COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

TESTIMONY OF JOHN D. TAYLOR

D.P.U. 21-92

SUBMITTED ON BEHALF OF

FITCHBURG GAS AND ELECTRIC LIGHT COMPANY

d/b/a Unitil

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I. INTRODUCTION

Q. Please state your name, affiliation, and business address.

A. My name is John D. Taylor, and I am employed by Atrium Economics, LLC ("Atrium") as a Managing Partner. My business address is 10 Hospital Center Commons, Suite 400 Hilton Head Island SC 29926.

Q. Please describe your professional background and education.

A. I have been employed as a utility consultant since 2006 providing rate, regulatory, strategic and other consulting services. Prior to joining Atrium I was employed at Black & Veatch Management Consulting and Concentric Energy Advisors. As a utility pricing and policy expert, I am involved in a variety of energy and utility related projects regarding matters pertaining to economics, finance, and public policy. Part of my role within these projects is to conduct various analyses which take into account both accounting and financial considerations and the particular operational configuration of a company's assets. I began my education studying electrical and mechanical engineering and worked for an industrial inspection company, which provided me with hands-on experience with electric utility assets and equipment. I have a B. A. degree in environmental economics from University of North Carolina at Asheville and master's in economics from American University.

Q. Have you previously testified in any formal hearings before regulatory bodies?

A. Yes. I have presented expert testimony in various state public utility regulatory proceedings in the United States and provided expert reports before the Ontario Energy Board, the Alberta Energy and Utilities Board, and the British Columbia Utilities

Commission. I have also testified before the Federal Energy Regulatory Commission ("FERC") on electric transmission matters. My testimony and expert reports relate to various utility regulatory issues such as cost of service, rate design, affiliate transactions, line extension polices, revenue requirements, and modernization programs such as electric vehicle programs and battery storage projects. I have also presented testimony before the Department for Fitchburg Gas and Electric Light Company's d/b/a Unitil ("Unitil" or the "Company") most recent base distribution rate case in D.P.U. 19-130.

Q. What is your assignment in this proceeding?

A. Unitil requested Atrium to support rate offerings in compliance with the Transportation Act and the Department's directives in D.P.U. 20-69-A. On May 21, 2021, the Department issued its Order in D.P.U. 20-69-A providing, among other things, further guidance with respect to compliance with Section 29 of the Transportation Act[1], and specifically directed the electric distribution company ("EDC") to consider in their filings the following: (1) converting kW-based charges to kilowatt-hour-based charges; (2) off-peak charging demand charge rebates or discounts; and (3) sliding scale demand charges based on the load factor of the electric vehicle charging site. Further, "..the Department encourages, but does not require, Unitil to propose electric vehicle-specific time-of-use rates for residential customers designed to provide appropriate price signals to encourage customers behaviors that will contribute to reducing system peak demand."[2] My testimony addresses Unitil's new electric vehicle ("EV") rate schedule for the residential

[1] On January 15, 2021, Governor Baker signed into law Chapter 383 of the Acts of 2020, An Act Authorizing and Accelerating Transportation Investment ("Transportation Act").
[2] May 21, 2021 Order in D.P.U. 20-69-A at page 43.

class and demand charge alternative rates, consisting of revisions to the Company's general service tariff, and associated pricing that would be applicable to charging usage of separately metered, EV charging stations.

Q. Please summarize the content of your testimony?

A. First, I describe Unitil's proposed demand charge alternative rates which is in alignment with National Grid and Eversource's proposals. I then will present the methodology employed to develop a time-of-use ("TOU") rate for Unitil's residential class aimed to encourage off-peak charging of EV's (the "RES EV-TOU Rate"). Further, the Department required that any proposed tariff included as part of the EDCs' demand charge alternative proposals must be filed as an exemplar tariff.[3] I present an exemplar tariff for the new residential EV-TOU customers and revisions to Unitil's General Delivery Service tariff relating to Rate GD-2 and Rate GD-3. Lastly, I provide bill impact analysis for residential customers electing to be placed on the RES EV-TOU Rate and EV charging stations participating in the proposed demand charge alternative rates. I am sponsoring the following exhibits in support of Unitil's proposal:

