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November 5, 2018

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

Re: Case 18 – 2660 – 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 (“VPPSA”) submit the following comments for consideration. Although the Commission is seeking responses to 20 specific questions, BED and VPPSA provide commentary that is organized around the five topical headings highlighted in the Commission’s Order of October 24<sup>th</sup>.

#### Summary Position Statement

As a means of providing the Commission with a summary of our preliminary position statement, BED and VPPSA would like to initially state that if the Commission determines that the usage fees charged by nonutility EVSE owners shall not be regulated in the manner that is similar to the rates of Vermont’s electric utilities and can be set and changed easily within a broad set of parameters (i.e. regulation light), some consumer protections should be enforced by the Commission, especially during the early stages of the EVSE market development. In addition, to the extent that lighter, relaxed regulation is applied to nonutility owners of EV chargers, the Commission should apply the same set of relaxed regulations to utility owners of EVSE as well. And finally, an optional statewide tariff for electric service for nonutility EV charging station owners by Vermont’s utilities may be a useful step for the Commission to consider. More detail on these general suggestions is provided below under each topical question area.



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Before addressing each of the topical areas raised by the Commission in its Order, BED and VPPSA believe it may be helpful to briefly describe various electric vehicle supply equipment (“EVSE”) interconnection scenarios.<sup>1</sup> These scenarios, which do not represent the entire universe of plausible scenarios, might help the Commission frame the extent of economic regulation necessary to ensure adequate customer protections.

**Scenario A – privately owned, restricted access Level 2 EVSE.** In this scenario, an EV charging station is interconnected to an existing customer main “house” meter. The EV station owner provides access to a limited set of users. A typical example of a Scenario A situation would be a workplace EV charging station. Other examples could also include multiunit apartment complexes and condominium associations. In these examples, access to the EVSE is restricted to employees, tenants and association members and their guests. Access to and use of the EV charging station is essentially an amenity in these scenarios. EV owners accessing this type of EVSE do not typically pay the EV charging station owner for its use. Lastly, the customer of record on the existing account meter – to which the EV charging station is connected – would retain responsibility for paying the distribution utility for all charges associated with that meter (including any demand charges based on the account use in total). BED and VPPSA believe that the Commission has the discretion not to exert regulatory authority over these types of EVSE station owners. We do believe that it would be appropriate for Scenario A owners to register their equipment with the Commission so that the Commission is aware of each EVSE location and who the responsible party is.

**Scenario B – privately owned, publicly available Level 2 EVSE.** In this scenario, EV station owners interconnect the EV charger behind an existing commercial meter or separately meter the EV charging station. Examples of this scenario could be convenience stores, restaurants or other types of businesses. In this scenario, providing

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<sup>1</sup> EVSE refers to all the equipment (i.e. conduit, drop wire, transformer, utility meter, protective bollards, cement slab platform), including the EV charging station (i.e. pedestal with plug in cords) necessary to charge a vehicle. In this position statement, EVSE and EV charging are used interchangeably unless EV charging station or EV station are used specifically.



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public access to EV charging equipment is tangential to the EVSE owner's main business. These types of businesses may or may not require EV owners to pay for the electricity dispensed from the EVSE, although they could require payment for accessing the EV charger in some other way such as a parking fee, a time based charging fee or even a surcharge for an unrelated product. Like scenario A, the customer of record is responsible for payments to the distribution utility for all charges associated with the EVSE through the primary account (including any demand charges). BED and VPPSA believe that economic regulation of this type of arrangement is warranted to ensure adequate consumer protections.

**Scenario C – commercial enterprise, privately owned, public access Level 2 and/or high capacity EVSE “pods”.** In this scenario, one or more level 2 and/or high capacity (50kW or larger) EV chargers are installed as stand-alone stations that are accessible along public streets or highways, other well-travelled byways and even in downtown locations. These EV charging stations will likely be owned by national companies such as Electrify America or Tesla but could also include parking lot owners or other smaller, regional companies. In this scenario, providing EV owners access to EVSE pods is a primary business strategy, or at least a significant component of a larger business strategy, even though the investment in such EVSE may result in revenue losses (at least in the short term). Like Scenario B above, the nature of the transactions between EV charging station owners and EV owners are so highly variable at this time that they are essentially undeterminable. In order to ensure customer protections, BED and VPPSA believe economic regulation of these operations would be warranted.

