BEFORE THE MAINE PUBLIC UTILITIES COMMISSION

RE: Central Maine Power Company Request for
Approval of Distribution Rate Increase and Rate
Design Changes Pursuant to 35-A M.R.S. § 307

Docket No. 2022-00152

Direct Testimony of
Melissa Whited and Eric Borden

On Behalf of
Maine Office of the Public Advocate

December 2, 2022

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Exhibit MW-EB-1: Resume of Melissa Whited

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, title, and employer.

A. **Ms. Whited:** My name is Melissa Whited. I am a Senior Principal at Synapse Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Suite 3, Cambridge, MA 02139.

Q. Mr. Borden: My name is Eric Borden. I am a Principal Associate at Synapse

A. Energy Economics ("Synapse"), located at 485 Massachusetts Avenue, Suite 3, Cambridge, MA 02139.

Q. Please describe Synapse Energy Economics.

A. Synapse is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues, including economic and technical assessments of demand-side and supply-side energy resources; energy efficiency policies and programs; integrated resource planning; electricity market modeling and assessment; renewable resource technologies and policies; and climate change strategies. Synapse works for a wide range of clients, including attorneys general, offices of consumer advocates, public utility commissions, environmental advocates, the U.S. Environmental Protection Agency, U.S. Department of Energy, U.S. Department of Justice, the Federal Trade Commission, and the National Association of Regulatory Utility Commissioners. Synapse has over 30 professional staff with extensive experience in the electricity industry.

Q. Please summarize your professional and educational experience.

A. **Ms. Whited:** I have 13 years of experience in economic research and consulting and have worked extensively on issues related to rate design and utility regulatory models. In addition to authoring numerous reports and testimony on rate design topics, I have been an invited panelist at annual meetings of both the National Association of Regulatory Utility Commissioners (NARUC) and the National Association of State Utility Consumer

Advocates (NASUCA). I am also a frequent guest lecturer at the University of Wisconsin, Department of Agricultural and Applied Economics.

I have sponsored testimony before the Maine Public Utilities Commission, the Georgia Public Service Commission, the Rhode Island Public Utilities Commission, the Public Service Commission of Maryland, the Massachusetts Department of Public Utilities, 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, Newfoundland and Labrador Board of Commissioners of Public Utilities, the Nova Scotia Utility and Review Board, and the Federal Energy Regulatory Commission. 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. My resume is attached as Exhibit MW-EB-1.

A. **Mr. Borden:** I have over 10 years of experience in the energy industry and joined Synapse in 2022. From 2015 to 2022, I was a Senior Energy Expert at The Utility Reform Network ("TURN") in California, where I served as an expert witness in numerous proceedings before the California Public Utilities Commission. I provided in-depth analysis to inform policy recommendations on a variety of energy issues, including several applications and policy-related proceedings related to electric vehicle infrastructure and policy. Prior to my role at TURN, I served as a Senior Energy Analyst at 4Thought Energy, where I conducted financial analyses based on multiple utility tariffs for a distributed generation natural gas combined heat and power firm. I also have previous consulting experience. I have a Bachelor's degree in finance from Washington University in St. Louis and a Master's in Public Affairs from the University of Texas at Austin. My resume is attached as Exhibit MW-EB-2.

Q. On whose behalf are you testifying in this case?

A. We are testifying on behalf of the Office of the Public Advocate (OPA).

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to address certain aspects of the rate application of Central Maine Power ("CMP" or the "Company"). Specifically, our testimony addresses the Company's proposed increase to the residential service charge and design of time-of-use ("TOU") rates. We do not address all aspects of the Company's proposal; silence on any issue should not necessarily be taken as acceptance of the Company's proposals related to such issue.

Q. What materials did you rely on to develop your testimony?

A. The sources for our testimony and exhibits are public documents, responses to discovery requests, and our personal knowledge and experience.

Q. Was your testimony prepared by you or under your direction?

A. Yes. Our testimony was prepared by us or under our direct supervision and control.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. Please summarize your main conclusions.

A. Our conclusions are as follows:

- The Company's proposal to increase the residential "service" charge by more than $9.00 is extreme, would adversely impact many low-income customers, disempowers customers, runs counter to state policy aims related to energy efficiency and conservation, and violates the principle of cost causation.
- The Company's proposed rate designs fail to include any seasonal differentiation, which distorts price signals and results in intra-class inequities.
- The Company's proposed TOU rates do not fully support Maine's energy policy goals, as they only apply to delivery rates while ignoring marginal generation and greenhouse gas emissions costs.

Q. Please summarize your recommendations.

A. We offer the following recommendations:

1. The Commission should reject the Company's proposal to include transformers, secondary lines, and local primary lines in the fixed service charge and instead direct the Company to recover these costs through volumetric rates.
2. The Commission should direct the Company to refile its residential rate design proposal with seasonally differentiated rates for all residential rate schedules.
3. The Commission should direct the Company to investigate needed billing system updates necessary to support optional time-varying standard offer service rates in order to better reflect Maine's energy policy goals.

III. THE COMPANY'S PROPOSAL TO INCREASE THE RESIDENTIAL SERVICE CHARGE SHOULD BE REJECTED.

Q. Please describe the Company's proposed increase to the residential service charge.

A. The Company proposes to increase the residential customer or "service" charge for transmission and distribution costs by more than $9, from $13.73 per month to $23.80 per month in Rate Year 3—a 67 percent increase.

Q. Is the proposed increase to the residential service charge reasonable?

A. No, for multiple reasons:

1. The proposal is not cost-based, as it includes costs that are demand-driven, which are neither fixed in nature nor customer-related.
2. The proposed service charge is exceedingly high and out-of-step with other utilities in the region.
3. Low-usage customers, and low-income customers in particular, are likely to experience the highest percentage increases in their bills.

4. The increase in the service charge represents a trend in customers' bills becoming more fixed, which reduces customer control.
5. All else equal, higher fixed charges dampen incentives for energy efficiency and conservation, undermining state energy policy goals.

The Proposed Service Charge Is Inconsistent with Cost Causation

Q. What is cost causation, and why is it important in rate design?

A. The principle of cost causation in rate design seeks to answer the question of why certain costs were incurred. Rates that reflect cost causation principles send more accurate price signals and reduce inequities.

Q. Is the proposed increase to the service charge consistent with cost causation?

A. No. The Company proposes to recover both customer-related costs and "local facilities" costs through the service charge. However, the costs associated with local facilities are not fixed, nor are they customer-related as they generally do not vary based on the number of customers served. Instead, they are driven by customers' aggregate demands on that equipment. Thus, recovering these costs through a fixed charge is inconsistent with cost causation principles.

Q. What are the local facilities whose costs the Company proposes to recover through the residential service charge?

A. The Company defines local facilities as transformers, secondary lines, and local primary lines.[1]

[1] CMP Rate Design and Revenue Allocation Supplemental Testimony, September 9, 2022, at RD-24.

Q. Is the size of a primary or secondary line correlated with the number of customers served?

A. No. In response to discovery, the Company states that, "It is not possible to correlate a conductor size with a customer count with any level of consistency or accuracy. In addition, customer numbers are not directly accounted for by the Company when determining the sizing of primary conductors or secondary cable."[2]

Q. What drives the costs of transformers, secondary lines, and local primary lines?

A. The Company states that the sizing of conductors is "driven by the expected maximum load downstream of the conductor, which affects transformer size," and only indirectly by the number of customers.[3] Further, the Company acknowledges that if additional demand materializes (for example, from electric vehicles, air conditioning, or heat pumps), the utility may need to make capacity upgrades to local facilities.[4] Thus, the primary cost driver for local facilities is customer demand—especially the aggregate demand by customers being served by that particular transformer, secondary line, or primary line. It is inconsistent with cost causation to recover these costs through a fixed charge.

