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## **Filed in ePUC**

May 13, 2019

Judith Whitney, Clerk  
Vermont Public Utility Commission  
112 State Street  
Montpelier, Vermont 05620-2701

Re: Case No. 18-2660-INV; Investigation into promoting the ownership and use of electric vehicles in the State of Vermont

Dear Ms. Whitney:

The Public Utility Commission (“Commission”) issued an order on March 22, 2019 requesting final written recommendations by May 13, 2019 for the Commission to consider and potentially include in its final report to the Legislature regarding Electric Vehicles (“EVs”). Green Mountain Power (“GMP”) appreciates the considerable work the Commission and participants have undertaken and is pleased to provide its final comments and recommendations.<sup>1</sup>

### Recommendation:

The climate crisis is the biggest threat that we see to our operations and our ability to reliably deliver clean energy to our customers. The time remaining to effect meaningful change and slow the catastrophic effects of the climate crisis is shrinking faster than any of the models forecasted. We believe our most urgent work on behalf our customers and Vermont is to drastically accelerate the reduction of fossil fuels in the Vermont economy, helping customers to cut carbon and increase resiliency. GMP, and virtually all of the other Vermont distribution utilities, reliably delivers very green, low-carbon energy everyday to our respective customers. The technologies exist today and are broadly available in the market to use this very green, low-carbon energy to power the most carbon emission intensive elements of our economy, namely transportation and thermal heating. Battery Electric and Plug-in Hybrid Electric vehicles are readily available technologies that can drastically reduce carbon emissions from Vermont’s transportation sector.

Cutting Vermont’s carbon footprint and greenhouse gas emissions is critical to our customers, our climate and ultimately our planet which is why GMP has adopted an aggressive energy vision to have a 100% carbon free energy supply by 2025 and 100% renewable energy by 2030.

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<sup>1</sup> As requested in the March 22, 2019 Order, these comments are indexed to the to the specific reporting requirements identified in Act 158, Section 25.

The transportation sector is responsible for a substantial portion of all GHG emissions in Vermont.<sup>2</sup> In order to meet the carbon and greenhouse gas reduction in Vermont's Comprehensive Energy Plan, by statute, and GMP's energy vision, widespread adoption of EVs is necessary, and for this reason, as discussed in our 2018 Integrated Resource Plan, GMP has undertaken several programs that promote EV adoption including EV charger incentives; EV charger as a service; an eCharger Pilot with flat fee unlimited charging utilizing shared access and load control; workplace EV charger contribution matches; installed public and workplace EV charging; and upstream rebates from manufacturers, and we most recently announced direct incentives up to \$2500 on EV purchases including a low-income incentive and employee discounts for certain EV purchases. Our experience offering innovative ways to promote EVs has shown us that the upfront price and the unavailability of vehicles that match Vermonters' needs continue to be the most significant barriers to adoption.

What we have learned from these programs is Vermonters will buy EVs if there are appropriately priced incentives that bring down the initial purchase cost of the EV. For example, in 2017, GMP teamed up with Freedom Nissan in South Burlington to give customers \$10,000 off the purchase of a Nissan Leaf. The incentive was funded entirely by Nissan USA, and Freedom Nissan reported that it became the number two Leaf dealership in the country in 3 months and went from selling 2-3 Leafs per month to over 200. To continue to incentivize EV adoption, GMP is now offering its own direct incentives.

While these incentives will get more Vermonters to adopt EVs, utility-funded incentives alone will not enable Vermont to reach its carbon and greenhouse gas goals. For this reason, we encourage the adoption of Vermont-specific incentives similar to the federal tax credits for purchasers of EVs to help more Vermonters afford these vehicles. Additionally, we recommend a moratorium on new costs for EV drivers, such as fuel tax, until there are at least 50,000 registered plug-in vehicles in Vermont.

It also will be critical to focus on ways to promote EV use in a manner that will not shift costs to customers who do not use EVs, and be careful to avoid EV policies that might hamper adoption. One way to reduce costs for all customers without shifting those costs to non-participating customers is to manage the EV loads. We believe that home charging will continue to represent the major portion of charging activity for EV owners. Given the later peak hours we are now experiencing, we believe it is critically important to create the ability to manage the EV loads for customers during curtailments as charging sessions increase. We also are looking for ways to enable greater electrification through altering demand charges or time-of-use rates to encourage greater deployment of EV infrastructure.

