BEFORE THE
MARYLAND PUBLIC SERVICE COMMISSION

IN THE MATTER OF DELMARVA POWER & LIGHT COMPANY'S APPLICATION FOR AN ELECTRIC MULTI-YEAR PLAN	* * * *	Case No. 9681

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DIRECT TESTIMONY

OF

MELISSA WHITED

ON BEHALF OF THE OFFICE OF PEOPLE'S COUNSEL

AUGUST 19, 2022

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DIRECT TESTIMONY OF
Melissa Whited

INTRODUCTION

Q. Please state your name and business address.

A. My name is Melissa Whited. I am a Senior Principal at Synapse Energy Economics, Inc. ("Synapse"), located at 485 Massachusetts Avenue, Cambridge, MA 02139.

Q. Please describe your educational background and qualifications.

A. I hold a Master of Arts in Agricultural and Applied Economics and a Master of Science in Environment and Resources, both from the University of Wisconsin-Madison. I have 13 years of experience in economic research and consulting.

Q. Please describe your professional experience.

A. At Synapse, I have worked extensively on issues related to utility regulatory models and rate design. I have been an invited speaker in numerous industry conferences, including as a panelist for the National Association of Regulatory Utility Commissioners (NARUC) Subcommittee on Rate Design at the 2021 Winter Policy Summit and the 2018 Annual Meeting.

I have sponsored testimony before the Maryland Public Service Commission, as well as the Georgia Public Service Commission, the Rhode Island Public Utilities Commission, the Massachusetts Department of Public Utilities, the Maine Public Utilities Commission, the California Public Utilities Commission, the Hawaii Public Utilities Commission, the Public Service Commission of Utah, the Public

Utility Commission of Texas, the Virginia State Corporation Commission, the Nova Scotia Utility and Review Board, the Newfoundland and Labrador Board of Commissioners of Public Utilities, and the Federal Energy Regulatory Commission. My resume is attached as Appendix A.

Q. On whose behalf are you appearing?

A. I am presenting testimony on behalf of the Office of People's Counsel.

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

A. I was retained by OPC to review the cost of service study and rate designs proposed by Delmarva Power & Light Company (DPL or the Company). to ensure consistency with Maryland's energy policy goals, particularly those specified in Maryland Public Utility Article (PUA) § 2-113(a)(2), which requires the Public Service Commission of Maryland (Commission) to consider the impacts of public service companies on the achievement of the State's climate commitments for reducing statewide greenhouse gas emissions. My testimony summarizes my findings regarding the impacts of DPL's proposed rate designs on customer electricity usage and beneficial electrification technologies and provides recommendations for rate design modifications.

I. Summary and Recommendations

Q. Please summarize your primary conclusions and recommendations based on your analysis of DPL's filing.

A. My conclusions and recommendations are as follows:

1. The Company's Class Cost of Service Study (CCOSS), including the use of a four-year average demand allocator, represents a reasonable approach to allocating costs based on cost causation.

2. DPL's proposal to eliminate seasonality in its distribution rates should be denied. Recent data regarding distribution system peak loads show significant seasonal variation, the price signal for which would not be conveyed if DPL's proposal is adopted. I recommend leaving in place the current level of seasonal variation and analyzing distribution system peak load data in the next rate case to see whether the recent trend of summer distribution peaks continues.

3. DPL's proposed Residential Time of Use Non-Demand (R-TOU-ND) rate design should be limited to customers who adopt beneficial electrification technologies. This will help align DPL's rate structures with the policy goals of the State, particularly conservation and GHG reduction goals.

4. DPL's electric vehicle (EV) rate designs should be denied. The utility should be required to re-file its EV rate designs with revenue-neutral time-differentiated rates, as well as a plan to increase enrollment in its EV rates and implement submetering protocols to avoid the unnecessary expense of a second utility meter to bill EV load.

II. Class Cost of Service Study

Q. Please briefly describe the Company's Class Cost of Service Study (CCOSS).

A. DPL witness Michael Normand presents the Company's CCOSS, which is designed to functionalize, classify, and allocate the Company's costs across customer classes based on the principle of cost causation. Once costs are separated by primary function, the costs are classified based on cost drivers (e.g., commodity, demand, or customer). Finally, the costs are either directly assigned to customers or are allocated using an allocator that attempts to reasonably reflect customers' responsibility for the costs. For example, allocators may be based on class non-coincident demand, the sum of individual customer maximum demands, the number of customers, or other factors.

Q. Has the Company's CCOSS methodology changed recently?

A. The Company represents that the allocation methodologies have remained largely the same, except for two key changes. The first change is to normalize the historical test year using rate making adjustments (RMAs), in order to comply with the filing requirements for an MRP. The second change is the use of four-year averages for determining demand allocators, rather than using a single-year of demand data.

Q. Why does the Company propose to use a four-year average for determining demand allocators rather than a single year?

A. Using a four-year average was recommended by Staff in CN 9655 as a means of smoothing year-to-year volatility, particularly since the rates will be in effect for three years.

Q. Do you agree with this approach?

A. Yes. In my opinion it is reasonable to use a four-year average to smooth volatility, particularly given that usage over the past two years have been substantially impacted by the pandemic.

Q. What is your overall assessment of the Company's CCOSS?

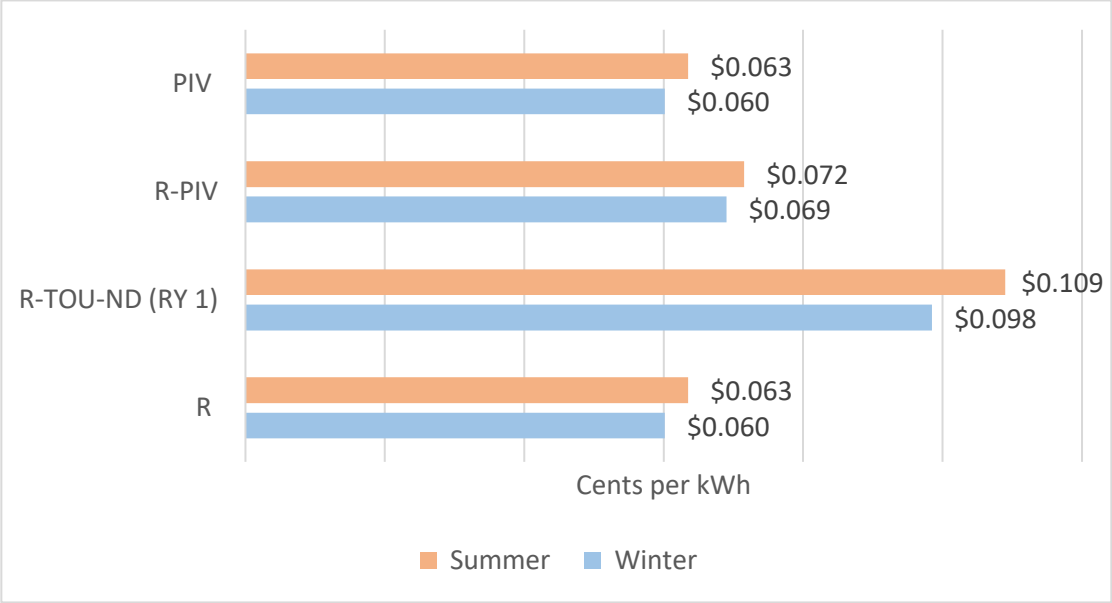
A. I find the methodologies employed by the Company in its CCOSS to be generally reasonable and consistent. Thus, I am not recommending any changes to the CCOSS at this time.

III. Seasonality in Rates

Q. Please describe the seasonal differentiation currently in DPL's rates.

A. Currently, DPL's residential distribution rates have modest seasonal differentiation, with slightly higher prices in the summer than the winter, as shown in the following Figure. The Company's commercial rates do not have any seasonal differentiation.

Figure 1. Current Seasonal Differentiation of DPL's Residential Rates[1]



Q. Please describe DPL's proposal regarding seasonality.

A. DPL witness Blazunas states that the Company proposes to "gradually remove[] the seasonal differentiation of the volumetric charge by RY3 of the MYP."[2] This would apply to all the Company's residential rates.

Q. What reasoning does DPL give to support this proposal?

A. DPL provides three reasons. First, the Company claims that removing seasonal variation is more "customer friendly" by creating "more predictability for customers." Second, the Company argues that the current rates do not "accurately reflect a differential in the cost of service between the two seasons." Last, the

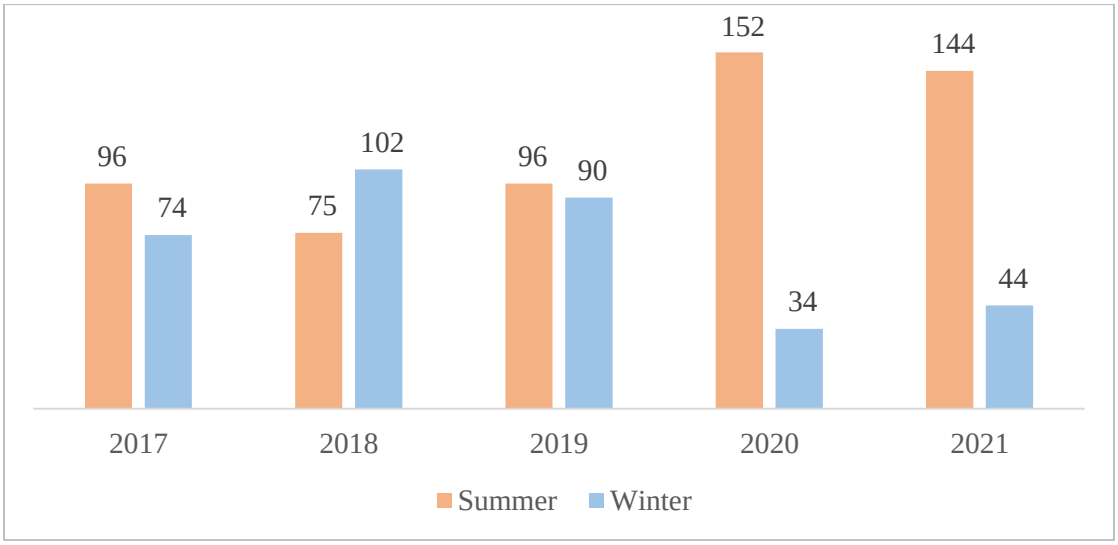
[1] Blazunas Excel Workpaper 2022 DPL MYP_Supporting Data_No.15, Tab "7. Summary Rate Table." The R-TOU-ND rate shows the on-peak summer and winter rate for illustrative purposes. The summer vs. winter off-peak rates have a similar differential shown here.
[2] Direct Testimony of Peter Blazunas, May 2022, ("Blazunas Testimony"), p. 34, lines 10-11.

Company states that eliminating seasonality will bring its rates "into alignment with the rate design of all of Delmarva Power's other rate schedules with volumetric distribution rates."[3]

Q. Do you agree with the Company's contention that eliminating seasonality would more accurately reflect cost of service?

A. Not necessarily. While before 2020 the number of distribution circuits that peaked in the summer versus winter was variable and fairly evenly dispersed, distribution circuits over the last two years have overwhelmingly recorded peak load in the summer, as shown in **Figure 2**.

Figure 2. Number of Distribution Circuits with Peak in Summer vs. Winter[4]



[3] Blazunas Testimony, p. 34, lines 10-20.
[4] Calculated from the Confidential Attachment to response OPC DR 2-1.

Q. What is the implication of eliminating seasonality if a greater number of distribution circuits peak in the summer?

A. If the trend shown above continues, customers will be sent inaccurate price signals about summer versus winter electricity usage. This would be contrary to cost causation principles and would have adverse consequences over time. For example, non-differentiated rates do not provide any additional incentive to invest in efficiency measures that target summer load, like more efficient air-conditioners. Further, customers with higher-than-average winter load and lower than average summer load would be unfairly burdened with higher costs. These customers would thus be subsidizing higher summer load customers.

Q. What about the Company's other two arguments - that equal rates between seasons is more "customer friendly" and that removing seasonal variation allows the residential rates to be more aligned with DPL's commercial rate structures?

A. It is not more "customer friendly" to unfairly burden customers with higher winter usage with higher bills, if it is in fact summer peaks that are driving additional costs on the grid. I also note that the current level of seasonal differentiation is mild, just $.0033 cents per kWh for the standard "R" rate. For an average customer that uses around 993 kWh per month, seasonal differentiation results in an additional $3.30 per month, or $13.30 over the summer, which is offset by lower bills in the winter. This mild differential may need to be strengthened in the future, but for the time-being eliminating it would have a relatively minor impact on smoothing customers' bills across seasons.

Regarding DPL's last argument regarding alignment with its commercial rates, the lack of seasonal differentiation in commercial rates may be inappropriate based on the data shown above. Thus, an existing, potentially flawed, rate structure for DPL's non-residential rates is not a compelling reason to eliminate seasonality in residential rates.

Q. What is your recommendation?

A. The current level of seasonal differentiation should be kept in place over the next few years, and the issue should be re-examined in DPL's next rate case. This will allow sufficient time to gather data to determine whether the recent trend of distribution peaks in the summer period continues. At the next rate case, the data can be reviewed to decide whether to eliminate, maintain, or increase the degree of seasonal differentiation of DPL's electric rates.

IV. Residential Time of Use Non-Demand (R-TOU-ND) Rate Proposal

Q. Why is the Company proposing to modify the R-TOU-ND rate when the Commission recently approved the R-TOU-P rate?

A. The Company is proposing to retain the R-TOU-ND rate (with modifications) in accordance with the settlement agreement approved by the Commission in Case No. 9670. As stated in the settlement agreement, the Company is to propose a modified R-TOU-ND rate "[t]o provide customers with an alternative time-of-use rate to the R-TOU-P rate developed in the Commission's Public Conference 44

Rate Design Working Group."[5] As noted by the Company, the modified rate R-TOU-ND may be attractive to customers who desire a lower rate differential "given the lower risk of negative bill impacts associated with a customer's potential inability (or perceived inability) to shift usage to the off-peak period."[6] In addition, the Company states the rate is "supportive of beneficial electrification efforts insofar as high use customers will not be disincentivized to electrify by a higher volumetric charge that reflects non-customer related costs."[7]

Q. Please summarize DPL's residential time of use rate proposal (R-TOU-ND).

A. The Company proposes a TOU rate (R-TOU-ND) for all residential customers that, relative to the standard "R" rate, includes a higher fixed charge and lower off-peak volumetric charges. The proposed rate has a 2:1 peak to off-peak ratio and a $15 monthly customer charge.[8] Enrollment in the rate is open to any residential customer.

