REVISION ENERGY

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

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 January 16, 2020 seeking public comment on rate design standards for electric vehicle charging stations and electric vehicle time of day rates, 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.

We would like to provide feedback on the two areas for which comments are being solicited. First, briefly discuss certain elements of rate design standards regarding electric vehicle charging stations and electric vehicles. Second, responding to the question of whether it is appropriate to implement electric vehicle time of day rates for residential and commercial customers.

The benefits of incentivizing use of electric vehicles through creative rate design are varied and widespread, primarily based upon harnessing the vehicle's battery storage attributes. These include grid wide benefits associated with increased efficiency and reliability, harnessing renewable energy generation, as well as clean air and reduced carbon emissions (and related positive public health effects), all quantifiable benefits of promoting transportation electrification. As a general proposition, we firmly believe that short-term utility investment and utility regulatory streamlining which promotes this technology can meet the Commission's rate design principles of "efficiency, equity, simplicity, continuity and revenue simplicity". In addition, we would argue, that the electric utility's crossover into transportation creates a new paradigm when it comes to assessing these principles. Efficiency now might more appropriately be looked at in the larger context of

[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.

beneficial electrification, where the reduction in fossil fuel through transition to electricity might, on the one hand, increase electrical demand, and on the other, dramatically reduce carbon emission, increase rate payer savings and improve public health. Even seemingly inequitable treatment of certain classes of electric rate users may be allowable when viewed in this larger context. Indeed we assert that rate design which promotes electric vehicle adoption also can also effectively meet the letter and intent of New Hampshire's Energy Policy and Restructuring Policy Principles[4], including benefitting all consumer classes equitably, providing long-term environmental sustainability, promoting renewable energy generation, promoting investment in energy efficiency (cleaner, more efficient vehicles) and lowering transportation (energy) costs to all consumers. This is to say that electric utility rate design will become an increasingly important element of transportation planning. Besides hewing to traditional rate design models and energy policy restructuring principles, the Commission must become more expansive in its vision for managing the electrical grid as it considers the dynamic nature of these evolving technologies and a completely new sphere of influence- transportation.

The first area where we see the greatest potential benefit from more effective rate design is in the value of aggregating residential EV charging loads through off-peak and seasonal incentives. 80% of EV drivers charge their plug in vehicles at night, after work, at their residences.[5] As a result, the vast majority of electrical load growth will occur in residential rate class. The implications of this growth are, frankly, enormous, even for a smaller population state. Assuming an average commute distance of 30 miles per day, New Hampshire drivers would need to charge up with 7-10 kWh per day to recover range, making their vehicle the single largest household load (adding 33% to the existing average New Hampshire household monthly use of 621 kWh)[6]. If Massachusetts's adoption targets were successful, it's grid would be subject to an additional demand of 2400 MW per day.[7] If regulators do not anticipate how best to integrate such a massive load increase, then EVs will create more problems with the grid than they can solve. However, since the vehicles (and many chargers) are programmable and/or controllable, there is ample opportunity to shape this load through appropriate rate design, whether by Time of day rates, seasonal rates, or interruptible rates (such as through a demand response program), or a combination of these. Providing some type of rate design incentive to charge at night during off-peak periods will be critical to controlling the growth of this new load source efficiently and economically.

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[4] New Hampshire Energy Policy, Title XXXIV Public Utilities, Chapter 374-F:3, Restructuring Policy Principles

[5] https://www.energy.gov/eere/electricvehicles/charging-home; www.eia.gov › electricity › sales_revenue_price › pdf › table5_a

[6] https://www.electricchoice.com/blog/electricity-on-average-do-homes/

[7] This is calculated by taking 80% of the 300,000 vehicle target and multiplying it by average daily kWh usage. 10 kWh x 240,000=2.4m kWh= 2400 MW.

The second area of rate design we see as critical to the successful deployment of EVs is in the area of demand charges, which can dramatically affect the economic viability of DC Fast Charging (a/k/a Level 3 charging or DCFC) and large clusters of level two chargers, such as might be installed at workplaces.

The high cost of DCFC'ing technology, and high risk of low utilization (less than 5%), creates a potentially unsustainable demand charge to the operators of these sites, where a vehicle could draw high amounts of power for short periods at inopportune moments during peak usage periods. An unusually high ramp up of electrical load is of particular concern as DCFC hardware speeds continue to increase. For example New Hampshire's VW funded RFP for its first DCFC network called for installation of 150 kW DCFC units, capable of charging three times faster than the current DCFC standard. Additionally, while some site locations may ultimately achieve high utilization sufficient to offset these demand charges, many remain at risk of never being able to cover these accentuated costs. The Rocky Mountain Institute ("RMI") suggests that even a mature EV market may not provide more than 30% utilization rates ten years out.[8] While battery technology could be used to address demand charge risk during peak load periods, it is still extremely expensive and relatively untested. Accordingly, the PUC should work to better define a demand charge strategy for the period of time when usage-based revenue is unable to offset these charges. Utilities and energy policy leaders are creating a variety of tools to shelter DCFC investments including, but not limited to, creating a five year demand charge holiday with gradual phase-in with increased usage (Southern California Edison), a monthly fixed subscription cost to cover host site utility infrastructure with all other costs in time of use ("ToU") energy rate (PG&E)[9], fixed subscription in combination with two tier ToU regime for energy pricing (Rocky Mountain Institute or "RMI") or a smart rate design model (Regulatory Assistance Project or "RAP"). The state should work with utilities and policy experts to pick one of these tools and focus on solving the economics of the near-term when low utilization is probable.

Finally, while time of use rate designs focused on nighttime charging should be considered for residential charging, the Commission should also consider how to handle workplace charging, which remains the second most common type of charging behavior. Workplace charging occurs primarily during daytime periods, often during seasonal or daily peaks. For many residents who lack access to garages or who rent, workplace charging becomes a critical charging opportunity, without which they would be deprived of the benefits of driving electric. We urge the Commission to consider how to avoid penalizing daytime charging behaviors, such as using rate design to promote charging during periods of overgeneration (i.e. winter peak periods) or use of time varying rates that reflect real-time pricing and

[8] https://rmi.org/insight/dcfc-rate-design-study/

[9] https://www.utilitydive.com/news/pge-sce-sdge-pursue-subscriptions-time-of-use-rates-to-drive-more-cali/545907/

which communicate with vehicles and charging technology in a way which avoids adding to peak daily usage.

We remain optimistic that the Commission will be able to assess the means by which rate design can promote electrification of our transportation sector without adding undue costs to New Hampshire residents, can harness the power of these emerging technologies to benefit the grid, and can eliminate obstacles to the state's transition away from fossil fuel.

Thank you for this opportunity to offer feedback.

Sincerely,

Barry Woods
Director of Electric Vehicle Innovation
ReVision Energy