As requested in the Commission's Order, below are GMP's responses to specific questions the Commission is required to report on pursuant to Act 158 Section 25.

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<sup>2</sup> According to the Vermont Department of Energy Conservation June 2018 Greenhouse Gas Emissions Inventory Update, the transportation sector represents approximately 43% of total greenhouse gas emissions in Vermont. [https://dec.vermont.gov/sites/dec/files/aqc/climate-change/documents/\\_Vermont\\_Greenhouse\\_Gas\\_Emissions\\_Inventory\\_Update\\_1990-2015.pdf](https://dec.vermont.gov/sites/dec/files/aqc/climate-change/documents/_Vermont_Greenhouse_Gas_Emissions_Inventory_Update_1990-2015.pdf)

***(I) Analysis and recommendations related to the role of electric distribution utilities:***

***(A) Removal or mitigation, as appropriate, of barriers to EV charging, including strategies, such as time-of-use rates, to reduce operating costs for current and future EV users without shifting costs to ratepayers who do not own or operate EVs***

The value proposition of EVs from a fuel and maintenance cost standpoint are well-known and compelling if one looks at the total cost of ownership when compared to the same costs for internal combustion engine (“ICE”) vehicles. The relatively low cost of electricity, as compared to gasoline, is a benefit rather than a barrier to EV charging.<sup>3</sup> In fact, at current gasoline and residential electric rates, most Vermonters adopting an EV will experience a 50% fuel cost reduction starting their first day of ownership. That is like getting \$1.25 to \$1.50 per gallon gasoline for the lifetime of the new vehicle. Likewise, vehicle maintenance costs for EVs are less than for ICE vehicles making EV operating costs a significant benefit rather than a barrier.<sup>4</sup> While rate designs that include time-of-use rates may prove helpful in the future to incent charging during certain times of the day or night to manage load and reduce costs for all customers, they will not serve to remove any barrier to EV charging or to drive a lot of customer adoption. To effect the most change in transportation emissions in the short term, directing policies toward reducing the cost of acquiring an EV is the most impactful decision that can be made.

***(B) Strategies for managing the impact of EVs on and services provided by EVs to the electric transmission and distribution system***

Given the flat and declining load in Vermont, GMP is not concerned, at this time, that a significant increase in EV usage will negatively impact the transmission and distribution system reliability. In fact, we believe a surge in EV adoption can help keep electric rates low as we are able to spread fixed costs across a larger number of kWhs delivered. GMP modeled a low, medium and high EV growth sensitivity analysis in its 2018 Integrated Resource Plan (“IRP”), and even with a high EV growth rate assumption, GMP did not see the need for upgrades to the T&D system to accommodate the new load even assuming no management. In fact, the additional potential load from EV charging simply slows down some of the load decrease we have seen year over year due to the effects of efficiency and net metering.

The opportunity for managing this new load to reduce peak-driven costs for all of our customers is substantial and has been demonstrated through our EV charging and EV Unlimited pilots. These programs allow us to have visibility and control over charging sessions at home and then aggregate that charging capacity in demand response events during system peaks. Having these charges installed also will be critical for future EV-specific charging rates which will help keep costs down for all customers.

***(C) Electric system benefits and costs of EV charging, electric utility planning for EV charging, and rate design for EV charging***

See A and B above.

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<sup>3</sup> April 9, 2019 Drive Electric Vermont presentation at 9.

<sup>4</sup> Id.

***(D) The appropriate role of electric distribution utilities with respect to the deployment and operation of EV charging stations***

GMP has several programs to incent the deployment of EV charging stations. In terms of workplace and public charging programs, GMP has a partnership with Tesla to install workplace chargers. Tesla pays for the hardware, and helps subsidize the installation costs. For businesses which provide EV incentives to their employees, GMP will match this incentive up to \$600 to create a \$1200 overall incentive. We also are offering \$375 per port incentive for public charging stations that get put in into businesses or retail locations where the public may want to access those things.

GMP also has deployed over a hundred Level 2 and DC fast chargers across the state thus far. Our experience shows us there is a higher utilization rate of those stations year over year, though there is still plenty of capacity for those chargers to be accessed by the EV-owning public which suggests public charging is not a major obstacle to increasing EV adoption, but it is certainly an element in providing a vibrant offering to get people to convert to EVs.