Exhibit	Description
Exhibit Unitil-JDT-1	Testimony of John D. Taylor
Exhibit Unitil-JDT-2	Proposed Demand Charge Alternative Rates
Exhibit Unitil-JDT-3	Exemplar Revisions to General Service Tariff
Exhibit-Unitil-JDT-4	RES-EV-TOU Rate Calculations
Exhibit Unitil-JDT-5	Exemplar RES EV-TOU Tariff
Exhibit Unitil-JDT-6	Illustrative Bill Impacts

[3] Grid Modernization, D.P.U. 20-69-A at 42 (May 21, 2021) at p. 43.

II. DEMAND CHARGE ALTERNATIVE

Q. Are demand related charges a significant portion of EV charging facility operating costs?

A. They can be. Charging stations, and especially fast charge stations, can result in a high peak demand due to their elevated power level to achieve quicker charging. Demand charges are an increasingly common part of rate structures offered by utilities which charge for the fixed distribution equipment necessary to meet peak demands based on the customer's peak demand (typically based on the maximum amount of power consumed by a customer during a 15-minute period). If a charging station has a low utilization rate (time during a month in which EV owners are charging at the station), the demand portion of their bill can be substantially higher than the actual energy costs. For EV chargers, demand charges can be initially challenging because EV equipment is likely to be used sporadically to start but still see high power demands, resulting in a final bill heavily tilted towards the demand charges. Such a rate structure may make the economics of EV charging stations challenging, particularly during the early days of charger installation where EV market penetration is still relatively low. As the number of EVs increase, the likelihood of increasing load factor for these chargers is more likely, resulting in a better balance of energy/demand charges.

Q. How can these hurdles caused by demand charges impact the electrification of the transportation industry?

A. These hurdles for early stage charging investment demonstrate the dilemma that tends to follow EVs, where consumers are less likely to buy EVs if chargers are not readily

available, but entities are less likely to build those capital-intensive chargers until greater market penetration of EVs increases their ability to recoup their initial cost. The current market for EV charging investment leads some owners to weather early costs from demand charges and low utilization. EV charging availability today will allow for more EV purchases in the future until increasing market penetration and charging station revenues can outweigh the early costs before the end of the lifetime of the charger.

Q. What tools have been utilized by utilities to address this demand charge dilemma?

A. Some utilities are utilizing a concept commonly referred to as a demand charge holiday. These are programs where utilities discount demand charges assigned to EV charger networks for a period of time until utilization rates rise and the chargers are economically viable. The actual structure and implementation of a demand charge incentives vary across the country. Options exist for indefinite demand charge holidays to reduce demand charges for EV chargers that ramp up over time to more complicated ways to adjust rate structures for EV infrastructure in a way that accounts for charging utilization. Demand charge holidays have not been the only type of assistance to EV charger networks proposed. Pacific Gas & Electric, for example, required EV operators to predict their monthly power use and then charged customers overage fees if they exceeded that total, similar to a subscription model. New York, on the other hand, offered upfront rebates intended to offset demand charges.

Q. What is Unitil proposing with respect to demand charges for new EV charging stations?

A. As further described below and in alignment with the proposals submitted by National Grid and Eversource, Unitil is proposing demand charge alternative rates to address this issue of low utilization. The proposed demand charge alternative rates shift revenue recovery from a demand charge to a per kWh charge. Given EV charging stations commonly bill electric vehicles for use of their station on a per kWh basis these demand charge alternative rates result in a better match between station revenue and operational costs.

Q. Please summarize the demand charge alternative rates proposed by Unitil.

A. Unitil currently offers two rates with demand charges: GD-2 for customers with monthly usage between 850 to 120,000 kWh and at least 4 kW of demand, and GD-3 for large customers with at least 120,000 kWh of usage monthly. The demand charge alternative rate proposed by Unitil will consist of different combinations of demand charges and distribution energy charges that vary based on the 12-month average load factor of the customer's account. In this rate construct, base distribution demand and energy charges work on a sliding scale. As load factor increases, the demand charge increases and the energy charge decreases. These demand charge alternatives will be implemented within the current tariff for GD-2 and GD-3 such that EV charging stations will have an alternative demand charge and distribution energy charge than other GD-2 and GD-3 customers that are not EV charging stations.

