REVISION ENERGY

Ms. Debra A. Howland
Executive Director
New Hampshire Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301-7319

May 11, 2020

RE: IT 20-004 Electric Distribution Utilities
Investigation into Rate Design Standards for Electric Vehicle Charging Stations and Electric Vehicle Time of Day Rates- ReVision Energy Comments

Dear Ms. Howland:

Pursuant to the Order of Notice dated April 9, 2020 seeking public comment the Commission Staff's recommendations regarding what rate design standards regulated electric distribution utilities should implement for electric vehicle charging stations and whether electric vehicle time of day rates should apply to residential and commercial customers, ReVision Energy ("ReVision") respectfully submits the following comments for your consideration. Thank you for the opportunity to do so.

As a matter of introduction, ReVision is one of New England's leading full-service solar and energy transition companies. Since 2003, ReVision has grown to over 250 employee-owners with nearly than 50 megawatts and 8,000 clean energy projects installed to-date across New Hampshire, Maine, Massachusetts, and Vermont. Our primary mission is to help our customers wean themselves off fossil fuel and adopt clean energy and clean transportation technologies.

ReVision has also been installing Electric Vehicle Supply Equipment ("EVSE") for Residential, Non-profit/Municipal and Commercial projects since 2011. It created an internal EV Charging Infrastructure Division in early 2017 specifically to grow sales, undertake business development, and increase advocacy efforts across its four state territory. As a result, ReVision Energy has installed hundreds of basic and smart charging units at a wide range of host sites- including colleges and secondary schools, large employers and commercial entities, private residences, municipalities, retailers, hospitality industry, malls and non-profit venues. ReVision has been installation partner with most major smart charging networks, including Greenlots, EVgo, Tesla and ChargePoint. These projects include both level two and DCFC technologies, with over 30 DCFC installations to date. Most recently, ReVision partnered with ChargePoint to win a competitive bid from the state of Maine to provide DCFC and level 2 installations at seven critical statewide locations chosen as the first build out of the backbone of public fast charging for the state using VW settlement funding. Three of these locations include state-of-art 150 kW DCFC

technology placed along Maine Turnpike service plazas. We also submitted a response to New Hampshire's RFP for its initial DCFC corridor after analyzing an owner/operator model. Our diverse experience with both the physical installations, public/private ownership models and transportation electrification policy issues inform the comments that follow.

As an important overarching issue, New Hampshire's current fleet of plug in vehicles, like the nation's at large, remains a small percentage of all operating vehicles. The electric vehicle and charging industries are still at an early stage of development and deployment. The utilization rates of any public charging infrastructure remain low. The deployment of plug in vehicles, particularly all battery electrics ("BEVs") is slow, making us believe that the growth of all types of charging will take, at minimum, several more years to become a significant presence on the grid. Nonetheless this is changing and the transition to electrification is underway. In the near term most New England states are pushing to meet a target of 15% Zero Emission Vehicles of all registered vehicles by 2025[1]. Massachusetts alone has a target of 300,000 plug ins on the road by 2025[2]. New Hampshire is currently behind the curve in terms of rates of adoption, with only 3,300 registered plug ins, or .23% of all registered light duty vehicles.[3] Accordingly, while electric vehicle specific rate design needs to be undertaken in anticipation of this transition, we still have an opportunity to pilot new ideas rather than develop a uniform, definitive electric vehicle rate design. The state should anticipate being flexible, adaptive and nimble in response to this opportunity.

With respect to the Commission Staff recommendations, ReVision Energy ("RE") has provided responses to each as set out below.

Cost of Service: Issue guidance that, to the maximum extent practicable, electric vehicle charging rate designs shall reflect the marginal cost of providing electric vehicle charging services.

RE Response: While cost of service is a foundational principle of rate design, the cost of providing electrical service to electric vehicle drivers should also consider the grid-wide benefits of this user class and how to factor those benefits into rate design analysis. In addition there are public health and climate action benefits associated with transitioning transportation to electricity, areas perhaps beyond the

---

[1] Shulock, C. (2016) Manufacturers Sales Under Zero Emission Vehicle Regulation: 2012 Expectations and Governor's Commitments Versus Today's Likely Outcomes, Shulock Consulting.

[2] www.nescaum.org › documents › 2018-zev-action-plan

[3] Testimony of NHDES, Docket No. DE 19-057, P7.

immediate statutory scope of rate design but nonetheless regulators must appreciate ripple effects of their rate design decisions on a broader swath of users and issues.

