

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

AT RICHMOND, MARCH 26, 2020

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STATE CORPORATION COMMISSION
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PETITION OF

VIRGINIA ELECTRIC AND POWER COMPANY

CASE NO. PUR-2019-00154

For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A 6 of the Code of Virginia, and for approval of an addition to the terms and conditions applicable to electric service

FINAL ORDER

On September 30, 2019, Virginia Electric and Power Company ("Dominion" or "Company") filed a petition with the State Corporation Commission ("Commission") for approval of a plan for electric distribution grid transformation projects ("Petition") pursuant to § 56-585.1 A 6 ("Section A 6") of the Code of Virginia ("Code"). Specifically, the Company is requesting approval of additional investments over the first three years of its ten-year grid transformation plan ("Plan"). The Company refers to these additional proposed investments as "Phase IB" of the Plan.¹ Pursuant to Section A 6, the Commission is required to issue its final order on the Petition within six months of the filing date.

On October 4, 2019, the Commission issued an Order for Notice and Hearing that, among other things: established a procedural schedule; set an evidentiary hearing date; directed Dominion to provide public notice of its Petition; and provided interested persons an opportunity to file comments on the Petition or to participate in the case as a respondent by filing a notice of

¹ Ex. 2 (Petition) at 5-6. The Company notes that the Commission previously approved certain proposed Phase I investments related to cyber and physical security, including supporting telecommunications infrastructure, which the Company refers to as "Phase IA" of the Plan. *See Petition of Virginia Electric and Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A 6 of the Code of Virginia*, Case No. PUR-2018-00100, Doc. Con. Cen. No. 190130074, Final Order (Jan. 17, 2019) ("2018 Grid Mod Final Order").

participation. Notices of participation were filed by: Appalachian Power Company; Appalachian Voices ("Environmental Respondents"); ChargePoint, Inc. ("ChargePoint"); Electrify America, LLC ("Electrify America"); the Sierra Club ("Sierra Club"); Walmart, Inc. ("Walmart"); and the Virginia Office of the Attorney General, Division of Consumer Counsel ("Consumer Counsel"). The Company, Environmental Respondents, ChargePoint, Electrify America, Sierra Club, Walmart, Consumer Counsel and Commission Staff ("Staff") pre-filed testimony in this matter.

Beginning January 27, 2020, the Commission convened a hearing on the Company's Petition.² During the hearing, the Commission received the testimony of public witnesses.³ The Commission also received testimony and exhibits from Dominion, respondents, and Staff. The hearing concluded on January 30, 2020. Post-hearing briefs were subsequently filed by Dominion, Environmental Respondents, ChargePoint, Electrify America, Sierra Club, Consumer Counsel, and Staff on February 28, 2020.⁴

NOW THE COMMISSION, having considered the record, the pleadings, and the applicable law, is of the opinion and finds as follows.

Code of Virginia

As amended by the Grid Transformation and Security Act ("GTSA"),⁵ Code § 56-576 defines an "electric distribution grid transformation project" ("GT Project") to mean:

a project associated with electric distribution infrastructure, including related data analytics equipment, that is designed to accommodate or facilitate the integration of utility-owned or customer-owned renewable electric generation resources with the utility's electric distribution grid or to otherwise enhance electric

² Staff and all parties except Appalachian Power Company participated at the hearing.

³ Tr. 8-65.

⁴ Walmart filed a letter in lieu of a post-hearing brief ("Post-Hearing Letter").

⁵ 2018 Va. Acts ch. 296.

distribution grid reliability, electric distribution grid security, customer service, or energy efficiency and conservation, including advanced metering infrastructure; intelligent grid devices for real time system and asset information; automated control systems for electric distribution circuits and substations; communications networks for service meters; intelligent grid devices and other distribution equipment; distribution system hardening projects for circuits, other than the conversion of overhead tap lines to underground service, and substations designed to reduce service outages or service restoration times; physical security measures at key distribution substations; cyber security measures; energy storage systems and microgrids that support circuit-level grid stability, power quality, reliability, or resiliency or provide temporary backup energy supply; electrical facilities and infrastructure necessary to support electric vehicle charging systems; LED street light conversions; and new customer information platforms designed to provide improved customer access, greater service options, and expanded access to energy usage information.

As amended by the GTSA, Section A 6 directs that:

A utility shall, without regard for whether it has petitioned for any rate adjustment clause pursuant to clause (vi), petition the Commission, not more than once annually, for approval of a plan for electric distribution grid transformation projects. Any plan for electric distribution grid transformation projects shall include both measures to facilitate integration of distributed energy resources and measures to enhance physical electric distribution grid reliability and security. In ruling upon such a petition, the Commission shall consider whether the utility's plan for such projects, and the projected costs associated therewith, are reasonable and prudent. Such petition shall be considered on a stand-alone basis without regard to the other costs, revenues, investments, or earnings of the utility; without regard to whether the costs associated with such projects will be recovered through a rate adjustment clause under this subdivision or through the utility's rates for generation and distribution services; and without regard to whether such costs will be the subject of a customer credit offset, as applicable, pursuant to subdivision 8 d. The Commission's final order regarding any such petition for approval of an electric distribution grid transformation plan shall be entered

by the Commission not more than six months after the date of filing such petition.

Section A 6 further declares that: "[e]lectric distribution grid transformation projects are in the public interest."

Like its first grid transformation plan proposed in Case No. PUR-2018-00100, the Company's current Plan will be costly to customers. If the ten-year Plan were fully implemented, the lifetime revenue requirement – the cost to customers over the life of the investments – would be nearly \$7 billion, including financing costs.⁶ Phase IB alone would have a lifetime revenue requirement of \$837.8 million, including financing costs.⁷ These costs are significant and, if approved, would ultimately be borne by customers through their monthly electric bills.