Q. Which rate will be applicable for EV charging stations that are below the GD-2 rate eligibility threshold of 850 kWh and at least 4 kW of demand?

A. These stations will be on Unitil's GD-1 rate which does not contain any demand related charges and thus is not a target of this demand charge alternative rates proposal. Further, Unitil anticipates the vast majority of EV charging stations within their service territory will be on their GD-2 rate with any substantially large EV charging stations within their Rate GD-3.

Q. Please describe how the demand charge alternative rates were constructed.

A. To create the demand charge alternative rates under Rates GD-2 and GD-3, Unitil performed a revenue neutral rate redesign for these two rate classes based on the rate design approved by the Department in Unitil's most recent base rate proceeding D.P.U. 19-130. Unitil's rate redesign for Rates GD-2 and GD-3 is presented in Exhibit Unitil-JDT-2. The Company designed three price schedules in addition to the traditional rate structure for Rates GD-2 and GD-3 by first reducing the demand charge by 50 percent, 75 percent, and 100 percent, which reduces the revenue generated by the demand charge in the rate design. Consequently, the remaining revenue to be recovered through rate design increases, and therefore the energy charge increases in each price schedule as a result of the demand charge decreasing, resulting in a revenue neutral redesign. These four pricing schedules are being made available to four load factor ("LF") brackets as follows:

(A) $0\% \leq LF \leq 5\%$

(B) $5\% < LF \leq 10\%$

(C) $10\% < LF \leq 15\%$

(D) $LF > 15\%$

Q. Please describe the illustrative pricing for the demand charge alternative rates.

A. For Rate GD-2 customers experiencing an annual station load factor greater than 15 percent, the demand charge is $9.64 per kW and the energy charge is $0.02326 per kWh. At an annual station load factor less than or equal to 15 percent, but greater than 10 percent, the demand charge is $4.82 per kW and the energy charge is $0.04094 per kWh. At an annual station load factor less than or equal to 10 percent, but greater than five percent, the demand charge is $2.41 per kW and the energy charge is $0.04978 per kWh. At an annual station load factor less than or equal to five percent, the demand charge is zero and the energy charge is $0.05863 per kWh. Equivalent values are shown for Rate G-3.

Q. Are the demand charge alternative rates revenue neutral to Unitil?

A. Yes. The rate offerings are designed to be revenue neutral, which assumes the same average load factor of Rates GD-2 and GD-3. However, the demand charge alternative rates for low load factor EV charging stations transfers cost recovery from demand charges to energy charges resulting in less revenue than would be collected through the otherwise applicable demand and energy rates.

Q. Will Unitil seek to recover these costs?

A. Separate cost recovery relating to differences in revenues from current general service rates and the demand charge alternative rates is not required because Unitil reconciles distribution costs to its approved target revenue under revenue decoupling as approved by the Department. Under revenue decoupling any incremental revenue from new EV charging facility customers would be used to offset revenue shortfalls that may occur due to the demand charge alternative rates.

Q. Is the demand charge alternative rates proposal limited in scope or duration?

A. Yes. The demand charge alternative rates are proposed to be in effect for ten years from the date of approval. At the conclusion of this limited term offering in the tenth year, customers would be charged the current general service rates. In alignment with other Massachusetts EDCs, Unitil is proposing to introduce this offering on a limited term basis in coordination with public policy objectives to increase the adoption of electric vehicles and to achieve the Commonwealth's carbon emission reduction goals by 2030. Further, this demand charge alternative rates proposal is solely offered to charging usage of separately metered EV charging stations.

Q. Will these demand charge alternative rates be available to both existing and new electric vehicle charging stations?

A. Yes. The proposed rate offerings will be available to all charging usage of separately metered EV charging stations including those stations that are in current operation. The metered account must consist of electric vehicle charging load only, which may require customers who wish to co-locate charging stations with their current business operations to install a separate meter for the electric vehicle charging load. Otherwise, the customer would not be eligible for the demand charge alternative rates and would be charged the current general service rates.