Q. Are you supportive of DPL's proposed R-TOU-ND rate?

A. In part. I agree that it is beneficial to provide customers with an alternate TOU rate option with a milder on-peak to off-peak differential than R-TOU-P. This design should appeal to customers who may have a lower risk tolerance for high on-peak rates.

[5] Case No. 9670, Settlement Agreement, January 24, 2022, p. 6.
[6] Blazunas Testimony, p. 36, lines 8-10.
[7] Blazunas Testimony, p. 35, lines 11-13.
[8] Blazunas Testimony, p. 35, lines 9-10; 18.

In addition, I am highly supportive of the Company's efforts to provide a rate that will encourage beneficial electrification. As I testified in Case No. 9670, rates that encourage customers to electrify their homes and vehicles will reduce carbon dioxide emissions and help Maryland meet its emission reduction targets. However, I am concerned that allowing any residential customer to enroll in the rate–regardless of whether they have adopted beneficial electrification technologies–could undermine conservation incentives.

Q. Why do you disagree that the R-TOU-ND tariff should be open to all customers?

A. Because R-TOU-ND has a high fixed charge, the volumetric charges are reduced in order to ensure that it is revenue-neutral relative to the standard residential tariff. The lower volumetric rates benefit customers who have higher-than-average usage. This result is advantageous for encouraging the adoption of beneficial electrification technologies, such as heat pumps or electric vehicles. However, if any residential customer is permitted to enroll in the rate, it also reduces the bills of customers who have high usage because they use electricity inefficiently, which is contrary to the State's energy policy goals.

Q. What energy policy goals would the R-TOU-ND enrollment provision run contrary to?

A. The Company's proposed enrollment provision for R-TOU-ND would be contrary to the State's policy goals regarding greenhouse gas emissions (GHGs). Specifically, the recent passage of House Bill 298 expanded the mandate of the

Commission. The bill modified PUA § 2-113(a)(2) to require the Commission to consider the impacts of public service companies on the achievement of the State's climate commitments for reducing statewide greenhouse gas emissions. Maryland's Greenhouse Gas Emissions Reduction Act (GGRA of 2016) requires the State to achieve a minimum of a 40% reduction in statewide greenhouse gas (GHG) emissions from 2006 levels by 2030. Conservation and energy efficiency will be paramount in achieving these goals.

Q. Can you provide an example of how the R-TOU-ND could discourage energy conservation?

A. Yes. Consider a high-usage residential customer who has the same load shape as the average residential customer, but uses twice as much energy simply due to being inefficient. Without making any changes to their usage patterns, the customer would pay 4.1% less on R-TOU-ND than on the standard R rate. This analysis is summarized in the following table, which depicts the average monthly bill for an average customer (using 979 kWh/month) and a high usage customer (using 1,958 kWh/month) under both the standard R rate and the R-TOU-ND rate.

Table 1. Comparison of average monthly bills for an average customer and high-usage customer

	Usage in Period	R	R-TOU-ND	Percent Difference
Fixed Charge		$8.96	$15.00	
$/kWh				
Summer On-Peak	7%	$0.0715	$0.1090	
Summer Off-Peak	27%	$0.0715	$0.0545	
Winter On-Peak	15%	$0.0690	$0.0985	
Winter Off-Peak	51%	$0.0690	$0.0526	
Monthly Bill @ 979 kWh (Avg User)		**$77.34**	**$77.34**	**0.0%**
Monthly Bill @ 1958 kWh (High User)		**$145.73**	**$139.68**	**-4.1%**

Source: Calculated from DPL Response to OPC DR 2-8

This example illustrates that high-usage customer would experience a bill reduction simply from switching from the R rate to the R-TOU-ND rate, without any changes to his or her consumption patterns. And, because the marginal cost of electricity would be relatively less expensive, the customer would have less incentive to invest in energy-efficient equipment.

Thus, while this type of rate can be helpful for encouraging the adoption of beneficial electrification technologies, it should not be open to all residential customers, as it does not necessarily encourage behavior that is in the interest of ratepayers or the State if any customer can opt in.

Q. What is your recommendation?

A. I recommend that the R-TOU-ND rate be made exclusive to customers that adopt beneficial electrification technologies – electric vehicles and/or major appliances that utilize electricity rather than natural gas, like heat pumps for space heating

and cooling. The rate should be available to DPL customers regardless of whether they choose a competitive retail supplier or DPL for the supply of electricity, as long as they adopt qualifying beneficial electrification technologies. For Southern California Edison in California, for example, verification of beneficial electrification technology adoption is achieved through a signed customer attestation that the enrollee has an EV or electric heat pump for water or space heating.[9] DPL currently has a web portal for customers to register their EV.[10] Such beneficial electrification customers are likely to have higher than average load because they are helping to achieve State greenhouse gas reduction goals, not because they are inefficiently using electricity.

V. Residential EV Tariffs (R-PIV and PIV)

Q. What are the utility's R-PIV and PIV electric rates?

A. These are rates for customers with electric vehicles (EVs). The R-PIV rate is applied to a household's entire electric load, including EV, while the PIV rate requires a second meter to be installed, paid for by all customers.

Q. What problems with these rates have you discussed in past testimony?

[9] The rate is also available to customers with residential battery storage systems. SCE, Rate TOU-D-PRIME. https://www.sce.com/residential/rates/electric-vehicle-plans.

[10] DPL, *Register Your Electric Vehicle*, https://secure.delmarva.com/SmartEnergy/SmartMeterSmartGrid/Pages/RegisterYourElectronicVehicle.aspx.

A. I have noted that the rates have extremely low enrollment, do not adequately incentivize EV adoption with low off-peak charging options, and that the PIV rate unnecessarily requires installation of a second utility meter to monitor EV load rather than utilize submetering technologies.[11]

Q. Why do you believe these are important issues for the Company to address?

A. As I noted in prior testimony, having low off-peak charging costs is helpful because "to overcome the adoption barrier of high initial costs for cleaner electric technologies, it is important to provide customers with operational savings relative to using fossil fuels. Rate design is a critical component in yielding such bill savings."[12] To the second point, customer adoption of the Company's EV rate is the only thing that can enable this. Finally, regarding submetering, it is a misuse of customer funds, and decreases ratepayer benefits of additional load from EVs, if the cost of a second meter must be incurred every time an EV is purchased and a customer wishes to adopt an EV-specific rate. Achieving Maryland's greenhouse gas reduction goals will require high levels of EV adoption, and the unnecessary cost to install a second meter could hinder such adoption.

Q. Has DPL remedied the issues discussed above in its most recent filing?

[11] Case No. 9670, Direct Testimony of Melissa Whited on Behalf of The Maryland Office of People's Council, ML No. 238062, December 2, 2021, ("Whited Testimony"), pp. 12-13.
[12] Whited Testimony, p. 7, lines 4-7.

No. Under the Company's proposal, the EV rates would continue to lack any time-differentiation of distribution rates going forward.[13] While supply costs are time-differentiated, the off-peak rate is only about $0.02/kWh lower than the standard rate; this price differential offers minimal cost savings for customers who charge their vehicles during off-peak hours. In addition, the Company continues to require customers on the PIV tariff to install a separate meter, even though submetering options are available.

Q. What are the consequences of the Company's failure to address your concerns from the previous case?

A. I believe that the minimal cost savings associated with the rates is likely a key reason why uptake of these rates remains abysmally low, at just six customers enrolled on the R-PIV tariff and zero customers on the PIV tariff through June 2022.[14] In addition, were any customers to enroll in the PIV tariff, all ratepayers would bear the costs of installing a second meter, and the Company would gain no experience with submetering technologies.

Q. What do you recommend to address these issues?

A. I recommend that the EV rate price signals be significantly strengthened by adopting time-differentiated distribution rates as well. Time-differentiated distribution rates would provide greater savings for EV customers to help spur

[13] Blazunas Excel workpaper No. 15, tab "7. Summary Rate Table."
[14] DPL response to OPC DR 2–3 and OPC DR 2-4.

adoption, while also providing a stronger price signal to encourage off-peak charging. In addition, the Company should further explore submetering technologies, as I discuss more in the next section.

A. Electric Vehicle Submetering

Q. Is a second meter necessary to measure and manage vehicle charging?

A. No. As I testified in DPL's previous Case No. 9670, multiple potentially lower-cost options are available, including submetering technologies and vehicle telematics. [15]

Q. Do you have any additional information to supplement your testimony in Case No. 9670 regarding submetering?

A. Yes. Previously I provided a few examples of utilities that are utilizing submetering technologies to monitor EV load, including Madison Gas & Electric's use of ChargePoint's Home L2 charger in Wisconsin,[16] vehicle telematics by Delmarva and other utilities in Maryland using WeaveGrid's software,[17] and Baltimore Gas & Electric plans to use this software for managed charging.[18] I wish

[15] Whited Testimony, pp. 5, 12-13.
[16] Madison Gas & Electric, "Charge@Home" Program, Frequently Asked Questions. Available at https://www.mge.com/our-environment/electric-vehicles/charge-at-home-program/charge@home-program-frequently-asked-questions.
[17] PHI Utilities. Case No. 9478. Mid-Course Program Evaluation and Semi-Annual Progress Report, September 14, 2021, p. 6. Available at https://webapp.psc.state.md.us/newIntranet/Casenum/NewIndex3_VOpenFile.cfm?filepath=//Coldfusion/Casenum/9400-9499/9478/Item_262\9478-MD-EV-Semi-AnnualFiling-091521.pdf
[18] Peters, Adele. "The next step for electric cars is to make them part of the grid." *Fast Company*. October 4, 2021. Available at https://www.fastcompany.com/90682274/the-next-step-for-electric-cars-is-to-make-them-part-of-the-grid

to add that the California Public Utilities Commission recently adopted submetering protocols, ordering utilities in that state to monitor and bill EV charging with submeters embedded in L2 charging stations.[19]

Q. How did DPL respond to this recommendation from your previous testimony?

A. The Company stated in rebuttal testimony it is "not opposed to using data from another source [embedded meter]," stating it received approval for an off-peak credit program that utilizes data from L2 charging stations to administer rebates in a manner that incentivizes off-peak charging. Similarly, it provides financial incentives using vehicle telematics.[20] However, the utility objects to using embedded meters for billing because this would "require additional investment to upgrade the Company's billing system."[21] Through discovery in this case, DPL states it "is still evaluating and determining the scope of work required to allow integration of submetering data," and is therefore unable to quantify the timeline or costs of necessary IT and billing upgrades.[22]

Q. What is your response?

[19] The Commission continues to explore the use of vehicle telematics for this purpose as well. California Public Utilities Commission, *Decision Adopting Plug-in Electric Vehicle Submetering Protocol and Electric Vehicle Supply Equipment Communication Protocols*, August 4, 2022. Available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M496/K405/496405751.PDF.
[20] Case No. 9670, Rebuttal Testimony of DPL witness Michael Normand, ML No. 238328, December 23, 2021, pp. 26-27.
[21] *Id*., p. 27.
[22] DPL Response to OPC DR 14-1(b/c).

A. First, it is not clear why the Company believes there is such a critical distinction between paying a credit for off-peak charging versus billing different rates for on and off-peak charging; functionally, both require tracking of usage by hour and applying a charge or rebate. My understanding is that billing may require the additional step of ensuring the total load recorded by the household's primary meter reflects the sum of EV load and household load. Since I raised this issue in previous testimony and the Company does not appear to have made substantive progress, I believe greater direction from the Commission is necessary to ensure submetering is enabled before mass adoption of EVs.

Q. Are there any current offerings from DPL suitable to implementing submetering for billing purposes?

A. Yes, and it is unfortunate the utility has not utilized the opportunity to initially test and implement submetering protocols. For the current "PIV Managed Charger Program" the first 37 customers to apply and qualify will be given significant rebates for the installation of certain "smart" residential L2 charging stations.[23] While the charger's connectivity will be used to send signals for the customer to participate in demand response programs, the utility will still install a second meter to enroll the customer in the PIV rate. While demand response (once it is

[23] DPL, *PIV Managed Charger Program*, https://www.delmarva.com/SmartEnergy/InnovationTechnology/Pages/PIVManagedChargerProgram.aspx; DPL, PIV Managed Charger Program Customer Participation Agreement, https://www.delmarva.com/SiteCollectionDocuments/Customer%20Participation%20Agreement%20Plug-In%20Vehicle%20%28PIV%29%20Managed%20Charger%20Program.pdf.

applied more broadly) is a significant step in the right direction to ensure the significant additional load coming from EVs will avoid peak times, rates can and should play a role as well. This small program is an excellent initial opportunity for the utility to set up billing practices and protocols to enroll customers in EV rates without the installation of a second utility meter, particularly when it would obviate the need to incur the costs associated with the second meter.

B. Marketing of EV Rates

Q. How does DPL market its EV rates?

A. The utility states that it markets its rates through its website, and typically provides print material "during in-person outreach events."[24]

Q. Have these marketing efforts been successful?

A. No. As stated above, there are just six customers on the R-PIV tariff and zero customers on the PIV tariff through June 2022.[25]

Q. What is your recommendation regarding the marketing of these rates?

A. The data show that simply posting rate options on the website and handing out flyers at certain events has not been sufficient to increase interest and uptake. At minimum, the utility should place materials and begin to educate sales representatives at car dealerships or stores with a high number of EV sales,

[24] DPL response to OPC DR 2-3 and OPC DR 2-4.
[25] *Id.*

including all-electric automakers like Tesla. These are key opportunities to engage customers when they are most interested in understanding how much money they can save fueling an EV versus internal combustion engine vehicle. A small initial program could be accomplished for a minimal amount of funding to test strategies and derive a more comprehensive marketing plan to drive greater adoption of EV rates.