For purposes of this Order, the Commission has grouped the Company's proposed investments into several categories of related elements. These categories and the costs of each are as follows: (i) advanced metering infrastructure ("AMI") (total cost: \$752.5 million; Phase IB: \$303.8 million); (ii) cyber security and stakeholder engagement and customer education (total cost: \$197.7 million; Phase IB: \$10.4 million); (iii) the customer information platform (total cost: \$668.9 million; Phase IB: \$36.5 million); (iv) pilot programs and hosting capacity analysis (total cost: \$65.9 million; Phase IB: \$34.8 million); (v) grid hardening (total cost: \$2.9 billion; Phase IB: \$210.8 million); and (vi) the self-healing grid and related investments (total cost: \$2.1 billion; Phase IB: \$241.5 million).⁸

⁶ Ex. 27 (Myers) at Table 3 (Revised).

⁷ The Company also proposes to spend \$83.7 million of capital costs associated with the customer information platform, which will not be in service until after Phase IB concludes and were not included in the Company's Phase IB lifetime revenue requirement calculation.

⁸ Ex. 27 (Myers) at Tables 3-7 (Revised) (including financing costs).

After consideration of the entire record, we find that Dominion has proven that the Phase IB costs of cyber security, stakeholder engagement and customer education, the customer information platform, the pilot programs and hosting capacity analysis, and certain components of grid hardening are reasonable and prudent, subject to certain requirements as discussed further below. We find that the Company has not proven the reasonableness and prudence of the plan or the costs associated with AMI, the self-healing grid and related investments, and certain components of grid hardening. These parts of the Plan are not approved. This disapproval is without prejudice to re-file for similar components in future proceedings. In total, through this Final Order, we approve additional incremental grid transformation-related costs of approximately \$212 million⁹ and additional related costs involving cyber security, stakeholder engagement and customer education, and telecommunications.¹⁰ The approved components include both measures to facilitate integration of distributed energy resources ("DER") and measures to enhance physical electric distribution grid reliability and security, consistent with the statutory purpose of the GTSA.

The Commission has followed all applicable statutory provisions. In considering the Company's cost-benefit analysis results, the Commission finds this evidence relevant and has weighed those results along with other relevant evidence in the record. Among other things, we recognize that the cost-benefit analysis is based on the full ten-year Plan and is not solely limited

⁹ These amounts do not include an additional \$83.7 million in capital costs we approve herein related to the customer information platform that the Company did not include in its calculation of the lifetime revenue requirement. *Id.* at Table 1 (Revised) and Appendix A at 8.

¹⁰ Some, but not all, of the costs of cyber security, stakeholder engagement and customer education and telecommunications relate to approved components of the Plan. Based on the record, it is not possible to calculate an exact level of approved spending in these categories; however, we will direct the Company to make a compliance filing identifying those costs and to track incurred costs necessary to demonstrate that spending in these categories is only related to approved components of the Plan.

to Phase IB.¹¹ The Commission has also considered both the arguments supporting the cost-benefit analysis, as well as those criticizing or opposing the results.¹² We do not herein establish a specific cost-benefit test for approval of a proposed GT Project. We agree with the Company in this regard that "the results of the [cost-benefit analysis] do not end the analysis of whether the proposed investments are reasonable and prudent."¹³ We have evaluated the proposed spending on a project-by-project basis in light of all the evidence in the record to determine whether the proposed Phase IB spending is reasonable and prudent, recognizing that the General Assembly has declared GT Projects to be in the public interest.¹⁴

Advanced Metering Infrastructure

As part of the Plan, the Company proposes to fully deploy AMI across its Virginia service territory. The proposed Phase IB spending associated with AMI is \$303.8 million (\$752.5 million over ten years).¹⁵ The Company previously requested approval to fully deploy AMI as part of its first application for approval of a grid transformation plan, but this request was denied in the 2018 Grid Mod Final Order. In denying approval, we cited Environmental Respondents witness Golin, who testified that AMI and related technologies "are beneficial and cost-effective *only to the extent* the Company utilizes them *to maximize* the potential gains of

¹¹ See, e.g., Staff's Post-Hearing Brief at 9.

¹² See, e.g., Ex. 4 (Hulsebosch Direct) at 3-19; Ex. 16 (Norwood) at 8-12; Ex. 18 (O'Donnell) at 17-28; Ex. 23 (Volkman) at 6-28; Ex. 29 (Hulsebosch Rebuttal) at 6-16.

¹³ Dominion's Post-Hearing Brief at 50.

¹⁴ No party suggested that any of the components of the proposed Plan did not meet the definition of an "electric grid transformation project." See, e.g., Ex. 16 (Norwood) at 8; Ex. 25 (Essah) at 14. They are therefore deemed "in the public interest" pursuant to Section A 6.