Q. How often would the station load factor be reviewed to assess the applicable demand charge alternative rate?

A. Unitil proposes to review the station load factor annually on or before May 1st of each year. This review would result in the calculation of the average monthly load factor over

the preceding 12 months. The calculated load factor would then determine whether the account needs to be reassigned to a different price option. Further, new charging stations with no prior account history would initially be assigned the price option associated with utilization equal to or below five percent. This price option utilizes no demand charge. Unitil is being conservative by assigning this tier because there is no available usage history. However, the customer may opt for a different price option if it believes the load profile will be different.

Q. If a customer's average annual load factor exceeds 15 percent in a year but then falls below 15 percent in a subsequent year, is the customer disqualified from the demand charge alternative rates once their load factor has exceeded 15 percent?

A. No. If a customer's load factor, based on the 12 previous months' average, were to exceed 15 percent in a year, the customer would remain enrolled and eligible for demand charge alternative rates in the future if their average annual load factor were to drop to or below 15 percent during any of the following years through the end of the ninth year.

Q. What is the Company presenting with respect to revisions to its General Delivery Service tariff?

A. Unitil is presenting revisions to its General Delivery Service tariff to incorporate the provisions pertaining to the availability of EV demand charge alternative rates, including the types of customers eligible, the pricing schedules, the term, and other relevant provisions. Exhibit Unitil-JDT-3 contains the clean and redlined exemplar tariff for General Delivery Service.

III. RESIDENTIAL ELECTRIC VEHICLE TIME OF USE RATE

Q. What were the general principles and approaches utilized to develop Unitil's proposed residential Electric Vehicle TOU Rate?

A. A primary principle of our approach is to develop cost causative rate differentials for costs that vary throughout the day as the primary quantitative inputs to the RES EV-TOU rate. We then review qualitative inputs and policy goals to develop the TOU rate differentials between on-peak and off-peak periods.

Q. What are the primary rate components that make up the cost of electricity for Unitil's customers?

A. There are three main rate components: (1) generation, which is provided through default energy service (Basic Service) or through competitive energy suppliers; (2) transmission costs that are separately charged to all customers and adjusted annually; and (3) distribution costs that are set in base rate proceedings. For purposes of developing the time-differentiated rate, the costs for default supply were utilized for the generation component. In order to develop a TOU rate, all three components must be considered, and an analysis conducted on how the costs of each component vary across time; either by hour or across blocks of time. As such, a methodology must be developed to ensure the costs assigned to each TOU period are appropriate.

Q. What method was utilized in determining how the cost of the generation component varies across time?

A. The method employed by Atrium in our analytics is similar in approach to Unitil Energy System's recently filed base rate proceeding in New Hampshire, Docket No. DE 21-030.

It is also similar to other methods Atrium has employed for TOU rate modeling in other jurisdictions with Independent System Operators and no generation ownership. The general approach is to first differentiate Basic Service seasonal energy purchases by time period (i.e. Summer on-peak, Winter off-peak, etc.), using seasonal load profile contributions to each time period as a guide. Second, the marginal cost per hour is calculated by multiplying the average Independent System Operator – New England ("ISO-NE") market clearing Locational Marginal Price ("LMP") for Western/Central Massachusetts (LMP node .Z.WCMASS) across each hour from multiple years and the class's hourly load over a test year. Third, seasonal Basic Service costs are then divided by the seasonal share of those time-differentiated marginal costs to calculate time-differentiated projected Basic Service revenues. Fourth, a time-differentiated marginal rate is calculated by dividing the projected Basic Service revenues by the differentiated seasonal Basic Service energy purchases for each time period. The share for each time period of those time-differentiated marginal rates for each season is then computed to calculate time-of-use ratios. These ratios are then applied to the seasonal Basic Service power supply total costs for each time period, resulting in time-differentiated Basic Service rates. In addition to time-differentiating the total Basic Service power supply costs, the costs associated with Basic Service Cost Adders and Renewable Energy Credits ("RECs") were allocated equally to all time periods such that the rate associated with these costs did not vary across time periods.