That said, the biggest benefit of EVs to the grid is just more throughput. Since many grid investments are already made and we're in a generally declining load environment, anytime we add electrical load (especially flexible and beneficial load) it reduces costs for everyone, with the only exception being when the new load is concurrent with the existing system peaks. Grid benefits can include, but are not limited to, use of electricity generation during off peak periods that enhances efficiency of the existing system, use of demand response to offset peak load during grid stressed periods, and potential use of distributed energy via battery storage from the vehicles. This latter benefit has been deemed potentially valuable but likely far in the future. In our experience we are seeing a number of energy companies engaged with vehicle manufacturers and creating bi-directional charging technology that is or will be available shortly. Accordingly the precise value of these grid benefits are still difficult to quantify for purposes of rate design and we urge the Commission to engage in ongoing pilots and data collection in response to these new technologies and more robust deployment.

Declining Block Rates: Issue guidance prohibiting declining block rates for any separately metered electric vehicle supply equipment.

RE Response: We agree. We should be moving towards rates that vary with time and reward load flexibility. Declining blocks do neither of those things.

Time of Use Rates – Appropriateness: Issue guidance supporting time of use rates as an appropriate rate design component for electric vehicle charging.

RE Response: Generally we are supportive, particularly with respect to residential charging, which in aggregate dwarfs all other forms of charging opportunities. Residential and commercial fleet charging rate design must provide incentives for off-peak charging given the scale. For workplace charging, which occurs during the day and reflects the second largest charging opportunity for most drivers, we should be sensitive to the impact of added electricity costs on providing charging opportunities for a significant cross section (10-15%) of EV drivers, many of whom might not otherwise have access to residential charging.

To make TOU rates actionable, the on peak periods should be as short as possible while still achieving the goals. It is much easier for a driver (at home or at work) to respond to a 3 hour peak, than a 10 hour peak.

Time of Use Rates – Whole Facility/House vs Separately Metered: Issue guidance that any electric vehicle TOU rates offered by the utilities should provide an option for customers to enroll in a separate rate class specific to electric vehicle charging end use.

RE Response: We support this option, however, the added cost to the customer for creating a separate rate class needs to be minimized to prevent barriers and enhance equity among rate payers. We understand there are examples of utilities that do TOU rates for EV only but without needing to add a separate meter and service. They do this by using a smart charger and backing out the charger load from the whole house load. The ability to capture utility grade usage data from existing "smart" technology, whether housed in the vehicle or the charger, would eliminate added submetering costs and may provide a simpler and more effective means of monitoring energy usage and manipulating it for grid benefits (e.g. responding to price signals).

In practice, our own experience is that EV charging is such a big load that if the rate differentials are really meaningful, it is worth being on a whole house TOU even if the charging is really the only load the household manages. Over time we expect customers to have the ability to manage more of their loads (with smart appliances or with batteries) and so in general we think nudging people towards a whole house TOU makes more sense than wasting money on separate service and meter for EV charging only. This might be different for commercial or larger charging clusters.

Time of Use Rates – Alternative Metering: Direct the electric distribution companies to file a feasibility assessment within 90 days relating to opportunities for offering an electric vehicle time of use rate for residential and commercial facilities that utilizes interval metering capability of devices other than a utility- owned meter. If an electric distribution company finds such an offering would not be feasible at this time, the assessment should nonetheless include a quantification of costs that would need to be incurred to deploy such a strategy, an explanation of any other barriers that may exist, and a roadmap for overcoming those barriers.

RE Response: We agree.

Time of Use Rates – Energy, Transmission, and Distribution: Issue guidance that any separately metered electric vehicle charging rates developed by the utilities should include a time-varying component for energy, transmission, and distribution. Once a utility has collected data regarding the average annual load shape of 500 electric vehicle rate customers, the Company shall solicit a separate tranche for full requirements, load following energy service within its default service solicitation for the electric vehicle customers using an average annual load shape specific to that customer class.

RE Response: We agree, with the caveat that New Hampshire, like other northern New England states likely will display some significant seasonality in EV charging usage, particularly during summer months. This could be in the form of added residential and commercial/public charging such that the proposed set of driver data may prove to be too narrow. Also the 'energy' portion of the time varying rate

needs to include the time varying capacity costs, not just the hourly marginal electricity cost.

Time of Use Rates – Consistency Among Utilities: Issue guidance that any separately metered residential electric vehicle charging rate should: (1) be based directly on cost causation; (2) incorporate time varying energy supply, transmission, and distribution components; (3) have three periods (e.g.- off peak, mid-peak, and peak); (4) be seasonably differentiated (e.g.- summer and winter); (5) have an average price differential between off-peak and peak of no less than 3:1; and (6) have a peak period no longer than four hours in duration.

RE Response: We agree with all of these except that we're not sure what the argument for the shoulder or mid peak is. We tend to think this level of granularity muddies the incentives and makes the programs more confusing so unless it is really needed, we'd argue to go to just peak and off peak. We definitely support seasonal differentiation and strongly support the argument for as short a peak pricing window as is tolerable because that is what makes it actionable.

Time of Use Rates – Quantification of Incremental Costs: Require each utility seeking approval of an electric vehicle time of use rate to provide an assessment of incremental costs associated with that offering, including but not limited to those costs associated with billing, metering, and marketing.

