company to significantly increase the level of participation in its DSM Programs and the level of energy savings those programs achieve." *Id.* at 90.

²¹ Va. Code § 56-585.5.

1 contrast, by modeling what is known to be achievable in the short term, the Company could
2 potentially act to mitigate the risks of surprise costs appearing in the future.

3 **Q. WHY DID THE COMPANY MODEL ITS EE SAVINGS INCLUSIVE OF THE**
4 **CATEGORY 2 SAVINGS?**

5 **A.** According to the Company, it was modeling DSM as directed to by the Commission.²²
6 Staff notes that in the 2020 IRP proceeding where the Company modeled no energy
7 efficiency savings targets after 2025, the Commission found that assumption to be
8 unreasonable, and "direct[ed] the Company to continue to model energy efficiency targets
9 after 2025."²³ The Company's modeling of Category 2 savings appears intended to show
10 how the Company would achieve the savings targets established by Code § 56-596.2 B 2,
11 including beyond 2025, albeit done by incorporating unidentified, not yet approved DSM
12 programs and measures; it therefore appears compliant with the Commission's directive.

13 **Q. WHAT IS STAFF'S RECOMMENDATION TO THE COMMISSION ON THIS**
14 **TOPIC?**

15 **A.** As an initial matter, it must be noted that the Company already runs Plan A, its "least-cost
16 plan," assuming only Category 1 savings. For Plans B and E, which represent the
17 Company's plans for addressing reliability and Renewable Portfolio Standards
18 requirements of the VCEA, Staff recommends that in future IRP proceedings the
19 Commission require the Company to provide additional modeling incorporating only the

²² Company's Response to Staff Interrogatory No. 4-131, Attachment ATB-1.

²³ *Commonwealth of Virginia, ex rel. State Corporation Commission, In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 et seq*, Case No. PUR-2020-00035, 2021 S.C.C. Ann. Rept. 190, 194, Final Order (Feb. 1, 2021) ("2020 Final Order").

1 Category 1 savings, i.e. the savings generated by programs that have been approved. Given
2 the discussion above, Staff's opinion is that running plans B and E inclusive of only the
3 Category 1 savings would provide reasonable context to the true costs of those plans in
4 future IRPs.

5 To be clear, these additional runs would be in addition to, not in lieu of, modeling
6 that assumes the Company achieving the energy savings targets contained within Code §
7 56-596.2 B 2. This information would effectively provide the range, or "bracket," of
8 possible future savings attributable to Company-sponsored DSM programs.

Retirement Analysis

9 **Q. DID THE COMPANY PROVIDE A RETIREMENT ANALYSIS OF ITS CARBON**
10 **GENERATING UNITS IN THE IRP?**

11 **A.** Yes, Dominion provided economic analyses demonstrating the Company's calculation of
12 the NPV's for coal-fired, biomass-fired and gas combined cycle generation facilities on a
13 10- and 25-year timeline.²⁴ Calculating an NPV demonstrates the benefit or cost to
14 customers over the Study Period, assuming a unit continues to operate. A negative value
15 indicates that the continued operation of the unit is uneconomic and results in a net cost to
16 customers. Retiring a unit with a negative-value results in a positive net savings, or benefit,
17 to customers.

18 The Company presented a unit analysis under Plan A, Plan B, and Plan B with low-
19 and high-capacity price sensitivities. The Company also provided the estimated costs

²⁴ 2023 IRP at 83-84.