Q. Please summarize your recommendations.

A. The utility's EV rate proposals should be denied. DPL should re-file this portion of its application to include (1) time-differentiated distribution rates; (2) a clear and supported strategy for marketing the rates to increase uptake, including low-cost options for novel marketing efforts like direct engagement with dealerships; and (3) a commitment and concrete plan to incorporate submetering for billing without the requirement of a second utility meter, starting with the utility's PIV Managed Charger Program.

VI. Conclusion

Q. Please summarize your conclusions and recommendations.

A. My conclusions and recommendations are as follows:

- The Company's Class Cost of Service Study (CCOSS), including the use of a four-year average demand allocator, represents a reasonable approach to allocating costs based on cost causation.

- DPL's proposal to eliminate seasonality in its distribution rates should be denied, given the significant seasonal variation in feeder peak demand shown in recent years. Instead, the current level of seasonal variation should remain until the next rate case when additional data can be analyzed to determine whether to modify the rate structure.
- DPL's proposed Residential Time of Use Non-Demand (R-TOU-ND) rate design should be limited to customers who adopt beneficial electrification technologies to better align with State energy policy goals, particularly conservation and GHG reduction goals.
- DPL should be required to re-file its EV rate designs with revenue-neutral time-differentiated rates, as well as a plan to increase enrollment in its EV rates and implement submetering protocols to avoid the unnecessary expense of a second utility meter to bill EV load.

Q. Does this conclude your testimony?

A. Yes, it does.

Melissa Whited, Senior Principal

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PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Cambridge MA. *Senior Principal,* May 2022 – Present, *Principal Associate,* 2017 – May 2022*, Senior Associate,* 2015 – 2017*, Associate*, 2012 – 2015

Consult and provide analysis of rate design proposals, alternative regulation, and other topics including distributed energy resources and electric vehicles. Develop expert witness testimony in public utility commission proceedings. Author reports on topics at the intersection of utility regulation, customer protection, and environmental impacts.

University of Wisconsin - Madison, Department of Agricultural and Applied Economics, Madison, WI. *Teaching Assistant – Environmental Economics*, 2011 – 2012

Developed teaching materials and led discussions on cost-benefit analysis, carbon taxes and cap-and-trade programs, management of renewable and non-renewable resources, and other topics.

Public Service Commission of Wisconsin, Water Division, Madison, WI. *Program and Policy Analyst - Intern*, Summer 2009

Researched water conservation programs nationwide to develop a proposal for Wisconsin's state conservation program. Developed spreadsheet model to calculate avoided costs of water conservation in terms of energy savings and avoided emissions.

Synapse Energy Economics, Cambridge, MA. *Communications Manager*, 2005 – 2008

Developed technical proposals for state and federal agencies, environmental and public interest groups, and businesses. Edited reports on energy efficiency, integrated resource planning, greenhouse gas regulations, renewable resources, and other topics.

EDUCATION

University of Wisconsin, Madison, WI
Master of Arts in Agricultural and Applied Economics, 2012
Certificate in Energy Analysis and Policy
National Science Foundation Fellow

University of Wisconsin, Madison, WI
Master of Science in Environment and Resources, 2010
Certificate in Humans and the Global Environment
Nelson Distinguished Fellowship

Southwestern University, Georgetown, TX
Bachelor of Arts in International Studies, *Magna cum laude,* 2003.

ADDITIONAL SKILLS

- Econometric Modeling – Linear and nonlinear modeling including time-series, panel data, logit, probit, and discrete choice regression analysis
- Nonmarket Valuation Methods for Environmental Goods – Hedonic valuation, travel cost method, and contingent valuation
- Cost-Benefit Analysis
- Input-Output Modeling for Regional Economic Analysis

FELLOWSHIPS AND AWARDS

- Winner, M. Jarvin Emerson Student Paper Competition, Journal of Regional Analysis and Policy, 2010
- Fellowship, National Science Foundation Integrative Graduate Education and Research Traineeship (IGERT), University of Wisconsin – Madison, 2009
- Nelson Distinguished Fellowship, University of Wisconsin – Madison, 2008

PUBLICATIONS

Whited, M. 2021. *Implementing PBR with Customer Protections in North Carolina: Docket E-100, Sub 178*. Synapse Energy Economics for the Carolina Utility Customers Association.

Kallay, J., A. Napoleon, J. Hall, B. Havumaki, A. Hopkins, M. Whited, T. Woolf, J. Stevenson, R. Broderick, R. Jeffers, B. Garcia. 2021. *Regulatory Mechanisms to Enable Investments in Electric Utility Resilience.* Synapse Energy Economics for Sandia National Laboratories.

Kallay, J., A. Napoleon, B. Havumaki, J. Hall, C. Odom, A. Hopkins, M. Whited, T. Woolf, M. Chang, R. Broderick, R. Jeffers, B. Garcia. 2021. *Performance Metrics to Evaluate Utility Resilience Investments.* Synapse Energy Economics for Sandia National Laboratories.

Kallay, J., A. Hopkins, A. Napoleon, B. Havumaki, J. Hall, M. Whited, M. Chang., R. Broderick, R. Jeffers, K. Jones, M. DeMenno. 2021. *The Resilience Planning Landscape for Communities and Electric Utilities.* Synapse Energy Economics for Sandia National Laboratories.

Woolf, T., L. Schwartz, B. Havumaki, D. Bhandari, M. Whited. 2021. *Benefit-Cost Analysis for Utility-Facing Grid Modernization Investments: Trends, Challenges, and Considerations.* Prepared by Lawrence Berkeley National Laboratory and Synapse Energy Economics for the Grid Modernization Laboratory Consortium of the U.S. Department of Energy.

Camp, E., B. Havumaki, T. Vitolo, M. Whited. 2020. *Future of Solar PV in the District of Columbia: Feasibility, Projections, and Rate Impacts of the District's Expanded RPS.* Synapse Energy Economics for the District of Columbia Office of the People's Counsel.

National Energy Screening Project. 2020. *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources*. E4TheFuture, Synapse Energy Economics, Energy Futures Group, ICF, Pace Energy and Climate Center, Schiller Consulting, Smart Electric Power Alliance.

Whited, M., J. Frost, B. Havumaki. 2020. *Best Practices for Commercial and Industrial EV Rates*. A guide prepared by Synapse Energy Economics for Natural Resources Defense Council.

Knight, P., E. Camp, D. Bhandari, J. Hall, M. Whited, B. Havumaki, A. Allison, N. Peluso, T. Woolf. 2019. *Making Electric Vehicles Work for Utility Customers: A Policy Handbook for Consumer Advocates.* Synapse Energy Economics for the Energy Foundation.

White, D., K. Takahashi, M. Whited, S. Kwok, D. Bhandari. 2019. *Memphis and Tennessee Valley Authority: Risk Analysis of Future TVA Rates for Memphis.* Synapse Energy Economics for Friends of the Earth.

Whited, M., B. Havumaki. 2019*. GD2019 04 M: DC DOEE Comments Responding to Notice of Inquiry.* Synapse Energy Economics for the District of Columbia Department of Energy and Environment.

Whited, Melissa. 2019. *DCG Comments on Technical Conference III Regarding F.C. 1156.* Synapse Energy Economics for the District of Columbia Department of Energy and Environment.

Whited, M., C. Roberto. 2019. *Multi-Year Rate Plans: Core Elements and Case Studies.* Synapse Energy Economics for Maryland PC51 and Case 9618.

Knight, P., E. Camp, C. Odom, E. Malone, M. Whited, J. Hall. 2019. *Exploring Equity in Residential Solar: A preliminary examination of who is installing solar in the Commonwealth of Massachusetts*. Synapse Energy Economics.

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

Whited, M., J. Kallay, D. Bhandari, B. Havumaki. 2018. *Driving Transportation Electrification Forward in Pennsylvania: Considerations for Effective Transportation Electrification Ratemaking*. Synapse Energy Economics for Natural Resources Defense Council.

Hall, J., J. Kallay, A. Napoleon, K. Takahashi, M. Whited. 2018. *Locational and Temporal Values of Energy Efficiency and other DERs to Transmission and Distribution Systems.* Synapse Energy Economics.

Woolf, T., J. Hall, M. Whited. 2018. *Earnings Adjustment Mechanisms to Support New York REV Goals: Outcome-Based, Program-Based, and Action-Based Options*. Synapse Energy Economics for Advanced Energy Economy Institute.

Whited, M., A. Allison, R. Wilson. 2018. *Driving Transportation Electrification Forward in New York: Considerations for Effective Transportation Electrification Rate Design.* Synapse Energy Economics on behalf of the Natural Resources Defense Council.

Allison, A. and M. Whited. 2018. "Electric Vehicles Still Not Crashing the Grid: Updates from California." Synapse Energy Economics on behalf of the Natural Resources Defense Council.

Fisher, J., M. Whited, T. Woolf, D. Goldberg. 2018. *Utility Investments for Market Transformation: How Utilities Can Help Achieve Energy Policy Goals.* Synapse Energy Economics for Energy Foundation.

Whited, M., T. Woolf. 2018. *Electricity Prices in the Tennessee Valley: Are customers being treated fairly?* Synapse Energy Economics for the Southern Alliance for Clean Energy.

Woolf, T., A. Hopkins, M. Whited, K. Takahashi, A. Napoleon. 2018. *Review of New Brunswick Power's 2018/2019 Rate Case Application.* In the Matter of the New Brunswick Power Corporation and Section 103(1) of the Electricity Act Matter No. 375. Synapse Energy Economics for the New Brunswick Energy and Utilities Board Staff.

Whited, M., T. Vitolo. 2017. Reply comments in District of Columbia Public Service Commission Formal Case No. 1130: *Reply Comments of the Office of the People's Counsel for the District of Columbia Regarding Pepco's Comments on the Office of the People's Counsel's Value of Solar Study.* Synapse Energy Economics. July 24, 2017.

Whited, M., A. Horowitz, T. Vitolo, W. Ong, T. Woolf. 2017. *Distributed Solar in the District of Columbia: Policy Options, Potential, Value of Solar, and Cost-Shifting*. Synapse Energy Economics for the Office of the People's Counsel for the District of Columbia.

Whited, M., E. Malone, T. Vitolo. 2016. *Rate Impacts on Customers of Maryland's Electric Cooperatives: Impacts on SMECO and Choptank Customers*. Synapse Energy Economics for Maryland Public Service Commission.

Woolf, T., M. Whited, P. Knight, T. Vitolo, K. Takahashi. 2016. *Show Me the Numbers: A Framework for Balanced Distributed Solar Policies.* Synapse Energy Economics for Consumers Union.

Whited, M., T. Woolf, J. Daniel. 2016. *Caught in a Fix: The Problem with Fixed Charges for Electricity*. Synapse Energy Economics for Consumers Union.

Lowry, M. N., T. Woolf, M. Whited, M. Makos. 2016. *Performance-Based Regulation in a High Distributed Energy Resources Future*. Pacific Economics Group Research and Synapse Energy Economics for Lawrence Berkley National Laboratory.

Woolf, T., M. Whited, A. Napoleon. 2015-2016. *Comments and Reply Comments in the New York Public Service Commission Case 14-M-0101: Reforming the Energy Vision*. Comments related to Staff's (a) a benefit-costs analysis framework white paper, (b) ratemaking and utility business models white paper, and (c) Distributed System Implementation Plan guide. Synapse Energy Economics on behalf of Natural Resources Defense Council and Pace Energy and Climate Center.

Luckow, P., B. Fagan, S. Fields, M. Whited. 2015. *Technical and Institutional Barriers to the Expansion of Wind and Solar Energy.* Synapse Energy Economics for Citizens' Climate Lobby.

Wilson, R., M. Whited, S. Jackson, B. Biewald, E. A. Stanton. 2015. *Best Practices in Planning for Clean Power Plan Compliance.* Synapse Energy Economics for the National Association of State Utility Consumer Advocates.

Whited, M., T. Woolf, A. Napoleon. 2015. *Utility Performance Incentive Mechanisms: A Handbook for Regulators*. Synapse Energy Economics for the Western Interstate Energy Board.

Stanton, E. A., S. Jackson, B. Biewald, M. Whited. 2014. *Final Report: Implications of EPA's Proposed "Clean Power Plan."* Synapse Energy Economics for the National Association of State Utility Consumer Advocates.

Peterson, P., S. Fields, M. Whited. 2014. *Balancing Market Opportunities in the West: How participation in an expanded balancing market could save customers hundreds of millions of dollars.* Synapse Energy Economics for the Western Grid Group.

Woolf, T., M. Whited, E. Malone, T. Vitolo, R. Hornby. 2014. *Benefit-Cost Analysis for Distributed Energy Resources: A Framework for Accounting for All Relevant Costs and Benefits.* Synapse Energy Economics for the Advanced Energy Economy Institute.

Peterson, P., M. Whited, S. Fields. 2014. *Synapse Comments on FAST Proposals in ERCOT.* Synapse Energy Economics for Sierra Club.

Hornby, R., N. Brockway, M. Whited, S. Fields. 2014. *Time-Varying Rates in the District of Columbia.* Synapse Energy Economics for the Office of the People's Counsel for the District of Columbia, submitted to Public Service Commission of the District of Columbia in Formal Case No. 1114.

Peterson, P., M. Whited, S. Fields. 2014. *Demonstrating Resource Adequacy in ERCOT: Revisiting the ERCOT Capacity, Demand and Reserves Forecasts*. Synapse Energy Economics for Sierra Club – Lone Star Chapter.

Stanton, E. A., M. Whited, F. Ackerman. 2014. *Estimating the Cost of Saved Energy in Utility Efficiency Programs.* Synapse Energy Economics for the U.S Environmental Protection Agency.

Ackerman, F., M. Whited, P. Knight. 2014. "Would banning atrazine benefit farmers?" *International Journal of Occupational and Environmental Health* 20 (1): 61–70.

