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December 12, 2019

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State Corporation Commission
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Richmond, Virginia 23219

Application of Virginia Electric and Power Company for approval to establish an experimental residential rate, designated Time-Of-Use Rate Schedule 1G (Experimental)
Case No. PUR-2019-00214

Dear Mr. Peck:

Please find enclosed for electronic filing in the above-captioned proceeding, the *Application of Virginia Electric and Power Company for approval to establish an experimental residential rate, designated Time-Of-Use Rate Schedule 1G (Experimental).*

Please do not hesitate to call if you have any questions in regard to the enclosed.

Very truly yours,

Lisa R. Crabtree

Enclosures

cc: William H. Chambliss, Esq.
Paul E. Pfeffer, Esq.
Audrey T. Bauhan, Esq.
Vishwa B. Link, Esq.
April M. Jones, Esq.

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

APPLICATION OF	)	
	)	
VIRGINIA ELECTRIC AND POWER COMPANY	)	
	)	
	)	Case No. PUR-2019-00214
For approval to establish an experimental residential rate, designated Time-Of-Use Rate Schedule 1G (Experimental)	)	

APPLICATION

Pursuant to § 56-234 B of the Code of Virginia ("Va. Code") and Rule 80 of the Rules of Practice and Procedure of the State Corporation Commission of Virginia ("Commission"), 5 VAC 5-20-80, Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), by counsel, respectfully requests Commission approval of its application ("Application") to establish a new experimental residential time-of-use ("TOU") rate schedule, designated Time-Of-Use Rate Schedule 1G (Experimental). This Application is supported by the pre-filed direct testimony and schedules of Company Witnesses Paul B. Haynes and Heather M. Jennings. In support of this Application, the Company respectfully shows the following:

1. Dominion Energy Virginia is a public service corporation organized under the laws of the Commonwealth of Virginia furnishing electric service to the public within its certificated service territory. The Company also supplies electric service to non-jurisdictional customers in Virginia and to the public in portions of North Carolina. Dominion Energy Virginia's electric system, consisting of facilities for generation, transmission, and distribution of electric energy, as well as associated facilities, is interconnected with the electric systems of neighboring utilities and is part of the interconnected network of electric systems serving the continental United States. By reason of its operation in Virginia and North Carolina and its

interconnections with other electric utilities, the Company engages in interstate commerce.

2. The Company's name and post office address are:

Virginia Electric and Power Company
120 Tredegar Street
Richmond, Virginia 23219

3. The names, post office addresses and telephone numbers of the attorneys for the Company are:

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I. BACKGROUND

4. On July 24, 2018, the Company filed a petition requesting approval of a plan for electric distribution grid transformation projects ("2018 GT Plan Petition"), pursuant to Va. Code § 56-585.1 A 6.[1] Specifically, the Company sought approval of the first three years ("Phase I") of a ten-year Plan. In the 2018 GT Plan Petition, the Company stated that Phase I included, for

[1] *Petition of Virginia Electric and Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A6 of the Code of Virginia*, Case No. PUR-2018-00100, Petition (July 24, 2018).

example, advanced metering infrastructure ("AMI") and customer information platform ("CIP").[2]

5. On January 7, 2019, the Commission issued its Final Order for the 2018 GT Plan Petition and stated that:

> Dominion may re-file a more fully developed AMI proposal in a future grid transformation filing. If Dominion chooses to proceed with a proposal for full deployment of AMI, its next proposal should . . . [address], at a minimum, the following elements: A. Detailed cost estimates for all AMI-related spending. B. Any plan for time-varying rates; and whether any such offering would be the default tariff for a customer with an installed smart meter. C. Any customer "opt-out" provision, both as to smart meter installation and time-varying rates, under all tariff scenarios for those consumers who so choose and to protect particularly vulnerable customers, such as those with medical conditions that reduce their ability to manage energy usage; and any fees proposed by the Company to be charged to customers who choose to opt-out both as to time-varying rates and smart meter installation. D. Analysis of how any plan promotes demand response, energy efficiency, and conservation. E. A transition plan including adequate customer education.[3]

6. On September 30, 2019, the Company filed a petition for approval of a plan ("2019 GT Plan Petition") for electric distribution grid transformation projects pursuant to Va. Code § 56-585.1 A 6, and for approval of an addition to the terms and conditions applicable to electric service.[4] The 2019 GT Plan Petition proposes, among other things, foundational technology and infrastructure required to more broadly and efficiently offer customers time-varying rates, including deployment of AMI and a transition to a new CIP. Additionally, the

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[2] *Id.*

[3] *Petition of Virginia Electric and Power Company, For approval of a plan for electric distribution grid transformation projects pursuant to § 56-585.1 A6 of the Code of Virginia*, Case No. PUR-2018-00100, Final Order at 10-11 (Jan. 7, 2019) (hereinafter, "2018 GT Plan Final Order").

[4] *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 Virginia, and for approval of an addition to the terms and condition applicable to electric service*, Case No. PUR-2019-00154, Petition (Sept. 30, 2019).

2019 GT Plan Petition provides an estimate of benefits from time-varying rates (recognizing that the introduction of such rates will be experimental), includes a Customer Education Plan that outlines an approach to educate customers on the new time-varying rate, and includes an overview of stakeholder engagement.

7. Pursuant to Senate Bill ("SB") 1769,[5] specifically Enactment Clause 2, the Company was required to convene a stakeholder process to make recommendations concerning, among other things, "the development of retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering technology and related investments in customer information systems." Furthermore, SB 1769 provides that "in developing the retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering technology, the stakeholder group shall include at least one non-demand schedule."

8. SB 1769 also provides for an independent facilitator to lead the stakeholder process. Specifically, the legislation provides that the stakeholder process be facilitated by "[an] independent facilitator with expertise in rate design, cost recovery, and solar markets, compensated by the utility, offset by such contributions from members of the stakeholder group as the members deem appropriate."

9. The Company must report on the status of the stakeholder group's work and "the programs developed in conjunction with such stakeholder group, including the petitions filed and the determination thereon." The Company must send the report "to the Governor, the State Corporation Commission, and the Chairmen of the House and Senate Committees on Commerce and Labor on January 1, 2020, and thereafter on January 1 of each successive year."

[5] 2019 Virginia Acts of Assembly, Chapter 763 (effective July 1, 2019).

10. Pursuant to SB 1769, the Company retained Navigant Consulting, Inc. ("Navigant") to conduct the stakeholder process and report the status of the stakeholder group's work. The Navigant Report is included with this Application as Attachment 1.

II. TOU RATE SCHEDULE 1G

11. In the 2019 GT Plan Petition, the Company, through Company Witness Gregory J. Morgan, discussed its intent to introduce a new time-varying rate as a corollary to the 2019 GT Plan Petition.[6] With this Application, the Company is filing for approval of TOU Rate Schedule 1G – a voluntary, experimental rate. The TOU Rate Schedule 1G is designed to be revenue neutral with residential Rate Schedule 1;[7] and, upon Commission approval, this rate would be available to residential customers where AMI has been installed.

12. The Company's proposed rate schedule has been developed during the course of a series of stakeholder group meetings, as set forth in the aforementioned SB 1769. TOU Rate Schedule 1G will be experimental, voluntary, and initially limited in the number of customers that can participate. It will include a basic customer charge and energy charges, differentiated by time periods within each season (*i.e.*, summer and non-summer). The Basic Customer Charge is proposed to be the same as the Residential Schedule 1 Basic Customer Charge of $6.58.

13. TOU Rate Schedule 1G's energy charges include the use of on-, off-, and super off-peak time periods. To determine the on-peak, off-peak, and super off-peak hours, the Company evaluated the hours during which the Company's load most frequently peaks in each season. In the summer period, the Company's load peaks between 3:00 p.m. and 6:00 p.m. In

[6] *See* 2019 GT Plan Petition at Morgan Direct Testimony (stating that the rate would be experimental, voluntary, and would be initially limited in the number of customers that can participate as AMI and the CIP are being deployed).
[7] The Company currently has a standard residential rate schedule, designated Schedule 1, which was last modified on January 1, 2018.

the non-summer months, comprising the Base period, the Company's load peaks around 8:00 a.m. and again in the late afternoon or evening. All hours that were not categorized as on-peak or super off-peak were then categorized as off-peak. Additionally, stakeholder feedback recommended excluding weekends and North American Electric Reliability Corporation ("NERC") holidays (New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas) from having on-peak periods. Therefore, proposed TOU Rate Schedule 1G will only have off-peak and super off-peak periods during those days. The direct testimony of Company Witness Haynes provides detailed information regarding the classification of each season and hour.

14. The Company proposes an enrollment limit of 10,000 participants (*i.e.*, customer accounts) under the TOU Rate Schedule 1G. Company Witness Haynes addresses eligibility requirements that a customer must satisfy before electing to participate, including: (i) the customer must be a residential customer that has AMI deployed at their premises; (ii) TOU Rate Schedule 1G would not be available to customers electing to participate (either directly or indirectly through a third-party curtailment service provider) in any PJM Interconnection, LLC Demand Response ("DR") Program or any Company-sponsored DR programs, including the Company's AC Cycling Program or the proposed Thermostat (DR) Program; (iii) a customer who discontinues service under Schedule 1G may not be served under this schedule within one year of such discontinuation of service; and (iv) participation would be limited to net metering customers with systems that have a capacity less than or equal to 10 kW.

15. The direct testimony of Company Witness Jennings addresses the management of the proposed TOU Rate Schedule 1G, including the following goals: (i) to provide customers a positive customer experience and an opportunity to reduce consumption and save on their

electric bills; (ii) to efficiently manage customer engagement, while balancing customer value and prudent expenditures; and (iii) to introduce modern customer engagement techniques and incorporate lessons learned.

16. Company Witness Jennings describes the plans for customer engagement and education, as well as the Company's proposal for evaluating the management of TOU Rate Schedule 1G. As Ms. Jennings discusses, the Company will engage with a third-party to evaluate operational results of TOU Rate Schedule 1G. The evaluation will include program management evaluation, a bill impact analysis, and a load impact analysis. The evaluation of program management will include metrics associated with participation, including enrollment rates, unenrollment rates, and communication preferences. The program management evaluation will also include surveying customers on satisfaction, behavior, and gathering feedback from community organizations. Pursuant to stakeholder input, in an initial survey, customers will be given the option to provide demographic information. Demographics will include age, income range, owner or renter status, and housing type (such as single or multi-family housing). The demographics will be used for program reporting. The third-party evaluator for the bill impact analysis, which will evaluate whether the participant group saved money on TOU Rate Schedule 1G, will use the usage data from participants. Similarly, the third-party evaluator will evaluate load impacts. The Company will provide an annual report providing evaluation findings and results.

17. Upon Commission approval of TOU Rate Schedule 1G, the Company respectfully requests for billing purposes, a rate effective date of January 1, 2021.

18. The proposed TOU Rate Schedule 1G is necessary in order to acquire information that is or may be in furtherance of the public interest. Time-varying rates can provide more

accurate price signals to customers that are better aligned with cost causation than standard rates. Through improved price signals, such rate structures can incent behavioral changes in customers taking service under such time-varying rates. Behavioral changes can benefit participants directly through bill savings and can benefit both participants and non-participants through the reduction of system costs. The results of TOU Rate Schedule 1G could inform upon broader future TOU offerings.

19. Finally, the 2018 GT Plan Final Order requested information on whether any time-varying rate offerings associated with AMI "would be the default tariff for a customer with an installed smart meter."[8] The Company is not proposing the time-varying rate as the default tariff for customers with AMI, at this time. In fact, the soonest the Company could propose to change the default tariff for customers would be at the conclusion of the first triennial rate review proceeding, with Commission approval. No decision has been made by the Company as to when and whether it would require any time-varying rate offering associated with AMI to be the default tariff for residential customers. Rather, the Company believes that this experimental rate will inform upon future offerings.

III. CONCLUSION

20. Pursuant to Va. Code § 56-234 B, the Company is proposing its new residential TOU Rate Schedule 1G to provide eligible customers with an experimental and voluntary time-varying rate where AMI has been installed. The Commission should find the proposed rate to be necessary in order to acquire information that is or may be in furtherance of the public interest.

WHEREFORE, Dominion Energy Virginia respectfully requests that the Commission (i) approve the Company's proposed experimental and voluntary rate schedule, designated Time-

[8] 2018 GT Plan Final Order at 11.

Of-Use Rate Schedule 1G (Experimental); and (ii) grant such other and further relief as it deems necessary or appropriate.

Respectfully submitted,

VIRGINIA ELECTRIC AND POWER COMPANY

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Counsel for Virginia Electric and Power Company

December 12, 2019

Attachment 1

NAVIGANT
A Guidehouse Company

2019 DEV Workshop Series: Time-of-Use Rate Design Recommendations

Prepared for:

Dominion Energy Virginia

Dominion Energy®

Submitted by:
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Reference No.: 209540
November 2019

TABLE OF CONTENTS

DISCLAIMER

This report was prepared by Navigant Consulting, Inc., a Guidehouse company (Navigant) for Dominion Energy Virginia. The work presented in this report represents Navigant's professional judgment based on the information available at the time this report was prepared. Stakeholders did not have a role in drafting this report directly, however have had the opportunity to provide input and feedback upon finalization of this version. Stakeholders did not have a role in drafting Dominion Energy Virginia's Grid Transformation Plan Filing, or Experimental TOU Rate filing specifically. Navigant is not responsible for the reader's use of, or reliance upon, the report, nor any decisions based on the report. NAVIGANT MAKES NO REPRESENTATIONS OR WARRANTIES, EXPRESSED OR IMPLIED. Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

EXECUTIVE SUMMARY

Dominion Energy Virginia (DEV) engaged Navigant Consulting, Inc., a Guidehouse company (Navigant) to facilitate a stakeholder engagement process through which the electric utility could solicit a stakeholder recommendation related to the design of an electric Time-of-Use (TOU) rate option that would be available to customers following DEV's deployment of Advanced Metering Infrastructure ("AMI"). Through five stakeholder workshops, Navigant rate design experts presented an assessment of the current industry landscape and offered insights into dynamic rate design trends. Additionally, Navigant shared insights on various rate design methods used across the industry to provide a foundation from which stakeholders could build their recommendation. Table ES-1 shows the list of participating stakeholder groups.

Table ES-1. Time-of-Use Workshop Participating Organizations

Participating Stakeholder Groups	
• Dominion Energy	• VA Advanced Energy Economy (AEE)
• MD DC DE VA Solar Energy Industries	• VA Clean Cities
• Natural Resources Defense Council	• VA Dept of Mines, Minerals and Energy
• Sierra Club	• VA Distributed Solar Alliance
• Solar United Neighbors	• VA Energy Efficiency Council
• Southern Environmental Law Center	• VA Poverty Law Center
• State Corporation Commission	• Vote Solar

In addition to an overview of the industry landscape, Navigant stepped through fundamental TOU rate design concepts to support stakeholders in making practical and feasible recommendations. The group discussed TOU rate design elements, such as peak period selection, on/off peak energy price ratio, and fixed/variable cost decisions. Finally, Navigant worked closely with the DEV Rate Design group to understand DEV's system load and usage characteristics to provide the stakeholders insight as to how various TOU rate design components might impact specific customer groups (as shown in Figure ES-1) and overall DEV costs.

Navigant offered the following TOU rate structure recommendations to stakeholders and DEV, which factors in the cross-section of interests expressed by stakeholders throughout the workshop series.

1. Pilot a TOU rate that includes three-rate periods that vary by season
2. Define seasonal peak time periods to make it easier to educate customers on how to change their usage and reduce their energy bills
3. Ensure the On-peak to Off-peak energy price ratio is at least 2:1
4. Establish a pilot TOU basic customer charge that preserves revenue neutrality

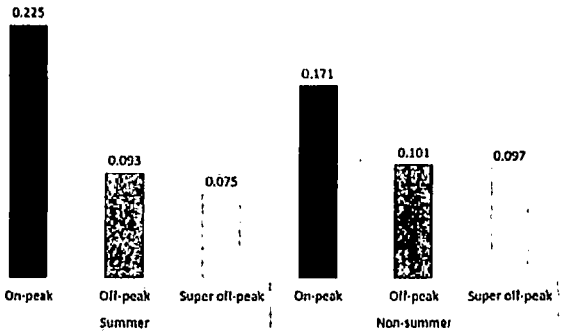
Navigant then worked with DEV to design a proposed pilot TOU rate as shown in Figure ES-1 that incorporated the above recommended design principles and presented this to stakeholders. Navigant believes this recommended rate meets many of the stakeholders' expressed goals and provides a basis to assess customer and system impacts that can be used to design a post-pilot TOU rate.