¹⁵ Ex. 27 (Myers) at Table 4 (Revised) (including financing costs).

rate optionality, energy efficiency, demand response, and DERs ..." and "[w]ithout a well-reasoned plan, this expensive equipment could be under-utilized and provide *little to no benefit to customers* and the utility."¹⁶

Environmental Respondents, Sierra Club and Consumer Counsel all urged rejection of Dominion's AMI proposal in that proceeding. We agreed for the reasons articulated by witness Golin and others. Our rejection was specifically without prejudice and invited Dominion to re-submit a proposal for deployment of AMI in a future proceeding subject to certain requirements set forth in the 2018 Grid Mod Final Order. Among other things, we stated that a future proposal must include any plan for time-varying rates.¹⁷ We concluded the 2018 Grid Mod Final Order by stating that "spending billions of dollars of customers' money on full deployment is reasonable and prudent *only* if the expenditure is accompanied by a sound and well-crafted plan to *fulfill the promise that smart meter technology* and other grid enhancements offer."¹⁸

Rate design in the form of time-varying rates, sometimes called "time of use" or "TOU" rates, holds the promise of being an extremely effective – if not the most effective – mechanism for energy efficiency and demand response. Demand response, in the form of peak-shaving, reduces the need to call upon additional generation units at times of peak demand, which may also have the added benefit of reducing carbon emissions. It also has the benefit of reducing the need to build additional generation units, the costs of which would otherwise be borne by customers. TOU rate design can empower customers to respond to price signals to reduce or

¹⁶ 2018 Grid Mod Final Order at 8 (emphasis added).

¹⁷ *Id.* at 11.

¹⁸ *Id.* at 15 (emphasis added).

shift consumption times and amounts. AMI is necessary to implement such rate design, and without TOU rates, one of the most significant benefits of AMI is lost to customers. So, it is reasonable and prudent in a grid transformation plan under Section A 6 that both be deployed together.¹⁹

In its current Petition, Dominion has not submitted a comprehensive plan to maximize the potential of AMI. In particular, while Dominion wants approval to collect from its customers the substantial costs of *full* deployment of AMI technology, it has failed to submit a comprehensive proposal to roll out TOU rate design across its entire territory and make such rates available to all its customers.²⁰ Rather, on December 12, 2019 and February 14, 2020, in a proceeding docketed as Case No. PUR-2019-00214, Dominion submitted and supplemented a separate, stand-alone proposal for approval of another TOU rate pilot,²¹ limited to no more than 10,000 of

¹⁹ The record in this proceeding also shows that the Company has installed approximately 485,000 AMI meters through the end of 2019 and continues to install additional AMI meters. Tr. 198-206. In this regard, the Commission notes that the instant case specifically involves the approval of a particular AMI project as part of a grid transformation plan under Section A 6 and, thus, the outcome herein is without prejudice for purposes of other proceedings.

²⁰ A comprehensive proposal to offer TOU and related rate designs to all of Dominion's customers – either as a voluntary (opt-in) or as the default (opt-out) tariff – could be accomplished in conjunction with a base rate case in which rate design issues can be comprehensively addressed. Under current statutes, however, it is unclear when Dominion would be required to submit to a full base rate case. An earnings review is scheduled for 2021; however, it is not known at this time whether that earnings review will require a full base rate case. There is also an opportunity during a Triennial Review for revenue neutral changes to rate design in the absence of a full base rate case, but such rate design would be limited to a revenue neutral TOU proposal. *See, e.g.*, Consumer Counsel's Post-Hearing Brief at 16; Staff's Post-Hearing Brief at 6-7.

²¹ Nearly ten years ago, Dominion applied for – and this Commission approved – three dynamic pricing TOU pilot offerings. *Commonwealth of Virginia, ex rel. State Corporation Commission: In re: Virginia Electric and Power Company's Proposed Pilot Program on Dynamic Rates*, Case No. PUE-2010-00135, Order Establishing Pilot Program, 2011 S.C.C. Ann. Rept. 386 (Apr. 8, 2011). These TOU pilots were undertaken in conjunction with the Company's three AMI demonstration pilots conducted in Charlottesville, Midlothian and Northern Virginia, which were not themselves subject to prior Commission approval. *See Application of Virginia Electric and Power Company, For approval to implement new demand-side management programs and for approval of two rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia*, Case No. PUE-2009-00081, 2010 S.C.C. Ann. Rept. 362, 366, Order Approving Demand-Side Management Programs (Mar. 24, 2010) ("The Company also

Dominion's 2.5 million Virginia customers, apparently in response to the 2018 Grid Mod Final Order and subsequent legislation.²² The Company asserts that the proposed pilot – which will take several years to complete – is a prerequisite to system-wide TOU rates.²³ In this regard, the Commission concludes that the Company has simply not provided a concrete, definitive plan to implement TOU rates on a system-wide basis and bring the benefits of full AMI deployment to customers in a timely manner.²⁴ Accordingly, we once again find the Petition contains an insufficient plan to maximize the potential of AMI, and that the substantial cost to customers of AMI is not reasonable and prudent based on the record established herein. Once again, this rejection is without prejudice.

Cyber Security and Stakeholder and Customer Education

Cyber Security

The Company proposes cyber security spending of \$7.2 million (\$186.6 million over ten years).²⁵ As part of Phase IB, the Company proposes to deploy cyber security protections necessary to protect the other Phase IB projects.²⁶ No party specifically took issue with the

states that the three AMI-enabled demonstration projects do not require Commission approval prior to implementation - only that approval is needed for cost recovery thereof.").

²² See, e.g., Ex. 45 (Morgan Rebuttal) at 8-9; Dominion's Post-Hearing Brief at 17; Ex. 7 (Frost Direct) at 7; Tr. 263, 267-68; 278. See also 2019 Va. Acts ch. 763, Enactment Clauses 3 and 4. Among other things, these enactment clauses direct Dominion to "develop and submit to the ... Commission for approval retail rate schedules designed to offer time-varying pricing, include at least one non-demand rate schedule."

²³ Tr. 267-70.

²⁴ See, e.g., Tr. 268, 281.

²⁵ Ex. 27 (Myers) at Table 5 (Revised) (including financing costs).

²⁶ See, e.g., Dominion's Post-Hearing Brief at 37.