RE Response: No Comment

Seasonal Rates: Issue guidance expressing a preference for seasonally differentiated electric vehicle charging time of use rates consistent with the underlying cost causation of the summer and winter seasons.

RE Response: TOU reflecting Seasonal Peaks generally makes sense. We don't know how different EV electricity consumption is as between summer and winter seasons. Our experience suggests that there is increased residential charging (#of charging sessions and total kWh used) during the winter because of cold weather battery impact but we've never seen any data on this seasonal consumption variation. There are lots of variables. The overall electricity use may be less in the winter because of less driving, fewer non-residents charging, more use of back up combustion vehicles, etc. The level of vehicle deployment is currently not responsible for significant load, but that will change over the next 5-10 years, and thus the Commission should be cognizant that EV-related load could itself shift seasonal demand.

Interruptible Rates: Issue guidance that interruptible rates are not an appropriate rate design for electric vehicle charging.

RE Response: We think this is right. You can't cut people's charging ability off entirely given the critical nature of transportation but you can just make it expensive to do at the wrong time.

Load Management Techniques: Issue guidance that load management techniques may be an appropriate strategy for electric vehicle rate design, but express a clear preference for delivery of such offerings in conjunction with TOU rate offerings, to the extent reasonably practicable.

RE Response: We don't understand this preference necessarily. Residential chargers in particular are a good match for active load management techniques that might be more precise than rate design. Why would we want to take that tool away? For example, we think Green Mountain Power's active management program of residential chargers is a good program. Given the early stages of adoption in the state of New Hampshire, both these tools should be evaluated carefully before a clear preference is mandated.

Demand Charges – Peak Coincidence or Volumetric Pricing Structure Alternative: Issue guidance that demand charges may be a component of an appropriate rate design for high demand draw charging stations, but that utilities should explore alternatives to the customer peak demand charges prevalent in New Hampshire, such as the use of volumetric pricing structures or demand charges which are based on coincidence with system peak and other peaks reflective of cost causation. Demand charges are not likely warranted for most residential charging applications.

RE Response: Non coincident demand charges are nonsensical in general (because relatively few utility costs are driven by non coincident demand), but they are a particular killer for low volume usage of L3/DC Fast Chargers. We absolutely need alternative demand charge rate designs for DCFC and large clusters of level two chargers, at least in the early years, because, without them, they will not be financially viable investments for private network owners/operators. Demand charges simply do not allow DCFC'ing to recoup sufficient revenue in a low utilization environment such as is likely in the near term. This is an issue every state is confronting and must be addressed now in anticipation of the build out of necessary long distance travel charging infrastructure sufficient to robustly host resident and tourist-based travel. We don't think coincident peak demand charges are any better because they do not take into account the random user patterns of DCFC'ing that necessarily occur as a result of typical driving behavior. Stated alternatively, you cannot control through rate design when a driver must charge quickly during long trips and such charging likely represents but a fraction of typical charging behavior (and electricity consumption) as compared with residential charging. This is true for other types of low volume chargers, especially public level two charging, that can't easily be shut off or curtailed during peak periods.

Demand Charges – Rate Design Alternative Analyses: Require Eversource to file for review within 90 days the results of any analysis conducted by its affiliates relating to rate design alternatives to demand charges or if it is not available, then file it when it becomes available.

RE Response: No comment.

Demand Charges – Peak Coincidence Billing/Metering Feasibility: Issue guidance directing each utility to file within 90 days a feasibility assessment of incorporating peak-coincident demand charges into its billing and metering system for the purposes of offering an electric vehicle charging rate to commercial and industrial customers.

RE Response: Peak coincident demand charges might work for EV chargers located at large Industrial customers who already monitor grid peaks and adjust loads accordingly but they don't make any sense for smaller clusters or for public charging stations (which can't respond to those pricing signals and so it is still just a game of roulette for station owners as to what the electricity will cost). Volumetric pricing for those stations is what makes sense in the early days.

Time of Use Rate Proposal Filings for Separately Metered EV Chargers: Open an adjudicative proceeding and direct each electric utility to file within 120 days, consistent with the guidance above: (1) an electric vehicle time of use rate proposal for separately-metered residential and small commercial customer applications; (2) an electric vehicle time of use rate proposal for separately metered high demand draw commercial customer applications that may incorporate direct current fast charging or clustered level 2 chargers. Both proposals should be accompanied by testimony explaining how those rates were developed, any plans for marketing residential electric vehicle time of use rates, and how the rate is consistent with the Commission guidance

RE Response: No Comment.

Thank you for the opportunity to respond to the Staff's Recommendations. We hope our experience and comments will prove helpful.

Sincerely,

Barry Woods
Director of Electric Vehicle Innovation
ReVision Energy