



March 16, 2018

-VIA ELECTRONIC FILING-
Project No. 1598941

Patrick Wruck, Commission Secretary
British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC Canada V6Z 2N3

RE: Greenlots' Written Evidence in the Matter of BCUC's Inquiry into the Regulation of Electric Vehicle Charging Services

Dear Secretary Wruck,

In response to the British Columbia Utilities Commission's ("BCUC" or "the Commission") January 12, 2018 Order Number G-10-18, establishing an Inquiry to review the regulation of electric vehicle (EV) charging service, and Order Number G-19-18 dated January 23, 2018, requesting intervenor written evidence on the preliminary scope of the Inquiry as described in that Order, Greenlots offers the following perspective and broader considerations in response to the questions posed.

Greenlots is a leading provider of electric vehicle charging software and services. The Greenlots network supports a significant percentage of the DC fast charging infrastructure in North America, including that deployed by BC Hydro. Greenlots' smart charging solutions are built around an open standards-based focus on future-proofing while helping site hosts, utilities, and grid operators manage dynamic electric vehicle charging loads and respond to local and system conditions.

1. Do EV charging stations operate in a competitive environment in BC or are they a natural monopoly service?

This question strikes to the core of BCUC and regulated utility involvement in EVSE, as the existence of a competitive market would mean that less involvement may be necessary. In short, while there is competition between a relatively small field of sellers of EV charging products and services to motivated investors/site hosts, there is not a competitive market for offering these services directly to drivers.

For example, in the residential context, an EV owner who needs a home charger will have no difficulty finding plenty of EVSE sellers and EVSE offerings to install in his or her garage. The same goes for a business that is motivated to purchase, own and operate EVSE on their premises as a value-added service or amenity to their customers and/or employees, perhaps to increase employee satisfaction, bolster their social/environmental responsibility, attract customers or

otherwise differentiate themselves in the marketplace. Unfortunately however, the existence of a competitive market ends here.

Outside of these specific use cases there are many forms of public charging—chargers for which there are not motivated investors/buyers. This includes lower powered chargers at public parking spaces or parking garages of certain multi-unit dwellings, or higher-powered chargers in metro areas or key transportation corridors to facilitate everyday and longer-range travel. This is EVSE deployed purely to provide charging services—chargers for provision of a charging service not in the context of offering an amenity or an additional value-added service.

For this second critical category, unfortunately a sustainable, competitive market is aspirational, and is unlikely to arise prior to the adoption of a critical mass of electric vehicles. This is primarily on account of a lack of a business model for the ownership and operation of public charging stations based on sustainable revenues from charging activities, and this has thus far resulted in a fundamentally inadequate amount of private investment in such charging infrastructure. Importantly, this is the specific category that drivers and studies consistently cite as being the primary barrier to EV adoption.

This particular market state, which can only be described as a market failure, is a classic situation warranting public investment and the involvement of regulated monopolies. At such a stage in the market, ownership and operation of charging infrastructure—including charging stations—is an appropriate and in many respects necessary role for the utility in breaking through these barriers, accelerating the market across most market segments, creating increased competition and attracting private investment.

2. Are the customers of EV charging stations captive or do they have a choice?

The answer to this question largely follows from the answer to the previous. The fundamental and well documented lack of investment—both public and private—in EV charging infrastructure, which is the primary barrier to EV adoption by buyers familiar with EVs, has, in short, forced EV drivers to be takers of and captive to very limited charging options. At this stage of the market, captivity to limited optionality is most concerning from a geographic standpoint—there are simply too few places for drivers to go to charge.

Especially for public charging, the fundamental economics simply do not currently support sufficient private investment to get the market to where it needs to be to support current and future drivers and their purchasing decisions sufficiently.

The degree of captivity can vary somewhat depending on location and use case however. In metropolitan contexts for example, there may be more options to choose from and a greater opportunity to exercise that choice. For higher powered charging along transportation corridors that facilitate longer range travel however, it is common that there is but a single charging option for a significant portion of that corridor. The increase in market availability of EVs with larger battery capacities that can facilitate longer range travel will increasingly put pressure on

this segment of the market, which already suffers from limited investment and therefore limited choice.

From a driver's standpoint, being captive to one set of EV charging options—say a utility network—is not inherently negative, and indeed, may be a strong positive if the charging experience is enjoyable. For the most part, a driver makes charging decisions based on geographic and temporal logistics, not price. As long as there is adequate coverage with a limited number of providers offering good service at reasonable prices, drivers will largely be satisfied. An eventual optionality to make decisions based on price, brand loyalty, etc. would indicate that the business model for private investment has improved, but would not necessarily create a better experience for drivers.

3. Should the Commission regulate the services provided by EV charging stations? What are benefits and detriments to such regulation?

The answer to this question depends entirely on the context. Non-utility EVSE operators should not be regulated as a public utility because they are providing a value-added charging service and not specifically reselling electricity. The fact that the charging service involves the transmittal of electricity is a necessary but incidental component of the service provided. That service fundamentally is battery charging, providing mobility, range, or vehicle miles, not electricity, per se. There are many other examples that as with EVSE, provide a service relying upon electricity but are not regulated as a utility.

With respect to utility-owned EVSE, the answer to this question rests with a utility's requested treatment of its costs related to the EVSE deployment. This activity should be subject to the Commission's jurisdiction and regulation provided the utility sought recovery of and a return on such investments from ratepayers. If a utility sought to do this via a separate, unregulated entity or subsidiary not provisioned with ratepayer funds, as may be appropriate in the future when a more competitive market develops, then no, this activity should not be subject to the Commission's jurisdiction, just as should be the case with non-utility owned EVSE.