Company's proposed Phase IB cyber security component,²⁷ and the Commission generally supports reasonable utility spending to support enhanced utility security.²⁸ Consistent with our determination in the 2018 Grid Mod Final Order, the Commission finds reasonable and prudent the costs of the Company's proposed Phase IB cyber security program, with the exception of the proposed spending that is related exclusively to components of the Plan that are not approved herein.²⁹

Stakeholder Engagement and Customer Education

The Company proposes to spend \$3.2 million (\$11.1 million over ten years) on stakeholder engagement and customer education.³⁰ To facilitate stakeholder engagement, the Company will continue to convene grid modernization workshops involving varying interests, including environmental advocates, municipal representatives and low income advocates.³¹ The Commission approves stakeholder engagement costs, as well as the customer education costs, to the extent they are necessary to support the approved components herein, such as the Smart

²⁷ The Environmental Respondents opposed all of Phase IB, or alternatively, request the Commission condition future cost recovery on meeting or exceeding appropriate performance benchmarks. Environmental Respondents Post-Hearing Brief at 2, 14.

²⁸ 2018 Grid Mod Final Order at 7.

²⁹ Thus, the Commission finds that such spending related exclusively to components of the Plan that are not approved herein is not reasonable and prudent and is not approved. In addition, as we did in the 2018 Grid Mod Final Order, the Commission directs the Company to separately track approved spending and to maintain documentation to facilitate Staff audit to ensure such spending is not related to unapproved components of the Plan. 2018 Grid Mod Final Order at 7 n.14.

³⁰ Ex. 27 (Myers) at Table 3 (Revised) (including financing costs).

³¹ Ex. 2 (Plan) at 18-19.

Charging Infrastructure Pilot Program ("Smart Charging Pilot") and to prepare for future grid modernization filings.³² The Commission finds such costs are reasonable and prudent.

Customer Information Platform

The Company proposes to deploy a customer information platform, including a meter data management system, at a cost of \$36.5 million for Phase IB (\$668.9 million over ten years).³³ The customer information platform, among other things, replaces the Company's legacy customer information system, the primary system supporting processes such as metering, billing, credit, services orders and revenue reporting.³⁴ Staff and Walmart support approval and Consumer Counsel does not oppose approval of the customer information platform.³⁵ The Commission finds that the costs of the new customer information platform are reasonable and prudent and should be approved. For example, the evidence in this matter showed that:

- "the Phase 1B investment in the [customer information platform] . . . is well supported by detailed cost estimates and a competitive [request for proposal] process;"³⁶

³² Proposed educational spending is not approved to the extent that it is related exclusively to components of the Plan that are not approved herein. The Commission directs the Company to separately track approved spending and to maintain documentation to facilitate Staff audit to ensure such spending is not related to unapproved components of the Plan.

³³ Ex. 27 (Myers) at Table 3 (Revised) (including financing costs). The Phase IB customer information platform lifetime revenue requirement of \$36.5 million includes only O&M expenses and financing costs. The Company also proposes to spend \$83.7 million of capital costs associated with the customer information platform, which will not be in service until after Phase IB concludes and were not included in the Company's Phase IB lifetime revenue requirement calculation, but are nevertheless approved by this Final Order. *Id.* at Table 1 (Revised) and Appendix A at 8. The Commission has found such costs reasonable and prudent.

³⁴ *See, e.g.*, Dominion's Post-Hearing Brief at 20.

³⁵ *See, e.g.*, Consumer Counsel's Post-Hearing Brief at 4; Walmart's Post-Hearing Letter at 2; Staff's Post-Hearing Brief at 19. The remaining parties took no position with the exception of Environmental Respondents which opposed all components of Phase IB or alternatively, recommended the Commission condition future cost recovery on meeting or exceeding appropriate performance benchmarks.

³⁶ Ex. 27 (Myers) at 17.

- "[t]he existing [system] is no longer vendor supported, [and] is quickly approaching the end of its useful life;"³⁷
- "the existing system is an outdated technology that is getting very close to . . . not functioning anymore;"³⁸
- "the existing [system] is unable to effectively and efficiently offer an expanded set of rate structures and customer-centric programs;"³⁹ and
- The new customer information platform "will provide customers the option to compare available rates and make assumptions on changing usage."⁴⁰

Pilot Programs and Hosting Capacity Analysis

The Commission includes the following Plan elements in this category: Locks Campus Microgrid (total cost: \$13.6 million; Phase IB: \$12.3 million), the Smart Charging Pilot (total cost: \$51.1 million; Phase IB: \$22.2 million), and the hosting capacity analysis (total cost: \$1.2 million; Phase IB: \$0.3 million).⁴¹

Locks Campus Microgrid

With the Locks Campus Microgrid project, the Company seeks to install a microgrid at its Locks Campus in Petersburg, Virginia. The microgrid will consist of a group of interconnected loads and DER that act as a small power grid, able to operate when connected to the larger electric grid and also able to continue to operate as an "island" when normal power is interrupted.⁴² Through this project, the Company states it "will obtain real-world data, better

³⁷ Dominion's Post-Hearing Brief at 20.

³⁸ *Id.* at 21 (internal quotation marks omitted).

³⁹ Ex. 8 (Arruda Direct) at 9.

⁴⁰ *Id.* at 11.

⁴¹ Ex. 27 (Myers) at Tables 3 and 6 (Revised) (including financing costs).

