COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF PUBLIC UTILITIES

Investigation by the Department of Public Utilities on its own Motion into the Modernization of the Electric Grid – Phase II	DPU 20-69

REPLY COMMENTS OF

GREEN ENERGY CONSUMERS ALLIANCE

EV adoption is requisite to the Global Warming Solutions Act.

As Conservation Law Foundation noted in their initial comments, the Massachusetts Global Warming Solutions Act will require at least 85% reduction in greenhouse gas emissions by 2050.[1] In order to meet these goals, there must eventually be regulations directed at reducing emissions in the transportation sector for light, medium, and heavy duty vehicles, which means growing EV sales and greater demand on the electricity system. With these policy changes imminent, a targeted rollout of Time Varying Rates (TVR) for electric vehicle (EV) drivers can provide benefits to all ratepayers in the short term and long term.

Rate design should address barriers to EV adoption and encourage participation in TVR.

National Grid makes the point that Massachusetts's high electricity rates are a barrier to EV adoption because fuel savings for EV drivers are not as high compared to other regions.[2] We concur and identify TVR for EV charging as one solution.

TVR for EV drivers would offer a lower rate for charging off-peak and improve the cost-effectiveness of switching to electricity for vehicle fuel. TVR provides a benefit to early-adopters that does not come at the expense of non-adopters and establishes an important norm as EV adoption increases. We disagree with Unitil's suggestion that TVR should be accompanied with a subscription fee or fixed charge.[3] Although customers have been shown to respond to TVR with behavior change, TVR is only as effective as the number of

[1] Page 3 of docket 20-69 comments by Conservation Law Foundation
[2] page 12 of docket 20-69 comments by National Grid
[3] Page 7 of docket 20-69 comments by Unitil

people participating. It doesn't make sense to charge customers to participate when their participation brings economic benefits to the system.

We echo DOER's point that TVR programs should be structured to support positive customer experience,[4] which will in turn create the biggest incentive for behavior change and the biggest benefits to the entire electric system in the form of reduced costs.

There are several methods to enable TVR that are worth further investigation.

Based on initial comments, there were four proposed methods to implement TVR for EV owners: a single whole-home smart meter, an EV-dedicated smart meter, a smart Level 2 charging station, or a third-party data collection device. No clear consensus emerged on which technology is best to implement TVR for EV owners.

We do agree with Eversource's position against the installation of EV-dedicated smart meters, the option that presents highest costs to ratepayers.[5] However, Eversource was incorrect in stating that "supporting TOU rates would require EV customers to add a second meter." [6] As ChargePoint pointed out, there are alternatives to smart meters to successfully track electricity consumption for billing.[7]

Specifically, smart Level 2 charging stations provide benefits that smart meter deployment does not. Offering charging equipment to EV drivers incentivizes EV adoption in of itself. Many consumers need Level 2 charging equipment to enable their decision to drive an electric vehicle - unlike smart meters or data-collection devices, which don't have any function to the EV driver besides their ability to enable TVR. A discounted or free charging station in exchange for TVR participation ensures greater interest, as it provides more value to the EV driver for their cooperation. The lower equipment costs would stack on top of lower per-kWh electricity rates for charging off-peak, making charging more affordable. A smart Level 2 charging station would enable all EV drivers, regardless of their vehicle's charging scheduling features, to easily schedule charging to respond to off-peak price signals.

Both Eversource[8] and DOER[9] mention "managed charging" as a form of direct load management that could supersede TVR. With managed charging, utilities could ramp

[4] page 9 of docket 20-69 comments by DOER
[5] page 15 of docket 20-69 comments by Eversource
[6] page 13 of docket 20-69 comments by Eversource
[7] page 8 of docket 20-69 comments by ChargePoint
[8] page 5 of docket 20-69 comments by Eversource
[9] page 17 of docket 20-69 comments by DOER

charging rates of participating vehicles up or down, according to the needs of the system. Current smart Level 2 charging stations are capable of enabling managed charging now or in the future. Whereas if utilities wanted to pursue active demand management after a targeted smart meter rollout, smart meters would again need to be replaced or upgraded.

Although deploying smart charging stations is a compelling opportunity for establishing TVR for EV charging, we also agree with the Cape Light Compact and their position that aging meters should be replaced with smart meters where possible.[10] This gradual approach to advanced metering makes sense insofar as it would not lock the entire system into one specific technology or product.

Demand charges for EV charging are counterproductive.

There is agreement by National Grid,[11] Eversource,[12] Conservation Law Foundation,[13] Sierra Club,[14] ChargePoint,[15] Tesla,[16] and Green Energy Consumers that the current rate structure for C&I customers, specifically the use of demand charges, is a barrier to EV adoption. As the docket considers establishing special rates for EV charging, we urge the DPU to require utilities to file alternatives to traditional tiered rates with demand charges.