Q. If the cost of local facilities is driven by customers' aggregate demands, how should these costs be recovered?

A. Ideally, based on cost-causation principles, these costs would be recovered through a time-varying volumetric rate, which conveys a signal to customers to reduce usage during the hours when these system components tend to experience their maximum demand. This would, for example, reduce the likelihood that electric vehicles in a neighborhood would all charge when household usage tends to be greatest, thereby reducing the need for local distribution system capacity upgrades.

[2] Response to OPA-10-2.

[3] Response to OPA-10-3 (a).

[4] Response to OPA-10-3 (e).

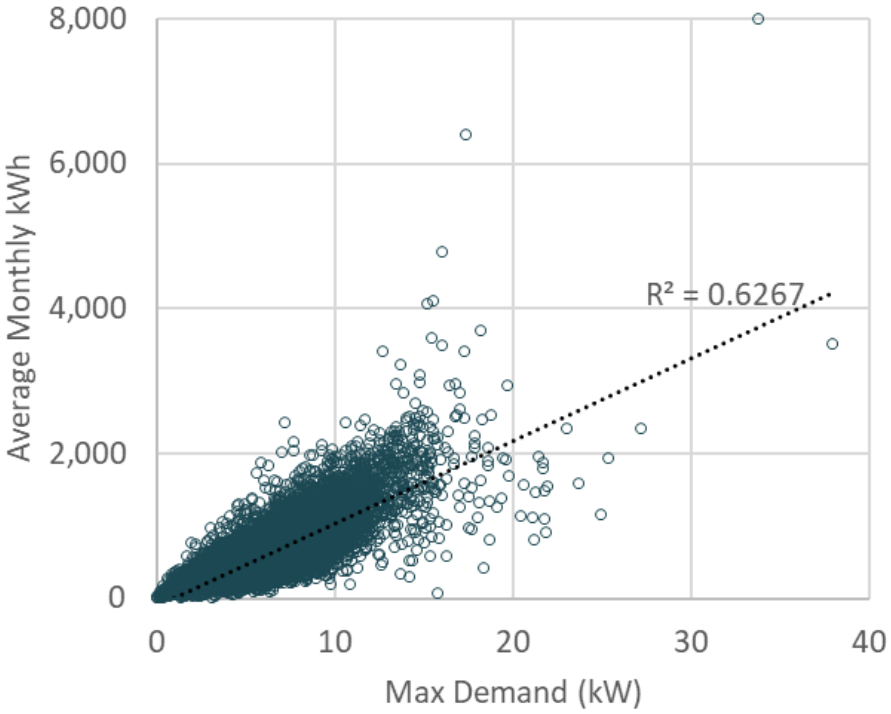
For customers not enrolled in time-varying rates, it is preferable to recover costs associated with customers' maximum demands through a volumetric rate, rather than a fixed charge. Although the correlation between a customer's volume of usage and maximum demand is not perfect, customers with higher usage tend to have higher maximum demands. Thus, it is generally more accurate to recover demand-related costs through a volumetric rate than a fixed charge.

Q. Have you analyzed the correlation between a customer's energy usage and maximum demand?

A. Yes, Ms. Whited previously conducted such analysis on more than 12,000 residential customers in National Grid's Massachusetts service territory, with the results shown in the figure below.[5] Average monthly energy use is shown on the vertical axis, while maximum demand is shown on the horizontal axis. The trend line shows a clear linear relationship between these two values, with an R-squared value of 0.63. (A perfect correlation between the two variables would result in an R-squared value of 1.0.) Thus, although energy consumption is not a perfect proxy for a customer's maximum demand, it is a superior measure than recovering demand-related costs on a customer-basis.

[5] Synapse analysis of data provided by National Grid in Massachusetts D.P.U. Docket 15-155, response to data request DPU-1-12-1.

Figure 1. Correlation between residential energy consumption and demand



Source: Massachusetts D.P.U. Docket 15-155, response to data request DPU-1-12-1.

Q. How should the service charge be determined?

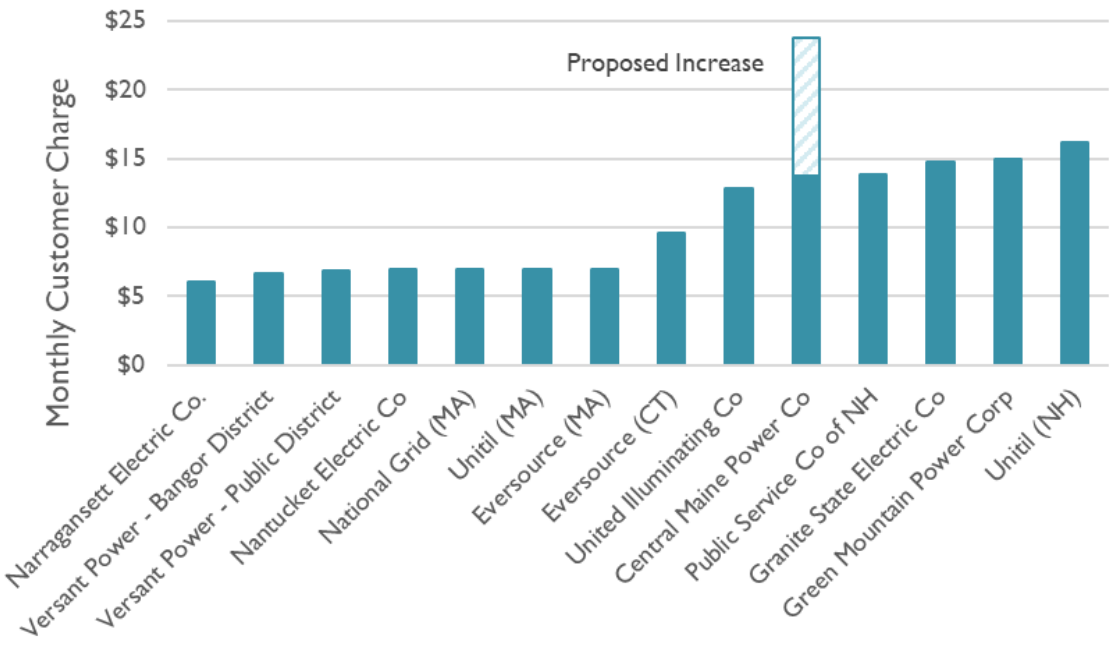
A. In general, fixed charges should only recover costs that are truly fixed. Because local facilities are sized to meet customer demands and may need to be upgraded if customers' demands increase, these costs are not truly fixed. Thus, the service charge should be designed to only recover marginal customer-related costs. According to the Company's marginal cost of service study, the monthly residential customer-related cost of distribution (for rate schedule A) is $10.62. In addition, the service charge currently includes a provision for 50 kWh. Under this specification, the distribution portion of the service charge should not be set higher than $10.62 plus the cost associated with 50 kWh.

CMP's Service Charge Would Be the Highest Among Peer Utilities

Q. How does the Company's proposal compare to its peer utilities?

A. If the Company's proposed increase in the service charge were granted, it would make its standard residential rate an outlier among its peers. We compare the Company's proposed service charge and the proposed increase to those of its peers in New England in Figure 2, below.[6]

Figure 2. Monthly residential fixed charges for investor-owned utilities in New England



Source: Utility tariffs as of October 2022.

As shown in the graph, CMP's existing residential service charge is already well above average, and the proposed increase would make it by far the highest in the region.

[6] This graph only compares the distribution portion of the customer charge to other utilities' customer charges.

Low-Income Customers Would Experience the Highest Relative Bill Increases

Q. Why do you claim that low-income customers are likely to experience the highest percentage increases in their bills?

A. The Company's proposal would disproportionately increase bills for customers that use the least energy. Simply put, the lower a customer's monthly consumption, the greater the percentage bill increase. This impact is clearly shown in the table below, which uses data from Exhibit RD-3 to compare the percentage change in the transmission and distribution portion of customer bills from 2022 to 2025 by average monthly usage level due to both the Company's proposed change in revenue requirements and rate design. The typical residential customer uses approximately 550 kWh/month.