Q. What method was utilized in determining how the cost of the transmission component varies across time?

A. The general approach is to time-differentiate Unitil's annual system transmission cost by season and time period, then divide those costs by time-differentiated system transmission deliveries (kWh). ISO-NE and transmission utility tariffs allocate FERC jurisdictional transmission revenue requirements (Regional Network Service or "RNS" and Local Network Service or "LNS") based on each distribution utility's share of the monthly coincident hour of peak load for the whole system (for RNS) and of their transmission provider's LNS peak. Unitil's transmission provider (at the LNS connection/wholesale meter point) is National Grid, which uses the system monthly peak for its LNS as well as RNS. The probability of the monthly coincident peak hour occurring during any particular TOU period is assumed to correspond to the historic experience over the most recent twenty years. Those hourly probabilities based on historic experience were then consolidated into the TOU periods. The current system external transmission costs to be recovered (from D.P.U. 20-134) are comprised of three components: total external transmission costs, prior period under-recovery, and computed interest. Twelve monthly coincident peak methodology was then used to allocate these current system external transmission costs to each customer class based on their proportionate use. Current residential external transmission charges were apportioned to the TOU periods based on the assumed probability of monthly coincident peak hours, the cost causation, occurring during each period.

Q. What method was utilized to time-differentiate the distribution component of costs?

A. As further explained below, the TOU model utilized is able to separately analyze and develop rates for the generation, transmission, and distribution components. To develop

the RES EV-TOU Rate, the distribution component was time-varied in order to produce a TOU rate for all three components with a 3 to 1 on-peak to off-peak ratio. In short, the allocation of the generation and transmission components across time periods was solely cost causative but the differentiation of the distribution component for purposes of developing the RES EV-TOU Rate was to obtain the targeted 3 to 1 on-peak to off-peak ratio.

Q. Why is Unitil supporting RES EV-TOU Rates that are not fully cost causative?

A. As outlined in the testimony of Company witnesses Carroll, Simpson, and Valianti, Unitil is proposing an EV initiative which contains multiple elements of support for the electrification of the transportation industry. Mass market adoption of EVs will be reliant upon charging networks, and those networks will need to be accessible, convenient, and affordable, particularly at home. In alignment with the Department's directive in Order in D.P.U. 20-69-A, Unitil is seeking to develop a RES EV-TOU rate differential that will encourage the reduction of system peak demand. As stated Order in D.P.U. 20-69-A, "..the Department encourages, but does not require, Unitil to propose electric vehicle-specific time-of-use rates for residential customers designed to provide appropriate price signals to encourage customers behaviors that will contribute to reducing system peak demand."[4]

Q. To what degree will the 3 to 1 on-peak to off-peak ratio result in reducing system peak demand?

[4] May 21, 2021 Order in D.P.U. 20-69-A at page 44.

A. There is no certainty as to the degree or amount of consumption behavior change that will occur due to the proposed peak/off-peak ratios. There is also no certainty as to the number of residential customers that will purchase an EV and elect to take EV charging service under Unitil's proposed RES EV-TOU rate. Research and publicly available analyses on TOU rates (cited below) demonstrates that utility customers' consumption behavior shifted when presented with differentiated peak and off-peak prices:

- **Pacific Energy Institute**: "…the studies collectively display a pattern of peak reduction behavior which increases in proportion to the ratio of peak to off-peak prices."[5]
- **The Electricity Journal**: "…customers do respond to higher peak to off-peak price ratios by lowering their peak demand, and this effect is amplified by the presence of enabling technologies."[6]
- **Public Utilities Fortnightly**: "…deployment of TOU rates to four million customers in Ontario has yielded tangible reductions in peak demand."[7]

[5] Pacific Energy Institute. Caldwell, J. (2019). "Price Elasticity and Electricity Rate Design," Center for Research in Regulated Industries, Rutgers University. Retrieved from: https://pacificenergyinstitute.org/wp-content/uploads/2020/02/Caldwell-Price-Elasticity-and-Electricity-Rate-Design.pdf