Ackerman, F., M. Whited, P. Knight. 2013. *Atrazine: Consider the Alternatives.* Synapse Energy Economics for Natural Resources Defense Council (NRDC).

Whited, M., F. Ackerman, S. Jackson. 2013. *Water Constraints on Energy Production: Altering our Current Collision Course.* Synapse Energy Economics for Civil Society Institute.

Whited, M. 2013. *Water Constraints on Energy Production: Altering our Current Collision Course – Policy Brief.* Synapse Energy Economics for Civil Society Institute.

Hurley, D., P. Peterson, M. Whited. 2013. *Demand Response as a Power System Resource: Program Designs, Performance, and Lessons Learned in the United States.* Synapse Energy Economics for Regulatory Assistance Project.

Whited, M., D. White, S. Jackson, P. Knight, E.A. Stanton. 2013. *Declining Markets for Montana Coal*. Synapse Energy Economics for Northern Plains Resource Council.

Woolf, T., M. Whited, T. Vitolo, K. Takahashi, D. White. 2012. *Indian Point Energy Center Replacement Analysis: A Plan for Replacing the Nuclear Plant with Clean, Sustainable, Energy Resources.* Synapse Energy Economics for National Resources Defense Council and Riverkeeper.

Whited, M., K. Charipar, G. Brown. *Demand Response Potential in Wisconsin.* Nelson Institute for Environmental Studies, Energy Analysis & Policy Capstone for the Wisconsin Public Service Commission.

Whited, M. 2010. "Economic Impacts of Irrigation Water Transfers in Uvalde County, Texas." *Journal of Regional Analysis and Policy* 40 (2): 160–170.

Grabow, M., M. Hahn and M. Whited. 2010. *Valuing Bicycling's Economic and Health Impacts in Wisconsin*. Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE) for State Representative Spencer Black.

Whited, M., D. Bernhardt, R. Deitchman, C. Fuchsteiner, M. Kirby, M. Krueger, S. Locke, M. Mcmillen, H. Moussavi, T. Robinson, E. Schmitz, Z. Schuster, R. Smail, E. Stone, S. Van Egeren, H. Yoshida, Z. Zopp. 2009. *Implementing the Great Lakes Compact: Wisconsin Conservation and Efficiency Measures Report.* Department of Urban and Regional Planning, University of Wisconsin-Madison, Extension Report 2009-01.

Whited, M. 2009. *2009 Wisconsin Water Fact Sheet*. Public Service Commission of Wisconsin.

Whited, M. 2003. *Gender, Water, and Trade*. International Gender and Trade Network Washington, DC.

TESTIMONY AND COMMENTS

Illinois Commerce Commission (Docket No. 22-0067): Direct Testimony of Melissa Whited and Ben Havumaki regarding the performance incentive mechanisms and tracking metrics proposed by Commonwealth Edison Company and Ameren Illinois Company. April 6, 2022.

Maryland Public Service Commission (Case No. 9670): Direct testimony of Melissa Whited regarding Delmarva Power and Light's proposed rate designs. On behalf of Maryland Office of People's Counsel. December 2, 2021.

Nova Scotia Utility and Review Board (Matter No. M10176): Direct testimony of Melissa Whited regarding Nova Scotia Power Inc.'s proposed Smart Grid Nova Scotia Solar Garden Rider. On behalf of Counsel to the Nova Scotia Utility and Review Board. August 18, 2021.

Colorado Public Utilities Commission (Proceeding No. 20AL-0432E): Answer testimony of Melissa Whited regarding inclining block rates. On behalf of Energy Outreach Colorado. March 8, 2021.

Maryland Public Service Commission (Case No. 9655): Direct and surrebuttal testimony of Melissa Whited regarding Pepco's proposed multi-year plan and performance incentive mechanisms. On behalf of Maryland Office of People's Counsel. March 3, 2021.

Nova Scotia Utility and Review Board (Matter No. M09777): Direct testimony of Melissa Whited regarding Nova Scotia Power Inc.'s proposed time-varying pricing tariff application. On behalf of Counsel to the Nova Scotia Utility and Review Board. February 24, 2021.

Georgia Public Service Commission (Docket No. 42516): Direct testimony of Melissa Whited and Ben Havumaki regarding Georgia Power's proposal to increase the customer charge for residential customers. On behalf of the Sierra Club. October 17, 2019.

Maine Public Utilities Commission (Docket No. 2018-00171): Direct testimony of Melissa Whited regarding utility incentives for non-wires alternatives. On behalf of Maine Office of the Public Advocate. December 17, 2018.

Rhode Island Public Utilities Commission (Docket No. 4780): Direct testimony of Tim Woolf and Melissa Whited regarding National Grid's Power Sector Transformation proposals. On behalf of the Rhode Island Division of Public Utilities and Carriers. April 28, 2018.

Rhode Island Public Utilities Commission (Docket No. 4770): Direct testimony of Tim Woolf and Melissa Whited regarding National Grid's proposed performance incentive mechanisms, benefit-cost analyses, and request for recovery of costs for its Advanced Metering Functionality study and distributed energy resources enablement investments. On behalf of the Rhode Island Division of Public Utilities and Carriers. April 6, 2018.

Rhode Island Public Utilities Commission (Docket No. 4783): Direct testimony of Tim Woolf and Melissa Whited regarding National Grid's Advanced Metering Functionality Pilot. On behalf of the Rhode Island Division of Public Utilities and Carriers. February 22, 2018.

Virginia State Corporation Commission (Case No. PUR-2017-00044): Direct testimony of Melissa Whited regarding Rappahannock Electric Cooperative's proposed increases to fixed charges for residential customers and small business customers. On behalf of Sierra Club. September 19, 2017.

California Public Utilities Commission (Application 17-01-020, 17-01-021, and 17-01-022): Joint opening testimony with Max Baumhefner and Katherine Stainken on fast charging infrastructure and rates; joint opening testimony with Max Baumhefner and Joel Espino on medium and heavy-duty and fleet charging infrastructure and commercial EV rates; joint opening testimony with Max Baumhefner and Chris King on residential charging infrastructure and rates. Rebuttal testimony on public fast charging rate design, commercial EV rate design, and residential EV rate design. On behalf of Natural Resources Defense Council, the Greenlining Institute, Plug In America, the Coalition of California Utility Employees, Sierra Club, and the Environmental Defense Fund. July 25, August 1, August 7, and September 5, 2017.

New York Public Service Commission (Case 17-E-0238): Direct and rebuttal testimony of Tim Woolf and Melissa Whited regarding Earnings Adjustment Mechanisms proposed by National Grid. On behalf of Advanced Energy Economy Institute. August 25 and September 15, 2017.

Utah Public Service Commission (Docket No. 14-035-114): Direct testimony of Melissa Whited regarding Pacificorp's proposed rates for customers with distributed generation. On behalf of Utah Clean Energy. June 8, 2017.

Texas Public Utilities Commission (SOAH Docket No. 473-17-1764, PUC Docket No. 46449): Cross-rebuttal testimony evaluating Southwestern Electric Power Company's proposed revisions to its Distributed Renewable Generation tariff. On behalf of Sierra Club and Dr. Lawrence Brough. May 19, 2017.

Massachusetts Department of Public Utilities (Docket No. 17-05): Direct and surrebuttal testimony of Tim Woolf and Melissa Whited regarding performance-based regulation, the monthly minimum reliability contribution, storage pilots, and rate design in Eversource's petition for approval of rate increases and a performance-based ratemaking mechanism. On behalf of Sunrun and the Energy Freedom Coalition of America, LLC. April 28, 2017 and May 26, 2017.

Public Utilities Commission of Hawaii (Docket No. 2015-0170): Direct testimony regarding Hawaiian Electric Light Company's proposed performance incentive mechanisms. On behalf of the Division of Consumer Advocacy. April 28, 2017.

Massachusetts Department of Public Utilities (Docket No. 15-155): Joint direct and rebuttal testimony with T. Woolf regarding National Grid's rate design proposal. On behalf of Energy Freedom Coalition of America, LLC. March 18, 2016 and April 28, 2016.

Federal Energy Regulatory Commission (Docket No. EC13-93-000): Affidavit regarding potential market power resulting from the acquisition of Ameren generation by Dynegy. On behalf of Sierra Club. August 16, 2013.

Wisconsin Senate Committee on Clean Energy: Joint testimony with M. Grabow regarding the importance of clean transportation to Wisconsin's public health and economy. February 2010.

TESTIMONY ASSISTANCE

Colorado Public Utilities Commission (Proceeding No. 16AL-0048E): Answer testimony of Tim Woolf regarding Public Service Company of Colorado's rate design proposal. On behalf of Energy Outreach Colorado. June 6, 2016.

Nevada Public Utilities Commission (Docket Nos. 15-07041 and 15-07042): Direct testimony on NV Energy's application for approval of a cost of service study and net metering tariffs. On behalf of The Alliance for Solar Choice. October 27, 2015.

Missouri Public Service Commission (Case No. ER-2014-0370): Direct and surrebuttal testimony on the topic of Kansas City Power and Light's rate design proposal. On behalf of Sierra Club. April 16, 2015 and June 5, 2015.

Wisconsin Public Service Commission (Docket No. 05-UR-107): Direct and surrebuttal testimony of Rick Hornby regarding Wisconsin Electric Power Company rate case. On behalf of The Alliance for Solar Choice. August 28, 2014 and September 22, 2014.

Maine Public Utilities Commission (Docket No. 2013-00519): Direct testimony of Richard Hornby and Martin R. Cohen on GridSolar's smart grid coordinator petition. On behalf of the Maine Office of the Public Advocate. August 28, 2014.

Maine Public Utilities Commission (Docket No. 2013-00168): Direct and surrebuttal testimony of Tim Woolf regarding Central Maine Power's request for an alternative rate plan. December 12, 2013 and March 21, 2014.

Massachusetts Department of Public Utilities (Docket No. 14-04): Comments of Massachusetts Department of Energy Resources on investigation into time varying rates. On behalf of the Massachusetts Department of Energy Resources. March 10, 2014.

State of Nevada, Public Utilities Commission of Nevada (Docket No. 13-07021): Direct testimony of Frank Ackerman regarding the proposed merger of NV Energy, Inc. and MidAmerican Energy Holdings Company. On behalf of the Sierra Club. October 24, 2013.

PRESENTATIONS

Whited, M. 2021. "Evolution of Net Metering in Hawaii." Presentation to the NARUC Winter Policy Summit. February 4.

Biewald, B., M. Whited. "Evaluating and Shaping the Impacts of EVs on Customers: Tools for Consumer Advocates." Presentation at the NASUCA Mid-Year Meeting, June 19, 2019.

Whited, M. 2019. "Performance Incentive Mechanisms." Presentation to the 2019 Pennsylvania Public Utility Law Conference, Harrisburg, PA. May 31.

Whited, M. 2018. "Smart Non-Residential Rate Design: Designing for the Future." Presentation to the NARUC Annual Meeting, Orlando, FL. November 11.

Whited, M. 2016. "Energy Policy for the Future: Trends and Overview." Presentation to the National Conference of State Legislators' Capitol Forum, Washington, DC, December 8.

Whited, M. 2016. "Ratemaking for the Future: Trends and Considerations." Presentation to the Midwest Governors' Association, St. Paul, MN, July 14.

Whited, M. 2016. "Performance Based Regulation." Presentation to the NARUC Rate Design Subcommittee. September 12.

Whited, M. 2016. “Demand Charges: Impacts and Alternatives (A Skeptic’s View).” EUCI 2nd Annual Residential Demand Charges Summit, Phoenix, AZ, June 7.

Whited, M. 2016. “Performance Incentive Mechanisms.” Presentation to the National Governors Association, Wisconsin Workshop, Madison WI, March 29.

Whited, M., T. Woolf. 2016. “Caught in a Fix: The Problem with Fixed Charges for Electricity.” Webinar presentation sponsored by Consumers Union, February.

Whited, M. 2015. “Performance Incentive Mechanisms.” Presentation to the National Governors Association, Learning Lab on New Utility Business Models & the Electricity Market Structures of the Future, Boston, MA, July 28.

Whited, M. 2015. “Rate Design: Options for Addressing NEM Impacts.” Presentation to the Utah Net Energy Metering Workgroup, Workshop 4, Salt Lake City, UT, July 8.

Whited, M. 2015. “Performance Incentive Mechanisms.” Presentation to the e21 Initiative, St. Paul, MN, May 29.

Whited, M., F. Ackerman. 2013. “Water Constraints on Energy Production: Altering our Current Collision Course.” Webinar presentation sponsored by Civil Society Institute, September 12.

Whited, M., G. Brown, K. Charipar. 2011. “Electricity Demand Response Programs and Potential in Wisconsin.” Presentation to the Wisconsin Public Service Commission, April.

Whited, M. 2010. “Economic Impact of Irrigation Water Transfers in Uvalde County, Texas.” Presentation at the Mid-Continent Regional Science Association’s 41st Annual Conference/IMPLAN National User’s 8th Biennial Conference in St. Louis, MO, June

Whited, M., M. Grabow, M. Hahn.2009. “Valuing Bicycling’s Economic and Health Impacts in Wisconsin.” Presentation before the Governor’s Coordinating Council on Bicycling, December.

Whited, M., D. Sheard. 2009. “Water Conservation Initiatives in Wisconsin.” Presentation before the Waukesha County Water Conservation Coalition Municipal Water Conservation Subgroup, July.

Resume updated July 2022

DELMARVA POWER & LIGHT COMPANY'S APPLICATIONS FOR AN ELECTRIC MULTI-YEAR PLAN

Case No. 9681

Data Responses Referenced in the Direct Testimony of

Melissa Whited

DPL Response to OPC DR 2-1 (Confidential information irrelevant to analysis redacted)

DPL Response to OPC DR 2-3

DPL Response to OPC DR 2-4

DPL Response to OPC DR 2-8

DPL Response to OPC DR 14-1

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9681
RESPONSE TO OPC DATA REQUEST NO. 2

QUESTION NO. 1

For each substation on the Company's system, please provide the following data in electronic spreadsheet format for each of the past five years:

a. The substation identifier (number or name)
b. The date and hour of peak demand
c. The peak demand in kW or kVA
d. The number of customers served by the substation

RESPONSE:

Please see confidential attachment.