Figure ES-1. Navigant's Initial Pilot TOU Rate Recommendation

Monthly usage (kWh)	Current average rate (¢ per kWh)	New average rate (¢ per kWh)	Change
0 – 500	13.7	13.8	0.5%
500 – 1,000	12.5	12.3	-1.8%
1,000 – 1,500	11.8	11.8	0.0%

Reduces the impact on low-use customers

- Rates based on $8.59 per month customer charge
  - Current customer charge for TOU is $11.28
  - Current customer charge for standard rate is $6.58



Overall, stakeholders reached consensus on most of the proposed rate design elements including the multiple peak rate periods (on-peak, off-peak and super off-peak), the on-peak/off-peak price ratios and the seasonal variance. Additionally, the group and DEV agreed on key programmatic elements for the pilot, such as the need for robust consumer education and defined learning objectives. The group did not universally support the proposed basic customer charge of $8.59 because it represented an increase from the current standard (Schedule 1) basic customer charge of $6.58. As a point of compromise, DEV and stakeholders agreed to maintain the basic customer charge and adjust energy rates as necessary to retain the core design elements of the proposed TOU rate design.

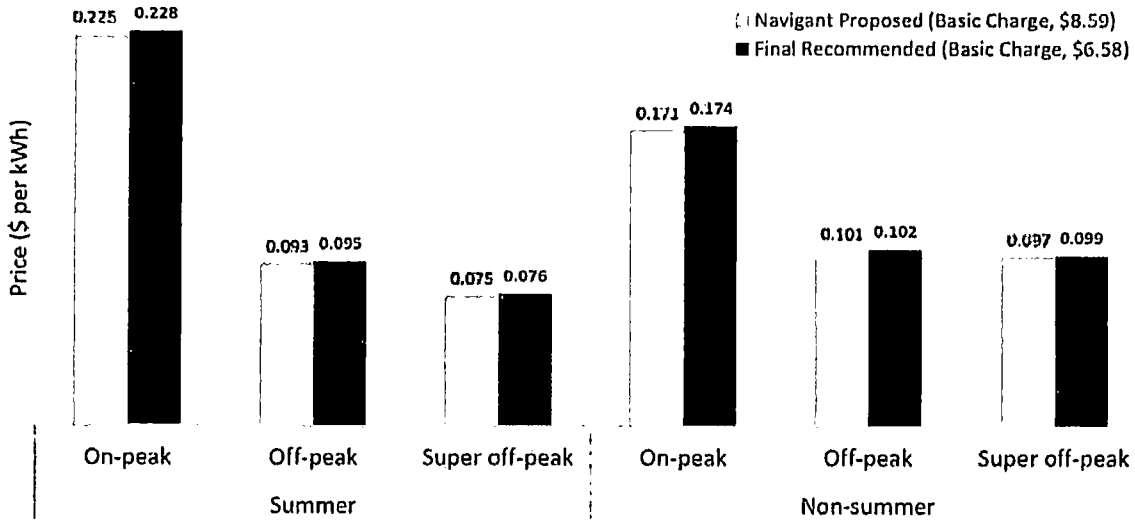
Navigant recognizes the importance of stakeholder and DEV alignment and supports the Recommended TOU Design rate shown in Table ES-2. This Recommended TOU Design includes a lower basic charge (same as current Schedule 1) and corresponding adjustments in energy prices to maintain a 2:1 energy price ration and revenue neutrality. Table ES-1 provides a side-by-side view of Navigant's recommended design and the final pilot design compromise.

Table ES-2. Stakeholder-Informed TOU Rate Design

	Navigant Proposed Design		Recommended TOU Design	
	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)
ON-PEAK	$0.225/kWh	$0.171/kWh	$0.228/kWh	$0.174/kWh
OFF-PEAK	$0.093/kWh	$0.101/kWh	$0.095/kWh	$0.102/kWh
SUPER OFF-PEAK	$0.075/kWh	$0.097/kWh	$0.076/kWh	$0.099/kWh
Basic Customer Charge	$8.59/month		$6.58/month	

Note
- No on-peak period on weekends or holidays
- Over 3x ratio in summer between on-peak and super off-peak
- Weighted average price ratio of 2.0 across the year
- Less than 10% of highest load days occur on weekends
- See Appendix B for defined summer and non-summer on-peak, off-peak, super off-peak periods.

Figure ES-2. Stakeholder-Informed TOU Rate Design



Navigant recommends, and stakeholders and DEV have generally agreed, that next steps include organizing into small working groups to continue working with DEV on several topics that did not achieve consensus during the stakeholder process to date. Those include a working group beginning in early 2020 to discuss distributed generation valuation and compensation, and another working group beginning in mid-2020 to discuss a more detailed customer outreach and education plans to support the TOU pilot enrollment and the evaluation metrics to support pilot efficacy. This document does not provide any recommendation on those topics. For a review of stakeholder progress toward statutory goals, see Appendix C.

1. INTRODUCTION

Dominion Energy Virginia (DEV) engaged Navigant Consulting, Inc. a Guidehouse company (Navigant) to facilitate a stakeholder engagement process through which the electric utility could solicit stakeholder recommendations related to the design of a new electric rate option that would be available to customers following DEV's deployment of AMI meters. Through five stakeholder workshops, Navigant rate design experts presented an assessment of current rate design trends and best practices. Additionally, Navigant rate experts shared their own insights on rate design methods to provide a foundational background on which stakeholders could base their recommendations. This report describes the stakeholder process and resulting stakeholder recommendations, as well as Navigant's recommendations, related to DEV's design of its time-of-use (TOU) rate and its associated pre-scale TOU rate pilot.

1.1 Background

In July 2019, Virginia enacted Senate Bill 1769 which, in part, requires DEV to a submit time-varying electric rate schedule for State Corporation Commission approval, of which should be designed to take advantage of advanced metering technology and related investments in customer information systems.

DEV currently offers several TOU options, many of which are experimental as listed in Table 1-1. Of the roughly 2.2 million residential customers served by the investor owned utility, only 0.4 percent of those customers are on a TOU rate.

Table 1-1. Customers on Dominion Energy Virginia Residential Time-of-Use Rates[1]

Rate Schedule	No. of Customers
Schedule 1S – Demand TOU	6,161
Schedule 1P –TOU *(Closed)*	746
Schedule 1T– Energy TOU	573
Schedule DPR – Residential Service *(Experimental)*	405
Schedule 1EV– Residential Service with Electric Vehicle Charging *(Whole House, Experimental)*	361
Schedule EV– Residential Electric Vehicle Charging *(Vehicle Charger Only, Experimental)*	150

To leverage its planned deployment of advanced metering infrastructure (AMI), DEV is seeking to design new dynamic rates to offer DEV customer more rate options. To explore the value TOU rate options provides to both participating and non-participating customers, DEV intends to launch a pre-deployment pilot program in advance of full of its AMI roll-out. As part of this effort, DEV leveraged SB 1769 stakeholder engagement process to engage stakeholders on the design of an experimental TOU rate that can be offered to existing AMI customers to generate learning irrespective of the limitations of DEV's current Customer Information System. DEV's goal is to pilot the new TOU rate to better understand how dynamic rate options could be successfully implemented once the utility completes its full AMI and new Customer Information Platform deployments.

[1] As of April 2019

1.2 Dominion Stakeholder Process

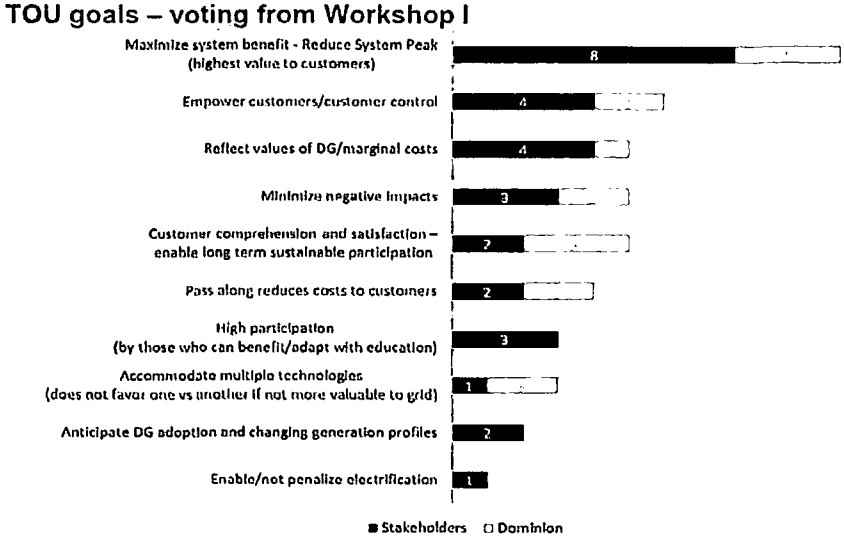
To initiate the stakeholder process, DEV invited a cross-section of state agencies, advocacy groups, and their own DEV rate design subject matter experts to participate in a series of workshops designed to solicit broader input on TOU rate design goals, pilot design elements and key learning objectives from the pilot. DEV hosted a five-session workshop series focused on collaboratively designing its TOU rate pilot. The workshops, held May through October 2019 in Richmond, Virginia, were attended by over a dozen stakeholder organizations and approximately 25 individuals from those organizations. Table 1-2 lists the participating organizations.

Table 1-2. Time-of-Use Workshop Participating Organizations

Participating Stakeholder Groups	
• Dominion Energy	• VA Advanced Energy Economy (AEE)
• MD DC DE VA Solar Energy Industries	• VA Clean Cities
• Natural Resources Defense Council	• VA Dept of Mines, Minerals and Energy
• Sierra Club	• VA Distributed Solar Alliance
• Solar United Neighbors	• VA Energy Efficiency Council
• Southern Environmental Law Center	• VA Poverty Law Center
• State Corporation Commission	• Vote Solar

Through the course of these three-hour workshops, Navigant facilitated stakeholder education around key design criteria that should be considered when designing dynamic electric rates. These topics touched a broad range of topics from the implications of the state's electric rate setting rules to the impacts on potential electrification initiatives. Because the stakeholder group represented a range of interests and constituents, Navigant sought first to identify any common objective that individual stakeholders sought to achieve through the new TOU offering. Early visioning exercises and polling revealed a range of goals. Figure 1-1 shows a tally of objectives identified by stakeholders and DEV at the June 2019 stakeholder meeting.

Figure 1-1: Stakeholder Objectives at May 2019 Stakeholder Meeting

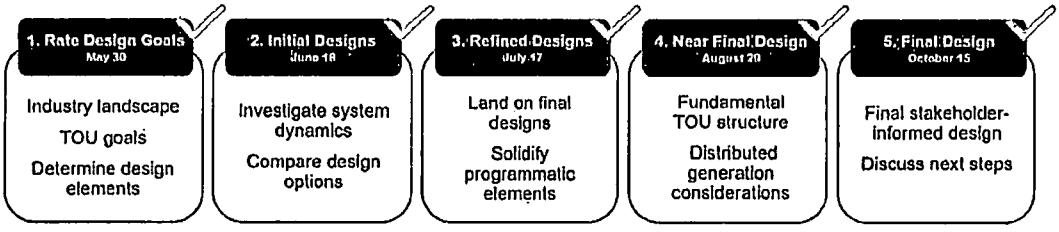


Navigant translated stakeholder input into the following three objectives:

1. Maximize system benefits (e.g., reducing system peak) to provide highest value to customers;
2. Empower customers by providing a new control option; and
3. Properly reflect value and cost drivers (e.g., distributed generation and marginal costs).

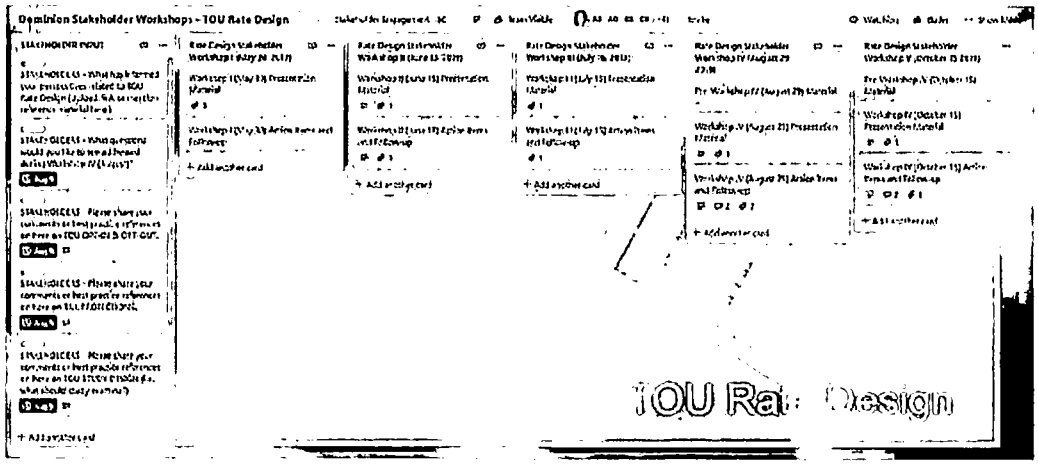
In addition to drawing out common stakeholder goals, the workshop series supported robust stakeholder discussions on the design options possible for a pilot TOU rate given the load and usage characteristics of the DEV electric system. Navigant also outlined fundamental TOU rate structures and design elements that could be leveraged to drive specific changes to load profiles and energy costs. Lastly, Navigant developed a series of example rate designs based on the stakeholder input offered throughout the workshop series to further illustrate the range of impacts that rate design decisions could have on various customer types. Figure 1-2 summarized each of the sessions and their respective topics.

Figure 1-2. DEV Stakeholder Workshop Series for Time-of-Use Rate Design



In additional to workshop discussions, Navigant established and managed an online engagement platform which offered stakeholders the ability to access or share information between workshops or to engage with one another or DEV between sessions. A view of that online stakeholder platform is illustrated in Figure 1-3.

Figure 1-3. Online Engagement Platform for TOU Stakeholder Workshop Series



The online stakeholder engagement platform provided an engagement channel for its 47 subscribed members and supported nearly 20 points of engagement in the form of posted information, comments or workshop materials.

2. TOU RATE DESIGN CONSIDERATIONS

Navigant assessed DEV's existing rate design structures and system load and usage characteristics to evaluate how shifting peak demand during the summer and winter periods would impact DEV's overall system cost – both by alleviating system capacity costs on its own system as well as capacity fees imposed by the independent system operator at the bulk power level (i.e., PJM). Navigant then paired analytical findings with industry accepted rate design methods to present stakeholders with a set of design options for consideration by stakeholders.

2.1 Key Design Options

The stakeholder group offered a range of perspectives on core TOU design elements:

- **Peak Periods**: Define the periods and duration for peak prices by time-of-day and season. The design of the peak periods should be driven by the goal to incent specific changes in load shape and behaviors so that specific benefits can be realized.
- **On-Peak/Off-Peak Ratio:** Determine the acceptable difference in price between peak and off-peak periods. This impacts the level of customer uptake and potential value of TOU pricing.
- **Fixed and Volumetric Charges:** Identify and quantify the appropriate level of a given rate design's fixed charge. This element impacts the types of customers who might be helped or harmed the most.

More specific considerations on these rate design components are provided below.

Peak Periods

As part of this discussion, the stakeholder group considered the impacts of rate design elements including the time of day, duration and seasons that peak rates would apply. A key concern of stakeholders was the time of day peak rates would apply and the resulting impact of peak rate time period on lower-income customers who are most likely to work night and weekend shifts when TOU rates are lowest and be home consuming energy during the times rates are highest.

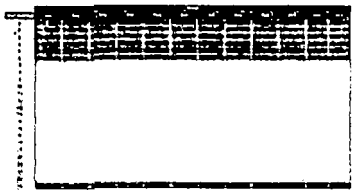
Another concern was the unfavorable impact of a seasonal peak period on different types of communities. For example, one stakeholder asked the group to consider the implications of a summer-only peak on those Virginia communities with tourism-dependent economies.

Nearly all stakeholders aligned around the need for simplicity regardless of the peak period design, noting that inconsistency in peak periods over the course of a day or a year would present both education and adoption challenges. Figure 2-1 illustrates the varying levels of peak period complexity discussed. The group ultimately decided on a single evening peak rate period.