**Scenario D – Utility owned, publicly available.** In this scenario, EVSE, including charging stations, are owned by a Vermont Distribution Utility within its service area. Access to the charging station is publicly available. Any EV owner with a credit card or recognizable access “fob” such as from ChargePoint, can plug in and charge their vehicle. The rates charged at these stations are subject to full Department and Commission oversight, and follow the normal ratemaking path for Vermont utilities. The capital costs and operating expenses incurred in deploying these charging stations is subject to prudence review in rate proceedings. As just one example, BED owns and



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operates 14 publicly available EV charging stations throughout the City. Rates and fees are offered to the public under approved tariffs – the current rate is \$0.17269/kWh, plus \$1.00 per hour of continuous charging over 4 hours. The rate includes Vermont sales tax, local option tax and an energy efficiency surcharge.

### Usage fees

The Commission asks seven questions related to usage fees. It is our understanding that the Commission is seeking to better understand the range of possible usage fee and payment arrangements that exist today between publicly available EV charging station owners and EV owners. The short answer to this question is: nobody really knows the specific details (and fine print) of all the fee and payment arrangements in existence today. There are simply too many scenarios to easily describe in this response. It is also highly likely that additional schemes will develop over time. So a report of current practices may not prove to be very useful to the Commission.

Instead of attempting to define the full universe of possible usage and payment arrangements, BED and VPPSA recommend that the Commission enforce two fundamental principles that must be adhered to by all EV charging station owners. These principles form the bedrock of Vermont public policy. The first is price transparency; the second is cost causation/cost recovery.

### *Price transparency*

In accordance with this principle, prices, or usage fees, if any, charged by an owner of a publicly available EV charging station must be transparent and conveyed to the public in terms that are understandable. If an EV station owner charges a time-based fee per session (i.e. per charge event), for example, the station owner would need to display a “bingo chart” reflecting a range of fees across various charging times. The table below is an example of such a chart.



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| 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      |

This type of bingo chart disclosure would need to be prominently displayed on the EVSE charging apparatus and, to the extent feasible, viewable in advance through an internet enabled device or cell phone (or provided to online services providing EV drivers with lists of available chargers available by location). By providing advanced notice, EV owners would then have sufficient information to make choices. If an EV station owner’s fees were too high relative to another station located within a mile of the EV owner’s location, they could easily opt to take their business to another service provider.

In addition to pre-disclosing examples of fees based on time, the EV station owner should be required to provide the EV owner with a final electronic receipt of the actual fee in a format that matches the bingo chart above. Thus, the final receipt of a \$5 session lasting 30 minutes that dispensed 10 kWh of electricity would provide a summary of the charges on a per minute fee basis (i.e. \$0.17), a per kWh charge basis (i.e. \$0.50) and the per gallon equivalent basis (\$3.78).

*Cost causation*

Within the bounds of administrative efficiency, the Commission has long supported the principle of cost causation. This principle, as the Commission knows, sends consumers appropriate price signals for services rendered and seeks to maximize economic efficiency while avoiding undue cost shifting between customers or groups of customers. Under this principle the cost causer pays for services including but not limited to wholesale energy, capacity and transmission costs, customer and billing costs, distribution costs and other ancillary costs incurred for activities necessary to



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maintain the business operations of utility providers of electricity. This principle should also be reflected, to the maximum extent possible, in EV charging station fees paid by EV owners, if the Commission wants to uphold past precedent and continue its policy of ensuring that cost causers pay for the services they consume. In other words, the shifting of costs incurred by the host distribution utility to serve EV charging station owners (and, in turn, EV owners) to other consumers should be avoided. However, because distribution utilities serve only the EV station owner (in this scenario), and the EV station owner serves the EV owner, regulated utilities have no ability at this time to require EV charging station fees charges to EV owners to reflect the underlying costs to serve the EVSE. Distribution utilities thus cannot mandate that EV station owners impose time of use rates/fees on their EV owner customers. All distribution utilities can do at this time is to propose a new rate structure that would be specific to publicly available EVSE as a separate rate class altogether (see Utility participation section below). Such a rate structure would, of course, need to recognize the unique characteristics of EVSE loads (e.g. low capacity factor and mobile loads that may not be associated with use by the utility's existing customers). But until such new tariff structures take effect, distribution utilities have no other option other than to provide services to EV station owners under current tariffs.

