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SCHOOL of LAW

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March 29, 2023

VIA ELECTRONIC FILING

Mr. Bernard Logan, Clerk  
c/o Document Control Center  
State Corporation Commission of Virginia  
Tyler Building - First Floor  
1300 East Main Street  
Richmond, Virginia 23219

RE: Application of Virginia Electric and Power Company for approval of its 2022 DSM  
Update pursuant to § 56-585.1 A 5 of the Code of Virginia

Case No. PUR-2022-00210

Dear Mr. Logan:

Enclosed for filing in the above-captioned proceeding is the **Direct Testimony of Chelsea Harnish**, which is being filed on behalf of the **Virginia Energy Efficiency Council**. Ms. Harnish's testimony includes five attachments, labeled CH-1 through CH-5. The testimony and attachments are being filed in a public version only.

If you should have any questions regarding this filing, please contact me at (434) 924-4776, or via email at [cjaffe@law.virginia.edu](mailto:cjaffe@law.virginia.edu).

Regards,

  
Cale Jaffe

Counsel of Record  
Virginia Energy Efficiency Council

cc: Parties on Service List  
Commission Staff

CERTIFICATE OF SERVICE

I hereby certify that the following have been served with a true and accurate copy of the attached filing on behalf of the Virginia Energy Efficiency Council by electronic mail only:

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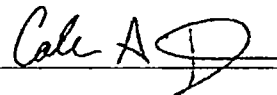
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DATED: March 29, 2023



Cale Jaffe

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### Witness Direct Testimony Summary

**Witness:** Chelsea Harnish

**Title:** Executive Director of the Virginia Energy Efficiency Council

**Summary:**

Chelsea Harnish, Executive Director of the Virginia Energy Efficiency Council ("VAEEC"), offers testimony in support of the VAEEC's position in this docket. Principally, Ms. Harnish offers the VAEEC's support for the Company's proposed Phase XI programs and bundles, while also making recommendations for strengthening these programs moving forward to meet targets under the Virginia Clean Economy Act. Ms. Harnish also offers recommendations related to the methodology for implementing and using the cost-effectiveness tests to assess programs in Virginia.

Ms. Harnish's testimony is broken down into three main sections: (1) Support for the Phase XI filing as necessary to meet VCEA targets; (2) Opportunities to strengthen the proposed programs; and (3) Review of cost-effectiveness test methodology.

In supporting the Company's Phase XI proposal, Ms. Harnish first notes that approval of the programs and bundles in Phase XI is likely necessary to meet the efficiency targets of the Virginia Clean Economy Act. She also emphasizes the many values of program bundling for customers and contractors alike. Indeed, program bundling was a specific recommendation made through the stakeholder process for its potential to improve awareness, customer experience, and enrollment, while also cutting vendor costs. That is, the Company has provided the four program bundles included in Phase XI in response to stakeholder input.

Ms. Harnish's testimony also includes several recommendations for improvements, including the potential of doing more to leverage the functionalities of Advanced Metering Infrastructure ("AMI") in demand-response programs. An initial step would be to utilize AMI for a geotargeted Peak Time Rebate Program that identifies service areas that are chronically capacity-constrained and focuses greater marketing, education, and outreach efforts to achieve participation in those areas. She also recommends retaining a requirement for contractors to obtain Building Performance Institute ("BPI") certification for the installation of all measures in the Residential Home Retrofit Bundle.

In terms of improving the methodology for cost-effectiveness tests to make test scores more accurate, Ms. Harnish recommends accounting for non-energy benefits ("NEBs"), including the social cost of carbon, among the benefits included in the analyses. She also expresses concern about an inappropriate reliance on building codes as energy efficiency baselines, which will significantly under-count program energy savings. She notes that the appropriate baseline would be the existing efficiency of the building or equipment, and recommends that the Company perform baseline studies for proposed programs. Finally, she observes that the Inflation Reduction Act and Bipartisan Infrastructure Law present significant funding opportunities that should also be accounted for in cost-effectiveness test scores.

**DIRECT TESTIMONY OF  
CHELSEA HARNISH ON BEHALF OF  
THE VIRGINIA ENERGY EFFICIENCY COUNCIL  
STATE CORPORATION COMMISSION OF VIRGINIA  
CASE NO. PUR-2022-00210**

## I. INTRODUCTION

**Q. Please state your name, business address, and position with the Virginia Energy Efficiency Council (“VAEEC” or the “Council”).**

A. My name is Chelsea Harnish, and my business address is 313 East Broad Street, Suite 226, Richmond, Virginia. I am the Executive Director of the Virginia Energy Efficiency Council.

**Q. Please tell us about the VAEEC and describe your role within the organization.**

A. The VAEEC is a 501(c)3 charitable organization that provides a platform for stakeholder engagement while assessing and supporting cost-effective energy efficiency programs, best practices in the energy efficiency industry, and sound policies that advance energy efficiency in Virginia. We also provide networking, outreach, and business services for the Commonwealth's energy efficiency industry and the public at large. Simply put, the VAEEC is the voice for the energy efficiency industry in Virginia. As Executive Director, my primary responsibility is to work with our members and stakeholders to fulfill our mission through our programmatic work. I oversee our staff, manage the organization's budget and contracts, and lead the VAEEC's regulatory and legislative work. On behalf of the VAEEC, I also participate regularly in the Dominion Energy Efficiency Stakeholder group, and I am chair of the Dominion Energy Efficiency Stakeholder Policy Subgroup.