[6] The Electricity Journal. Faruqui, A., Sergici, S., and Warner, C. (2017). "Arcturus 2.0: A meta-analysis of time-varying rates for electricity." Retrieved from: https://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Electric_Rates/2017%20Arcturus%202%200%20(10-12-2017).pdf & https://www.sciencedirect.com/science/article/abs/pii/S104061901730275

[7] Public Utilities Fortnightly. Lessem, N., Faruqui, A., Sergici, S., and Mountain, D. (2017). "The Impact of Time-of-Use Rates in Ontario." Retrieved from: https://brattlefiles.blob.core.windows.net/files/7305_the_impact_of_time_of_use_rates_in_ontario.pdf

- **The Brattle Group**: "The First Year Analysis of Ontario's Full-scale TOU Program revealed that the residential customers responded to the TOU rates by shifting their usage from peak to off-peak."[8]

Q. Please describe the Excel-based model that Atrium utilized to develop the TOU rates.

A. The Excel-based model allows for the development of time-differentiated rates for each of the three rate components across various time periods. The model provides the ability to define the peak periods across differing time periods and run the analysis for these different time periods. It collates information relating to the LMP clearing price and the transmission hourly peak demands and applies the procedures detailed above. This can be done across various periods of time to develop different options or scenarios. The model also allows for modeling multiple rate classes simultaneously so as time periods are redefined the calculations are updated for all rate classes being reviewed.

Q. What time period options were analyzed by Atrium when running the TOU rates model?

A. Atrium utilized the TOU Rates model to review the following two options:

- Option 1: On-Peak: non-holiday weekdays, 10am-10pm. Off-Peak: all other times
- Option 2: On-Peak: non-holiday weekdays, 3pm-8pm. Mid-Peak: non-holiday weekdays, 6am-3pm. Off-Peak: all other times.

[8] The Brattle Group, Faruqui, A, et al. (2013) "Impact Evaluation of Ontario's Time-of-Use Rates: First Year Analysis." Retrieved from: http://files.brattle.com/system/publications/pdfs/000/004/967/original/impact_evaluation_of_ontario's_time-of-use_rates-first_year_analysis_faruqui_et_al_nov_26_2013.pdf?1386626350

Option 1 reflects the current time periods offered by Unitil under rate G4 - Optional Time-of-Use Rate – Medium Size Customers with average usage of 850 to 120,000 kWh; whereas Option 2 is in alignment with the current proposed residential EV-TOU Rate for Unitil Energy Systems in New Hampshire.

Q. When developing the RES EV-TOU Rate, what were the resulting rates for the time periods analyzed under each of the options listed above?

A. The results of Option 1 can be viewed within Table 1 below and Option 2 in Table 2. The calculations supporting these two Tables are presented in Exhibit Unitil-JDT-4. As described above only the generation and transmission components were time-differentiated using qualitative data and analysis for this rate and given the desire to further incentivize the adoption of electric vehicles, and in alignment with Commission guidance discussed above, the EV-TOU Rate is varying the remaining portion of the distribution costs in a manner that results in a total TOU rate with a ratio of 3 to 1 on-peak to off-peak. Further, it should be noted that the rates are illustrative as the Basic Service and transmission rates will be at different levels when final rates become effective.

Table 1 – Option 1 Time Periods EV-TOU Rate

		Option 1: Two Seasons (Jun-Nov Summer, Dec-May Winter); On-Peak (non-holiday weekdays, 10am-10pm); Off-Peak (all other times)				
		$/kWh				
Time Periods		**Basic Service TOU Retail Rates**	**Transmission TOU Rates**	**Distribution TOU Rates**	**Total EV TOU Rates**	**Peak:Off-Peak Ratio**
Summer: Jun-Nov	Summer_Peak	0.1045	0.0753	0.1590	0.3388	3.00
	Summer_Off-peak	0.0884	-	0.0245	0.1129	1.00
	Summer_Mid-peak	-	-	-	-	
Winter: Dec-May	Winter_Peak	0.1162	0.0756	0.1762	0.3681	3.00
	Winter_Off-peak	0.1061	-	0.0166	0.1227	1.00
	Winter_Mid-peak	-	-	-	-	