At this time, however, BED and VPPSA believe that under most usage fee and payment arrangements, the EV charging station fees do not reflect underlying costs. Indeed, many EVSE organizations generate revenue through a monthly subscription. These arrangements allow for charging at any time of the day or night. Monthly subscriptions may also limit kWh consumption. Under this arrangement, BED and VPPSA suspect that the EV charging station owner/operators are providing EVSE access as a loss leader to generate revenues for a related business line (e.g. Tesla). They may be seeking to acquire market share, even if at a loss today, and/or they are hoping that the diversity of charging times and the restrictions placed on kWh consumption limit their financial losses. This type of arrangement, in our opinion, is unsustainable for the long term and not in the best interests of Vermont consumers.



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### *EV charging station technology*

The Commission requested answers to five questions related to technology. The first question concerns those factors that affect the rate of charge. The remaining questions focused on metering.

With respect to the rate of charge, it is our understanding that the size of the battery (kWh storage), onboard AC to DC conversion apparatus, and the state of battery charge (e.g. 80% of full charge) are the main factors that affect the rate of charge. As batteries get bigger and conversion equipment becomes more efficient, EVs will be able to take maximum advantage higher capacity DC fast chargers that are currently planned to be built in the future. Once these improvements become standard in EVs, the rate of charge will be limited by the size and capability of the EVSE stations. Higher capacity stations (50 kW+) will charge vehicles much faster than level 2 chargers (7kW). However, most EV's on the road today (with the exception of Tesla's) have relatively small batteries and inefficient onboard conversion capabilities. Thus, most of today's EVs cannot charge any faster on a high capacity EV charger than a level 2.

BED and VPPSA would also add that the rate of charge is, in most cases, not very important to EV owners. As noted in other venues, 83 percent of EV charging takes place at home, while workplace charging is a distant second preferred location. Level 2 charging over several hours is more than adequate for these locations. The clear exceptions where a faster rate of charge would be beneficial to EV owners are in public use areas; particularly highways and downtowns.

What is important to both distribution utilities and EV station owners is metering. Meters must accurately record kWh, kW and, for utilities with AMI capabilities, time of consumption. Due to the importance of accurately recording consumption, and the extreme difficulty of existing utility billing systems incorporating third party data and data structures, BED and VPPSA recommend that the practice of the host utility installing its own utility-grade meters to publicly available EVSE remain in place. At this time, BED and VPPSA are unaware of whether internal EVSE meters have attained a level of accuracy that is comparable to utility-grade metering devices.



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As a result, we would prefer installing utility-grade meters to all publicly available EVSE in order to ensure full cost recovery of the services rendered to such owners until such time as metering devices internal to EVSE are proven to be as accurate as utility-grade meters and that they can be readily assimilated into all utility billing systems without undue cost. In addition, BED and VPPSA would note that utility billing systems in use today are not generally designed to accept disparate meter data from third parties. In order to accept such data streams, the host utility would need to make appropriate modification to their existing billing systems, which could be costly and impose a relatively significant administrative burden on the host utility.

Notwithstanding our reservations concerning internal EVSE metering devices, BED and VPPSA would not be opposed to EV station owners charging EV owners fees based on a time-of-use framework, so long as the internal technology of the EV station was capable of accurately assessing such time sensitive consumption. Indeed, distribution utilities who currently possess the necessary AMI capabilities could, at their option, compensate EV station owners for successfully responding to high demand, high costs periods.

It is worth noting that should the Commission determine that EV charging station owners can provide their own metering services based on the EVSE station owners' data capabilities, the proposing EVSE station owner would need to pay for all host utility incurred costs related to such arrangement(s) and would need to transmit their data in a standard format acceptable to the host utility. Although BED and VPPSA would take all the necessary steps to accommodate EV station owners requests for advanced metering capabilities if ordered to do so, we are very concerned about the costs we would incur to support the intake of non-utility data. As the Commission may know, managing large streams of data, especially from sources generated outside the typical utility ecosystem is challenging and costly to manage. And, for the utilities to incur such costs on behalf of private equipment owners would not be appropriate.





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## Consumer protections

Three questions in the Commission's order concern consumer protections. One question pertains to disclosure of EV usage fees and charges. One focuses on the authority of the State to verify meter accuracy. And, the last question asks how EV owners may file complaints and what remedies they may be able to access should they experience material harm (financial or otherwise) resulting EVSE usage.

As an initial matter, the Commission's jurisdictional authority over publicly available EVSE owners is and shall remain unalterable regardless of any economic regulatory modifications/waivers it may entertain in this proceeding. In our view, the powers conferred on the Commission under section 203 must not be undermined. The Commission needs to be able to perform its duties to protect consumers from unfair business practices. Accordingly, the Commission is obligated to enforce the rules in place today over any and all entities *"engaged in the manufacture, transmission distribution or sale of gas and electricity directly to the public for lighting, heating or power and so far as relates to the use of occupancy of public highways."*<sup>2</sup>

To the extent that the Commission does determine that the full force of its regulatory authority is unnecessary to perform its duties and that it has the discretion to not regulate publicly available EV charging stations, BED and VPPSA recommend that the Commission require and enforce EV station owners to disclose usage fees and other charges in the manner described above. To not make such disclosures a mandatory requirement of entry into this market space would likely lead to inadequate customer protections, in our opinion. This would be especially true since most Vermonters would assume that the same level of regulatory scrutiny would apply over EVSE charges as does over other types of electricity services.

With respect to verifying meter accuracy, it is our understanding that such verifications are determined through utility accepted standards as described in the terms and condition of electric service. Also, it is not entirely clear to BED and VPPSA whether any state agency has the authority under current law to access the property of

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<sup>2</sup> 30 V.S.A. §203



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EV station owners in order to verify the accuracy of their in unit meters (as is the case, for example, for gasoline pumps and the owners of gas stations).

As for consumer complaints, BED and VPPSA assume that any and all complaints from EV owners about their use of publicly available EV charging stations would be handled by the Department's CAPI division. As for remedies related to fraudulent practices, EV owners would, we presume, file a complaint with the Vermont Attorneys General office. BED and VPPSA recommend that publicly available EV charging station owners should be required to provide contact information on the EV charging station for consumers. Moreover, since the most likely scenario is that billing errors would not be discovered until after the EV owner leaves the charging facility, EV station owners should be required to include such contact information on any billing statements or receipts. The Commission should also maintain an online searchable database of contact information of all EVSE owners and their locations in Vermont that customers may access.

### Utility Participation

Four questions posed by the Commission were related to utility participation. Below, we offer comments on two of the four. The first concerns the "structure" of competition between utility owned EVSE and nonutility EVSE owners. The second asks whether time-of-use rate structures for EVs charged at a home or business location should be extended to owners of publicly available EVSE.

### *Structure of Competition*

As the Commission knows, distribution utilities are subject to the full force of the Commission's jurisdiction in every facet of their business operations. Such oversight would presumably extend to utility-owned EVSE. Under a fully enforced regulatory regime, retail rates are cost-based and capital investments are subject to prudence review in rate-setting processes. And, while cost shifting between and among some of a distribution utility's customers and customer classes may exist, it is kept to an absolute minimum. Furthermore, cost shifting only occurs because it is administratively inefficient to set rates based on a customer's exact cost of service. Lastly, should a fully-



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regulated utility establish an unregulated affiliate to own and manage publicly available EVSE, the utility would still be required to set rates based on the cost to serve that affiliated EVSE owner, and the utility would be prohibited from extending to that affiliate preferential rates for the services it renders.

As a result of the existing regulatory framework that exists for distribution utilities, a utility and/or affiliated owned EVSE would be at a distinct disadvantage vis-à-vis a lightly regulated nonutility EVSE owner (particularly with regards to capital investments in EVSE equipment). To partially rectify this imbalance, BED and VPPSA recommend that whatever set of regulations the Commission applies to nonutility EVSE owners, should also be applied to utility-owned EVSE or EVSE owned by a utility affiliate company.

#### *Rate structures*

The Commission asks whether a utility's time of use rate structure for EVs charging at a residential or commercial location should also be available to nonutility-owned, publicly available EVSE owners. The short answer is no. Residential and commercial customers are not the same as EVSE owners. All three have different load profiles. In the case of residential and commercial customers, the specific electric loads (i.e. appliances, machinery or motors) would have much greater diversity of use. EVSE, on the other hand, are single use machines; they are either on or off. Once on, the load on the grid reaches the maximum allowed by the charging system immediately upon plugging the handle into EV's receptacle (unless programmed for delayed charging). In the case of DC fast chargers, that load is 50 kW or more. In short, EVSE have unique usage characteristics. Thus, a rate design for a residential or commercial customer is inapplicable to EVSE station owners, and existing time-of use rates are not sufficiently "granular" to adequately recover the utility costs from EVSE. Highly granular time-of-use rates that recognize capacity costs might be compensatory, but pose significant billing challenges *even for those utilities with AMI systems* as AMI systems record consumption but do not have billing capabilities per se.



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Because EVSE stations are very unusual in terms of energy versus demand impacts (load factors), and due to the mobile nature of the loads they serve (i.e. not necessarily native customers of the host utility), BED and VPPSA do believe that distribution utilities should consider establishing a separate rate class and tariff service for EVSE (provided they have, or expect to have, sufficient separately metered EVSE deployment to make the costs of rate design appropriate). Like other tarified services, the rates would almost certainly include a customer charge, an energy charge and demand component to be handled under current utility billing systems. Also, the rates will need to be fully compensatory to the host distribution utility in that the cost to serve the EVSE should be fully recoverable through rates. Under a utility established rate structure, distribution utilities may also provide demand response credits to the extent that EVSE have the capability to respond to high demand, high-cost energy periods.

As a means to ease market entry for nonutility EVSE owners, BED and VPPSA recommend that the Commission consider the merits of establishing a statewide EVSE rate structure that host distribution utilities could opt into. Such rates should reflect the marginal cost of energy, capacity, transmission and other costs necessary to serve EVSE. Additionally, any such rate would have to be able to be implemented with “least common denominator” metering and billing capability. Of course, if host utilities do not believe the statewide rate is fully compensatory they should have the option to use their currently approved tariffs or to file their own cost based EVSE rate.

Lastly, for any nonutility owned publicly available EV station, it would be prudent for the Commission to require that the EV station owner demonstrate that sales of electricity to EV owners occur at or above the average variable cost the EV station owner incurs from the host electric utility. In this way, EV usage fees mirror, to the greatest extent possible, the current utility structure and regulation.

## General

As a general matter, BED and VPPSA suggest that the Commission consider taking any and all additional precautions necessary to ensure nonutility EV station



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owners maintain and operate EVSE safely and responsibly. We believe it is imperative that EV stations remain operable, even during inclement weather, and that EV station owners ensure that their stations do not expose residents to hazardous conditions.

The Commission also should take steps to minimize or eliminate cross-subsidization of unregulated, or lightly regulated, EV stations through the EV station owner's use of state incentive programs such as either installing individual net metering systems at EVSE locations or subscribing their EV station meters to a group net meter system. Allowing for such gaming would create an environment conducive to unintended consequences that could undermine not only the state's environmental goals, but also those intended to protect low income consumers.

Providing EV station owners with the opportunity to receive revenues under the state net metering program at a rate in excess of the host utility's retail rate while simultaneously allowing them to charge EV owners a usage fee at a premium to the utility tariff rate is unlikely to promote overall state policy objectives. Such a situation would also exacerbate the competitive disadvantage of Utility owned EV charging stations

### Conclusion

BED and VPPSA appreciate the Commission's efforts to take definitive steps to provide certainty and stability in order to attract investment in this space. We are hopeful that the responses to the questions provide the Commission with the information it seeks. In our view, the central task for the Commission is to issue a memorandum clarifying whether it is in the public interest to exercise the full force of its authority under Section 203 on all EVSE owners or whether the Commission can exercise its discretion to temper its authority without undermining its conferred powers or ability to perform its duties while still preventing cost shifting from owners of publicly available EVSE to other customers and protecting Vermont consumers.

BED and VPPSA appreciate the opportunity provide these comments and look forward to providing further assistance, if needed. Please feel free to contact us should you have any questions or concerns.



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Sincerely,

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Burlington Electric Department

Melissa Bailey  
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