1    **Q.     Please summarize your professional and educational expertise with respect to**  
2    **energy policy.**

3    A.     I have been Executive Director at the VAEEC since November of 2015. Prior to joining  
4    the VAEEC, I worked for the Virginia Conservation Network on climate and energy policy, with  
5    a special focus on energy policy matters before the General Assembly. Prior to my time at the  
6    Virginia Conservation Network, I served as the Virginia Policy Coordinator for the Chesapeake  
7    Climate Action Network. Before that, I worked with Clean Power Now in Massachusetts in  
8    support of the Cape Wind offshore wind project. I have a master's degree in marine science from  
9    Boston University and an undergraduate degree in biology from University of South Carolina. A  
10   copy of my resume is included with this testimony as **Attachment CH-1**.

12   **Q.     Why did the VAEEC elect to intervene in this proceeding?**

13   A.     VAEEC has more than 100 members, including energy efficiency businesses,  
14   universities, nonprofits, local governments, and electric utilities. These members recognize the  
15   important value that cost-effective energy efficiency programs can provide to all ratepayers—  
16   both participants in the programs and non-participants alike. Our goal is to ensure that energy  
17   efficiency is properly recognized as an integral part of Virginia's economy and clean energy  
18   future. Together with our members, the VAEEC is identifying cost-effective energy efficiency  
19   solutions that improve the quality of life in our work and home environments.

**Q. Has the VAEEC participated in previous DSM dockets involving Dominion Energy?**

A. Yes. The VAEEC has intervened as a participant in multiple DSM proceedings involving the Company prior to the current docket: PUE-2016-00111; PUR-2017-00129; PUR-2018-00168; PUR-2019-00201; PUR-2020-00156, and PUR-2021-00247. The VAEEC has also participated in multiple efficiency dockets for Appalachian Power Company.

**Q. Did you personally file testimony as a witness in any of those earlier dockets?**

A. Yes. I sponsored testimony in support of the VAAEC's position in PUE-2016-00111, PUR-2017-00129, and PUR-2021-00247.

## II. OVERVIEW OF RECOMMENDATIONS

**Q. Have you had the opportunity to review Dominion's initial filing in this docket?**

A. Yes, I have.

**Q. Please summarize your understanding of the Company's application.**

A. The Company's Application seeks approval of five new energy-efficiency programs and four new program bundles as part of Phase XI. I support the Company's proposed programs and bundles. The package, taken as a whole, represents a critically essential addition to the Company's DSM portfolio, and is likely necessary to achieve the efficiency targets imposed on the Company by the Virginia Clean Economy Act ("VCEA").

1 **Q. How is your testimony structured?**

2 A. My testimony provides an overview of the position of the Virginia Energy Efficiency  
3 Council in this docket. I explain my support for the proposed Phase XI programs and bundles  
4 and make recommendations for strengthening these programs moving forward to meet future  
5 VCEA targets. Further, I make recommendations related to the cost-effectiveness methodology.

6  
7 My testimony is broken down into three main sections:

- 8 1. Support for the Phase XI filing as necessary to meet VCEA targets;
- 9 2. Opportunities to strengthen the proposed programs; and
- 10 3. Review of cost-effectiveness test methodology.

11  
12 **III. THE PHASE XI FILING IS CRITICAL TO MEETING**  
13 **THE VCEA ENERGY EFFICIENCY TARGETS**

14 **Q. Please describe your understanding of the VCEA energy efficiency savings targets.**

15 A. The Virginia Clean Economy Act amended Va. Code § 56-596.2 B 2 to require the  
16 Company to meet a year-by-year series of energy savings targets through the implementation of  
17 DSM programs.<sup>1</sup> These targets are calculated based on the Company's average annual energy  
18 jurisdictional retail sales in calendar year 2019 and are cumulative, representing the total savings  
19 from the term year as well as from previous years. The savings targets start at 1.25% for calendar  
20 year 2022 and increase each year by an increment of 1.25%, requiring the Company to achieve a  
21 savings total of 2.5% of 2019's consumption by the end of 2023.<sup>2</sup>

22  

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<sup>1</sup> VA. CODE ANN. § 56-596.2 B 2.

<sup>2</sup> VA. CODE ANN. § 56-596.2.



1    **Q.     Is approval of the Company's Phase XI application necessary in order to meet the**  
2    **VCEA energy efficiency targets?**

3    A.     Likely yes. The Phase XI application updates existing programs that have demonstrated  
4    success in achieving cost-effective energy savings in the past, such as the Residential Customer  
5    Engagement and Peak Time Rebate programs. The application also updates the Energy  
6    Efficiency Products Marketplace so that rebates can be issued to eligible customers to purchase  
7    up-to-date energy efficient appliances.

8  
9    The Phase XI application also fills gaps in program eligibility and expands the pool of potential  
10   eligible customers. For example, it extends the Phase IX Agricultural Program to customers who  
11   could benefit from the programs offerings but operate under a residential tariff, such as family  
12   farms. Similarly, the Non-residential Custom Program enables customers to partner with the  
13   Company to pursue complex efficiency projects that might not fall neatly into other program  
14   categories. This improves the flexibility of the Company's DSM portfolio and allows it to tap  
15   into energy savings that were unattainable in previous years.