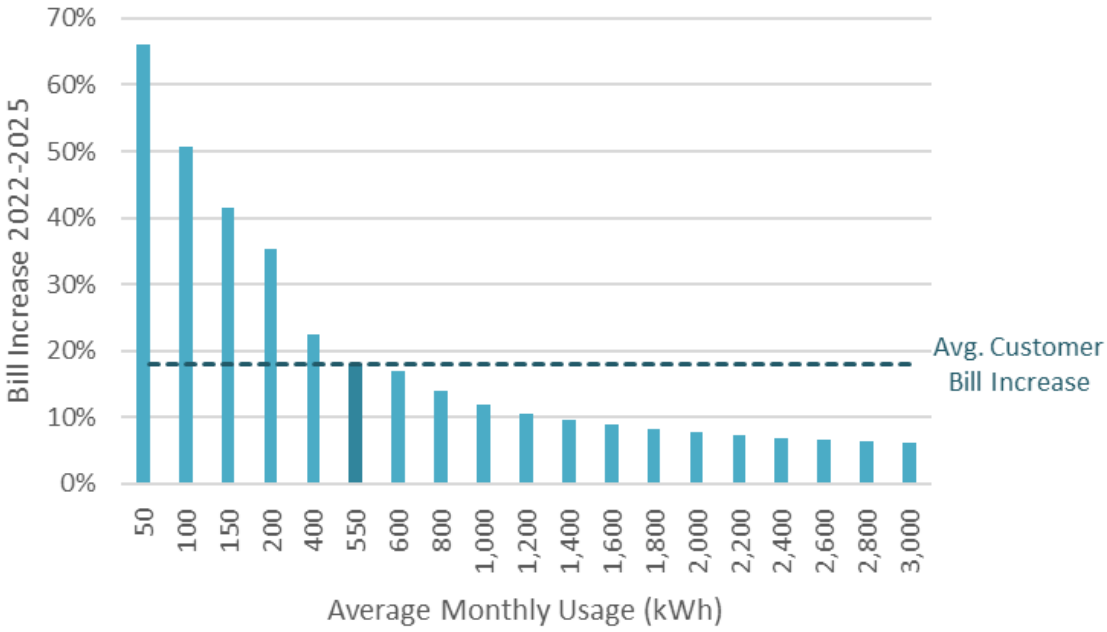
Table 1. Increase in total bills for residential customers by usage

Average Monthly kWh	2022 T&D-Only Bill	2025 T&D-Only Bill	Bill Change	Percentage Change
3,000	272.60	289.55	16.96	6%
2,800	255.05	271.47	16.42	6%
2,600	237.50	253.38	15.89	7%
2,400	219.94	235.30	15.35	7%
2,200	202.39	217.21	14.82	7%
2,000	184.84	199.13	14.28	8%
1,800	167.29	181.04	13.75	8%
1,600	149.74	162.96	13.21	9%
1,400	132.19	144.87	12.68	10%
1,200	114.64	126.79	12.15	11%
1,000	97.09	108.70	11.61	12%
800	79.54	90.62	11.08	14%
600	61.99	72.53	10.54	17%
550	**57.61**	**68.01**	**10.41**	**18%**
400	44.44	54.45	10.01	23%
200	26.89	36.36	9.47	35%
150	22.51	31.84	9.34	41%
100	18.12	27.32	9.20	51%
50	13.73	22.80	9.07	66%
-	13.73	22.80	9.07	66%

Source: Synapse analysis of CMP Exhibit RD-3.

As shown in the table above, the typical residential customer who uses an average of 550 kWh/month would experience a bill increase of 18 percent on the transmission and distribution portion of their bill from 2022 to 2025 due primarily to the Company's proposed increase in transmission and distribution revenue requirements. However, customers who use only 200 kWh/month would experience a bill increase of nearly double that amount: 35 percent, due to the combined effect of the higher fixed charge and revenue requirements increase. Lower-usage customers would see their bills increase by an even higher percentage, as shown in the figure below.

Figure 3. Percentage transmission and distribution bill increase by usage level (2022–2025)



Source: Synapse analysis of CMP Exhibit RD-3.

Q. Who are the low-usage customers that would be most impacted by the proposed rate design?

A. Customers who consume less than average generally include low-income customers and customers who have taken steps to reduce their electricity consumption—often through investing personal financial resources in energy efficient technologies or distributed generation.

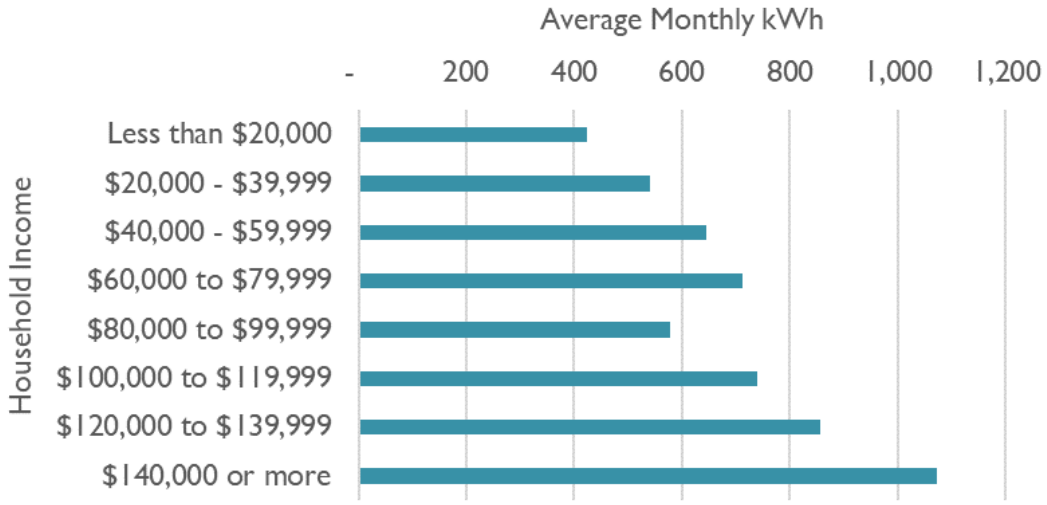
Q. Why do you suggest that low-income customers would be hit hardest by the increased basic service charge?

A. Low-income customers tend to use less energy on average. This means that higher basic service charges will raise electricity bills most for those who can least afford it.

Q. On what basis do you conclude that low-income customers tend to use less energy than average residential customers?

A. Regional data from the U.S. Energy Information Administration's (EIA) 2015 Residential Energy Consumption Survey (RECS) for New England shows a clear positive relationship between income and annual electricity consumption: usage generally increases with income, and households in the two highest income tiers consume more than double the amount of electricity as households in the lowest income tier.[7]

Figure 4. Average electricity consumption in New England by income group



Source: Synapse analysis of U.S. Energy Information Administration Residential Energy Consumption Survey (2015).

[7] U.S. EIA. 2015 RECS Survey Data. https://www.eia.gov/consumption/residential/data/2015/.

The correlation between income and electricity consumption is also supported by data from the U.S. Department of Energy's (DOE) Low-Income Energy Affordability Data Tool (LEAD). While the LEAD tool reports spending on electricity, this can be viewed as a proxy for electricity consumption. For Maine, LEAD shows a clear relationship between household income and total spending on both electricity and all energy, with households in the highest income grouping (at or above 100 percent of state median income) spending approximately 17 percent more on electricity than households in the lowest tier (0 percent to 30 percent of state median income).[8]

Q. Is it possible that these regional and state-wide statistics do not apply to CMP's territory?

A. It is highly unlikely that the regional and state correlations between income and electricity consumption do not apply to CMP's territory. In fact, data provided by the Company generally support the positive correlation between income and electricity consumption, as we describe below.

