Appalachian Mountain Advocates

West Virginia
Post Office Box 507
Lewisburg, WV 24901
(304) 645-9006

Virginia
415 Seventh Street NE
Charlottesville, VA 22902
(434) 529-6787

www.appalmad.org

May 23, 2023

BY ELECTRONIC FILING

Mr. Bernard Logan, Clerk
c/o Document Control Center
STATE CORPORATION COMMISSION
Tyler Building — First Floor
1300 East Main Street
Richmond, Virginia 23219

RE: Petition of Virginia Electric & Power Company for revision of rate adjustment clause Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia

Case No. PUR-2023-00005

Dear Mr. Logan,

Please find attached for filing in the above-captioned case the **Public Version** of the Direct Testimony of Devi Glick on behalf of the Sierra Club. The Club is also filing under separate cover a Confidential / Extraordinarily Sensitive Supplement to this Testimony, which will consist of fourteen unredacted pages of the testimony and six additional exhibits.

Please do not hesitate to contact me if you have any questions regarding this filing.

Thank you,

Evan Dimond Johns
APPALACHIAN MOUNTAIN ADVOCATES
Post Office Box 507
Lewisburg, West Virginia 24901
Phone: (434) 738 – 1863
E-Mail: ejohns@appalmad.org

Copied by Electronic Mail:
Commission Staff
Service List

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

PETITION OF

VIRGINIA ELECTRIC & POWER COMPANY **Case No. PUR-2023-00005**

For revision of rate adjustment clause: Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia.

DIRECT TESTIMONY

of

DEVI GLICK

on behalf of the

SIERRA CLUB

May 23, 2023

(PUBLIC REDACTED VERSION)

Summary of the Direct Testimony of Devi Glick

Dominion has not demonstrated the prudence of investing in either the Temporary or Permanent Chillers Projects at Mount Storm. Dominion delayed compliance with the temperature discharge differential rules on the gamble that it would receive a variance, and now the utility is inappropriately asking ratepayers to pay $31 million in operations and maintenance costs to rent the Temporary Chillers necessary to comply with the October 31, 2022 deadline. Dominion has not publicly disclosed its estimates for the full Permanent Chiller Project, continuing a pattern of the Company presenting an incomplete or piecemeal picture to the Commission of the likely cost and risk associated with current and future environmental regulations at the plant.

Dominion has also not demonstrated the prudence of moving forward with the Permanent Chiller Project relative to replacement and retirement of the plant. Dominion's most recent (2022) analysis, conducted at the time it was deciding to move forward with the Chiller Project, and other recent historical analysis demonstrate a pattern of declining projected economic performance. Dominion also failed to evaluate the regulatory risks associated with continued reliance on Mount Storm, including the risk of additional environmental compliance costs from increased stringency in effluent limitation guidelines regulations, mercury air toxins standards regulations, and carbon dioxide prices at any point during the Project.

I recommend that the Commission disallow the $31 million in O&M costs that Dominion incurred for the Temporary Chiller Project because these costs were avoidable through more timely action by Dominion. I also recommend that the Commission not allow recovery, in current and future dockets, of the $22 million in costs Dominion is seeking for the Permanent Chiller Project until Dominion has presented analysis demonstrating the prudence of continued investment in the plant relative to retirement and replacement and alternatives. I also recommend that the Commission require Dominion to present a more comprehensive and transparent evaluation of the forward-looking costs of environmental compliance likely required to maintain Mount Storm.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION & PURPOSE OF TESTIMONY

Q Please state your name and occupation.

A My name is Devi Glick. I am a Senior Principal at Synapse Energy Economics, Inc. (Synapse). My business address is 485 Massachusetts Avenue, Suite 3, Cambridge, Massachusetts 02139.

Q Please describe Synapse Energy Economics.

A Synapse is a research and consulting firm specializing in energy and environmental issues, including electric generation, transmission and distribution system reliability, ratemaking and rate design, electric industry restructuring and market power, electricity market prices, stranded costs, efficiency, renewable energy, environmental quality, and nuclear power. Synapse's clients include state consumer advocates, public utilities commission staff, attorneys general, environmental organizations, federal government agencies, and utilities.

Q Please summarize your work experience and educational background.

A At Synapse, I conduct economic analysis and write testimony and publications that focus on a variety of issues related to electric utilities. These issues include power plant economics, electric system dispatch, integrated resource planning, environmental compliance technologies and strategies, and valuation of distributed energy resources. I have submitted expert testimony before state utility regulators in more than a dozen states.

In the course of my work, I develop in-house models and perform analysis using industry-standard electricity power system models. I am proficient in the use of spreadsheet analysis tools, as well as optimization and electric dispatch models. I have directly run EnCompass and PLEXOS and have reviewed inputs and outputs for several other models.

Before joining Synapse, I worked at Rocky Mountain Institute, focusing on a wide range of energy and electricity issues. I have a master's degree in public policy and a master's degree in environmental science from the University of Michigan, as well as a bachelor's degree in environmental studies from Middlebury College. I have more than 10 years of professional experience as a consultant, researcher, and analyst. A copy of my current resume is attached as Exhibit DG-1.

Q On whose behalf are you testifying in this case?

A I am testifying on behalf of the Sierra Club.

Q Have you testified previously before the State Corporation Commission of Virginia?

A Yes, I submitted testimony in Commission Case Nos. PUR-2022-00006 and PUR-2018-00195—both cases in which Virginia Electric and Power Company (Dominion or the Company) requested recovery of costs associate with effluent limitation guidelines (ELG) and coal combustion residuals (CCR) compliance.

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

A In this proceeding, I reviewed the request by Dominion for recovery of the Lake Discharge Temperature Control System Project (the Chiller Project) that was required to be operational by October 2022. This includes the cost of a temporary chiller system (the Temporary Chillers) and part of the cost of a permanent chiller system (the Permanent Chillers). I reviewed the timeline for Dominion's compliance with the Company's National Pollutant Discharge Elimination System (NPDES) permit and the related West Virginia Department of Environmental Protection (WVDEP) Administrative Orders to evaluate whether any of the temporary chiller costs were avoidable through more prudent regulatory compliance efforts. I reviewed the environmental compliance spending Dominion has incurred at Mount Storm in recent years, and the incremental and incomplete analysis Dominion has put forward to support each investment. I also evaluated the prudence of the Company's decision to continue investing in and operating Mount Storm relative to retirement and replacement with alternatives.

Q How is your testimony structured?

A In Section 2, I summarize my findings and recommendations for the Commission. Then, in Section 3, I provide an overview of the Mount Storm plant and introduce the Chiller Project for which the Company requests cost recovery in this docket.

In Section 4, I summarize other recent environmental compliance spending by Dominion, including for the Bottom Ash Waste Transport (BAWT) project. I

discuss other likely future environmental compliance costs Dominion will incur in the near future. I review the Company's incomplete cost projections for the Chiller Project, and Dominion's history of making large environmental investments in the plant supported by incomplete forward-looking analyses—a pattern that continued most recently with Dominion's analysis for the BAWT project.

In Section 5, I summarize the regulatory timeline for the Chiller Project and the period over which Dominion was aware that it was out of compliance with its NPDES permit. I evaluate whether Dominion could have reasonably avoided any of the costs associated with the Temporary Chiller Project.

In Section 6, I review all the data available to me and to Dominion at the time it decided to move forward with the Chiller Project and evaluate the prudence of the Company undertaking the Permanent Chiller Project. I review the Company's projections on the cost and the value the plant would provide, and then I calculate the value it actually *did* provide.

In Section 7, I discuss the market and regulatory risks that the Company faces over the next decade in continuing to rely on coal and operate Mount Storm. These risks include the additional, more stringent ELG levels proposed on March 29, 2023, and the additional, more stringent Mercury and Air Toxics Standards (MATS) proposed on April 24, 2023.

Q What information do you rely upon for your analysis, findings, and observations?

A My analysis relies primarily on the workpapers, exhibits, and discovery responses of Dominion's witnesses. I also rely on other publicly available documents and data, which I cite throughout my testimony.

Q Are you sponsoring any exhibits in support of your testimony?

A Yes. I am sponsoring the following exhibits:

No.	Description of Exhibit	Protected Status
DG-1	Resume of Devi Glick	Public
DG-2	Summary of Company's Studies of Mount Storm NPV (2017–2022)	Extraordinarily Sensitive
DG-3	Company's Response to Sierra Club Discovery Request No. 2-27	Public
DG-4	Company's Response to Sierra Club Discovery Request No. 2-32	Public
DG-5	Company's Response to Sierra Club Discovery Request No. 2-5	Public
DG-6	Company's Response to Sierra Club Discovery Request No. 2-9	Public
DG-7	Company's Response to Sierra Club Discovery Request No. 2-33	Public
DG-8	Company's Response to Sierra Club Discovery Request No. 4-1	Public
DG-9	Generating Unit-Level Costs & Loadings Estimates by Regulatory Option, EPA Doc. No. SE10381 (February 28, 2023)	Public

No.	Description of Exhibit	Protected Status
DG-10	Company's Response to Sierra Club Discovery Request No. 5-1	Public
DG-11	Company's Response to Sierra Club Discovery Request No. 3-4	Public
DG-12	Company's Response to Sierra Club Discovery Request No. 2-8	Public
DG-13	Company's Response to Sierra Club Discovery Request No. 2-14 ES Attachments: MS Delta T Overview_20220124a_CFG; Executive Update 041122; MTSE-89402-LDTC 316A-Executive Updated 052622; MTSE-89402-LDTC 316A-Executive Updated 060922; MTSE-89402-LDTC 316A-Executive Updated 063022; and MSO LDTC Executive Update	Extraordinarily Sensitive
DG-14	Company's Response to Sierra Club Request No. 2-16, ES Attachment Weekly Updates DTC	Extraordinarily Sensitive
DG-15	Company's Response to Sierra Club Request No. 5-13, ES Attachment Sierra Club Set 5-13 (JWS)	Extraordinarily Sensitive
DG-16	Company's Response to Sierra Club Request No. 3-1, ES Attachment 2017-2022 System Capital Plan Final – MS and Environ Only ES	Extraordinarily Sensitive
DG-17	Company's Response to Sierra Club Discovery Request No. 6-1	Public
DG-18	Company's Response to Sierra Club Discovery Request No. 2-23	Public
DG-19	Company's Response to Sierra Club Discovery Request No. 5-10	Public
DG-20	Company's Response to Sierra Club Request No. 5-6, Attachment Sierra Club Set 05-06 (TNE)	Public

No.	Description of Exhibit	Protected Status
DG-21	Company's Response to Sierra Club Request No. 2-20, Attachment Sierra Club 02-20.1 (WJC)	Public
DG-22	Company's Response to Sierra Club Discovery Request No. 2-30	Public
DG-23	Company's Response to Sierra Club Request No. 2-27, ES Attachment Sierra Club Set 02-27 (BKC)	Extraordinarily Sensitive
DG-24	Company's Response to Sierra Club Request No. 2-18, Attachment 02-18 (WWJ)	Public
DG-25	Company's Response to Sierra Club Request No. 2-19, Attachment 02-19 (WWJ)	Public
DG-26	Company's Response to Sierra Club Discovery Request No. 3-3	Public

2. FINDINGS AND RECOMMENDATIONS

Q Please summarize your findings.

A My primary findings are:

1. Dominion has not demonstrated the prudence of investing in the Temporary Chiller Project. Dominion could have avoided the $31 million in operations and maintenance (O&M) cost for the Temporary Chiller Project by beginning installation of a Permanent Chiller Project sooner, rather than gambling on a variance and delaying compliance until it was too late to bring online the permanent solution by October 2022.

2. Mount Storm has earned only marginal net revenues over the past five years and is projected to earn negative-to-marginal net revenues over the

next decade (based on the Company's most recent IRP modeling from 2022 and its updated October 2022 modeling). Under more realistic and updated assumptions, including updated natural gas prices and renewable cost assumptions that reflect the impact of the Inflation Reduction Act (IRA), Mount Storm is likely to incur costs in excess of its projected revenues.

3. Dominion knew for over a decade that it was violating its NPDES permit, yet the Company refused to evaluate or model the cost of compliance before this current docket and did not disclose the additional costs of compliance to the Commission.

4. In this docket, the Company has presented the cost of compliance for only a portion of the Chiller Project. This aligns with a pattern of presenting incomplete or piecemeal analysis to the Commission that underestimates, or otherwise does not fully capture, the likely cost and risk associated with compliance with future environmental regulations at the plant.

5. Dominion failed to evaluate other risks of continued reliance on Mount Storm, including the risk of additional environmental compliance costs from increased stringency in environmental regulations such as ELG regulations, MATS regulations, and carbon dioxide (CO_2) regulations.

Based on those findings, I offer the following recommendations:

1. The Commission should deny Dominion's request to recover through Rider E the $31 million in O&M costs associated with renting and installing the Temporary Chillers on the basis that the Company could have avoided these costs if it had acted in a timely and reasonable manner to install the Permanent Chillers.

2. The Commission should deny Dominion's request to recover the $22 million in capital costs associated with the Permanent Chillers, both in the current and any subsequent Rider E dockets until such time as the Company demonstrates the prudence of continuing to maintain and operate the plant (including consideration of all known and future costs for environmental compliance with the ELG and MATS rules) relative to retirement and replacement with alternatives.

3. MOUNT STORM PLANT BACKGROUND

Q Describe the Mount Storm Power Station.

A Mount Storm is a three-unit power plant located near Bismarck, West Virginia with a combined capacity of approximately 1621 MW.[1] Unit 1 is 570 MW, Unit 2 is 570 MW, and Unit 3 is 522 MW.[2] The Units were built in 1965, 1966, and 1973

1 Direct Testimony of Rick D. Boyd (Boyd Direct) at 3.

2 Company's Response to Sierra Club Request No. 2-27(a), attached as Exhibit DG-3.

respectively.[3] The Company has not announced retirement dates for the units; but for planning purposes Dominion indicated that it modeled Mount Storm as retired in 2044 in the 2022 IRP Update.[4] The units will be between 70 and 80 years old at that time. The plant is 100 percent owned by Dominion.

Q What is Dominion asking for in its application?

A In this docket, Dominion is asking for recovery through Rider E for costs associated with the Chiller Project, which Dominion refers to as the Lake Discharge Temperature Control System Project. The Project is designed to meet an October 31, 2022, compliance deadline in Mount Storm's NPDES permit and to comply with WVDEP water quality standards. The Chiller Project is made up of two projects: a Temporary Chiller Project where the Company rented chiller equipment to meet the October 2022 deadline and a Permanent Chiller Project that will replace the rented chillers. The Company plans to complete the construction of the Permanent Chillers in Q1 2025.[5] Specifically, Dominion seeks

---

3 ENERGY INFORMATION ADMINISTRATION, Form 860: Annual Electric Generator Report (2021), available at https://www.eia.gov/electricity/data/eia860/.

4 Company's Response to Sierra Club Request No. 2-32, attached as Exhibit DG-4.

5 Company's Response to Sierra Club Request No. 2-5, attached as Exhibit DG-5.

to recover $22 million in projected capital costs (excluding financing costs)[6] and $31 million in total O&M through the current Rider E Docket.[7]

These costs cover the capital and O&M costs for the Temporary Chillers, and some of the capital costs for the Permanent Chillers. The combined $53 million Dominion is requesting does not cover the full cost for the Permanent Chiller Project: the Company indicated that there are additional capital and O&M costs required for the Permanent Chiller Project that Dominion has not yet evaluated and the Company will seek to recover those costs in a future Rider E docket.[8] This means that Dominion is asking the Commission to approve recovery for part of the Chiller Project now and part in a future docket, without providing any transparency to the Commission or the ratepayer on the total expected Chiller Project cost.

Q What is the remaining undepreciated balance for Mount Storm?

A As shown in Table 1 below, Dominion has a large undepreciated plant balance at Mount Storm totaling more than $515 million.

---

6 Boyd Direct at 8.

7 *Id.* at 9.

8 Company's Response to Sierra Club Request No. 2-9, attached as Exhibit DG-6.

Table 1: Remaining Plant Balance at Mount Storm as of June 30, 2022

Unit	Balance (Millions)
Mount Storm Unit 1	$175
Mount Storm Unit 2	$142
Mount Storm Unit 3	$198
Total	**$515**

Source: Company's Response to Sierra Club Request No. 2-33, attached as Exhibit DG-7.

Q Is it concerning that Dominion is seeking to make another large investment in Mount Storm on top of the current undepreciated balance?

A Yes. The Chiller Project will add to the plant costs that will be passed on to ratepayers. And as I discuss in Section 7, the Chiller Project is just one of several large investments that Dominion will likely be required to make at Mount Storm if it continues to operate the plant. All of these cost considerations should factor into whether Mount Storm continues to operate.

In the eyes of a utility, a large undepreciated balance is a barrier to retirement. Dominion has an incentive to keep the plant online because, if it retires any of the units early, it risks not recovering the remaining undepreciated balance. But to keep the plant online, the Company will need to continue investing in O&M as well as any necessary future major capital expenditures. If future environmental regulations require additional, large capital investments or increased O&M, and the Company opts to continue investing in the plant rather than retiring it, those

expenses will further inflate rates and the undepreciated plant balance and make early retirement even more of a challenge. Then, when the plant inevitably retires before 2044, the Company will be left with substantial stranded assets.

4. DOMINION HAS DISPLAYED A PATTERN OF PIECEMEAL & OPAQUE ENVIRONMENTAL COMPLIANCE PLANNING

Q What environmental controls has Dominion already installed at Mount Storm?

A Dominion is currently installing the Bottom Ash Water Transport (BAWT) Project, which it expects to complete later this year. The project is required to comply with the U.S. Environmental Protection Agency's (EPA's) 2020 ELG Rule, which is incorporated into Mount Storm's NPDES permit. Dominion projects the complete BAWT project will cost approximately $120 million in capital costs (excluding financing costs) and $17 million in O&M costs. Dominion also installed selective catalytic controls (SCR) at Mount Storm to control nitrogen oxide (NO_x) emissions, as well as wet scrubbers to control sulfur dioxide, mercury, and particulate matter emissions. Additionally, Dominion installed electrostatic precipitators to control particulate matter at the plant when it first came online.[9] These emission control projects together cost just under one billion dollars in $2022.

9 EIA Form 860, *supra* note 3.

Q What other environmental controls is Dominion likely to have to install at Mount Storm in the near future?

A EPA proposed a new MATS rule on April 24, 2023, which would strengthen the filterable particulate matter pollutant emission standard from 0.030 pounds per million British thermal units of heat input (lb/MMBtu) to 0.010 lb/MMBtu for all existing coal-fired electric utility steam generating units. EPA is also soliciting comment on an even more stringent standard of 0.006 lb/MMBtu or lower.[10] The EPA has already determined that plants, like Mount Storm, using electrostatic precipitators to control particulate matter will need to upgrade their electrostatic precipitators to comply with the 0.010 lb/MMbtu standard, as well as install fabric filters to comply with the 0.006 lb/MMBtu standard.[11] At a minimum, Dominion will need to implement potentially costly upgrades to comply with this standard and may need to install a new baghouse at Mount Storm, requiring major capital investments. Mount Storm is, in fact, one of only a few plants in the United States that will not be able to meet the proposed standard without upgrades.

---

10 *National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units Review of the Residual Risk and Technology Review*, 88 FEDERAL REGISTER 24854 (Proposed April 24, 2023), available at https://bit.ly/43emrFx.

11 ENVIRONMENTAL PROTECTION AGENCY, *2023 Technology Review for the Coal- and Oil-Fired EGU Source Category* (2023), available at https://bit.ly/3Mij2yR.

In addition, EPA's proposed March 2023 Supplemental Steam Electric ELG and Standards Rule (Supplemental ELG Rule) includes a zero-discharge requirement and a proposed combustion residual leachate discharge requirement.[12] Dominion claims the BAWT system that it is currently installing should meet the zero-discharge requirement, but the Company has been silent on the combustion residual leachate discharge requirements. Its current system likely does not meet those requirements, and compliance will require future plant upgrades.[13] Admittedly, those upgrades will be required regardless of when Mount Storm retires. But the Supplemental ELG Rule illustrates EPA's continuing effort to rein in the disproportionate environmental footprint of coal-fired generation. It also highlights the importance of transparent, forward-looking decision-making for plants subject to increasingly stringent regulation.

Q How much does Dominion anticipate the Chiller Project will cost?

A Dominion failed to publicly disclose its cost estimates for the full Chiller Project, inclusive of both the Temporary Chiller and Permanent Chiller Projects. The estimates Dominion did provide in support of its request in this docket are $22 million in capital costs and $31 million in O&M. This covers the cost of the

12 Company's Response to Sierra Club Request No. 4-1, attached as Exhibit DG-8.

13 ENVIRONMENTAL PROTECTION AGENCY, *Generating Unit-Level Costs & Loadings Estimates by Regulatory Option*, Document Control No. SE10381 (February 28, 2023), attached as Exhibit DG-9.

Temporary Chillers and a portion of the costs for the Permanent Chiller equipment. Specifically, the planning, rental, installation, and operation of air-cooled chiller equipment designed to achieve short-term compliance (the Temporary Chillers). Additionally, it includes the costs associated with the design, engineering, fabrication, delivery, and purchase of the air-cooled chiller equipment that will constitute the permanent solution, along with related plant modifications (the Permanent Chillers).[14] Dominion's estimates do not, however, include ongoing O&M costs or construction and installation costs for the Permanent Chillers.

Q What do we know about the cost estimate Dominion has provided and the costs the Company has already incurred for the Chiller Project?

A We know that the $31 million in O&M costs Dominion is requesting in this docket is mostly allocated to the rental cost for the Temporary Chiller system.[15] The $22 million in capital costs is allocated to the Permanent Chiller system (or both the temporary and permanent system).[16]

We also know that Dominion has incurred $13.8 million in spending as of February 2023—$11.2 million is for the Temporary Chillers, all of which is O&M;

14 Direct Testimony of Rick D. Boyd (Boyd Direct) at 8.

15 *Id.* Schedule 5.

16 Company's Response to Sierra Club Request No. 5-1, attached as Exhibit DG-10.

and the remaining $2.6 million for the Permanent Chillers, the majority of which is capital investment.[17] The Company's current spending comprises only parts of the total $31 million and $22 million the Company is requesting in the Rider E docket.

Q Has Dominion provided any public estimates for the outstanding Permanent Chiller costs?

A No. Dominion stated that the "cost estimates for construction and installations are in the earlier stages of development,"[18] and that for the ongoing O&M costs, "the Company is not yet able to project the likely ongoing O&M costs for the Permanent System."[19] Dominion plans to recover these incremental costs in a future Rider E docket. When asked in discovery to provide any estimates for the outstanding costs, Dominion refused.[20]

This is concerning for several reasons. First, **[BEGIN CONFIDENTIAL / ES]** [redacted]

17 Exhibit DG-5; Company's Response to Sierra Club Request No. 3-4, attached as Exhibit DG-11.

18 Boyd Direct at 8.

19 *Id.* at 9.

20 Company's Response to Sierra Club Request No. 2-8, attached as Exhibit DG-12; Exhibit DG-6.

[redacted] **[END CONFIDENTIAL / ES]** While it is understandable for Dominion to have uncertainty around the final Chiller Project

21 *See* Company's Response to Sierra Club Request 02-14, *ES Attachment MS Delta T Overview_20220124a_CFG (CONF-ES)*, *ES Attachment Executive Update 041122 (CONF-ES)*, *ES Attachment MTSE–89402–LDTC 316A–Executive Updated 052622 (CONF-ES)*, *ES Attachment MTSE–89402–LDTC 316A–Executive Updated 060922 (CONF-ES)*, *ES Attachment MTSE–89402–LDTC 316A–Executive Updated 063022 (CONF-ES)*, *ES Attachment MSO LDTC Executive Update (CONF-ES)*, collectively attached as Confidential / ES Exhibit DG-13.

22 *Id.* at *ES Attachment MSO LDTC Executive Update* (*CONF-ES*).

23 Company's Response to Sierra Club Request No. 2-16, *ES Attachment Weekly Updates DTC (CONF-ES)*, attached as Confidential / ES Exhibit DG-14; Company's Response to Sierra Club Request No. 5-13, *ES Attachment Sierra Club Set 05-13 (JWS) CONF-ES*, attached as Confidential / ES Exhibit DG-15.

cost, it is not reasonable for the Company to refuse to transparently provide the Commission with at least a range of its existing, and known, cost estimates. The Company regularly relies on uncertain input assumptions in its resource planning analysis—including market prices, gas prices, and new resource capital costs. There is no reason why it cannot provide cost estimates for the full Chiller Project as well.

Second, it is concerning because Dominion is once again not providing the Commission with a full picture of the costs required to keep Mount Storm online. This continues a trend of the Company controlling what cost information it shares with the Commission and providing piecemeal and incomplete information on the known and likely future costs required to maintain Mount Storm.

Q Explain Dominion's history of transparency with environmental compliance costs.

A Dominion has regularly refused to provide or include in timely analysis the estimated cost of compliance with all likely future environmental regulations. Specifically, in the 2022 Rider E docket filing, Dominion did not include the

estimated costs of the Chiller Project in any of its modeling, and refused to even estimate what the cost of compliance would be.[24]

The problem with this piecemeal approach is that (1) it requires the Commission to make each individual environmental compliance decision based on an incomplete picture of forward-going costs, and based solely on the costs that Dominion has opted to disclose and recover at that time; (2) it locks Dominion into a pattern of making incremental environmental upgrade decisions at Mount Storm, which when evaluated individually may seem economically marginal or reasonable, but when evaluated in conjunction with all other known, environmental compliance costs, some of which are now locked in, would show that retirement and replacement was economically preferable.

Dominion also has demonstrated a pattern of substantially underestimating the cost of compliance at the beginning of its environmental projects. **[BEGIN CONFIDENTIAL / ES]** [redacted]

24 *Petition of Virginia Electric & Power Company for Revision of Rate Adjustment Clause Rider E etc.*, Case No. PUR-2022-00006, Transcript of Proceedings at 156:14–156:19 (July 13, 2022), available at https://bit.ly/3WiZj6y.

25 *See* Confidential / ES Exhibit DG-14.

[redacted] **[END CONFIDENTIAL / ES]**

Dominion currently projects the BAWT project will cost $120 million.[27]

Q Explain more about how incremental decision-making locks Dominion ratepayers into an increasingly expensive legacy power plant.

A When Dominion management approved the Chiller Project in early 2022, the majority of the BAWT project had already been installed. This means that after spending $120 million on the BAWT project Mount Storm, Dominion was now going to have to spend tens of millions more to comply with its NPDES Permit and WVDEP Administrative Orders, an issue it had known about for over a decade. As of the filing of this case, the Company's most recent analysis—its 2022 IRP update—showed that continuing to operate this plant relative to alternatives was not economic.

This put Dominion in a bad position: if it admitted that Mount Storm was no longer economic, before the BAWT project was even operational, it would be admitting that it had just wasted over one hundred million dollars of ratepayers' money on an investment that was avoidable with a 2028 retirement. And this

---

26 Company's Response to Sierra Club Request No. 3-1, *ES Attachment 2017-2022 System Capital Plan Final – MS and Environ Only*, attached as Confidential / ES Exhibit DG-16; Company's Response to Sierra Club Request No. 6-1, attached as Exhibit DG-17.

27 Boyd Direct at 4.

position was avoidable through better modeling and planning. The Commission could then choose to not allow Dominion to recover its full net plant balance, or at least its return on the plant balance, when the plant retired earlier than projected.

Prior to 2022, Dominion never modeled the cost of compliance with temperature differential permit requirements, despite knowing for more than a decade (as discussed in the next section) that it was out of compliance. Modeling the additional tens of millions required for the chillers on top of the BAWT project would have resulted in Mount Storm looking less economic (especially in the pause between Phase 1 and Phase 2 of the BAWT project). Yet the first time Dominion modeled the cost of chillers as part of any of its forward-looking economic analysis was as part of its 2022 IRP Update Analysis, once the BAWT costs were no longer avoidable and had already been approved by the Commission.[28] Here the Company modeled $46.7 million in capital costs over the year 2022–2024 for the Chiller Project.[29] **[BEGIN CONFIDENTIAL / ES]** [redacted] **[END CONFIDENTIAL / ES]**

28 Company's Response to Sierra Club Request No. 2-23(a), attached as Exhibit DG-18.

29 Company's Response to Sierra Club Request No. 5-10, attached as Exhibit DG-19.

30 *See* Confidential / ES Exhibit DG-14.

At best, this was poor resource planning. At worst, this was Dominion taking advantage of the Rider process and the Commission's limited view of the economics of the Mount Storm plant.

5. DOMINION'S DECISIONS TO DELAY COMPLIANCE WITH TEMPERATURE DIFFERENTIAL LIMITS AT MOUNT STORM WERE IMPRUDENT AND RESULTED IN THE AVOIDABLE AND UNNECESSARY COSTS OF A TEMPORARY SYSTEM

Q Can you provide a timeline of Dominion's compliance with, and violation of, its NPDES permit related to the water temperature differential limitations?

A In 2008, WVDEP amended Dominion's NPDES permit to limit the temperature of water discharged from Outlet 001, which is located at the weir below the Dam. These limits included (1) seasonal temperature limits and (2) instantaneous temperature limits. For the seasonal temperature limits, WVDEP directed that the water temperature may not exceed 73 degrees Fahrenheit (F) from December through April and 87 degrees F from May to November.[31] Additionally, for the instantaneous temperature limits the permit limited the instantaneous difference between the water temperature downstream at Outlet 001 and upstream at the intake to Mount Storm Lake to less than five degrees F at any time.[32]

---

31 WV/NPDES Permit No. WV0005525 (April 14, 2008).

32 Direct Testimony of Thomas N. Effinger (Effinger Direct) at 4.

WVDEP required Dominion to comply with both of these limits by July 2014 or obtain a section 316(a) variance.[33] Section 316(a) of the Clean Water Action allows states to grant a variance to thermal requirements if generators are able to demonstrate that despite the thermal differential, there is a "balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made."[34]

From 2009–2014, the Company began using lake management and operational techniques to comply with the seasonal maximum temperature limit requirement. These efforts were not designed to comply with the 5-degree F instantaneous differential limit.[35] Dominion did not pursue any additional efforts to comply with the 5-degree F instantaneous differential limit. Between 2019 and 2021, Dominion also began to relocate certain fish species from nearby sources to the balanced indigenous population (BIP) Stretch downstream of Mount Storm Lake in an effort to establish a BIP near Mount Storm and gain a section 316(a) variance.[36]

Using lake management and operational techniques, the Company was required to comply with the seasonal maximum temperature limits by the July 2014 deadline.

---

33 *Id.* at 7.

34 *Id.* at 4–5.

35 Direct Testimony of Ranajit Sahu (Sahu Direct), Exhibit RS-1 at 3–4.

36 Effinger Direct at 8.

However, the Company was not able to comply with the 5-degree F temperature differential limitation, nor was it granted a 316(a) variance by July 2014.[37]

Dominion then spent the next seven years transporting fish into the lake in an attempt to gain a 316(a) variance, instead of implementing a solution to reduce the temperature of the water it was discharging into the lake. Amendments to Administrative Orders issued by WVDEP between 2020 and 2021 established a final deadline of October 31, 2022 to comply with the temperature differential limit or obtain a 316(a) variance.[38] The Company continued to unsuccessfully assert to WVDEP that it had achieved a BIP on numerous occasions, and after WVDEP indicated that a BIP had not been established on January 26, 2021, Dominion finally began efforts to comply with the temperature variance it had known about since 2008.[39] On March 2, 2022 the Company issued an RFP for the temporary chillers and began work on the Temporary Chiller Project.[40] Dominion was still seeking to obtain a 316(a) variance even after beginning the Temporary Chiller Project and unsuccessfully asked WVDEP to grant them one on March 14,

37 *Id.* at 9.

38 *Id.* at 9–10.

39 *Id.* at 10.

40 *Id.*; Boyd Direct Schedule 7.

2022.[41] The Temporary Chillers were installed and Dominion achieved compliance with the 5-degree temperature variance limit by the October 31, 2022 deadline, in a matter of six months.[42]

I summarize the regulatory and compliance timeline for the NPDES permit limits in Table 2 below.

Table 2: Regulatory & Compliance Timeline for Permit Limits[43]

Date	Regulatory Action	Company Action
2008	WVDEP issues Administrative Order 6291 and amends the NPDES permit to require either compliance with both the seasonal maximum and the 5° differential limits or obtaining a Section 316(a) variance by July 2014.	
2009		Dominion begins several Lake Management Control System (LMCS) projects for achieving compliance.
2009		The Company begins reintroduction efforts to relocate certain fish species from nearby sources to the BIP Stretch downstream of Mount Storm Lake.
Q3 2011		Company completes LMCS installation.

41 Company's Response to Sierra Club Request No. 5-06, *Attachment Sierra Club Set 05-06 (TNE)*, attached as Exhibit DG-20.

42 *Id.*; Boyd Direct Schedule 7.

43 Effinger Direct at 4–10, unless otherwise indicated.

Q1 2012		Company submits Operational Plan for LMCS to WVDEP.
2012		Dominion escalates volume of fish reintroduction efforts
Q2 2014		Company achieves compliance with seasonal maximum temperature limits.
Q3 2014	WVDEP denies Dominion's request for a rate-of-change approach	Company has not achieved compliance with 5° temperature differential limit it was directed to achieve by July 2014, and proposes rate-of-change approach whereby temperature shifts would be limited to 5 °F per hour instead of on an instantaneous basis.
Q4 2014	WVDEP issues Amendment 4 to Order 6291, which requires submission of a Plan of Action by December 31, 2014 describing steps to be taken to come into compliance with the differential limit.	Company submits a Plan of Action outlining a two-pronged approach consisting of investigation of methods to improve its LMCS and to continue biological reintroduction and sampling aimed at achieving a 316(a) variance.
Q1 2015		Company develops temperature balance models, reports to WVDEP.
Q1 2015	WVDEP approves report.	Company identifies improvements to reintroduction and sampling processes and reports BIP compliance.
Q3 2015	WVDEP issues Administrative Order 8420, which includes requirements to continue biological monitoring in the Stony River and to identify and implement opportunities to reduce significant thermal shifts (>/= 10°F over a 24-hour period) at Outlet 001.	

Q2 2020	WVDEP issues Amendment 4 to Administrative Order 8420 with a deadline of October 31, 2022 to either comply with the differential limit or submit a request for a variance with documentation of a sustainable BIP.	
Q1 2021	WVDEP indicates that a BIP has not been established and issues Amendment No. 6, which continued to require steps necessary to either comply with the thermal discharge requirements or submit a major permit modification request for a variance by October 31, 2022.	
Q3 2021		Company begins efforts to identify options for compliance with the temperature differential limit and begins work on Temporary Chillers.[44]
Q4 2022	WVDEP Administrative Order 8420 is terminated on November 9, 2022.	Temporary Chillers come online October 18, 2022; Company achieves compliance with differential limit
Q1 2025		Company plans to finish construction of Permanent Chillers.[45]

44 *See* Exhibit DG-5.

45 *Id.*

Q What steps did Dominion take to achieve compliance with its 2008 NPDES permit requirement of a 5 °F temperature differential limitation?

A The Company failed to take any substantial steps to achieve compliance with the 5-degree F temperature differential limitation for 13 years (2008 to 2021). During that time, rather than assessing the need for and prudence of installing chillers at Mount Storm, the company took fish from a nearby waterbody and transported them into Mount Storm Lake in an effort to gain an exemption from achieving the temperature requirements.[46] As discussed in the Direct Testimony of Ranajit Sahu, the chiller technology Dominion is using has been around since well before 2008 and could have been installed at any time during the period Dominion was delaying compliance.[47]

Q Why did Dominion install the Temporary System in 2022 rather than the Permanent System?

A In 2021, the Company finally began efforts to identify options for compliance with the temperature differential limit and began work on the Temporary Chiller system.[48] **[BEGIN CONFIDENTIAL / ES]** [redacted]

[redacted]

46 Effinger Direct at 6–7.

47 Sahu Direct at 4.

48 *See* Exhibit DG-5.

[redacted]

[redacted] **[END CONFIDENTIAL / ES]** Because Dominion delayed compliance for over a decade, and installation of a permanent system required more time than it now had to comply, the Company had to rent and install a temporary system to ensure it could meet the compliance deadline. Had the Company acted at almost any point earlier during the 14-year period of non-compliance, it would have been able to install the permanent system without needing to implement a temporary system.

Q Is this the first time Dominion has imprudently incurred costs for environmental compliance at its coal plants?

A No, unfortunately it is not. In Case No. PUR-2018-00195 Dominion ignored several pieces of analysis that the Company itself had conducted at the time it decided to invest in Wet-to-Dry conversion technology for Chesterfield Units 3 and 4. Specifically, the Company ignored its 2015 IRP results as well as subsequent 2015 analysis. Both of these analyses showed—and, indeed, contained summary conclusions indicating—that Dominion should continue operation of

---

49 Confidential / ES Exhibit DG-13 at *ES Attachment Mount Storm Lake Delta-T Overview*

Units 3 and 4 only over the short term and should avoid life-extending capital expenditures.[50]

Q What portion of the Chiller Project cost that Dominion is asking to recover in this docket was avoidable if Dominion had installed a Permanent Chiller system by the October 2022 compliance deadline instead of hoping for a variance?

A Dominion would avoid at least $31 million in O&M costs incurred to rent the chillers if the Company had acted sooner to comply with the thermal limits instead of delaying while seeking a variance.[51] The Company knew that if it was denied a variance, it would not have sufficient time to install the permanent solution. Yet it gambled that it would receive a variance and delayed action for over a decade. The costs resulting from this failed gamble should be disallowed and not passed on to ratepayers.

---

50 *Petition of Virginia Electric and Power Company for approval of a rate adjustment clause, designated Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia*, Case No. PUR-2018-00195, Final Order (August 5, 2019), available at https://bit.ly/3ly0qOl.

51 Boyd Direct, Schedule 5.

6. THE DECISION TO INSTALL PERMANT CHILLERS AT MOUNT STORM WAS NOT PRUDENT BASED ON WHAT DOMINION KNEW AT THE TIME, NOR IS IT PRUDENT BASED ON WHAT IT KNOWS NOW

Q What information did Dominion have at the time it decided to move forward with the Chiller Project?

A Dominion had three key types of analysis and data at the time it decided to move forward with the Temporary Chiller Project in early 2022, and two additional pieces of analysis that came out during 2022, concurrent with the installation of the Temporary System. As discussed below, all of this analysis indicated that continued investment in Mount Storm was likely not prudent. Specifically:

1. Dominion conducted a series of six retirement and life-extension analyses studies between December 2015 and July 2021. The earliest of these studies projected substantial net revenues over the next decade (between 2018–2033) at Mount Storm. The projections from these early studies have failed to materialize.[52]

52 Company's Response to Sierra Club Request No. 2-20, *Attachment Sierra Club 02-20.1 (WJC)*, attached as Exhibit DG-21; Company's Response to Sierra Club Request No. 2-22, *ES Attachment Sierra Club Set 02-22.1 (WJC)*, *ES Attachment Sierra Club Set 02-22.2 (WJC)*, *ES Attachment Sierra Club Set 02-22.3 (WJC)*, *ES Attachment Sierra Club Set 02-22.4 (WJC)*, *ES Attachment Sierra Club Set 02-22.5 (WJC)*. These documents contain voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

2. Dominion's actual cost and revenue data from the plant between 2016 and 2022 showed that, in contrast with projections, the plant had performed only marginally.[53]

3. The Company's July 2022 IRP Update[54] projected Mount Storm would perform uneconomically over the next decade. Then, an updated unit disposition analysis in September 2022,[55] which was designed to inform Dominion's decision whether to move forward with the Chiller Project, showed that Mount Storm was projected to perform only marginally at best.

Q Describe the retirement and life extension analysis that the Company performed between 2016 and the present.

A Dominion provided eight unit replacement and retirement studies that it conducted between December 2015 and October 2022. Dominion provided a single summary slide deck with the results from these six studies, as well as the

53 Company's Response to Sierra Club Request No. 2-30, attached as Exhibit DG-22; Company's Response to Sierra Club Request No. 2-27, *ES Attachment Sierra Club Set 02-27 (BKC)*, attached as Confidential / ES Exhibit DG-23.

54 Company's Response to Sierra Club Request No. 2-20, *ES Attachment Sierra Club Set 02-20.2 (WJC).* This document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

55 Company's Response to Sierra Club Request No. 2-21, *ES Attachment Sierra Club Set 02-21 (WJC).* This document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

two most recent 2022 studies, along with excel workpapers with the outputs of the PLEXOS analysis for seven of the studies. I used each of these pieces of analysis to evaluate the information that Dominion had available to it throughout the time it was seeking a variance from compliance with its NPDES permit, and through the present where it made the decision to install the Temporary Chillers.

Q Did Dominion's projections change over time?

A Yes. Confidential / Extraordinarily Sensitive Exhibit DG-2 summarizes the results of the retirement studies that Dominion performed between 2017–2022 (including the most recent 2022 IRP Update analysis and the revised October 2022 analysis) showing the range of Mount Storm plant net present value (NPV) estimates across those studies. A negative NPV value indicates the plant is uneconomic.

Extraordinarily Sensitive ES Figure 1 displays graphically the range of Dominion's projections of Mount Storm NPV across scenarios and sensitivities from the same set of studies. This figure also shows that there is a clear downward or "value reduction" trend over time with Dominion's calculated NPVs associated with keeping Mount Storm online.

ES Figure 1: NPV of Dominion's Projections for Mount Storm by Year of Study[56]

[BEGIN CONFIDENTIAL / EXTRAORDINARILY SENSITIVE]

[END CONFIDENTIAL / EXTRAORDINARILY SENSITIVE]

Sources: Exhibit DG-21, ES Attachment Sierra Club Set 02-20.2 (WJC); Company's Response to Sierra Club Request No. 2-21, ES Attachment Sierra Club Set 02-21 (WJC); Company's Response to Sierra Club Request No. 2-22, ES Attachment Sierra Club Set 02-22.1 (WJC), ES Attachment Sierra Club Set 02-22.2 (WJC), ES Attachment Sierra Club Set 02-22.3 (WJC) ES, ES Attachment Sierra Club Set 02-22.4 (WJC), and ES Attachment Sierra Club Set 02-22.5 (WJC). These latter documents contain voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

56 For the 2021 and 2022 IRP updates, the data shown is for Plan B, which complies with the requirements of the Virginia Clean Economy Act. Figure omits data for the 2022 high fuel sensitivity.

Even more noticeable is the substantial drop-off between the high NPV projections that Dominion developed in 2017 and 2018, and the lower NPV projections Dominion determined in more recent years.

In 2017 and 2018, the Company was projecting hundreds of millions of dollars in value from operating Mount Storm relative to retirement. But starting in 2019, Dominion's projections of the plant's value dropped off substantially to only tens of millions of dollars at best. Despite the fact that Dominion had numerous studies showing decreasing and even negative projected revenue when it decided to move forward with the Chiller Project in 2022, the Company did not find that concerning or worthy of prompting reconsideration of expending millions of ratepayers' dollars in the plant. As discussed above with the Chesterfield project, this is not the first time Dominion has ignored the results of its own analysis when making investment decisions.

Q What else did you find when reviewing the projections that Dominion created during the time it was seeking a variance from its NPDES permit and deciding whether to install the Chiller Project?

A *2016 Retirement Analysis and 2017 Analysis*: Dominion indicated that its 2016 Retirement Analysis (conducted in December 2015) showed that Mount Storm maintains "positive economic value," but the Company provided no data or

quantitative results associated with this study.[57] Similarly, for its March 2017 Analysis, where the Company compared the costs of retirement, cofiring, and repowering with continuing the cost of continuing to operate the plant on coal, Dominion provided only minimal summary outputs on a slide deck showing substantial savings from keeping the plant online, and no input or output data.[58] As a result, I was unable to fully scrutinize any of the Company's modeling from before late 2017.

November 2017 Unit Analysis: The earliest piece of analysis for which Dominion provided an annual break-down of the Company's revenue projections is the November 2017 Unit Analysis.[59] **[BEGIN CONFIDENTIAL / ES]** [redacted]

57 *See* Exhibit DG-21.

58 *Id.*

59 *Id.*; Company's Response to Sierra Club Request No. 2-22, *ES Attachment Sierra Club Set 02-22.1 (WJC)*. The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

[redacted] **[END CONFIDENTIAL / ES]**

2018 IRP Retirement Analysis: **[BEGIN CONFIDENTIAL / ES]** [redacted]

[redacted] **[END CONFIDENTIAL / ES]**

2019 Unit Analysis: Dominion's 2019 Unit Analysis projected only $34 million NPV benefits over the period of 2019 to 2029. **[BEGIN CONFIDENTIAL / ES]**

[redacted] **[END CONFIDENTIAL**

60 *See* Exhibit DG-21; Company's Response to Sierra Club Request No. 2-22, *ES Attachment Sierra Club Set 02-22.2 (WJC)*. The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

/ ES] Under a low-capacity-price scenario, Dominion projected negative revenues of $76 million over the period of 2019 to 2029.[61]

2020 Unit Analysis: In Dominion's 2020 Unit Analysis, the Company projected an NPV of $100 million over the period of 2020 to 2029, **[BEGIN CONFIDENTIAL / ES]** [redacted] **[END CONFIDENTIAL / ES]** Under a low-capacity-price sensitivity, Dominion projected negative revenues of $318 million over the period of 2020 to 2029.[62]

2021 IRP Update: Dominion's 2021 IRP update showed that Mount Storm was projected to perform only marginally in the best-case scenario (as shown in Extraordinarily Sensitive Figure 2 below) and was projected to lose millions over the next ten years under other likely scenarios.[63] Specifically, Dominion expected

---

61 *See* Exhibit DG-21; Company's Response to Sierra Club Request No. 2-22, ES *Attachment Sierra Club Set 02-22.3 (WJC)*. The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

62 *See* Exhibit DG-21; Company's Response to Sierra Club Request No. 2-22, *ES Attachment Sierra Club Set 02-22.4 (WJC)*. The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

63 *See* Exhibit DG-21; Company's Response to Sierra Club Request No. 02-22, *ES Attachment Sierra Club Set 02-22.5 (WJC)*. The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

the plant to earn $18 million in net revenues (NPV) over the period of 2021 to 2030 under a base capacity value assumption.

Q What does Dominion's most recent 2022 IRP update and October 2022 revised analysis show about the projected performance of Mount Storm?

A Dominion's IRP update from July 2022 finds that Mount Storm is projected to lose $32 million between 2022 and 2031 under base assumptions, and as much as $175 million under low capacity price assumptions. Additionally, this analysis shows Mount Storm's capacity factor is expected to drop significantly from a high of 35 percent in 2024 to between 16 and 23 percent after 2025.[64] This is the first analysis the Company conducted that included any costs associated with the Chiller Project—although the exact cost estimates Dominion used are unclear.[65]

In Dominion's October 2022 revision analysis (conducted in September 2022) the Company finds that Mount Storm is projected to earn $39 million between 2022 and 2031.[66] Dominion attributes this change in results mainly to higher energy pricing. Dominion indicated that it included $46.7 million in capital costs in 2022

64 Exhibit DG-21; Company's Response to Sierra Club Request No. 2-21, *ES Attachment Sierra Club Set 02-21 (WJC).* The latter document contains voluminous spreadsheet data in numerous tabs and can be provided to authorized parties upon request.

65 Exhibit DG-18.

66 Exhibit DG-21; Company's Response to Sierra Club Request No. 2-21, *ES Attachment Sierra Club Set 02-21 (WJC).*

to 2024 for the Chiller Project[67] and an increase in O&M costs in 2022 analysis.

[BEGIN CONFIDENTIAL / ES] [redacted]

[redacted] **[END CONFIDENTIAL / ES]**

Extraordinarily Sensitive Figure 2: Mount Storm's Projected Net Revenue from 2022 IRP Update

[BEGIN CONFIDENTIAL / EXTRAORDINARILY SENSITIVE]

[END CONFIDENTIAL / EXTRAORDINARILY SENSITIVE]

Source: Company's Response to Sierra Club Request 2-21, ES Attachment 02-21 (WJC).

67 Exhibit DG-19.

68 *See* Confidential / ES Exhibit DG-14.

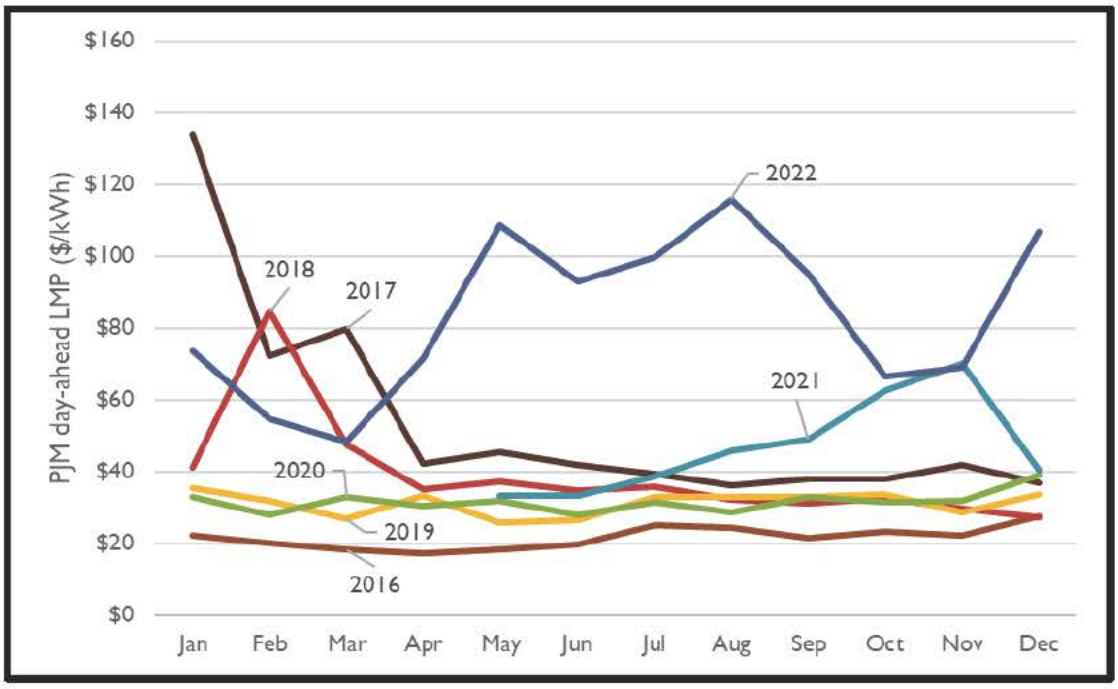
Q How did Mount Storm actually perform in recent years?

A The Company's own data shows that Mount Storm has **[BEGIN CONFIDENTIAL / ES]** [redacted] **[END CONFIDENTIAL / ES]** were driven in large part by a spike in locational marginal prices (LMPs) at the Dominion hub in January 2018 as a result of cold weather events, when average LMPs were more than double what was seen in the next two years (2019 and 2020). The revenues in 2022 were driven by high gas prices resulting from the war in Ukraine in 2022.[70] Both the winter spike in 2018 and the elevated prices through 2022 were prompted by anomalous events not expected to continue into the future, and are not reasonable events for Dominion to plan around. Figure 3 below shows the monthly average LMPs for Dominion's hub for each year between 2016 and 2022.

69 Exhibit DG-22; Confidential / ES Exhibit DG-23.

70 PJM INTERCONNECTION, Data Miner (last accessed April 28, 2023), available at https://bit.ly/3MCcOcb.

Figure 3: PJM Day-Ahead LMPs ($/kWh)



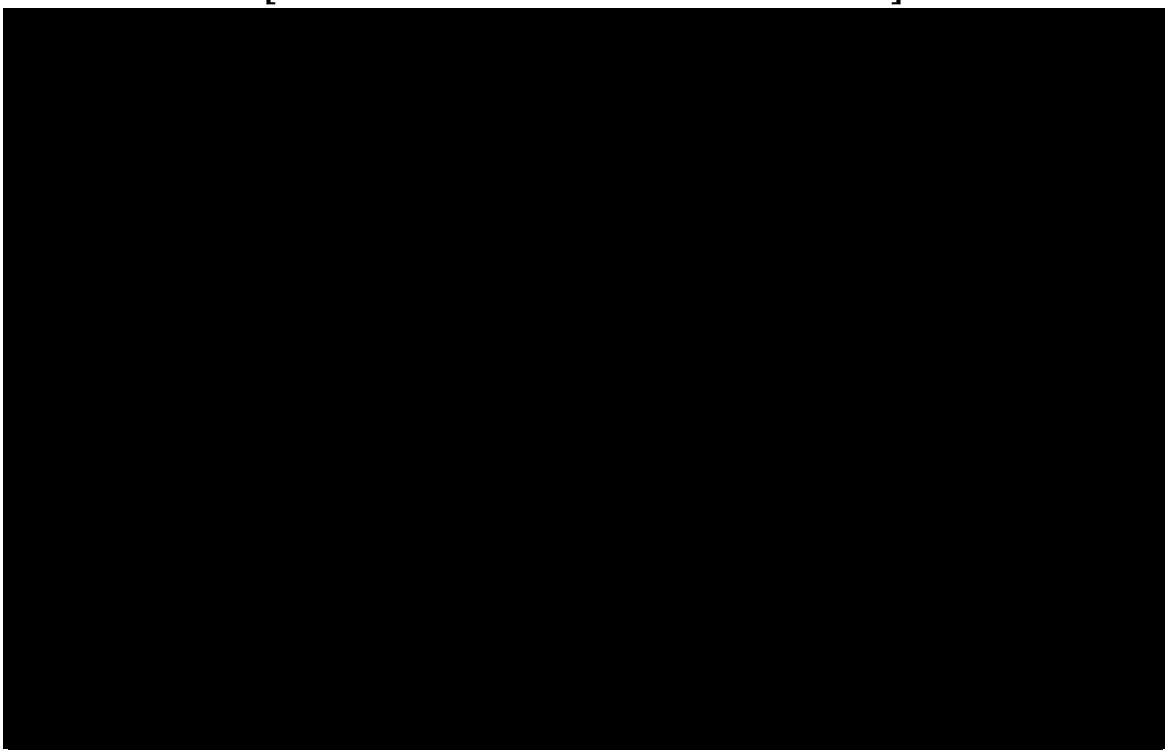
Source: PJM Data Miner, supra note 70.

Q What do you observe about changes in Mount Storm's utilization across projections as compared to the Plant's actual utilization?

A Dominion's average annual capacity factor projections for Mount Storm have fallen with nearly every subsequent forecast the Company produced between 2016 and 2022, as shown in Extraordinarily Sensitive Figure 4 below.

Extraordinarily Sensitive Figure 4: Dominion's Projected Capacity Factors for Mount Storm Across All Studies (2016–2022)

[BEGIN EXTRAORDINARILY SENSITIVE]



[END EXTRAORDINARILY SENSITIVE]

Sources: Company's Response to Sierra Club Request No. 2-20, ES Attachment 2-20.2 (WJC); Company's Response to Sierra Club Request No. 2-21, ES Attachment 02-21 (WJC); Company's Response to Sierra Club Request No. 2-22, All ES Workbooks; Company's Response to Sierra Club Request No. 2-27. These documents can be provided to authorized parties upon request.

The Plant's actual average annual capacity factor has dropped quite significantly from a high of 63 percent in 2016 to a low of 33 percent in 2020.[71] Dominion's recent forecast, which the Company prepared as part of its 2022 IRP, shows the

71 Exhibit DG-21.

Company's lowest capacity factor projections yet: these drop to around and below 20 percent from 2026 onward.[72]

It is concerning that Dominion considered it prudent to invest even more capital in the plant for both the Temporary and Permanent Chiller systems, committing tens of million in avoidable spending to a plant that it now projects will operate only minimally going forward. This low utilization is also concerning because there are risks to reliability of continued coal operation when units operate at low capacity factors and increase the amount of cycling required. The increased degradation can lead to higher forced outage rates.[73] A forced outage at even one coal unit represents the loss of hundreds of MW of capacity, increasing reliability risk on the system.

Q Which inputs were the largest driver of Dominion's projected finding in the October 2022 revised analysis that the Plant will continue to be economic?

A Dominion relied on high energy and capacity market prices forecasts developed by ICF to deliver high projected NPV over the next few years.

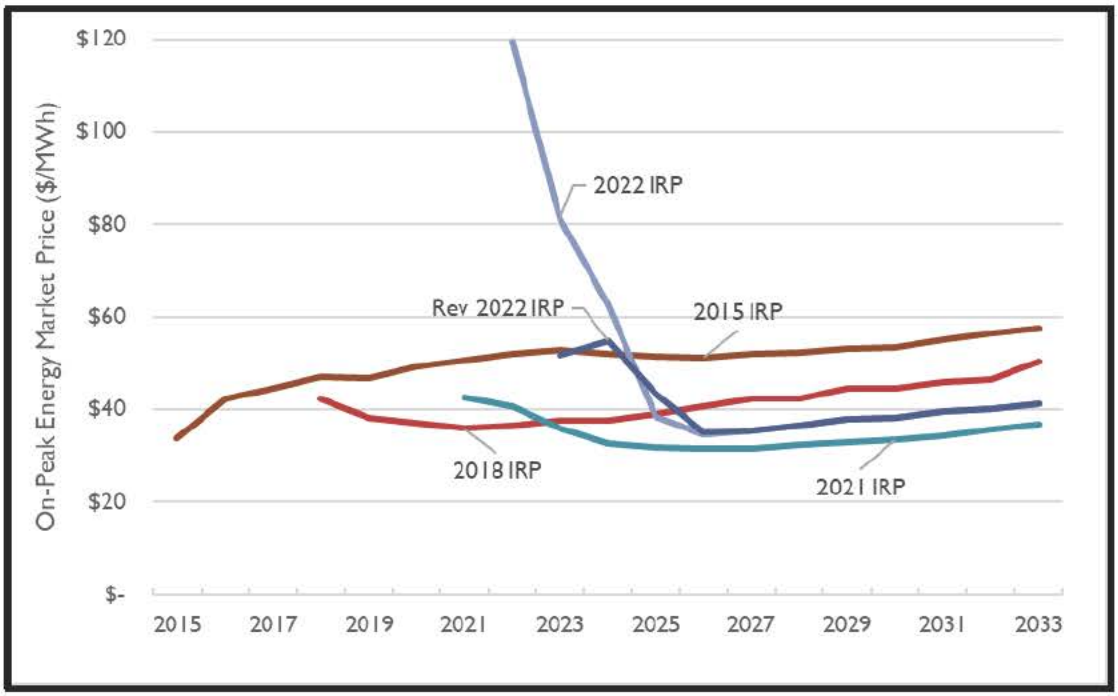
For its energy market price forecasts (on-peak prices only shown in Figure 5 below), ICF's high energy market prices projections drove the Company's

72 *Id.*

73 N. Kumar *et al.*, *Power Plant Cycling Costs*, NATIONAL RENEWABLE ENERGY LABORATORY (April 2012), available at https://bit.ly/3lR395P.

findings of high net revenues from keeping Mount Storm online. Specifically, in its 2015 projection, ICF projected that on-peak prices would increase by 70 percent between 2015 and 2033 and off-peak prices would increase by 84 percent over the same time period. With its subsequent projection, published in 2017, ICF adjusted its forecast downward but still projected an increase of 19 percent and 40 percent for on- and off-peak prices respectively between 2018 and 2033. By the time of its 2021 IRP, the Company once again adjusted down its forecast: this time it projected a 14 percent drop in peak energy market prices by 2033 relative to 2021 levels, and only a 16 percent increase in off-peak prices over this same time period. What is most striking is that ICF's peak energy price forecast from 2021 projects on-peak energy prices than are below its projected off-peak prices from its 2015 IRP. The Company's 2022 IRP update relied on exceptionally high near-term energy prices (over the next 2–3 years), but long-term prices that were only slightly above the 2021 IRP forecast. In its October update, Dominion revised down substantially its near-term energy price forecast.

Figure 5: Dominion's Energy Market Prices from IRPs & Updates (2015–2022)

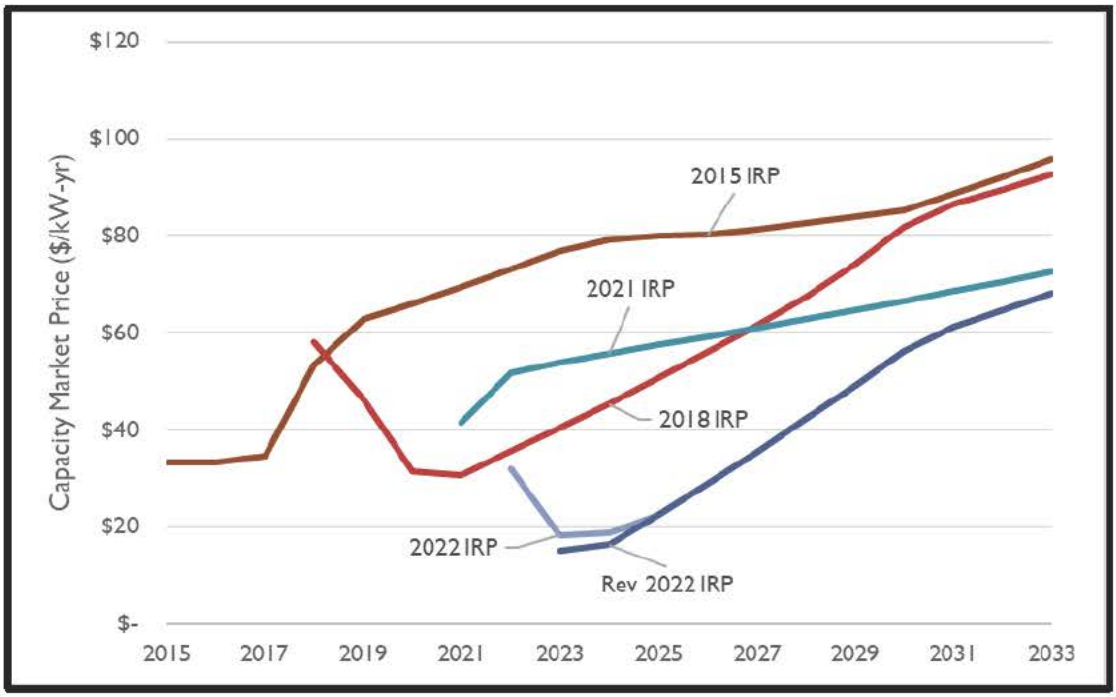


Sources: Company's Response to Sierra Club Request No. 2-18, Attachment 02-18 (WWJ), attached as Exhibit DG-24; Company's Response to Sierra Club Request No. 2-19, Attachment 02-19 (WWJ), attached as Exhibit DG-25; Dominion 2015 IRP Appendix 4A (ICF Commodity Price Forecasts for Dominion Virginia Power – Spring 2015 Forecast); Dominion 2018 IRP Appendix 4 (ICF Commodity Price Forecasts for Virginia Electric and Power Company – Fall 2017 Forecast); Dominion 2021 IRP Appendix 4O.

Dominion also relied on ICF's capacity market price forecasts for its IRP and retirement studies (shown in Figure 6 below). ICF's 2015 capacity price forecast projected a large increase in capacity market prices, with prices jumping above $50/kw-year by 2018, rising to nearly $80/kW-year by 2025, and reaching over $90/kw-year by 2033. In ICF's subsequent forecast prepared in late 2017, ICF's capacity prices dropped back down to below $40/kW-year before 2022, but then began rising again each year, reaching $90/kW-year by 2033. ICF's most recent

capacity forecast projects slightly higher capacity prices in the near term than its 2018 forecast, but projects much slower growth in capacity prices over the long term.

Figure 6: Dominion Capacity Market Prices from IRPS (2015–2022)



Sources: Exhibit DG-24; Exhibit DG-25; Dominion 2015 IRP Appendix 4A (ICF Commodity Price Forecasts for Dominion Virginia Power – Spring 2015 Forecast); Dominion 2018 IRP Appendix 4 (ICF Commodity Price Forecasts for Virginia Electric and Power Company – Fall 2017 Forecast); Dominion 2021 IRP Appendix 4O.

Q How did Dominion's assumed retirement dates for Mount Storm impact this analysis?

A Dominion's assumption that Mount Storm will continue to operate beyond 2040 is unsupported by modeling. Sierra Club Witness Rachel Wilson noted this in her

testimony on Dominion's 2020 IRP in Case No. PUR-2020-00035, finding that Dominion's assumed retirement date for Mount Storm of 2043 was hard-coded into the Company's 2020 IRP modeling and did not reflect an optimized resource planning decision. Ms. Wilson further noted that the Company's modeling did not include full sustaining capital cost estimates, and therefore it omitted a substantial portion of the costs required to keep Mount Storm online for another two decades.[74] The Commission agreed with Ms. Wilson that these were shortcomings and ordered Dominion to address these issues in its 2021 IRP update.[75]

Q What should Dominion's 2016–2022 studies, along with the unit's actual performance over the past few years, have indicated to the Company regarding the reasonableness of moving forward the Chiller Project?

A The substantial drop in projected revenues between the Company's 2017 and 2018 analysis and its more recent 2022 analysis —coupled with the declining utilization of the plant, should have indicated to Dominion that the economics of Mount Storm were changing and it was no longer prudent continuing investing tens of millions of dollars in the plant. The Company is permitted to sometimes be

74 *Virginia Electric and Power Company's Integrated Resource Plan Filing Pursuant to Virginia Code § 56-597 et seq.,* Case PUR-2020-00035, Direct Testimony of Rachel Wilson (September 15, 2020), available at https://bit.ly/3yXz2kV.

75 *Virginia Electric and Power Company's Integrated Resource Plan Filing Pursuant to Virginia Code § 56-597 et seq.,* Case PUR-2020-00035, Final Order (February 1, 2021), available at https://bit.ly/39N5VWV.

wrong, but it is unreasonable to ignore this kind of information and move forward with a Chiller Project that will unnecessarily incur costs of tens of millions of dollars.

Q Are you aware of any precedent for disallowing coal plant capital costs that are unsupported by a contemporaneous retirement analysis?

A Yes. The Virginia State Corporation Commission denied Dominion $18 million in cost recovery for the wet-to-dry conversion for coal-fired Chesterfield Units 3 and 4 in Case No. PUR-2018-00195. The Commission found that Dominion invested "additional long-term environmental compliance capital into these units" despite the Company's own analysis that showed that it was more economic to retire or convert the units to burn gas by 2020.[76]

7. COAL-FIRED POWER PLANTS LIKE MOUNT STORM WILL BECOME INCREASINGLY RISKY & COSTLY TO OPERATE

Q What does the future look like for coal-fired generating units in the United States and in the PJM region?

A Existing coal-fired generating units will become even less economic than they are today, because of both economic and regulatory forces that will increase the costs

76 *Petition of Virginia Electric and Power Company for approval of a rate adjustment clause, designated Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to § 56-585.1 A 5 e of the Code of Virginia*, Case No. PUR-2018-00195, Final Order (August 5, 2019), available at https://bit.ly/3wB90Cl.

of operation at coal units relative to other types of capacity. Between 2015 and 2022, an average of 11.6 gigawatts (GW) of coal retired each year in the United States.[77] An additional 10.2 GW of coal generation capacity is scheduled to retire in 2023.[78]

Regionally, capacity prices from the most recent PJM capacity auction were lower than they have been in the past decade. Renewables, nuclear, and natural gas-fired generators increased their cleared capacity, while more than eight GW of coal capacity failed to clear. Analysis from Bloomberg New Energy Finance reports that of the coal-fired power plants on the PJM grid, approximately 70 percent will be uneconomic by 2023.[79]

Q What are the economic forces that affect the operation of existing coal units?

A A range of factors have contributed to these retirements. These include flat electricity demand growth, sustained low gas prices (up through the 2022 spike), and increased competition from renewables and battery energy storage as technological improvements and scale economies have dramatically and steadily lowered the costs of wind and solar energy production and battery storage

77 Energy Information Administration, Preliminary Monthly Electric Generator Inventory (March 2023), available at https://bit.ly/3MmpDbv.

78 *Id.*

79 Will Wade, *Most Coal Plants in Biggest U.S. Grid Are Becoming Money-Losers*, Bloomberg (June 8, 2021), available at https://bloom.bg/3Nt2ByK.

systems. All of those trends are expected to persist in the future. Even for coal units that have staved off full retirement, competition from gas and renewables has led to decreases in capacity factors,[80] as we have seen at Mount Storm.

Q Have these market changes led to additional risks associated with continued operation of coal units?

A Yes. Coal-fired generators are intended to operate as baseload generators that run with high capacity factors. Increased penetration of renewable energy technologies and lower cost gas generation means that coal units are increasingly being called upon to operate at lower loading levels, ramp up and down more frequently, and cycle (start and stop) more often (as discussed above). But coal units were not designed to operate like peaker plants, so this leads to increased wear and tear on the component parts, which contributes to increased costs and/or outages at the units.

As discussed above, Dominion's data shows that Mount Storm's utilization has gone down from a high capacity factor of 63 percent in 2016 to a low of 33 percent in 2020.[81] Dominion's recent forecast, which the Company prepared as part of its

80 Energy Information Administration, *U.S. Coal Consumption in 2018 Expected to be the Lowest in 39 Years* (December 28, 2018), available at https://bit.ly/3Nvq3eI.

81 Exhibit DG-3.

2022 IRP, shows the Company's lowest capacity factor projections yet: these drop to around and below 20 percent from 2026 onward.[82]

Table 3: Actual Capacity Factors at Mount Storm (2016–2022)

2016	2017	2018	2019	2020	2021	2022
63%	49%	39%	32%	33%	39%	33%

Source: Calculated based on Company's Response to Sierra Club Request No. 2-27(c), attached as Exhibit DG-3.

Table 4: Projected Capacity Factors at Mount Storm (2023–2031)

2023	2024	2025	2026	2027	2028	2029	2030	2031
31%	35%	27%	16%	16%	17%	19%	21%	23%

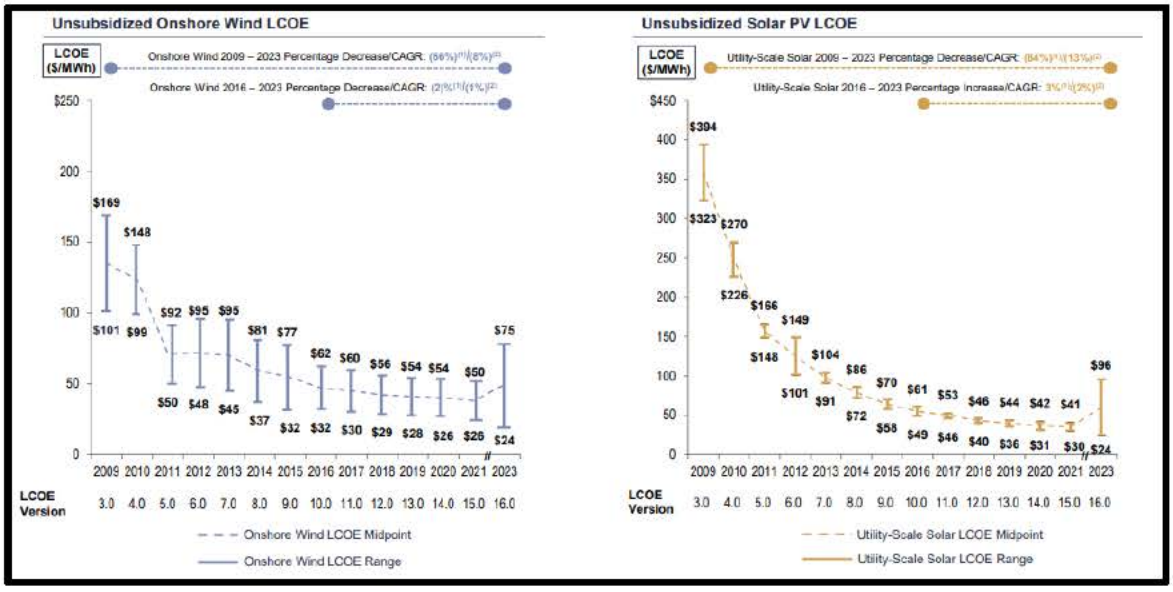
Source: Exhibit DG-21

Q Explain how renewables have become a driving factor in coal-plant retirements.

A The costs of clean generation technologies have fallen dramatically over the previous decade. On a levelized cost of energy (LCOE) basis, costs for wind are now 66 percent lower than the costs in 2009, with a compound annual rate of decline of 8 percent per year. Costs for solar are now 84 percent lower than in 2009, with a compound annual rate of decline of 13 percent per year. Those annual trends are shown in Figure 7.

82 Exhibit DG-21.

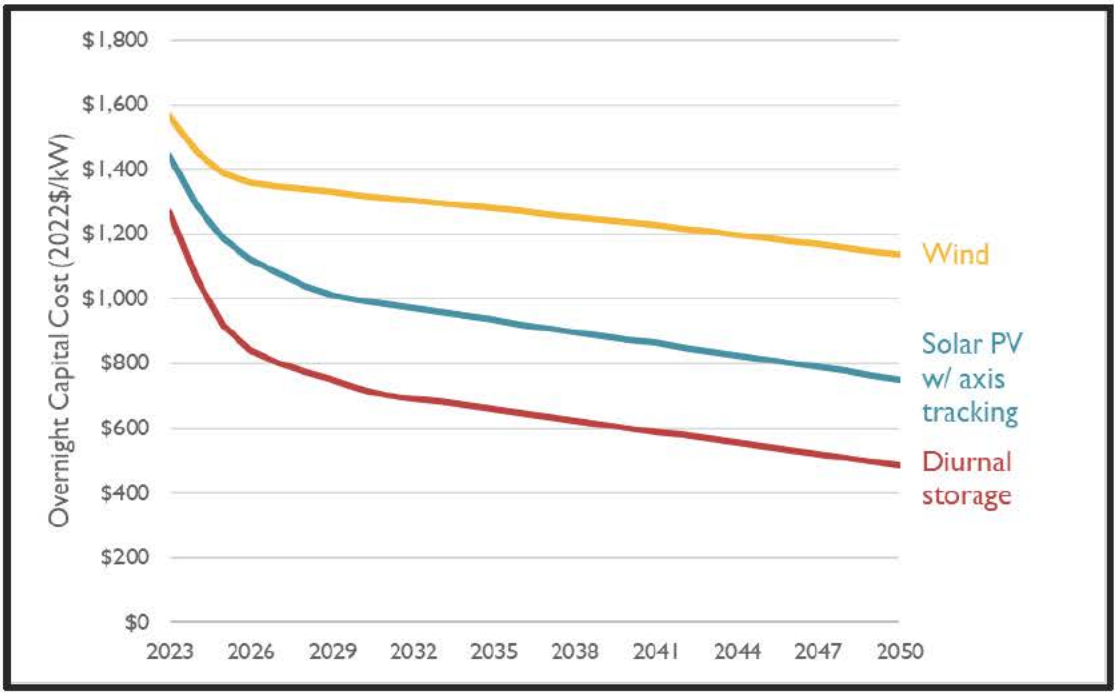
Figure 7: Historical Levelized Cost of Energy for Wind and Solar PV Technologies



Source: LAZARD, Levelized Cost of Energy Analysis (Version 16.0 April 2023), available at https://bit.ly/3Itq0zT.

These two technologies, in addition to battery storage, are predicted to experience continued cost declines going forward. Figure 8 below shows the EIA's forecasts used in developing the 2023 Annual Energy Outlook for solar PV, wind, and storage resources.

Figure 8: Forecast of Overnight Capital Cost for New Solar PV, Wind, and Battery Storage



Source: *ENERGY INFORMATION ADMINISTRATION, Annual Energy Outlook at Table 55 (2023), available at https://bit.ly/45dWTdJ.*

A 2021 report by Australia's Clean Energy Council states that "large-scale battery storage is now the superior choice for electricity peaking services, providing significant cost, flexibility, and emissions advantages when compared to equivalent open-cycle gas turbine plants."[83]

83 CLEAN ENERGY COUNCIL, *Battery Storage: The New, Clean Peaker* (April 10, 2021), available at https://bit.ly/3LEcLLk.

Q Has Dominion included the IRA tax credits in any of its recent modeling?

A No. Dominion indicated that none of its 2022 modeling included IRA cost assumptions.[84] This is concerning because the Company's October 2022 analysis came out several months after the IRA passed, yet the Company still did not include the updated cost assumptions in its modeling.

Q How does the IRA change the tax credits available to Dominion for clean energy resources?

A The IRA provides additional tax credits for solar PV and wind, and new tax credits for battery storage that were not available before the law went into effect. The IRA benefits wind by extending the existing ITC and PTC tax credits. But it is even more impactful and transformative for solar PV, which now qualifies for both the ITC and PTC, and for battery storage, which is now eligible for the ITC even as a standalone resource (*i.e.*, not coupled to a solar or wind plant). As shown in Table 5, the ITC and PTC values have increased for projects placed into service in the next few years.

84 Company's Response to Sierra Club Request No. 3-3, attached as Exhibit DG-26.

Table 5. Clean Energy Tax Credits Before and After the IRA

	Tax Credit Type	Tax Credit Value	Eligible Resources	Tax Credit Level for Projects that Began Construction in:			
				2021	2022	2023	2024
Pre IRA	PTC	2.5 cents/kWh, adjusted for inflation	Wind	60%	0%	0%	0%
	ITC	Percent of total investment	Wind	26%	26%	22%	10%
			Solar	26%	26%	22%	10%
Post IRA	PTC	2.5 cents/kWh, adjusted for inflation	Solar, Wind, Storage		100%	100%	100%
	ITC	Percent of total investment	Solar, Wind, Storage		30% †	30%	30%

† *30% tax credit level assumes prevailing wage and apprenticeship requirements are met.*

Sources: CONGRESSIONAL RESEARCH SERVICE, The Energy Credit or Energy Investment Tax Credit (2021), available at https://bit.ly/3pVgOho; CONGRESSIONAL RESEARCH SERVICE, Energy Tax Provisions: Overview and Budgetary Cost (2021), available at https://bit.ly/41RWTgz; Inflation Reduction Act of 2022, Public Law No. 117-169 (August 16, 2022).

Beyond what is depicted in Table 5, the IRA added new ITC and PTC tiers that entitle any solar, wind, or battery storage projects to an additional 10 percent tax credit adder if they meet domestic content criteria and another 10 percent adder if they are located in an energy community. Any census tract where a coal mine or coal-fired power plant has closed since 2009 is defined as an energy community (as well as the census tracts directly adjacent). Additionally, brownfield sites and areas where fossil fuels have (1) accounted for at least 0.17 percent of direct employment or (2) 25 percent of local tax revenues and where the unemployment

rate is above the national average for the previous year qualify as energy communities.[85] The maximum ITC and PTC credits available across a broad swath of the country[86] are thus 50 percent, notably larger than what Dominion would have modeled in any prior analysis.

Q What are the regulatory forces that challenge the operation of existing units?

A One such regulatory force is the increase to renewable portfolio standard (RPS) policies in neighboring states that also operate in the PJM market. The volume of zero-variable cost resources on the grid in PJM will increase in future years as neighboring states increase their renewable energy targets, implement more stringent targets for carbon dioxide emissions reductions, or both. In 2018, for example, New Jersey increased its RPS to 50 percent by 2030.[87] In 2019, Maryland legislators passed a bill that also increased its RPS to 50 percent by 2030.[88] The

85 26 U.S.C. § 45(b)(11)(B)

86 Tony Lenoir, *Mapping Communities Eligible for Additional Information Reduction Act Incentives*, S&P Global Market Intelligence (October 11, 2022), available at https://bit.ly/3WnTTY3 (identifying "more than 2,800 [ ] U.S. census tracts across 42 states" eligible for the 10 percent adder).

87 U.S. Energy Information Administration, *Today in Energy: Updated Renewable Portfolio Standards Will Lead to More Renewable Electricity Generation* (February 27, 2019), available at https://bit.ly/3wBLwgi.

88 Catherine Morehouse, *Maryland 50% RPS Bill Doubles Offshore Wind Target, Expands Solar-Carve Out*, Utility Dive (April 10, 2019), available at https://bit.ly/3luJ4SB.

District of Columbia increased its RPS to 100 percent renewable energy by 2040.[89] The locational marginal price for energy will decline as a greater number of these renewable generators come online, further lowering energy revenues earned by coal units.

Additionally, the Biden administration is increasing regulation of fossil-fuel generators across the board. Coal plants have numerous environmentally impactful inputs (fuel and reagents) and outputs (emission, coal ash, discharge water), many of which can be, and increasingly are being, regulated. Because of this, coal plants are inherently at greater risk of regulation and therefore more likely to incur significant future environmental compliance costs than lower or zero-emission resources.

Q Are there other environmental regulatory risks associated with the continued operation of the Mount Storm power plant that Dominion has not taken into account in its most recent analysis?

A Yes. As discussed above in Section 4, Dominion may incur additional costs at Mount Storm to comply with several current and future environmental rules, including increased ELG stringency, increased MATS stringency.

89 Robert Walton, *DC Eases Path for Renewable Generators as it Pursues 100% Goal*, UTILITY DIVE (February 13, 2019), available at https://bit.ly/39JDRU4.

In addition, President Biden has announced a goal of net-zero carbon dioxide emissions on the country's power grid by 2035.[90] To that end, the administration announced earlier this month a new proposal to regulate greenhouse gas emissions from fossil-fueled plants like Mount Storm.[91] The pre-publication proposal lays out four potential pathways for coal-fired generation based on the operational horizon of a unit:

(a) For units retiring after 2039, the proposal requires carbon capture and storage (CCS) with a 90% capture rate.[92]

(b) For units retiring between 2035 and 2040, the proposal requires co-firing 40% natural gas on a heat-input basis.[93]

(c) For units retiring between 2032 and 2035, the proposal requires a commitment to operate at a maximum annual capacity factor of 20 percent.[94]

---

90 *See* Executive Order No. 14008, 86 FEDERAL REGISTER 7619 (January 27, 2021).

91 *New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generation Units; and Repeal of the Affordable Clean Energy Rule* (Pre-Publication May 8, 2023), available at https://bit.ly/3WilLwK.

92 *Id.* at 21.

93 *Id.* at 22.

94 *Id.* at 22–23.

(d) For units that retire before 2032, the proposal requires only routine O&M methods.[95]

EPA expects to publish the final rule in June 2024.[96]

Q Are there other threats facing the coal industry?

A Yes. There have been substantial labor shortages on the railroads, impacting the delivery of coal to many plants. This has resulted in many utilities having to de-rate their plants during periods when their coal supplies ran low.

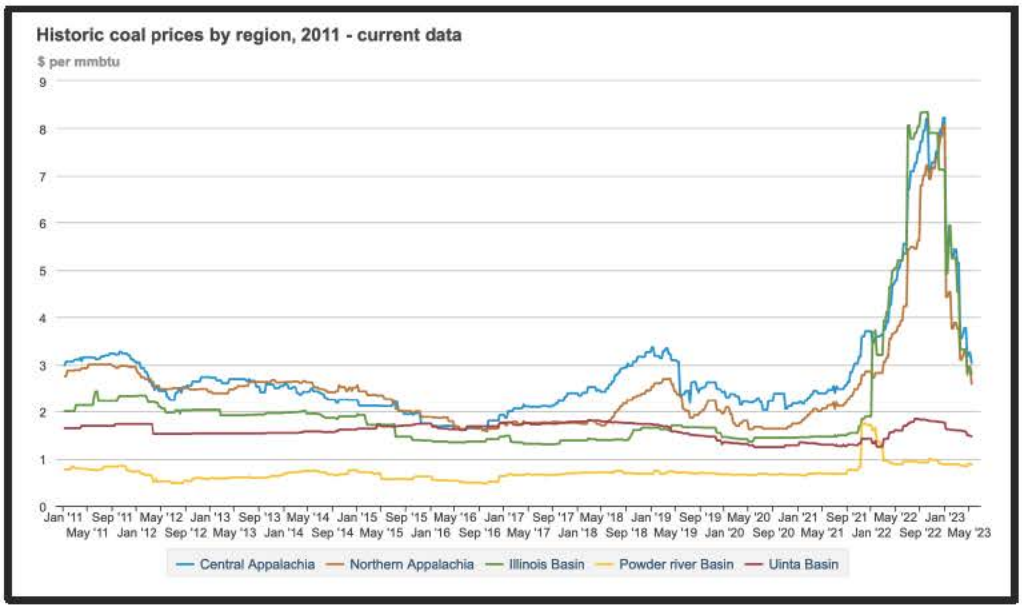
Additionally, after staying relatively stable for the past decade, the price of coal spiked significantly in some parts of the country over the last year, as shown in Figure 9 below. These are price spikes that even a diligent market watcher could not have predicted. While coal costs have subsided in the last few months (although they are still higher than usual), the spike shows the inherent risk in relying on commodity fuels—a risk that can be mitigated by transitioning to clean energy.

---

95 *Id.* at 22.

96 *Id.* at 501.

Figure 9. Historical Coal Prices by Region (2011 to Present)



Source: *ENERGY INFORMATION ADMINISTRATION, Coal Market Archives*, https://www.eia.gov/coal/markets/ (May 15, 2023).

8. CONCLUSIONS & RECOMMENDATIONS

Q Please summarize your findings.

A Dominion dragged its feet on compliance with the water temperature differential standards at Mount Storm and has now imprudently incurred more than $31 million in O&M costs to rent the Temporary Chiller system while it plans a permanent system. These costs were avoidable if Dominion had acted earlier to install a Permanent Chiller system. In seeking recovery for these costs in the current docket, Dominion has presented the cost of compliance for only a portion of the Chiller Project. This aligns with Dominion's pattern of presenting incomplete or piecemeal analysis to the Commission that underestimates, or

otherwise does not fully capture, the likely cost and risk associated with compliance with future environmental regulations at the plant.

Dominion has also not demonstrated the prudence of moving forward with the Permanent chiller system, based on the recent performance of the plant, and its projected future economics. Dominion knew at the time it began planning the Chiller system Mount Storm had earned only marginal net revenues between 2016 and 2022, and only then because of temporary and anomalous single-year factors. Further, the plant is projected to earn negative to marginal net revenues over the next decade based on the Company's most recent IRP modeling (from 2022) and its updated October 2022 modeling. Under more realistic and updated assumptions, including updated natural gas prices and renewable cost assumptions that reflect the Inflation Reduction Act (IRA) cost assumptions, Mount Storm is likely to incur costs in excess of its projected revenues.

Finally, Dominion has failed to evaluate regulatory risks associated with continued reliance on Mount Storm, including the risk of additional environmental compliance costs from increased stringency in ELG regulations, MATS regulations, and CO_2 prices at any point in the project.

Q Please summarize your recommendations.

A Because the Company could have avoided the cost of the Temporary Chiller project by acting sooner to install a permanent system, the Commission should

disallow the $31 million in O&M costs associated with the Temporary Chillers. Additionally, the Commission should deny Dominion's request to recover the costs associated with the Permanent Chillers, both in the current and any subsequent Rider E dockets until such time as the Company demonstrates the prudence of continuing to maintain and operate the plant (including consideration of all known and future costs for environmental compliance with the ELG and MATS rules) relative to retirement and replacement of Mount Storm with alternatives. Finally, the Commission should require Dominion to clearly evaluate and include in analysis all future environmental compliance costs it is likely to incur at Mount Storm.

Q Does this conclude your testimony?

A Yes.

INDEX OF EXHIBITS

EXHIBIT DG-1

Resume of Devi Glick

(May 23, 2023)

Devi Glick, Senior Principal

Synapse Energy Economics I 485 Massachusetts Avenue, Suite 3 I Cambridge, MA 02139 I 617-453-7050
dglick@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics Inc., Cambridge, MA. *Senior Principal*, May 2022 – Present; *Principal Associate*, June 2021 – May 2022; *Senior Associate*, April 2019 – June 2021; *Associate*, January 2018 – March 2019.

Conducts research and provides expert witness and consulting services on energy sector issues. Examples include:

- Modeling for resource planning using PLEXOS and Encompass utility planning software to evaluate the reasonableness of utility IRP modeling.
- Modeling for resource planning to explore alternative, lower-cost and lower-emission resource portfolio options.
- Providing expert testimony in rate cases on the prudence of continued investment in, and operation of, coal plants based on the economics of plant operations relative to market prices and alternative resource costs.
- Providing expert testimony and analysis on the reasonableness of utility coal plant commitment and dispatch practice in fuel and power cost adjustment dockets.
- Serving as an expert witness on avoided cost of distributed solar PV and submitting direct and surrebuttal testimony regarding the appropriate calculation of benefit categories associated with the value of solar calculations.
- Reviewing and assessing the reasonableness of methodologies and assumptions relied on in utility IRPs and other long-term planning documents for expert report, public comments, and expert testimony.
- Evaluating utility long-term resource plans and developing alternative clean energy portfolios for expert reports.
- Co-authoring public comments on the adequacy of utility coal ash disposal plans, and federal coal ash disposal rules and amendments.
- Analyzing system-level cost impacts of energy efficiency at the state and national level.

Rocky Mountain Institute, Basalt, CO. August 2012 – September 2017
Senior Associate

- Led technical analysis, modeling, training and capacity building work for utilities and governments in Sub-Saharan Africa around integrated resource planning for the central electricity grid energy. Identified over one billion dollars in savings based on improved resource-planning processes.

- Represented RMI as a content expert and presented materials on electricity pricing and rate design at conferences and events.
- Led a project to research and evaluate utility resource planning and spending processes, focusing specifically on integrated resource planning, to highlight systematic overspending on conventional resources and underinvestment and underutilization of distributed energy resources as a least-cost alternative.

Associate

- Led modeling analysis in collaboration with NextGen Climate America which identified a CO2 loophole in the Clean Power Plan of 250 million tons, or 41 percent of EPA projected abatement. Analysis was submitted as an official federal comment which led to a modification to address the loophole in the final rule.
- Led financial and economic modeling in collaboration with a major U.S. utility to quantify the impact that solar PV would have on their sales and helped identify alternative business models which would allow them to recapture a significant portion of this at-risk value.
- Supported the planning, content development, facilitation, and execution of numerous events and workshops with participants from across the electricity sector for RMI's Electricity Innovation Lab (eLab) initiative.
- Co-authored two studies reviewing valuation methodologies for solar PV and laying out new principles and recommendations around pricing and rate design for a distributed energy future in the United States. These studies have been highly cited by the industry and submitted as evidence in numerous Public Utility Commission rate cases.

The University of Michigan, Ann Arbor, MI. *Graduate Student Instructor*, September 2011 – July 2012

The Virginia Sea Grant at the Virginia Institute of Marine Science, Gloucester Point, VA. *Policy Intern*, Summer 2011

Managed a communication network analysis study of coastal resource management stakeholders on the Eastern Shore of the Delmarva Peninsula.

The Commission for Environmental Cooperation (NAFTA), Montreal, QC. *Short Term Educational Program/Intern*, Summer 2010

Researched energy and climate issues relevant to the NAFTA parties to assist the executive director in conducting a GAP analysis of emission monitoring, reporting, and verification systems in North America.

Congressman Tom Allen, Portland, ME. *Technology Systems and Outreach Coordinator*, August 2007 – December 2008

Directed Congressman Allen's technology operation, responded to constituent requests, and represented the Congressman at events throughout southern Maine.

EDUCATION

The University of Michigan, Ann Arbor, MI
Master of Public Policy, Gerald R. Ford School of Public Policy, 2012
Master of Science, School of Natural Resources and the Environment, 2012
Masters Project: *Climate Change Adaptation Planning in U.S. Cities*

Middlebury College, Middlebury, VT
Bachelor of Arts, 2007
Environmental Studies, Policy Focus; Minor in Spanish
Thesis: *Environmental Security in a Changing National Security Environment: Reconciling Divergent Policy Interests, Cold War to Present*

PUBLICATIONS

Addleton, I., D. Glick, R. Wilson. 2021. *Georgia Power's Uneconomic Coal Practices Cost Customers Millions*. Synapse Energy Economics for Sierra Club.

Glick, D., P. Eash-Gates, J. Hall, A. Takasugi. 2021. *A Clean Energy Future for MidAmerican and Iowa.* Synapse Energy Economics for Sierra Club, Iowa Environmental Council, and the Environmental Law and Policy Center.

Glick, D., S. Kwok. 2021 *Review of Southwestern Public Service Company's 2021 IRP and Tolk Analysis.* Synapse Energy Economics for Sierra Club.

Glick, D., P. Eash-Gates, S. Kwok, J. Tabernero, R. Wilson. 2021. *A Clean Energy Future for Tampa.* Synapse Energy Economics for Sierra Club.

Glick, D. *2021. Synapse Comments and Surreply Comments to the Minnesota Public Utility Commission in response to Otter Tail Power's 2021 Compliance Filing* Docket E-999/CI-19-704. Synapse Energy Economics for Sierra Club.

Eash-Gates, P., D. Glick, S. Kwok. R. Wilson. 2020. *Orlando's Renewable Energy Future: The Path to 100 Percent Renewable Energy by 2020.* Synapse Energy Economics for the First 50 Coalition.

Eash-Gates, P., B. Fagan, D. Glick. 2020. *Alternatives to the Surry-Skiffes Creek 500 kV Transmission Line.* Synapse Energy Economics for the National Parks Conservation Association.

Biewald, B., D. Glick, J. Hall, C. Odom, C. Roberto, R. Wilson. 2020. *Investing in Failure: How Large Power Companies are Undermining their Decarbonization Targets.* Synapse Energy Economics for Climate Majority Project.

Glick, D., D. Bhandari, C. Roberto, T. Woolf. 2020. *Review of benefit-cost analysis for the EPA's proposed revisions to the 2015 Steam Electric Effluent Limitations Guidelines.* Synapse Energy Economics for Earthjustice and Environmental Integrity Project.

Glick, D., J. Frost, B. Biewald. 2020. *The Benefits of an All-Source RFP in Duke Energy Indiana's 2021 IRP Process.* Synapse Energy Economics for Energy Matters Community Coalition.

Camp, E., B. Fagan, J. Frost, N. Garner, D. Glick, A. Hopkins, A. Napoleon, K. Takahashi, D. White, M. Whited, R. Wilson. 2019. *Phase 2 Report on Muskrat Falls Project Rate Mitigation, Revision 1 – September 25, 2019.* Synapse Energy Economics for the Board of Commissioners of Public Utilities, Province of Newfoundland and Labrador.

Camp, E., A. Hopkins, D. Bhandari, N. Garner, A. Allison, N. Peluso, B. Havumaki, D. Glick. 2019. *The Future of Energy Storage in Colorado: Opportunities, Barriers, Analysis, and Policy Recommendations.* Synapse Energy Office for the Colorado Energy Office.

Glick, D., B. Fagan, J. Frost, D. White. 2019. *Big Bend Analysis: Cleaner, Lower-Cost Alternatives to TECO's Billion-Dollar Gas Project*. Synapse Energy Economics for Sierra Club.

Glick, D., F. Ackerman, J. Frost. 2019. *Assessment of Duke Energy's Coal Ash Basin Closure Options Analysis in North Carolina.* Synapse Energy Economics for the Southern Environmental Law Center.

Glick, D., N. Peluso, R. Fagan. 2019. *San Juan Replacement Study: An alternative clean energy resource portfolio to meet Public Service Company of New Mexico's energy, capacity, and flexibility needs after the retirement of the San Juan Generating Station*. Synapse Energy Economics for Sierra Club.

Suphachalasai, S., M. Touati, F. Ackerman, P. Knight, D. Glick, A. Horowitz, J.A. Rogers, T. Amegroud. 2018. *Morocco – Energy Policy MRV: Emission Reductions from Energy Subsidies Reform and Renewable Energy Policy.* Prepared for the World Bank Group.

Camp, E., B. Fagan, J. Frost, D. Glick, A. Hopkins, A. Napoleon, N. Peluso, K. Takahashi, D. White, R. Wilson, T. Woolf. 2018. *Phase 1 Findings on Muskrat Falls Project Rate Mitigation.* Synapse Energy Economics for Board of Commissioners of Public Utilities, Province of Newfoundland and Labrador.

Allison, A., R. Wilson, D. Glick, J. Frost. 2018. *Comments on South Africa 2018 Integrated Resource Plan.* Synapse Energy Economics for Centre for Environmental Rights.

Hopkins, A. S., K. Takahashi, D. Glick, M. Whited. 2018. *Decarbonization of Heating Energy Use in California Buildings: Technology, Markets, Impacts, and Policy Solutions*. Synapse Energy Economics for the Natural Resources Defense Council.

Knight, P., E. Camp, D. Glick, M. Chang. 2018. *Analysis of the Avoided Costs of Compliance of the Massachusetts Global Warming Solutions Act*. Supplement to 2018 AESC Study. Synapse Energy Economics for Massachusetts Department of Energy Resources and Massachusetts Department of Environmental Protection.

Fagan, B., R. Wilson, S. Fields, D. Glick, D. White. 2018. *Nova Scotia Power Inc. Thermal Generation Utilization and Optimization: Economic Analysis of Retention of Fossil-Fueled Thermal Fleet to and Beyond 2030 – M08059*. Prepared for Board Counsel to the Nova Scotia Utility Review Board.

Ackerman, F., D. Glick, T. Vitolo. 2018. *Report on CCR proposed rule*. Prepared for Earthjustice.

Lashof, D. A., D. Weiskopf, D. Glick. 2014. *Potential Emission Leakage Under the Clean Power Plan and a Proposed Solution: A Comment to the US EP*A. NextGen Climate America.

Smith, O., M. Lehrman, D. Glick. 2014. *Rate Design for the Distribution Edge*. Rocky Mountain Institute.

Hansen, L., V. Lacy, D. Glick. 2013. *A Review of Solar PV Benefit & Cost Studies*. Rocky Mountain Institute.

TESTIMONY

New Mexico Public Regulation Commission (Case No. 22-00286-UT): Direct Testimony of Devi Glick in the matter of Southwestern Public Service Company's application for: (1) Revisions of its retail rates under advice notice no. 312; (2) Authority to abandon the Plant X Unit 1, Plant X Unit 2, and Cunningham Unit 1 Generating Stations and amend the abandonment date of the Tolk Generating Station; and (3) other associated relied. On behalf of Sierra Club. April 21, 2023.

Michigan Public Service Commission (Case No. U-20805): Direct Testimony of Devi Glick in the matter of the Application of Indiana Michigan Power Company for a Power Supply Cost Recovery Reconciliation proceeding for the 12-month period ended December 31, 2021. On behalf of Michigan Attorney General. April 17, 2021.

Michigan Public Service Commission (Case No. U-21261): Direct Testimony of Devi Glick in the matter of the application of Indiana Michigan Power Company for approval to implement a Power Supply Cost Recovery Plan for the twelve months ending December 31, 2023. On Behalf of Sierra Club. March 23, 2021.

New Mexico Public Regulation Commission (Case No. 19-00099-UT / 19-00348-UT): Direct Testimony of Devi Glick in the matter of El Paso Electric Company's Application for Approval of Long-Term Purchased Power Agreements with Hecate Energy Santa Teresa, LLC, Buena Vista Energy, LLC, and Canutillo Energy Center LLC. On Behalf of New Mexico Office of the Attorney General, January 23, 2023.

Arizona Corporation Commission (Docket No. E-01933A-22-0107): Direct Testimony of Devi Glick in the matter of the application of Tucson Electric Power Company for the establishment of just and reasonable rates and charges designed to realize a reasonable rate of return on the fair value of the properties of Tucson Electric Power Company devoted to its operations throughout the state of Arizona for related approvals. On Behalf of Sierra Club. January 11, 2023.

New Mexico Public Regulation Commission (Case No. 22-00093-UT): Direct Testimony of Devi Glick in the amended application for approval of El Paso Electric Company's 2022 renewable energy act plan pursuant to the renewable energy act and 17.9.572 NMAC, and sixth revised rate no. 38-RPS cost rider. On Behalf of New Mexico Office of the Attorney General, January 9, 2023.

Iowa Utilities Board (Docket No. RPU-2022-0001): Supplemental Direct and Rebuttal Testimony of Devi Glick. On behalf of Environmental Intervenors. November 21, 2022.

Public Utility Commission of Texas (PUC Docket No. 53719): Direct Testimony of Devi Glick in the application of Entergy Texas, Inc. for authority to change rates. On behalf of Sierra Club. October 26, 2022.

Virginia State Corporation Commission (Case No. PUR-2022-00051): Direct Testimony of Devi Glick in re: Appalachian Power Company's Integrated Resource Plan filing pursuant to Virginia Cost §56-597 *et seq*. On behalf of Sierra Club. September 2, 2022.

Public Service Commission of the State of Missouri (Case No. ER-2022-0129, Case No. ER-2022-0130): Surrebuttal Testimony of Devi Glick in the matter of Every Missouri Metro and Evergy Missouri West request for authority to implement a general rate increase for electric service. On behalf of Sierra Club. August 16, 2022.

Iowa Utilities Board (Docket No. RPU-2022-0001): Direct Testimony of Devi Glick in MidAmerican Energy Company Application for a Determination of Ratemaking Principles. On behalf of Environmental Intervenors. July 29, 2022.

Public Service Commission of the State of Missouri (Case No. ER-2022-0129, Case No. ER-2022-0130): Direct Testimony of Devi Glick in the matter of Every Missouri Metro and Evergy Missouri West request for authority to implement a general rate increase for electric service. On behalf of Sierra Club. June 8, 2022.

Virginia State Corporation Commission (Case No. PUR-2022-00006): Direct Testimony of Devi Glick in the petition of Virginia Electric & Power Company for revision of rate adjustment clause: Rider E, for the recovery of costs incurred to comply with state and federal environmental regulations pursuant to §56-585.1 A 5 e of the Code of Virginia. On behalf of Sierra Club. May 24, 2022.

Oklahoma Corporation Commission (Case No. PUD 202100164): Direct Testimony of Devi Glick in the matter of the application of Oklahoma gas and electric company for an order of the Commission authorizing application to modify its rates, charges, and tariffs for retail electric service in Oklahoma. On behalf of Sierra Club. April 27, 2022.

Public Utility Commission of Texas (PUC Docket No. 52485): Direct Testimony of Devi Glick in the application of Southwestern Public Service Company to amend its certifications of public convenience and necessity to convert Harrington Generation Station from coal to natural gas. On behalf of Sierra Club. March 25, 2022.

Public Utility Commission of Texas (PUC Docket No. 52487): Direct Testimony of Devi Glick in the application of Entergy Texas Inc. to amend its certificate of convenience and necessity to construct Orange County Advanced Power Station. On behalf of Sierra Club. March 18, 2022.

Michigan Public Service Commission (Case No. U-21052): Direct Testimony of Devi Glick in the matter of the application of Indiana Michigan Power Company for approval of a Power Supply Cost Recovery Plan and Factors (2022). On Behalf of Sierra Club. March 9, 2022.

Arkansas Public Service Commission (Docket No. 21-070-U): Surrebuttal Testimony of Devi Glick in the Matter of the Application of Southwestern Electric Power Company for approval of a general change in rate and tariffs. On behalf of Sierra Club. February 17, 2022.

New Mexico Public Regulation Commission (Case No. 21-00200-UT): Direct Testimony of Devi Glick in the Matter of the Southwestern Public Service Company's application to amend its certifications of public convenience and necessity to convert Harrington Generation Station from coal to natural gas. On behalf of Sierra Club. January 14, 2022.

Public Utilities Commission of Ohio (Case No. 18-1004-EL-RDR): Direct Testimony of Devi Glick in the Matter of the Review of the Power Purchase Agreement Rider of Ohio Power Company for 2018 and 2019. On behalf of the Office of the Ohio Consumer's Counsel. December 29, 2021.

Arkansas Public Service Commission (Docket No. 21-070-U): Direct Testimony of Devi Glick in the Matter of the Application of Southwestern Electric Power Company for Approval of a General Change in Rates and Tariffs. On behalf of Sierra Club. December 7, 2021.

Michigan Public Service Commission (Case No. U-20528): Direct Testimony of Devi Glick in the matter of the Application of DTE Electric Company for reconciliation of its power supply cost recovery plan (Case No. U-20527) for the 12-month period ending December 31, 2020. On behalf of Michigan Environmental Council. November 23, 2021.

Public Utilties Commission of Ohio (Case No. 20-167-EL-RDR): Direct Testimony of Devi Glick in the Matter of the Review of the Reconciliation Rider of Duke Energy Ohio, Inc. On behalf of The Office of the Ohio Consumer's Counsel. October 26, 2021.

Public Utilities Commission of Nevada (Docket No. 21-06001): Phase III Direct Testimony of Devi Glick in the joint application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their 2022-2041 Triennial Intergrade Resource Plan and 2022-2024 Energy Supply Plan. On behalf of Sierra Club and Natural Resource Defense Council. October 6, 2021.

Public Service Commission of South Carolina (Docket No, 2021-3-E): Direct Testimony of Devi Glick in the matter of the annual review of base rates for fuel costs for Duke Energy Carolinas, LLC (for potential increase or decrease in fuel adjustment and gas adjustment). On behalf of the South Carolina Coastal Conservation League and the Southern Alliance for Clean Energy. September 10, 2021.

North Carolina Utilities Commission (Docket No. E-2, Sub 1272): Direct Testimony of Devi Glick in the matter of the application of Duke Energy Progress, LLC pursuant to N.C.G.S § 62-133.2 and commission R8-5 relating to fuel and fuel-related change adjustments for electric utilities. On behalf of Sierra Club. August 31, 2021.

Michigan Public Service Commission (Docket No. U-20530): Direct Testimony of Devi Glick in the application of Indiana Michigan Power Company for a Power Supply Cost Recovery Reconciliation proceeding for the 12-month period ending December 31, 2020. On behalf of the Michigan Attorney General. August 24, 2021.

Public Utilities Commission of Nevada (Docket No. 21-06001): Phase I Direct Testimony of Devi Glick in the joint application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of their 2022-2041 Triennial Intergrade Resource Plan and 2022-2024 Energy Supply Plan. On behalf of Sierra Club and Natural Resource Defense Council. August 16, 2021.

North Carolina Utilities Commission (Docket No. E-7, Sub 1250): Direct Testimony of Devi Glick in the Mater of Application Duke Energy Carolinas, LLC Pursuant to §N.C.G.S 62-133.2 and Commission Rule R8-5 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities. On behalf of Sierra Club. May 17, 2021.

Public Utility Commission of Texas (PUC Docket No. 51415): Direct Testimony of Devi Glick in the application of Southwestern Electric Power Company for authority to change rates. On behalf of Sierra Club. March 31, 2021.

Michigan Public Service Commission (Docket No. U-20804): Direct Testimony of Devi Glick in the application of Indiana Michigan Power Company for approval of a Power Supply Cost Recovery Plan and factors (2021). On behalf of Sierra Club. March 12, 2021.

Public Utility Commission of Texas (PUC Docket No. 50997): Direct Testimony of Devi Glick in the application of Southwestern Electric Power Company for authority to reconcile fuel costs for the period May 1, 2017- December 31, 2019. On behalf of Sierra Club. January 7, 2021.

Michigan Public Service Commission (Docket No. U-20224): Direct Testimony of Devi Glick in the application of Indiana Michigan Power Company for Reconciliation of its Power Supply Cost Recovery Plan. On behalf of the Sierra Club. October 23, 2020.

Public Service Commission of Wisconsin (Docket No. 3270-UR-123): Surrebuttal Testimony of Devi Glick in the application of Madison Gas and Electric Company for authority to change electric and natural gas rates. On behalf of Sierra Club. September 29, 2020.

Public Service Commission of Wisconsin (Docket No. 6680-UR-122): Surrebuttal Testimony of Devi Glick in the application of Wisconsin Power and Light Company for approval to extend electric and natural gas rates into 2021 and for approval of its 2021 fuel cost plan. On behalf of Sierra Club. September 21, 2020.

Public Service Commission of Wisconsin (Docket No. 3270-UR-123): Direct Testimony and Exhibits of Devi Glick in the application of Madison Gas and Electric Company for authority to change electric and natural gas rates. On behalf of Sierra Club. September 18, 2020.

Public Service Commission of Wisconsin (Docket No. 6680-UR-122): Direct Testimony and Exhibits of Devi Glick in the application of Wisconsin Power and Light Company for approval to extend electric and natural gas rates into 2021 and for approval of its 2021 fuel cost plan. On behalf of Sierra Club. September 8, 2020.

Indiana Utility Regulatory Commission (Cause No. 38707-FAC125): Direct Testimony and Exhibits of Devi Glick in the application of Duke Energy Indiana, LLC for approval of a change in its fuel cost adjustment for electric service. On behalf of Sierra Club. September 4, 2020.

Indiana Utility Regulatory Commission (Cause No. 38707-FAC123 S1): Direct Testimony and Exhibits of Devi Glick in the Subdocket for review of Duke Energy Indian, LLC's Generation Unit Commitment Decisions. On behalf of Sierra Club. July 31, 2020.

Indiana Utility Regulatory Commission (Cause No. 38707-FAC124): Direct Testimony and Exhibits of Devi Glick in the application of Duke Energy Indiana, LLC for approval of a change in its fuel cost adjustment for electric service. On behalf of Sierra Club. June 4, 2020.

Arizona Corporation Commission (Docket No. E-01933A-19-0028): Reply to Late-filed ACC Staff Testimony of Devi Glick in the application of Tucson Electric Power Company for the establishment of just and reasonable rates. On behalf of Sierra Club. May 8, 2020.

Indiana Utility Regulatory Commission (Cause No. 38707-FAC123): Direct Testimony and Exhibits of Devi Glick in the application of Duke Energy Indiana, LLC for approval of a change in its fuel cost adjustment for electric service. On behalf of Sierra Club. March 6, 2020.

Public Utility Commission of Texas (PUC Docket No. 49831): Direct Testimony of Devi Glick in the application of Southwestern Public Service Company for authority to change rates. On behalf of Sierra Club. February 10, 2020.

New Mexico Public Regulation Commission (Case No. 19-00170-UT): Testimony of Devi Glick in Support of Uncontested Comprehensive Stipulation. On behalf of Sierra Club. January 21, 2020.

Nova Scotia Utility and Review Board (Matter M09420): Expert Evidence of Fagan, B, D. Glick reviewing Nova Scotia Power's Application for Extra Large Industrial Active Demand Control Tariff for Port Hawkesbury Paper. Prepared for Nova Scotia Utility and Review Board Counsel. December 3, 2019.

New Mexico Public Regulation Commission (Case No. 19-00170-UT): Direct Testimony of Devi Glick regarding Southwestern Public Service Company's application for revision of its retail rates and authorization and approval to shorten the service life and abandon its Tolk generation station units. On behalf of Sierra Club. November 22, 2019.

North Carolina Utilities Commission (Docket No. E-100, Sub 158): Responsive testimony of Devi Glick regarding battery storage and PURPA avoided cost rates. On behalf of Southern Alliance for Clean Energy. July 3, 2019.

State Corporation Commission of Virginia (Case No. PUR-2018-00195): Direct testimony of Devi Glick regarding the economic performance of four of Virginia Electric and Power Company's coal-fired units and the Company's petition to recover costs incurred to company with state and federal environmental regulations. On behalf of Sierra Club. April 23, 2019.

Connecticut Siting Council (Docket No. 470B): Joint testimony of Robert Fagan and Devi Glick regarding NTE Connecticut's application for a Certificate of Environmental Compatibility and Public Need for the Killingly generating facility. On behalf of Not Another Power Plant and Sierra Club. April 11, 2019.

Public Service Commission of South Carolina (Docket No. 2018-3-E): Surrebuttal testimony of Devi Glick regarding annual review of base rates of fuel costs for Duke Energy Carolinas. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. August 31, 2018.

Public Service Commission of South Carolina (Docket No. 2018-3-E): Direct testimony of Devi Glick regarding the annual review of base rates of fuel costs for Duke Energy Carolinas. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. August 17, 2018.

Public Service Commission of South Carolina (Docket No. 2018-1-E): Surrebuttal testimony of Devi Glick regarding Duke Energy Progress' net energy metering methodology for valuing distributed energy resources system within South Carolina. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. June 4, 2018.

Public Service Commission of South Carolina (Docket No. 2018-1-E): Direct testimony of Devi Glick regarding Duke Energy Progress' net energy metering methodology for valuing distributed energy resources system within South Carolina. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. May 22, 2018.

Public Service Commission of South Carolina (Docket No. 2018-2-E): Surrebuttal testimony of Devi Glick on avoided cost calculations and the costs and benefits of solar net energy metering for South Carolina Electric and Gas Company. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. April 4, 2018.

Public Service Commission of South Carolina (Docket No. 2018-2-E): Direct testimony of Devi Glick on avoided cost calculations and the costs and benefits of solar net energy metering for South Carolina Electric and Gas Company. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. March 23, 2018.

Resume updated January 2023

EXHIBIT DG-3

Company's Response to Sierra Club Discovery Request No. 2-27

(March 29, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

As it pertains to subpart (d), the following response to Question No. 27 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Wesley A. Hudson
Manager – Electric Market Operations
Virginia Electric and Power Company

As it pertains to subparts (a)-(c), and (e)-(h), the following responses to Question No. 27 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Jeffrey E Currier
Strategic Advisor – Energy Supply
Virginia Electric and Power Company

As it pertains to subparts (i)-(j) and (l)-(m), the following response to Question No. 27 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

B. Kyle Cosby
Manager - Financial and Business Services
Dominion Energy Services, Inc.

As it pertains to subpart (k), the following response to Question No. 27 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Ronnie T. Campbell
Accounting Manager
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 27 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 27

For each of the three Mount Storm units, please provide the following historical annual data from 2016 and through 2022, and by month as available for 2023:

(a) Nameplate capacity, summer capacity, and winter capacity (MW)

(b) Unforced capacity (MW)

(c) Capacity factor

(d) Generation (MWh)

(e) Equivalent availability factor (EAF)

(f) Heat rate

(g) Forced or random outage rate

(h) Effective forced outage rate (EFOR)

(i) Fixed O&M costs

(j) Non-fuel variable O&M costs

(k) Fuel costs (by type)

(l) Environmental CapEx

(m) All other CapEx

Response:

With respect to subparts (j) through (m), the Company objects to this interrogatory because it is not relevant to this proceeding and would require original work in order to respond. Notwithstanding and subject to these objections, the Company provides the following response:

(a) Please see the following tables:

Nameplate MW Capacity

MT. STORM 1	570.2
MT. STORM 2	570.2
MT. STORM 3	522.0

Summer Installed MW Capacity

	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
MT. STORM 1	554.0	551.0	550.0	548.2	548.2	548.2	543.9
MT. STORM 2	555.0	553.3	553.0	553.0	553.0	553.0	553.0
MT. STORM 3	520.0	520.0	520.0	520.0	520.0	520.0	520.0

Winter MW Capacity

MT. STORM 1	569.0
MT. STORM 2	570.0
MT. STORM 3	537.0

(b) Please see the following table:

Unforced Capacity (UCAP) MW (As of 6/1 of each year)

	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
MT. STORM 1	529.4	532.3	511.0	525.6	513.5	529.6	480.3
MT. STORM 2	530.1	534.4	534.7	520.6	471.4	492.2	533.9
MT. STORM 3	491.4	485.4	430.4	458.0	508.8	497.2	507.5

(c) Please see the following table:

Capacity Factor

								Jan	**Feb**
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
MT. STORM 1	68.4%	49.4%	43.4%	36.8%	47.0%	34.5%	29.9%	21.2%	0.0%
MT. STORM 2	67.0%	58.0%	32.2%	34.6%	28.9%	37.9%	36.1%	14.5%	0.0%
MT. STORM 3	53.3%	39.1%	41.2%	25.2%	23.0%	43.8%	32.2%	0.0%	67.5%

(d) See Attachment Sierra Club Set 02-27(d) (WAH).

(e) Please see the following table:

Equivalent Availability								**Jan**	**Feb**
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
MT. STORM 1	82.0%	74.4%	75.5%	63.8%	76.1%	59.2%	59.1%	99.3%	0.0%
MT. STORM 2	80.5%	81.1%	66.2%	59.7%	63.4%	58.2%	81.8%	48.4%	0.0%
MT. STORM 3	65.2%	70.5%	72.1%	54.5%	58.3%	64.7%	62.3%	84.8%	95.7%

(f) Please see the following table:

Heat Rate								**Jan**	**Feb**
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
MT. STORM 1	10,126	10,164	10,152	10,423	10,413	10,319	10,494	11,192	10,916
MT. STORM 2	10,067	10,045	10,039	10,378	10,195	10,312	10,512	10,929	9,480
MT. STORM 3	10,393	10,555	10,786	10,603	11,076	9,833	10,938	0	10,941

(g) Please see the Company's response subpart (h).

(h) Please see the below table:

EFOR								**Jan**	**Feb**
	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2023**
MT. STORM 1	4.7%	8.3%	2.6%	8.4%	3.9%	15.3%	15.2%	2.0%	0.0%
MT. STORM 2	3.9%	4.2%	10.3%	11.4%	14.6%	4.1%	6.8%	0.0%	0.0%
MT. STORM 3	7.0%	21.2%	14.3%	2.4%	6.2%	2.5%	11.0%	0.0%	4.3%

(i)-(j), (l)-(m) - See Attachment Sierra Club Set 2-27 (BKC) ES.

(k) See Attachment Sierra Club Set 02-27(k) (RTC) CONF.

Attachment Sierra Club Set 02-27 (BKC) ES is extraordinarily sensitive in its entirety. Attachment Sierra Club Set 02-27(k) (RTC) CONF is confidential in its entirety. This information is being provided pursuant to the protections set forth in 5 VAC 5-20-170, the Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information dated March 13, 2023, any subsequent protective order or ruling that may be issued for confidential or extraordinarily sensitive information in this proceeding, and the Agreements to Adhere executed pursuant to any such orders or rulings.

EXHIBIT DG-4

Company's Response to Sierra Club Discovery Request No. 2-32

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 32 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

William J. Caffall
Senior Energy Market Analyst
Dominion Energy Services, Inc.

Question No. 32

Please provide the current planned retirement dates for each of the three Mount Storm units.

Response:

There are no official planned retirement dates for Mt. Storm Units 1-3. For planning purposes only, Mt. Storm Units 1-3 were shown as retired in 2044 in the 2022 IRP Update.

EXHIBIT DG-5

Company's Response to Sierra Club Discovery Request No. 2-5

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Christopher Nunn
Manager of Generation Projects
Dominion Energy Services, Inc.

Question No. 5

See pages 6 and 7 of Boyd's Direct Testimony. Please provide all costs incurred by the Company to rent and install the LDTCS Project Temporary System at Mount Storm by the following categories and specify whether the cost is classified as capital or O&M:

(a) Front-end engineering and design

(b) Rental of air-cooled chiller equipment

(c) Site preparation

(d) Construction and installation of foundations

(e) Installation of power line and transformer

(f) Installation of piping and valving

(g) Installation of instrumentation for the system

(h) Installation of controls for the system

(i) Installation of variable frequency drives and controls to the cooling tower fans

Response:

Please see the following table:

Case No. PUR-2023-00005 Sierra Club Second Set - Question 5		
Front End Engineering and Design	$ 395,360.00	O&M
Rental of Air-Cooled Chillers	$ 8,175,510.00	O&M
Site Preparation	$ 20,633.00	O&M
Construction Foundations	$ 487,687.00	CAPITAL
Power Line and Transformer	$ 1,969,991.54	CAPITAL
Installation of Piping and Valves	$ 2,648,400.00	O&M
Instrumentation & Controls	$ 47,244.00	O&M
VFDs	$ 61,945.26	CAPITAL

Note: The above costs are project to date through February 2023.

EXHIBIT DG-6

Company's Response to Sierra Club Discovery Request No. 2-9

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 9 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Rick Boyd
Director of Generation Projects
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 9 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 9

On page 9 of his Direct Testimony, Witness Boyd states that the Company "is not yet able to project the likely ongoing O&M costs for the Permanent System." Please state whether the Company thinks it is likely that the ongoing O&M costs for the Permanent System are going to be lower, higher, or roughly equal to the ongoing O&M costs for the Temporary System.

Response:

The Company objects to this interrogatory as it seeks information that is not relevant to this proceeding and calls for speculation. Subject to and notwithstanding these objections, the Company provides the following response:

As stated in the Direct Testimony of Company Witness Rick D. Boyd at page 7, installation costs of the Permanent System will be presented for recovery in a future Rider E update as appropriate.

EXHIBIT DG-7

Company's Response to Sierra Club Discovery Request No. 2-33

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 33 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Steven Gaberdiel
Accounting Manager
Dominion Energy Services, Inc.

Question No. 33

Please provide the total undepreciated balance for each of the three Mount Storm units as of:

(a) November 01, 2021 (i.e., when Phase 2 of the BAWT project began)

(b) July 6, 2022 (i.e., when construction began for the LDTCS Temporary System)

Response:

(a) See Attachment Sierra Club Set 02-33(a) (SPG)

(b) See Attachment Sierra Club Set 02-33(b) (SPG).

Net Book Value
As of October 31, 2021

Unit	Acquisition Value	Accum Depreciation	Net Book Value
Mount Storm Unit 1	501,044,127.09	318,673,335.60	182,370,791.49
Mount Storm Unit 2	432,302,597.95	283,594,972.21	148,707,625.74
Mount Storm Unit 3	565,151,257.15	358,903,044.13	206,248,213.02
	1,498,497,982.19	961,171,351.94	537,326,630.25

Net Book Value
as of June 30, 2022

Unit	Acquisition Value	Accum Depreciation	Net Book Value
Mount Storm Unit 1	501,670,402.76	326,576,227.38	175,094,175.38
Mount Storm Unit 2	433,918,812.37	292,000,817.54	141,917,994.83
Mount Storm Unit 3	561,082,996.27	363,145,083.09	197,937,913.18
	1,496,672,211.40	981,722,128.02	514,950,083.38

EXHIBIT DG-8

Company's Response to Sierra Club Discovery Request No. 4-1

(April 21, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Fourth Set

The following response to Question No. 1 of the Fourth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on April 14, 2023, was prepared by or under the supervision of:

Thomas N. Effinger
Director – Environmental Services
Dominion Energy Services, Inc.

With respect to legal issues, the following response to Question No. 1 of the Fourth Set of Interrogatories and Requests for Production of Documents propounded by the Virginia State Corporation Commission Staff received April 14, 2023, has been prepared under my supervision.

Timothy D. Patterson
McGuireWoods LLP

Question No. 4-1

Please refer to the Company's Response to Sierra Club Request No. 2-26(a), in which the Company states that it cannot determine the costs to comply with the proposed 2023 ELG rule "[s]ince neither the proposed rule nor a Final Rule have been issued."

(a) Please state whether the Company now anticipates incurring costs to comply with the 2023 ELG rule as described in the proposed rule published in the Federal Register on March 29, 2023.1

(b) If so, please provide a description of the work to be performed, an estimate of the capital costs and O&M costs, and any supporting analysis. If not, please explain why not.

Response:

The Company objects to this interrogatory as it is not relevant to this proceeding and calls for speculation. Subject to and notwithstanding this objection, the Company provides the following response:

On March 29, 2023, the Environmental Protection Agency ("EPA") published in the Federal Register the proposed rule "Supplemental Steam Electric ELG and Standards Rule" ("Proposed Rule"). The Proposed Rule discusses potential revisions to the 2015 and 2020 Effluent Limitations Guidelines's ("ELG Rule") best available technology economically achievable ("BAT") effluent limitations and pretreatment standards for flue gas desulfurization ("FGD"), wastewater and bottom ash transport water ("BATW"), and combustion residual leachate for

existing sources. Within the Proposed Rule, the EPA has offered four alternatives for FGD and BATW and has solicited public comment.

Because it is not clear what compliance requirements would be contained in the final rule, or whether it would require an alternative based on the public comments, the cost for compliance with the 2023 ELG rule at Mt. Storm cannot be predicted. However, should a zero-discharge requirement be imposed, the Mt. Storm Bottom Ash Water Transport Project as described in the Direct Testimony of Company Witness Boyd would be compliant with that requirement. Mt. Storm currently recycles 100% of its FGD blowdown, so that waste stream would also meet a zero-discharge requirement if imposed by the final rule.

EXHIBIT DG-9

Generating Unit-Level Costs & Loadings Estimates by Regulatory Option,

EPA Doc. No. SE10381

(February 28, 2023)

MEMORANDUM

TO: Steam Electric Rulemaking Record - EPA-HQ-OW-2009-0819

FROM: U.S. EPA

DATE: February 28, 2023

SUBJECT: Generating Unit-Level Costs and Loadings Estimates by Regulatory Option for the 2023 Proposed Rule – DCN SE10381

For the 2023 proposed rule, EPA evaluated data on wastewater flow rates, treatment technology costs, and pollutant concentration data from individual power plants, technology vendors, and previous rulemakings to estimate compliance costs and pollutant loadings associated with treating flue gas desulfurization (FGD) wastewater and combustion residual leachate (CRL) from landfills as well as with handling bottom ash (BA) transport water[1]. The methodology for estimating these costs and loadings for each wastestream and regulatory option are presented in the *Technical Development Document for Proposed Supplemental Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category* report (EPA-821-R-23-005). This memorandum presents the treatment technology and estimated costs and pollutant loadings for each generating unit for the regulatory options considered by EPA. The regulatory options for the 2023 proposed rule are shown in Table 1.

Table 1. Main Regulatory Proposed Options

Wastestream	Subcategory	Technology Basis for the BAT/PSES Regulatory Options			
		1	2	3 (Preferred)	4
FGD wastewater	NA	CP+LRTR	Membrane filtration	Membrane filtration	Membrane filtration
	High FGD flow facilities/LUEGUs	Not subcategorized	Not subcategorized	Not subcategorized	Not subcategorized
	EGUs permanently ceasing coal combustion by 2028	Surface impoundments	Surface impoundments	Surface impoundments	Surface impoundments
	Early adopters permanently ceasing coal combustion by 2032	Not subcategorized	CP+LRTR	CP+LRTR	Not subcategorized
BA transport water	NA	High recycle rate systems	High recycle rate systems	Dry handling or closed-loop systems	Dry handling or closed-loop systems
	LUEGUs	Not subcategorized	Not subcategorized	Not subcategorized	Not subcategorized

[1] For legacy wastewater, an additional wastestream considered under this proposed rule, EPA is proposing to not specify a nationwide technology basis. However, EPA estimated wastewater flow rates and corresponding costs and pollutant loadings for facilities to treat legacy wastewater using several technology options, as described in *Legacy Wastewater at CCR Surface Impoundments – Estimated Volumes, Treatment Costs, and Pollutant Loadings* (DCN SE10252).

Table 1. Main Regulatory Proposed Options

Wastestream	Subcategory	Technology Basis for the BAT/PSES Regulatory Options			
		1	2	3 (Preferred)	4
	EGUs permanently ceasing coal combustion by 2028	Surface impoundments	Surface impoundments	Surface impoundments	Surface impoundments
	Early adopters permanently ceasing coal combustion by 2032	Not subcategorized	Not subcategorized	High recycle rate systems	Not subcategorized
CRL	NA	CP	CP	CP	CP

CP+LRTR = chemical precipitation plus low residence time reduction

LUEGU = low utilization electric generating unit

EGU = electric generating unit

The following tables present the costs and loadings estimates for the steam electric industry:

- Table 2: Unit-level costs for FGD wastewater treatment under Regulatory Option 1;
- Table 3: Unit-level costs for FGD wastewater treatment under Regulatory Option 2;
- Table 4: Unit-level costs for FGD wastewater treatment under Regulatory Option 3;
- Table 5: Unit-level costs for FGD wastewater treatment under Regulatory Option 4;
- Table 6: Unit-level costs for BA transport water treatment under Regulatory Option 1;
- Table 7: Unit-level costs for BA transport water treatment under Regulatory Option 2;
- Table 8: Unit-level costs for BA transport water treatment under Regulatory Option 3;
- Table 9: Unit-level costs for BA water treatment under Regulatory Option 4;
- Table 10: Unit-level costs for CRL treatment under all regulatory options;
- Table 11: Unit-level total pollutant loadings for FGD wastewater under baseline and all regulatory options;
- Table 12: Unit-level total pollutant loadings for BA transport water under baseline and all regulatory options; and
- Table 13: Unit-level total pollutant loadings for CRL under baseline and all regulatory options.

EPA estimated potential ranges of bromide and iodine loadings. Given that most coal-fired power plants use bromide additives, total loadings are calculated as the sum of bromide maximum loading and iodine minimum loading. See the *FGD Halogen Loadings from Steam Electric Power Plants* (DCN SE10317) on additional details on halogen loadings estimates.

Table 6. Unit-Level Cost Estimates for BA Transport Water Treatment Under Regulatory Option 1

Plant Name	Plant ID	Unit ID	Treatment Technology	Capacity (MW)	Capital Cost	Annual O&M Cost	One Time Cost	Recurring O&M Costs		
								5-Year	6-Year	10-Year
Jeffrey Energy Center	8353	SE Unit-1	Purge	681	$0	$0	NA	$0	NA	$0
Jeffrey Energy Center	8353	SE Unit-2	Purge	681	$0	$0	NA	$0	NA	$0
Jeffrey Energy Center	8353	SE Unit-3	Purge	681	$0	$0	NA	$0	NA	$0
Newton	8490	SE Unit-1	SI	617	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-1	Purge	1,110	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-2	Purge	1,110	$0	$0	NA	$0	NA	$0
F.B. Culley Generating Station	8965	SE Unit-3	Purge	270	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-1	Purge	816	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-2	Purge	816	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-3	Purge	1,300	$0	$0	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-1	Purge	552	$0	$0	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-2	Purge	555	$0	$0	NA	$0	NA	$0
Wyodak Power Plant	9229	SE Unit-1	Purge	362	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-1	Purge	570	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-2	Purge	570	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-3	Purge	522	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-1	SI	411	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-2	SI	657	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-3	SI	745	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-4	SI	745	$0	$0	NA	$0	NA	$0
Muskogee Generating Station	9621	SE Unit-3	Purge	572	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-1	SI	806	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-2	SI	819	$0	$0	NA	$0	NA	$0

Table 7. Unit-Level Cost Estimates for BA Transport Water Treatment Under Regulatory Option 2

Plant Name	Plant ID	Unit ID	Treatment Technology	Capacity (MW)	Capital Cost	Annual O&M Cost	One Time Cost	Recurring O&M Costs		
								5-Year	6-Year	10-Year
Jeffrey Energy Center	8353	SE Unit-3	Purge	681	$0	$0	NA	$0	NA	$0
Newton	8490	SE Unit-1	SI	617	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-1	Purge	1,110	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-2	Purge	1,110	$0	$0	NA	$0	NA	$0
F.B. Culley Generating Station	8965	SE Unit-3	Purge	270	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-1	Purge	816	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-2	Purge	816	$0	$0	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-3	Purge	1,300	$0	$0	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-1	Purge	552	$0	$0	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-2	Purge	555	$0	$0	NA	$0	NA	$0
Wyodak Power Plant	9229	SE Unit-1	Purge	362	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-1	Purge	570	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-2	Purge	570	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-3	Purge	522	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-1	SI	411	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-2	SI	657	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-3	SI	745	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-4	SI	745	$0	$0	NA	$0	NA	$0
Muskogee Generating Station	9621	SE Unit-3	Purge	572	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-1	SI	806	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-2	SI	819	$0	$0	NA	$0	NA	$0

Table 8. Unit-Level Cost Estimates for BA Transport Water Treatment Under Regulatory Option 3

Plant Name	Plant ID	Unit ID	Treatment Technology	Capacity (MW)	Capital Cost	Annual O&M Cost	One Time Cost	Recurring O&M Costs		
								5-Year	6-Year	10-Year
Jeffrey Energy Center	8353	SE Unit-3	ZLD	681	$2,461,204	$289,843	NA	$0	NA	$0
Newton	8490	SE Unit-1	SI	617	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-1	ZLD	1,110	$4,262,840	$486,554	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-2	ZLD	1,110	$4,262,840	$486,554	NA	$0	NA	$0
F.B. Culley Generating Station	8965	SE Unit-3	ZLD	270	$4,234,312	$253,104	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-1	ZLD	816	$2,749,683	$340,467	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-2	ZLD	816	$2,749,683	$340,467	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-3	ZLD	1,300	$4,379,013	$542,211	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-1	ZLD	552	$2,899,010	$276,258	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-2	ZLD	555	$2,914,765	$277,759	NA	$0	NA	$0
Wyodak Power Plant	9229	SE Unit-1	ZLD	362	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-1	ZLD	570	$2,294,856	$252,012	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-2	ZLD	570	$2,294,856	$252,012	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-3	ZLD	522	$2,101,605	$230,790	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-1	SI	411	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-2	SI	657	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-3	SI	745	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-4	SI	745	$0	$0	NA	$0	NA	$0
Muskogee Generating Station	9621	SE Unit-3	ZLD	572	$4,996,699	$383,246	NA	$0	NA	$0
PPL Montour	9805	SE Unit-1	SI	806	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-2	SI	819	$0	$0	NA	$0	NA	$0

Table 9. Unit-Level Cost Estimates for BA Transport Water Treatment Under Regulatory Option 4

Plant Name	Plant ID	Unit ID	Treatment Technology	Capacity (MW)	Capital Cost	Annual O&M Cost	One Time Cost	Recurring O&M Costs		
								5-Year	6-Year	10-Year
Newton	8490	SE Unit-1	SI	617	$0	$0	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-1	ZLD	1,110	$4,262,840	$486,554	NA	$0	NA	$0
Belews Creek Steam Station	8661	SE Unit-2	ZLD	1,110	$4,262,840	$486,554	NA	$0	NA	$0
F.B. Culley Generating Station	8965	SE Unit-3	ZLD	270	$4,234,312	$253,104	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-1	ZLD	816	$2,749,683	$340,467	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-2	ZLD	816	$2,749,683	$340,467	NA	$0	NA	$0
John E. Amos Plant	9161	SE Unit-3	ZLD	1,300	$4,379,013	$542,211	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-1	ZLD	552	$2,899,010	$276,258	NA	$0	NA	$0
Fort Martin Power Station	9225	SE Unit-2	ZLD	555	$2,914,765	$277,759	NA	$0	NA	$0
Wyodak Power Plant	9229	SE Unit-1	ZLD	362	$0	$0	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-1	ZLD	570	$2,294,856	$252,012	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-2	ZLD	570	$2,294,856	$252,012	NA	$0	NA	$0
Mount Storm Power Station	9289	SE Unit-3	ZLD	522	$2,101,605	$230,790	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-1	SI	411	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-2	SI	657	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-3	SI	745	$0	$0	NA	$0	NA	$0
Roxboro Steam Plant	9391	SE Unit-4	SI	745	$0	$0	NA	$0	NA	$0
Muskogee Generating Station	9621	SE Unit-3	ZLD	572	$4,996,699	$383,246	NA	$0	NA	$0
PPL Montour	9805	SE Unit-1	SI	806	$0	$0	NA	$0	NA	$0
PPL Montour	9805	SE Unit-2	SI	819	$0	$0	NA	$0	NA	$0

Table 10. Unit-Level Cost Estimates for CRL Treatment Under all Four Regulatory Options

Plant Name	Plant ID	Unit ID	Treatment Technology	Capacity (MW)	Capital Cost	Annual O&M Cost	One Time Cost	Recurring O&M Costs		
								5-Year	6-Year	10-Year
Belews Creek Steam Station	8661	SE Unit-2	CP	1,110	$5,388,530	$302,610	NA	NA	$55,020	NA
John E. Amos Plant	9161	SE Unit-1	CP	816	$23,045,884	$2,382,624	NA	NA	$48,780	NA
John E. Amos Plant	9161	SE Unit-2	CP	816	$14,471,042	$1,496,104	NA	NA	$30,630	NA
John E. Amos Plant	9161	SE Unit-3	CP	1,300	$14,471,042	$1,496,104	NA	NA	$30,630	NA
Fort Martin Power Station	9225	SE Unit-1	CP	552	$5,234,424	$285,644	NA	NA	$54,870	NA
Fort Martin Power Station	9225	SE Unit-2	CP	555	$5,262,872	$287,197	NA	NA	$55,169	NA
Mount Storm Power Station	9289	SE Unit-1	CP	570	$4,445,858	$312,933	NA	NA	$34,553	NA
Mount Storm Power Station	9289	SE Unit-2	CP	570	$4,856,376	$341,828	NA	NA	$37,743	NA
Mount Storm Power Station	9289	SE Unit-3	CP	522	$4,856,376	$341,828	NA	NA	$37,743	NA
John P. Madgett	9373	SE Unit-1	CP	387	$8,030,240	$287,313	NA	NA	$110,039	NA
Roxboro Steam Plant	9391	SE Unit-1	CP	411	$4,796,861	$368,135	NA	NA	$32,054	NA
Roxboro Steam Plant	9391	SE Unit-2	CP	657	$4,796,861	$368,135	NA	NA	$32,054	NA
Roxboro Steam Plant	9391	SE Unit-3	CP	745	$4,229,117	$324,564	NA	NA	$28,260	NA
Roxboro Steam Plant	9391	SE Unit-4	CP	745	$2,644,324	$202,939	NA	NA	$17,670	NA
W H Zimmer Station	9475	SE Unit-1	CP	1,300	$9,492,257	$456,521	NA	NA	$110,039	NA
AES Cayuga LLC	9671	SE Unit-2	CP	167	$8,632,335	$356,997	NA	NA	$110,039	NA
PPL Montour	9805	SE Unit-1	CP	806	$4,717,320	$222,259	NA	NA	$55,477	NA
PPL Montour	9805	SE Unit-2	CP	819	$4,639,562	$218,595	NA	NA	$54,562	NA
Dallman	9971	SE Unit-4	CP	230	$7,730,919	$252,670	NA	NA	$110,039	NA

CP = chemical precipitation

Monitor = monitoring costs only due to existing treatment-in-place

Table 12. Generating Unit-Level Total Pollutant Loadings for BA Transport Water

Plant Name	Plant ID	Unit ID	Baseline Loading (lb)	Regulatory Option 1 Loading (lb)	Regulatory Option 2 Loading (lb)	Regulatory Option 3 Loading (lb)	Regulatory Option 4 Loading (lb)
Associated Electric Cooperative, Inc, Thomas Hill Energy Center	7400	SE Unit-1	47,200	47,200	47,200	0	0
Associated Electric Cooperative, Inc, Thomas Hill Energy Center	7400	SE Unit-2	74,700	74,700	74,700	0	0
Winyah Generating Station	7411	SE Unit-1	0	0	0	0	0
Winyah Generating Station	7411	SE Unit-2	0	0	0	0	0
Winyah Generating Station	7411	SE Unit-3	0	0	0	0	0
Winyah Generating Station	7411	SE Unit-4	0	0	0	0	0
Powerton Station	7587	SE Unit-1	152,000	152,000	152,000	0	0
Powerton Station	7587	SE Unit-2	152,000	152,000	152,000	0	0
Pleasants Power Station	8281	SE Unit-1	0	0	0	0	0
Pleasants Power Station	8281	SE Unit-2	0	0	0	0	0
Miami Fort Station	8308	SE Unit-2	0	0	0	0	0
Miami Fort Station	8308	SE Unit-3	0	0	0	0	0
Jeffrey Energy Center	8353	SE Unit-1	113,000	113,000	113,000	0	0
Jeffrey Energy Center	8353	SE Unit-2	113,000	113,000	113,000	0	0
Jeffrey Energy Center	8353	SE Unit-3	113,000	113,000	113,000	0	0
Newton	8490	SE Unit-1	0	0	0	0	0
Belews Creek Steam Station	8661	SE Unit-1	182,000	182,000	182,000	0	0
Belews Creek Steam Station	8661	SE Unit-2	182,000	182,000	182,000	0	0
F.B. Culley Generating Station	8965	SE Unit-3	95,100	95,100	95,100	0	0
John E. Amos Plant	9161	SE Unit-1	128,000	128,000	128,000	0	0
John E. Amos Plant	9161	SE Unit-2	128,000	128,000	128,000	0	0
John E. Amos Plant	9161	SE Unit-3	204,000	204,000	204,000	0	0
Fort Martin Power Station	9225	SE Unit-1	105,000	105,000	105,000	0	0
Fort Martin Power Station	9225	SE Unit-2	105,000	105,000	105,000	0	0
Wyodak Power Plant	9229	SE Unit-1	0	0	0	0	0
Mount Storm Power Station	9289	SE Unit-1	98,300	98,300	98,300	0	0
Mount Storm Power Station	9289	SE Unit-2	98,300	98,300	98,300	0	0
Mount Storm Power Station	9289	SE Unit-3	90,000	90,000	90,000	0	0
Roxboro Steam Plant	9391	SE Unit-1	0	0	0	0	0
Roxboro Steam Plant	9391	SE Unit-2	0	0	0	0	0
Roxboro Steam Plant	9391	SE Unit-3	0	0	0	0	0

Table 13. Generating Unit-Level Total Pollutant Loadings for CRL Wastewater

Plant Name	Plant ID	Unit ID	Baseline Loading (lb)	Regulatory Option 1 Loading (lb)	Regulatory Option 2 Loading (lb)	Regulatory Option 3 Loading (lb)	Regulatory Option 4 Loading (lb)
Pleasants Power Station	8281	SE Unit-1	152,000	151,000	151,000	151,000	151,000
Pleasants Power Station	8281	SE Unit-2	152,000	151,000	151,000	151,000	151,000
Pleasants Power Station	8281	SE Unit-2	152,000	151,000	151,000	151,000	151,000
Miami Fort Station	8308	SE Unit-2	394,000	391,000	391,000	391,000	391,000
Miami Fort Station	8308	SE Unit-3	394,000	391,000	391,000	391,000	391,000
Jeffrey Energy Center	8353	SE Unit-1	590,000	585,000	585,000	585,000	585,000
Jeffrey Energy Center	8353	SE Unit-2	590,000	585,000	585,000	585,000	585,000
Jeffrey Energy Center	8353	SE Unit-3	590,000	585,000	585,000	585,000	585,000
Newton	8490	SE Unit-1	78,800	78,200	78,200	78,200	78,200
Belews Creek Steam Station	8661	SE Unit-1	429,000	425,000	425,000	425,000	425,000
Belews Creek Steam Station	8661	SE Unit-2	429,000	425,000	425,000	425,000	425,000
John E. Amos Plant	9161	SE Unit-1	1,730,000	1,720,000	1,720,000	1,720,000	1,720,000
John E. Amos Plant	9161	SE Unit-1	1,730,000	1,720,000	1,720,000	1,720,000	1,720,000
John E. Amos Plant	9161	SE Unit-2	1,730,000	1,720,000	1,720,000	1,720,000	1,720,000
John E. Amos Plant	9161	SE Unit-2	1,730,000	1,720,000	1,720,000	1,720,000	1,720,000
John E. Amos Plant	9161	SE Unit-3	2,760,000	2,730,000	2,730,000	2,730,000	2,730,000
John E. Amos Plant	9161	SE Unit-3	2,760,000	2,730,000	2,730,000	2,730,000	2,730,000
Fort Martin Power Station	9225	SE Unit-1	388,000	385,000	385,000	385,000	385,000
Fort Martin Power Station	9225	SE Unit-2	390,000	387,000	387,000	387,000	387,000
Mount Storm Power Station	9289	SE Unit-1	310,000	307,000	307,000	307,000	307,000
Mount Storm Power Station	9289	SE Unit-1	310,000	307,000	307,000	307,000	307,000
Mount Storm Power Station	9289	SE Unit-2	310,000	307,000	307,000	307,000	307,000
Mount Storm Power Station	9289	SE Unit-2	310,000	307,000	307,000	307,000	307,000
Mount Storm Power Station	9289	SE Unit-3	284,000	282,000	282,000	282,000	282,000
Mount Storm Power Station	9289	SE Unit-3	284,000	282,000	282,000	282,000	282,000
John P. Madgett	9373	SE Unit-1	86,000	85,300	85,300	85,300	85,300
Roxboro Steam Plant	9391	SE Unit-1	394,000	391,000	391,000	391,000	391,000
Roxboro Steam Plant	9391	SE Unit-2	631,000	626,000	626,000	626,000	626,000
Roxboro Steam Plant	9391	SE Unit-3	715,000	710,000	710,000	710,000	710,000
Roxboro Steam Plant	9391	SE Unit-4	715,000	710,000	710,000	710,000	710,000
W H Zimmer Station	9475	SE Unit-1	497,000	493,000	493,000	493,000	493,000
AES Cayuga LLC	9671	SE Unit-2	255,000	253,000	253,000	253,000	253,000
PPL Montour	9805	SE Unit-1	227,000	226,000	226,000	226,000	226,000

EXHIBIT DG-10

Company's Response to Sierra Club Discovery Request No. 5-1

(May 4, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Fifth Set

The following response to Question No. 5-1 of the Fifth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on April 27, 2023, was prepared by or under the supervision of:

Rebecca B. Gilmer
Manager of Generation Projects
Dominion Energy Services, Inc.

Question No. 5-1

Please refer to the Company's Response to Sierra Club Request No. 2-1 regarding the $22 million cost estimate for the LDTCS Project.

(a) Please break down how the $22 million is allocated according to the following categories:

(i) temporary system only;
(ii) temporary and permanent system;
(iii) permanent system only.

(a) Please quantify the amount of the $22 million that covers only the permanent system.

Response:

(a) Please see below:

(i) $0
(ii) $5.4 million
(iii) $16.6 million

(b) $16.6 million

EXHIBIT DG-11

Company's Response to Sierra Club Discovery Request No. 3-4

(April 12, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Third Set

The following response to Question No. 3-4 of the First Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on April 5, 2023, was prepared by or under the supervision of:

Jordon Smith
Generation Station Project Controls Coordinator
Dominion Energy Resources

With respect to legal issues, the following response to Question No. 3-4 of the First Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on April 5, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 3-4

Of the costs identified by category in response to Sierra Club Request No. 2-5, please specify the percentage of the costs (if any) that are tied to work that will also be used by the Permanent System.

Response:

The Company objects to this request as it would require original work to produce the information in the manner requested. Subject to and notwithstanding this objection, the Company provides the following approximations of percentage of costs tied to work that will also be used by the Permanent System:

Please see the following table:

EXHIBIT DG-12

Company's Response to Sierra Club Discovery Request No. 2-8

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 8 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Rick Boyd
Director of Generation Projects
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 8 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 8

On page 7 of its Petition, the Company states that "cost estimates for construction and installation are in earlier stages of development." Please provide the Company's current best cost estimate as well as the lower-bound and upper-bound cost estimates for these construction and installation costs.

Response:

The Company objects to this interrogatory as it seeks information that is not relevant to this proceeding and calls for speculation. Subject to and notwithstanding these objections, the Company provides the following response:

As stated in the Direct Testimony of Company Witness Rick D. Boyd at page 7, installation costs for the Permanent System will be presented for recovery in a future Rider E update as appropriate.

EXHIBIT DG-17

Company's Response to Sierra Club Discovery Request No. 6-1

(May 8, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Sixth Set

The following response to Question No. 6-1 of the Sixth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on May 1, 2023, was prepared by or under the supervision of:

Rick D. Boyd
Director of Generation Projects
Dominion Energy Services, Inc.

Question No. 6-1

Please refer to Company Witness Rick Boyd's Direct Testimony at 4, regarding the total estimated BAWT Project cost:

(a) Please provide the date when the BAWT Project was first approved by the Company's management.

(b) Please provide the initial cost estimate that the Company provided to management at the time the BAWT Project was first approved.

Response:

(a) The BAWT project received management approval on February 13, 2017.

(b) The BAWT initial cost estimate was $76.13 million.

EXHIBIT DG-18

Company's Response to Sierra Club Discovery Request No. 2-23

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 23 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

William J. Caffall
Senior Energy Market Analyst
Dominion Energy Services, Inc.

Question No. 23

For each study provided in response to Request No. 1-22 and for each integrated resource plan (IRP) Dominion has conducted since 2015, please state whether the Company included an estimate of the cost to install chillers to comply with the Company's National Pollution Discharge Elimination System (NPDES) permit(s) for Mount Storm in its modeling:

(a) If such an estimate was included, please provide the Company's cost assumptions.

(b) If such an estimate was not included, please explain why the cost to comply with the NPDES permit(s) was not modeled.

Response:

(a) Initial cost estimates for the installation of chillers at the Mt. Storm Power Station were first introduced as part of the unit disposition analysis for the 2022 IRP Update. Please see Attachment Sierra Club Set 2-20.2 (WJC) ES.

(b) Cost estimates for the installation of chillers at the Mt. Storm Power Station were introduced as part of the unit disposition analysis for the 2022 IRP Update in order to comply with an administrative compliance order issued by the WVDEP.

Attachment Sierra Club Set 02-20.2 (WJC) ES is extraordinarily sensitive in its entirety. This information is being provided pursuant to the protections set forth in 5 VAC 5-20-170, the Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information dated March 13, 2023, any subsequent protective order or ruling that may be issued for confidential or extraordinarily sensitive information in this proceeding, and the Agreements to Adhere executed pursuant to any such orders or rulings.

EXHIBIT DG-19

Company's Response to Sierra Club Discovery Request No. 5-10

(May 4, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Fifth Set

The following response to Question No. 5-10 of the Fifth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on April 27, 2023, was prepared by or under the supervision of:

B. Kyle Cosby
Manager – Financial and Business Services
Dominion Energy Services, Inc.

Question No. 5-10

Please refer to the Company's Response to Sierra Club Request No. 3-2(d). Please provide the high-level capital cost projections for the full cost of the temporary and permanent LDTCS system that Dominion included in the unit disposition analysis provided in Attachment Sierra Club Set 02-20.1 (WJC).

Response:

The capital cost projections for the LDTCS system included in the unit disposition analysis provided in Attachment Sierra Club Set 02-20.1 (WJC) are as follows:

- 2022 - $9.1M
- 2023 - $25.2M
- 2024 - $12.4M

EXHIBIT DG-20

Company's Response to Sierra Club Discovery Request No. 5-6

Attachment Sierra Club Set 05-06 (TNE)

(May 4, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Fifth Set

The following response to Question No. 5-6 of the Fifth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on April 27, 2023, was prepared by or under the supervision of:

Thomas N. Effinger
Director – Environmental Services
Dominion Energy Services, Inc.

As it pertains to legal matters, the following response to Question No. 5-6 of the Fifth Set of Interrogatories and Requests for Production of Documents propounded by the Sierra Club received on April 27, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 5-6

Please refer to the Company's Response to Sierra Club Request No. 2-4(b), and Company Witness Effinger's Direct Testimony at 10 regarding the Company's belief that it would receive a 316(a) variance.

(a) Please provide the dates and documentation from the discussions the Company had with WVDEP asserting that it had achieved a BIP and was entitled to the section 316(a) variance

(b) Please provide documentation of WVDEP's responses to those assertions.

Response:

The Company objects to this interrogatory as overly broad and unduly burdensome, and to the extent it would require original work to respond. Subject to and notwithstanding these objections, the Company provides the following response:

(a) Although the Company was hopeful that a section 316(a) variance would be granted based on achieving a Balanced Indigenous Population ("BIP"), the West Virginia Department of Environmental Protection ("WVDEP") never acknowledged that a BIP had been demonstrated. Conference call discussions were typically conducted to coincide with the annual monitoring reports and in relation to the Administrative Orders and their amendments. The last such WVDEP determination was received on March 14,

2022. Also see the Direct Testimony of Company Witness Thomas N. Effinger, Schedule 2.

(b) Please see Attachment Sierra Club Set 05-06 (TNE) for a copy of the March 14, 2022 communication with WVDEP.

From: Matt Overton (Services - 6)
To: Wirts, John C
Cc: Borsuk, Frank; Keplinger, Brandon J; Ben Eberline (Services - 6); Kenneth Roller (Services - 6); Kristin E Slagle (Services - 6); Rick R Linker (Services - 6); THOMAS EFFINGER (Services - 6); Matthew L Sweeney; Katheryn D Emery; Charles S Driver
Subject: RE: [EXTERNAL] Re: Mt. Storm - Stony River
Date: Monday, March 14, 2022 3:18:30 PM

Thanks for getting back to us John. That answers the question on the 316(a) side. If you guys can also address the question of what a BIP in the Stony River would look so we have some idea of a success goal, that would help also.

Thanks for your considerations.

P. Matt Overton, PWD
Corporate Biology
5000 Dominion Boulevard
Glen Allen, Virginia 23060
matt.overton@dominionenergy.com
804.339.6288

From: Wirts, John C <john.c.wirts@wv.gov>
Sent: Monday, March 14, 2022 3:09 PM
To: Matt Overton (Services - 6) <matt.overton@dominionenergy.com>
Cc: Borsuk, Frank <borsuk.frank@epa.gov>; Keplinger, Brandon J <brandon.j.keplinger@wv.gov>; Ben Eberline (Services - 6) <Ben.Eberline@dominionenergy.com>; Kenneth Roller (Services - 6) <kenneth.roller@dominionenergy.com>; Kristin E Slagle (Services - 6) <kristin.e.slagle@dominionenergy.com>; Rick R Linker (Services - 6) <rick.r.linker@dominionenergy.com>; THOMAS EFFINGER (Services - 6) <THOMAS.EFFINGER@dominionenergy.com>; Matthew L Sweeney <matthew.l.sweeney@wv.gov>; Katheryn D Emery <katheryn.d.emery@wv.gov>; Charles S Driver <charles.s.driver@wv.gov>
Subject: [EXTERNAL] Re: Mt. Storm - Stony River

Matt,
Frank and I have talked. I guess I'm not certain what it is you're hoping to get from us at this point. If its a statement regarding whether we think Stony River currently has a balanced indigenous population, I believe we can say (and have said) that based on the data we have to date - No. It doesn't seem that there is any language relating to the 316(a) variance process that provides for the

consideration of the acknowledged stressors in this area in the evaluation of a fish community.
Its simply about demonstrating that there is a healthy community that can sustain itself with an alternative temperature criterion.
I've cc'd a couple additional people: permit writer Matt Sweeney; my boss, Kathy Emery; and our legal advisor, Scott Driver - in case they want to weigh in on this.

With the recent installation of the stop log, you have the potential to have a more natural flow and have a successful recruitment season - perhaps improving the community to the point of starting to look like a BIP. I'm not suggesting that a single year of better populations equates to a BIP (one that can sustain itself long-term), but it would certainly help.

It seems that Dominion believes that the lawsuit prevents you from seeking additional extensions of the order.
So, again, I'm just not sure that there is anything we can do now to help you in your decision making process.
If there is something else you were hoping we could weigh in on, let me know.
Thanks, John

On Mon, Mar 14, 2022 at 1:19 PM matt.overton@dominionenergy.com <matt.overton@dominionenergy.com> wrote:

> John and Frank:
>
> In the interest of scheduling and equipment acquisition, we are anxious to get some feedback from you guys on the 316(b) variance. We had assumed we would hear something from you guys by March 4. We have reached a critical time in our decision-making process and need to move forward along one of two paths. Do you have anything to share now?
>
> Thanks for your considerations.
>
> 
>
> P. Matt Overton, PWD
> Corporate Biology
> 5000 Dominion Boulevard
> Glen Allen, Virginia 23060
> matt.overton@dominionenergy.com
> 804.339.6288
>

the sender that you have received the message in error, and delete it. Thank you.

EXHIBIT DG-21

Company's Response to Sierra Club Discovery Request No. 2-20

Attachment Sierra Club 02-20.1 (WJC)

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 20 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

William J. Caffall
Senior Energy Market Analyst
Dominion Energy Services, Inc.

Question No. 20

For each of the three Mount Storm units, please state whether the Company produced any analysis or assessment of the economics of continued operation of said units—e.g., a retirement study or unit disposition analysis—to inform its decision to move forward with the LDTCS Temporary System. If yes, provide all such analysis. If no, explain why no analysis was conducted.

Response:

Yes. The company conducted a unit disposition analysis for the three Mt. Storm units as part of the 2022 IRP Update which included costs of the LDTCS Temporary and Permanent Systems. See Attachment Sierra Club Set 02-20.1 (WJC) for the retirement presentation and Attachment Sierra Club Set 02-20.2 (WJC) ES for underlying data for the results of this study.

Attachment Sierra Club Set 02-20.2 (WJC) ES is extraordinarily sensitive in its entirety. This information is being provided pursuant to the protections set forth in 5 VAC 5-20-170, the Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information dated March 13, 2023, any subsequent protective order or ruling that may be issued for confidential or extraordinarily sensitive information in this proceeding, and the Agreements to Adhere executed pursuant to any such orders or rulings.

Mount Storm Retirement Analysis 2016-2022

2016 Analysis

Mt Storm 1-3

- Positive economic value
- Helps maintain fuel diversity for VA customers
- 111(d) risk depends on final West VA SIP
  - Renewable options limited in W Va
  - W Va controls allowance distribution under mass options
    - Requires 9M allowances to operate at 61% CF (2012 base year)
- Gas co-firing will further mitigate 111(d) risk
- Significant capital needs
- Recommendation:
  - Delay Capx spending until W VA SIP final (Sept 2018)
  - Continue to evaluate cost/benefit to various ranges of co-firing with firm gas FT

2016 Analysis

Incremental Capital – Mt Storm 1

Mount Storm 1 - Capital		2016	2017	2018	2019	2020	2021
	Unit Common Allocated	$ 27,768	$ 21,303	$ 7,120	$ 18,643	$ 16,606	$ 6,082
	MS1 EHC System Installation	$ -	$ -	$ 242	$ 802	$ -	$ -
	MS1 Air Compressor System Replacement 3900 SCFM	$ 212	$ -	$ -	$ -	$ -	$ -
	MS1 Start/Stop Controller Replacement	$ -	$ 674	$ 1,117	$ -	$ -	$ -
	MS1 Processor Controller Replacement	$ 227	$ 1,660	$ -	$ -	$ -	$ -
	MS1 Reheat Stop Valve Casing Replacement	$ -	$ -	$ -	$ 2,207	$ 8	$ 9,400
	MS1 Boiler Ash Pit Replacement	$ -	$ -	$ 1,006	$ 15,174	$ -	$ -
	MS1 Superheat Pendants (Final Superheat)	$ -	$ -	$ 2,512	$ 21,086	$ -	$ -
	MS1 SCR Catalyst 1st Layer Replacement	$ -	$ -		$ 1,391	$ 2,828	$ -
	MS1 SCR Catalyst 2nd Layer Replacement					$ -	$ 1,391
	MS1 SCR Catalyst 3rd Layer Replacement	$ -	$ 1,392	$ 2,836	$ -	$ -	$ -
	MS1 HP Generator Field Rewind	$ -	$ -	$ -	$ 1,806	$ -	$ -
	MS1 DCS Process Control	$ 403	$ 156	$ -	$ -	$ -	$ -
	MS1 Absorber Internal Components Replacement	$ -	$ -	$ 2,508	$ 7,519	$ -	$ -
	Total U1 Capital	$ 28,609	$ 25,186	$ 17,341	$ 68,626	$ 19,442	$ 16,873

Notes: 1) Orange highlighted text represents incremental costs included in life extension analysis
2) 2015 capital costs assumed to be sunk as of 12/15/2015
3) Railway project costs embedded in “Unit Common Alllocated” line item

2016 Analysis

Incremental Capital – Mt Storm 2

Mount Storm 2 - Capital	2016	2017	2018	2019	2020	2021
Unit Common Allocated	$ 27,768	$ 21,303	$ 7,120	$ 18,643	$ 16,606	$ 6,082
MS2 EHC System Installation	$ -	$ -	$ -	$ -	$ 200	$ 2,210
MS2 Air Compressor System Replacement 3900 SCFM	$ 2,663	$ -	$ -	$ -	$ -	$ -
MS2 Start/Stop Controller Replacement	$ -	$ 674	$ 1,117	$ -	$ -	$ -
MS2 Ammonia Injection Grid Replacement	$ -	$ -	$ -	$ 170	$ 1,628	$ -
MS2 Boiler Final Superheat Replacement	$ -	$ -	$ -	$ -	$ 2,516	$ 18,363
MS2 Horizontal Superheat Replacement	$ -	$ -	$ -	$ -	$ 3,018	$ 21,146
MS2 Reheat Stop Valve Casing Replacement	$ -	$ -	$ -	$ -	$ -	$ 2,316
MS2 HP Generator Field Rewind	$ -	$ -	$ -	$ -	$ -	$ 1,805
MS2 LP Generator Field Rewind	$ -	$ -	$ -	$ -	$ -	$ 1,810
MS2 LP Generator Stator/Rotor Rewire	$ -	$ -	$ -	$ -	$ -	$ 13,540
MS2 SCR Catalyst 1st Layer Replacement	$ -	$ -	$ -	$ 1,391	$ 2,828	$ -
MS2 SCR Catalyst 2nd Layer Replacement	$ 2,834	$ -	$ -	$ -	$ -	$ -
MS2 SCR Catalyst 3rd Layer Replacement	$ -	$ 1,393	$ 2,831	$ -	$ -	$ -
MS2 DCS Process Controller Replacement (58182)	$ 229	$ 154	$ -	$ -	$ -	$ -
MS2 Boiler Economizer Replacement	$ -	$ -	$ -	$ -	$ 6,018	$ 24,092
Total U2 Capital	$ 33,493	$ 23,524	$ 11,067	$ 20,204	$ 32,814	$ 91,365

Notes: 1) Orange highlighted text represents incremental costs included in life extension analysis
2) 2015 capital costs assumed to be sunk as of 12/15/2015
3) Railway project costs embedded in “Unit Common Alllocated” line item

2016 Analysis

Incremental Capital – Mt Storm 3

Mount Storm 3 - Capital		2016	2017	2018	2019	2020	2021
	Unit Common Allocated	$ 27,768	$ 21,303	$ 7,120	$ 18,643	$ 16,606	$ 6,082
	MS3 Start/Stop Controller Replacement	$ 1,592	$ -	$ -	$ -	$ -	$ -
	MS3 DCS Processor Controller Replacement	$ 1,250	$ -	$ -	$ -	$ -	$ -
	MS3 Boiler Feed Pump Turbine Controls Replacement	$ 1,306	$ -	$ -	$ -	$ -	$ -
	MS3 Main Turbine Controls Replacement	$ 375	$ -	$ -	$ -	$ -	$ -
	MS3 1st Point Feedwater heater Replacement	$ -	$ -	$ 1,003	$ 4,099	$ -	$ -
	MS3 Boiler Superheat Pendant Platen Replacement	$ 8,538	$ -	$ -	$ -	$ -	$ -
	MS3 Boiler - Radiant Reheat Partial Replacement	$ 7,340	$ -	$ -	$ -	$ -	$ -
	MS3 Generator & Transformer Protective Relay Replacement	$ 237	$ -	$ -	$ -	$ -	$ -
	MS3 SCR Catalyst 1st Layer Replacement	$ -	$ -	$ -	$ -	$ -	$ 1,392
	MS3 SCR Catalyst 2nd Layer Replacement	$ 1,392	$ 2,834	$ -	$ -	$ -	$ -
	MS3 SCR Catalyst 3rd Layer Replacement	$ -	$ -	$ 1,391	$ 2,828	$ -	$ -
	MS3 A BFP Condensor Cleaning System Installation	$ 101	$ -	$ -	$ -	$ -	$ -
	MS3 HP Inner Cylinder Replacement	$ -	$ -	$ -	$ -	$ -	$ 4,025
	MS3 SCR In/Out Turning Vanes Replacement	$ 2,771	$ -	$ -	$ -	$ -	$ -
	MS3 LP Turbine L-0 Blade Replacement	$ 1,910	$ -	$ -	$ -	$ -	$ -
	Total U3 Capital	$ 54,581	$ 24,137	$ 9,514	$ 25,570	$ 16,606	$ 11,500

Notes: 1) Orange highlighted text represents incremental costs included in life extension analysis
2) 2015 capital costs assumed to be sunk as of 12/15/2015
3) Railway project costs embedded in “Unit Common Alllocated” line item

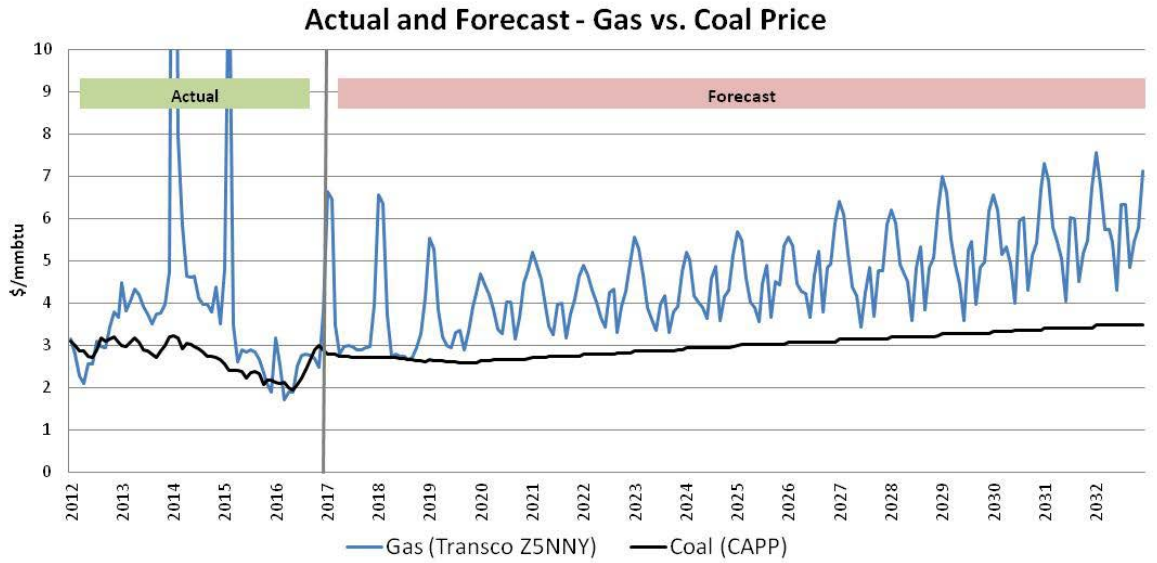
Contains Confidential/ES Data

2017 Analysis

Retire/CoFire/Repower Analysis

Assumptions: Gas Firing

	BOP CapX (1-time)		Pipeline Expenses		
Units	**25% co-fire**	**100% co-fire**	**25% co-fire (FT service)**	**100% co-fire (FT service)**	**100% co-fire (IT service)**
Mt Storm 1-3	$70 m	$162 m	$102 m /yr	$102 m /yr	$102 m /yr



Contains Confidential/ES Data

Retire/Cofire/Repower Analysis

NPV Results

2017 Analysis

Plan Deltas (M$)

Units	Retire	25% Cofire	100% Cofire	Repower
MtStorm 1-3	-$887	-$1,689	-$1,380	-$2,790

Note : Negative values indicate hurt for customers

Assumptions

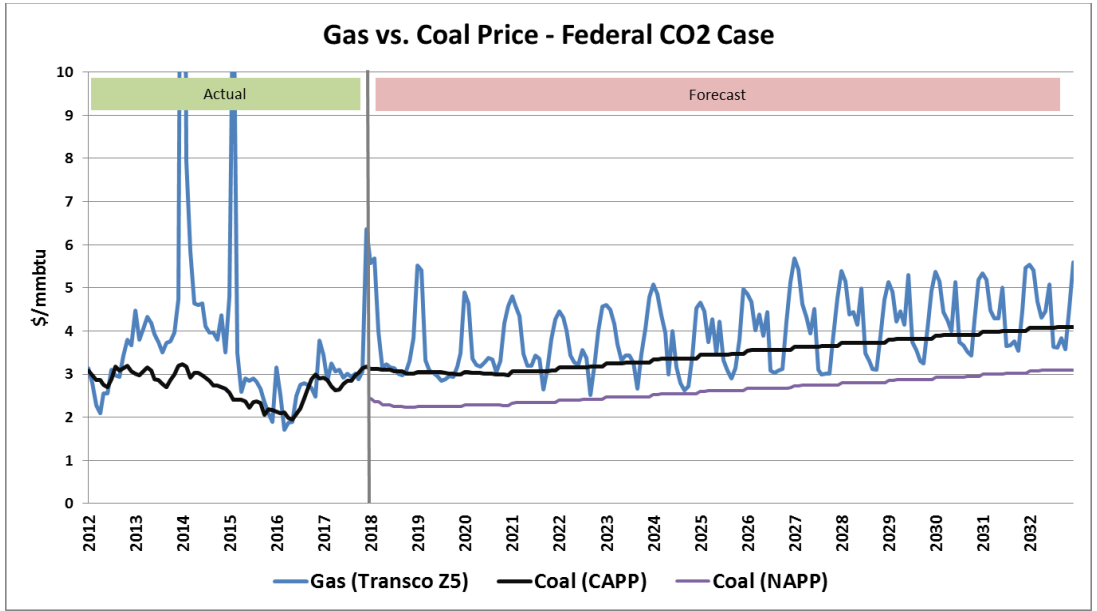
- **All scenarios are based on the Mass Existing IRP case**
- **Retirement dates considered were 2022**
- **Cofire and Repower options used a 2019 COD**

Co-Fire Gas Assumptions

2018 Analysis

	CapX (1-time)		Annual Expenses		
	25% Cofire	100% Cofire/ Repower	25% Cofire (FT-service)	Repower (FT-service)	100% Cofire (IT-service)
Mount Storm 1-3	$69 m	$162 m	$102 m/yr	$102 m/yr	$102 m/yr

- Mount Storm Power Stations require a new pipeline

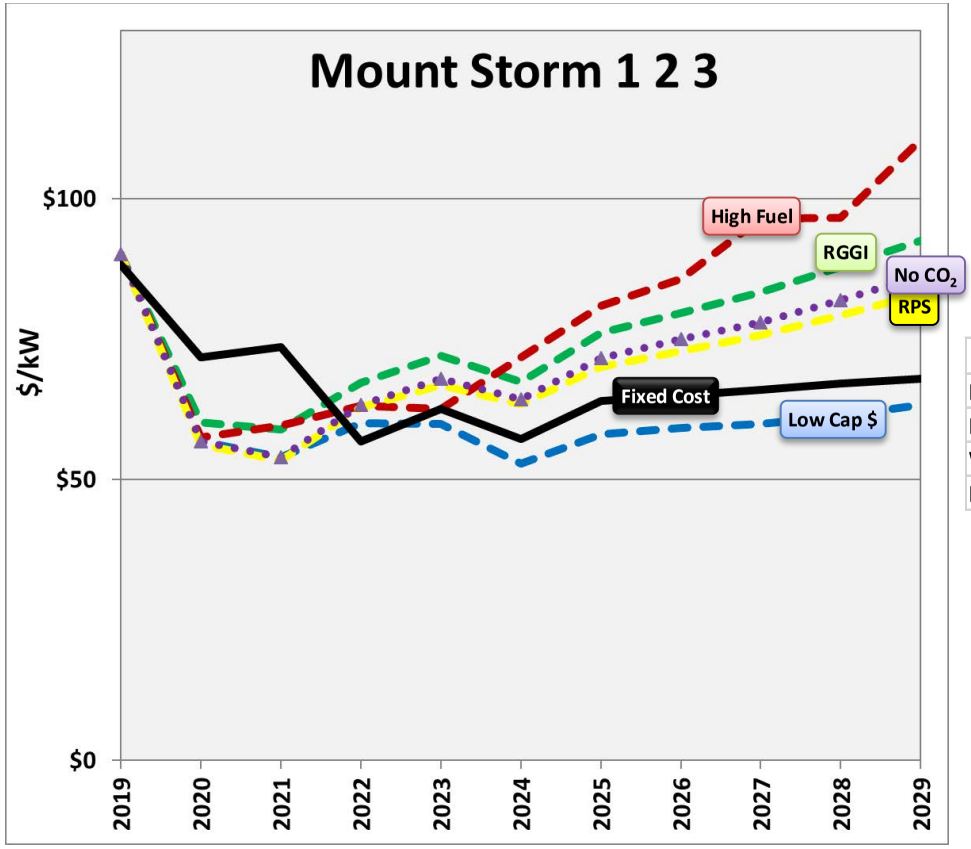


Co-Fire NPV Results 2018 Analysis

		2018-2043 Delta vs BAU NPV $M		
RGGI	**2018-2043 BAU NPV $M**	**25% Co-fire**	**100% Co-fire**	**Repower**
Mount Storm 1-3	$873	($1,606)	($1,357)	($2,132)
Federal CO2	**2018-2043 BAU NPV $M**	**25% Co-fire**	**100% Co-fire**	**Repower**
Mount Storm 1-3	$620	($1,416)	($1,353)	($1,718)

Notes: 1) Positive value indicates customer benefit
2) Units are not adjusted for the CP risk

Mt Storm 1-3 2019 Analysis



NPV ($M)	No CO_2	Low Cap $	RPS	RGGI	High Fuel
Mt Storm 1-3	$34	($76)	$19	$85	$116

Station Capacity Factors

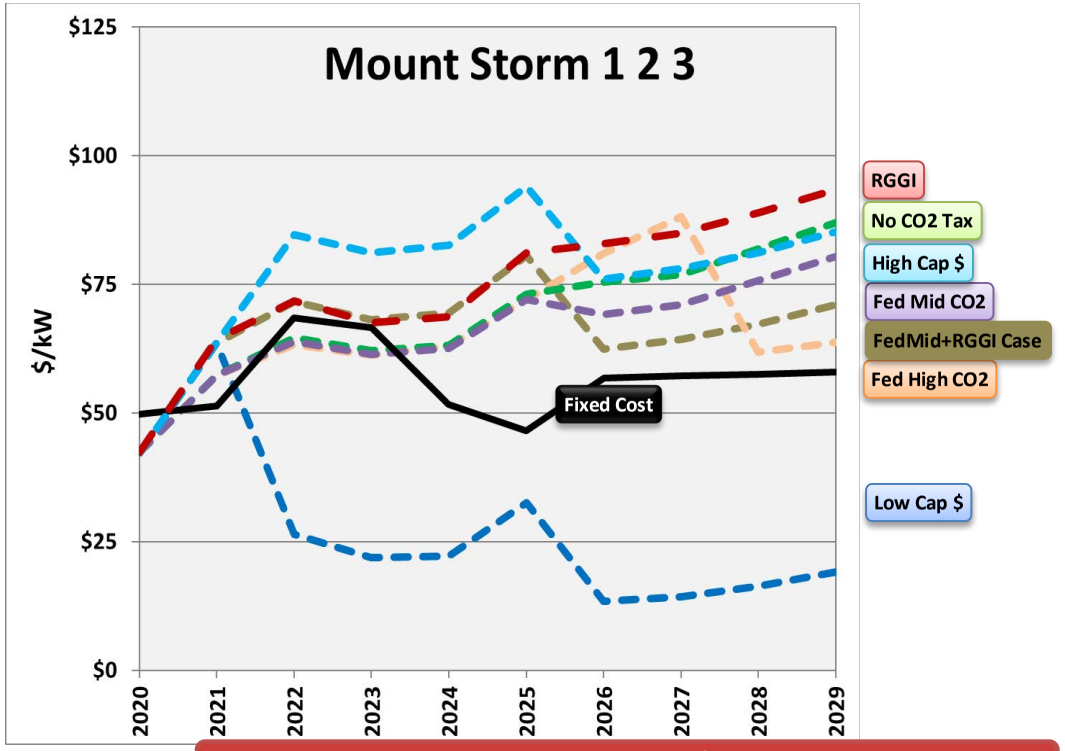
Mount Storm 1-3	2015-2017 avg	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
No CO2 Tax	60	39	31	23	17	16	10	19	18	18	18	20
No CO2 Tax - RPS		39	30	21	15	15	7	14	13	11	12	12
VA RGGI		39	35	32	26	25	18	25	24	25	25	25
High Fuel (2018)		39	31	31	31	33	36	39	36	42	32	34

Note:

1. Revenue streams shown as dash lines include net energy revenue and gross capacity revenue
2. Fixed cost shown as solid black line represents associated fixed O&M, property taxes, and Capex

Mount Storm 2020 Analysis

Notes:
1. Revenue streams shown as dash lines include net energy revenue and gross capacity revenue
2. Fixed cost shown as solid black line represents associated fixed O&M, property taxes, and Capex



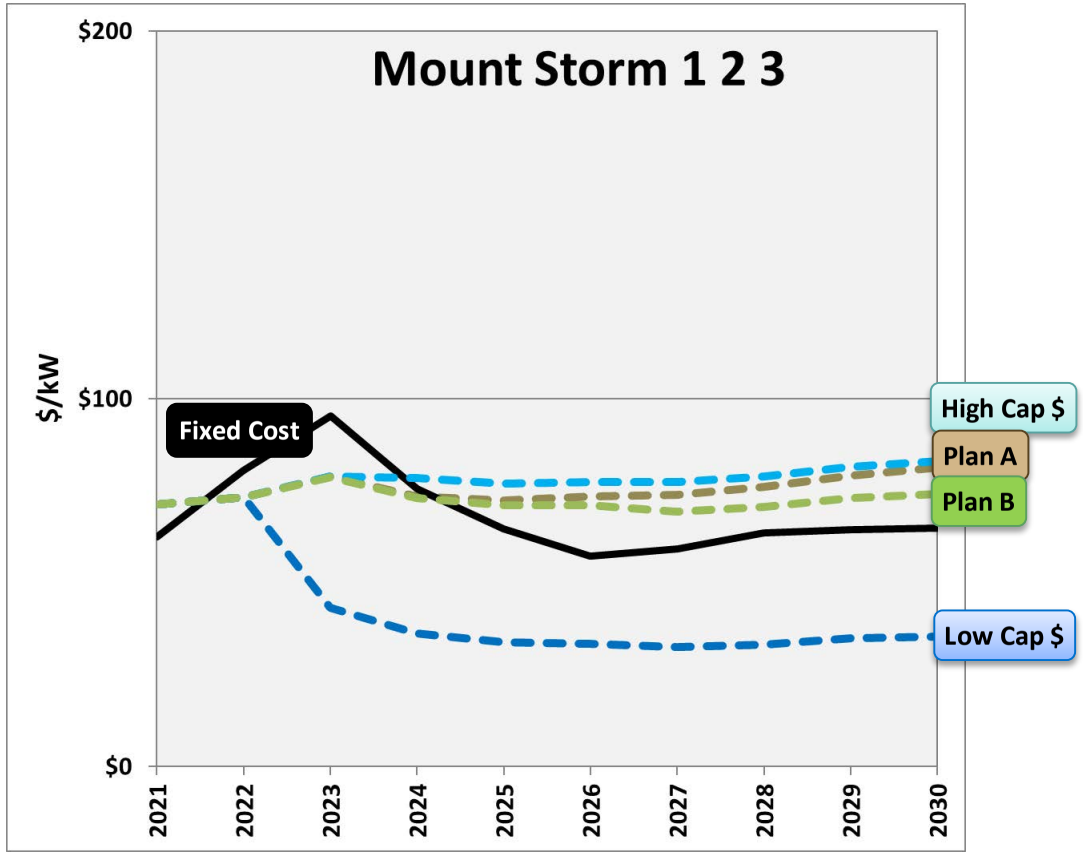
Unit	MWs	10-year NPVs ($M) Fed Mid RGGI VA	Low Cap $	High Cap $	VA RGGI	Federal Mid CO2	Federal High CO2	No CO2 Tax
Mount Storm	1,541	$100	($318)	$217	$226	$93	$93	$138

Station Capacity Factor

Coal	Actuals				Forecast									
Mount Storm 1-3	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Fed Mid + RGGI	63	49	39	32	36	42	43	36	34	42	14	15	17	19
RGGI VA					37	43	45	35	35	45	47	48	47	48
Fed Mid CO2					37	39	37	28	28	39	28	29	30	33
Fed High CO2					37	39	36	28	30	37	48	58	4	5
No CO2 Tax					37	39	39	30	29	40	41	42	42	45

Mount Storm

2021 Analysis



Unit	NPVs ($M) 2021 Plan A	Low Cap $	High Cap $	2021 Plan B
Mount Storm	$60	($288)	$86	$18

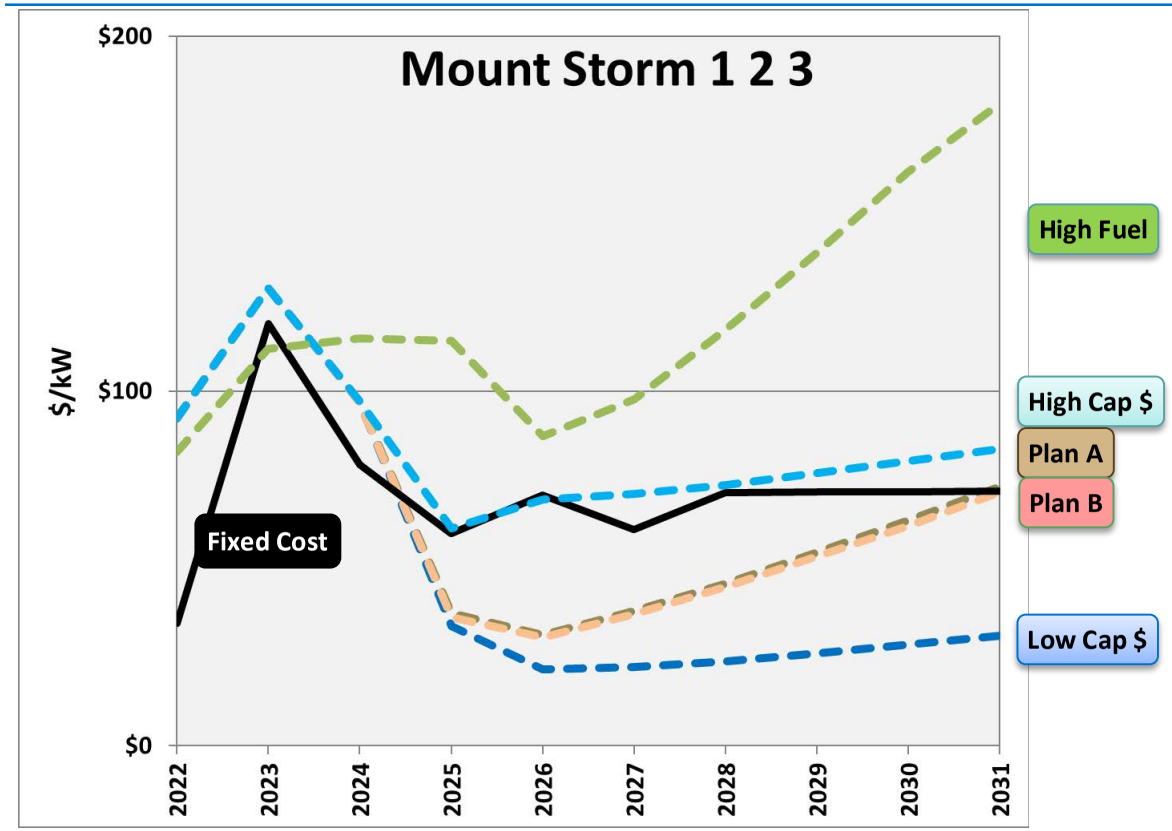
Station Capacity Factors

	Actuals				Forecast									
Coal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mount Storm 1-3	49	39	41	33	37	41	32	24	20	19	18	18	19	20

1. Revenue streams shown as dash lines include net energy revenue and gross capacity revenue
2. Fixed cost shown as solid black line represents associated fixed O&M, Capex, property taxes, and allocated overhead
3. NPVs are adjusted to account for applicable ancillary revenues

Mount Storm

2022 Analysis



Unit	NPVs ($M) 2022 Plan A	Low Cap $	High Cap $	2022 Plan B	Plan B High Fuel
Mt Storm	($23)	($175)	$162	($32)	$526

Station Capacity Factors

	Actuals					Forecast									
Coal	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Mount Storm 1-3	49	39	41	33	39	20	31	35	27	16	16	17	19	21	23

1. Revenue streams shown as dash lines include net energy revenue and gross capacity revenue
2. Fixed cost shown as solid black line represents associated fixed O&M, Capex, property taxes, and allocated overhead
3. NPVs are adjusted to account for applicable ancillary revenues

2022 October Analysis Revision

NPV	Plan A	Plan B
5YR NPV 2022-2026 ($M)	96	93
10YR NPV 2022-2031 ($M)	48	39
15YR NPV 2022-2036 ($M)	77	33
25YR NPV 2022-2047 ($M)	185	34

- This analysis is based on Blue Sheet data provided by Power Generation Finance
- 15 and 25 Year NPV gaps are due to the Social Cost of Carbon Dispatch Adder starting in 2031

Lake Discharge Temperature Control System

NPV Analysis – IRP Comparison

2022 October Analysis Revision

2022 IRP Update		Plan A	Plan B
10YR	NPV 2022-2031 ($M)	(23)	(32)

October 2022 Revision		Plan A	Plan B
10YR	NPV 2022-2031 ($M)	48	39

- Higher Energy Pricing
- Increased Fuel Costs
- Change in Capital Spend
  - 316A increase to capital approx $10M in 2022-2024
- Increase in O&M

2022 October Analysis Revision

- This NPV Analysis uses the 2022 IRP Load Forecast. The most recent load forecast used for the 9+3 budget reflects higher data center load that will be included in the 2023 PJM load forecast
- ICF is indicating that prices will remain high for a longer duration than originally anticipated
- Analysis is based on normal weather. Mt Storm has additional value during extreme weather periods, for example +$37M in January 2018 PJM cold weather alert periods.
- Analysis does not consider the fuel diversity, fuel contracts, B&O Tax, dispatchability, or physical location benefits that Mt Storm provides. Transmission estimates $60M of system upgrades would be necessary to retire the station.

EXHIBIT DG-22

Company's Response to Sierra Club Discovery Request No. 2-30

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 30 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Wesley A. Hudson
Manager – Electric Market Operations
Virginia Electric and Power Company

As it pertains to ancillary revenue data, the following response to Question No. 30 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

William A. Coyle
Manager – Market Analytics
Virginia Electric and Power Company

Question No. 30

For the period 2016–2022, please provide total energy, capacity, and ancillary service market revenues by unit for each of the three Mount Storm units and confirm whether the values represent the Company's share or total unit.

Response:

See the gross revenue information in the tables below. These values represent the total unit as the Company has a 100% ownership share.

Energy Revenue:

	2016	2017	2018	2019	2020	2021	2022
MT. STORM 1	$98,257,138	$74,287,932	$88,538,948	$49,523,278	$49,775,740	$66,370,442	$118,694,757
MT. STORM 2	$97,978,493	$88,892,152	$67,772,223	$46,426,523	$29,772,693	$64,626,200	$139,836,447
MT. STORM 3	$73,301,056	$54,401,634	$81,414,513	$31,784,029	$21,302,652	$70,633,158	$122,328,973
TOTAL	$269,536,687	$217,581,719	$237,725,684	$127,733,830	$100,851,085	$201,629,800	$380,860,177

Capacity Revenue:

	2016	2017	2018	2019	2020	2021	2022
MT. STORM 1	$25,437,622	$27,776,874	$30,830,372	$24,587,856	$16,749,841	$21,941,778	$11,149,236
MT. STORM 2	$25,806,212	$27,764,982	$30,504,166	$24,414,301	$16,716,358	$21,986,547	$11,223,226
MT. STORM 3	$24,160,367	$26,051,015	$28,599,930	$22,831,360	$15,678,189	$21,053,121	$11,165,218
Total	$75,404,200	$81,592,870	$89,934,468	$71,833,518	$49,144,388	$64,981,446	$33,537,680

Ancillary Revenue:

	2016	2017	2018	2019	2020	2021	2022
MT. STORM 1	$247,109	$1,366,965	$2,163,855	$1,067,423	$1,203,879	$968,305	$1,373,195
MT. STORM 2	$304,380	$1,335,795	$1,088,584	$935,411	$663,352	$1,032,567	$1,676,512
MT. STORM 3	$143,759	$935,869	$2,198,949	$640,549	$232,519	$902,437	$1,234,653
TOTAL	$695,248	$3,638,629	$5,451,388	$2,643,383	$2,099,749	$2,903,309	$4,284,359

EXHIBIT DG-24

Company's Response to Sierra Club Discovery Request No. 2-18

Attachment 02-18 (WWJ)

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 18 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Whitney W. Johnson
Manager - Energy Market Analysis
Dominion Energy Services, Inc.

Question No. 18

Please provide the Company's energy market and capacity market price forecasts that were current:

(a) when approval was granted to proceed with the LDTCS Temporary System and

(b) when approval was granted to proceed with the LDTCS Permanent System.

Response:

See Attachment Sierra Club Set 02-18 (WWJ).

Attachment Sierra Clu

2022 IRP Base Case - As Filed May 2022			
	($/MWh)	($/MWh)	$/kW-yr
Year	DOM Zone On-Peak	DOM Zone Off-Peak	PJM RTO Capacity
2022	119.49	74.00	31.94
2023	81.40	57.98	18.39
2024	62.54	44.44	18.87
2025	38.50	27.54	22.62
2026	34.75	25.90	28.93
2027	35.33	27.34	35.45
2028	36.55	29.28	42.18
2029	37.84	31.35	49.13
2030	38.30	33.42	56.23
2031	39.58	34.91	61.22
2032	40.06	35.71	64.68
2033	41.17	37.09	68.24
2034	42.04	38.31	71.90
2035	42.89	39.59	75.69
2036	43.25	40.37	78.16
2037	44.40	41.84	79.65
2038	44.99	42.84	81.18
2039	45.45	43.76	82.75
2040	45.93	44.71	84.36
2041	47.60	46.52	87.29
2042	49.08	48.16	91.23
2043	51.21	50.40	95.29
2044	52.93	52.28	99.48
2045	54.48	54.05	103.79
2046	55.34	55.13	108.21
2047	56.85	56.86	112.75
2048	58.40	58.64	117.42
2049	59.99	60.47	122.23
2050	61.61	62.34	127.17

EXHIBIT DG-25

Company's Response to Sierra Club Discovery Request No. 2-19

Attachment 02-19 (WWJ)

(March 25, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Second Set

The following response to Question No. 19 of the Second Set of Interrogatories and Requests for Production of Documents propounded by Sierra Club received on March 17, 2023, was prepared by or under the supervision of:

Whitney W. Johnson
Manager - Energy Market Analysis
Dominion Energy Services, Inc.

Question No. 19

Provide the Company's current energy market and capacity market price forecast.

Response:

See Attachment Sierra Club Set 02-19 (WWJ).

Attachment Sierra Clu

	2022 IRP ICF Base Case - Feb 2023 Market Data		
	($/MWh)	($/MWh)	$/kW-yr
Year	DOM Zone On-Peak	DOM Zone Off-Peak	PJM RTO Capacity
2023	51.90	39.35	15.03
2024	54.92	44.16	16.42
2025	43.58	33.04	22.62
2026	35.23	26.41	28.93
2027	35.33	27.34	35.45
2028	36.55	29.28	42.18
2029	37.84	31.35	49.13
2030	38.30	33.42	56.23
2031	39.58	34.91	61.22
2032	40.06	35.71	64.68
2033	41.17	37.09	68.24
2034	42.04	38.31	71.90
2035	42.89	39.59	75.69
2036	43.25	40.37	78.16
2037	44.40	41.84	79.65
2038	44.99	42.84	81.18
2039	45.45	43.76	82.75
2040	45.93	44.71	84.36
2041	47.60	46.52	87.29
2042	49.08	48.16	91.23
2043	51.21	50.40	95.29
2044	52.93	52.28	99.48
2045	54.48	54.05	103.79
2046	55.34	55.13	108.21
2047	56.85	56.86	112.75
2048	58.40	58.64	117.42
2049	59.99	60.47	122.23
2050	61.61	62.34	127.17

EXHIBIT DG-26

Company's Response to Sierra Club Discovery Request No. 3-3

(April 12, 2023)

Virginia Electric and Power Company
Case No. PUR-2023-00005
Sierra Club
Third Set

The following response to Question No. 3-3 of the First Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on April 5, 2023, was prepared by or under the supervision of:

William J. Caffall
Senior Energy Market Analyst
Dominion Energy Services, Inc.

With respect to legal issues, the following response to Question No. 3-3 of the Third Set of Interrogatories and Requests for Production of Documents propounded by Virginia State Corporation Commission Staff received on April 5, 2023, was prepared by or under the supervision of:

Timothy D. Patterson
McGuireWoods LLP

Question No. 3-3

Please refer to the Company's Response to Sierra Club Request No. 2-12.

Please indicate whether the impacts of the IRA were included in the October 2022 modeling:

(a) If yes, please explain all updates the Company made to its modeling and provide all updated resource cost assumptions.

(b) If no, please explain why the Company did not model any IRA impacts.

Response:

The Company objects to this interrogatory as it seeks information that is not relevant to this proceeding. Subject to and notwithstanding this objection, the Company provides the following response:

The impacts of the Inflation Reduction Act ("IRA") were not included in the October 2022 modeling. The October 2022 modeling was developed using a similar model as the 2022 IRP Update which was filed on September 1, 2022, just over two weeks after the IRA was signed into law by President Biden on August 16, 2022. Moreover, the Internal Revenue Service is continuing to issue guidance on the implementation of the IRA, and the Company is continuing to evaluate such guidance as appropriate. Future analyses, including the 2023 IRP, will include impacts of the IRA where applicable.

CERTIFICATE OF SERVICE

In accordance with the Commission's April 1, 2020 Order Requiring Electronic Service, entered in Case No. CLK-2020-00007, I certify that on May 23, 2023, I sent the foregoing by electronic mail to:

Elaine S. Ryan
Timothy D. Patterson
Benjamin A. Shute
McGuireWoods
eryan@mcguirewoods.com
tpatterson@mcguirewoods.com
bshute@mcguirewoods.com

S. Perry Coburn
Timothy G. McCormick
Christian F. Tucker
Christian & Barton
pcoburn@cblaw.com
tmccormick@cblaw.com
ctucker@cblaw.com

Frederick D. Ochsenhirt
Simeon Brown
State Corporation Commission
Office of the General Counsel
Frederick.Ochsenhirt@scc.virginia.gov
Simeon.Brown@scc.virginia.gov

Paul E. Pfeffer
David J. DePippo
Dominion Energy Services
paul.e.pfeffer@dominionenergy.com
david.j.depippo@dominionenergy.com

R. Scott Herbert
Office of the Attorney General
Division of Consumer Counsel
sherbert@oag.state.va.us

In addition, in accordance with Ordering Paragraph (4) of the Commission's February 21, 2023 Order for Notice and Hearing, I certify that on May 23, 2023, I sent the foregoing by electronic mail to:

State Corporation Commission
Office of Hearing Examiners
Wendy.Starkey@scc.virginia.gov
LeaAnn.Robertson@scc.virginia.gov
Kaitlyn.Mcclure@scc.virginia.gov

Evan Dimond Johns
(Virginia State Bar No. 89285)