16  
17   **Q.     Are there any especially noteworthy improvements in the Phase XI proposal as**  
18   **compared to prior applications or petitions from the Company?**

19  
20   A.     Yes. The Phase XI application heeds the suggestions of stakeholders by forming program  
21   bundles out of existing offerings. These bundles are effective because they couple energy  
22   efficiency audit programs with rebate and installation offerings to ensure that eligible customers  
23   receive not just information on how to improve their energy efficiency, but the technology and

hardware to realize those improvements. Further, program bundles can save costs as they accomplish multiple initiatives in a single vendor visit.

**Q. Has the Company adequately taken advantage of the stakeholder process?**

A. Largely yes. While there is always room for greater stakeholder engagement, the VAEEC is generally pleased with the Company's engagement with stakeholders while preparing this case, as well as its responsiveness to stakeholder feedback to improve the Phase XI application.

**Q. Could you provide some examples of stakeholder suggestions that have been adopted by the Company?**

A. Yes, I can provide several examples. First, my testimony from last year's filing included a recommendation that the Company work with the stakeholder group to develop a cohesive marketing plan as a next step after developing the Long-Term Plan.<sup>3</sup> In response, the Company presented an initial plan for their marketing approach in collaboration with marketing consultants (the West Cary Group) at a stakeholder meeting earlier this year. A copy of the West Cary Group's presentation from that meeting, which was provided to the VAEEC by the Company in response to an interrogatory, is attached to my testimony as **Attachment CH-2**. On slides 30 and 31 of the presentation, the Company indicates its intention to form a Customer Awareness and Outreach Subgroup of the stakeholder group.

Also, in last year's filing, Company Witness Frost responded to questions raised in my testimony by indicating that the Company would continue working with stakeholders to explore modifying

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<sup>3</sup> Direct Testimony of Chelsea Harnish at 18-24, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at [https://www.scc.virginia.gov/docketsearch/DOCS/6t7\\_01!.PDF](https://www.scc.virginia.gov/docketsearch/DOCS/6t7_01!.PDF).

its implementation of the cost-benefit tests to ensure it accurately captures all of a program's benefits.<sup>4</sup> I am pleased to report that the stakeholder Policy Subgroup has a meeting next month to continue this discussion.

Finally, program bundling was a specific recommendation made through the stakeholder process for its potential to improve awareness, customer experience, and enrollment while cutting vendor costs. In response, the Company has provided four robust program bundles and has indicated that it will continue to move toward a streamlined DSM portfolio of bundled offerings.<sup>5</sup>

**Q. Could you say more about how the development of program bundles progressed through the stakeholder process?**

**A.** Yes. Specifically, Commission Staff in Interrogatory 05-106 asked about stakeholder involvement in program bundling. The Company's response to that interrogatory is included as **Attachment CH-3** with my testimony.

The development of program bundles is a perfect example of how the stakeholder process has worked well. In reviewing the Company's Long-Term Plan last year, several stakeholders were concerned that the Company was not planning to move fast enough to address the need to streamline programs as recommended in the Plan. The Company has taken that feedback into account and responded by introducing four new program bundles with a plan to continue to bundle more programs, where cost-effective, in the future.

<sup>4</sup> Rebuttal Testimony of Nathan J. Frost at 5, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at <https://www.scc.virginia.gov/docketsearch/DOCS/75zw011.PDF>.

<sup>5</sup> Direct Testimony of Michael T. Hubbard at 7, Application of Virginia Electric and Power Company (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7phr011.PDF>.

**Q. Could you describe how program bundling benefits Virginia ratepayers and customers?**

A. Previously, I have testified as to how bundling makes a program more attractive to a broader and more diverse array of customers. The approach also helps to recruit contractors, as bundled programs provide more opportunities for vendors to get into households and serve more customers than they otherwise could through implementation of isolated, individual measures or programs. The more attractive the overall bundled program is to customers, the more popular it is also going to be for contractors.

Not only does bundling make measures more popular—it also increases their cost-effectiveness. According to an analysis by Matthew Socks of Optimal Energy, Inc., presented at the 2016 ACEEE Summer Study on Energy Efficiency in Buildings, program bundles “reduce transaction costs while simplifying the overall process for customers.”<sup>6</sup> For example, program bundles provide the opportunity for contractors to visit a home to perform an energy assessment, spontaneously note opportunities for equipment or building shell upgrades to the homeowner, and even install measures in a single visit. Unbundled, those same energy-efficiency savings might require three or four visits, often by multiple contractors, which would make them less cost-effective.

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<sup>6</sup> Direct Testimony of Chelsea Harnish at 6, Application of Virginia Electric and Power Company (2016) (No. PUE-2016-00111), available at <https://www.scc.virginia.gov/docketsearch/DOCS/3d4s011.PDF>.