Table 2 – Option 2 Time Periods EV-TOU Rate

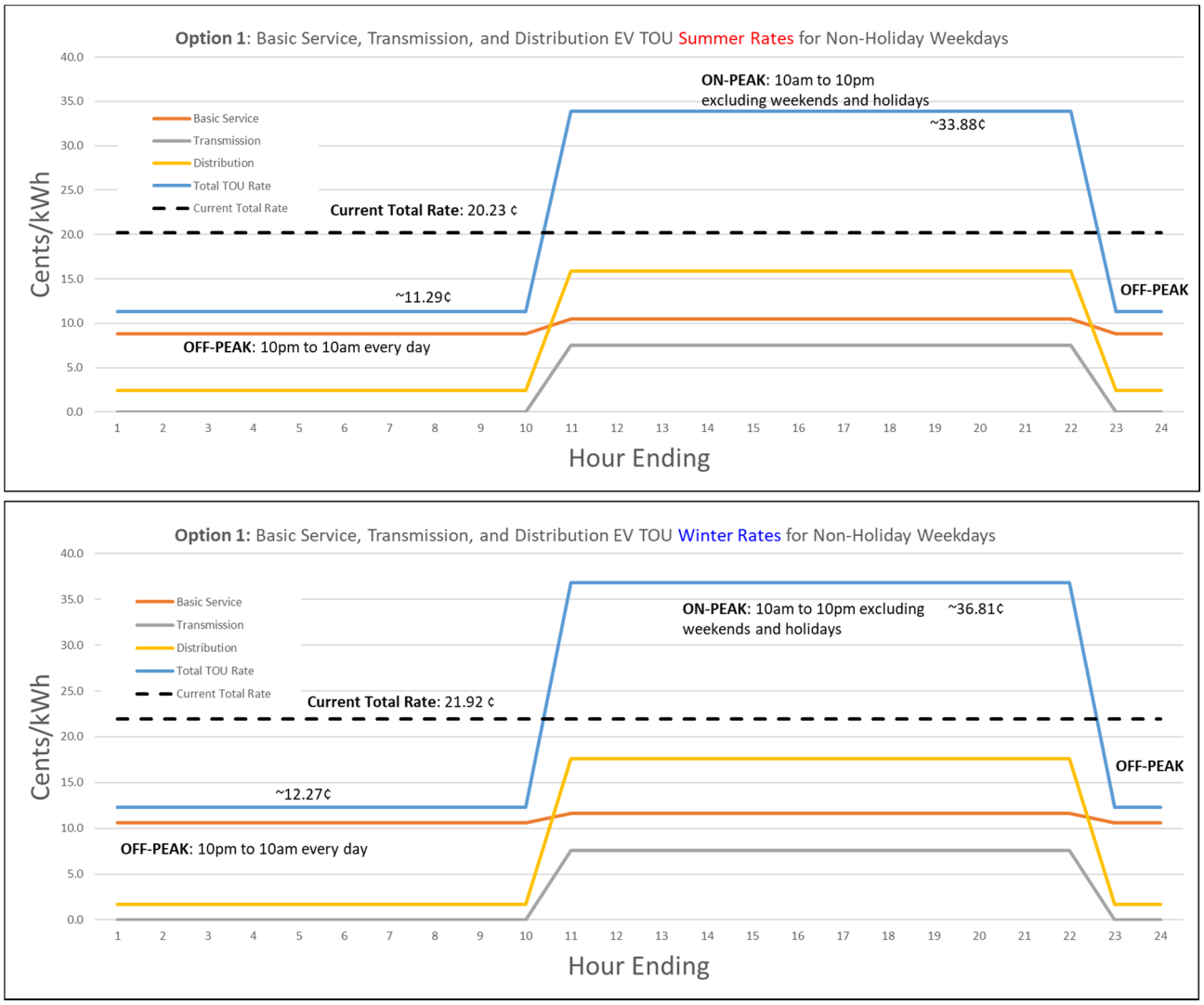
		Option 2: Two Seasons (Jun-Nov Summer, Dec-May Winter); On-Peak (non-holiday weekdays, 3pm-8pm); Mid-Peak (non-holiday weekdays, 6am-3pm); Off-Peak (all other times)				
		$/kWh				
Time Periods		**Basic Service TOU Retail Rates**	**Transmission TOU Rates**	**Distribution TOU Rates**	**Total EV TOU Rates**	**Peak:Off-Peak Ratio**
Summer: Jun-Nov	Summer_Peak	0.1126	0.1143	0.1553	0.3823	3.00
	Summer_Off-peak	0.0887	-	0.0388	0.1274	1.00
	Summer_Mid-peak	0.0953	0.0350	0.1107	0.2410	1.89
Winter: Dec-May	Winter_Peak	0.1229	0.1373	0.1731	0.4333	3.00
	Winter_Off-peak	0.1038	0.0019	0.0388	0.1444	1.00
	Winter_Mid-peak	0.1153	0.0121	0.0992	0.2266	1.57