SPONSOR: Michael T. Normand/William Sullivan

Substation	2017		2018		2019		2020		2021		Total Customers Served
	Date/Hour	kW	Date/Hour	kW	Date/Hour	kW	Date/Hour	kW	Date/Hour	kW	
[redacted]	12/15/17 22:00	1,600	1/2/18 7:00	1,800	1/31/19 6:55	1,850	7/6/20 16:09	1,760	8/26/21 17:08	1,940	359
	12/15/17 22:00	1,600	1/2/18 7:00	1,800	1/31/19 6:55	1,850	7/6/20 16:09	1,760	8/26/21 17:08	1,940	359
	7/12/17 18:00	1,800	8/29/18 18:00	2,000	1/21/19 18:30	2,070	7/20/20 18:20	1,900	8/12/21 18:00	1,770	740
	7/12/17 18:00	600	8/29/18 18:00	667	1/21/19 18:30	690	7/20/20 18:20	633	8/12/21 18:00	590	180
	7/12/17 18:00	1,200	8/29/18 18:00	1,333	1/21/19 18:30	1,380	7/20/20 18:20	1,267	8/12/21 18:00	1,180	560
	2/9/17 19:00	2,000	6/30/18 17:00	2,200	7/20/19 15:00	1,800	7/2/20 17:00	2,100	7/12/21 16:00	2,100	451
	2/9/17 19:00	2,000	6/30/18 17:00	2,200	7/20/19 15:00	1,800	7/2/20 17:00	2,100	7/12/21 16:00	2,100	451
	1/9/17 20:00	1,400	1/7/18 13:00	1,700	1/21/19 10:00	1,400	7/20/20 18:00	1,300	7/7/21 20:00	1,700	368
	1/9/17 20:00	560	1/7/18 13:00	680	1/21/19 10:00	560	7/20/20 18:00	520	7/7/21 20:00	680	173
	1/9/17 20:00	840	1/7/18 13:00	1,020	1/21/19 10:00	840	7/20/20 18:00	780	7/7/21 20:00	1,020	195
	8/28/17 20:00	1,500	2/12/18 18:00	1,700	1/21/19 20:00	1,280	8/5/20 18:23	1,420	8/12/21 18:00	1,210	322
	8/28/17 20:00	1,500	2/12/18 18:00	1,700	1/21/19 20:00	1,280	8/5/20 18:23	1,420	8/12/21 18:00	1,210	322
	7/20/17 19:00	2,720	1/6/18 7:06	2,660	1/31/19 6:59	2,690	7/21/20 17:29	2,500	8/12/21 18:27	2,500	632
	7/20/17 19:00	907	1/6/18 7:06	887	1/31/19 6:59	897	7/21/20 17:29	833	8/12/21 18:27	833	457
	7/20/17 19:00	1,813	1/6/18 7:06	1,773	1/31/19 6:59	1,793	7/21/20 17:29	1,667	8/12/21 18:27	1,667	175
	7/20/17 18:00	2,000	1/6/18 20:02	2,060	7/21/19 17:53	2,120	7/21/20 16:35	2,040	6/30/21 18:30	2,120	490
	7/20/17 18:00	1,500	1/6/18 20:02	1,545	7/21/19 17:53	1,590	7/21/20 16:35	1,530	6/30/21 18:30	1,590	442
	7/20/17 18:00	500	1/6/18 20:02	515	7/21/19 17:53	530	7/21/20 16:35	510	6/30/21 18:30	530	48
	2/5/17 10:00	2,300	1/7/18 8:00	2,600	7/20/19 18:40	2,820	8/25/20 17:10	2,510	1/31/21 18:23	2,450	558
	2/5/17 10:00	1,380	1/7/18 8:00	1,560	7/20/19 18:40	1,692	8/25/20 17:10	1,506	1/31/21 18:23	1,470	238
	2/5/17 10:00	920	1/7/18 8:00	1,040	7/20/19 18:40	1,128	8/25/20 17:10	1,004	1/31/21 18:23	980	320
	8/22/17 15:00	97,900	8/17/18 17:39	99,200	7/21/19 18:00	88,400	7/20/20 19:00	86,800	6/30/21 19:00	85,290	11,009
	7/20/17 16:00	13,188	7/3/18 15:00	13,405	7/22/19 15:00	13,354	7/31/20 0:00	13,334	8/13/21 15:00	11,765	2,453
	7/2/17 17:00	16,179	7/3/18 15:00	14,859	7/20/19 15:00	15,179	7/19/20 17:00	14,526	8/13/21 17:00	13,758	2,587
	7/21/17 13:00	12,783	8/7/18 14:00	13,335	7/17/19 15:00	13,320	7/22/20 14:00	12,697	6/30/21 15:00	11,409	1,176
	7/20/17 17:00	10,255	7/2/18 17:00	10,271	7/21/19 17:00	10,986	7/20/20 15:00	13,755	7/12/21 17:00	10,625	1,425
	8/22/17 16:00	18,155	6/5/18 17:00	17,939	7/19/19 15:00	17,331	7/7/20 15:00	16,694	6/30/21 13:00	17,138	1,255
	7/20/17 17:00	13,068	7/3/18 15:00	13,557	7/17/19 17:00	13,065	7/20/20 16:00	12,905	6/30/21 19:00	12,186	705
	7/13/17 13:00	17,290	6/29/18 14:00	11,443	7/21/19 17:00	10,644	7/19/20 17:00	10,452	7/15/21 14:00	13,054	1,408
	7/22/17 16:00	2,760	1/6/18 19:49	3,240	7/21/19 16:39	3,090	7/3/20 17:50	2,940	7/17/21 15:05	2,950	759
	7/22/17 16:00	1,932	1/6/18 19:49	2,268	7/21/19 16:39	2,163	7/3/20 17:50	2,058	7/17/21 15:05	2,065	547
	7/22/17 16:00	828	1/6/18 19:49	972	7/21/19 16:39	927	7/3/20 17:50	882	7/17/21 15:05	885	212
	12/4/17 19:00	900	12/31/18 22:00	800	1/30/19 20:00	800	1/18/20 14:00	700	2/9/21 11:00	1,300	145
	12/4/17 19:00	900	12/31/18 22:00	800	1/30/19 20:00	800	1/18/20 14:00	700	2/9/21 11:00	1,300	145
	7/20/17 19:00	87,257	1/5/18 19:56	93,250	1/31/19 7:38	64,675	7/20/20 19:00	65,646	7/12/21 16:00	60,915	6,645
	1/16/17 7:00	16,871	1/3/18 8:00	18,915	2/1/19 5:00	18,056	2/15/20 7:00	17,319	7/28/21 15:00	15,705	932
	7/21/17 17:00	27,413	7/3/18 15:00	29,447	1/31/19 8:00	24,740	6/24/20 14:00	21,562	2/23/21 9:00	19,285	802
	1/9/17 7:00	29,346	1/5/18 19:00	21,049	1/31/19 7:00	15,767	6/24/20 14:00	13,338	3/2/21 9:00	11,819	811
	7/20/17 18:00	11,836	1/7/18 8:00	12,548	1/31/19 7:00	12,435	7/20/20 17:00	12,883	6/30/21 18:00	11,920	2,602
	7/20/17 13:00	17,401	1/31/18 7:00	16,265	7/4/19 15:00	17,690	7/20/20 15:00	17,484	8/19/21 18:00	14,882	1,412
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8/12/21 17:00	7,535	86
	2/13/17 19:00	781	1/7/18 8:00	944	2/2/19 7:48	950	1/20/20 20:00	730	1/29/21 10:00	790	193
	2/13/17 19:00	781	1/7/18 8:00	944	2/2/19 7:48	950	1/20/20 20:00	730	1/29/21 10:00	790	193
	N/A	N/A	6/30/18 17:52	19,220	3/5/19 6:46	46,830	7/21/20 15:00	47,750	8/11/21 19:00	44,900	5,707
	N/A	N/A	8/29/18 17:00	7,133	7/21/19 17:00	7,410	7/19/20 17:00	7,135	8/11/21 18:00	6,517	739
	N/A	N/A	7/1/18 14:00	3,475	7/21/19 17:00	4,822	7/19/20 16:00	4,798	12/17/20 4:00	5,832	676
	N/A	N/A	7/7/18 13:00	2,596	8/19/19 15:00	22,539	7/21/20 15:00	23,811	6/30/21 18:00	21,937	3,337
	N/A	N/A	7/2/18 16:00	11,550	3/7/19 7:00	18,997	7/20/20 17:00	11,807	8/13/21 15:00	11,651	955
	N/A	N/A	7/4/18 18:00	700	1/21/19 8:00	600	6/25/20 20:00	600	1/18/20 19:00	500	178
	N/A	N/A	7/4/18 18:00	700	1/21/19 8:00	600	6/25/20 20:00	600	1/18/20 19:00	500	178
	7/19/17 20:00	1,300	7/1/18 17:00	1,300	7/20/19 18:00	1,480	8/10/20 17:00	1,100	7/16/21 17:16	1,260	129
	7/19/17 20:00	1,300	7/1/18 17:00	1,300	7/20/19 18:00	1,480	8/10/20 17:00	1,100	7/16/21 17:16	1,260	129
	7/20/17 15:00	6,955	7/3/18 14:00	7,132	7/17/19 15:00	7,267	7/30/20 12:00	2,176	7/19/21 14:23	1,995	1,192
	7/20/17 15:00	1,600	7/3/18 14:00	1,640	7/17/19 15:00	1,671	7/30/20 12:00	500	7/19/21 14:23	459	350
	7/20/17 15:00	1,739	7/3/18 14:00	1,783	7/17/19 15:00	1,817	7/30/20 12:00	544	7/19/21 14:23	500	399
	7/20/17 15:00	696	7/3/18 14:00	713	7/17/19 15:00	727	7/30/20 12:00	218	7/19/21 14:23	200	25
	7/20/17 15:00	1,529	7/3/18 14:00	1,570	7/17/19 15:00	1,599	7/30/20 12:00	479	7/19/21 14:23	437	418
	7/20/17 15:00	1,391	7/3/18 14:00	1,426	7/17/19 15:00	1,453	N/A	N/A	N/A	N/A	-
	1/7/17 20:00	1,500	12/31/18 10:00	1,700	1/30/19 20:35	1,810	12/19/20 20:34	1,600	1/31/21 20:00	1,540	492
	1/7/17 20:00	1,500	12/31/18 10:00	1,700	1/30/19 20:35	1,810	12/19/20 20:34	1,600	1/31/21 20:00	1,540	492
	3/15/17 18:05	1,610	1/7/18 19:42	1,650	7/21/19 17:17	1,610	7/20/20 19:10	1,710	3/16/21 19:46	1,860	413
	3/15/17 18:05	1,610	1/7/18 19:42	1,650	7/21/19 17:17	1,610	7/20/20 19:10	1,710	3/16/21 19:46	1,860	413
	7/19/17 17:00	2,280	7/2/18 20:00	2,250	7/21/19 18:00	2,480	7/27/20 20:00	2,430	8/12/21 18:00	2,310	612
	7/19/17 17:00	1,300	7/2/18 20:00	1,283	7/21/19 18:00	1,414	7/27/20 20:00	1,385	8/12/21 18:00	1,317	376
	7/19/17 17:00	980	7/2/18 20:00	967	7/21/19 18:00	1,066	7/27/20 20:00	1,045	8/12/21 18:00	993	236
	6/30/17 19:00	1,100	6/30/18 19:00	1,100	7/4/19 18:00	1,200	6/27/20 19:00	1,100	7/17/21 16:00	1,300	442
	6/30/17 19:00	1,100	6/30/18 19:00	1,100	7/4/19 18:00	1,200	6/27/20 19:00	1,100	7/17/21 16:00	1,300	442
	2/27/17 7:43	1,900	1/5/18 21:00	1,300	7/20/19 17:00	1,900	7/3/20 17:00	1,800	7/16/21 17:00	1,800	482
	2/27/17 7:43	1,900	1/5/18 21:00	1,300	7/20/19 17:00	1,900	7/3/20 17:00	1,800	7/16/21 17:00	1,800	482
	12/15/17 19:00	1,101	12/27/18 21:00	900	1/21/19 9:00	1,000	8/3/20 16:00	1,200	6/24/21 18:00	800	297
	12/15/17 19:00	1,101	12/27/18 21:00	900	1/21/19 9:00	1,000	8/3/20 16:00	1,200	6/24/21 18:00	800	297
	7/19/17 14:00	2,200	1/6/18 18:00	2,600	7/20/19 17:00	2,300	7/21/20 15:00	2,400	8/11/21 19:00	2,400	537
	7/19/17 14:00	2,200	1/6/18 18:00	2,600	7/20/19 17:00	2,300	7/21/20 15:00	2,400	8/11/21 19:00	2,400	537
	7/20/17 22:00	500	1/3/18 7:00	600	1/21/19 12:00	600	7/2/20 19:00	500	6/5/21 18:00	500	125
	7/20/17 22:00	500	1/3/18 7:00	600	1/21/19 12:00	600	7/2/20 19:00	500	6/5/21 18:00	500	125
	7/12/17 16:00	1,200	1/6/18 18:00	1,500	1/31/19 8:24	1,470	12/20/20 8:55	1,270	8/13/21 16:00	1,250	325
	7/12/17 16:00	1,200	1/6/18 18:00	1,500	1/31/19 8:24	1,470	12/20/20 8:55	1,270	8/13/21 16:00	1,250	325
	7/20/17 19:00	1,700	8/29/18 18:00	2,660	7/21/19 18:00	2,950	8/27/20 18:00	2,630	8/25/21 17:25	2,870	623
	7/20/17 19:00	510	8/29/18 18:00	798	7/21/19 18:00	885	8/27/20 18:00	789	8/25/21 17:25	861	250
	7/20/17 19:00	1,190	8/29/18 18:00	1,862	7/21/19 18:00	2,065	8/27/20 18:00	1,841	8/25/21 17:25	2,009	373
	1/9/17 6:00	963	1/6/18 17:00	994	1/6/19 17:00	994	1/21/20 18:00	980	8/10/21 17:23	2,210	283
	1/9/17 6:00	963	1/6/18 17:00	994	1/6/19 17:00	994	1/21/20 18:00	980	8/10/21 17:23	2,210	283
	7/19/17 17:00	1,700	6/30/18 17:00	1,700	7/19/19 19:00	1,700	7/19/20 16:00	1,800	8/11/21 19:00	2,000	445
	7/19/17 17:00	1,700	6/30/18 17:00	1,700	7/19/19 19:00	1,700	7/19/20 16:00	1,800	8/11/21 19:00	2,000	445
	7/20/17 19:00	2,350	1/5/18 20:18	2,670	1/21/19 8:54	2,510	7/20/20 18:12	2,160	8/12/21 17:12	1,870	462
	7/20/17 19:00	2,350	1/5/18 20:18	2,670	1/21/19 8:54	2,510	7/20/20 18:12	2,160	8/12/21 17:12	1,870	462
	7/20/17 16:00	1,052	12/28/18 19:00	700	2/1/19 15:00	800	6/30/20 16:51	700	1/4/21 10:00	1,600	160
	7/20/17 16:00	1,052	12/28/18 19:00	700	2/1/19 15:00	800	6/30/20 16:51	700	1/4/21 10:00	1,600	160
	7/20/17 16:00	1,943	1/7/18 8:00	2,058	1/7/19 8:00	2,058	1/31/20 10:00	2,013	12/20/19 7:00	1,662	498
	7/20/17 16:00	1,943	1/7/18 8:00	2,058	1/7/19 8:00	2,058	1/31/20 10:00	2,013	12/20/19 7:00	1,662	498
	1/8/17 16:00	1,700	1/5/18 19:00	2,200	1/21/19 19:06	2,200	1/20/20 19:55	1,710	1/31/21 17:22	1,870	870
	1/8/17 16:00	629	1/5/18 19:00	814	1/21/19 19:06	814	1/20/20 19:55	633	1/31/21 17:22	692	272
	1/8/17 16:00	1,071	1/5/18 19:00	1,386	1/21/19 19:06	1,386	1/20/20 19:55	1,077	1/31/21 17:22	1,178	598
	7/20/17 17:00	1,238	7/2/18 17:00	1,362	7/21/19 13:00	1,344	7/20/20 16:00	1,343	6/30/21 19:00	1,340	345
	7/20/17 17:00	1,238	7/2/18 17:00	1,362	7/21/19 13:00	1,344	7/20/20 16:00	1,343	6/30/21 19:00	1,340	345
	7/20/17 16:00	700	7/3/18 16:00	731	7/21/19 16:00	764	7/20/20 18:00	763	6/27/21 17:00	600	175
	7/20/17 16:00	700	7/3/18 16:00	731	7/21/19 16:00	764	7/20/20 18:00	763	6/27/21 17:00	600	175
	7/20/17 14:00	578	1/9/18 6:00	565	7/22/19 16:58	560	7/20/20 19:48	570	7/13/21 19:00	570	155
	7/20/17 14:00	578	1/9/18 6:00	565	7/22/19 16:58	560	7/20/20 19:48	570	7/13/21 19:00	570	155
	7/19/17 10:53	2,290	8/28/18 13:55	2,262	7/19/19 12:23	2,450	7/22/20 14:54	280	7/15/21 15:00	270	19
	7/19/17 10:53	2,290	8/28/18 13:55	2,262	7/19/19 12:23	2,450	7/22/20 14:54	280	7/15/21 15:00	270	19
	1/9/17 6:00	3,285	1/6/18 18:00	3,565	1/31/19 7:25	1,740	7/20/20 16:58	1,670	6/30/21 19:11	1,610	987
	1/9/17 6:00	1,380	1/6/18 18:00	1,497	1/31/19 7:25	731	7/20/20 16:58	701	6/30/21 19:11	676	418
	1/9/17 6:00	1,905	1/6/18 18:00	2,068	1/31/19 7:25	1,009	7/20/20 16:58	969	6/30/21 19:11	934	569
	1/9/17 6:00	2,196	7/2/18 17:00	2,227	7/21/19 17:00	2,254	7/20/20 17:00	2,320	8/11/21 17:00	2,200	623
	1/9/17 6:00	2,196	7/2/18 17:00	2,227	7/21/19 17:00	2,254	7/20/20 17:00	2,320	8/11/21 17:00	2,200	623
	3/15/17 12:00	1,358	7/3/18 17:00	1,277	7/21/19 16:00	1,353	7/21/20 17:00	1,325	6/20/21 18:00	1,100	357