**Q. What programs would be discontinued if the Phase XI proposed bundles are approved?**

A. If the Phase XI portfolio is approved, it is my understanding that the Company proposes discontinuing the following programs: Phase VII Residential Home Energy Assessment Program; Phase VII Non-residential Window Film Program; Phase VII Non-residential Small Manufacturing Program; Phase VII Non-residential Heating and Cooling Efficiency Program; Phase VII Residential Appliance Recycling Program; Phase VII Non-residential Office Program; and Phase VIII HB 2789 (Heating and Cooling/Health and Safety).<sup>7</sup>

**Q. Do you endorse the discontinuation of these programs?**

A. Only if the new Phase XI programs and bundles are approved. Furthermore, I have concerns about shutting down these currently operating programs at the end of the year. These programs should continue to be offered until the new bundles are ready to launch, to avoid any start-stop issues for contractors, particularly because the Company has indicated in Staff Interrogatory 01-14 that it is still working to implement last year's Phase X programs at this point. The Company's response to that interrogatory is included with my testimony as

**Attachment CH-4.**

**Q. Could you please describe these stop-start issues faced by contractors?**

A. Yes. Please allow me to reference the testimony of Andrew Grigsby, who served as a VAEEC witness in the Company's 2016 DSM docket. At the time, Mr. Grigsby worked as an

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<sup>7</sup> Direct Testimony of Michael T. Hubbard at 6, Application of Virginia Electric and Power Company (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7phr011.PDF>.

1 energy efficiency contractor with the Local Energy Alliance Program (“LEAP”).<sup>8</sup> Mr. Grigsby  
2 testified that “it causes confusion, customer loss, and a substantial harm to small businesses  
3 when programs are started, cancelled, and restarted after a gap in the program. It hurts  
4 contractors to have to hire, lay off, and then attempt to rehire staff who have moved on to other  
5 jobs and opportunities.” Mr. Grigsby went on to recommend a program extension that would  
6 “allow for an efficient transition between the original program and the extended program,  
7 without any harmful gaps in service.” I echo this recommendation today. The Company should  
8 extend existing programs beyond December 2023, as needed, in order to ensure a consistent term  
9 of service for both contractors’ and customers’ sake.

10  
11 **IV. OPPORTUNITIES TO IMPROVE THE COMPANY’S PHASE XI FILING**

12 **Q. Notwithstanding the VAEEC’s overall support for the Company’s Phase XI filing,**  
13 **do you have any recommendations for how it might be improved?**

14 A. Yes. Moving forward there are promising opportunities to improve the effectiveness of  
15 the Residential Customer Engagement Program, and to leverage the functionalities of Advanced  
16 Metering Infrastructure (“AMI”) in the Peak Time Rebate Program to unlock further energy  
17 savings.

18  
19 **Q. Do you have any recommendations on how the Company might improve the**  
20 **Residential Customer Engagement Program?**

21 A. Yes. The Phase XI Residential Customer Engagement Program proposes to update the  
22 design of the Phase VIII Residential Customer Engagement Program, which the Company’s

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<sup>8</sup> Direct Testimony of Andrew Grigsby at 6-7, Application of Virginia Electric and Power Company (2016) (No. PUE-2016-00111), available at <https://www.scc.virginia.gov/docketsearch/DOCS/4%408h01!.PDF>.

1 EM&V data have shown to be one of the top energy saving programs in its portfolio.<sup>9</sup> This  
2 program builds an important foundation by educating high-usage customers about their  
3 consumption through Home Energy Reports. The Company should leverage this foundation to  
4 achieve greater energy savings by pairing the Residential Customer Engagement Program with  
5 targeted, robust incentives for measure installation. One way to do that would be through the  
6 creation of a new program bundle.

7  
8 **Q. Do you have any recommendations on how to improve the Residential Peak Time**  
9 **Rebate Program?**

10 A. Yes. There is a good bit of room to do more to leverage the functionalities of AMI in  
11 demand-response programs. These programs can be better tailored to achieve their peak-shaving  
12 goals, at lower cost, if the Company takes advantage of what it learns about customer behavior  
13 from the AMI data.

14  
15 An initial step would be to utilize AMI for a geotargeted Peak Time Rebate Program that  
16 identifies service areas that are chronically capacity-constrained and focuses greater marketing,  
17 education, and outreach efforts to achieve participation in those areas. AMI functionality should  
18 also be used to identify customers with load profiles that suggest substantial potential for peak  
19 usage reduction, who could then receive targeted marketing offers. Moving forward, this demand  
20 response program should be bundled with energy efficiency programs to offer targeted incentives  
21 to customers for installation of load-reduction measures (such as improved insulation or

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<sup>9</sup> Application of Virginia Electric and Power Company at 8 (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7psl011.PDF>.

1 installation of efficient appliances) that will reduce, rather than merely shift, their load during  
2 high-usage events.

3  
4 **Q. Could you expand on the potential for geotargeting in DSM programs?**

5 A. First, I would like to note that the Company has stated an intention to investigate  
6 geotargeted programs and marketing materials in its Long-Term Plan.<sup>10</sup> And the VAEEC has  
7 emphasized the potential for geotargeting in prior testimony from myself and from Mark James,  
8 a professor at Vermont Law and Graduate School. I encourage the Company to work with  
9 stakeholders to develop marketing and program implementation plans that include geotargeting  
10 in order to increase DSM program participation and harness the potential that DSM programs  
11 offer as a grid resource.

