BURLINGTON ELECTRIC DEPARTMENT

VPPSA Vermont Public Power Supply Authority

May 13, 2019

Ms. Judith C. Whitney, Clerk
Vermont Public Utility Commission
112 State Street, Drawer 20
Montpelier, VT 05620

Re: **Case 18 – 2660 – Final Comments**
Investigation into promoting the ownership and use of electric vehicles

Dear Ms. Whitney;

At the request of the Vermont Public Utility Commission ("Commission"), the City of Burlington Electric Department ("BED") and Vermont Public Power Supply Authority ("VPPSA") submit the following final comments in the above-captioned proceeding.

BED and VPPSA have filed numerous written comments over the past several months and actively participated in each of the Commission's workshops. While we stand behind our earlier comments, particularly with respect to jurisdictional issues and the full application of 30 V.S.A.§203 on nonutility electric vehicle supply equipment ("EVSE") station owners, our comments and recommendations below are focused on the following key public policies:

- Promoting EV adoption
- Rate design & Cost recovery
- Customer protections & price transparency
- EVSE technology

Promoting EV adoption

In its Order of Notice, the Commission clearly articulated its main objective for this proceeding.

> *If the state is going to meet its ambitious GHG reduction goals, it is imperative that we develop an environment in which more Vermonters choose renewable*

energy forms of transportation so that we, as a state, can reduce that 47% number to a level consistent with our GHG reduction goals.[1]

It is fair to say that the participants to this proceeding are working toward the same goal. We are all seeking to further develop an environment that would support even higher levels of EV adoption in the near term than today's rate. The question, however, isn't necessarily about how we create such an environment but more about maximizing public and private investments in a coordinated and cost-effective manner that neither undermines individual organizations' efforts nor stifles innovation. If we can do this, our collective goal of creating a conducive EV adoption environment will be easier to achieve.

To start creating that environment, the State will need to focus on the largest barrier to EV adoption today. That barrier is the **upfront price of EVs relative to comparable ICE vehicle**.[2] Such a near term focus is supported by the evidence submitted to the Commission in this proceeding. As Drive Electric Vermont pointed out during its presentation, the biggest barrier to EV adoption is the price of the EV. According to DEV, 25 percent of respondents said they would not purchase an EV because they cost too much. Driving range of EVs and charging availability were also barriers but neither are as steep as the upfront cost barrier. Given the cost differential between EVs and traditional ICE vehicles, it would be easy to conclude that pairing together state funds, including VW settlement funds, with private funds from Vermont distribution utilities (i.e. Tier III) and manufacturing funds (i.e. Nissan and GM employee discounts) would have a significant impact on EV adoption. Thus, BED and VPPSA would support any Commission recommendation in its legislative report that would result in increased funding for direct financial incentive programs to buy down the upfront cost of EVs.

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[1] Dkt 18 – 2660, Order of Notice, July, 9 2018. The 47% number refers to an Agency of Natural Resource's study finding that 47 percent of Vermont's greenhouse gas emissions are generated from the transportation sector.

[2] Internal Combustion engines fueled with gas or diesel fuels.

If supporting policies and investments that increase the cost competitiveness of EVs is an appropriate strategy, then it would be consistent for the Commission to also oppose policies that undermine such a strategy. One such policy that the Commission ought to oppose is the kWh tax on EV charging.

As discussed at length during the proceeding, a kWh tax would undermine innovative at-home pricing structures that have been designed to improve grid management, increase EV awareness, and improve the customer economics of EV ownership. Aside from undermining our collective efforts to actively promote EV adoption, a kWh tax on EV's would not achieve the State's goal of stemming the apparent erosion of Transportation tax revenues. There are simply too few EV's on the road today to make up for the large losses in tax revenues. Moreover, a kWh tax could easily be bypassed. All an EV owner would have to do is plug their EV into a typical 120V outlet, or purchase any type of level 2 charger on Amazon that is not registered with the serving distribution utility. If EV owners elect either of these options, it would be impossible to impose a kWh tax since the serving utility would be unable to discern the difference between an EV that is consuming electricity or the resident's clothes dryer without on-site inspections.