The key consideration here in determining whether Commission regulation is appropriate or not isn't the physical location of the EVSE or the physics of it dispensing electricity but instead who bears the costs. If a utility is to use its ability as a regulated monopoly to pass these costs onto ratepayers, then that activity clearly falls under Commission jurisdiction.

Utility involvement in and ownership of EVSE can come with a variety of distinct benefits that the Commission can help to ensure. In particular, this includes safe and reliable service and increasing the efficient utilization of the electric grid in a manner that can put downward pressure on rates to the benefit of all utility customers. In addition, regulated utility involvement has a critical role to play in fostering a future EVSE market where greater profitability and through it—competition—can develop, while also catalyzing EV ownership generally.

4. Should the rate design of EV charging stations be established under a public utility's traditional cost of service model or some other model? And within that context, what are the customer pricing options (e.g. energy based rate vs. time-based rate)?

The overarching principle that should guide the design of regulated utility EV-specific rates is ensuring that they fully reflect, account for and incentivize the benefits that come with transportation electrification. This includes fully accounting for public policy goals and not only basing them on cost of service, in the same way that preferential rates are designed for certain disadvantaged customer classes. For example, it should be a goal to maintain EV charging rates below or at a minimum, on par with, the equivalent cost of gasoline fueling, otherwise such rates would work against the broader goals of transportation electrification.

To accomplish these goals, fully accounting for the benefits of both increased EV loads to the grid and in electrifying the transportation sector is essential, an exercise that generally is broader than traditional cost of service ratemaking. For example, added benefits which should be reflected in these rates include the avoided cost of harmful fossil fuel emissions and the benefits of more efficient grid utilization. Smart rates and managed charging could be fully leveraged to ensure these benefits, going beyond both volumetric and time-based rates. For non-utility deployed public charging, the rates offered to drivers should be left to the discretion of the developer or site host. The utility, however, could offer rates and managed charging programs to the developer or site host that encourages that the final rates they offer to drivers incentivizes charging that is beneficial to the grid.

Rate design is a critical element in fully realizing the benefits of transportation electrification and in insuring that deployed infrastructure most effectively overcomes barriers to EV adoption. As a result, rate design should account for and be designed considering the broader public policy goals that are largely driving transportation electrification in the first place.

5. Should the EV charging station service rate be based on a public utility's existing wholesale or commercial retail rate or some other rate?

Transportation electrification load is unique in its potential to facilitate such a reduction in the cost of energy. In many ways, efficient transportation electrification is the most visible and scalable application to demonstrate the productive role utilities could play in managing a "smart grid" to provide reliable, environmentally responsible, and cost-effective energy services. EV rates therefore should be similarly "smart" to fully realize these benefits.

A core goal should be to send as accurate of a price signal as possible, reflecting as close to the real-time, localized demands of and constraints of the grid as feasible. This could be an hourly time-varying rate or a real-time pricing program based upon locational marginal prices. These dynamic pricing elements should have limits and safeguards around them such as to ensure that other ratemaking goals as discussed earlier, including public policy goals, are also factored into the final rates offered.

6. Should public utilities include EV charging stations in their regulated rate base or through a separate nonregulated entity?

As discussed earlier, currently the fundamental economics of charging simply do not support sufficient private investment necessary to adequately support EV drivers and EV purchasing decisions. This is the classic definition of a market failure that utilities have a critical role in addressing.

This fundamental issue is a market challenge to which regulated utility involvement is both necessary and appropriate. Longstanding principles of utility regulation hold that such market failures for a service often warrant and necessitate the provision of ratepayer dollars to provide that service given the private market failing to do so. As a result, cost recovery through the regulated rate base is both appropriate and necessary.

If a utility could only participate via an unregulated entity or subsidiary, they would face the same market challenges discussed above that the existing unregulated private market is already encountering, and as a result, would likely do very little to address the core of the problem. Additionally, such an approach would mean that ratepayers and the grid would likely not benefit from the broader array of benefits discussed earlier that direct regulated utility involvement can bring.

This should not be confused for anti-competitive behavior. Rather, regulated utility investment in charging infrastructure, growing the installed infrastructure base, will help spark EV purchasing decisions and grow the total customer base, getting the market closer to an inflection point where asset utilization rates of charging infrastructure can attract greater private investment and hopefully help develop and sustain a more competitive market.

7. If public utilities provide EV charging services within their regulated business, is there a risk of cross subsidization from other rate classes to support this new service and if so, is the proposed rate design potentially unduly discriminatory?

Cross subsidization across rate classes can be minimized by fully embracing the rate design goals and principles discussed in answer to question #4 above. By aligning rates with grid conditions as accurately as feasible, this ensures that to the fullest extent possible all ratepayers may receive the benefits discussed from increased and intelligently integrated EV load. Additionally, accounting for the broader environmental benefits of transportation electrification and related public policy goals is important to ensure that the rate analysis performed is fully and accurately accounting for all costs and benefits.

Given these benefits, which often do not make it into such rate analyses, the extent to which some cross subsidization may exist, this can be appropriate and non-discriminatory given broader public policy goals, in the same way this is often the case with rate pricing for certain disadvantaged customer classes.

8. Any other matters that may assist in the effective and efficient review of the Inquiry.

Greenlots looks forward to further engaging with the Commission, utilities, and the stakeholder community on this important topic moving forward, and working to grow the EV and EVSE market across the Province.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Thomas Ashley', with a stylized flourish at the end.

Thomas Ashley
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