- First, in recent years, the median usage of Electric Lifeline Program (ELP) customers has been roughly equivalent to standard residential usage. In 2021, 51 percent of ELP customers used less than 550 kWh per month, while in 2022, 50 percent of ELP customers used less than 550 kWh per month.[9] However, ELP customers do not represent all low-income customers and may be biased towards those with the highest electricity bills, as these customers may be more likely to seek out assistance and go to the trouble of applying to the program each year.

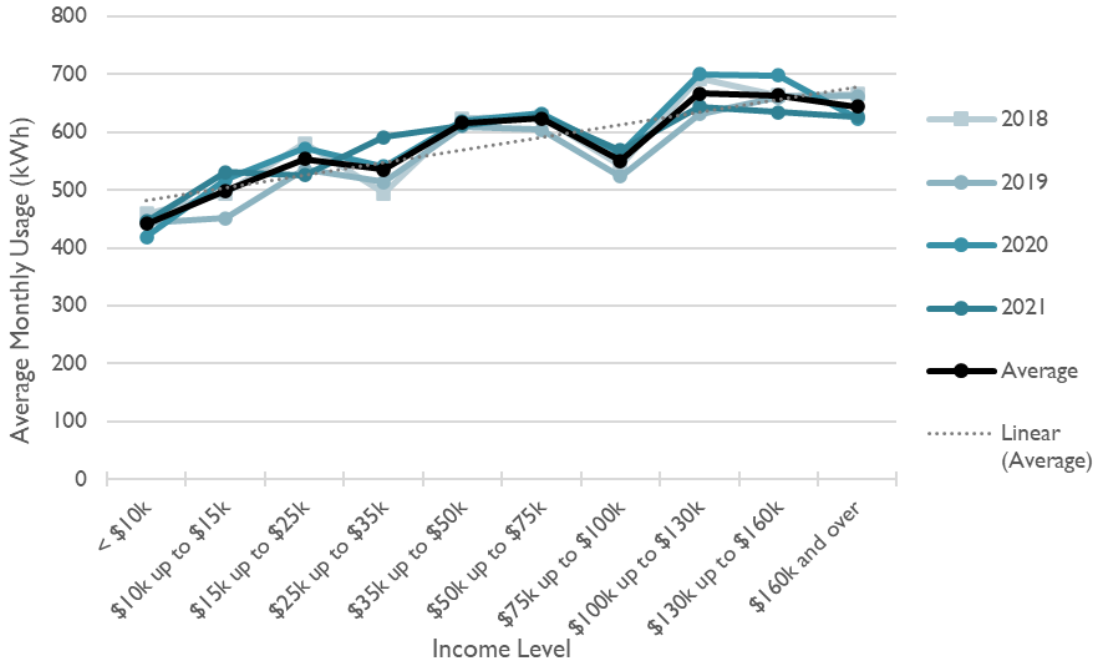
- In CMP's customer satisfaction perception survey, respondents reported their income level and CMP matched these customers to account numbers. Although not all survey respondents provided their income data, approximately 600 customers provided

[8] U.S. DOE. LEAD Tool. https://www.energy.gov/eere/slsc/maps/lead-tool.

[9] Response to ODR-001-013, Attachment 1. The usage levels in 2018–202 skewed higher, but these years also had many fewer participants. It is likely that higher-usage customers were more likely to seek out bill assistance than those with lower usage.

income data in each year from 2018–2022.[10] Our analysis of the income and usage data for these customers reveal a consistent positive correlation between income and usage in each year, as shown in the figure below.

Figure 5. Correlation between income and usage for CMP survey respondents (2018–2021)



Source: Synapse analysis of response to ODR-001-013, Attachment 1.

Q. If lower-income households spend less on electricity, does this alleviate your concern about the impacts of increasing the service charge?

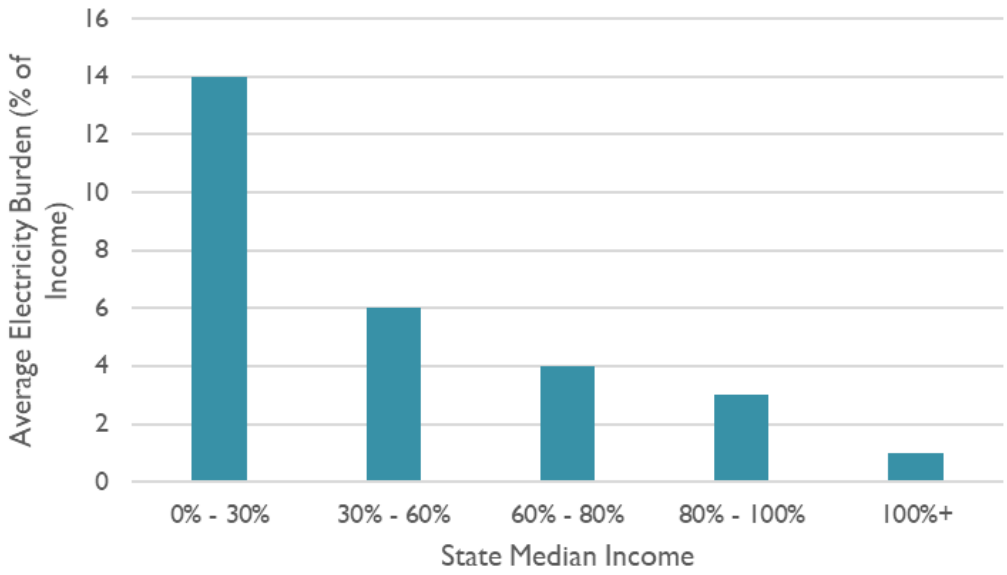
A. No. Although lower-income households spend less on electricity, these low-income households face far worse energy burdens (the percentage of household income spent on energy bills). Per the LEAD data, in Maine, households in the lowest income group have average electricity burdens of 14 percent.[11] In contrast, households with incomes at or

[10] Response to ODR-001-014, Attachment 1.

[11] *Id.*

above the state median income have average electricity burdens of only 1 percent.[12] This is shown in Figure 6, below.

Figure 6. Electricity bills as percent of income, Maine



Source: U.S. DOE – LEAD tool.

Because of the correlation between electricity usage and income, low-income customers with the highest energy burdens will be the ones experiencing the highest percentage bill increases as a result of the increased service charge. Another way to say this is that electricity bills are highly regressive, and an increase in the fixed charge will serve only to exacerbate this fact by further increasing low-income customers' bills.

Q. Does CMP's Electric Lifeline Program mitigate against these negative effects?

A. Only to a limited degree. First, it is important to recognize that the ELP program does not completely shield customers from the impacts of increases in the service charge. In its present form, the program provides an average discount of 26 percent on electricity bills

[12] *Id.*

for households in the lowest income grouping.[13] More critically still, the ELP is only available to customers whose income is 75 percent or less than the Federal Poverty Level—approximately 19,000 customers in CMP's territory.[14] In contrast, approximately 62,000 customers are at or below 150 percent of the Federal Poverty Level in CMP's territory. Thus, the ELP benefits less than a third of low-income customers, when defined by the 150 percent of the Federal Poverty Level threshold[15] as an annual income of around $42,000 per year for a household of four.[16] Certainly, even levels of income higher than 150 percent of the Federal Poverty Level threshold may be considered "low income."

Q. What are the equity implications of your analysis?

A. Our analysis shows that rate design has important equity implications by increasing bills for some types of customers more than others. Specifically, the proposed service charge increase would have regressive impacts by increasing bills the most for customers who can least afford it.

CMP's Service Charge Proposal Would Reduce Customer Control

Q. Please explain how the Company's proposed increase to the service charge would reduce customers' control of their bills.

A. If the Commission granted CMP's proposed increase, the result would be a service charge in 2025 that has increased by approximately 113 percent since 2017, from $10.68 per month to $22.80 per month. Moreover, the proposed increase in the service charge

[13] Central Maine Power, *Low Income Customer Assistance Programs* (February 2022) at slide 5. Available at: https://legislature.maine.gov/testimony/resources/EUT20220215Ball132894062972462298.pdf.

[14] CMP response to ODR-001-013 indicating that 19,264 customers benefitted from the ELP in 2022.

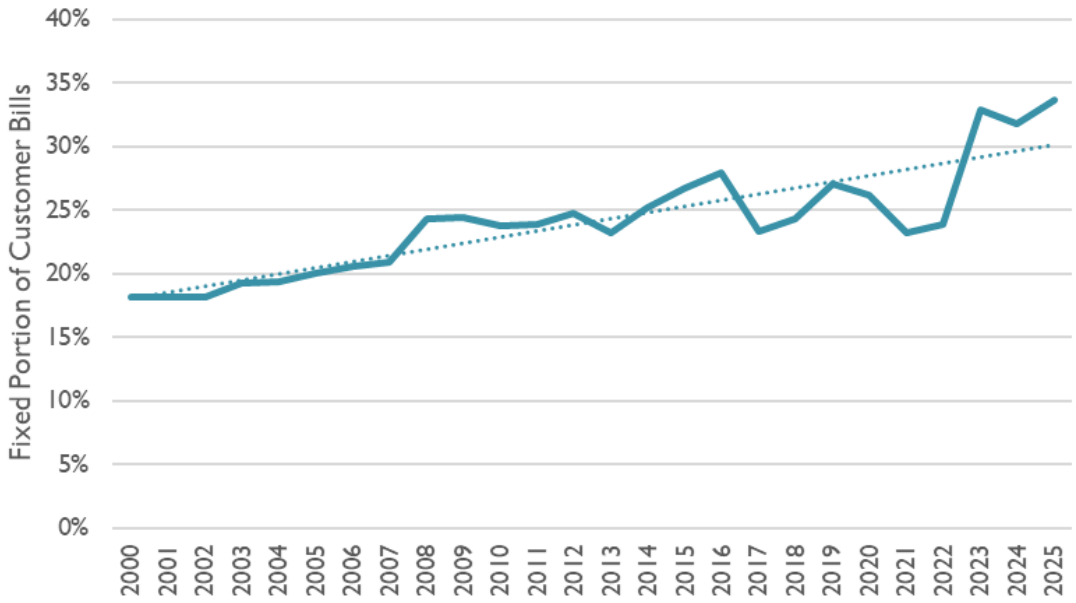
[15] Central Maine Power, *Low Income Customer Assistance Programs* (February 2022) at slide 5. Available at: https://legislature.maine.gov/testimony/resources/EUT20220215Ball132894062972462298.pdf

[16] *Federal Register*, Updated 1/21/22, available https://www.federalregister.gov/documents/2022/01/21/2022-01166/annual-update-of-the-hhs-poverty-guidelines.

would alter the rate structure of the domestic schedule by continuing the trend toward an increasingly fixed overall bill.

In 2000, the fixed charge constituted only 18 percent of a typical residential customer's bill (based on 550 kWh/month usage).[17] The fixed portion has increased steadily in most years, and by 2025, CMP would increase this to 34 percent of the typical residential customer's bill. The figure below clearly shows this trend.

Figure 7. Portion of residential delivery bill recovered through fixed charge (2000–2025)



Source: CMP Rate Bulletin: Rate A #1, July 1, 2022.

Q. Why are you concerned that customers' bills are becoming increasingly fixed?

A. When customers' bills become more fixed, it disempowers customers by reducing the extent to which they can manage their bills by adjusting their consumption. This is particularly troubling when coupled with CMP's proposal to increase residential delivery

[17] CMP Rate Bulletin: Rate A #1, July 1, 2022. https://www.cmpco.com/wps/wcm/connect/www.cmpco.com10190/404324b9-bc27-4b09-bb3c-f0b7355bbbb9/a_06.30.22.xlsx?MOD=AJPERES&CACHEID=ROOTWORKSPACE.Z18_31MEH4C0N8JA30AVT8DPRB2O26-404324b9-bc27-4b09-bb3c-f0b7355bbbb9-o6Rmvvk.

rates substantially over the next few years. Not only will customers face significantly higher bills—they will have less ability to manage these bills.

Our concern regarding customers' loss of control is not unique. For example, in 2013, the Maryland Public Service Commission rejected in total a $0.86 increase in the basic service charge, noting that doing so would reduce customer control of their bills:

> Even though this issue was virtually uncontested by the parties, we find we must reject Staff's proposal to increase the fixed customer charge from $7.50 to $8.36. Based on the reasoning that ratepayers should be offered the opportunity to control their monthly bills to some degree by controlling their energy usage, we instead adopt the Company's proposal to achieve the entire revenue requirement increase through volumetric and demand charges.[18]

The Proposed Service Charge Would Undermine Energy Efficiency and Conservation Efforts

Q. Please explain why you believe the Company's proposal would dampen customer incentive for energy efficiency and conservation?

A. By increasing the proportion of a customer's bill that is fixed and that cannot be offset by energy efficiency or other distributed resources, the Company's proposed rate design would reduce the incentive for customers to make such investments. This runs counter to state policies that aim to enhance environmental protection and encourage energy efficiency. For example:

- Sec. 5. 35-A MRSA §103-A requires Maine's Public Utilities Commission to "facilitate the achievement [of] the State of the greenhouse gas emissions reduction goals," and to "[m]itigate disproportionate energy burdens and other

[18] *In The Matter of the Application of Baltimore Gas and Electric Company for Adjustment in its Electric and Gas Base Rates,* Case No. 9299, Order No. 85374, 99 (Maryland Public Service Commission February 22, 2013).

inequities of affordability and environmental justice experienced by customers."[19]

- Under Maine's Climate Action Plan, "Maine Won't Wait," energy efficiency is a key part to the State's decarbonization strategy.[20]

- Executive Order 13 (signed November 26, 2019), "An Order for State Agencies to Lead by Example Through Energy Efficiency, Renewable Energy, and Sustainability Measures," directs Maine agencies to lead by example by investing in energy efficiency, renewable energy, and emissions reductions.

By increasing the fixed charge rather than the volumetric rate, the Company's proposal would reduce the financial benefit of energy efficiency and conservation efforts, thereby diluting incentives for energy efficiency and undermining state energy policy goals.

Q. Have other commissions recognized the detrimental impact of higher fixed charges on energy efficiency and conservation?

A. Yes, the negative effects of increasing fixed charges are well recognized. In 2016, the Maryland Public Service Commission rejected the utility's proposed fixed charge, noting that it would result in customers having less control over their bills and would be antithetical to energy conservation efforts.

> In arriving at this increase, I place emphasis on Maryland's public policy goals that intend to encourage energy conservation. Maintaining relatively low customer charges provides customers with greater control over their electric bills by increasing the value of volumetric charges. No matter how diligently customers might

[19] Sec. 5. 35-A MRSA §103-A, *An Act To Require Consideration of Climate and Equity Impacts by the Public Utilities Commission* (May 2021). Available at: http://www.mainelegislature.org/legis/bills/getPDF.asp?paper=HP1251&item=1&snum=130.

[20] Maine Climate Council, *Maine Won't Wait: A Four Year Plan for Climate Action* (December 2020). Available at: https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020.pdf.

attempt to conserve energy or respond to AMI-enabled peak pricing incentives, they cannot reduce fixed customer charges.[21]

In 2012, the Missouri Public Service Commission rejected a proposed increase in the basic service charge for residential and small general service classes, writing:

> Shifting customer costs from variable volumetric rates, which a customer can reduce through energy efficiency efforts, to fixed service charges, that cannot be reduced through energy efficiency efforts, will tend to reduce a customer's incentive to save electricity. Admittedly, the effect on payback periods associated with energy efficiency efforts would be small, but increasing service charges at this time would send exactly [the] wrong message to customers that both the company and the Commission are encouraging to increase efforts to conserve electricity.[22]

Alternatives to an Increased Service Charge

Q. Can adjustments be made to the service charge without the adverse impacts on customers you discussed above?

A. Yes. The service charge currently includes a customer's first 50 kWh. This allotment could be modestly increased with a corresponding increase to the service charge without distorting price signals or adversely impacting most low-usage customers. For example, the Commission could increase the service charge to include 200 kWh per month rather than CMP's current level of 50 kWh. This alternative would still encourage conservation and energy efficiency, while ensuring all customers contribute towards system costs without penalizing the majority of low-usage customers. This concept requires more

[21] MD PSC. Case No. 9418. *In The Matter of the Application of Potomac Electric Power Company for Adjustment to its Retail Rates for the Distribution of Electric Energy*, Order No. 87884, at 110.

[22] MO PSC. File No. ER-2012-0166. *In the Matter of Union Electric Company Tariff to Increase Its Annual Revenues for Electric Service*, Report and Order, at 110-11.

analysis but is a better alternative to CMP's proposal of increasing the service charge without a corresponding increase in the included kilowatt-hours.

Q. What do you recommend regarding the residential service charge?

A. For all of the reasons discussed above, we recommend that the Commission reject the Company's proposal and retain the existing residential service charge. Alternatively, we recommend that an increase in the service charge be accompanied by an increase in the number of kilowatt-hours included, so as not to distort price signals or penalize the majority of low-usage customers.

IV. THE PROPOSED RATES LACK SEASONAL DIFFERENTIATION

Q. What is your concern regarding the lack of seasonality in the Company's proposed residential rate designs?

A. The Company's proposed residential rates—including the TOU rate—are not cost-based, as they do not reflect seasonal variations in costs.

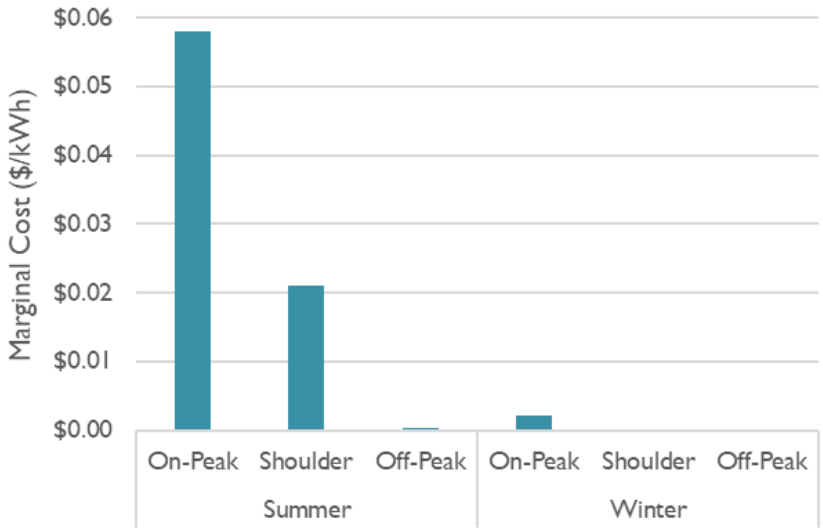
Q. Do marginal distribution costs vary by season?

A. Yes. According to the Company's marginal cost of service testimony, approximately 99 percent of the probability of peak load on the distribution system currently occurs during the summer months of July and August. While this is expected to decline by 2026/2027, the probability of peaks occurring in the summer will remain higher than 90 percent,[23] primarily due to the grid's lower carrying capacity during the summer.[24] Thus, the Company's marginal cost of service study indicates that marginal distribution substation and feeder costs are 28 times higher during the summer peak period than the winter peak period, as shown in the figure below.

[23] Exhibit AN-3, page 7.

[24] Exhibit AN-3, page 4.

Figure 8. Marginal distribution substation and feeder costs



Source: Exhibit AN-2, Table 7, page 12.

Q. Are these seasonal variations in distribution marginal costs reflected in the Company's proposed rates?

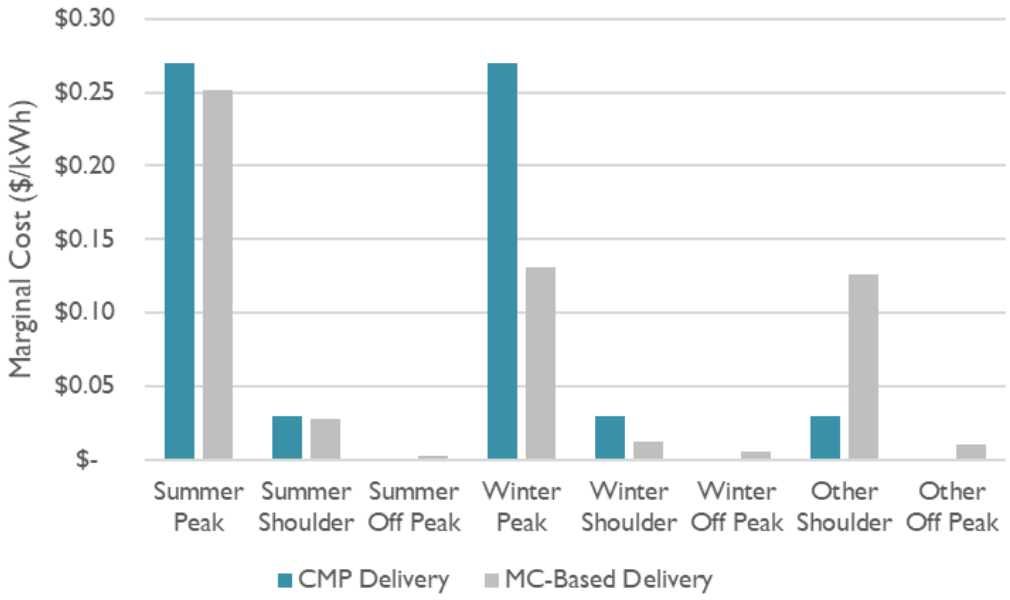
A. No. Both the Company's proposed residential TOU rate and flat rate (Schedule A) have the same prices during the summer and winter. This results in the winter rates being far too high relative to marginal costs.

Q. Have you analyzed what the delivery rates would be if they more closely reflected the seasonality of marginal costs?

A. Yes. We recalculated the rates for each period based on the hourly marginal transmission and distribution costs provided in response to COMES-001-019 and the current service charge of $13.73. The resultant marginal costs for each TOU period are shown in the table below.

We then scaled these costs by an equal percentage to yield CMP's proposed total delivery revenue requirements. The following figure compares the Company's proposed TOU rates with our estimate of rates that more closely reflect the average marginal distribution cost for each time period.

Figure 9: CMP's proposed TOU rates compared to marginal cost-based TOU rates



Source: Synapse analysis of response to COMES-001-019_Attachment 1 CONFIDENTIAL (2022-152).xlsx.

Q. What are the implications of failing to include seasonal variation in the Company's proposed rate designs?

A. First and foremost, the lack of seasonality contributes to intra-class inequities, with customers who use a larger share of electricity during the winter subsidizing those who use a larger share of electricity during the summer. Second, by pricing winter rates much higher than the marginal costs indicate, the incentive to invest in electric heat pumps that consume significant electricity during the winter is substantially weakened.

Q. What do you recommend with regard to seasonality of rates?

A. We recommend that the Commission direct the Company to refile its proposed residential rates with seasonally differentiated delivery prices. It is important for the seasonality of costs to be reflected in both the default residential rate (Schedule A) and any optional rates, so that customers who use more electricity during the summer are not dissuaded from enrolling in an optional rate due to the higher summer delivery prices.

V. THE PROPOSED TOU RATES DO NOT FULLY SUPPORT MAINE'S ENERGY POLICY GOALS

Q. Please explain what additional concerns you have with the Company's proposed TOU rates.

A. The Company's proposed TOU rates only apply to transmission and distribution costs, not to standard offer service. By excluding generation costs, including costs associated with greenhouse gas emissions, the rates do not fully support Maine's energy policy goals of lowering electricity costs and reducing greenhouse gas emissions.

Q. Does the Company face time-varying marginal generation costs?

A. Yes, but indirectly. As the Company explains, "CMP procures supply service from wholesale energy providers via a standard offer (SO) rate. The supplier's SO price, stated in flat $ per kWh, is year-round for residential customers, and monthly for medium and large commercial customers. CMP passes[ ]through the SO rates to its customers in retail rates. The bidding process is run by the Maine PUC and the SO service rate reflects the bid prices from the providers that were awarded the contract for full generation requirements of CMP customers. Even though CMP's SO rate is not differentiated by time of day or seasons for the residential customers, the cost responsibility to CMP is influenced by the load profile of its customers."[25] In other words, wholesale energy providers account for the class load profile when estimating the cost to serve CMP's customers.

Q. Did the Company consider greenhouse gas emissions rates in its proposed TOU periods or prices?

A. No. The Company states that its rate design proposals seek "to enable State policy and stakeholder consensus objectives" and cites Maine's aggressive greenhouse gas emission reduction targets (which require emissions to be reduced 45 percent below 1990 levels by

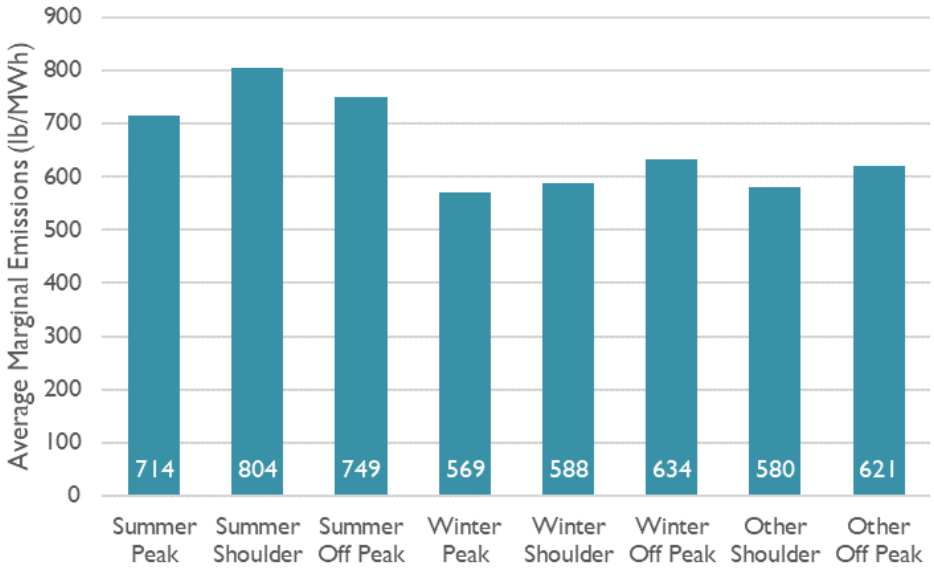
[25] Ex. AN-3, page 6.

January 1, 2030, and 80 percent below 1990 levels by January 1, 2050).[26] However, the Company did not analyze or consider hourly greenhouse gas emissions on the grid in the design of its proposed TOU rates.[27]

Q. Do you believe the Company's rate design proposals will result in emissions reductions?

A. No. Based on recent data regarding average marginal emissions rates in ISO New England by proposed TOU period, the Company's proposal would incent customers to shift load from times with relatively *low* emissions to periods with higher marginal emissions rates, thus increasing emissions from the electric sector.[28] The figure below shows average marginal emissions rates by TOU period.

Figure 10. ISO-NE marginal emissions rates, averaged by TOU period (2019)



Source: ISO-New England, Final 2019 ISO New England Electric Generator Air Emissions Report.

[26] Ex. RD at 11:3-5.

[27] Transcript. Technical Conference, November 4, 2022, 28:3.

[28] ISO-New England, Final 2019 ISO New England Electric Generator Air Emissions Report, available at: https://www.iso-ne.com/static-assets/documents/2021/11/20211102_2019_rt_marginal_co2_emission_rates.xlsx.

As Figure 10 shows, emissions rates are higher in the summer than in the winter or the shoulder season. In addition, the marginal emissions rates during summer and winter on-peak hours are lower than during other hours. Therefore, higher on-peak prices in the summer and winter, intended to shift load to shoulder or off-peak times, will tend to increase emissions from the electric sector as customers respond to these price signals.

Q. How can the Company align its rate design proposal with Maine's energy policy goals?

A. TOU rates should be designed holistically to consider all components of the grid—generation, transmission, and distribution. Thus, the Company's proposed TOU rate should be offered in conjunction with a time-varying standard offer service rate.

Q. How would a standard offer service TOU rate account for marginal greenhouse gas emissions?

A. Emissions can be incorporated into the marginal costs associated with each time period by using the Social Cost of Carbon (SCC), less the carbon fee paid through the Regional Greenhouse Gas Initiative (RGGI) market.[29] This should be updated periodically as marginal emissions rates change based on increasing amounts of renewables on the system or other factors.

Q. Would the incorporation of greenhouse gas emissions costs result in recovering more revenues than the cost of supply?

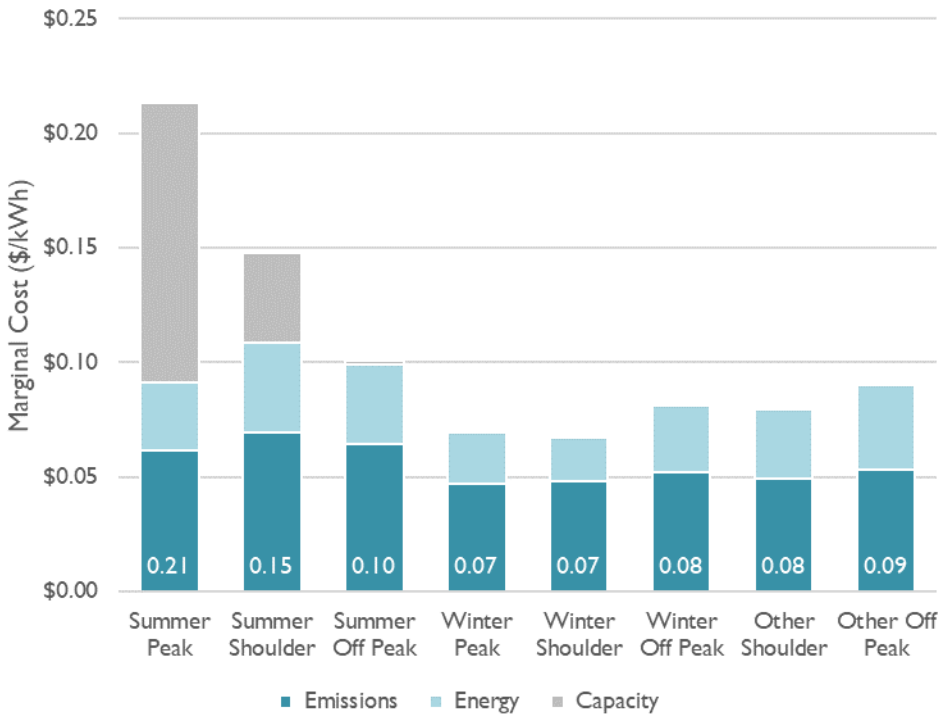
A. No. The total revenue requirement associated with standard offer service would remain the same, but the marginal costs associated with emissions would be considered when determining the appropriate price ratios across TOU periods.

[29] MWh Load * CO_2 rate (lb/MWh) / 2204 (lbs/metric ton) * SCC – RGGI Charge / MWh Load.

Q. Did you estimate how the incorporation of supply costs, including greenhouse gas emissions, would impact supply rates in each TOU period?

A. Yes. Using an estimated SCC of $190 per metric ton[30] less the carbon price paid in the latest RGGI auction ($13.45 per ton of CO_2)[31] and the marginal costs for energy and capacity calculated by CMP, we calculated the total marginal supply costs for each of CMP's proposed TOU periods,[32] as shown in the figure below.

Figure 11. Marginal cost for emissions, energy, and capacity by TOU period



[30] U.S. Environmental Protection Agency. Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances, September 2022, p. 3. Available at: https://www.epa.gov/environmental-economics/scghg-tsd-peer-review

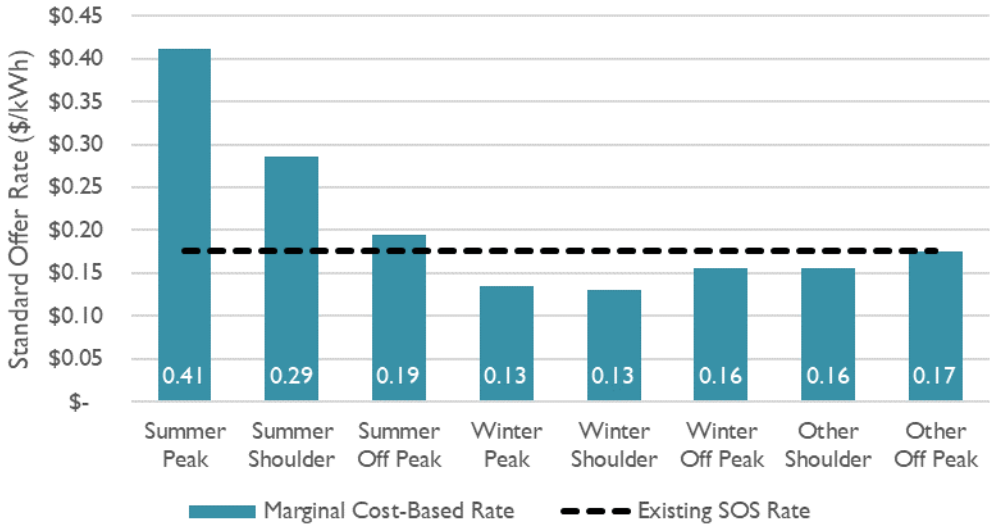
[31] See RGGI, https://www.rggi.org/Auction/57.

[32] We multiply CMP hourly load data from 2019 by ISO-NE marginal emissions rates in that hour to calculate total CO_2 emissions in each hour. We then multiplied this by the social cost of carbon, after which we subtract RGGI revenues and divide by MWh to calculate the marginal emissions cost in each hour. These values are averaged by period and shown in the Figure.

Source: Synapse analysis of response to COMES-001-019_Attachment 1 CONFIDENTIAL (2022-152).xlsx and ISO-New England, Final 2019 ISO New England Electric Generator Air Emissions Report.

We then applied a scalar to increase the rates by an equal percentage to yield the required total standard offer supply revenue requirement. The resulting marginal cost-based rates are presented in Figure 12 and compared to the existing standard offer service rates approved for 2023.

Figure 12: Marginal cost-based rate for standard offer service



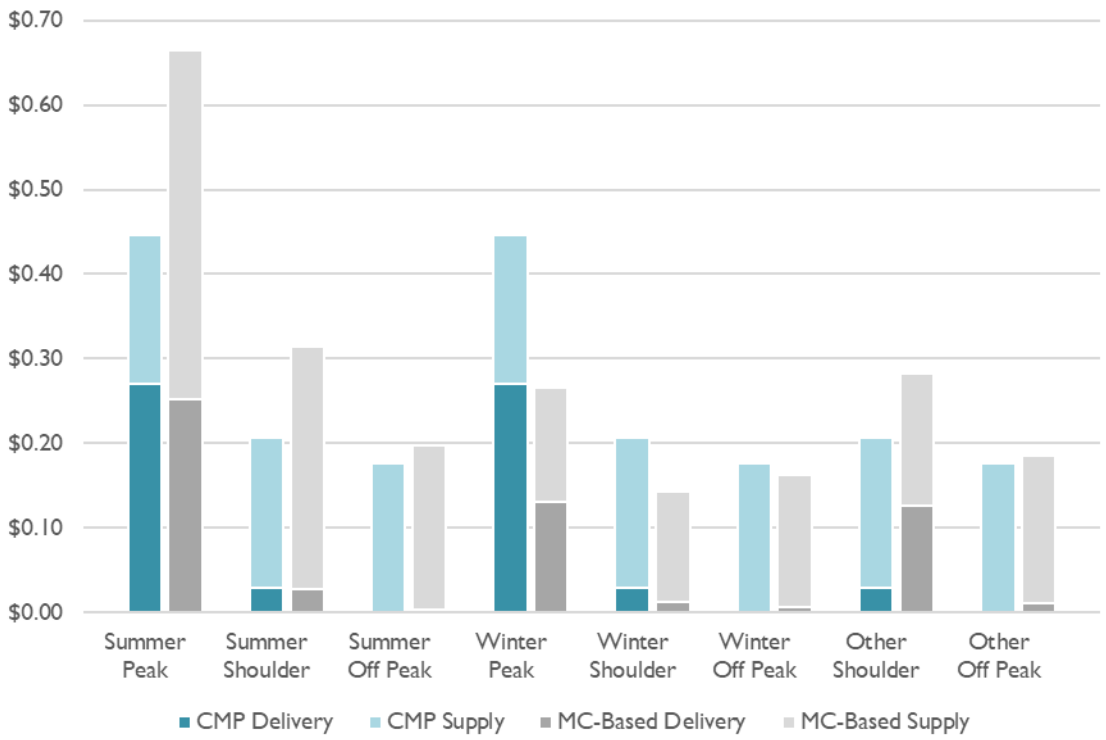
Source: Synapse analysis of response to COMES-001-019_Attachment 1 CONFIDENTIAL (2022-152).xlsx and ISO-New England, Final 2019 ISO New England Electric Generator Air Emissions Report.

The rates presented above accurately reflect the relative marginal costs of emissions and generation by proposed TOU period.

Q. Did you also estimate the resultant bundled TOU rates (including both delivery and supply costs)?

A. Yes. Our estimates of the bundled TOU rates are shown in the figure below, relative to CMP's bundled TOU rate without time-differentiated supply costs.

Figure 13. Comparison of bundled TOU rates based on marginal costs versus CMP's proposal



Q. What do you recommend with respect to CMP's proposed TOU rate?

A. We recommend that the Commission direct CMP to investigate updates necessary for its billing system to support a time-varying standard offer service rate that accounts for energy prices and marginal greenhouse gas emissions in each period. At a minimum, the standard offer service rate should be informed by the differential in marginal greenhouse gas emissions for each period, even if it does not fully reflect the full social cost of carbon.

VI. CONCLUSION AND RECOMMENDATIONS

Q. Please summarize your main conclusions and recommendations.

A. Our conclusions and recommendations are as follows:

1. The Commission should reject the Company's proposal to implement a massive increase to the residential service charge. The Company's proposal is not based on cost causation, would adversely impact many low-income customers, would result in customers having less control over their bills, and runs counter to state policy aims related to energy efficiency and conservation. If any increase to the service charge is made, it should be accompanied by an increase in the number of kilowatt-hours included in the charge.
2. The Commission should direct the Company to refile its residential rate design proposal with seasonally differentiated rates for all residential rate schedules. Without such differentiation, price signals are distorted, and intra-class inequities are exacerbated.
3. The Commission should direct the Company to investigate needed billing system updates necessary to support optional time-varying standard offer service rates in order to better reflect Maine's energy policy goals, particularly reducing generation costs and greenhouse gas emissions.

Q. Does this conclude your testimony?

A. Yes, it does.