The state could, in theory, simply impose an estimated EV transportation tax on all EV owners based on statewide average vehicle miles travelled. However, such a tax would over tax some EV drivers who drive less than the statewide average and under tax other EV drivers who drive more than the statewide average. Not only would this type of tax be unfair, it would raise only an extremely small percentage of the State's overall transportation budget, at least in the beginning years. In our view, any effort to impose a new EV tax as this point in time would dampen the State's efforts to create a positive environment for EV adoption as well as undermine future and existing innovative residential rate structures that have been implemented to improve our ability to manage the grid to the benefit of all customers.

Although BED and VPPSA are opposed to a residential per kWh tax, we would not oppose a decision to impose a per kWh tax on publicly available EVSE usage provided the usage of the publicly available EVSE is separately metered.

Rate design & Cost recovery

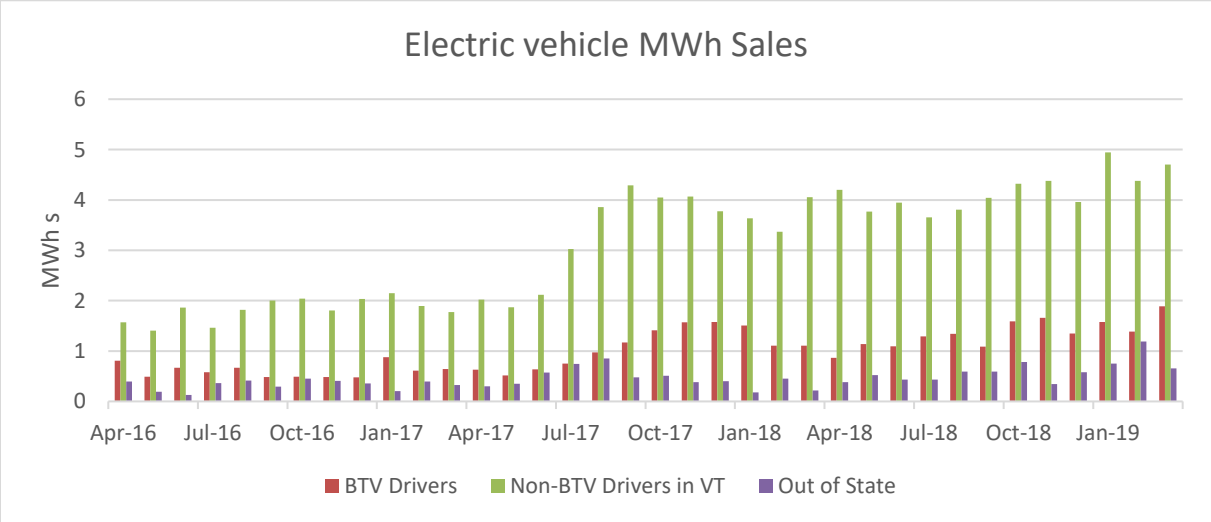
As noted by the Commission in its January 23rd letter to the Legislature, section 25 of Act 158 directs the Commission to consider policy recommendations that would *remove or mitigate, as appropriate, [] barriers to EV charging, including strategies, such as time-of-use rates, to reduce operating costs for current and future EV users* ***without shifting costs to ratepayers who do not own or operate EVs.***[3] Throughout these proceedings, BED and VPPSA have maintained that EVSE rate structures must comply with the Commission's long-standing policy of establishing compensatory rates; meaning that rates must reflect the underlying costs to serve specific customer classes to the greatest extent possible. The Commission's policy does allow for special rates to be developed for specific customer loads that deviate from established tariffs. Such exceptions typically involve a utility study demonstrating that the marginal cost to serve a specific and identifiable marginal load is less than the existing tariff rate that would be applicable to a customer. Under these conditions, a lower rate than the existing tariff rate could be justified so long as the marginal costs to serve the load are recoverable.