Both DOER[17] and Unitil[18] mention on-site energy storage as a solution to curb demand charges for large C&I customers with inflexible charging loads. While Unitil recommends maintaining the current demand charge system, we agree with DOER that it is better to reward the co-location of storage than to punish inflexible charging loads. Considering that high-power DC fast charging stations will be necessary to support large-scale electrification of fleet vehicles, medium and heavy duty shipping vehicles, and rideshare vehicles, it should be a matter of public policy to ensure that grid-scale storage vendors and charging station vendors partner to co-locate facilities to the fullest extent possible. This strategy would eliminate the barrier imposed by demand charges and support the Commonwealth's goals for storage, currently 1,000 MW by 2025.[19] Considering these co-benefits, locating inflexible charging loads and storage with solar makes sense as well.

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[10] page 12 of docket 20-69 comments by Cape Light Compact
[11] page 13 of docket 20-69 comments by National Grid
[12] page 8 of docket 20-69 comments by Eversource
[13] page 9 of docket 20-69 comments by Conservation Law Foundation
[14] page 1 of docket 20-69 comments by Sierra Club
[15] page 12 of docket 20-69 comments by ChargePoint
[16] page 6 of docket 20-69 comments by Tesla
[17] page 13 of docket 20-69 comments by DOER
[18] page 7 of docket 20-69 comments by Unitil
[19] Energy Storage Initiative from mass.gov

DOER makes a strong case for on-site energy storage in their initial comments; we support their advocacy on this issue. [20]

Inflexible charging loads will be present most often at DC fast charging sites and charging sites for large EV fleets. Considering the importance of good customer experience and EV adoption, punishing inflexible EV charging loads will be counterproductive. Therefore, we support the replacement of demand charges with time-varying volumetric rates for inflexible EV charging at C&I sites.

National Grid suggests that volumetric time-varying rates create challenges for heat pump and EV markets, as per-kWh rates do not reflect the cost that these technologies impose on the electric system.[21] However, the Sierra Club points out that it is apparent that non-coincident demand charges do not adequately reflect the cost borne to the system either.[22] According to the Rocky Mountain Institute, demand charges on public EV charging stations are not necessary to recover upstream costs of distribution circuits, transmission, or generation.[23] In California, where TVR for EV charging is available from all three of the state's investor-owned utilities, revenue collected from EV charging far exceeded system upgrade costs.[24]

Transmission & distribution costs should be included in a TVR-rate.

The Attorney General's Office, among other stakeholders, recognizes the benefits of TVR for transmission and distribution in their comments:

> This approach would be consistent with the time-variable nature of T&D costs. For example, ISO-NE billing determinants allocate wholesale transmission costs to the peak-hour of each hour, and substation and other distribution costs reflect peak system demands.[25]

And further: "Shifting consumption away from peak periods can avoid incurring additional capacity, distribution, or transmission costs."[26]

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[20] page 12 of docket 20-69 comments by DOER
[21] page of docket 20-69 comments by National Grid
[22] page 3 of docket 20-69 comments by Sierra Club
[23] See Rate-Design Best Practices for Public Electric-Vehicle Chargers from the Rocky Mountain Institute
[24] Electric Vehicles are Driving Electric Rates Down from Synapse Energy Economics
[25] page 6 of docket 20-69 comments by Attorney General's Office
[26] Page 7 of docket 20-69 comments by Attorney General's Office

National Grid presented some confusing points regarding the question of whether there should be TVR on the distribution side. On the one hand, the company pointed out that current rate structures "will recover a disproportionately greater amount of system costs from customers with these technologies." Comments continue:

> Moreover, existing residential rates do not provide the price signals needed for customers with beneficial electrification technologies to engage in efficient energy usage behavior to manage their bills and avoid increasing system costs paid by all customers. Rates that more closely reflect the fundamental ways electric system costs are incurred are needed to provide customers with improved opportunities to manage electric bills and to grow the markets for the technologies in an economically sustainable manner.[27]

We agree with the above assessment from National Grid. Where the confusion appears is in the company's stated preference for time-varying demand (per kW) charges over volumetric (per kWh) charges. In particular, we do not understand the relevance of this statement, "…fixed or demand-based charges are reflective of how fixed costs are incurred on the distribution system."[28]

It is our understanding that, for residential customers at least, fixed costs are recovered by the monthly customer charge and that supply, transmission, and distribution charges are assessed on residential customers on a per kWh basis precisely because the cost of service is volumetric.