12  
13 In a previous filing, VAEEC witness Mark James had described geotargeting as an opportunity  
14 to “focus energy and demand reductions in areas where they produce high customer and system  
15 benefits by allowing the Company to test the potential of DSM programs to reduce specific load  
16 and peak demand in congested areas, while collecting data that would inform the design of future  
17 programs.”<sup>11</sup> I have previously testified on how the geotargeting of constrained distribution and  
18 transmission areas can allow the Company to obtain greater cost savings through deferred or  
19 avoided capital expenditures.<sup>12</sup>

20  

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<sup>10</sup> Direct Testimony of Terry M. Fry, Schedule I at 103, 108, Petition of Virginia Energy and Power Company (2021) (No. PUR-2021-00247), available at <https://scc.virginia.gov/docketsearch/DOCS/67%40%2301!.PDF>.

<sup>11</sup> Direct Testimony of Mark James at 30, Petition of Virginia Electric and Power Company (2019) (No. PUR-2019-00201), available at <https://scc.virginia.gov/docketsearch/DOCS/4lyz01!.PDF>.

<sup>12</sup> Direct Testimony of Chelsea Harnish at 22, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at [https://www.scc.virginia.gov/docketsearch/DOCS/6t7\\_01!.PDF](https://www.scc.virginia.gov/docketsearch/DOCS/6t7_01!.PDF).



With sufficient installation of AMI technologies throughout the Company's jurisdictional service territory, the data needed to achieve increased savings and improved grid stability will be at the Company's fingertips. The Company should seize the opportunity that geotargeting provides.

**Q. Are there other use cases for AMI functionalities outside of geotargeted marketing?**

A. Yes. In general, the near-real-time feedback from AMI technologies enhances the quality of insights on energy use and provides data that can be used for improved program design.

AMI-gathered data may be used to maximize cost-effectiveness by pre-screening customers for focused outreach efforts. By utilizing interval data to examine characteristics such as peak-period usage, baseload demand, load-shape characteristics, and discretionary demand, the Company may identify customers who are most likely to participate and possess the most potential for greatest energy savings. As one example, Pacific Gas & Electric published a recent study showing dramatic increases of over 50% in average customer savings for whole-house retrofit and commercial direct install programs when targeting customers based on temperature-to-load correlation and total usage.<sup>13</sup> That PG&E study is included with my testimony as **Attachment CH-5**. In addition to revealing potential for higher savings at lower cost, the analysis also helped to rule out neutral and negative savers from program eligibility.<sup>14</sup>

<sup>13</sup> Adam M. Scheer et al., *Customer Targeting via Usage Data Analytics to Enhance Metered Savings*, ACEEE SUMMER STUDY ON ENERGY EFFICIENCY IN BUILDINGS (2018), available at [www.aceec.org/files/proceedings/2018/index.html#/paper/event-data/p195](http://www.aceec.org/files/proceedings/2018/index.html#/paper/event-data/p195).

<sup>14</sup> *Id.*

1 **Q. Are there other noteworthy functionalities of AMI?**

2 A. Another potential use case for AMI technology is meter-based, pay-for-performance,  
3 which is an emerging model for energy efficiency program design that rewards energy savings  
4 on an ongoing basis rather than through up-front payments based on estimated savings. The  
5 Company could use AMI data to determine performance payments at an hourly resolution, as  
6 well as to set higher reward rates to incentivize savings at peak demand periods. These data  
7 could also provide the Company with insights into how to improve programs in real time rather  
8 than through retroactive review.

9

10 **Q. How could the pool of customers who are eligible to participate in DSM programs**  
11 **be expanded?**

12 A. Maximizing the pool of eligible customers for DSM programs is crucial to the continued  
13 satisfaction of the Company's VCEA goals. One way to achieve this is to extend program  
14 eligibility to customers who use both gas and electric appliances in their homes. These so-called  
15 "dual-fuel customers" are allowed to participate in energy efficiency programs offered by other  
16 utilities. For those energy efficiency programs, utilities are able to use inputs for avoided fuel  
17 savings in their cost-effectiveness tests.<sup>15</sup> For one example, through my participation in Old  
18 Dominion Power's stakeholder process, I understand that their proposed Bring Your Own  
19 Thermostat energy efficiency program will be available to dual-fuel customers. Potomac Electric  
20 and Power Company ("PEPCO") similarly offers efficiency programs to dual-fuel customers

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<sup>15</sup> Direct Testimony of Chelsea Harnish at 17, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at [https://www.scc.virginia.gov/docketsearch/DOCS/617\\_011.PDF](https://www.scc.virginia.gov/docketsearch/DOCS/617_011.PDF), citing EMPOWER MARYLAND 2020 COST-EFFECTIVENESS RESULTS REPORT PRESENTED TO BALTIMORE GAS & ELEC. (Oct. 22, 2021).

receiving service from Washington Gas.<sup>16</sup> The Commission should consider directing the Company to expand program eligibility for dual-fuel customers. Alternatively, opportunities for dual-fuel customers should be explored in the stakeholder process. Expanding the pool of eligible customers not only leads to substantial increases in kilowatt-hour savings, which can be applied toward the Company's VCEA targets, but also extends energy-saving options and a provides a better customer experience to more customers.

**Q. Do you have additional thoughts on improvements the Company might consider?**

A. Yes. To meet future energy savings targets, the Company should consider further AMI integration to enhance zero-energy buildings into grid-interactive efficient buildings ("GEBs"), which combine multiple AMI use cases (such as dynamic pricing, real-time feedback, and geotargeting) to extract more grid value from programs and reduce capital costs. GEBs can leverage the distributed energy resources of zero-energy buildings to interact with the grid in real time in exchange for compensation, as in the Peak Time Response Program.