Figure 2-1. Example of Peak Period Designs

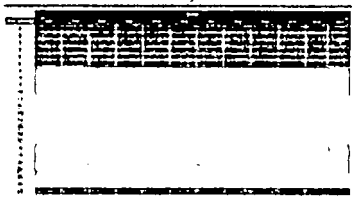
Two-period, year round

Period		Rate (c/kWh)
Off-peak	11 pm – 6 am	8.1
On-peak	6 am – 11 pm	12.0



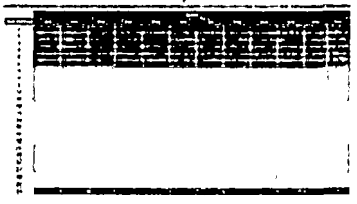
Three-period with targeted on-peak

Period		Rate (c/kWh)
Off-peak	11 pm – 6 am	8.0
Mid-peak	All other times	10.2
On-peak	4 pm – 8 pm (summer, three months) 6 am – 10 am & 5 pm – 9 pm (winter, three months)	18.0



Three-period with longer on-peak

Period		Rate (c/kWh)
Off-peak	11 pm – 6 am	8.0
Mid-peak	All other times	8.0
On-peak	1 pm – 10 pm (summer, four months) 6 am – 11 am & 4 pm – 9 pm (winter, four months)	15.8



On-Peak/Off-Peak Ratio

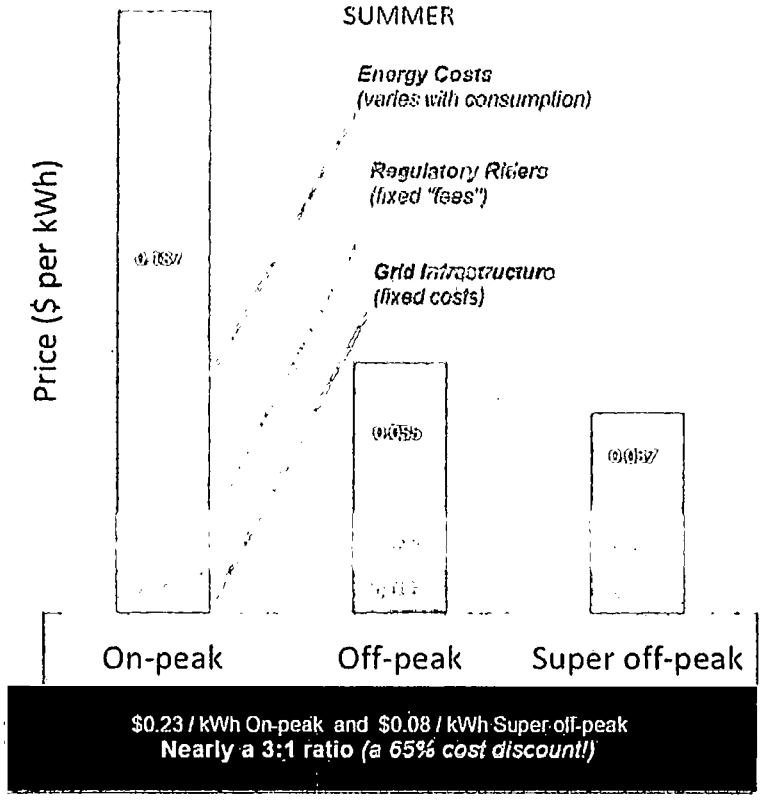
The stakeholder group also shared input on a target on-peak/off-peak energy price ratio, which represents spread between the on-peak rate is a premium over the off-peak. This spread drives customer behavior and potential savings (or penalties). Stakeholders saw advantages to a larger on-peak/off-peak ratio to offer adequate value to those willing to participate in a TOU rate and modify their energy consumption behaviors but were also were conscious of the impact of penalties.

The group again connected these design decisions to the impact on those lower income evening and weekend workers. One stakeholder highlighted the risk that customers new to participating in a TOU rate might receive much higher than expected energy bills might experience as they try to familiarize themselves with TOU design. DEV and stakeholders discussed education and tools, such as a rate comparison, that can be made to help reduce customer backlash towards future TOU rate offerings.

Fixed and Volumetric Charges

During the workshops, participants discussed the concept of fixed versus volumetric charges and which riders should be included in the pilot TOU rate. Stakeholders generally agreed that higher volumetric rates presented a greater opportunity to conserve energy, and that a well-designed TOU rate should avoid negative outcomes for ratepayers who are interested in distributed generation and/or broader electrification initiatives designed to lower carbon emissions and provide an overall benefit to DEV customers. Navigant's analysis of the relationship between 'fixed' costs and TOU charges is presented in in Figure 2-2.

Figure 2-2. Summer On-peak to Off-peak with Fixed and Volumetric Cost Drivers



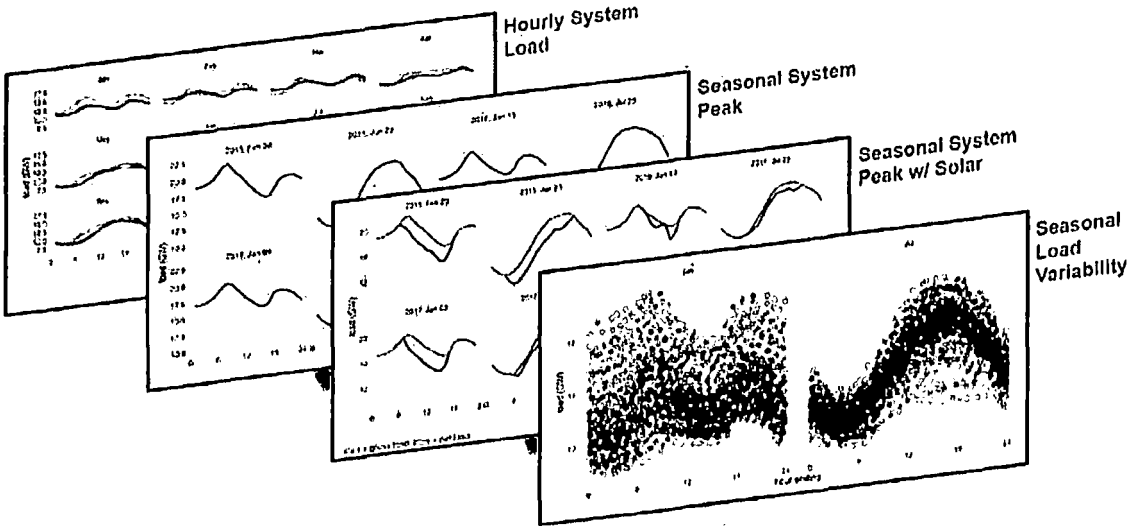
2.2 Design Limits and Bounding Conditions

Navigant outlined key design rate design conditions needed to ensure that all customers benefit from TOU rates. Specifically, a TOU offering that maximizes cost savings for *all* customers directly relates to its ability to reduce peak system load. A reduction of peak system load reduces the need for DEV to build out more infrastructure, thus keeping electricity costs lower for TOU customers and non-TOU customers alike. Accordingly, to achieve this goal, a TOU peak rate period would have to correspond to times when peak system load occurs.

Stakeholders advocating for a short-duration peak rate period (for example, a peak rate period occurring on weekdays from 7:00 PM to 8:00 PM to minimize the window of time customers had to navigate) learned that such a rate design might in fact drive *higher* customer bills. The facilitator introduced the concept of load "snap back" – that is, as TOU customers shift their usage to just before and just after the short peak period window, a new, and often higher, system peak is created which would require DEV to make investments in system capacity to accommodate the larger peak.

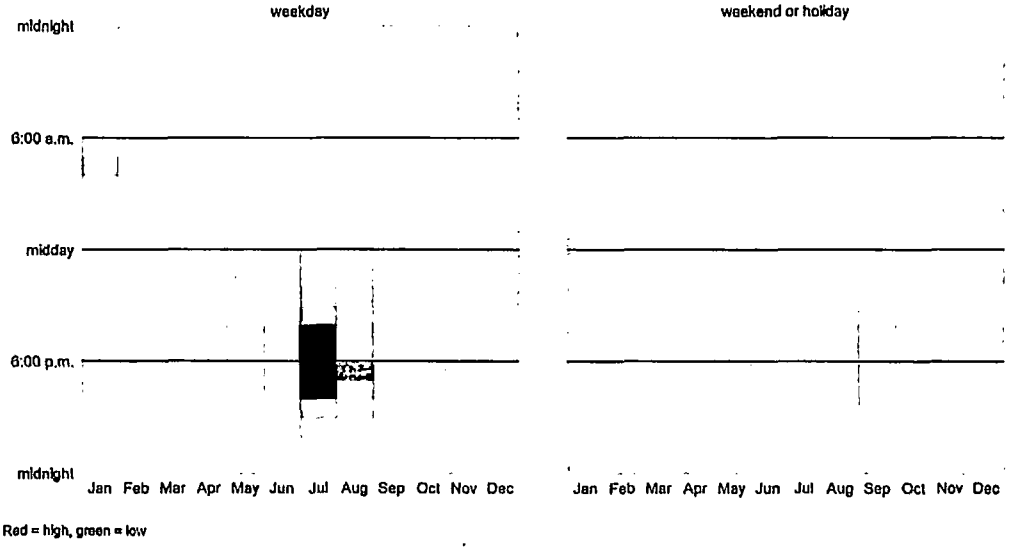
To illustrate these concepts to stakeholders, assessed the load and customer characteristics of DEV's electric system, highlighting when and how system peaks occurred and the types of rate structures that often work better in such dynamics. Illustrations of various load and usage characteristics are shown in Figure 2-3.

Figure 2-3. Illustration of the System Load and Usage Characteristics Assessed



Additionally, Navigant's rate design expert worked closely with the DEV Rate Design group to understand cost drivers and rate considerations specific to the DEV system. Navigant experts then used data visualizations like those pictured in Figure 2-4 to illustrate for stakeholders. This graphic is a heat map representing the variability in generation and delivery costs across months and hours to help identify the periods of high prices that should be reflected in peak pricing.

Figure 2-4. Illustration of Total System Costs
(2015 – 2018 Average for Generation, Transmission and Distribution)



Additionally, Navigant highlighted limitations on some TOU design options that stemmed from Virginia state statute. For example, Virginia Code Section 56-585.1 guides utilities on the specific methods to be used when recovering costs associated with new generation, including new utility-scale renewables, and energy efficiency. This constraint was specifically applicable during stakeholder discussions regarding how the basic customer charge for new TOU customers should be determined. Because any fixed charges designed into a TOU rate dictates the corresponding variable rates (assuming a revenue neutral[2] rate design), the proportion of fixed charges limited some design options the group might have otherwise explored. Moreover, a key point of disagreement among the stakeholder group stemmed from discussions of minimum customer charges, as discussed in more detail in Section 3.

[2] *Revenue neutrality* in this context means that changes to rate structures result in no change to the overall revenue collected by customers. Some workshop participants felt that the concept of revenue neutrality was moot as the underling system costs, which drive the revenue requirements that are used to set electricity rates, are not fully known. Such costs are typically only determined as part of a general rate case, which stakeholders attest has not occurred in more 30 years.

3. OUTCOMES OF THE STAKEHOLDER PROCESS

3.1 Area of Stakeholder Consensus

Overall, stakeholders supported the development of a new TOU pilot designed to support better understanding of how dynamic rates could be leverage with full AMI deployment. Stakeholders also found alignment regarding several areas of the pilot design and implementation. Specific areas of alignment are listed in Table 3-1.

Table 3-1. Areas of Stakeholder Alignment for TOU Pilot

Areas of Alignment	
Customer Education	• Accessible rate comparison information to be provided • Leverage digital education, including welcome package information • Program notifications should be sent to promote ongoing education
Pilot Eligibility	• AMI meters are required for pilot patriation • Customers must opt-in to the pilot program
Enrollment	• Enrollment target for pilot is 5,000 residential customers • Surveys to be used to gain demographic data • Study groups to be created to assess demographic-specific impacts

Customer Education

Both DEV and the stakeholder group agreed that customer outreach and education activities will be particularly important for the success of a new TOU rate offering and supported the need for additional rigor around targeted education to reach specific customer segments, such as low-income customers. The group discussed the implications of a TOU pilot that would launch prior to the full implementation of DEV's new Customer Information Platform and Customer Portal[3], tools specifically designed to support customer understanding of more granular energy consumption data.

Stakeholders and DEV agreed to continue conversations on the content, format, and medium of ongoing outreach and education. The group discussed specific tools such as rate comparisons that could be used to help customers better recognize the savings opportunities that a TOU rate could offer. Stakeholders recommended that leveraging a variety of channels for initial customer education (e.g., a digital welcome package, bill inserts) could encourage customers to use digital channels more regularly in the future to take advantage of additional energy-saving tools and customer offerings.

Pilot Eligibility and Enrollment

Overall, stakeholders supported a target enrollment of 5,000 existing residential AMI customers to pilot the TOU rate design. While customers would be required to opt-in to the TOU pilot, the group discussed the need for targeted enrollment to ensure that customer control groups could be established to study the TOU rate design impacts on and consumption behaviors of specific types of customers (e.g., low income).

[3] As part of its 2019 Grid Transformation Filing, DEV has requested approval for the cost recovery of a new Customer Information Platform capable of using interval AMI data to support advanced rate offerings for customers.

3.2 Opportunities for Further Alignment

While stakeholders and DEV generally found alignment around key design elements, such as peak rate times and on-peak/off-peak ratios, they did not reach consensus on a couple of fundamental elements. The most notable instances of stakeholder divergence involved the TOU basic customer charge[4] and the application of non-bypassable charges for TOU customers with distributed energy resources (DER).

Basic Customer Charge

Stakeholders were asked to endorse Navigant's proposed $8.59 basic customer charge for the new TOU design. Customers on current TOU rates are assessed a basic customer charge of $11.28, while general service (Rate Schedule 1) customers see a $6.58 basic customer charge. Using the on-peak/off-peak ratio and peak period durations that stakeholders supported, Navigant calculated a basic customer charge that would result in a revenue-neutral TOU rate – $8.59 per month. Several stakeholders advocated for keeping the same TOU rate design and applying the lower $6.58 basic customer charge. During the last workshop, stakeholders and DEV agreed to develop a pilot TOU rate that maintained the $6.58 basic charge and was still revenue-neutral. The revised rate is shown in Figure 3-1 below.

During the final workshop, DEV and stakeholder reached agreement to recommend a pilot revenue-neutral TOU rate that maintained the basic customer charge at the lower $6.58 per month level and adjusted the energy prices accordingly to maintain the targeted 2:1 energy price ratio. Navigant recognizes the value of consensus in this initial pilot and supports the proposed Recommended TOU Design shown in Figure 3-1 with full details in Appendix B.

Figure 3-1. Stakeholder-Informed TOU Rate Design

	Navigant Proposed Design		Recommended TOU Design	
	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)
ON-PEAK	$0.225/kWh	$0.171/kWh	$0.228/kWh	$0.174/kWh
OFF-PEAK	$0.093/kWh	$0.101/kWh	$0.095/kWh	$0.102/kWh
SUPER OFF-PEAK	$0.075/kWh	$0.097/kWh	$0.076/kWh	$0.099/kWh
Basic Customer Charge	$8.59/month		$6.58/month	

Navigant worked with DEV to assess the impact of the proposed rates on customers with different usage characteristics and shared the results with stakeholders. These results are included in Figure 3-2.

[4] The *minimum customer charge* is meant to represent the fixed costs incurred to provide the minimum level of electric service to a customer before energy can even be consumed. This this charge covers administrative items such as billing and service connections, as well as the infrastructure in the field, such as cables, conductor, conduit, poles and transformers.

Figure 3-2. Impacts of the Proposed Minimum Customer Charge on Customer Bills

Monthly usage (kWh)	Current average rate (c per kWh)	New average rate (c per kWh)	Change
0 – 500	13.7	13.8	0.5%
500 – 1,000	12.5	12.3	-1.8%
1,000 – 1,500	11.8	11.8	0.0%

Reduces the impact on low-use customers

- Rates based on $8.59 per month customer charge
  - Current customer charge for TOU is $11.28
  - Current customer charge for standard rate is $6.58

Non-bypassable Charges

Navigant asked stakeholders to consider 'non-bypassable' charges that would be applicable to some subset of customers receiving energy from customer-owned generation in order to maintain the same level of revenue for some distribution-related charges and public benefit program riders (e.g., energy efficiency and low-income programs) in which these customers also participate. To support informed discussion, Navigant calculated the impacts a non-bypassable charge of 1.9 cents per kWh would have on DER customers with 3 kW self-generation systems and customers with 6 kW self-generation systems, as illustrated in Table 3-2.

Table 3-2. Impact for a Solar Distributed Generation Customer

3 kW System	TOU Rate	All Production	All Production (exports only)	Only exports	Share of Self-consumption
South-facing	-4%	-21%	-10%	-7%	82%
SW-facing	-3%	-20%	-9%	-6%	84%
West-facing	-3%	-20%	-7%	-5%	89%

6 kW System	TOU Rate	All Production	All Production (exports only)	Only exports	Share of Self-consumption
South-facing	-4%	-21%	-14%	-12%	52%
SW-facing	-3%	-20%	-13%	-11%	55%
West-facing	-3%	-19%	-11%	-9%	59%

Note

- *All production*: Approx. 1.9 cents/kWh held as non-bypassable on all production
- *All production with distribution for exports*: Approx. 0.3 cents/kWh held as non-bypassable on all production, approx. 1.9 cents/kWh held as non-bypassable on real-time exports
- *Only Exports*: Approx. 1.9 cents/kWh held as non-bypassable on all real-time exports

Stakeholders, however, did not reach agreement as to whether any non-bypassable charge should be incorporated into the TOU rate design. Stakeholders and DEV agreed to continue conversation in a smaller group after the conclusion of this stakeholder process to gather data and seek consensus on the appropriate treatment of DER generation.

4. FINAL RECOMMENDATIONS

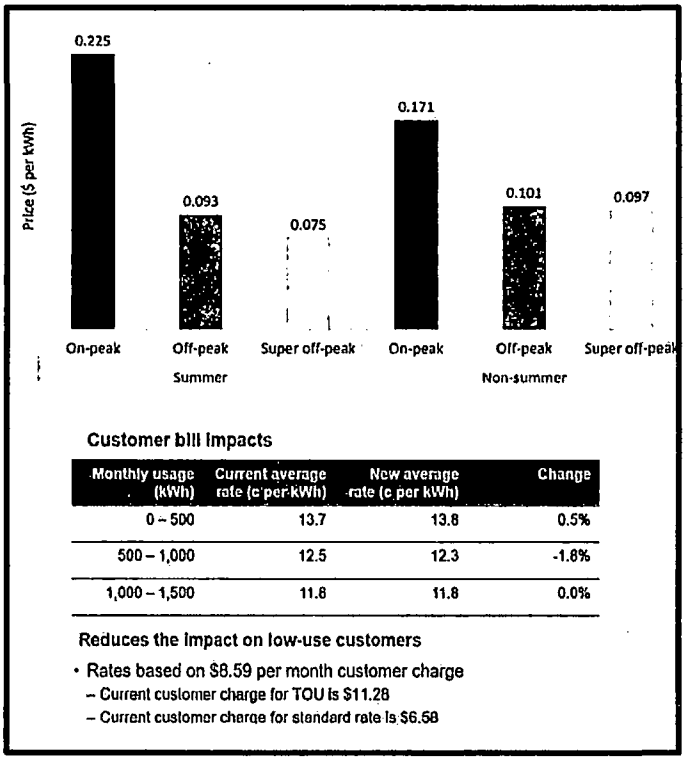
4.1 Initial Recommendation

Given Navigant's understanding and interpretations of the input, goals and concerns expressed by stakeholders over six months and five workshops, Navigant offered a TOU rate design recommendation for DEV and stakeholder consideration on the design of its TOU pilot. As shown in Figure 4-1, Navigant recommended:

1. Pilot a TOU rate that includes three-rate periods that vary by season
2. Define peak time periods to make it easier to educate customers on how to change their usage and reduce their energy bills
3. Ensure the On-peak to Off-peak energy price ratio is at least 2:1
4. Establish a pilot TOU basic customer charge that preserves revenue neutrality

Navigant's rate design recommendation is grounded in their rate design experts' knowledge of accepted industry practices and attempts to integrate interests expressed by workshop participants. Navigant believes this design meets stakeholders' goal of a greater than 2.0 on-peak/off-peak ratio, defines peak periods making it simple for customers, and includes a basic customer charge that includes an acceptable level of non-variable costs.

Figure 4-1. Navigant Initial Recommended TOU Rate Design



Customer bill impacts

Monthly usage (kWh)	Current average rate (c per kWh)	New average rate (c per kWh)	Change
0 – 500	13.7	13.8	0.5%
500 – 1,000	12.5	12.3	-1.8%
1,000 – 1,500	11.8	11.8	0.0%

Reduces the impact on low-use customers

- Rates based on $8.59 per month customer charge
  - Current customer charge for TOU is $11.28
  - Current customer charge for standard rate is $6.58

4.2 Stakeholder-informed Recommendation

While stakeholders did find alignment on many of the core TOU rate design elements proposed, ultimately the stakeholder group did not support an increase to the basic customer charge.

As a point of compromise, DEV agreed to maintain the basic customer charge at $6.58 per month throughout the pilot period as well as preserve the core design elements that stakeholders supported from Navigant's recommended TOU rate design, with modest adjustment to peak rates.

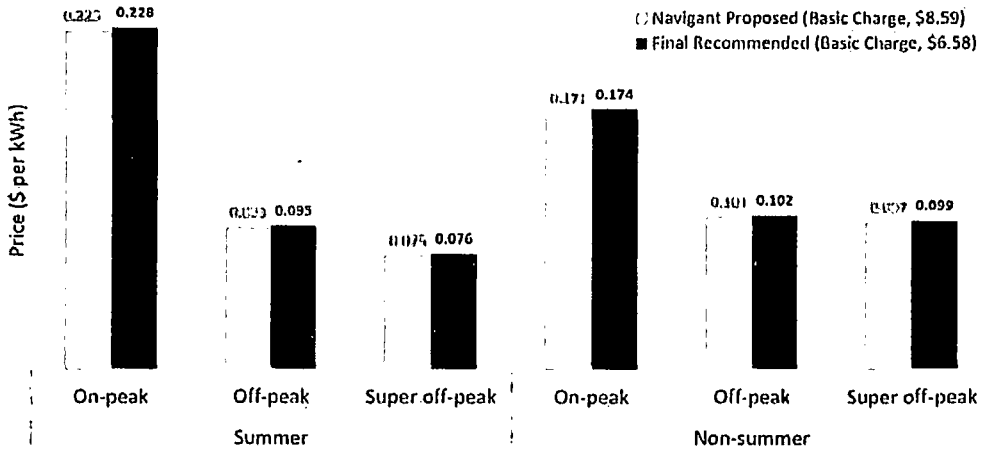
Navigant recognizes the importance of stakeholder and DEV alignment and supports the Recommended TOU Design rate shown in Figure 4-2. The Recommended TOU Design incorporates a lower basic charge and corresponding adjustments in energy prices to ensure the energy price ratio is maintained. Figure 4-2 provides a side-by-side view of Navigant's recommended design and DEV's final pilot design compromise.

Figure 4-2. Stakeholder-Informed TOU Rate Design

	Navigant Proposed Design		Recommended TOU Design	
	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)	SUMMER (May 1 – Sept 30)	NON-SUMMER (Oct 1 – April 30)
ON-PEAK	$0.225/kWh	$0.171/kWh	$0.228/kWh	$0.174/kWh
OFF-PEAK	$0.093/kWh	$0.101/kWh	$0.095/kWh	$0.102/kWh
SUPER OFF-PEAK	$0.075/kWh	$0.097/kWh	$0.076/kWh	$0.099/kWh
Basic Customer Charge	$8.59/month		$6.58/month	

Note
- No on-peak period on weekends or NERC holidays
- Over 3x ratio in summer between on-peak and super off-peak
- Weighted average across the year of 2.0
- Less than 10% of highest load days occur on weekends
- See Appendix B for defined summer and non-summer on-peak, off-peak, super off-peak periods.

Figure 4-1. Stakeholder-Informed TOU Rate Design



4.3 Topics for Further Discussion

Navigant also endorses a strong focus on customer outreach and education, particularly during the pilot period as supporting tools and technologies such as the Customer Information Platform and Customer Portal will not yet be available. Finally, Navigant endorses the use of targeted enrollments to establish control groups that represent various customer types to support pilot EM&V.

5. CONCLUSION

Following the close of this stakeholder workshop series, DEV intends to file its proposed new residential TOU rate (reflected in Appendix B) with the State Corporation Commission in late 2019, with a rollout target for the pilot rate and associated customer education campaign in 2020. Many stakeholder participants of the TOU Rate Design Workshop Series have expressed a commitment to continued collaboration. They have vocalized their plans to continue working collectively with each other and DEV on additional items to support a TOU rate pilot that offers key rate design learnings to DEV and provides value to Virginia customers.

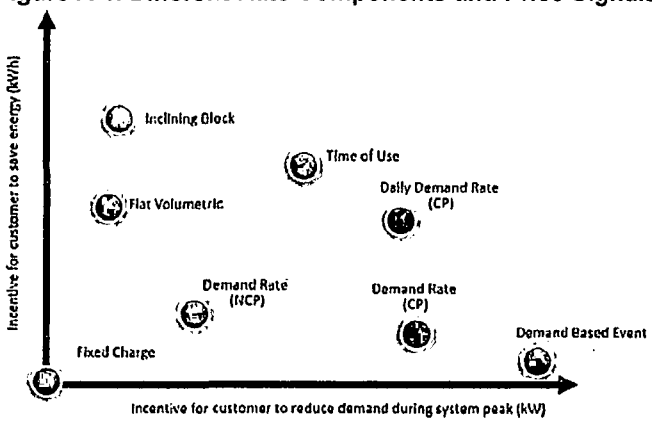
As part of immediate steps, the stakeholders intend to organize into small working groups to develop the next level of details to support the TOU pilot launch. Working group topics include bill protections, opt-in and opt-out assessments, valuation and compensation of DER generation, and the development of measures and metrics to support learnings from the TOU pilot. Stakeholders will also continue working with DEV to develop more detailed customer outreach and education plans to support the TOU pilot enrollment. A summary of designated activities by HB 2547 and their progress to date are supplied in Appendix C.

APPENDIX A. TOU LANDSCAPE ACROSS THE INDUSTRY

As advanced metering and onsite technologies, such as smart thermostats, connected appliances and home energy management systems become more commonplace, electricity customers are growing better positioned to influence their own load profiles.

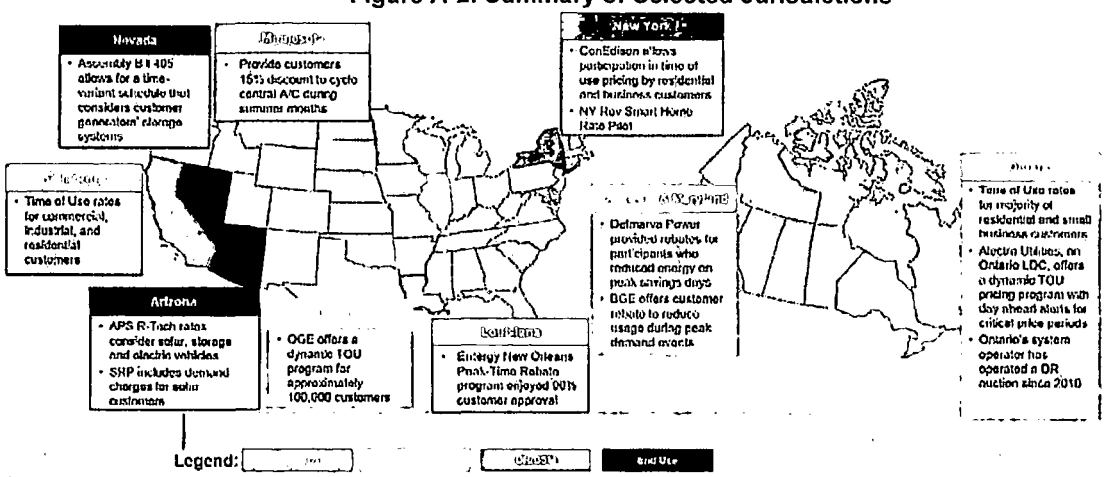
Around the country, states are enacting rules and utilities are implementing dynamic electricity rate pilot programs to get ahead of the expected impacts of these load shaping consumer-level technologies. To support customers while simultaneously working to optimize overall grid-level load profiles, electric utilities are exploring new electric rate design options that better map rate design components to customers price signals, as illustrated in Figure A-1. Figure A-2 highlights examples of rate designs being explored across North America.

Figure A-1. Different Rate Components and Price Signals



Source: Navigant

Figure A-2. Summary of Selected Jurisdictions



Source: Navigant

APPENDIX B. DEV PROPOSED RESIDENTIAL TOU PILOT RATE

The tables below reflect Dominion Energy's proposed new stakeholder-informed TOU rate schedule pricing for its Virginia residential customers[5].

Prices					
	Base Distribution	Base Generation	All Riders	Base Gen w/ All Riders	Base D and G and All Riders
Basic Customer Charge	$ 6.58				$ 6.58
Max kW	$ -				$ -
On-Peak kW	$ -				$ -
Summer On	$ 0.017255	$ 0.152128	$ 0.058863	$ 0.210991	$ 0.228246
Summer Off	$ 0.017255	$ 0.018916	$ 0.058863	$ 0.077779	$ 0.095034
Summer Super Off	$ 0.017255	$ 0.000229	$ 0.058863	$ 0.059092	$ 0.076347
Base On	$ 0.017255	$ 0.097539	$ 0.058863	$ 0.156402	$ 0.173657
Base Off	$ 0.017255	$ 0.026289	$ 0.058863	$ 0.085152	$ 0.102407
Base Super Off	$ 0.017255	$ 0.022826	$ 0.058863	$ 0.081689	$ 0.098944

Ratio of Per kWh On-peak to Off-peak and Super Off-peak Charges	
Summer On-peak Price / Weighted Off -peak, Super Off-peak Price	2.5
Base On-peak Price / Weighted Off -peak, Super Off-peak Price	1.7
Weighted Average On-peak Price	$0.190210
Weighted Average Off-peak Price, Super Off-peak Price	$0.097233
Wt. Avg. On-peak Price to Wt. Avg. Off-peak, Super Off-peak Price	2.0

Weekdays Excluding NERC Holidays		
Rating periods	Summer (May 1 - Sept 30)	Base (October 1 - April 30)
On-peak	3:00 PM - 6:00 PM (3 hours)	6:00 AM - 9:00 AM (3 hours) 5:00 PM - 8:00 PM (3 hours)
Off-peak	5:00 AM - 3:00 PM (10 hours) 6:00 PM - 12:00 AM (6 hours)	5:00 AM - 6:00 AM (1 hour) 9:00 AM - 5:00 PM (8 hours) 8:00 PM - 12:00 AM (4 hours)
Super Off-peak	12:00 AM - 5:00 AM (5 hours)	12:00 AM - 5:00 AM (5 hours)

[5] Current as of November 6, 2019

Weekends and NERC Holidays		
Rating periods	**Summer (May 1 - Sept 30)**	**Base (October 1 - April 30)**
Off-peak	5:00 AM - 12:00 AM (19 hours)	5:00 AM - 12:00 AM (19 hours)
Super Off-peak	12:00 AM - 5:00 AM (5 hours)	12:00 AM - 5:00 AM (5 hours)
Note: NERC Holidays and weekends will not have an on-peak period.		
NERC Holidays		
New Year's Day	Monday, 1/1/2018	
Memorial Day	Monday, 5/28/2018	
Independence Day	Wednesday, 7/4/2018	
Labor Day	Monday, 9/3/2018	
Thanksgiving	Thursday, 11/22/2018	
Christmas	Tuesday, 12/25/2018	

APPENDIX C. STAKEHOLDER PROGRESS AND GOALS

That no later than 60 days after July 1, 2019 Dominion Energy shall convene a stakeholder process to make recommendations to the utility concerning:

	Covered by stakeholder group?
the development of retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering technology and related investments in customer information systems;	Single TOU pilot drafted with enrollment limits. Expanded enrollments can be accommodated at scale once CIS and AMI are completed, subject to Commission review of DEVs GT Plan filing; Additional discussion of customer information systems needed
the development of incentive programs for the installation of equipment to develop electric energy derived from sunlight for customers using advanced metering technology served under such time-varying rate schedules;	To be discussed beginning in 2020
the possible transition of net metering customers using advanced metering technology to the time-varying rate schedules;	To be discussed beginning in 2020
peak shaving programs;	To be discussed beginning in 2020
the provision of on-site distributed renewable generation to multifamily dwellings;	To be discussed beginning in 2020
related system effects [from distributed generation resources]...	System effects discussed; Consensus has not yet been reached
Requirements arising from distributed generation resources.	To be discussed beginning in 2020

The scope of the work of the stakeholder group convened pursuant to this enactment shall include the following:

	Covered by stakeholder group?
In developing the retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering technology, the stakeholder group shall include at least one non-demand schedule.	Yes
	To be discussed beginning in 2020

In developing incentive programs for the installation of equipment to develop electric energy derived from sunlight for customers using advanced metering technology served under such time-varying rate schedules, the stakeholder group shall seek to accelerate solar development without adversely impacting other non-solar customers and to establish appropriate incentives to sustain the program, including consideration of the expiration of federal tax incentives available. Any such incentive program shall be limited to net-metering customers until other customers receive advanced metering technology.	
In developing recommendations for the possible transition of net metering customers to the time-varying rate schedules, the stakeholder group shall (i) recommend the timing and increases in the net-metering cap to take advantage of the deployment of advanced metering technology and the approval of time-varying rate schedules, in a range estimated to be between two percent and four percent, and (ii) recommend appropriate increases in customer class caps, aligned with potential system cap increases, and the timing of deployment of advanced metering technology, taking into consideration infrastructure costs and rate impacts of higher solar distributed generation capacity. The stakeholder group shall recommend capacity and market milestones for growth of solar distributed generation capacity	To be discussed beginning in 2020
The stakeholder group shall develop recommendations related to distributed generation resources, including rate design options for the possible transition from retail net metering to successor time-varying rate schedules, recognizing the dependency of such rate design to the deployment of advanced metering technology. The stakeholder group design shall encourage rate stability and allow sufficient transition time for customer education. The stakeholder group shall seek to encourage voluntary transition to time-varying rate schedules and shall provide mechanisms to gather data from such early adopters in order to minimize program impacts on existing net metering customers and other ratepayers. The stakeholder group shall make recommendations about the appropriate grandfathering of existing net metering customers who elect not to be served under the time-varying rate schedules.	To be discussed beginning in 2020
The stakeholder group may address the availability of power purchase agreements, standby and demand charges, Schedule 19 PURPA contracts, distributed generation storage deployment, and other topics that the facilitator deems appropriate.	To be discussed beginning in 2020
That on or before March 1, 2020, a Phase II Utility, as such term is defined in subdivision A 1 of § 56-585.1 of the Code of Virginia, shall develop and submit to the State Corporation Commission for approval retail rate schedules designed to offer time-varying pricing, including at least one non-demand rate schedule. Customer-generators or agricultural customer-generators	Pilot to be submitted to SCC; net metering customer participation not discussed

participating in net metering may elect to be served under such time-varying rate schedule at such time as the customer-generator or agricultural customer-generator is served by advanced-metering technology equipment satisfactory to the utility.	
That on or before March 1, 2020, a Phase II Utility, as such term is defined in subdivision A 1 of § 56-585.1 of the Code of Virginia, shall develop and submit to the State Corporation Commission for approval an incentive program for the installation of equipment to develop electric energy derived from sunlight for customers served under time-varying retail rate schedules that have advanced-metering technology equipment satisfactory to the utility.	To be discussed beginning in 2020

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Paul B. Haynes

Title: Director, Regulation

Summary:

Company Witness Paul B. Haynes testifies in support of the Company's proposal for a new experimental residential time-of-use ("TOU") rate schedule, designated Schedule 1G. Mr. Haynes specifically explains the TOU schedule, which has been developed during the course of a series of stakeholder group meetings set forth by the provisions of Senate Bill 1769 (approved during the 2019 General Assembly Session) and signed by the Governor. Company Witness Haynes addresses that, upon State Corporation Commission ("Commission") approval, this rate would be available to residential customers where advanced metering infrastructure ("AMI") has been installed.

Mr. Haynes further discusses how the rate schedule will be experimental, voluntary, and initially limited in the number of customers that can participate. Mr. Haynes explains how Rate Schedule 1G will include a basic customer charge and energy charges, differentiated by time periods within each season; the benefits of time-varying rates; and the applicability provisions of the proposed Schedule 1G. Finally, Company Witness Haynes explains the Schedule 1G bill impact analysis.

DIRECT TESTIMONY
OF
PAUL B. HAYNES
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00214

Q. Please state your name, position of employment with Virginia Electric and Power Company ("Dominion Energy Virginia" or the "Company"), and business address.

A. My name is Paul B. Haynes and I am Director – Regulation for the Company. My business address is One James River Plaza, 120 Tredegar Street, Richmond, Virginia 23219. A statement of my background and qualifications is attached as Appendix A.

Q. Mr. Haynes, what is the purpose of your testimony in this case?

A. I am testifying in support of the Company's application for approval of a new experimental residential time-of-use ("TOU") rate schedule, designated Schedule 1G. Specifically, my testimony will explain the TOU schedule, which has been developed during the course of a series of stakeholder group meetings set forth by the provisions of Senate Bill 1769 (passed during the 2019 General Assembly Session) and signed by the Governor. The rate schedule will be experimental, voluntary, and initially limited in the number of customers that can participate. It will include a basic customer charge and energy charges, differentiated by time periods within each season (*i.e.*, summer and non-summer). Upon State Corporation Commission ("Commission") approval, this rate would be available to residential customers where advanced metering infrastructure ("AMI") has been installed.

Q. Will you be introducing any exhibits with your testimony?

A. Yes. Company Exhibit No. __, PBH, consisting of Schedules 1-6, was prepared under my supervision and direction and is accurate and complete to the best of my knowledge and belief.

Q. How is your testimony organized?

A. My testimony is organized as follows:

I. Stakeholder Process

II. Schedule 1G Applicability and Rate Design

III. Schedule 1G Bill Impact Analysis

I. STAKEHOLDER PROCESS

Q. Please describe the provision of Senate Bill 1769 that directs the formation of a stakeholder process to develop time-varying rate schedules.

A. In Senate Bill 1769, the Company was directed to convene a stakeholder process to address several issues, including recommendations concerning "the development of retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering." The legislation further provided that "in developing the retail rate schedules designed to offer time-varying pricing that take advantage of advanced metering technology, the stakeholder group shall include at least one non-demand schedule."

Q. Please describe the provision of Senate Bill 1769 as it relates to participants in the stakeholder process.

A. The stakeholder process should include "representatives from the utility, the State Corporation Commission, the office of Consumer Counsel of the Attorney General, the

Department of Mines, Minerals and Energy, net-metering program administrators, customer-generators, agricultural customer-generators, solar energy program implementers, solar energy providers, other residential and small business customers, and any other interested stakeholder who the utility deems appropriate for inclusion in such process."

Q. Does Senate Bill 1769 provide for an independent facilitator to lead the stakeholder process?

A. Yes. The stakeholder process is directed by the legislation to include and be facilitated by "an independent facilitator with expertise in rate design, cost recovery, and solar markets, compensated by the utility, offset by such contributions from members of the stakeholder group as the members deem appropriate." Prior to engaging the facilitator, the Company was directed to consult with the stakeholder group and the Commission.

Q. Once formed, does Senate Bill 1769 direct the Company to report on the progress of the stakeholder group's work?

A. Yes. The Company must report on the status of the work of the group, including any petitions filed and the outcome of such petitions, "to the Governor, the State Corporation Commission, and the Chairmen of the House and Senate Committees on Commerce and Labor on January 1, 2020 and thereafter on January 1 of each successive year."

Q. Was this stakeholder group convened?

A. Yes. As summarized in the Navigant Report included as Attachment 1 to the Company's Application, a stakeholder group met five times between May and October to discuss TOU rate goals, benefits, and options, among other things. The group also coordinated

outside of these meetings via an interactive web board and on additional phone calls.

As input from the stakeholder group was received, different rate designs were prepared and shared with the group. The final rate design based upon the stakeholder group process is the proposed Schedule 1G. As discussed in the pre-filed direct testimony of Company Witness Heather M. Jennings, the Company would also use stakeholder input to guide the implementation, customer education, customer engagement, and marketing of Schedule 1G, if approved.

II. SCHEDULE 1G APPLICABILITY AND RATE DESIGN

Q. Before explaining the new residential TOU rate schedule that the Company is proposing, what are the benefits of time-varying rates?

A. Time-varying rates can provide more accurate price signals to customers that are better aligned with cost causation principles than standard rates. Through improved price signals, such rate structures can incent behavioral changes in customers taking service under such rates. Participating customers may reduce usage during peak periods and enable the system to avoid incurring higher variable operating expenses, such as fuel, and avoid future capacity costs. These behavioral changes can benefit participants directly through bill savings and can benefit both participants and non-participants through the reduction of system costs. Another benefit is that time-varying rates can serve to reduce subsidies inherent in standard rates because better price signals, based upon cost causation in seasonal rate periods, are provided when compared to standard rate schedules. While standard rate schedules may have cost recovery distinguished by season, such rates may not provide differentiation in cost recovery by time period.

Q. Does the Company currently have TOU rate schedules under which residential customers take service?

A. Yes, the Company currently has the following time-of-use rate schedules applicable to residential customers:

- Schedule 1S,
- Schedule 1T,
- Schedule 1P (Closed to new customers),
- Schedule DP-R (Closed to new customers),
- Schedule 1EV (Closed to new customers), and
- Schedule EV (Closed to new customers).

Regarding the two TOU schedules that are applicable and available to new customers, Schedules 1S and 1T have been in place for several decades and provide different approaches to pricing. Schedule 1S is a three-part rate design with a Basic Customer Charge, seasonally-differentiated demand charges, and energy charges for the seasonally-differentiated on- and off-peak periods. Schedule 1T is a two-part rate design with a Basic Customer Charge and energy charges for the seasonally-differentiated on- and off-peak periods. Both Schedule 1S and 1T have an on-peak period in the summer season that lasts for eleven hours, from 11 a.m. to 10 p.m. In the base (or non-summer) season, the on-peak period is divided into two four-hour periods, from 7 a.m. to 11 a.m. and 5 p.m. to 9 p.m.

As described in my testimony, the proposed Schedule 1G has a different design than any of the prior time-of-use rate schedules and, therefore, should provide new and valuable

information regarding customer behavior in response to price signals.

Q. For what period will Schedule 1G be available?

A. Customers may elect to participate through at least December 31, 2024, but may discontinue participation at any time. However, a customer who discontinues service under Schedule 1G may not be served under this schedule within one year of such discontinuation of service. Additional eligibility requirements are discussed later in my testimony. Should the Commission approve Rate Schedule 1G, the Company respectfully requests for billing purposes, a rate effective date for usage on and after January 1, 2021.

Q. In the Final Order in Case No. PUR-2018-00100, the Commission requested information on whether any time-varying rate offerings associated with AMI "would be the default tariff for a customer with an installed smart meter." Is it the Company's position that customers with smart meters would be required to take service under this tariff?

A. No, it is not. The Company does not intend to propose the time-varying rate as the default tariff for customers with AMI. In fact, the soonest the Company could propose to change the default tariff for customers would be the conclusion of the first triennial rate review proceeding, with Commission approval, as discussed in the testimony of Company Witness Gregory J. Morgan in the Company's 2019 Grid Transformation ("GT") Plan filing, Case No. PUR-2019-00154. No decision has been made by the Company as to when and whether it would require any time-varying rate offering associated with AMI to be the default tariff for residential customers. Rather, the Company believes that this experimental rate will inform upon future offerings.

Q. Please describe the applicability provisions of the proposed Schedule 1G.

A. Schedule 1G is applicable to residential customers that have AMI deployed at their premises. Proposed Schedule 1G is an experimental rate schedule that is voluntary, meaning customers are not required to take service under this rate schedule. The rate schedule is available to customers up to a limit of 10,000 accounts. Company Witness Jennings addresses the Company's current system limitations that necessitate a participation limit; the stakeholder group recommended that 4,000-5,000 customers would be needed for the data collected from operation of Schedule 1G to be robust in some of the key areas as identified by the group.

Q. Are there any additional applicability provisions of the proposed residential TOU Schedule 1G?

A. Yes. Schedule 1G would not be available to customers electing to participate (either directly or indirectly through a third-party curtailment service provider) in any PJM Interconnection, LLC Demand Response ("DR") Program or any Company-sponsored DR programs, including the Company's AC Cycling Program or the proposed Thermostat (DR) Program.

This limitation is needed because customers participating in DR or peak-shaving programs are already compensated for taking certain actions to limit consumption during "peak" times. If they were to also be rewarded, in a sense, for shifting this consumption to off-peak times via the rate differentials within Schedule 1G, these customers would be getting twice the benefits while only providing load reduction once.

Q. Currently, under Rate Schedule 1, there is a provision that when a customer receives service in accordance with Paragraph XXV - Net Metering of the Company's Terms and Conditions, a standby demand charge is applicable when the capacity of a renewable generator exceeds 10 kW. Will this provision appear in proposed Schedule 1G?

A. No. Since there are no demand charges proposed for Schedule 1G, this provision will not be applicable. However, the Company proposes to limit participation on Schedule 1G to net metering customers with systems that have a capacity less than or equal to 10 kW.

Q. Regarding the requirement that customers must have AMI, how many residential customers is that currently?

A. The Company, as of November 2019, has 452,702 AMI meters installed, including 402,457 on the premises of residential customers.

The Company began to deploy AMI in 2008 in a targeted fashion based on specific operational and customer needs. The Company did this at a measured pace over the course of several years during which time the Company refined its expectations of supplier and technology capabilities and developed operational experience through real-world application. Following a competitive bidding process, the Company continued to deploy AMI in larger quantities and densities in diverse geographical areas of the Company's service territory in order to validate deployment and operational strategies.

Q. Does the Company currently have an application for approval of a plan for electric grid transformation projects pending before the Commission that includes additional deployment of AMI?

A. Yes. In the GT Plan filing, the Company proposes to deploy AMI fully across the Virginia service territory. As stated in the Company's application, "the full deployment of AMI is a foundational component of the Grid Transformation Plan, effectively enabling all other Plan components, and is needed to unlock the capabilities that customers, stakeholders, and the Commonwealth are demanding." As explained by Company Witness Nathan J. Frost in his testimony in the GT Plan filing, AMI generally refers to the over-arching metering system, which includes smart meters, a field area network and a back-office system called the AMI head-end system. Company Witness Frost provides a detailed explanation of AMI in his testimony.

Q. Earlier, you described that time-varying rates can provide more accurate price signals to customers that are better aligned with cost causation than standard rates. Why does the Company need AMI to bill time-varying rates?

A. The Company needs AMI to bill time-varying rates because the Company cannot distinguish a customer's consumption at different points in time using standard metering. Standard meters record a customer's usage and allow the measurement of kWh consumption during a billing period (usually one month for residential customers) but are not capable of recording consumption during specific time intervals during the day. Therefore, in order to bill customers based upon costs in specific time intervals, the Company needs to be able to measure consumption during such intervals. Among other things, AMI provides this capability as explained in Company Witness Frost's testimony

in the GT Plan.

Q. Has the Company utilized existing AMI metering deployed in the Company's service territory to design the proposed rate, Schedule 1G?

A. Yes. Of the 402,457 installed AMI meters on the premises of residential customers, the Company has used approximately 287,000 of such meters to provide the sample data for the 2018 test period that has been used to design the proposed TOU rate schedule pricing. The Company selected 287,000 residential customers with AMI metering based on those customers that had usage for at least 95% of the hourly intervals in the 2018 test period.

Q. How does this Schedule 1G compare to residential Schedule 1 when considering revenue?

A. Rate Schedule 1G has been designed to be "revenue neutral" with Rate Schedule 1 using the 2018 test period and based upon an annualization of base rates in the Company's standard residential rate schedule, Schedule 1, which became effective January 1, 2018. Such base rates were determined according to the Commission's Final Order in Case No. PUR-2018-00055, which addressed the annual reductions to corporate income taxes, paid by utilities, pursuant to the federal Tax Cuts and Jobs Act of 2017.

Being revenue neutral means that the proposed Schedule 1G produces the same revenue as the Company's Schedule 1 based upon all of the billing determinants booked for Schedule 1 during 2018. Said another way, based upon the Company's sampling of AMI meters installed on the premises of approximately 287,000 customers and the measurement of interval usage for such customers during 2018, such usage, when grossed up to account for the difference between such usage and total Schedule 1 booked usage,

produces the same revenue under proposed Schedule 1G and Schedule 1.

My Schedule 1 presents the annualized base revenue for the residential rate Schedule 1 for 2018.

Q. Does "revenue neutral" mean that each customer's bill will be the same for Schedule 1 and proposed Schedule 1G?

A. No. Individual customer bills may not be revenue neutral between Schedule 1 and proposed Schedule 1G.

Q. Earlier you mentioned the proposed Schedule 1G will include energy charges, differentiated by time periods within each season. Please discuss the derivation of the seasonal periods in Schedule 1G.

A. The residential load shape was analyzed by month to determine the optimal seasonality of the rate schedule. The months of May through September have a typical summer load shape (with a single peak in the late afternoon or early evening) and comprise the Summer season. The remaining months of October through April have a non-summer load shape (both a morning and afternoon peak) and comprise the Base season. Illustrative examples of the system and residential load shapes in the Summer and Base seasons are shown in Figures 1.1 and 1.2, respectively.

Figure 1.1

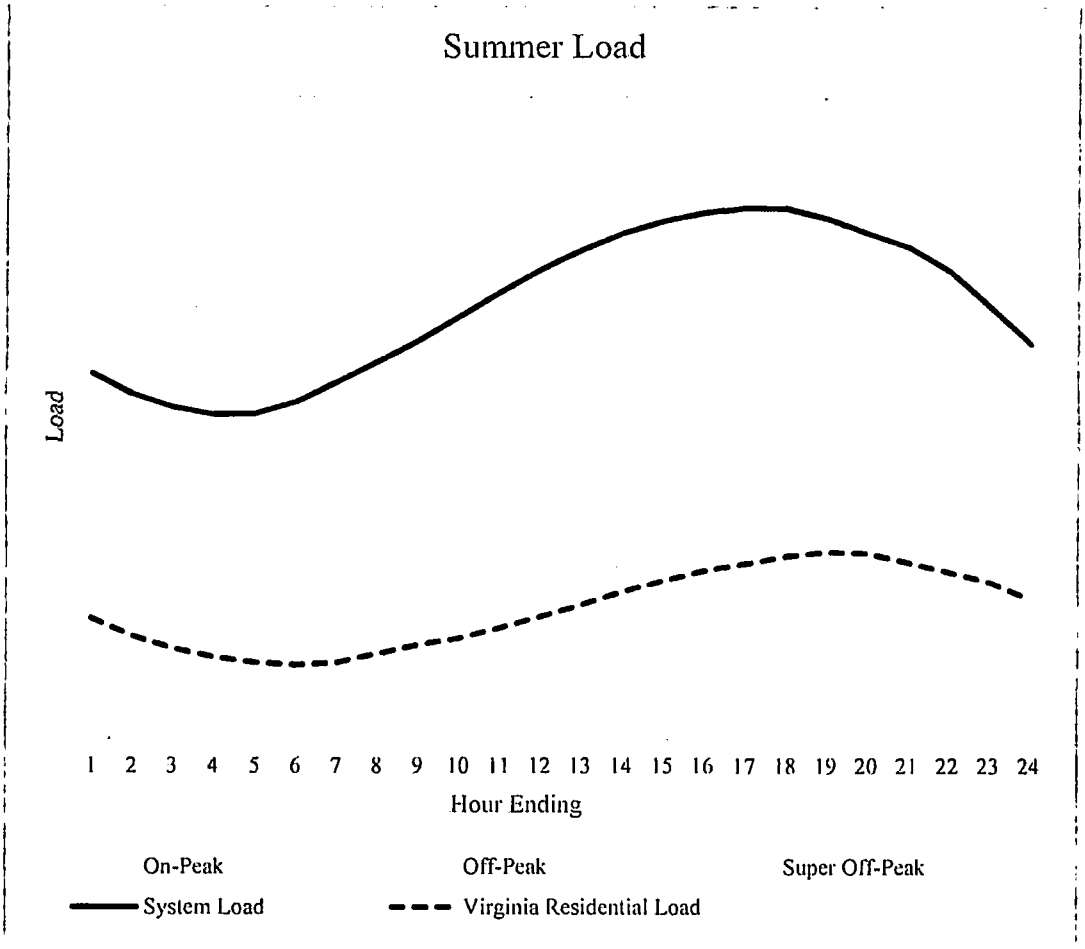
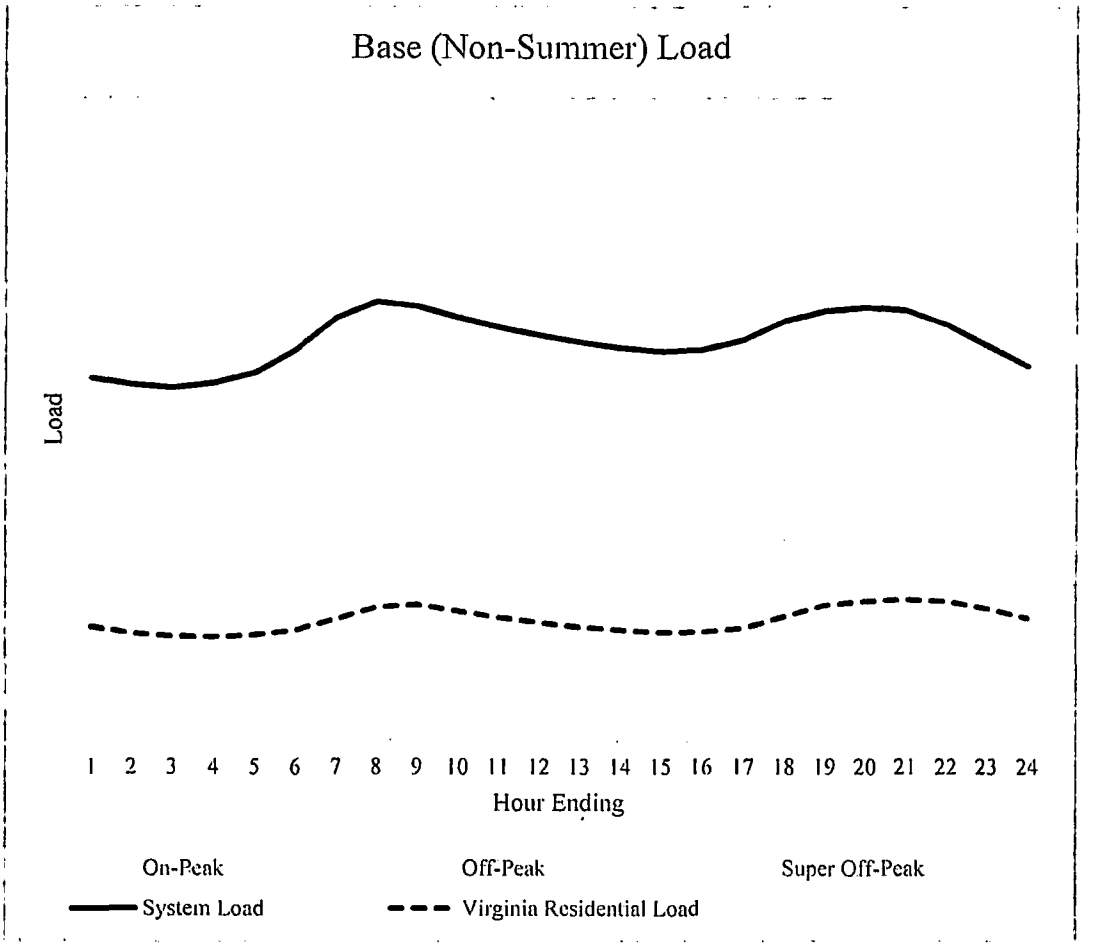


Figure 1.2



Q. Mr. Haynes, please discuss the derivation of the time periods proposed for Schedule 1G.

A. Schedule 1G includes the use of on-, off-, and super off-peak time periods. To determine the on-peak, off-peak, and super off-peak hours, the Company evaluated the hours during which the Company's load most frequently peaks in each season. In the Summer period, the Company's load peaks between 3:00 PM and 6:00 PM. In the non-summer months, comprising the Base period, the Company's load peaks around 8:00 AM and again in the late afternoon or evening. Initially, the Company had considered that a four-hour on-

peak period was appropriate during the Summer period, but after addressing feedback and considering outcomes of previous pilots, the stakeholder process guided the establishment of an on-peak period of three hours in duration during the Summer.[1]

The stakeholder process also guided the development of a consistent super off-peak period from midnight to 5:00 AM every day, regardless of season.

All hours that were not categorized as on-peak or super off-peak were then categorized as off-peak.

Additionally, stakeholder feedback recommended excluding weekends and North American Electric Reliability Corporation ("NERC") holidays (New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas) from having on-peak periods. Therefore, proposed Schedule 1G will only have off-peak and super off-peak periods during those days.

Table 1 summarizes the seasonal and hourly rating period classifications.

[1] The stakeholder process direction is consistent with the Company's experience in its Residential Dynamic Pricing Pilot with Schedule DP-R. The Company learned that the on-peak period of 1 p.m. to 7 p.m. on "A" days and 10 a.m. to 10 p.m. on other days was too long to achieve load reductions during system peak conditions in the late afternoons during the cooling season, which was from April 16 through October 15.

Table 1

	Weekdays Excluding NERC Holidays		Weekends and NERC Holidays	
Time Period	Summer	Base	Summer	Base
24:00 - 1:00	Super Off	Super Off	Super Off	Super Off
1:00 - 2:00	Super Off	Super Off	Super Off	Super Off
2:00 - 3:00	Super Off	Super Off	Super Off	Super Off
3:00 - 4:00	Super Off	Super Off	Super Off	Super Off
4:00 - 5:00	Super Off	Super Off	Super Off	Super Off
5:00 - 6:00	Off	Off	Off	Off
6:00 - 7:00	Off	On	Off	Off
7:00 - 8:00	Off	On	Off	Off
8:00 - 9:00	Off	On	Off	Off
9:00 - 10:00	Off	Off	Off	Off
10:00 - 11:00	Off	Off	Off	Off
11:00 - 12:00	Off	Off	Off	Off
12:00 - 13:00	Off	Off	Off	Off
13:00 - 14:00	Off	Off	Off	Off
14:00 - 15:00	Off	Off	Off	Off
15:00 - 16:00	On	Off	Off	Off
16:00 - 17:00	On	Off	Off	Off
17:00 - 18:00	On	On	Off	Off
18:00 - 19:00	Off	On	Off	Off
19:00 - 20:00	Off	On	Off	Off
20:00 - 21:00	Off	Off	Off	Off
21:00 - 22:00	Off	Off	Off	Off
22:00 - 23:00	Off	Off	Off	Off
23:00 - 24:00	Off	Off	Off	Off

Q. Were there other guiding principles that the stakeholder process determined are important when designing a time-varying rate?

A. Yes. In addition to the stakeholder recommendations already discussed related to customer participation and the establishment of the seasonal periods and time periods within each season, other important stakeholder recommendations were taken into account in the rate design.

First, key input from the stakeholder process was that in order to achieve behavioral response to the time-of-use pricing, the ratio of on-peak to off-peak and super off-peak charges needs to be 2:1. This was an important objective that the rate design for the

proposed Schedule 1G achieves.

Second, while stakeholders saw the advantage of the 2:1 ratio of on-peak to off-peak and super-off peak charges, there was also concern expressed about the impact of such a design on lower income evening and weekend workers who may be more likely to be home during on-peak hours and less able to modify their consumption. Such impacts, phrased as "penalties" in the Navigant Report, would be in the form of higher bills. Indeed, Navigant notes that stakeholders were "conscious of the impact of penalties" with particular concern for low income customers.

As stated earlier, the rate design achieves the 2:1 ratio over the course of the annual period with a nearly 3:1 ratio in the Summer season and a lower ratio in the Base season. The rate design does not exceed the 2:1 ratio over the course of the annual period, and this helps address the concern about low income customers. However, as stated in the stakeholder report, customer education and information will also be essential to avoid "customer backlash" about this TOU rate design and future TOU rate designs. The direct testimony of Company Witness Jennings addresses customer education and information.

Provided later in this testimony is information regarding the impacts of proposed Schedule 1G on customers who have received fuel assistance. Using customers who have received fuel assistance is an attempt to determine impacts on low income customers. This information is presented in my Schedule 5, page 2.

Q. Can you provide a general description of proposed Schedule 1G rates?

A. Schedule 1G is a two-part rate design consisting of a customer charge and an energy charge. There is no demand charge and there are no blocked energy charges.

Senate Bill 1769 requires that at least one of the time-varying rates be a non-demand schedule. The stakeholder process is bringing such a schedule forward to the Commission for approval in this filing.

Q. Mr. Haynes, please discuss the derivation of the rate components proposed for time-of-use rate Schedule 1G.

A. The stakeholder process guided the development of the proposed Basic Customer Charge in Schedule 1G. The Basic Customer Charge is proposed to be the same as the Residential Schedule 1 Basic Customer Charge of $6.58.

To maintain the revenue neutrality discussed earlier, annualized base distribution revenues from Schedule 1 customers in Virginia were used to develop target base distribution revenues for the TOU rate. With the proposed Basic Customer Charge set at $6.58, the remaining distribution revenue is proposed to be recovered through an energy charge.

Also to maintain revenue neutrality, annualized base generation revenues from Schedule 1 customers in Virginia were used to develop target base generation revenues for the TOU rate. However, to achieve the stakeholder recommendations that I have discussed, it is appropriate to consider and to recognize the effects of riders on TOU price signals. This was discussed and explained during one of the stakeholder meetings. While the Company is not proposing to differentiate the generation riders and fuel cost recovery by season and time period in this proposal, these revenues have been used to help differentiate the base generation TOU rate design. It is important to note that in addition to base generation revenue, generation and fuel rider revenues and the cost recovery that

those represent would be reflective of costs represented by generation market prices, PJM capacity prices, and hourly locational marginal prices that have been used as part of the rate design process for proposed Schedule 1G. "All-in" base generation prices were developed, and the flat per-kWh generation riders and fuel charges were then subtracted from the generation prices to arrive at final base generation prices. These final base generation prices produce revenue that is equal to the revenue produced by the base generation prices that are in the Company's Schedule 1.

My Schedule 2, pages 1 and 2, presents the derivation of the proposed rate components for Schedule 1G. My testimony Schedule 2, page 3, presents the proposed annualized revenue for 2018.

Q. Has the Company prepared a tariff for proposed Schedule 1G?

A. Yes. The tariff is presented in my Schedule 3.

III. SCHEDULE 1G BILL IMPACT ANALYSIS

Q. Would you explain how the proposed Schedule 1G would impact customer bills assuming no change in usage?

A. As shown in my Schedule 4, a typical Schedule 1 customer (1,000 kWh per month) with average on-peak usage (illustrated by Customer A) would save $1.52, or 1.3% per month without changing their behavior. A typical Schedule 1 customer (1,000 kWh per month) with higher on-peak usage (illustrated by Customer B) would spend an additional $1.63, or 1.3% per month without changing their behavior. A typical Schedule 1 customer (1,000 kWh per month) with lower on-peak usage (illustrated by Customer C) would save $4.65, or 3.9% per month without changing their behavior.

Q. Do you have a schedule that presents a comparison of monthly consumption at different usage levels and billing under Schedule 1 and proposed Schedule 1G?

A. Yes. This comparison is presented in my Schedule 5, page 1. Based upon the sample AMI residential customers selected as a basis for rate design, a calculation of the average consumption within ranges of usage has been prepared. For the average consumption within each range, a bill calculation using both Schedule 1 and proposed Schedule 1G has been calculated as well as the resulting average rate. My Schedule 5 shows the average rate for Schedule 1 and proposed Schedule 1G billing and presents a difference in these average rates and a percentage difference within each range. Based upon the sample AMI residential customers, approximately 90% are in the ranges between 0 kWh up to 2,000 kWh per month.

Q. Do you also have a schedule that presents a comparison of consumption at different usage levels and billing under Schedule 1 and proposed Schedule 1G for customers with AMI that have received fuel assistance during 2018?

A. Yes. This comparison is presented in my Schedule 5, page 2. Similar to Schedule 5, page 1, I present ranges of usage and calculate bills and the resulting average rates for both Schedule 1 and proposed Schedule 1G. I show the difference between these average rates and a percentage difference within each range.

Q. If a customer changes its usage pattern based upon the price signals in proposed Schedule 1G, what happens to the customer's bill?

A. Assuming no change in total usage, if a customer shifts usage from the on-peak period to the off-peak period or the super off-peak period, the customer will achieve bill savings. In my Schedule 6, I show a comparison of bill impacts for shifts in usage for an average

on-peak usage customer (Customer A), a higher on-peak usage customer (Customer B), and a lower on-peak usage (Customer C). A comparison is shown against Rate Schedule 1. A separate comparison is shown for Schedule 1G with shifts in usage against Schedule 1G with no shifts in usage.

Q. Mr. Haynes, does this conclude your direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF PAUL B. HAYNES

Paul B. Haynes received a Bachelor of Science degree in Business Administration from the University of Richmond in 1984 and a Master of Business Administration with a Concentration in Quantitative Methods from Virginia Commonwealth University in 1989.

Mr. Haynes started his career with the Company as a meter reader. He went through the Company's Customer Service Representative training program for three-and-a-half years, during which time he designed distribution facilities to serve residential and non-residential customers. In 1990, Mr. Haynes joined the Rate Department to work in the Rate Design section, where he assisted with regulatory filings and the design of rates, and performed analysis related to the Company's Virginia and North Carolina service territories. He has held various staff analyst positions within the Customer Rates Department, formerly the Cost Allocation and Pricing Department. In 2006, Mr. Haynes became Project Manager of Regulatory Research and Analysis, and then became Manager of Regulatory Analysis, Research and Support in 2007. On June 1, 2009, Mr. Haynes became Manager – Regulation with responsibility for cost allocation and cost of service studies, and on January 1, 2013, he assumed his current position as Director – Regulation with responsibility for Cost of Service and Rate Design.

Mr. Haynes has previously provided testimony before the State Corporation Commission of Virginia and the North Carolina Utilities Commission.

Company Exhibit No. 15
Witness: PBH
Schedule 1
Page 1 of 1

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
ANNUALIZED BASE REVENUES
RESIDENTIAL SCHEDULE 1

		BASED ON RATES IN EFFECT 1/1/2018				
		BASE DISTRIBUTION		BASE GENERATION		
	2018 BILLING UNITS	RATE	REVENUE	RATE	REVENUE	TOTAL REVENUE
BASIC CUSTOMER CHARGE	26,456,299	$6.58	$174,082,447			$174,082,447
ENERGY-KWH						
FIRST 800 - SUMMER	6,172,787,501	$0.021086	$130,159,397	$0.035826	$221,146,285	$351,305,682
ADD'L - SUMMER	4,494,753,608	$0.011943	$53,680,842	$0.054500	$244,964,072	$298,644,914
FIRST 800 - BASE	11,355,915,590	$0.021086	$239,450,836	$0.035826	$406,837,032	$646,287,868
ADD'L - BASE	8,144,854,301	$0.011943	$97,273,995	$0.027632	$225,058,614	$322,332,609
TOTAL	30,168,311,000		$694,647,518		$1,098,006,003	$1,792,653,521

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
DERIVATION OF PROPOSED DISTRIBUTION RATES
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

PROPOSED SCHEDULE 1G BASE DISTRIBUTION REVENUE	$694,647,518
PROPOSED SCHEDULE 1G BASIC CUSTOMER CHARGE	$6.58
PROPOSED SCHEDULE 1G BASIC CUSTOMER CHARGE REVENUE	$174,082,447
PROPOSED SCHEDULE 1G BASE DISTRIBUTION REVENUE LESS BASIC CUSTOMER CHARGE REVENUE	$520,565,071
SCHEDULE 1G ENERGY BILLING UNITS	30,168,311,000
PROPOSED SCHEDULE 1G DISTRIBUTION PER KWH CHARGE	$0.017255

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
DERIVATION OF PROPOSED GENERATION RATES
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

	HOURS	PERCENTAGE OF COSTS	TARGET GENERATION REVENUE	DESIGN UNITS	ALL-IN GENERATION PRICE PER KWH	PROPOSED BASE GENERATION PRICE PER KWH
ON-PEAK - SUMMER	321	12.9%	$283,106,116	1,503,483,777	$0.188300	$0.152128
OFF-PEAK - SUMMER	2586	24.4%	$533,410,793	9,682,868,594	$0.055088	$0.018916
SUPER OFF-PEAK - SUMMER	765	3.1%	$67,938,755	1,866,405,988	$0.036401	$0.000229
ON-PEAK - BASE	894	21.1%	$461,945,850	3,454,815,779	$0.133711	$0.097539
OFF-PEAK - BASE	3134	30.4%	$665,551,767	10,655,538,888	$0.062461	$0.026289
SUPER OFF-PEAK - BASE	1060	8.1%	$177,300,866	3,005,197,973	$0.058998	$0.022826
TOTAL		100.00%	$2,189,254,148			

RATES IN EFFECT AS OF SEPTEMBER 1, 2019	
RIDER A	$0.023254
RIDER S	$0.004084
RIDER R	$0.001093
RIDER W	$0.001993
RIDER B	$0.000728
RIDER GV	$0.002289
RIDER US-2	$0.000280
RIDER US-3	$0.000197
RIDER BW	$0.002254

SUM OF GENERATION RIDER AND FUEL CHARGES	$0.036172
RESIDENTIAL SCH 1 KWH	30,168,311,000
RESIDENTIAL SCH 1 GENERATION RIDER AND FUEL REVENUE	$ 1,091,248,145
RESIDENTIAL SCH 1 BASE GENERATION REVENUE FROM TESTIMONY SCH 1	$ 1,098,006,003
RESIDENTIAL SCH 1 TOTAL GENERATION REVENUE	$ 2,189,254,148

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
ANNUALIZED BASE REVENUES
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

		BASE DISTRIBUTION		BASE GENERATION		
	2018 BILLING UNITS	RATE	REVENUE	RATE	REVENUE	TOTAL REVENUE
BASIC CUSTOMER CHARGE	26,456,299	$6.58	$174,082,447			$174,082,447
ENERGY-KWH						
ON-PEAK - SUMMER	1,503,483,777	$0.017255	$25,943,154	$0.152128	$228,722,101	$254,665,255
OFF-PEAK - SUMMER	9,682,868,594	$0.017255	$167,081,385	$0.018916	$183,162,070	$350,243,455
SUPER OFF-PEAK - SUMMER	1,866,405,988	$0.017255	$32,205,507	$0.000229	$427,118	$32,632,625
ON-PEAK - BASE	3,454,815,779	$0.017255	$59,614,090	$0.097539	$336,978,254	$396,592,344
OFF-PEAK - BASE	10,655,538,888	$0.017255	$183,865,161	$0.026289	$280,119,615	$463,984,775
SUPER OFF-PEAK - BASE	3,005,197,973	$0.017255	$51,855,773	$0.022826	$68,596,845	$120,452,619
TOTAL	30,168,311,000		$694,647,518		$1,098,006,003	$1,792,653,521

Company Exhibit No. 11
Witness: PBH
Schedule 2
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Schedule 1G

RESIDENTIAL SERVICE
(EXPERIMENTAL)

I. APPLICABILITY AND AVAILABILITY

This schedule is applicable only to Customers electing to receive separately metered and billed Electricity Supply Service and Electric Delivery Service from the Company for use in and about (a) a single-family residence, flat or apartment, (b) a combination farm and one occupied single-family residence, flat or apartment, or (c) a private residence used as a boarding and/or rooming house with no more than one cooking installation nor more than ten bedrooms, or (d) separately metered service to detached accessory buildings appurtenant to residential dwellings unless such buildings use electricity for commercial or industrial purposes.

A combination residence and farm, having more than one single-family residence, flat or apartment served electricity through a single meter, that was being billed under Schedule 1 prior to April 1, 1971, may be supplied electricity under this schedule provided each such dwelling unit is occupied by the owner or by a tenant working on the farm. Such multiple-residence farms connected on and after April 1, 1971, shall not be served under this schedule.

This schedule is not applicable for (a) individual motors rated over 15 HP, and (b) commercial use as in hotels, public inns, motels, auto courts, tourist courts, tourist camps, or trailer camps.

This schedule is not available to Customers electing to participate (either directly or indirectly through a third-party curtailment service provider) in any PJM Interconnection, LLC ("PJM") Demand Response Program or any Company-sponsored peak-shaving demand response program.

This schedule is not available to Customers that receive service in accordance with Paragraph XXV – NET METERING of the Company's TERMS AND CONDITIONS where the alternating current capacity of the Renewable Fuel Generator exceeds 10 kW.

This schedule is available only where the Company has installed and deployed Advanced Metering Infrastructure (AMI).

Subject to a limitation of 10,000 accounts, this schedule is available to Customers on a voluntary basis through and including December 31, 2024. A Customer who discontinues service under this schedule after less than one year of service may not be served under this schedule for the Customer's account at the same premise within one year of such discontinuation of service.

(Continued)

Schedule 1T
RESIDENTIAL SERVICE
(EXPERIMENTAL)

(Continued)

II. MONTHLY RATE

A. Distribution Service Charges

1. Basic Customer Charge
Basic Customer Charge $6.58 per billing month.

2. Plus Distribution kWh Charge

a. All On-Peak kWh	@	1.7255¢ per kWh
b. All Off-Peak kWh	@	1.7255¢ per kWh
c. All Super Off-Peak kWh	@	1.7255¢ per kWh

3. Plus each Distribution kilowatt-hour used is subject to all applicable riders, included in the Exhibit of Applicable Riders.

B. Electricity Supply (ES) Service Charges

1. Generation kWh Charge

a. For the billing months of June through September

All On-Peak ES kWh	@	15.2128¢ per kWh
All Off-Peak ES kWh	@	1.8916¢ per kWh
All Super Off-Peak ES kW	@	0.0229¢ per kWh

b. For the billing months of October through May

All On-Peak ES kWh	@	9.7539¢ per kWh
All Off-Peak ES kWh	@	2.6289¢ per kWh
All Super Off-Peak ES kW	@	2.2826¢ per kWh

2. Plus Transmission kWh Charge

All kWh	@	0.970¢ per kWh

C. Plus each Electricity Supply kilowatt-hour used is subject to all applicable riders, included in the Exhibit of Applicable Riders.

D. The minimum charge shall be the Basic Customer Charge in Paragraph II.A.1., above.

(Continued)

Schedule 1G

RESIDENTIAL SERVICE
(EXPERIMENTAL)

III. DETERMINATION OF ON-PEAK, OFF-PEAK, AND SUPER OFF-PEAK HOURS

A. On-Peak Hours (Except certain holidays)

1. For the period of May 1 through September 30, On-Peak hours are: 3 p.m. to 6 p.m., Mondays through Fridays.

2. For the period of October 1 through April 30, On-Peak hours are: 6 a.m. to 9 a.m. and 5 p.m. to 8 p.m., Mondays through Fridays.

B. Off-Peak and Super Off- Peak Hours

1. For the period of May 1 through September 30, Off-Peak hours are 5 a.m. to 3 p.m. and 6 p.m. to 12 a.m., Mondays through Fridays.

2. For the period of October 1 through April 30, Off-Peak hours are 5 a.m. to 6 a.m.; 9 a.m. to 5 p.m.; and, 8 p.m. to 12 a.m., Mondays through Fridays.

3. Off-Peak hours are 5 a.m. to 12 a.m. on weekends and holidays, as identified in Section III.B.5.

4. Super Off-Peak hours are 12 a.m. to 5 a.m.

5. The following holidays are observed as Off-Peak and Super Off-Peak: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas.

IV. METER READING AND BILLING

A. Meters may be read in units of 10 kilowatt-hours and bills rendered accordingly.

B. The Company may render an interim monthly bill based on estimated kWh usage during periods for which the meter was not read.

C. When bills are calculated for a bimonthly period, the Basic Customer Charge shall be multiplied by two; and the minimum charge shall be the modified Basic Customer Charge.

V. TERM OF CONTRACT

Open order.

Company Exhibit No. 9
Witness: PBH
Schedule 4
Page 1 of 1

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
TYPICAL BILL IMPACT ASSUMING NO CHANGE IN USAGE
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

CUSTOMER A & B - SCHEDULE 1

	FIRST 800 KWH	ADDITIONAL KWH
SUMMER	800	200
BASE	800	200

CUSTOMER A - SCHEDULE 1G

	ON-PEAK KWH	OFF-PEAK KWH	SUPER OFF-PEAK KWH
SUMMER	115	745	140
BASE	200	625	175

CUSTOMER B - SCHEDULE 1G

	ON-PEAK KWH	OFF-PEAK KWH	SUPER OFF-PEAK KWH
SUMMER	150	730	120
BASE	225	600	175

CUSTOMER C - SCHEDULE 1G

	ON-PEAK KWH	OFF-PEAK KWH	SUPER OFF-PEAK KWH
SUMMER	80	760	160
BASE	175	650	175

	SCHEDULE 1	CUSTOMER A PROPOSED SCH. 1G	CUSTOMER B PROPOSED SCH. 1G	CUSTOMER C PROPOSED SCH. 1G
REVENUES - SUMMER				
BASIC CUSTOMER CHARGE	$6.58	$6.58	$6.58	$6.58
DISTRIBUTION	$19.26	$17.26	$17.26	$17.26
GENERATION	$39.56	$31.61	$36.66	$26.59
ALL RIDERS	$58.86	$58.86	$58.86	$58.86
TOTAL BILL - SUMMER	$124.26	$114.31	$119.36	$109.29
REVENUES - BASE				
BASIC CUSTOMER CHARGE	$6.58	$6.58	$6.58	$6.58
DISTRIBUTION	$19.26	$17.26	$17.26	$17.26
GENERATION	$34.19	$39.93	$41.71	$38.15
ALL RIDERS	$58.86	$58.86	$58.86	$58.86
TOTAL BILL - BASE	$118.89	$122.63	$124.41	$120.85
WEIGHTED ANNUAL BILL	$1,448.20	$1,430.00	$1,467.71	$1,392.44
WEIGHTED MONTHLY BILL	$120.68	$119.17	$122.31	$116.04
CHANGE IN MONTHLY BILL		-$1.52	$1.63	-$4.65
% CHANGE IN MONTHLY BILL		-1.3%	1.3%	-3.9%

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
TYPICAL BILL IMPACT AT SEVERAL LEVELS OF CONSUMPTION
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

RANGE OF MONTHLY USAGE	AVERAGE RATE - SCH 1	AVERAGE RATE - SCH 1G	DIFFERENCE	% DIFFERENCE
0-500 kWh	$0.137160	$0.133014	-$0.004147	-3.0%
500-1000 kWh	$0.124799	$0.121591	-$0.003208	-2.6%
1000-1500 kWh	$0.119078	$0.118395	-$0.000683	-0.6%
1500-2000 kWh	$0.116336	$0.116824	$0.000488	0.4%
2000-2500 kWh	$0.114821	$0.115816	$0.000994	0.9%
2500-3000 kWh	$0.113857	$0.115085	$0.001227	1.1%
3000-3500 kWh	$0.113196	$0.114536	$0.001340	1.2%
3500-4000 kWh	$0.112711	$0.114060	$0.001349	1.2%
4000-4500 kWh	$0.112344	$0.113766	$0.001421	1.3%
4500-5000 kWh	$0.112054	$0.113485	$0.001431	1.3%
5000-6000 kWh	$0.111740	$0.113152	$0.001412	1.3%
6000-7000 kWh	$0.111410	$0.112834	$0.001424	1.3%
7000-8000 kWh	$0.111171	$0.112542	$0.001371	1.2%
8000-9000 kWh	$0.110981	$0.112352	$0.001371	1.2%
9000-10000 kWh	$0.110844	$0.112266	$0.001421	1.3%
>10000 kWh	$0.110424	$0.111635	$0.001212	1.1%

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
TYPICAL BILL IMPACT AT SEVERAL LEVELS OF CONSUMPTION
FUEL ASSISTANCE CUSTOMERS
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

RANGE OF MONTHLY USAGE	AVERAGE RATE - SCH 1	AVERAGE RATE - SCH 1G	DIFFERENCE	% DIFFERENCE
0-500 kWh	$0.136768	$0.133219	-$0.003549	-2.6%
500-1000 kWh	$0.125816	$0.122371	-$0.003446	-2.7%
1000-1500 kWh	$0.121525	$0.118613	-$0.002911	-2.4%
1500-2000 kWh	$0.117577	$0.116549	-$0.001028	-0.9%
2000-2500 kWh	$0.115696	$0.115327	-$0.000369	-0.3%
2500-3000 kWh	$0.114572	$0.114490	-$0.000082	-0.1%
3000-3500 kWh	$0.113641	$0.113499	-$0.000142	-0.1%
3500-4000 kWh	$0.113097	$0.112947	-$0.000151	-0.1%
4000-4500 kWh	$0.112640	$0.111830	-$0.000810	-0.7%

VIRGINIA ELECTRIC AND POWER COMPANY
TIME-OF-USE RATE DESIGN
TYPICAL BILL IMPACT ASSUMING CHANGE IN USAGE PATTERN
PROPOSED TIME-OF-USE RATE SCHEDULE 1G

CHANGE IN CUSTOMER BILLS COMPARED TO SCHEDULE 1

	PERCENTAGE SHIFT IN USAGE FROM ON-PEAK TO OFF-PEAK					
	0% SHIFT	6% SHIFT	10% SHIFT	15% SHIFT	20% SHIFT	30% SHIFT
CUSTOMER A	-$1.52	-$2.40	-$2.95	-$3.71	-$4.45	-$5.89
CUSTOMER B	$1.63	$0.59	-$0.12	-$1.01	-$1.90	-$3.66
CUSTOMER C	-$4.65	-$5.35	-$5.80	-$6.40	-$6.99	-$8.14

CHANGE IN CUSTOMER BILLS COMPARED TO SCHEDULE 1G WITH 0% SHIFT IN USAGE

	PERCENTAGE SHIFT IN USAGE FROM ON-PEAK TO OFF-PEAK				
	6% SHIFT	10% SHIFT	15% SHIFT	20% SHIFT	30% SHIFT
CUSTOMER A	-$0.88	-$1.44	-$2.19	-$2.93	-$4.37
CUSTOMER B	-$1.04	-$1.75	-$2.64	-$3.53	-$5.29
CUSTOMER C	-$0.70	-$1.16	-$1.76	-$2.34	-$3.50

WITNESS DIRECT TESTIMONY SUMMARY

Witness: Heather M. Jennings

Title: Manager, Customer Information Platform

Summary:

Company Witness Heather M. Jennings testifies in support of the Company's proposal for a new experimental residential time-of-use ("TOU") rate schedule, designated Schedule 1G. Ms. Jennings specifically provides information on the Company's proposal to manage Schedule 1G and the purpose behind the limitation of customers able to enroll on Rate Schedule 1G. Company Witness Jennings explains that management of Schedule 1G includes customer engagement and education, development and maintenance of the tools leveraged for engagement and education, and an evaluation of customer's responses to Schedule 1G.

Ms. Jennings discusses how education and engagement will occur throughout the lifecycle of managing Schedule 1G with initial education to encourage customer engagement, tools to easily enroll in Schedule 1G, and continued education on how customers can manage their bill. Finally, Ms. Jennings explains how the Company will engage with a third-party to evaluate operational results of Schedule 1G. The evaluation will include program management evaluation, a bill impact analysis, and a load impact analysis.

DIRECT TESTIMONY
OF
HEATHER M. JENNINGS
ON BEHALF OF
VIRGINIA ELECTRIC AND POWER COMPANY
BEFORE THE
STATE CORPORATION COMMISSION OF VIRGINIA
CASE NO. PUR-2019-00214

Q. Please state your name, position of employment with Virginia Electric and Power Company ("Dominion Energy Virginia" or "the Company"), and business address.

A. My name is Heather M. Jennings and I am Manager, Customer Information Platform for the Company. My business address is 600 East Canal Street, Richmond, Virginia 23219. A statement of my background and qualifications is attached as Appendix A.

Q. Please explain the purpose of your testimony in this case.

A. I am testifying in support of the Company's application for approval of a new experimental residential time-varying rate schedule, designated Schedule 1G. Specifically, my testimony provides information on the Company's proposal to manage Schedule 1G. Management of Schedule 1G includes customer research, education, and engagement; development and maintenance of the tools leveraged for engagement and education; and an evaluation of customer's responses to Schedule 1G.

Q. Will you be introducing any exhibits with your testimony?

A. Yes. Company Exhibit No. __, HMJ, consisting of Schedule 1, was prepared under my supervision and direction and is accurate and complete to the best of my knowledge and belief.

Q. What is the goal for the management of Schedule 1G?

A. The goals for management of Schedule 1G can be summarized as follows: (1) to provide customers a positive customer experience and an opportunity to reduce consumption and save on their electric bills; (2) to efficiently manage customer engagement, while balancing customer value and prudent expenditures; and (3) to introduce modern customer engagement techniques and incorporate lessons learned.

Q. Please explain how the management of time-varying rates is related to the Company's application for approval of a plan for electric grid transformation projects currently pending before the State Corporation Commission ("Commission") in Case No. PUR-2019-00154 ("2019 GT Plan").

A. The 2019 GT Plan proposes foundational technology and infrastructure that is required to manage time-varying rates in a more broad and efficient manner. The technology includes the deployment of advanced metering infrastructure ("AMI") and a transition to a new Customer Information Platform ("CIP").

Company Witness Paul B. Haynes provides details on the dependence of AMI for time-varying rates. In addition to AMI, the CIP is required to efficiently and broadly offer time-varying rates. Specifically, the CIP would allow the Company to efficiently bill time-varying rates. The CIP also enables the Company to efficiently offer a wide range of engagement tools including personalized rate comparisons, ways to show how behavior changes will influence bills, alert options, and notification options. Additional details on how the CIP supports time-varying rates is described within the 2019 GT Plan through the direct testimony of Company Witness Thomas J. Arruda.

The Company's 2019 GT Plan filing also includes a Customer Education Plan. The Customer Education Plan outlines an approach that includes leveraging feedback from customer and stakeholders, reviewing results from prior project experience and industry best practices, establishing objectives for educating customers, developing timelines for communications, creating and distributing education materials, and incorporating lessons learned. This same approach will be used for the customer education and engagement for new time-varying rates, including Schedule 1G. In addition, the Customer Education Plan outlines multi-channel education initiatives, including foundational energy education and smart meter detailed energy usage data education. The education initiatives included in the Customer Education Plan will be instrumental in providing foundational knowledge to customers as they evaluate options, such as enrolling in Schedule 1G.

Q. Can Schedule 1G be available to customers prior to implementation of the CIP projects outlined in the 2019 GT Plan?

A. Yes, but only on a limited basis. Given that the core components of the CIP will not be in place until 2023, assuming Commission approval, Schedule 1G will need to primarily utilize existing systems. Billing time-varying rates within the existing systems requires manual processes and certain system workarounds that are inefficient. As a result, the Company cannot accommodate a large population enrolling in Schedule 1G and, upon Commission approval, will need to manage marketing of the new Schedule 1G in order to control the inflow of enrollments. Similarly, offering personalized rate comparisons within the existing systems requires custom development. Therefore, the personalized rate comparison will initially be limited in scope and functionality.

Accordingly, and as discussed by Company Witness Haynes, the Company has proposed that Schedule 1G be available to customers through at least December 31, 2024, with a limit of 10,000 participants. The proposed participation level exceeds the target enrollment referenced in the Navigant Report, included as Attachment 1 to the Application. The targeted enrollment level of 5,000 referenced in the Navigant Report should provide a population large enough to gauge customer behavior under the new tariff. By increasing the limit to 10,000 participants, additional customers can enroll in Schedule 1G.

Q. Are there additional 2019 GT Plan elements that would be used for management of Schedule 1G?

A. In addition to the CIP and the Customer Education Plan discussed above, management of Schedule 1G will leverage the AMI deployment and Notification Preferences elements of the 2019 GT Plan.

As Company Witness Haynes indicates, only customers with AMI installed will be eligible to enroll in Schedule 1G. The interval data gathered from AMI meters enables the Company to bill on the time-varying rate, and to evaluate the data for load and bill impacts. Notification Preferences, which is a subcomponent of CIP, will allow customers to choose their preferred means of communication to receive alerts and information for Schedule 1G.

Q. What functionality will be developed to support the management of Schedule 1G during the time period before the 2019 GT Plan elements are available?

A. Within the 2019 GT Plan, Company Witness Arruda's testimony, on page 27 at Table 4,

describes the interim capabilities that the Company will provide with Schedule 1G. The Company will provide the following capabilities: (1) an analysis—comparing a customer's bill under their current rate and the new time-varying rate—for customers interested and/or enrolled in Schedule 1G; (2) online enrollment; and (3) ongoing education through notifications in the interim period before new technologies and CIP functionalities are available.

Table 1 is a summary of interim capabilities supporting Schedule 1G.

Table 1. Interim Capabilities for Schedule 1G

New, Experimental Time-Varying Rate Schedule 1G
Education & Enrollment
Digital education; including welcome package information
Rate comparison information
Rate and notification enrollment on Manage Accounts
Ongoing Education
Program notifications sent for ongoing education

A key element in education is the rate comparison. The comparison will provide customers a summary of their bill history and provide an estimate of what their bills would have been if they had taken service under Schedule 1G. This analysis will be designed for customers to access online and will utilize the customers own interval data, providing convenient and personalized information. This information, coupled with energy education and some programmatic education, should provide customers the ability to assess whether Schedule 1G is appealing, financially or otherwise, to them.

Q. Please further describe the educational approach that will be utilized for Schedule 1G.

A. The approach described in the Customer Education Plan of the 2019 GT Plan addresses elements including: (1) establishing objectives for educating customers; (2) conducting research and leveraging feedback; (3) reviewing results from prior project experience and industry best practices, and incorporating lessons learned; (4) developing timelines for communications; and (5) creating and distributing education materials. A summary of how the Company will manage Schedule 1G by element is described below. The Company will incorporate additional details as a part of an outreach and communications plan, which will be developed late 2020. The plan will be iterative in that it will be updated to reflect changes in populations of eligible customers, changing functionality, program management lessons learned, and customer feedback.

Establishing Objectives for Educating Customers

The goal for Schedule 1G customer education is to encourage customers to self-educate with accessible tools and personalized information, to participate if they choose and empower those decisions, and to allow customers to monitor personal results.

Conducting Research and Leveraging Feedback

The Company participated in a stakeholder process as summarized in the Navigant Report. As discussed therein, the Company and stakeholders gained alignment on several aspects of program management, including the importance of customer outreach and education activities. The Company will continue to engage with stakeholders regarding education and outreach related to Schedule 1G. The Company will also work with

stakeholders to engage with community organizations in order to assess communication needs and opportunities.

In addition, once customers are enrolled, the Company will obtain feedback from participating customers and community organizations, and adjust program management accordingly.

Reviewing Results and Incorporating Lessons Learned

The Company has incorporated lessons learned from the management of prior time-varying rates for residential customers, including those associated with dynamic pricing and electric vehicles. These pilot programs provide the Company with some insights into customers' behavior, preferences, and levels of engagement. This is further detailed later in my testimony.

Developing Timelines for Communications

The Company anticipates marketing Schedule 1G starting January 2021. With this timeline, the Company will develop an initial outreach and communications plan late 2020.

Creating and Distributing Education Materials

The goal of the educational material will be to provide concise, consistent, and easy-to-understand content. The Company intends to continue to work with stakeholders to solicit input on collateral developed to educate customers on Schedule 1G. For illustrative purposes, the Company developed a sample illustration of the time frames and price categories for Schedule 1G, which is included as my Schedule 1. Graphics like those found in my Schedule 1 would be part of a comprehensive campaign. A campaign

would also include information such as Schedule 1G pricing, energy saving tips, and how to access online personalized rate comparison. The campaign material will be further refined and evaluated with customer research initiatives and stakeholder input.

Q. Please provide additional details on planned outreach for Schedule 1G.

A. The Company will take a measured approach to outreach and marketing due to the limited nature of Schedule 1G. The Company will initially conduct research to assess needs and opportunities in order to develop specific communication plans to reach a diverse audience. This research will include coordinating with stakeholders to reach community organizations, and discussing with the organizations how the Company can effectively engage with customers about Schedule 1G.

Initial research findings will influence the messaging and channels for initial education. Initial education initiatives will provide accessible information to eligible customers regarding potential savings, the enrollment process, and how to manage usage to optimize savings. After enrollment, ongoing messaging to participants will be developed to bring about continued behavioral changes.

For initial outreach, the Company will consider existing channels, such as those shown in Table 2.

Table 2. Customer Communication Channels

Channel	Description	Audience
Website	Program Information – pages TBD	DE.com visitors
Email	Email with Program info/ Link to Website	Targeted eligible customers
Brochure	Program Information	Targeted eligible customers; Stakeholder organizations
DomNet	Internal article for employees	Dominion Energy employees
Knowledge Management	Announcement on Notification Preferences	Customer service representatives
Training	Program information and training	Customer service representatives

In addition, the Company will leverage existing community outreach initiatives. Specifically, the Company will educate and provide materials to the Company's representatives conducting weatherization. Weatherization is currently being conducted by a network of trained specialists who perform detailed diagnostic audits and energy efficiency upgrades to customers (based on income, age, and disability status). The Company will provide information and training to the network. Similarly, the Company's Energy Assistance and Community Outreach representatives will be provided the educational material on Schedule 1G. The Energy Assistance and Community Outreach representatives' primary focus is to raise public awareness about available bill payment assistance programs, along with educating customers about how to make wise energy decisions. Information about Schedule 1G and the ability for customers to

potentially save money will be an additional aspect of this groups' ability to provide one-on-one energy conservation and weatherization demonstrations, help customers understand their energy usage, and help customers understand ways to save.

Once customers are enrolled in the rate, outreach and education will continue. Ongoing education and outreach messages will include those shown in Table 3.

Table 3. Ongoing Customer Communications

Topic	Frequency
Initial program information	Notification upon enrollment; Online in perpetuity
Seasonal price changes	Two times per year; aligned with pricing structure
Annual program analysis	Once per year
General rate education	At least two per year

The Company will analyze and refine the outreach process as needed over time. Further details on outreach will be included in the communication and outreach plan, which will be initially developed late 2020, as mentioned above.

Q. How will the Company evaluate Schedule 1G?

A. The Company will engage with a third-party to evaluate operational results of Schedule 1G. The evaluation will include program management evaluation, a bill impact analysis, and a load impact analysis.

The evaluation of program management will include metrics associated with participation, including enrollment rates, unenrollment rates, and communication preferences. The program management evaluation will also include surveying customers

on satisfaction and behavior and gathering feedback from community organizations. Pursuant to stakeholder input, in an initial survey, customers will be given the option to provide demographic information. Demographics will include age, income range, owner or renter status, and housing type (such as single or multi-family housing). The demographics will be used for program reporting.

The third-party evaluator for the bill impact analysis, which will evaluate whether the participant group saved money on Schedule 1G, will use the usage data from participants. Similarly, the third-party evaluator will evaluate load impacts. The Company will provide an annual report providing evaluation findings and results.

For planning purposes, the Company has estimated monthly target enrollments and subsequent reports as a result of the anticipated analysis. The Company will then provide reports of the data at the end of each year, with the first report provided at the end of 2021. The content of the reports will depend on the data available as of the prior July 31. Table 4 outlines the reports and the anticipated analysis.

Table 4: Target Participant Levels and Reporting

Date	Target Cumulative Participants	Target Cumulative Participants with 12-months data	Reports provided End of Year (Data for analysis included through July prior to the report)
12/31/2021	3,300	0	Report 1: Report focused on program management (enrollment rates, outreach, material, and customer surveys). No bill impact or load impact analysis (no customers with 12-months of data)
7/31/2022	5,225	1,925	
12/31/2022	6,600	3,300	Report 2: Report includes program management. Include limited bill impact and load impact analysis (only 1925 customers with 12-months of data, which will not be statistically valid)
7/31/2023	8,525	5,225	
12/31/2023	9,900	6,600	Report 3: Report includes update on program management, bill impact analysis, and a load impact analysis. Analysis will reflect approximately 5225 customers.
12/31/2024	10,000		

Q. Certain stakeholders expressed particular interest in outreach to the Company's low income customers for any proposed time-varying rate. Please summarize the Company's proposed approach for Schedule 1G.

A. It is the Company's hope that low income customers will view Schedule 1G as an opportunity for real and meaningful bill savings; or, in cases where a low income customer may not be likely to see savings, communication and education is such that the customer can make the appropriate decision regarding participation.

As mentioned above, the Company will leverage existing programs that reach low income communities, including the Weatherization efforts and Energy Assistance and Community Outreach. The Company will also continue to engage with a small group of interested stakeholders as the Company develops the educational materials for this program.

Additionally, the Company intends to offer Schedule 1G as an opt-in rate where customers will have the ability to unenroll at any time if they are to find the time-varying rate is not appropriate for their circumstances. This is discussed further in the direct testimony of Company Witness Haynes.

Finally, the customer survey and self-identifying demographic information collected therein should be valuable in tracking the impact of Schedule 1G within the low income community.

Q. Please further describe how the Company will continue to engage with stakeholders.

A. As indicated in the Navigant Report, additional working groups will convene in 2020. This includes a working group beginning in mid-2020 to discuss customer outreach and education plans to support Schedule 1G enrollment and the evaluation metrics to support pilot efficacy.

Q. What lessons learned will be addressed in the program management of Rate Schedule 1G?

A. As mentioned, the Company's most recent experiences with managing time-varying rates for residential customers come from the Company's dynamic pricing pilot and the electric vehicle pilot. Each of these pilots included customer feedback and surveys,

which were reported in their respective cases. While there was much learned through these pilots, I will highlight a few influencing lessons and how the Company has incorporated the lessons into the plans to manage Schedule 1G.

First, the Company observed that customers have better satisfaction and understanding of the rate after several rounds of education. In both pilots, customers gained satisfaction and comprehension of rates throughout the program. As a result, within Schedule 1G, the Company plans to offer more continuing education opportunities and to more frequently reach out to customers with education information.

Next, in surveying customers that were dissatisfied with the dynamic rate pilot customers, several customers cited that there was limited access to past data and there was not enough information on how to reduce usage. With Schedule 1G, the Company will provide a personalized rate comparison. In addition, the Company plans to leverage new technology to engage with customers more frequently and more efficiently.

Finally, the Company has seen that customers are unlikely to proactively seek out information to manage their bills. In order to encourage customer engagement, the management of Schedule 1G will include ongoing proactive communications with customers.

Q. What is the Company proposing as the start date for the rate management?

A. As noted by Company Witness Haynes, should the Commission approve Schedule 1G, the Company proposes to begin the offering Schedule 1G on and after January 1, 2021. This timeframe allows for time to finalize outreach and technology processes required to manage the rate prior to offering the rate to customers.

Q. Ms. Jennings, does this conclude your direct testimony?

A. Yes, it does.

BACKGROUND AND QUALIFICATIONS OF HEATHER M. JENNINGS

Heather M. Jennings is Manager of Customer Information Platform for Dominion Energy Virginia. She manages the planning and implementation of a new Customer Information Platform, replacing all customer facing applications and the related internal applications.

Prior to joining the Company, she worked as an environmental and engineering consultant for what is now AECOM in Northern Virginia. Ms. Jennings joined the Company in 2003 as an engineer in Environmental Services and has held various roles in finance, energy conservation, new technology, and customer service. Ms. Jennings was promoted to Manager–Metering Solutions in 2011, and held several leadership roles managing metering strategies, technology, and systems. Prior to her current role, she managed the Richmond-based customer contact center as Manager, Customer Account Management. She assumed her current post in March 2019.

She earned a Bachelor's degree in Environmental Engineering from Syracuse University and an MBA from Virginia Commonwealth University.

Ms. Jennings has not previously provided testimony before the State Corporation Commission of Virginia.

Company Exhibit No. ___
Witness: HMJ
Schedule 1
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Schedule 1. Illustrative Rate Graphic