We agree with National Grid that time-varying distribution rates for EV charging would be beneficial to EV drivers and non-drivers alike insofar as it would send an appropriate price signal to EV drivers to charge off-peak. This would not be a cross-subsidy for EV drivers, as the off-peak rate would be reflective of the value that off-peak charging brings to the system. National Grid's commentary in favor of demand charges requires more elucidation, especially since National Grid identified demand charges as a barrier to EV adoption for C&I fleets.[29] Establishing demand charges for residential customers would establish yet another cost barrier to charging for EV drivers by introducing a stick, rather than a carrot, for behavior change.

Regarding distribution and transmission TVR, Eversource states "Energy-based TVR charges do not accurately convey the cost of distribution loading because the rates encourage

[27] page 17 of docket 20-69 comments by National Grid
[28] page 15 of docket 20-69 comments by National Grid
[29] page 13 of docket 20-69 comments by National Grid

reduced usage over a duration rather than an instantaneous moment."[30] This argument is also used to justify Eversource's position against supply-based and transmission and distribution-based TVR. We disagree with this conclusion, based on evidence that shows EV drivers consume little energy during peak hours, which inherently reduces the instantaneous peak load.[31]

As discussed in Green Energy Consumers' initial comments, there are avoided transmission and distribution costs when EVs are charged off-peak.[32] Comments to the contrary from Eversource, National Grid, and Unitil are not reconcilable with the fact that avoided transmission and distribution cost are included in the benefit-cost analysis values for their energy efficiency and system reliability programs in Massachusetts and Rhode Island.[33]

We agree with Acadia Center, which stated "A time-varying rate should accurately reflect underlying cost drivers; those may be different for supply and distribution, but nevertheless, both have cost drivers that can be reflected in time-varying rates. A TVR for supply does not need to be the same as a TVR for distribution, but they should both send appropriate price signals."[34] When EVs charge off-peak, they contribute to the rate-base by consuming electricity when it is cheapest and least-taxing to the transmission and distribution system. As more EVs charge on the electricity grid, there are more avoided costs in upgrading the transmission and distribution system. The bigger the off-peak discount, the more likely it is that the price differential will actually incentivize different charging behavior.

Implementation of TVR for EV charging should consider environmental justice.

The comments of the Massachusetts Energy Directors Association and the Low-Income Energy Affordability Network establish the principles that should guide an equitable and affordable transition to TVR for EV charging. We support their comments, particularly their recognition TVR could make EVs more affordable for low-income customers.[35]

Further, Conservation Law Foundation lists environmental justice as a key consideration for the implementation of any customer-facing investments for EV charging.[36] We support

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[30] page 8 of docket 20-69 comments by Eversource
[31] Electric Vehicles are Driving Electric Rates Down from Synapse Energy Economics
[32] page 8 of docket 20-69 comments by Green Energy Consumers Alliance
[33] Further discussion of avoided transmission and distribution costs is found at the Avoided Energy Supply Components in New England: 2018 Report from Synapse Energy Economics.
[34] page 5 of docket 20-69 comments by Acadia Center
[35] page 3 of docket 20-69 comments by MEDA/LEAN
[36] page 5 of docket 20-69 comments by Conservation Law Foundation

their position and would like to highlight two examples of the intersection of TVR and environmental justice: supporting electrification for C&I fleets and data access for competitive energy suppliers.

1. Recognizing that low-income ratepayers are less likely to own cars and more likely to live in communities burdened by vehicle pollution, it is a matter of environmental justice that medium and heavy duty fleet vehicles operated by C&I customers be supported in the transition to electric vehicles. This means establishing alternatives to demand charges so that large customers, specifically transit bus operators, can charge affordably and operate in environmental justice zones. On top of all the previously-discussed grid-scale benefits of TVR for EV charging, the benefit of improved air quality should not be ignored.

2. Customers under community aggregation plans will soon make up the vast majority of Massachusetts households. Green Energy Consumers Alliance reiterates our position that charging data should be made available to competitive suppliers that supply the energy for community aggregations. Data access to these suppliers would enable supply-side TVR for EV charging for the thousands of EV drivers participating in aggregation. Electric distribution companies could also offer a distribution/transmission-side TVR to these customers as well. We did not observe any initial comments submitted to the DPU that indicated municipal aggregators and their customers should not be able to offer TVR.

   We also see an important distinction between suppliers in service of an aggregation versus suppliers in the individual marketplace. Competitive suppliers in the latter market have been found by the Attorney General's Office to engage in predatory consumer acquisition practices that lead to higher rates than what they would pay under Basic Service.[37] Low-income communities and communities of color are disproportionately impacted by higher rates from the individual contracts offered by competitive suppliers. As a matter of economic and environmental justice, we assert that only energy suppliers for community aggregations should be eligible to receive the data to enable TVR for their increasing base of Massachusetts ratepayers.

[37] AG Healey Report: Massachusetts Residents Who Switched to Competitive Electric Supply Continue to Lose Millions Each Year