[redacted]											
	3/15/17 12:00	1,358	7/3/18 17:00	1,277	7/21/19 16:00	1,353	7/21/20 17:00	1,325	6/20/21 18:00	1,100	357
	7/20/17 14:00	1,344	9/4/18 14:00	1,415	7/30/19 15:00	1,496	7/21/20 14:00	1,536	8/11/21 14:51	1,400	298
	7/20/17 14:00	1,344	9/4/18 14:00	1,415	7/30/19 15:00	1,496	7/21/20 14:00	1,536	8/11/21 14:51	1,400	298
	7/22/17 14:00	878	7/2/18 17:00	953	7/21/19 15:00	887	7/20/20 17:00	897	6/6/21 20:00	800	242
	7/22/17 14:00	878	7/2/18 17:00	953	7/21/19 15:00	887	7/20/20 17:00	897	6/6/21 20:00	800	242
	7/19/17 17:00	2,098	7/3/18 16:00	2,238	7/21/19 16:00	2,330	7/20/20 17:00	2,283	8/12/21 17:00	2,240	569
	7/19/17 17:00	2,098	7/3/18 16:00	2,238	7/21/19 16:00	2,330	7/20/20 17:00	2,283	8/12/21 17:00	2,240	569
	7/20/17 15:00	2,488	7/2/18 15:00	2,641	7/21/19 16:00	2,746	7/21/20 15:00	2,730	8/12/21 16:00	2,710	625
	7/20/17 15:00	1,244	7/2/18 15:00	1,320	7/21/19 16:00	1,373	7/21/20 15:00	1,365	8/12/21 16:00	1,355	290
	7/20/17 15:00	1,244	7/2/18 15:00	1,320	7/21/19 16:00	1,373	7/21/20 15:00	1,365	8/12/21 16:00	1,355	335
	7/19/17 17:00	2,164	7/3/18 16:00	2,200	7/21/19 16:00	2,418	8/11/20 17:00	2,374	8/13/21 17:00	2,410	710
	7/19/17 17:00	1,515	7/3/18 16:00	1,540	7/21/19 16:00	1,693	8/11/20 17:00	1,662	8/13/21 17:00	1,687	490
	7/19/17 17:00	649	7/3/18 16:00	660	7/21/19 16:00	725	8/11/20 17:00	712	8/13/21 17:00	723	220
	7/24/17 20:00	3,416	7/26/18 15:00	4,376	1/7/19 10:00	2,860	1/2/20 9:00	3,038	8/13/21 17:00	2,520	613
	7/24/17 20:00	1,366	7/26/18 15:00	1,750	1/7/19 10:00	1,144	1/2/20 9:00	1,215	8/13/21 17:00	1,008	173
	7/24/17 20:00	2,050	7/26/18 15:00	2,626	1/7/19 10:00	2,626	1/2/20 9:00	1,823	8/13/21 17:00	1,512	440
	1/9/17 6:00	2,889	7/2/18 17:00	2,975	7/21/19 17:00	3,213	8/11/20 17:00	3,108	8/12/21 17:00	3,140	907
	1/9/17 6:00	1,878	7/2/18 17:00	1,934	7/21/19 17:00	2,088	8/11/20 17:00	2,020	8/12/21 17:00	2,041	816
	1/9/17 6:00	1,011	7/2/18 17:00	1,041	7/21/19 17:00	1,125	8/11/20 17:00	1,088	8/12/21 17:00	1,099	91
	1/9/17 6:00	1,130	7/1/18 17:00	1,182	7/21/19 17:00	1,295	7/20/20 17:00	1,257	7/6/21 19:00	1,300	291
	1/9/17 6:00	1,130	7/1/18 17:00	1,182	7/21/19 17:00	1,295	7/20/20 17:00	1,257	7/6/21 19:00	1,300	291
	7/20/17 17:00	1,549	1/7/18 9:00	1,646	7/21/19 16:00	1,685	7/20/20 17:00	1,685	8/10/21 18:00	1,700	448
	7/20/17 17:00	1,549	1/7/18 9:00	1,646	7/21/19 16:00	1,685	7/20/20 17:00	1,685	8/10/21 18:00	1,700	448
	1/9/17 7:00	31,778	1/5/18 8:00	37,442	1/31/19 7:00	38,154	7/3/20 16:00	31,283	8/11/21 18:00	29,200	6,752
	1/8/17 8:00	18,420	1/5/18 8:00	22,414	1/21/19 7:00	20,744	7/28/20 16:00	17,823	8/13/21 17:00	17,286	3,972
	1/9/17 8:00	13,589	1/7/18 7:00	15,405	1/31/19 7:00	17,436	7/6/20 16:00	12,808	8/11/21 16:00	13,015	2,780
	7/20/17 15:00	14,926	1/7/18 7:00	17,577	9/4/19 17:00	18,957	7/21/20 18:00	16,800	8/13/21 18:00	16,000	2,061
	1/9/17 7:00	4,741	1/7/18 7:00	5,413	1/31/19 7:00	5,214	7/20/20 17:00	4,373	1/29/21 7:00	4,200	1,057
	7/20/17 18:00	10,928	1/7/18 7:00	12,164	7/21/19 18:00	12,270	7/22/20 16:00	11,653	8/13/21 17:00	11,310	1,004
	1/8/17 9:00	10,062	1/6/18 8:00	11,729	1/31/19 6:00	11,016	7/19/20 15:00	10,215	7/17/21 15:00	9,937	2,311
	1/8/17 9:00	3,921	1/6/18 7:00	5,000	1/21/19 8:00	4,565	7/3/20 17:00	4,191	7/17/21 15:00	3,999	1,145
	1/8/17 9:00	6,159	1/6/18 8:00	6,883	1/31/19 6:00	6,516	7/19/20 15:00	6,004	7/17/21 15:00	5,938	1,166
	7/22/17 15:00	5,888	7/2/18 17:00	6,107	7/20/19 17:00	6,595	7/4/20 13:00	7,198	8/13/21 18:00	5,616	1,458
	6/12/17 17:00	29	7/16/18 15:00	29	7/20/19 17:00	39	7/6/20 15:00	29	7/7/21 17:00	29	8
	7/22/17 15:00	5,888	7/2/18 17:00	6,107	7/20/19 17:00	6,595	7/4/20 13:00	7,198	8/13/21 18:00	5,616	1,450
	N/A	N/A	N/A	N/A	1/31/19 6:00	21,900	12/20/20 7:00	19,000	1/29/21 6:00	42,709	4,509
	N/A	N/A	N/A	N/A	1/31/19 6:00	38,080	12/20/20 6:00	31,821	1/29/21 6:00	25,532	2,109
	N/A	N/A	N/A	N/A	1/31/19 6:00	24,349	12/20/20 7:00	21,609	1/29/21 6:00	17,177	1,207
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8/12/21 20:00	6,523	1,193
	1/7/17 17:00	35,385	1/5/18 7:00	41,441	1/21/19 7:00	39,695	8/28/20 15:00	28,891	8/13/21 17:00	22,980	6,203
	1/8/17 8:00	9,522	1/6/18 7:00	11,514	1/21/19 7:00	11,294	8/8/20 9:00	8,602	7/17/21 16:00	8,670	1,990
	1/8/17 8:00	5,904	1/6/18 7:00	7,213	1/21/19 6:00	7,461	12/19/20 6:00	5,261	1/29/21 7:00	5,210	2,093
	1/8/17 7:00	18,592	1/5/18 7:00	22,590	1/31/19 7:00	21,545	1/23/20 7:00	15,014	1/29/21 7:00	9,526	2,120
	1/9/17 7:00	20,667	1/7/18 7:00	26,511	1/31/19 7:00	22,700	7/21/20 17:00	17,927	7/13/21 18:00	18,200	2,490
	1/9/17 7:00	9,580	1/7/18 7:00	11,463	1/31/19 6:00	10,663	7/21/20 18:00	9,877	8/12/21 17:00	9,651	544
	7/19/17 14:00	4,841	7/2/18 12:00	4,930	1/31/19 7:00	5,607	1/21/20 7:00	5,221	7/14/21 17:00	4,913	858
	1/9/17 7:00	6,599	1/7/18 7:00	10,291	1/21/19 7:00	5,923	7/21/20 17:00	4,236	1/29/21 6:00	4,414	1,088
	1/9/17 7:00	11,277	7/2/18 16:00	16,576	1/21/19 11:00	11,689	8/10/20 14:00	15,578	8/13/21 17:00	9,743	1,551
	N/A	N/A	1/7/18 7:00	6,029	6/29/19 14:00	9,805	8/11/20 17:00	8,801	8/13/21 17:00	9,352	1,147
	1/9/17 7:00	11,277	7/2/18 19:00	8,301	1/21/19 6:00	2,090	7/21/20 20:00	1,759	7/12/21 20:00	1,625	404
	1/9/17 7:00	29,763	1/3/18 7:00	33,618	1/31/19 7:00	32,178	7/21/20 17:00	28,245	8/13/21 18:00	27,800	3,026
	1/9/17 7:00	12,841	1/7/18 7:00	14,689	1/31/19 7:00	13,820	7/20/20 18:00	11,296	6/30/21 18:00	11,311	1,860
	1/9/17 7:00	16,922	1/3/18 7:00	19,139	1/31/19 7:00	18,358	7/22/20 16:00	16,121	8/13/21 16:00	16,502	1,166
	1/8/17 8:00	44,570	1/5/18 7:00	55,553	1/31/19 0:00	54,762	12/19/20 0:00	41,055	1/29/21 0:00	41,221	7,325
	1/9/17 7:00	15,275	1/5/18 7:00	18,646	1/31/19 7:00	18,826	12/19/20 7:00	14,554	1/29/21 7:00	14,389	2,112
	1/8/17 8:00	14,919	1/6/18 7:00	17,143	1/21/19 7:00	16,903	12/19/20 6:00	12,290	1/29/21 7:00	12,474	2,375
	1/8/17 9:00	16,007	1/5/18 7:00	20,017	1/31/19 7:00	19,260	12/19/20 7:00	14,304	2/17/21 7:00	12,785	2,838
	7/20/17 14:00	18,432	1/6/18 9:00	32,305	1/21/19 9:00	32,928	8/27/20 15:00	30,934	12/26/21 9:00	25,071	3,962
	1/8/17 10:00	11,359	1/3/18 8:00	15,831	12/11/18 7:00	13,985	1/23/20 7:00	14,834	8/11/21 17:00	11,221	2,122
	8/22/17 14:00	9,569	1/6/18 7:00	20,511	1/31/19 5:00	18,613	7/30/20 15:00	13,630	1/29/21 7:00	13,097	1,840
	1/8/17 8:00	10,639	1/5/18 7:00	12,960	1/21/19 7:00	12,464	7/3/20 17:00	8,813	1/29/21 7:00	8,967	2,070
	1/8/17 8:00	7,174	1/5/18 7:00	8,602	1/31/19 7:00	7,788	7/19/20 16:00	5,801	1/29/21 7:00	6,167	1,398
	1/8/17 7:00	3,494	1/6/18 7:00	4,288	1/31/19 7:00	3,842	8/2/20 17:00	2,963	1/28/21 21:00	2,723	672
	7/12/17 15:00	4,525	1/7/18 7:00	5,122	1/21/19 7:00	5,020	7/21/20 16:00	4,699	1/29/21 7:00	3,887	1,059
	7/12/17 15:00	1,358	7/12/17 15:00	1,536	1/21/19 7:00	1,506	7/21/20 16:00	1,409	1/29/21 7:00	1,167	299
	7/12/17 15:00	3,167	7/12/17 15:00	3,586	1/21/19 7:00	3,514	7/21/20 16:00	3,290	1/29/21 7:00	2,720	760
	1/8/17 8:00	16,655	1/7/18 7:00	21,015	1/21/19 7:00	19,472	7/19/20 17:00	15,245	1/29/21 7:00	15,029	2,854
	1/8/17 8:00	9,204	1/7/18 7:00	11,631	1/21/19 7:00	10,711	7/19/20 17:00	8,078	7/17/21 16:00	8,084	1,444
	1/8/17 18:00	7,579	1/7/18 7:00	9,383	1/31/19 7:00	8,845	7/18/20 17:00	6,772	8/13/21 17:00	6,708	1,410
	6/12/17 13:00	26,300	1/5/18 8:00	29,170	2/28/19 8:00	27,962	7/20/20 14:00	29,070	8/13/21 16:00	25,813	5,841
	7/14/17 14:00	4,595	1/6/18 8:00	7,370	1/30/19 8:00	6,960	7/22/20 15:00	9,692	8/13/21 16:00	9,296	1,828
	1/8/17 18:00	4,532	1/6/18 19:00	4,978	1/21/19 9:00	4,772	7/20/20 16:00	4,031	1/29/21 8:00	4,122	997
	1/8/17 19:00	7,152	1/6/18 19:00	8,073	1/31/19 9:00	7,302	7/20/20 16:00	6,785	8/13/21 16:00	6,730	2,003
	6/13/17 16:00	5,767	1/5/18 8:00	7,064	8/19/19 11:00	6,488	7/7/20 13:00	6,357	7/8/21 13:00	6,500	10
	7/13/17 13:00	3,143	8/29/18 14:00	3,656	7/17/19 11:00	3,727	7/27/20 19:00	5,536	8/24/21 13:00	4,381	95
	6/12/17 16:00	6,560	1/5/18 19:00	5,243	6/13/19 15:00	4,680	7/16/20 14:00	4,998	8/12/21 17:00	4,440	908
	6/12/17 16:00	6,560	1/5/18 19:00	5,243	6/13/19 15:00	4,680	7/16/20 14:00	4,998	8/12/21 17:00	4,440	908
	6/13/17 14:00	8,714	1/7/18 7:00	8,712	1/31/19 6:00	8,063	7/21/20 16:00	7,304	8/13/21 16:00	7,290	1,341
	6/13/17 14:00	8,714	1/7/18 7:00	8,712	1/31/19 6:00	8,063	7/21/20 16:00	7,304	8/13/21 16:00	7,290	1,341
	8/9/17 14:00	5,434	7/3/18 15:00	5,712	7/22/19 14:00	6,333	7/21/20 14:00	6,356	7/27/21 16:00	4,830	984
	8/9/17 14:00	5,434	7/3/18 15:00	5,712	7/22/19 14:00	6,333	7/21/20 14:00	6,356	7/27/21 16:00	4,830	984
	1/10/17 8:00	18,210	1/3/18 7:00	18,716	1/31/19 8:00	19,621	7/28/20 13:00	19,652	8/24/21 13:00	18,470	2,539
	7/22/17 14:00	11,483	1/3/18 8:00	7,280	1/31/19 8:00	7,368	1/22/20 8:00	6,304	1/11/21 7:00	5,996	1,194
	6/12/17 13:00	10,329	1/3/18 7:00	11,499	8/19/19 13:00	12,473	7/21/20 12:00	13,357	8/12/21 15:00	13,472	1,345
	7/21/17 17:00	1,206	1/7/18 8:00	1,478	7/21/19 16:00	1,325	7/19/20 16:00	1,319	1/29/21 6:00	1,042	357
	7/21/17 17:00	1,206	1/7/18 8:00	1,478	7/21/19 16:00	1,325	7/19/20 16:00	1,319	1/29/21 6:00	1,042	357
	1/8/17 9:00	20,320	1/5/18 6:00	23,503	1/21/19 7:00	22,326	7/30/20 16:00	14,859	1/29/21 7:00	13,898	4,183
	1/8/17 19:00	9,752	1/3/18 7:00	11,546	1/31/19 7:00	10,972	2/21/20 7:00	7,786	2/23/21 7:00	5,680	1,463
	1/8/17 9:00	10,704	1/6/18 8:00	12,554	7/21/19 15:00	12,468	7/20/20 17:00	10,848	8/13/21 18:00	9,738	2,720
	N/A	N/A	N/A	N/A	8/19/19 15:00	34,944	7/20/20 13:00	44,403	8/13/21 16:00	40,071	7,235
	N/A	N/A	N/A	N/A	8/19/19 15:00	3,207	7/28/20 17:00	3,420	1/29/21 7:00	3,410	972
	N/A	N/A	N/A	N/A	8/20/19 13:00	9,107	7/20/20 15:00	8,849	8/13/21 15:00	8,061	1,723
	N/A	N/A	N/A	N/A	6/23/19 12:00	1,537	7/28/20 14:00	9,108	8/13/21 15:00	7,823	1,485
	N/A	N/A	N/A	N/A	N/A	N/A	1/21/20 7:00	9,935	12/3/20 11:00	7,628	13
	N/A	N/A	N/A	N/A	8/20/19 13:00	14,080	6/4/20 17:00	7,547	8/13/21 21:00	7,648	1,484
	N/A	N/A	N/A	N/A	8/20/19 13:00	7,574	1/21/20 8:00	8,074	8/13/21 15:00	7,720	1,558
	1/9/17 7:00	42,566	1/3/18 7:00	45,570	1/31/19 7:00	42,732	7/20/20 16:00	41,172	8/13/21 16:00	43,090	8,907
	8/1/17 14:00	13,468	8/29/18 16:00	16,439	7/22/19 17:00	16,272	7/30/20 15:00	14,135	8/13/21 16:00	17,561	2,400
	1/9/17 7:00	4,347	7/2/18 16:00	6,780	1/31/19 7:00	11,683	7/21/20 17:00	7,020	8/13/21 16:00	6,930	1,642
	1/9/17 7:00	13,785	1/3/18 7:00	14,779	1/31/19 7:00	13,329	7/20/20 16:00	11,747	8/13/21 16:00	11,034	3,242
	7/13/17 13:00	15,256	1/3/18 7:00	15,235	7/22/19 16:00	12,176	8/27/20 16:00	11,787	8/27/21 16:00	11,749	1,623
	N/A	N/A	N/A	N/A	1/21/19 7:00	7,737	12/20/20 6:00	6,495	8/11/21 19:00	5,998	1,835
	N/A	N/A	N/A	N/A	6/11/19 13:00	169	12/20/19 6:00	2,964	7/17/21 9:00	1,906	739
	N/A	N/A	N/A	N/A	1/21/19 7:00	7,741	12/20/19 6:00	3,530	1/29/21 6:00	3,600	1,096
	1/9/17 7:00	72,203	1/3/18 7:00	76,005	1/31/19 7:00	72,585	12/20/20 7:00	49,775	8/13/21 16:00	35,363	8,139
	12/15/16 17:00	15,870	1/3/18 7:00	17,077	1/31/19 7:00	16,699	7/21/20 14:00	3,178	8/12/21 15:00	3,069	315
	1/9/17 7:00	16,679	1/7/18 7:00	17,591	1/31/19 7:00	16,152	12/20/20 7:00	14,056	8/13/21 16:00	8,061	1,937
	1/9/17 8:00	10,158	7/2/18 10:00	9,874	8/22/19 13:00	9,699	1/21/20 8:00	8,689	6/7/21 12:00	8,830	1,327
	12/16/16 7:00	15,931	1/3/18 6:00	19,890	7/21/19 16:00	22,642	12/20/20 7:00	22,634	8/13/21 16:00	14,294	3,663