Q. Which option is being used for setting the RES EV-TOU Rate?

A. Unitil is proposing to utilize Option 1. This option provides for clear price signals with only two time periods and is in alignment with the current TOU on and off-peak periods used for Rate GD-3 and Rate GD-4 which is Unitil's optional TOU rate for GD-2.

Figure 1 below shows the Residential EV-TOU Rates by season.

Figure 1 – Residential EV-TOU Rates by Season



Q. What will the customer charges be for customers on the RES EV-TOU Rates?

A. The incremental customer charge for the RES EV-TOU rate is set at $6.39 which represents the carrying cost associated with a separate meter required to meter the EV charging port.

Q. What is the process of updating these rates when costs for the generation component and the transmission component are updated?

A. As Unitil updates its Basic Service and transmission rates, it will need to update the RES EV-TOU rates given the total TOU rates are time varied for the generation component and transmission component. If the proposed TOU rates are approved, the ratios set in this proceeding will be used to scale the changes in generation Basic Service costs and transmission costs.

Q. Has Unitil prepared an illustrative tariff for the new RES EV-TOU Tariff?

A. Yes. Unitil Exhibit Unitil-JDT-5 contains an exemplary tariff which includes the provisions pertaining to the eligibility for this tariff, requirements, pricing schedules, the term, and other relevant provisions.

Q. Were EV-TOU Rates for non-residential charging stations analyzed or developed?

A. No. While the same method could be employed to develop TOU rates for non-residential charging stations, Unitil's proposal at this time is limited to the RES EV-TOU Rate given significant home charging that occurs for EV owners. Further, the benefit of time differentiated rates for public EV charging stations may be limited given public charging stations provide charging service to their customers for which they have little control in when their facilities are being utilized. Some EV charging stations may benefit from a TOU rate structure (e.g., hotels, overnight fleet locations) whereas others would be harmed (e.g., workplace, community centers, highway corridors), depending on their ability to control or incentive usage during certain time periods. Focus for this filing was placed on demand charge alternative rates for non-residential EV charging stations.

Q. Would the Company be able to immediately make EV Pricing available to customers upon approval by the Department?

A. No, the Company would not be able to immediately make EV Pricing available, as implementation time, billing system updates, and training for customer service representatives on the offering would be necessary. The Company anticipates that EV Pricing would require approximately three months to implement so that the Company can accurately program its billing systems to set up the required functionality.

IV. BILL IMPACTS

Q. Have you prepared illustrative bill impacts for customers on the RES EV-TOU rate and for EV charging stations under the proposed demand charge alternative rates?

A. Yes. Exhibit Unitil-JDT-6 provides illustrative bill impacts. Page 1 of Exhibit Unitil-JDT-6 demonstrates total charges for EV Charging stations with various load factors comparing that to the current GD-2 rate structure. Page 2 of Exhibit Unitil-JDT-6 provides illustrative discounts for assumed site locations and charging ports within Unitil's service territory over the next ten years. Lastly, page 3 of Exhibit Unitil-JDT-6 provides a bill impact analysis for various driving profiles opting to participate in the RES EV-TOU rate.

V. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes.