

December 31, 2019

The Honorable Governor Ralph Northam
Commonwealth of Virginia
P.O. Box 1475
Richmond, VA 23218

*Virginia Electric and Power Company's
Report on Stakeholder Group and Programs related to Time-Varying Rates,
In accordance with 2019 Virginia Acts of Assembly, Chapter 763*

Dear Governor Northam:

In accordance with Enactment Clause 2 of Chapter 763 of the 2019 Virginia Acts of Assembly (effective July 1, 2019), Virginia Electric and Power Company d/b/a Dominion Energy Virginia ("Dominion" or "the Company") submits this status report on the work of the stakeholder group convened pursuant to this Chapter and programs developed in conjunction with such stakeholder group ("Status Report").

Specifically, Chapter 763 of the 2019 Virginia Acts of Assembly directs, among other things:

That no later than 60 days after the effective date of this act each Phase II Utility, as such term is defined in subdivision A 1 of § 56-585.1 of the Code of Virginia, shall convene a stakeholder process to make recommendations to the utility concerning (i) 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; (ii) 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; (iii) the possible transition of net metering customers using advanced metering technology to the time-varying rate schedules; (iv) peak shaving programs; (v) the provision of on-site distributed renewable generation to multifamily dwellings; and (vi) related system effects and requirements arising from distributed generation resources. 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, shall facilitate such stakeholder process. The utility shall consult with the stakeholder group and the State Corporation Commission prior to engaging the independent facilitator. Such stakeholder process shall 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. The utility shall report on the

status of the work of the stakeholder group and the programs developed in conjunction with such stakeholder group, including the petitions filed and the determination thereon, 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.

In accordance with these requirements, Dominion engaged Navigant Consulting, Inc. (“Navigant”), after consultation with the stakeholder group and the State Corporation Commission, to facilitate the stakeholder process. The stakeholder group met five times between May and October 2019, to discuss time-varying 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.

In November 2019, Navigant submitted a report to Dominion entitled, 2019 DEV Workshop Series: Time-of-Use Rate Design Recommendations (“2019 Navigant Report”). The 2019 Navigant Report is included with this Status Report as Attachment 1. The 2019 Navigant Report provides details regarding rate design considerations, outcomes of the stakeholder process to this point, and recommendations.

In addition, Dominion filed with the State Corporation Commission on December 12, 2019 an Application for Approval to Establish an Experimental Residential Rate, designated Time-of-Use Rate Schedule 1G (Experimental), which was docketed as Case No. PUR-2019-00214 and is currently pending.

Beyond these initial developments, Dominion remains committed to the continuing work of the stakeholder group and future regulatory filings. As noted in the Navigant Report at Appendix C, several items remain for discussion, including: the development of incentive programs for the installation of equipment to develop electric energy from sunlight for customers using advanced metering technology served under time-varying rate schedules; the possible transition of net metering customers to time-varying rate schedules; peak shaving programs; the provision of on-site distributed renewable generation to multifamily dwellings; and related system effects and requirements arising from distributed generation resources. The Company will conduct additional stakeholder meetings in early 2020 that will focus on the remaining items.

Thank you for the opportunity to provide this information. If you or your staff members have any questions, please contact me.

Sincerely,

Nate Frost
Director - New Technology & Energy Conservation
Dominion Energy Virginia



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

Prepared for:

Dominion Energy Virginia



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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

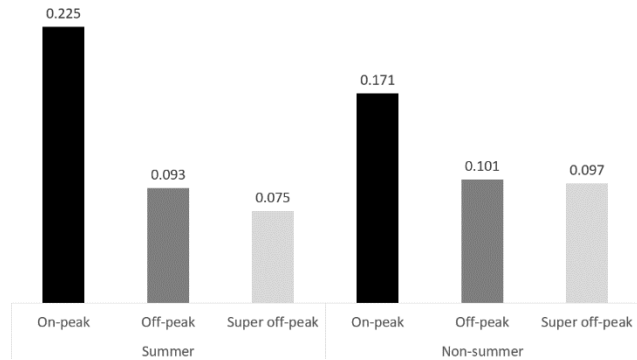
Navigant then worked with DEV to design a proposed pilot TOU rate as shown in Figure ES-1 that incorporated the above recommended design principles and presented this to stakeholders. Navigant believes this recommended rate meets many of the stakeholders’ expressed goals and provides a basis to assess 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 (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



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 ratio and revenue neutrality. Table ES-1 provides a side-by-side view of Navigant’s recommended design and the final pilot design compromise.

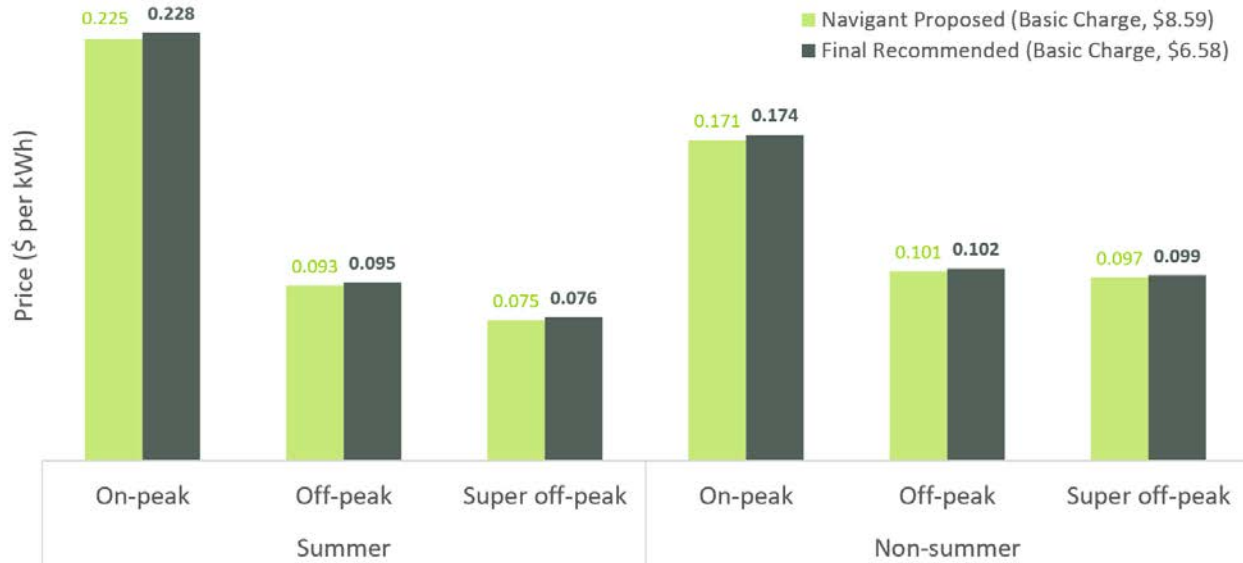
Table ES-2. Stakeholder-Informed TOU Rate Design

	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 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 Rates¹

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

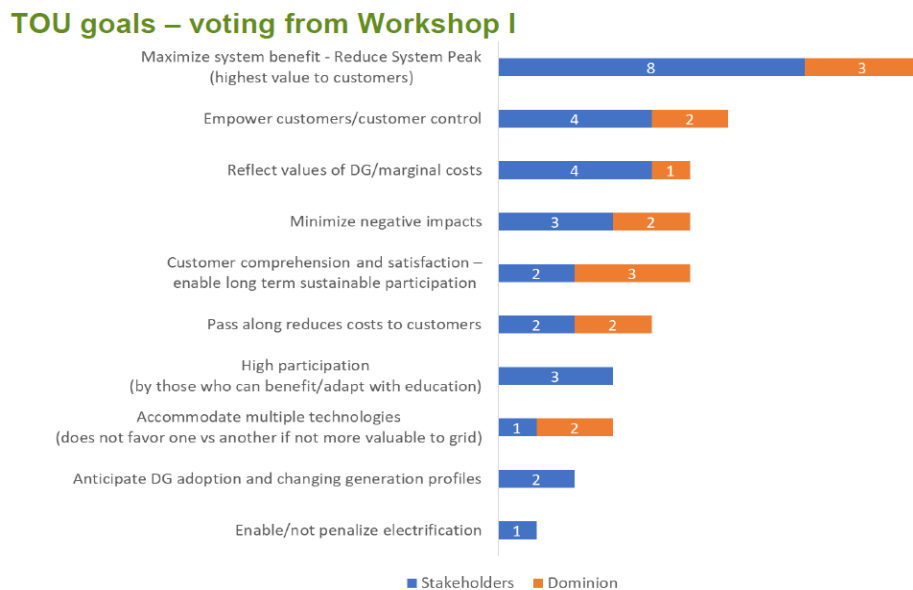
To initiate the stakeholder process, DEV invited a cross-section of state agencies, advocacy groups, and their own DEV rate design subject matter experts to participate in a series of workshops designed to solicit broader input on TOU rate design goals, pilot design elements and key learning objectives 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

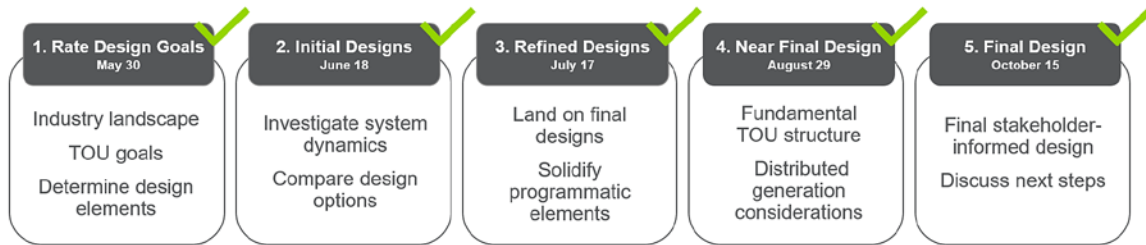


Navigant translated stakeholder input into the following three objectives:

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).

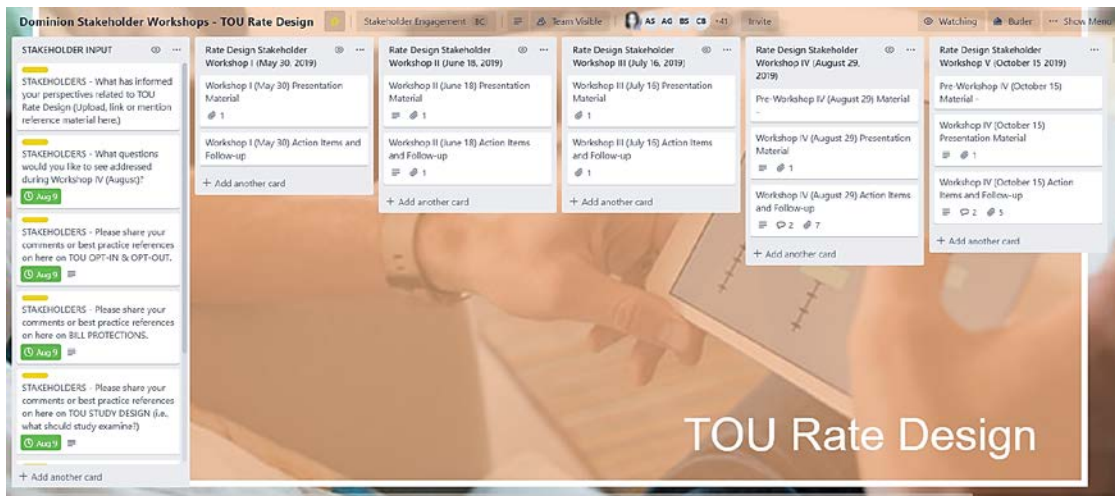
In addition to drawing out common stakeholder goals, the workshop series supported robust stakeholder discussions on the design options possible for a pilot TOU rate given the load and usage characteristics of the DEV electric system. Navigant also outlined fundamental TOU rate structures and design 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 addition 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.

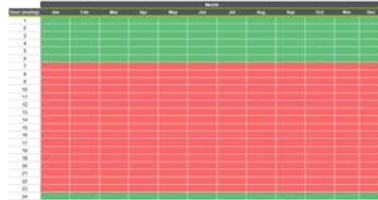
Another concern was the unfavorable impact of a seasonal peak period on different types of communities. For example, one stakeholder asked the group to consider the implications of a summer-only peak on those Virginia communities with tourism-dependent economies.

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

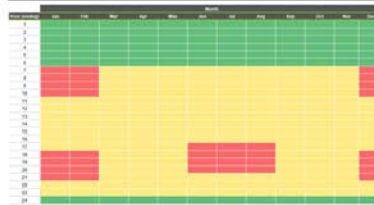
Two-period, year round

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	8.9
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

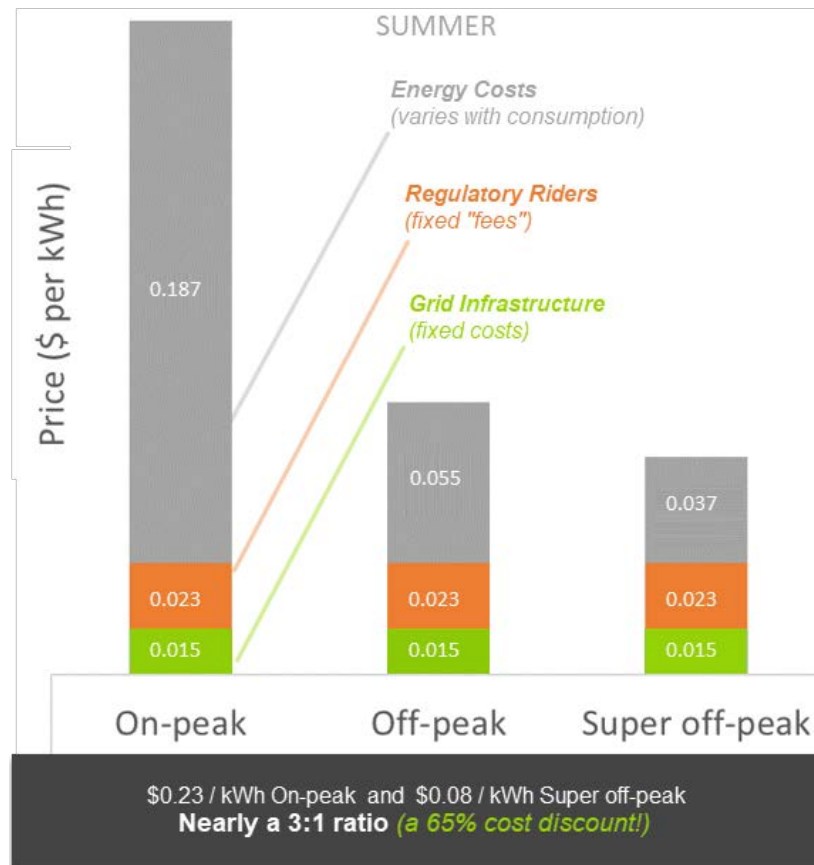
The stakeholder group also shared input on a target on-peak/off-peak energy price ratio, which represents spread between the on-peak rate is a premium over the off-peak. This spread drives customer behavior and potential savings (or penalties). Stakeholders saw advantages to a larger on-peak/off-peak 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



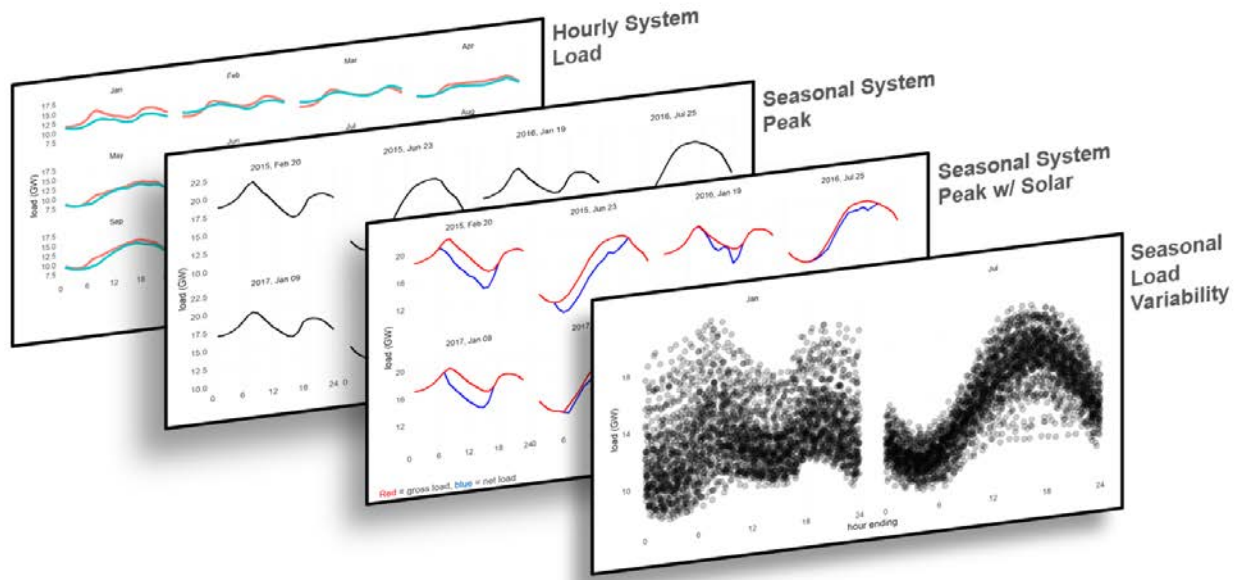
2.2 Design Limits and Bounding Conditions

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.

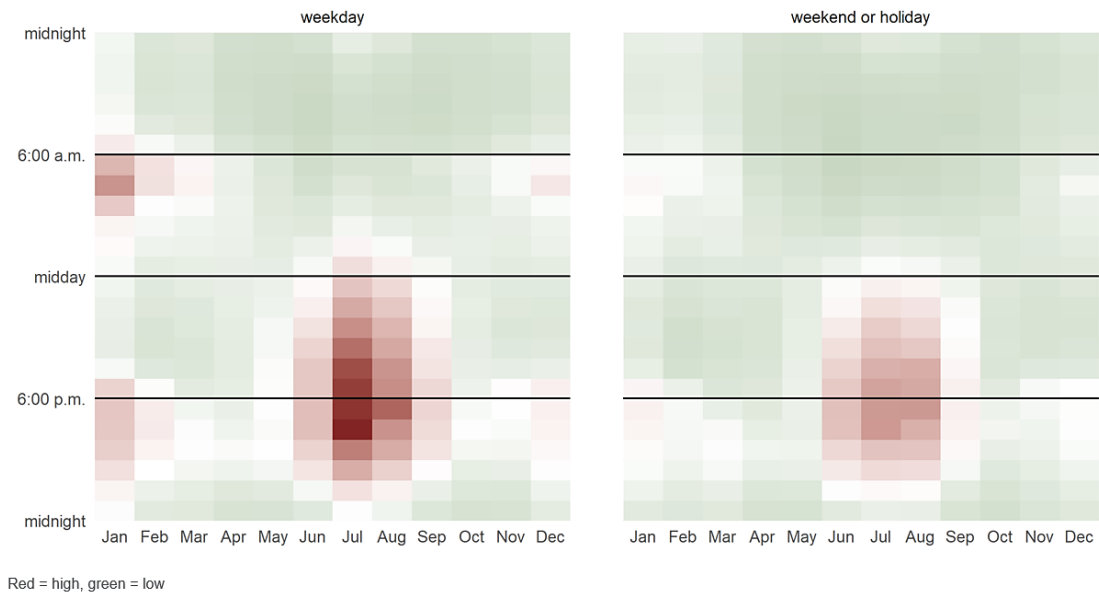
To illustrate these concepts to stakeholders, assessed the load and customer characteristics of DEV’s electric system, highlighting when and how system peaks occurred and the types of rate structures that often work better in such dynamics. Illustrations of various load and usage characteristics are 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 neutral² 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 underlying 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • AMI meters are required for pilot patriation • Customers must opt-in to the pilot program
Enrollment	<ul style="list-style-type: none"> • 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 Portal³, 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 charge⁴ 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 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

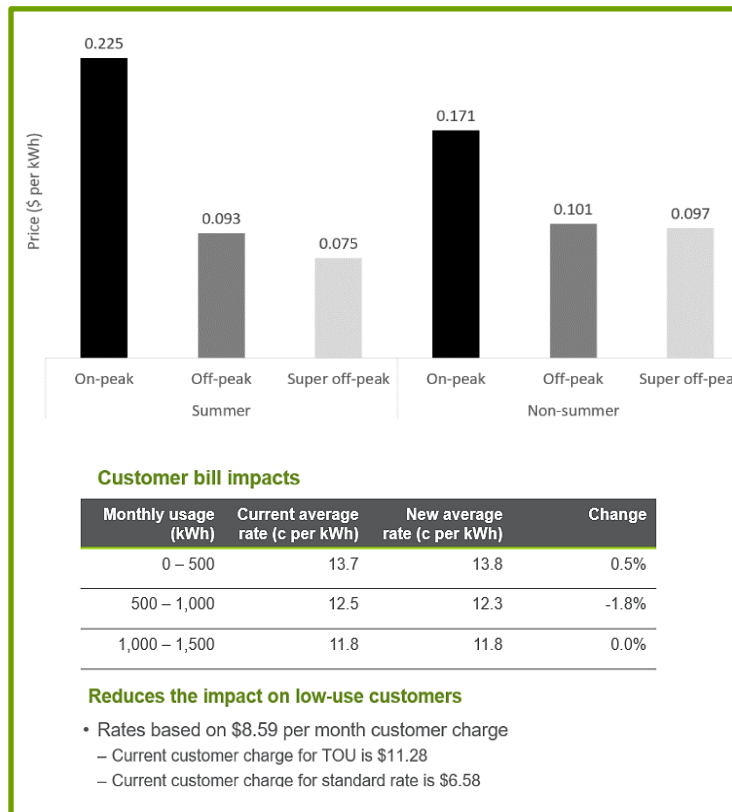
4.1 Initial Recommendation

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



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.

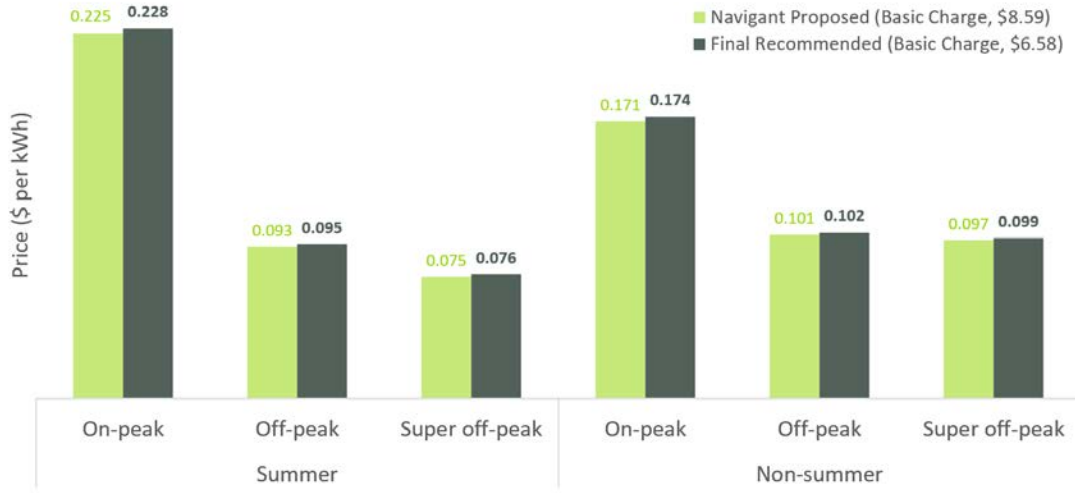
Figure 4-2. Stakeholder-Informed TOU Rate Design

	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.

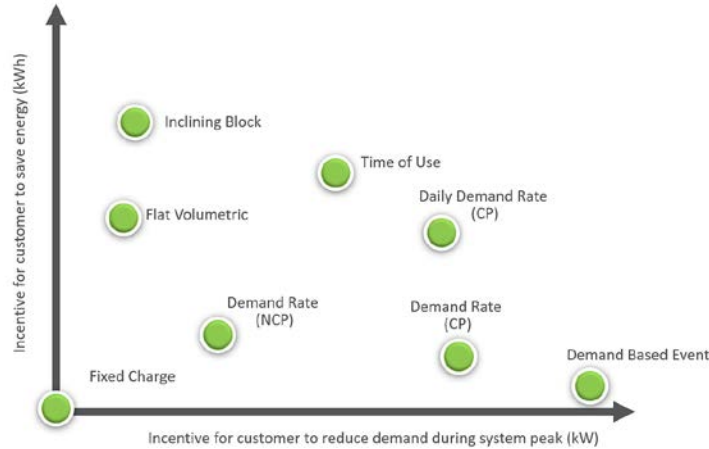
As part of immediate steps, the stakeholders intend to organize into small working groups to develop the next level of details to support the TOU pilot launch. Working group topics include bill protections, opt-in and opt-out assessments, valuation and compensation of DER generation, and the development 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.

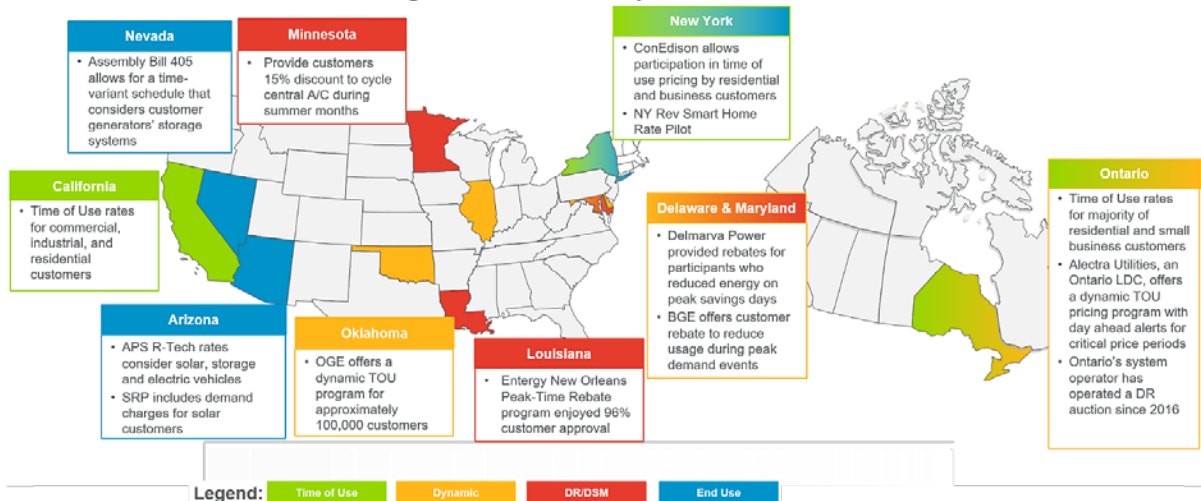
Around the country, states are enacting rules and utilities are implementing dynamic electricity rate pilot programs to get ahead of the expected impacts of these load shaping consumer-level technologies. To support customers while simultaneously working to optimize overall grid-level load profiles, 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 customers⁵.

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)
<p>Note: NERC Holidays and weekends will not have an on-peak period.</p>		
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

<p>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.</p>	
<p>In developing recommendations for the possible transition of net metering customers to the time-varying rate schedules, the stakeholder group shall</p> <ul style="list-style-type: none"> (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 	<p>To be discussed beginning in 2020</p>
<p>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.</p>	<p>To be discussed beginning in 2020</p>
<p>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.</p>	<p>To be discussed beginning in 2020</p>
<p>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</p>	<p>Pilot to be submitted to SCC; net metering customer participation not discussed</p>

<p>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.</p>	
<p>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.</p>	<p>To be discussed beginning in 2020</p>