Throughout this proceeding, the Commission heard from stakeholders promoting the build-out of infrastructure for publicly accessible Level 3 charging for long distance EV travel by distribution utilities (“DUs”), paid for by Vermont’s electric customers. Two primary suggested models for utility involvement in Fast Charger infrastructure included utility ownership of charging infrastructure and utility contribution of “make-ready”<sup>1</sup> costs to support chargers. While this infrastructure likely will be required at some point, we do not yet know whether other market solutions – through the automobile industry, the growing EV charger industry, or otherwise – will emerge to provide it. Exact demand and optimal locations for public Level 3 charging also are not yet known. Our experience so far tells us that most charging will continue to be done at home or work. Additionally, we have seen standards change over the past few years, raising the possibility of stranded investments. Given these uncertainties, we do not recommend at this time that Vermont adopt a policy of requiring electric customers to pay for statewide public charging infrastructure through a DU build out.

***(2) Analysis and recommendations on each related to EV charging stations owned or operated by persons other than electric distribution utilities:***

***(A) How and on what terms, including quantity, pricing, and time of day, such charging stations will obtain electric energy to provide to EVs***

Generally, charging stations will be connected to circuits served from the service panels of the addresses hosting the stations. In these cases, metering will be for the premise and not specifically for the charger. If the charger is participating in a load management program, it will have to be metered specifically to determine how it responds to curtailments. In these cases, measurement would be either through a dedicated meter, or through the metrology built into the charger. In cases where the charger is served from a dedicated circuit, though, either a dedicated AMI meter, the metrology within the charger itself, or a combination of the two will be employed.

The charging stations will be served under utility rates. GMP provides General Service to customers up to 200 kW and up to 7600 kWh/month via a rate design that does not include demand charges. For larger accounts that are served via demand-billed rate schedule, the public charging stations that are behind the commercial customer's billing meter have the opportunity to diversify the maximum monthly demand if that EV equipment is used infrequently. For Level 3 charging that is directly served through a separate utility meter, a demand charge can become a large percentage of a relatively small utility bill if the utilization is low. For these cases, rate structures that mitigate the effect of demand charges for low utilization charging stations during an initial period of time have been discussed by workshop participants.

***(B) What safety standards should apply to the charging of EVs***

Charging stations owners/operators should conform to any and all local and national safety codes including Vermont electrical safety codes.

***(C) The recommended scope of the jurisdiction of the Commission, the Department of Public Service, and other State agencies over such stations***

The Commission already submitted its recommendation to the Legislature on this issue.

***(D) Whether such stations will be free to set the rates or prices at which they provide electric energy to EVs, and any other issues relevant to the appropriate oversight of the rates and prices charged by such stations, including the transparency to the consumer of those rates and prices***

GMP does not recommend mandating a specific rate or fee structure for utility or non-utility charging stations. Again, we believe that most charging will be done at homes or at businesses under existing rates which already are much less expensive compared to fossil fuels. We believe the creativity of the market should be allowed to develop charging programs and pricing structures to meet consumer requirements and demand. Whatever rate is charged by non-utility charging stations should be clear, transparent and accurate. The Department of Public Service and the Commission regulate entities that sell electricity to the public. The Secretary of the Agency of Agriculture, Food and Markets has jurisdiction over weights and measures under 9 V.S.A Chapter 73. GMP notes that on the Agency's website, there is a link to the National Institute of Standards and Technology ("NIST") Handbook 44 in which NIST has published tentative standards for electric vehicle fueling systems.

[https://agriculture.vermont.gov/food\\_safety\\_consumer\\_protection/weights\\_measures/device\\_inspection/laws\\_regulations](https://agriculture.vermont.gov/food_safety_consumer_protection/weights_measures/device_inspection/laws_regulations)

***(E) The recommended billing and complaint procedures for such charging stations***

Charging station owners/operators should clearly post information about accessing customer service resources in order to facilitate real-time charging session support. Most public charging stations provide toll-free customer service numbers that are staffed 24/7 and can provide information, answer questions or remotely troubleshoot a charging session issue with the customer. This type of service is important to increase customer confidence in being able to transact a successful charging session a high percentage of the time.