In Docket 18-2763, BED submitted such a study prior to implementing its residential EV rate program that included a $0.06 per kWh credit for customers charging their EVs between 10 PM and 11:59AM. BED's cost study demonstrated that BED's marginal cost to serve the new nighttime EV load in a residential household was less than the discounted rate (i.e. 0.08 kWh) collected from EV program participants. BED's rate credit program however may not work for other distribution utilities as their costs may differ from BED's. Thus, the Commission's recommendation to the Legislature should include a provision that allows distribution utilities the flexibility to propose their own rate structures to achieve the Act's directive of reducing EV operating costs, if possible, without shifting costs to non-EV owners. Allowing for such regulatory flexibility would also ensure that any proposed rate structure would reflect the capabilities of the host utility and the level of EV deployment in its territory. As noted above, the cost to charge an EV is not a

[3] See Commission letter of January 23, 2019 to various Vermont Legislative committees.

primary barrier to widespread EV adoption. Accordingly, the Commission should not mandate special EV charging rates at this time.

With respect to publicly available EVSE, BED and VPPSA contend that each utility will need the flexibility to establish compensatory rates for nonutility EVSE station owners and to separately meter their charging equipment. The reason for such additional flexibility is due to the unique characteristics of stand-alone EVSE. Unlike other commercial customer loads, like lighting or ventilation or HVAC equipment, separately metered EVSE spike to full capacity for a period of time before tailing off as the EV battery reaches a complete state of charge. Their demand for power is also highly random and unpredictable. As a consequence of this uniqueness, EVSE stations do not fit neatly into any existing customer class load profile. Moreover, unless EVSE stations have built in storage capabilities, the use of the EVSE could easily fall within critical peak events driving capacity and transmission costs higher than they would be otherwise. Finally, as the graph below demonstrates (using BED data as an example), EV drivers living outside of Burlington (green columns) consume more electricity at BED's publicly available EVSE stations than residents do. For the above reasons, distribution utilities need the flexibility to propose fully compensatory rates to the Commission for nonutility owned, separately metered EVSE in order to prevent shifting nonutility owned EVSE costs onto host utility customers.



Nonutility EVSE-specific rates could include a mechanism to levelize estimated demand charges over time. As a means to maximize the potential benefits of this this type of an arrangement, we also recommend that nonutility EVSE station owners provide the serving utility with control capabilities in order to curtail energy consumption during peak demand events. And, in the case of EVSE/storage combinations, which would provide similar benefits to load control, utilities would need the ability to switch the power source to the EVSE station from the grid to the battery when it was advantageous to do so.

As noted in prior filings, BED and VPPSA would be more than willing to engage with other market actors to tailor a mutually agreeable tariff structure to promote additional public EVSE installations. But in order to accomplish this task, the distribution utilities need the flexibility to develop such rates. If the Commission's Legislative report includes a recommendation requiring distribution utilities to offer a specific rate to EVSE station owners, or even require utilities to develop such rates in accordance with a rate/structure prescribed by the Commission or Legislature, then our ability to design innovative rate structures that would be appropriate for each host utility in concert with other market actors that is both compensatory and fair would be seriously affected.

Customer Protections & Price transparency

In our November 5, 2018 filing, we highlighted our concerns relative to customer protections and price transparency. Now that the Commission has determined that nonutility owners of EVSE stations will not be subject to 30 V.S.A. §203, we believe that robust consumer protections and price transparency standards is even more critical than before.

With respect to customer protections, BED and VPPSA recommend that EVSE station owners provide EV drivers with sufficient information both at the EVSE station and online in the event that an EV driver wants to challenge a charge that they may have incurred that was erroneous. Such information should include 365x24x7 access via a toll-free telephone number to live customer service personnel who can handle any and all billing disputes or can address any EVSE station

performance issues. In addition, the information provided to EV drivers should include instructions for contacting the Department of Public Services CAPI center and/or the Vermont Attorney General's office in the event the EV driver is unsatisfied with EVSE owners' response. Lastly, all EVSE stations should be subject to inspection by an independent third party to ensure that each EVSE station accurately bills users for the amount of energy actually dispensed into an EV owner's battery. It is our understanding that the Vermont Agency of Agriculture may have the authority to perform this task.