I have been pleased with the Company's participation in the stakeholder process, and its genuine consideration of the issues raised. Furthermore, the Commission Staff's participation in the stakeholder process has been especially important. I am optimistic that ideas for program improvement such as these can be addressed through future stakeholder meetings and orders of the Commission.

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<sup>16</sup> Potomac Electric Power Co., *PEPCO Energy Wise Rewards*, available at [https://energywiserewards.pepco.com/wp-content/uploads/2020/11/Pepco\\_Program\\_Rules.pdf](https://energywiserewards.pepco.com/wp-content/uploads/2020/11/Pepco_Program_Rules.pdf).

1 **Q. Does the Company's Phase XI application contain any changes that you do not**  
 2 **support?**

3 A. Yes. Company Witness Hubbard states in his testimony that the Company, as part of its  
 4 redesign of the Residential Home Retrofit Bundle, will no longer require a Building Performance  
 5 Institute ("BPI") certification for the installation of all measures.<sup>17</sup> I have concerns about the  
 6 removal of this requirement.

7  
 8 First, Virginia law requires that residential building energy analysts hold a Virginia Residential  
 9 Building Analyst license.<sup>18</sup> Residential building energy analysts are persons who, among other  
 10 duties, may enter a home to "prepare a residential building energy analysis report and provide  
 11 recommendations for improvements."<sup>19</sup> Residential building energy analysis is defined as:

12  
 13 (i) an inspection, investigation, or survey of a dwelling or  
 14 other structure to evaluate measure, or quantify its energy  
 15 consumption and efficiency, including lighting, HVAC,  
 16 electronics, appliances, water heaters, insulation, and water  
 17 conservation, and (ii) recommendations to reduce energy  
 18 consumption and improve efficiency of a dwelling or other  
 19 structure, including lighting, HVAC, electronics, appliances,  
 20 water heaters, insulation, and water conservation for  
 21 compensation conducted or made by a licensed residential  
 22 building energy analyst.<sup>20</sup>  
 23

24 In order to receive this license, analysts must complete an accredited residential building energy  
 25 analyst training program, such as BPI. The Company cannot do away with the BPI certification

<sup>17</sup> Direct Testimony of Michael T. Hubbard at 11, Application of Virginia Electric and Power Company (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7phr011.PDF>.

<sup>18</sup> VA. CODE ANN. § 54.1-1145.

<sup>19</sup> VA. CODE ANN. § 54.1-1144.

<sup>20</sup> *Id.*

1 requirement because it is also a requirement of the Virginia REBA license, which is needed by  
2 any contractor performing a home energy analysis in the Residential Home Retrofit Bundle.

3  
4 **Q. Outside of requirements set by state law, are there practical reasons to require**  
5 **licensure of building energy analysts?**

6 A. Yes. Requiring BPI licensure for all contractors performing a home energy assessment as  
7 part of the Residential Home Retrofit Bundle ensures consistency and quality in the assessments  
8 for each participating customer. Being licensed, bonded, and insured does not necessarily  
9 guarantee that each contractor understands the basic principles of building science, which is  
10 essential to completing any thorough energy assessment. Additionally, contractors prefer BPI  
11 training. One nationwide survey of contractors reports that 61% of respondents preferred BPI  
12 certifications over other options for qualifying contractors to perform this work.<sup>21</sup>

13  
14 **Q. Why has the Company suggested making this change to do away with BPI**  
15 **certification?**

16 A. The Company points to a lack of participating contractors in their programs for this  
17 change, but it would be prudent to evaluate underlying factors for this phenomenon. The  
18 COVID-19 pandemic created serious challenges for energy efficiency contractors. During the  
19 height of the pandemic, energy efficiency contractor jobs fell 11.4% from 2019 numbers.  
20 Residential contractors were unable to enter homes due to safety concerns and government social  
21 distancing guidelines, according to the 2021 U.S. Department of Energy's Energy and

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<sup>21</sup> Kara Saul Renaldi & Skip Wiltshire-Gordon, *AnnDyl Contractor Survey*, ANNDYL POL. GRP. (2023), available at <https://www.anndyl.com/contractor-survey-results/>.

1 Employment Report (“USEER”).<sup>22</sup> Likewise, Mr. Hubbard highlighted some of the lingering  
2 effects that COVID-19 has had on the Company’s programs in his testimony regarding the  
3 Company’s decision to discontinue the Residential Appliance Recycling Program.<sup>23</sup>  
4

5 **Q. Are these circumstances expected to continue?**

6 A. No. In fact, the 2022 USEER indicates that we are already seeing a rebound from the  
7 pandemic in this respect.<sup>24</sup> And that rebound is about to skyrocket. With the passage of the  
8 Inflation Reduction Act (“IRA”), the U.S. Department of Energy will deliver \$9 billion to states  
9 for residential energy efficiency and electrification projects, which will create an unprecedented  
10 demand for skilled contractors involved in the installation of energy efficiency measures.