***(3) Analysis and recommendations on each of the following issues:***

***(A) Jointly with the Secretary of Transportation, recommended options to address how EV users pay toward the cost of maintaining the State's transportation infrastructure, including consideration of methods to assess the impact of EVs on that infrastructure and how to calculate a charge based on that impact, the potential assessment of a charge to EVs as a rate per kilowatt hour delivered to an EV; varying such a charge by size and type of EV; and phasing in such a charge***

GMP does not recommend kWh fee at this time while we are still in the early phase of EV adoption. Building the pace of EV adoption is important and any additional fees will serve as a short term barrier. We do not want to minimize the importance of developing a policy for continuing to fund transportation infrastructure, but until Vermont reaches a meaningful number of registered EVs policy should promote a faster pace of EV adoption. We believe 50,000 registered plug-in EVs could be a meaningful threshold. While GMP could apply a kWh fee on EV charging where GMP's utility meter is dedicated to measuring the kWh usage of energy used to charge EVs, it would be rare to have a meter dedicated to one EV charger. Where there is not a separate utility meter for the charger, in order to assess a kWh fee, GMP would need to first know that the customer is using an EV charger and then obtain the kWh usage from the EV charger itself. We handled this as a manual practice in our EV charging pilot explained in more detail below; that pilot was small in scale and designed in part to test this aspect. Automation would be required to undertake this on a larger scale.

Any policy creating a kWh fee charge would have to recognize that a great deal of home (and frequently business-based charging) is presently done behind the meter. GMP, through its pilot program, installed almost 300 residential chargers; anyone else charging EVs at home in GMP's territory is doing so with their own chargers (or directly from an existing outlet) outside of GMP's program. Absent requiring submetering for EVs or another system to segregate this usage from the customer's whole-house or business usage, there would be no way for a utility to collect a kWh fee on energy used for EV charging. Obviously, utilities would only be able to collect and remit taxes for EV charging that is known to the utility and capable of tracking. We know that utility collection would not capture all charging.

Indeed, any such policy would need to carefully avoid perverse incentives for customers to utilize outlets or systems that would avoid a fee. Managing how and when EVs are charged is important and will benefit the operation of the electric grid, as well as reduce overall energy costs for all customers. It is therefore critical that customers be encouraged to participate in utility and third party programs that allow shared access that will benefit all Vermonters.

Additionally, any such kWh fee should avoid creating potential stranded costs, as may occur if a second meter were required. This is a fast-evolving, innovative market, and it is hard to know what innovation is coming that may enable customers, utilities, and third parties to manage EV charging more easily than, or differently from, how we are doing so now.

GMP understands the need to maintain, repair and build out Vermont's roads and transportation infrastructure and recognizes that there currently is a shortfall in infrastructure funds. We also recognize that EV owners use our roads and bridges and should bear their fair share of

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infrastructure costs- at some point- but not until EV adoption is relatively widespread, and the market no longer needs to be incentivized. These incentives can be phased out over time as EV adoption grows. When there is a significant increase in EV adoption in Vermont, to the point that incentives are no longer necessary to move the market, new policies for the transportation fund should be considered. In the meantime, there are other ideas, like optional fees (that could be waived for low-income Vermonters) for personalized EV plates, which would provide some revenue toward the transportation fund without impacting EV adoption. Many EV drivers are proud of their decision and carbon cutting work, and this could be an option for them.

Once EV adoption has taken off and is secure in Vermont, there are a number of ways to ensure EV owners pay their share of the costs to maintain and build out transportation infrastructure. These could include mileage-based assessments (which have the benefit of directly relating to the EV's usage on Vermont's roads), tolls (which have the benefit of capturing in-state and out-of-state users of Vermont's infrastructure) or some type of tax on the sale of energy for EV charging. To the extent there is a tax assessed on EV energy sales, this tax should not be collected by utilities or require utility data to assess as utilities would need to undertake costly changes to their billing and IT systems in order to handle such collections and third party data. Absent mandating the use of utility-accessible chargers for all EV charging, which GMP does not support, there would be no mechanism for utilities to reliably identify energy used specifically for EV charging.

***(B) the accuracy of electric metering and submetering technology for charging EVs***

ChargePoint conducted a comparison study for another US utility. The Level 2 charger metrology showed a 0.76% difference in accuracy compared to the utility meter, which was deemed sufficient for our GMP pilot.

***(C) strategies to encourage EV usage at a pace necessary to achieve the goals of the State's Comprehensive Energy Plan and its greenhouse gas reduction goals, without shifting costs to electric ratepayers who do not own or operate EVs***

See 1(A) above.

Thank you for this opportunity to comment, and if you have any questions, please feel free to reach out.

Sincerely,



Carolyn Browne Anderson

CBA

Enclosure

cc: ePUC Service List