1/9/17 8:00	12,246	1/3/18 7:00	13,530	1/31/19 8:00	12,938	7/20/20 15:00	4,090	8/13/21 14:00	3,637	897
6/6/17 17:00	48,146	6/19/18 13:00	49,641	7/17/19 15:00	44,755	2/10/20 7:00	32,259	8/13/21 14:00	32,370	5,459
1/8/17 18:00	9,768	1/3/18 7:00	11,793	1/31/19 7:00	11,081	7/20/20 15:00	2,974	1/29/21 7:00	3,027	678
1/10/17 6:00	5,384	1/6/18 8:00	6,304	1/22/19 7:00	4,312	7/22/20 15:00	3,684	1/31/21 12:00	4,395	1,423
7/20/17 14:00	14,129	7/2/18 14:00	13,981	7/17/19 15:00	13,846	7/20/20 14:00	13,354	8/13/21 13:00	12,921	1,253
8/18/17 16:00	14,453	6/19/18 13:00	21,568	7/22/19 16:00	14,394	3/9/20 7:00	13,049	8/13/21 15:00	7,076	1,924
7/12/17 15:00	6,440	8/17/18 14:00	6,206	7/17/19 12:00	6,052	8/27/20 11:00	5,873	7/26/21 13:00	5,889	181
9/20/17 16:00	33,542	1/7/18 7:00	39,109	12/19/19 6:00	31,443	7/20/20 16:00	26,424	8/13/21 16:00	24,740	4,956
1/9/17 7:00	3,971	1/7/18 7:00	4,867	1/31/19 6:00	5,204	7/21/20 17:00	4,493	8/13/21 16:00	4,312	829
1/9/17 7:00	16,617	1/7/18 7:00	22,535	12/11/19 6:00	12,308	7/20/20 17:00	8,406	8/13/21 17:00	7,561	1,733
7/20/17 14:00	13,222	7/2/18 16:00	13,370	1/31/19 7:00	13,311	7/30/20 15:00	12,774	8/13/21 17:00	12,699	2,394
1/9/17 8:00	3,623	1/7/18 8:00	4,230	1/31/19 7:00	4,265	7/20/20 16:00	4,021	7/20/21 19:00	3,850	902
1/9/17 7:00	2,351	1/7/18 8:00	2,693	1/21/19 18:00	2,444	7/21/20 17:00	2,353	7/13/21 17:00	2,262	573
1/9/17 8:00	1,343	7/3/18 14:00	1,790	1/31/19 8:00	1,941	1/21/20 8:00	1,634	2/8/21 7:00	1,530	329
1/8/17 18:00	10,224	1/6/18 18:00	11,649	1/31/19 7:00	10,183	7/21/20 17:00	9,230	8/13/21 17:00	9,029	2,307
7/22/17 16:00	6,234	1/6/18 18:00	5,890	1/21/19 18:00	5,457	7/21/20 16:00	4,494	1/29/21 7:00	4,649	1,307
3/5/17 8:00	6,793	1/6/18 18:00	5,759	1/31/19 7:00	4,981	7/3/20 17:00	4,661	8/13/21 17:00	4,672	1,000
3/28/17 2:00	4,221	1/5/18 7:00	4,005	1/21/19 7:00	4,150	7/21/20 16:00	3,770	8/12/21 17:00	3,280	663
3/28/17 2:00	4,221	1/5/18 7:00	4,005	1/21/19 7:00	4,150	7/21/20 16:00	3,770	8/12/21 17:00	3,280	663
1/9/17 7:00	10,718	1/3/18 7:00	11,980	1/22/19 7:00	10,818	7/20/20 14:00	9,938	7/1/21 15:00	9,100	1,746
1/9/17 7:00	5,909	1/7/18 7:00	6,627	1/22/19 7:00	5,799	7/20/20 14:00	4,580	1/29/21 7:00	4,844	1,077
1/9/17 7:00	4,809	1/3/18 7:00	5,503	1/22/19 8:00	5,038	1/21/20 7:00	4,462	6/30/21 14:00	4,391	669
1/9/17 7:00	28,412	1/7/18 7:00	31,692	1/31/19 7:00	28,593	7/21/20 14:00	27,111	8/26/21 14:00	25,179	5,135
1/9/17 7:00	13,686	1/7/18 7:00	15,920	1/21/19 7:00	13,989	1/21/20 7:00	11,760	1/29/21 7:00	12,060	2,973
6/13/17 15:00	16,426	1/7/18 7:00	15,772	7/22/19 15:00	15,536	7/21/20 13:00	16,280	7/7/21 12:00	16,346	2,162
1/9/17 8:00	15,355	1/3/18 8:00	15,677	1/21/19 10:00	17,275	1/21/20 7:00	14,967	8/13/21 14:00	14,899	2,796
1/9/17 8:00	23,530	1/7/18 8:00	23,909	1/21/19 10:00	8,242	8/5/20 15:00	8,209	8/12/21 15:00	7,209	1,346
1/9/17 8:00	15,815	1/3/18 7:00	17,148	1/31/19 7:00	6,444	2/21/20 9:00	5,681	3/8/21 6:00	5,019	1,170
8/4/17 10:00	6,921	8/16/18 16:00	8,569	7/3/19 13:00	3,653	7/30/20 17:00	4,168	8/12/21 21:00	3,949	280
N/A	N/A	7/3/18 18:00	1,891	8/19/19 18:00	2,016	7/20/20 19:00	1,980	8/11/21 16:00	1,571	452
N/A	N/A	7/3/18 18:00	1,891	8/19/19 18:00	2,016	7/20/20 19:00	1,980	8/11/21 16:00	1,571	452
7/4/17 17:00	40,647	1/6/18 7:00	51,409	1/21/19 7:00	44,337	7/3/20 18:00	38,959	7/11/21 15:00	40,400	13,478
7/2/17 18:00	8,006	1/7/18 6:00	9,855	7/4/19 18:00	8,930	7/26/20 18:00	7,736	7/16/21 18:00	7,262	3,247
1/8/17 7:00	13,361	1/7/18 7:00	20,763	1/21/19 7:00	17,474	7/20/20 17:00	12,915	7/16/21 17:00	12,331	3,722
7/4/17 17:00	9,477	7/4/18 17:00	10,039	7/4/19 17:00	10,040	7/3/20 17:00	8,812	8/13/21 16:00	8,273	2,910
7/23/17 17:00	12,104	2/3/18 6:00	16,557	7/4/19 17:00	11,690	7/26/20 17:00	9,962	8/13/21 16:00	9,413	3,599
7/13/17 15:00	12,779	1/7/18 7:00	15,206	7/21/19 15:00	14,141	7/20/20 17:00	13,899	8/13/21 16:00	13,577	3,730
7/13/17 15:00	5,285	1/1/18 18:00	6,546	7/21/19 17:00	5,879	8/6/20 14:00	7,873	8/13/21 16:00	5,447	1,388
7/13/17 15:00	7,494	1/7/18 7:00	9,023	1/31/19 7:00	8,493	8/28/20 16:00	8,016	8/13/21 16:00	8,130	2,342
1/9/17 7:00	18,710	6/1/18 16:00	25,334	7/21/19 16:00	15,163	7/20/20 16:00	14,434	8/13/21 14:00	13,700	2,497
1/9/17 7:00	18,710	6/1/18 16:00	25,334	7/21/19 16:00	15,163	7/20/20 16:00	14,434	8/13/21 14:00	13,700	2,497
7/22/17 16:00	25,923	1/7/18 6:00	27,381	7/21/19 17:00	27,592	7/20/20 17:00	25,280	8/13/21 16:00	24,683	7,610
7/2/17 17:00	5,090	7/3/18 17:00	5,204	7/20/19 18:00	5,182	7/26/20 18:00	5,155	8/13/21 17:00	5,508	910
1/9/17 22:00	8,176	1/7/18 6:00	7,216	7/21/19 17:00	7,342	7/3/20 18:00	6,586	8/13/21 18:00	6,191	2,740
7/22/17 16:00	8,914	1/7/18 7:00	10,410	1/21/19 7:00	10,285	7/26/20 17:00	8,194	8/13/21 15:00	7,777	2,856
7/22/17 16:00	5,503	7/4/18 17:00	5,460	7/21/19 17:00	6,053	7/20/20 17:00	5,415	8/13/21 17:00	5,312	1,104
7/2/17 17:00	29,766	1/1/18 7:00	36,573	7/21/19 17:00	33,495	7/20/20 17:00	29,221	7/16/21 17:00	28,795	8,716
7/2/17 17:00	7,440	7/4/18 17:00	7,382	7/21/19 17:00	8,403	7/20/20 17:00	7,052	7/16/21 18:00	7,234	1,277
7/2/17 17:00	9,215	1/5/18 20:00	8,478	7/21/19 17:00	8,041	7/27/20 17:00	7,056	7/16/21 17:00	6,790	2,124
3/5/17 6:00	10,328	1/1/18 7:00	8,058	7/21/19 17:00	8,010	7/20/20 18:00	7,108	7/17/21 17:00	6,577	2,438
1/8/17 6:00	7,702	1/1/18 7:00	13,219	1/21/19 7:00	11,725	7/3/20 18:00	8,489	1/29/21 7:00	8,594	2,877
7/21/17 18:00	22,379	8/9/18 17:00	23,354	7/21/19 17:00	19,749	7/20/20 17:00	17,147	8/13/21 17:00	17,063	3,909
7/8/17 19:00	4,225	7/5/18 19:00	4,396	7/21/19 19:00	2,785	7/23/20 19:00	2,424	8/13/21 20:00	2,566	701
7/21/17 18:00	6,602	8/6/18 17:00	6,646	7/21/19 17:00	3,748	7/20/20 17:00	3,079	8/10/21 16:00	3,131	796
7/21/17 17:00	8,001	7/4/18 17:00	8,206	7/21/19 18:00	9,253	7/20/20 17:00	8,084	8/13/21 18:00	7,941	1,146
7/4/17 17:00	3,704	8/7/18 18:00	3,703	7/21/19 17:00	4,024	8/2/20 18:00	3,800	8/13/21 18:00	3,662	1,266
7/13/17 13:00	22,047	1/3/18 7:00	23,304	7/21/19 13:00	33,705	8/4/20 18:00	31,330	8/13/21 18:00	26,176	5,275
7/13/17 17:00	990	1/7/18 7:00	1,296	1/21/19 7:00	1,295	7/5/20 15:00	1,186	7/17/21 15:00	1,197	228
7/13/17 18:00	1,719	7/2/18 17:00	1,694	7/21/19 20:00	1,542	7/3/20 20:00	1,561	8/13/21 19:00	1,626	370
8/21/17 12:00	1,476	7/3/18 13:00	1,506	7/21/19 17:00	6,564	7/22/20 16:00	5,837	8/12/21 16:00	5,755	1296
7/13/17 13:00	5,279	1/7/18 7:00	7,106	1/31/19 7:00	5,991	7/20/20 20:00	4,231	1/29/21 6:00	4,618	1296
7/15/17 16:00	3,024	1/7/18 8:00	3,783	7/20/19 16:00	3,353	7/23/20 17:00	3,811	8/13/21 15:00	3,463	228
7/20/17 14:00	9,489	8/29/18 14:00	10,292	7/21/19 16:00	10,923	7/23/20 16:00	10,722	8/12/21 14:00	10,971	1857