11 Contractors who perform home energy efficiency and electrification upgrades as part of these  
12 programs are federally required to be familiar with BPI standards and procedures.<sup>25</sup>

13 For these programs to be successful, the energy efficiency workforce will need to grow  
14 significantly, which in turn requires investment in training and education. The Department of  
15 Energy will be providing hundreds of millions of dollars to states for contractor training and  
16 education and specifically endorses BPI’s Energy Auditor training. The fact that this funding is  
17 being distributed to states first before rebate program funds only underscores the urgent need to  
18 prepare for the surge in skilled energy efficiency contractor demand that these programs will  
19 generate.  
20

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<sup>22</sup> U.S. DEP’T OF ENERGY, 2021 U.S. ENERGY AND EMPLOYMENT REPORT (2021), available at <https://www.energy.gov/policy/2021-us-energy-and-employment-report>.

<sup>23</sup> Direct Testimony of Michael T. Hubbard at 12, Application of Virginia Electric and Power Company (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7phr011.PDF>.

<sup>24</sup> U.S. DEP’T OF ENERGY, 2022 U.S. ENERGY AND EMPLOYMENT REPORT (2022), available at <https://www.energy.gov/policy/us-energy-employment-jobs-report-useer>.

<sup>25</sup> 42 U.S.C. 18795(b)(1).

1 By requiring the same certification as the programs that will distribute federal funds, the  
 2 Company is helping to ensure that Virginia contractors are poised to take advantage of these  
 3 funds once they become available. It also ensures that consumers who want to take advantage of  
 4 federal funds will be able to leverage utility programs in a streamlined and efficient manner.

## 5 6 V. COST-EFFECTIVENESS TESTS

7 **Q. How is the cost-effectiveness of DSM programs currently measured?**

8 A. Virginia law requires that utility DSM programs must pass three out of four cost-  
 9 effectiveness tests in order to be deemed “in the public interest.”<sup>26</sup> This requirement is unusually  
 10 restrictive, as only two other states require DSM programs to pass multiple cost-effectiveness  
 11 tests.<sup>27</sup>

12  
 13 **Q. Would you recommend a reform of the process for how Virginia’s uses the cost-  
 14 effectiveness tests?**

15 A. Yes, and this is an issue that merits further discussion in the stakeholder process.  
 16 Company witnesses have previously testified that the Company has refrained from proposing  
 17 several programs widely used by other utilities due to concerns with the inappropriate use of the  
 18 cost-effectiveness tests under Virginia’s approach.<sup>28</sup> Furthermore, Virginia is unusual in that it

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<sup>26</sup> VA. CODE ANN. 56-576. Notable exceptions to this requirement exist for low-income and age-qualifying programs, which apply to several of the proposed Phase XI program bundles.

<sup>27</sup> Direct Testimony of Chelsea Harnish at 24, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at [https://www.scc.virginia.gov/docketsearch/DOCS/6t7\\_011.PDF](https://www.scc.virginia.gov/docketsearch/DOCS/6t7_011.PDF).

<sup>28</sup> Direct Testimony of Michael T. Hubbard, Schedule 5 at 1, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at <https://scc.virginia.gov/docketsearch/DOCS/67%40gQI!.PDF>. These programs include the Strategic Energy Management program used by multiple utilities, including Duke Energy. See Ethan Rogers et al., *Features and Performance of Energy Management Programs*, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON. at 61-62 (Jan. 2019), available at <https://www.aceee.org/sites/default/files/publications/researchreports/ie1901.pdf>.

assesses cost-effectiveness at the individual program level, whereas most jurisdictions evaluate at the overall portfolio level.<sup>29</sup> This restrictive procedure deprives customers of significant potential savings and hinders the Company's ability to meet its VCEA targets.

**Q. Are there issues related to how Virginia's cost-effectiveness tests are calculated?**

A. As stated in my previous testimony,<sup>30</sup> the Commission should consider recommendations in the *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* ("NSPM for DERs") for cost-effectiveness testing.<sup>31</sup> The NSPM for DERs provides a comprehensive framework for improving cost-effectiveness practices for energy efficiency and other distributed energy resources. One of its main principles is to develop a primary test that aligns with state policies, such as the VCEA.

The Commission does not need to invent a new test to use the NSPM approach. Rather, the Commission could modify an existing cost-effectiveness test in a way that draws on appropriate components from multiple tests to advance Virginia's energy goals and policies. The Dominion Energy Efficiency Stakeholder Policy Subgroup, which includes representatives of the utility, the Commission Staff, cost-benefit testing experts, and stakeholders, has been meeting over the last year to discuss how Virginia can move towards this approach to better align proper use of the cost-effectiveness tests with Virginia policy.

<sup>29</sup> Martin Kushler et al., *A National Survey of State Policies and Practices for the Evaluation of Ratepayer-Funded Energy Efficiency Programs*, AM. COUNCIL FOR AN ENERGY-EFFICIENT ECON. 31 (Feb. 2012), available at <https://www.aceee.org/sites/default/files/publications/researchreports/ul22.pdf>.

<sup>30</sup> Direct Testimony of Chelsea Hamish at 27-28, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at [https://www.scc.virginia.gov/docketsearch/DOCS/617\\_011.PDF](https://www.scc.virginia.gov/docketsearch/DOCS/617_011.PDF).

<sup>31</sup> NAT'L ENERGY SCREENING PROJECT & E4THEFUTURE, NATIONAL STANDARD PRACTICE MANUAL FOR BENEFIT-COST ANALYSIS OF DISTRIBUTED ENERGY RESOURCES (Aug. 2020), available at <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>.



1  
2 **Q. Company Witness Edmund J. Hall testified that the Company responded to**  
3 **stakeholder feedback by analyzing the social cost of carbon benefits associated with each**  
4 **DSM programs. Do you have comments on that analysis?**

5 A. Yes. I was pleased to see that this analysis was done and that it was determined by Mr.  
6 Hall that DSM programs can reduce overall carbon emissions. However, this analysis was  
7 performed on a standalone analysis and was not included in the cost-effectiveness testing.<sup>32</sup> The  
8 cost-effectiveness tests should be modified to include the social cost of carbon as well as other  
9 non-energy benefits ("NEBs"). These benefits are experienced by customers through increased  
10 comfort, air quality, and convenience, as well as by utilities, through reduced bill complaints and  
11 required shut-off notices, especially in low-income communities.<sup>33</sup> NEBs also affect society  
12 more broadly through increased community health, improved aesthetics, and greater energy self-  
13 reliance.<sup>34</sup> Indeed, the Company's Long-Term Plan acknowledges reduced greenhouse gas  
14 emissions as a NEB provided by energy efficiency programs.<sup>35</sup> The Stakeholder Policy Subgroup  
15 is actively exploring this topic, and has discussed other high impact NEBs such as avoided  
16 environmental compliance costs and market price effects. The *National Standard Practice*

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<sup>32</sup> Direct Testimony of Edmund J. Hall, Schedule 8, Application of Virginia Electric and Power Company (2022) (No. PUR-2022-00210), available at <https://www.scc.virginia.gov/docketsearch/DOCS/7pht011.PDF>.

<sup>33</sup> NAT'L ACTION PLAN FOR ENERGY EFFICIENCY, UNDERSTANDING COST-EFFECTIVENESS OF ENERGY EFFICIENCY PROGRAMS: BEST PRACTICES, TECHNICAL METHODS, AND EMERGING ISSUES FOR POLICY-MAKERS 44 (Nov. 2008).

<sup>34</sup> *Id.* at 45.

<sup>35</sup> Direct Testimony of Terry M. Fry, Schedule 1 at 109, Petition of Virginia Electric and Power Company (2021) (No. PUR-2021-00247), available at <https://scc.virginia.gov/docketsearch/DOCS/67%40%23011.PDF> (stating that "some industry experts anticipate that GHG reductions could become . . . a key input to calculating the cost-effectiveness of these efforts").

1 *Manual for Benefit-Cost Analysis of Distributed Energy Resources* also provides extensive  
2 discussion and guidance on NEBs.<sup>36</sup>

3  
4 **Q. Do you have other suggestions for how cost-effectiveness testing in Virginia can be**  
5 **improved?**

6 Yes. The use of state building codes as an evaluation, measurement and verification (“EM&V”)   
7 baseline for calculating energy savings likely leads to undercounting program savings. Building   
8 codes are an appropriate baseline for “naturally occurring” installations, such as those in new   
9 construction, where the utility seeks to make a more efficient installation than would otherwise   
10 be required.

11  
12 But most energy efficiency programs incentivize customers to take actions they otherwise would   
13 not take, such as replacing existing equipment with a more efficient model, or voluntarily   
14 improving a building shell. In these cases, the appropriate baseline is the existing efficiency of   
15 the building or equipment.

16  
17 An inappropriate reliance on building codes as energy efficiency baselines will significantly   
18 under-count program energy savings. The VAEEC urges the Company to perform baseline   
19 studies for programs that encourage customers to take voluntary actions to implement energy   
20 efficiency measures in existing buildings (*e.g.*, early replacement of equipment, additional   
21 building shell efficiency improvements) by using appropriate indicators for “existing conditions”

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<sup>36</sup> NAT’L ENERGY SCREENING PROJECT & E4THEFUTURE, NATIONAL STANDARD PRACTICE MANUAL FOR BENEFIT-COST ANALYSIS OF DISTRIBUTED ENERGY RESOURCES (Aug. 2020), available at <https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/>.

1 in participant buildings. The U.S. Department of Energy has produced program evaluation  
2 guidelines that describe baseline issues in more detail.<sup>37</sup>

3  
4 **Q. Beyond these suggestions for amending cost-effectiveness test methodology, are**  
5 **there other developments on the horizon that will bear on cost-effectiveness calculations of**  
6 **energy efficiency programs?**

7 A. Federal policy developments, including the Inflation Reduction Act and Bipartisan  
8 Infrastructure Law, present significant funding opportunities that could supplement energy  
9 efficiency programs. When the Department of Energy releases its guidance on these offerings  
10 later this year, the Company should make sure that these sources of funding are appropriately  
11 accounted for in cost-effectiveness analyses.

12  
13 **Q. Does this conclude your direct testimony?**

14 A. Yes.

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<sup>37</sup> See U.S. DEPT. OF ENERGY EVALUATION, MEASUREMENT, VERIFICATION WORKING GRP., SEE ACTION GUIDE FOR STATES: EVALUATION, MEASUREMENT, AND VERIFICATION FRAMEWORKS—GUIDANCE FOR ENERGY EFFICIENCY PORTFOLIOS FUNDED BY UTILITY CUSTOMERS 43 (Jan. 2018) (DOE/EE-1721); EPA, GUIDEBOOK FOR ENERGY EFFICIENCY EVALUATION, MEASUREMENT, AND VERIFICATION 10-12 (Jun. 2019).