As for price transparency, we reiterate our earlier position that all EV drivers deserve the opportunity to compare and contrast EVSE charges in advance of pulling up to the EVSE. In order to be able to effectively compare and contrast EVSE charges, EVSE owners will need to display their rates in a transparent manner that is clear and comprehensible. Such charges would need to be prominently displayed on the EVSE station and viewable online. If such information is provided, EV owners would have the ability to make informed choices as to where they choose to charge their EV. An example of how such information could be displayed was provided in our November 5th comments. For ease of reference, we provide that same table below.

Total Fee	Duration of session event (minutes)	Total kWh dispensed	$/min.	$/kWh	$/gallon e
$5.00	30	10	$0.17	$0.50	$3.78
$10.00	45	15	$0.22	$0.67	$5.04
$15.00	60	20	$0.25	$0.75	$5.67
$20.00	75	25	$0.27	$0.80	$6.05

EVSE technology

Several participants touted the capabilities of the metrology embedded in their EVSE and asserted that they complied with national standards for billing accuracy. BED and VPPSA agree that the metering equipment may be sufficiently accurate for

billing end users. But such claims do not negate the need for a revenue-grade utility meter to be installed at EVSE locations. There are two reasons why.

First, an embedded EVSE meter typically measures only the electricity dispensed into the vehicle battery. It does not account for the electricity serving the EVSE pedestal itself and therefore does not account for line losses from the utility meter to the EVSE station or the consumption of electricity by the EVSE's internal electronics (i.e. LED display, wireless cellular repeater etc.). For level 2 chargers, the difference between the electricity dispensed into the vehicle battery and the electricity measured at the utility meter ranges between 3 and 7 percent. For older DC fast chargers, the difference is significantly more (15 – 20 percent). Because of these differences, a revenue-grade utility meter must be installed at every public EVSE location where the load of the charging station will not be included in the load of an existing meter/account; otherwise unaccounted electricity consumption will increase and such losses would need to be recovered from other ratepayers.

The second reason relates to data management challenges. Relying solely on data streams for billing (and taxing) purposes that flow from outside of the utility IT ecosystem would be challenging and costly for all distribution utilities. Our IT systems are currently not designed to effectively accept, store and manage such third party data. And, as noted in our January 9th comments, utilities would need to modify their back office IT systems to track consumption from a variety of EVSE vendors with potentially different data protocols in order to bill them from electric services. Such modifications would require considerable personnel resources and would not be cost-free. To keep costs manageable, BED and VPPSA insist that the Commission require the installation of a revenue-grade utility meter at each EVSE location.

Conclusion

BED and VPPSA have appreciated the many opportunities to actively participate in the Commission's workshops. As we noted throughout the proceeding, our organizations share the same goal as the Commission and want to help create an environment that would further encourage EV adoption in Vermont. As we describe

above, we believe the best way to create that environment is to focus the State's efforts on:

- Maximizing public and private funding to increase the cost competitiveness of EV's relative to comparable ICE vehicles at least in the near-term;
- Focusing on reducing the upfront cost of EVs;
- Opposing legislation that would have the effect of increasing the cost of ownership of EVs or would create significant implementation difficulties for the electric utilities, such as a kWh tax applicable to all EV charging;
- Allowing for flexibility to establish rate structures for any separately- metered non-utility EVSE that are compensatory and do not shift costs to non-EV drivers;
- Implementing customer protections that would allow EV drivers to easily contest erroneous EVSE charges at public non-utility EVSE;
- Ensuring EVSE's are regularly inspected for accuracy by an independent third party;
- Requiring sufficient price transparency for public EVSE station use so EV drivers can compare and contrast prices between various EVSE providers; and,
- Requiring nonutility EVSE station owners to install revenue-grade utility meters at all EVSE station locations where the consumption of the equipment will not be included under another utility billing meter/account.

Should you have any additional questions or concerns, please feel free to contact us

Sincerely,

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Burlington Electric Department

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