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9681
RESPONSE TO OPC DATA REQUEST NO. 2

QUESTION NO. 3

Refer to Witness Normand's direct testimony, p. 12 regarding the R-PIV tariff.

a. How many customers are currently enrolled on this tariff (as of June 2022)?

b. Please describe all steps the Company is taking to enhance enrollment on this tariff and provide copies of marketing and outreach materials provided to customers, as well as links to website pages designed to enhance awareness and enrollment.

RESPONSE:

a. 6 customers are enrolled as of June 2022.

b. As a part of the approved EV smart Pilot program, Delmarva Power has developed customer education content that is available on the Delmarva Power Smart Energy website. The information educates the customer on rate plan options, the benefits, requirements of participation, and a link to the application. Print version of the program information is typically made available during in-person outreach events.

Whole House Time of Use Rate (TOU) | Delmarva Power - An Exelon Company

SPONSOR: Michael T. Normand / William Sullivan

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9681
RESPONSE TO OPC DATA REQUEST NO. 2

QUESTION NO. 4

Refer to Witness Normand's direct testimony, p. 12 regarding the PIV tariff.

a. How many customers are currently enrolled on this tariff (as of June 2022)?

b. Please describe all steps the Company is taking to enhance enrollment on this tariff and provide copies of marketing and outreach materials provided to customers, as well as links to website pages designed to enhance awareness and enrollment.

RESPONSE:

a. 0 customers are enrolled as of June 2022.

b. As a part of the approved EV smart Pilot program, Delmarva Power has developed customer education content that is available on the Delmarva Power Smart Energy website. The information educates the customer on how the program works, the benefits, requirements of participation, and a link to the application. Print version of the program information is typically made available during in-person outreach events.

PIV Managed Charger Program | Delmarva Power - An Exelon Company
How to Participate in the PIV Program | Delmarva Power - An Exelon Company

SPONSOR: Michael T. Normand / William Sullivan

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9681
RESPONSE TO OPC DATA REQUEST NO. 2

QUESTION NO. 8

Refer to Witness Blazunas' direct testimony, p. 35 regarding service classification R-TOU-ND.

a. Please explain how the proposed customer charge of $15 was derived.

b. What would be the corresponding volumetric rates be if the customer charge were $20?

c. Would enrollment on the tariff be limited to customers who have adopted beneficial electrification technologies (such as heat pumps)? If not, please explain why not.

RESPONSE:

a. The proposed Customer charge of $15 represents a reasonable reflection of costs (slightly below 70% of the Company's Test Period Unit Cost for Service Classification "R" of $21.84) while still maintaining the Commission's preference for an emphasis on conservation.

b. Please see Attachment.

c. No. While the design of this rate had customers who have adopted beneficial electrification technologies in mind it would not be limited to those customers. Since the proposed customer charge and corresponding lower volumetric rates are reflective of costs this tariff is proposed to be available to any eligible residential customer. This rate would provide all residential customers an additional choice with respect to their service classification and, consequently, residential customers would have the ability to determine for themselves which service classification available to them is best suited to meet their energy requirements.

SPONSOR: Peter R. Blazunas

DPL MARYLAND
PROPOSED TIME-OF-USE DISTRIBUTION RATE R-TOU-ND (RY1)
UTILIZING SALES AND RATES FOR SCHEDULE R - RESIDENTIAL SERVICE

	REVENUE AT PROPOSED RATES (RY1) - R				PROPOSED REVENUE - R-TOU-ND			
	RY1 BILLING DETERMINANTS (1)	PROPOSED RATES (2)	REVENUE AT PROPOSED RATES (3) = (1) x (2)	RY1 BILLING DETERMINANTS (4)	PROPOSED RATES (5)		REVENUE AT PROPOSED RATES (6) = (4) x (5)	
1. CUSTOMER CHARGE	BILLS			BILLS				
Schedule R	2,191,667	$ 8.96	$ 19,637,336	2,191,667	$ 20.00		$ 43,833,340	
	kWh	$/kWh		kWh	**$/kWh**	**Ratio**		
2. DELIVERY SERVICE CHARGE								
Summer								
Schedule R - On Peak				143,221,110	**0.100233**	**2.0**	$ 14,355,481	
Schedule R - Off Peak				585,099,478	**0.050116**		$ 29,322,845	
Schedule R - Total	728,320,588	0.071515	$ 52,085,847	728,320,588			$ 43,678,326	
				24%				
Winter								
Schedule R - On Peak				319,086,806	**0.090590**	**1.9**	$ 28,906,074	
Schedule R - Off Peak				1,098,617,315	**0.048350**		$ 53,118,147	
Schedule R - Total	1,417,704,121	0.068994	$ 97,813,078	1,417,704,121			$ 82,024,221	
	2,146,024,709			29%				
3. TOTAL REVENUE			$ 169,536,261				$ 169,535,887	
							$ (374)	

	CCOS						$20 Cust Charge	
	Total (a)	Summer		Winter			Summer	Winter
	100%	34%		66%				
Demand Primary	$ 81,935,080	$ 27,807,231	70%	$ 54,127,849	70%		$ 30,682,975	$ 57,620,186
Customer	$ 3,872,456	$ 1,314,239	3%	$ 2,558,217	3%		$ 1,450,154	$ 2,723,274
Energy plus Other Demand	$ 30,830,179	$ 10,463,185	26%	$ 20,366,994	26%		$ 11,545,258	$ 21,681,076
	$ 116,637,715	$ 39,584,656	100%	$ 77,053,059	100%		$ 43,678,386	$ 82,024,535

Primary Weighting

Peak	23% (b)
Off-Peak	77%
	100%

Billing Determinant Allocation (c)	Summer	Winter
Peak	19.66%	22.51%
Off Peak	80.34%	77.49%
Total	100%	100%

(a) - Customer = (CCOSS amount less customer charge revenue of $43.833M shown above).
(b) - Calculated amount to ensure peak rates are capped at a ratio of approximately 2:1.
(c) - Calculated amount using 2021 hourly residential load data.

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9681
RESPONSE TO OPC DATA REQUEST NO. 14

QUESTION NO. 1

Witness Normand's Rebuttal Testimony in Case No. 9670 states that "the Company is open to submetering," but that submeters "are currently only used for rebates and not billing which would require additional investment to upgrade the Company's billing system." Regarding the PIV and R-PIV rate filed in this proceeding:

a. Does it remain the case that DPL does not use submetering for billing? Please explain.
b. If DPL does not use submetering for EV billing purposes, please provide a timeline of when it expects to implement this.
c. Please quantify the "additional investment to upgrade the Company's billing system" that would be required to implement billing uses submeters. Please explain why these upgrades are necessary and provide supporting workpapers for the Company's estimate.

RESPONSE:

a. Yes. Absent upgrades, the Company's billing system is not designed to integrate vehicle metrology data in addition to normal utility grade metering for issuance of retail invoices to customers. To enable submetering IT and billing system upgrades would be required.

b/c. The Company is still evaluating and determining the scope of work required to allow integration of submetering data and therefore a project timeline and project costs are not available. Please note that the Company's EV program is a five-year pilot program, and any potential submetering options would only be available to 37 customers as currently approved by the Commission in Order No. 88997.

SPONSOR: William Sullivan / Michael T. Normand