1 associated with transmission and distribution upgrades needed to support a future unit's
2 retirement.²⁵

3 **Q. WHAT ARE THE RESULTS OF THE COMPANY'S 10-YEAR NPV ANALYSIS?**

4 **A.** The table below demonstrates the Company's 10-year unit analysis on an NPV basis:

Ten-Year Cash Flow Analysis Results (NPV \$ Million)²⁶					
Units	NERC Plan A	NERC Plan B	Low Capacity Price	High Capacity Price	Est. T&D Impact
Clover 1 - 2	\$52	\$48	(\$23)	\$110	\$0
Mt. Storm 1 - 3	\$148	\$126	(\$130)	\$352	\$6
VCHEC ²⁷	(\$199)	(\$206)	(\$305)	(\$119)	\$16.8
Altavista	\$21	\$20	\$12	\$27	\$0
Hopewell	\$34	\$32	\$25	\$39	\$0
Southampton	\$36	\$35	\$27	\$42	\$0
Rosemary	(\$4)	(\$4)	(\$26)	\$16	\$0
Bear Garden	\$570	\$557	\$454	\$649	\$6
Brunswick	\$1,217	\$1,186	\$954	\$1,391	\$6.5
Chesterfield 7 - 8	\$316	\$305	\$241	\$362	\$3
Gordonsville 1 - 2	\$122	\$118	\$81	\$150	\$0
Greensville	\$1,600	\$1,562	\$1,301	\$1,792	\$6.5
Possum Point 6	\$410	\$397	\$302	\$482	\$11.7
Warren	\$1,600	\$1,568	\$1,339	\$1,771	\$0

5 As can be seen above, VCHEC is uneconomic over the next ten years under all
6 scenarios provided by the Company. Rosemary is uneconomic under every scenario except

²⁵ *Id* at 83.

²⁶ *Id.* at 83, fig. 5.2.1.1.

²⁷ "Virginia City Hybrid Energy Center"

1 the Company's high-capacity price scenario. Both Clover and Mt. Storm, as generating
2 stations,²⁸ are uneconomic under a low-capacity price scenario.

3 **Q. WHAT ARE THE RESULTS OF THE COMPANY'S 25-YEAR NPV ANALYSIS?**

4 **A.** The table below demonstrates the Company's 25-year retirement analysis on an NPV basis:

Twenty-Five-Year Cash Flow Analysis Results (NPV \$ Million)²⁹				
Units	2023 High Capacity Price	2023 Low Capacity Price	Low Capacity Price	High Capacity Price
Clover 1 - 2	\$423	\$797	\$563	\$828
Mt Storm 1 - 3	\$1,817	\$3,763	\$2,915	\$3,876
VCHEC	\$193	\$792	\$465	\$835
Altavista	\$104	\$165	\$138	\$169
Hopewell	\$120	\$181	\$157	\$184
Southampton	\$125	\$186	\$158	\$190
Rosemary	\$27	\$35	(\$39)	\$45
Bear Garden	\$1,650	\$2,440	\$2,098	\$2,486
Brunswick	\$3,670	\$5,456	\$4,689	\$5,559
Chesterfield 7 - 8	\$989	\$1,603	\$1,389	\$1,631
Gordonsville 1 - 2	\$469	\$775	\$654	\$791
Greenville	\$4,692	\$6,869	\$6,007	\$6,984
Possum Point 6	\$1,344	\$2,103	\$1,788	\$2,145
Warren	\$4,114	\$5,827	\$5,068	\$5,929

²⁸ Generating stations can, in some cases, be comprised of multiple generating units. For example, North Anna Generating Station is comprised of North Anna Unit 1 and North Anna Unit 2. Both Clover units are uneconomic separately and the results in the table above are summed. The same is true for Mt. Storm.

²⁹ 2023 IRP at 84, fig. 5.2.1.2.

1 As shown above, under the low-capacity price forecast, all units are shown to be
2 economic over the Company's 25-year analysis, with the exception of Rosemary.³⁰

3 **Q. DOES THE COMPANY INCORPORATE THE RESULTS OF THE**
4 **RETIREMENT ANALYSIS INTO ITS IRP PLANS?**³¹

5 **A.** According to the Company, the same unit-specific data used in its retirement analysis was
6 included into PLEXOS modeling,³² and PLEXOS was allowed to endogenously optimize
7 the timing of unit retirements in Plans A-C.³³ As reflected in Plans A-C, all units were
8 selected to continue operation over the 15-year Planning Period.³⁴ Under Plans D and E,
9 the Company sought to identify a "glide path,"³⁵ that balanced unit retirement with
10 reliability needs, among other considerations.³⁶ It should be noted that in Plans D and E,
11 the Company retires all carbon emitting units by 2045.

12 **Q. DOES STAFF HAVE ANY COMMENTS ON THE COMPANY'S RETIREMENT**
13 **ANALYSIS?**

14 **A.** Yes, Staff has three comments. First, the Study Period of the IRP is over the course of 15
15 years, while the Planning Period is over 25 years. Although, the Company does not present

³⁰ Rosemary is an oil-fired generating station with a capacity factor of 1%. Thus, it is particularly exposed in a low-capacity price environment, as shown in the Company's 10- and 25-year analyses.

³¹ As part of the 2020 IRP proceeding, the Company committed to modeling unit retirements within Plexos. *See* 2020 Final Order at 10.

³² "PLEXOS" is a unified energy modeling and forecasting software platform.

³³ 2023 IRP at page 83.

³⁴ *Id.* at 25-27.

³⁵ *Id.* at 83.

³⁶ *Id.*

1 a 15-year cash flow analysis in the 2023 IRP, Staff has performed some analyses and
2 included that information below.

3 Second, the results of the retirement analysis are dependent on the underlying
4 assumptions made within the model. For example, changing the capacity price forecast
5 between the Company's low and high-capacity price forecast flips Mt. Storm from an
6 uneconomic resource (negative \$130 NPV) to an economic resource (\$352 NPV), over 10
7 years under Plan B. Staff witnesses Johnson and Glattfelder discuss the Company's
8 underlying IRP modeling assumptions in more detail. For illustrative purposes, the table
9 below compares the Company's retirement analysis with an additional Plan B sensitivity
10 using Staff witness Johnson's capacity price forecast, over 15 years:

Resource	2023 IRP Cash Flow Analysis Results (NPV \$ Millions)				
	2023 Plan A	2023 Plan B	Low Capacity Price	High Capacity Price	2023 Plan B Staff Capacity Price
Clover 1 - 2	\$105	\$136	\$8	\$197	(\$5)
Mt Storm 1 - 3	\$368	\$506	\$40	\$727	(\$4)
VCHEC	(\$210)	(\$168)	(\$348)	(\$82)	(\$364)
Altavista	\$33	\$37	\$22	\$44	\$21
Hopewell	\$47	\$51	\$39	\$58	\$37
Southampton	\$51	\$56	\$40	\$63	\$39
Rosemary	\$5	\$7	(\$35)	\$26	(\$38)
Bear Garden	\$763	\$817	\$629	\$907	\$611
Brunswick	\$1,646	\$1,796	\$1,347	\$1,969	\$1,307
Chesterfield 7 - 8	\$397	\$440	\$323	\$496	\$312
Gordonsville 1 - 2	\$169	\$189	\$122	\$221	\$115
Greenville	\$2,164	\$2,315	\$1,840	\$2,540	\$1,796
Possum Point 6	\$552	\$604	\$431	\$687	\$415
Warren	\$2,083	\$2,201	\$1,782	\$2,399	\$1,744

1 As can be seen above, under Staff witness Johnson's capacity price sensitivity, all
2 units perform worse than the Company's Plan B low-capacity price sensitivity. In the case
3 of Mt. Storm³⁷ and Clover, both stations are projected to be uneconomic over the next 15
4 years.

5 Finally, to the extent that the Commission determines that a unit is uneconomic, the
6 Commission could consider the cost of that unit to be unreasonable in future cost recovery
7 proceedings.

Conclusions and Recommendations

8 **Q. PLEASE SUMMARIZE STAFF'S POSITION ON THE PROPOSED**
9 **PROGRAMS.**

10 **A. Staff makes the following recommendations for the Commission's consideration:**

- 11 ▪ Staff recommends that the Commission require the Company to provide additional
12 modeling incorporating only the Category 1 savings, i.e. the savings generated by
13 programs that have been approved, for Plans B and E in future IRP proceedings.
- 14 ▪ To the extent that the Commission determines that a generating unit is uneconomic
15 based on the NPV included in the Company's cash-flow analysis, the Commission
16 could consider the cost of that unit to be unreasonable in future cost recovery
17 proceedings.

18 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

19 **A. Yes.**

³⁷ It should be noted that Mt. Storm, as a generating station, is dragged down by Units 1 and 3, which have negative NPVs of (\$22) and (\$3) million, Unit 2 remains at a positive NPV under Staff witness Johnson's capacity price forecast at a NPV of \$21 million.

ATTACHMENT

ATB-1

Virginia Electric and Power Company
Case No. PUR-2023-00066
Virginia State Corporation Commission Staff
Set 10

The following response to Question No. 201 of the Tenth Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on July 24, 2023, was prepared by or under the supervision of:

Edmund J. Hall
Energy Market & Demand Side Planning Strategic Advisor
Dominion Energy Services, Inc

Question No. 201

Please refer to page 107 of the IRP. Why did the Company exclude free-ridership effects from the identified and unidentified DSM sources?

Response:

The Company only includes the incremental net benefits of DSM programs in its load forecast. The effects of participants who would have implemented a program measure or practice in the absence of DSM program are already included/embedded in the Company's load forecast. If the Company included free-ridership effects in the DSM sources, it would be double counting those energy savings.

Virginia Electric and Power Company
Case No. PUR-2023-00066
Virginia State Corporation Commission Staff
Set 2

The following response to Question No. 68 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on June 14, 2023, was prepared by or under the supervision of:

Edmund J. Hall
Energy Market & Demand Side Planning Strategic Advisor
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 68 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on June 14, 2023, was prepared by or under the supervision of:

Vishwa B. Link
McGuireWoods LLP

Question No. 68

Beyond what is provided on Page 7, 65, and 66 of the Company's IRP, please provide a narrative explanation of how the Company anticipates the Inflation Reduction Act may impact the Company's progress toward achieving the energy efficiency and demand-side management savings targets contained within Code § 56-596.

Response:

The Company objects to this request because it would require original work, and it is vague and speculative. As the Company states on page 65 of the 2023 Plan, "additional guidance from the IRS will be required for the Company to fully analyze the impact, if any, most of these provisions will have on the Company." Subject to and notwithstanding these objections, the Company provides the following response.

The Inflation Reduction Act and Infrastructure Investment and Jobs Act do not directly enable the Company to meet the targets contained within Va. Code § 56-596. However, vendors who participate in the Company's contractor network supporting DSM projects in the income-qualifying space may be able to take advantage of opportunities enabled by the legislation, thereby potentially reducing future available efficiency savings.

Virginia Electric and Power Company
Case No. PUR-2023-00066
Staff Set 4

The following response to Question No. 131 of the Fourth Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on July 3, 2023, was prepared by or under the supervision of:

Edmund J. Hall
Energy Market & Demand Side Planning Strategic Advisor
Dominion Energy Services, Inc.

Question No. 131

Please refer to the following:

- (a) Section 4.1.3 of the 2023 IRP filing which states in part: " The second category ("Category 2 Programs" or "generic" EE) represents unidentified EE programs and measures designed to meet (i) the energy savings targets in the VCEA for 2022 through 2025; (ii) a 5% energy savings target for 2026 and beyond";
- (b) Virginia Electric and Power Company's June 15, 2023 Evaluation, Measurement & Verification Report prepared by DNV GL (Volumes 1-6) at Table 1 of Page iii; and,
- (c) The rebuttal testimony of Company witness Nathan J. Frost in Case No. PUR-2022-00210, page 11, lines 9-12, which states " to date, the Company 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".
 - (i) Does the Company believe that the Category 2 energy efficiency savings is still a valid model input? Please explain why or why not.

Response:

Please see page 4 of the Commission's Final Order in Case No. PUR-2020-00035. The Company believes including the Category 2 programs in the model adheres to the Commission's March 9, 2020, Order in that proceeding.