⁴² Ex. 9 (Wright Direct) at 17.

understand DER performance characteristics, perform testing of DER grid support and islanding capabilities, vet new technology integration into the distribution grid, and evaluate microgrid operations architecture for potential future applications."⁴³ Staff, Walmart, Sierra Club, ChargePoint, and Electrify America took no position on this component and Consumer Counsel and Environmental Respondents opposed it generally.⁴⁴ Based on the limited scope and experimental nature of this pilot-type program related to the integration of DER on the Company's system, the Commission finds the Locks Campus Microgrid is reasonable and prudent.

Smart Charging Pilot

With the Smart Charging Pilot, the Company seeks to obtain "data and tools necessary to understand and manage future [electric vehicle ("EV")] charging load in furtherance of additional investments, pilots, programs, or rate designs that will support EV adoption while minimizing the impact of EV charging on the distribution grid."⁴⁵ The pilot will consist of: (i) rebates for the infrastructure and upgrades, if necessary, at EV charging sites; and (ii) rebates for the smart charging equipment that enables managed charging.⁴⁶ The Company also proposes to own up to four charging stations as part of Phase IB to support electrification in the rideshare market.⁴⁷ The data collected as part of the pilot will enable the Company "to design customer

⁴³ Ex. 2 (Plan) at 25; *see also* Ex. 38 (Wright Rebuttal) at 18.

⁴⁴ *See, e.g.*, Staff's Post-Hearing Brief at 26; Consumer Counsel's Post-Hearing Brief at 17; Environmental Respondents' Brief at 2.

⁴⁵ Ex. 7 (Frost Direct) at 35.

⁴⁶ *Id.* Dominion states that managed charging allows a utility or third-party to remotely control vehicle charging by turning it up, down, or off to better correspond to the needs of the grid. *Id.* at 39

⁴⁷ *Id.* at 41.

offerings specific to the charging behavior of its customers."⁴⁸ The pilot will also inform "future options for alternative rates and programs for electric transportation."⁴⁹

Several respondents sponsored testimony that was largely focused on the Smart Charging Pilot, including Sierra Club, Electrify America, and ChargePoint. Each of these parties was generally supportive of the pilot;⁵⁰ however, ChargePoint recommended that the Company's proposed ownership of four charging stations be rejected and the spending be converted to additional rebates.⁵¹ ChargePoint, among other things, objected to "inject[ing] the utility into the competitive EV space."⁵² Dominion, however, maintains that "it is important to consider various utility investment models as part of the Pilot Program with the understanding that one model . . . may be better suited for some segments and geographic areas . . ." and that "many rideshare rides start or end in low income areas, which are often less likely to have [fast charging] located nearby."⁵³

The Commission approves the proposed Smart Charging Pilot Program, including the Company's proposed limited ownership of four charging stations for purposes of collecting relevant data during the term of the Pilot. The Commission finds that collecting relevant data to

⁴⁸ *Id.* at 47.

⁴⁹ Ex. 34 (Frost Rebuttal) at 25-26.

⁵⁰ In addition, Walmart supported the proposed Pilot; Consumer Counsel did not oppose it; and Staff took no position. *See, e.g.*, Walmart's Post-Hearing Letter at 2; Consumer Counsel's Post-Hearing Brief at 17; Staff's Post-Hearing Brief at 26-27. As noted earlier, Environmental Respondents' generally opposed all aspects of the Plan based on concerns with the Company's cost/benefit analysis.

⁵¹ *See, e.g.*, ChargePoint's Post-Hearing Brief at 12.

⁵² *See, e.g., id.*

⁵³ Ex. 34 (Frost Rebuttal) at 24.

facilitate the increased deployment of EVs on the Company's electric grid through the proposed Pilot is reasonable and prudent. Such approval does not, however, represent any guarantee that additional utility ownership of charging stations will be approved by the Commission.

The integration of EV charging into the Company's electric system raises important issues, many of which were not able to be fully explored in this proceeding. For example, Electrify America requests the Commission direct Dominion "to work with EV charging companies to eliminate minimum charges and to develop and propose new rate designs that will support the growing private market for fast charging services."⁵⁴ Sierra Club witness Camp also recommends the Commission implement an energy-only time-of-use rate for EV customers.⁵⁵ Consumer Counsel witness Norwood recommends, among other things, that the Company study "cost allocation methods that fairly recognize the direct benefits of such [infrastructure] investment."⁵⁶ While we decline to adopt these specific recommendations in this case based on the record established herein, the Commission recognizes that the continued deployment of charging stations in the Commonwealth represents a significant, ongoing issue that impacts the public interest. In this regard, the Commission has recently issued an order establishing a separate proceeding for the investigation and consideration of electric vehicle-related issues, which has been docketed as Case No. PUR-2020-00051.

⁵⁴ See, e.g., Electrify America's Post-Hearing Brief at 8.

⁵⁵ Ex. 22 (Camp) at 19-24.

⁵⁶ Ex. 16 (Norwood) at 22. The Company opposed this recommendation because it has not requested cost recovery in this proceeding. Ex. 34 (Frost Rebuttal) at 26.

Hosting Capacity Analysis

A hosting capacity analysis defines the amount of DER that can be connected to each segment of the distribution grid without causing voltage or loading issues and indicates to customers whether distribution grid investments may be necessary to integrate their DER.⁵⁷ In Phase IB, the Company proposes to perform a hosting capacity analysis for both utility scale and net metering DER and publish the results using online interactive maps.⁵⁸

The Company asserts that the intelligent grid devices that are proposed to be installed as part of AMI and the self-healing grid will enable more advanced and dynamic hosting capacity analysis in the future.⁵⁹ Staff witness Volkmann explained, however, that the Company currently has the capability to successfully engage in a "round one" hosting capacity analysis with the information currently available to the Company.⁶⁰ We do not approve the Company's AMI or self-healing grid proposals as discussed herein; however, we do find the proposed hosting capacity analysis, using information currently available to the Company, is reasonable and prudent.

Grid Hardening

The Company's grid hardening proposal is one of the most expensive components of the Plan. Over ten years, it makes up the single largest category of proposed spending, with a lifetime revenue requirement of approximately \$3 billion (\$210.8 million over Phase IB). The

⁵⁷ Ex. 9 (Wright Direct) at 9.

⁵⁸ *Id.* at 10.

⁵⁹ Ex. 2 (Plan) at 24. Staff supported this component of the Plan; Consumer Counsel and Environmental Respondents opposed it; and the remaining parties took no position.

⁶⁰ Tr. 446.

four sub-components of Grid Hardening are: (i) mainfeeder hardening (total cost: \$1.6 billion; Phase IB: \$112.4 million); (ii) targeted corridor improvement (total cost: \$37.4; Phase IB: \$12.5 million); (iii) proactive component upgrade (total cost: \$1.2 billion; Phase IB: \$70.1 million); and (iv) voltage island mitigation (total cost: \$143.6 million; Phase IB: \$15.7 million).⁶¹ Consumer Counsel, Environmental Respondents and Staff opposed the grid hardening proposals, in large part based on concerns with the Company's cost-benefit analysis.⁶²

Mainfeeder Hardening

During Phase IB, the Company proposes to harden 11 mainfeeders serving approximately 24,000 customers.⁶³ These mainfeeders were selected based on outage history and "essentially represent the 'worst of the worst' performing feeders in terms of customers experiencing poor reliability."⁶⁴ While the average Dominion customer experienced 127 outage minutes annually between 2014 and 2018, the customers served by the targeted 11 mainfeeders experienced 348 outage minutes on average annually, which is significantly worse than the system average.⁶⁵ The Company anticipates that Phase IB mainfeeder hardening will, on average, reduce outage time annually by 94 minutes for each customer served by the selected mainfeeders, a 27% improvement.⁶⁶

⁶¹ Ex. 27 (Myers) at Table 7 (Revised) (including financing costs).

⁶² See, e.g., Consumer Counsel's Post-Hearing Brief at 17; Environmental Respondents' Post-Hearing Brief at 2; Staff's Post-Hearing Brief at 29-33. The remaining parties took no position.

⁶³ See, e.g., Dominion's Post-Hearing Brief at 32.

⁶⁴ *Id.*

⁶⁵ Ex. 9 (Wright Direct) at 23-26. Figures are excluding major events.

⁶⁶ *Id.* at 26.

The Commission finds that Phase IB mainfeeder hardening is reasonable and prudent and should be approved as a pilot-type program as proposed by the Company,⁶⁷ targeting customers with the worst reliability records, to validate the projected reliability improvements resulting from this type of program. Such a pilot-type program would provide credible measurement and evaluation to determine whether there are demonstrative improvements in reliability that result from hardening these mainfeeders. Commission approval herein does not guarantee any additional future approvals associated with the Company's full ten-year mainfeeder hardening program, which, if fully implemented over ten years, would cost approximately \$1.6 billion.⁶⁸ The Commission expects to see actual data collected to analyze the specific impacts of mainfeeder hardening before it will approve any additional spending on future phases related to mainfeeder hardening.⁶⁹ The Company shall also report annually on mainfeeder hardening, as detailed further below.

Targeted Corridor Improvements

The Company proposes to spend \$12.5 million during Phase IB (\$37.4 million over ten years) on targeted corridor improvements.⁷⁰ The targeted corridor improvements would consist of (i) a remediation of ash tree mortality program and (ii) an herbicide program for ground floor

⁶⁷ See, e.g., Dominion's Post-Hearing Brief at 7.

⁶⁸ Ex. 27 (Myers) at Table 7 (Revised) (including financing costs).

⁶⁹ Further, any additional spending would depend upon the Company demonstrating that the reliability improvements are reasonable and prudent based on the record in that case.

⁷⁰ Ex. 27 (Myers) at Table 7 (Revised) (including financing costs).

maintenance.⁷¹ We find the targeted corridor improvements are reasonable and prudent based on the record in this proceeding. The evidence showed, for example, that:

- Identifying and proactively removing ash trees impacted by emerald ash borer infestation before they become too brittle will reduce safety risk, reduce the cost of removal, and eliminate dead hazard trees that could cause outages;⁷²
- While the Company has been removing affected ash trees for several years, the pace of the impact to the system is growing, with approximately 75% of the ash trees already dead or in declining health;⁷³
- The Company has completed several pilot projects to determine the most effective approach to an herbicide program;⁷⁴ and
- The Company's proposed herbicide program is designed to reduce the amount of incompatible growth on the Company's distribution corridors and reduce outages and improve accessibility to Company facilities for routine inspections or unplanned restoration work.⁷⁵

Proactive Component Upgrades

The Company proposes to spend \$70.1 million during Phase IB (\$1.2 billion over ten years) on proactive component upgrades.⁷⁶ In Phase IB, the Company is proposing to proactively upgrade (i) substation transformers deemed to be at a high risk of failure, and (ii) service transformers identified by smart meters as either being overloaded or not providing appropriate voltage levels.⁷⁷

⁷¹ Ex. 9 (Wright Direct) at 27-28.

⁷² *Id.* at 27.

⁷³ *Id.* at 27-28.

⁷⁴ *Id.* at 28.

⁷⁵ *Id.*

⁷⁶ Ex. 27 (Myers) at Table 7 (Revised) (including financing costs).

⁷⁷ Ex. 9 (Wright Direct) at 29.

The Commission does not find that the proposed proactive component upgrade program is reasonable and prudent based on the record in this case. First, the service transformer-related component is dependent on AMI meters, which the Commission does not approve herein. In addition, the evidence showed that:

- The ten-year cost of the proactive component upgrade program exceeds \$1 billion, making it one of the larger components of the overall Plan;
- The Company acknowledges that the program "is not cost-effective under a traditional cost-benefit analysis;"⁷⁸
- Although the primary-asserted benefit of this component is reliability improvements, the Company did not present specific reliability improvement metrics (reduced minutes of interruption before and after, reduced customer interruptions, etc.) that could be measured and verified after-the-fact for the program;⁷⁹ and
- Unlike mainfeeder hardening, the proactive component upgrade program does not target customers with below average reliability.

Voltage Island Mitigation

The Company proposes to spend \$15.7 million during Phase IB (\$143.6 million over ten years) on voltage island mitigation to address portions of the distribution grid without any available system redundancy.⁸⁰ For Phase IB, the Company proposes to mitigate two voltage islands which serve 2,600 customers.⁸¹ The Commission finds that Phase IB Voltage Island Mitigation is reasonable and prudent at the level proposed for Phase IB. The evidence showed, for example:

⁷⁸ Ex. 28 (Baine Rebuttal) at 6. Staff witness Volkmann also testified that, based on the Company's own analysis, the Poor Health [Substation] Transformer component of the proactive component upgrade program was not cost-effective on a stand-alone basis, even considering reliability benefits. Tr. 408.

⁷⁹ See, e.g., Ex. 9 (Wright Direct) at 29-32; Ex. 29 (Hulsebosch Rebuttal) at 29.

⁸⁰ Ex. 27 (Myers) at Table 7 (Revised) (including financing costs).

⁸¹ Ex. 9 (Wright Direct) at 34.

- The communities served by voltage islands are exposed to the risk of an extended outage, in the range of 24 hours, if the single substation transformer fails;⁸² and
- The Company's proposal would apply various solutions that would eliminate the risk of extended outages and would include installing a second transformer at each location and reconfigure feeders to provide both capacity to restore all customers in the event of a failure of the existing transformer, but also to improve the day-to-day service reliability.⁸³

Self-Healing Grid and Related Elements

The Company proposes to spend \$54 million during Phase IB (\$873 million over ten years)⁸⁴ to deploy certain technology referred to as fault location, isolation, and service restorage, or FLISR. This technology is also referred to as the self-healing grid. This investment is closely related to, and dependent on, the Company's proposed Phase IB telecommunications investment, which would cost an additional \$152.7 million in Phase IB (\$1.1 billion over ten years).⁸⁵ Also connected to the self-healing grid investment are the Company's proposed investments in advanced analytics (total cost: \$67.1 million; Phase IB: \$12.8 million) and the enterprise asset management system ("EAMS") (total cost: \$41.4 million; Phase IB: \$22 million).⁸⁶ In total, these related investments would have a Phase IB lifetime revenue requirement of approximately \$241.5 million and represent the largest component (almost 30 percent) of the Company's

⁸² *Id.* at 33.

⁸³ *Id.* at 33-34.

⁸⁴ Ex. 27 (Myers) at Table 6 (Revised) (including financing costs).

⁸⁵ *Id.* at Table 5 (Revised) (including financing costs). At the hearing, Company witness Wright indicated that a small portion of the telecommunications component is related to the Locks Campus Microgrid and grid hardening. Tr. 258. The Commission approves necessary telecommunications spending related to the Locks Campus Microgrid and grid hardening, but only to the extent those components are approved herein. The Company is directed to track approved spending and to maintain documentation to facilitate Staff audit to ensure such spending is not related to unapproved components of the Plan.

⁸⁶ Ex. 40.

proposed Phase IB spending. During Phase IB, the Company would install the self-healing grid on mainfeeders serving 88,000, or just 3.5%, of the Company's 2.5 million Virginia customers.⁸⁷ Over ten years, this group of investments would ramp up significantly and result in the installation of the self-healing grid on mainfeeders serving over 2 million of the Company's customers.⁸⁸ Over ten years, the lifetime revenue requirement would top \$2.1 billion, representing approximately 30 percent of the costs of the ten-year Plan.⁸⁹

The Company's self-healing grid proposal is expensive and sweeping. No respondent or Staff supported it.⁹⁰ The Company's justification for this proposed investment is to improve customer reliability.⁹¹ Similarly, the Company's cost-benefit analysis shows that the primary benefit of this proposal is improved reliability.⁹² Unlike the Company's mainfeeder hardening proposal, however, the self-healing component is not targeted at customers with below average reliability.⁹³ Rather, the Company states it is targeting mainfeeders with the largest number of customers.⁹⁴ The Commission finds that the Company has not sufficiently established the need for this level of investment to improve overall system reliability, and we will not commit customers to pay for such an expensive investment based on this record. In sum, the

⁸⁷ Ex. 7 (Frost Direct) at 7; Ex. 9 (Wright Direct) at 8.

⁸⁸ Ex. 9 (Wright Direct) at 7-8.

⁸⁹ Ex. 27 (Myers) at Tables 5-6 (Revised) (including financing costs).

⁹⁰ *See, e.g.*, Consumer Counsel's Post-Hearing Brief at 17; Staff's Post-Hearing Brief at 27-29; Environmental Respondents' Brief at 2.

⁹¹ *See e.g.*, Ex. 9 (Wright Direct) at 6.

⁹² *See, e.g.*, Ex. 29 (Hulsebosch Rebuttal) at 27.

⁹³ *See, e.g.*, Tr. 159, 250.

⁹⁴ *See, e.g.*, Ex. 9 (Wright Direct) at 7-8.

Commission finds that the proposed self-healing grid and related investments are not reasonable and prudent.

Further in this regard, we note that Dominion correctly points out that the GTSA requires the Company to propose GT Projects aimed at improved reliability.⁹⁵ The GTSA, however, does not require the Commission to approve *any* reliability-related GT Project at *any* cost. Instead, the GTSA directs the Commission to consider the reasonableness and prudence of the Company's proposal. The Commission finds that the record simply does not support the need for this level of costs to customers when the purported gains in reliability are speculative and not targeted to the worst-performing locations.

Finally, Dominion requests the opportunity to demonstrate the reliability and resiliency improvements of the self-healing grid through a pilot-type program.⁹⁶ While we find a limited pilot-type program is reasonable for Phase IB mainfeeder hardening, we do not find it reasonable and prudent for the self-healing grid. If effective, mainfeeder hardening has the potential to improve service for customers with reliability significantly below system average. That is not the case for the self-healing grid, which is not targeted at customers with below average reliability. In addition, we find that the Company has not sufficiently established the specific parameters of a pilot that would support a research and development ("R&D") project for cost-benefit review; and while the Commission has not applied a strict cost-benefit analysis herein, we consider the reasonableness and prudence of using customers to fund specific pilot-type R&D projects, as we have done herein with mainfeeder hardening.

⁹⁵ See, e.g., Dominion's Post-Hearing Brief at 52-54.

⁹⁶ See, e.g., *id.* at 7.

Cost Caps

The Commission further finds that the Phase IB components approved herein are reasonable and prudent only if they are limited to the amount of capital and operations and maintenance ("O&M") costs proposed for each approved component by the Company on rebuttal for the following: the customer information platform; the pilot programs and hosting capacity analysis; and mainfeeder hardening. We do not find it reasonable and prudent for the Company to incur any amount of costs above those proposed costs. Any costs that exceed the cost estimates for approved components on rebuttal must be proven by Dominion in a future proceeding to be reasonable and prudent before recovery thereof from ratepayers shall be permitted. The cost caps established herein shall be by individual program (*i.e.*, customer information platform, Locks Campus Microgrid, Smart Charging Pilot, hosting capacity analysis, and mainfeeder hardening), and shall be separate for capital and O&M costs.⁹⁷ Dominion did not oppose the imposition of cost caps on approved spending.⁹⁸

Some, but not all, of the costs of certain components relate to other approved components of the Plan. For example, an unspecified amount of the cyber security component is necessary to provide security for the other approved Phase IB components. Based on the record, it is not possible to calculate an exact level of approved spending in these categories – cyber security, stakeholder engagement and customer education, and telecommunications. We only approve the requested investment in these components to the extent the costs are related to approved investments. We direct the Company to track that information as previously discussed. With respect to these investments, we also direct the Company to make a compliance filing within

⁹⁷ See, e.g., Staff's Post-Hearing Brief at 10.

⁹⁸ Ex. 28 (Baine Rebuttal) at 18.

45 days hereof that identifies, separately for each of the foregoing components of spending (cyber security, stakeholder engagement and customer education, and telecommunications), the amount of (i) capital and (ii) O&M costs approved herein. Such amounts shall also be costs caps with respect to these components.

Reporting Requirements

On or before March 31, 2021, and each year thereafter until further order of the Commission, the Company shall file an annual report on the approved elements of the Plan, both Phase IA and IB, consistent with the Company's proposed reporting metrics.⁹⁹

In addition, with respect to approved Phase IB mainfeeder hardening, the report shall include mainfeeders and miles hardened, costs per mile, performance improvements measured by event count, duration, restoration and System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) impacts, and any other information mutually determined by Dominion and Staff to be useful in evaluating mainfeeder hardening. The Company shall also provide a comparison of the realized benefits of mainfeeder hardening compared to the projected benefits presented in Schedule 7 of Company witness Wright's direct testimony.¹⁰⁰

Conclusion

Through this Final Order we address the Company's request for approval of additional investments over the first three years of its ten-year Plan, referred to as Phase IB. Today we approve costs of approximately \$212 million and additional related costs involving cyber

⁹⁹ *Id.* at Rebuttal Schedule 4.

¹⁰⁰ Ex. 9 (Wright Direct).

security, stakeholder engagement and customer education, and telecommunications, but deny approval of the remaining elements contained in Dominion's Petition and Plan.¹⁰¹ This results in the denial of approximately \$626 million in proposed costs that would be borne by customers in their monthly bills. We recognize the importance of the Plan's overall objectives. We have approved those elements in which the heavy costs to customers have been adequately justified by the overall benefits to customers, and we have denied approval to those elements whose heavy costs were not justified by the overall benefits to customers. As required by the statute, we have considered whether Dominion's "plan for such projects, and the projected costs associated therewith, are reasonable and prudent."¹⁰² Accordingly, in exercising the Commission's discretion thereunder, we have denied those projects for which we have found that the plan, or the projected costs, are not reasonable and prudent.

Accordingly, IT IS SO ORDERED, and this matter IS DISMISSED.

Commissioner Patricia L. West participated in this matter.

AN ATTESTED COPY hereof shall be sent electronically by the Clerk of the Commission to all persons on the official Service List in this matter. The Service List is available from the Clerk of the Commission.

A True Copy
Teste:



Clerk of the
State Corporation Commission

¹⁰¹ Includes financing costs.

¹⁰² Section A 6.