



May 3, 2018

Sent via email/eFile

BCUC REGULATION OF ELECTRIC VEHICLE CHARGING SERVICE INQUIRY EXHIBIT A-17
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Mr. Thomas Ashley
VP Policy
Greenlots
925 N. La Brea Avenue 6th Floor
Los Angeles, CA 90038
tom@greenlots.com

Re: British Columbia Utilities Commission – An Inquiry into the Regulation of Electric Vehicle Charging Service – Project Number 1598941 – Information Request No. 1

Dear Mr. Ashley:

Further to your March 16, 2018 filing of written evidence with respect to the above-noted Inquiry, enclosed please find British Columbia Utilities Commission (BCUC) Information Request No. 1. In accordance with the regulatory timetable, please file your responses on or before Wednesday, June 6, 2018.

The BCUC's Rules of Practice and Procedure (Rules) set out in Order G-1-16 provide guidance and establish requirements for participants in BCUC proceedings. Subject to section 14 of the Rules, all parties that receive an information request must provide full and adequate response to each question.

The BCUC's Rules of Practice and Procedure can be viewed here:
<https://www.ordersdecisions.bcuc.com/bcuc/orders/en/127520/1/document.do>

If you have any questions regarding the information request process, please contact Commission Secretary.

Sincerely,

Original signed by:

Patrick Wruck
Commission Secretary

/dg
Enclosure



British Columbia Utilities Commission
An Inquiry into the Regulation of Electric Vehicle Charging Service

INFORMATION REQUEST NO. 1 TO GREENLOTS

A. INVESTMENT DECISION

- 1.0 Reference: Exhibit C20-2, p. 6**
Exhibit C15-2, pp. 2, 5
EVCS business model and economics

On page 6 of Exhibit C20-2, AddÉnergie Technologies Inc. (AddÉnergie) states:

That the major barrier to EV charging station competitiveness is that British Columbia lacks a comprehensive network of charging stations and that one is unlikely to be developed by [third-party] investment alone.

On page 2 of Exhibit C15-2, Greenlots states:

[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 [third-party] investment in such charging infrastructure.

...

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

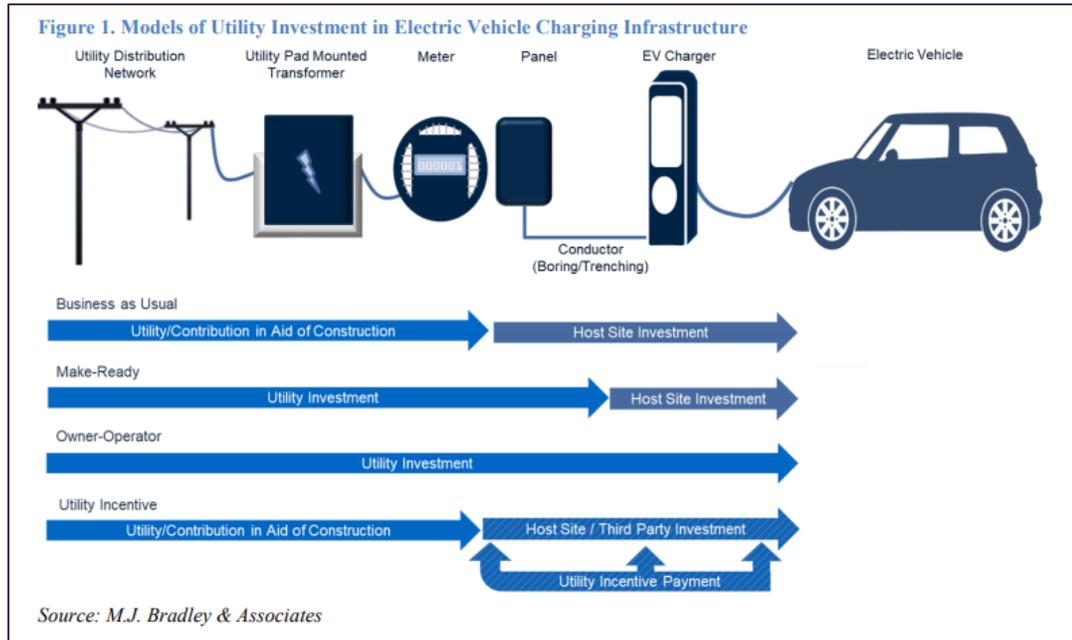
On page 5 of Exhibit C15-2, Greenlots states:

[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 [third-party] investment and hopefully help develop and sustain a more competitive market.

- 1.1 In Greenlots' view, what asset utilization rate does Greenlots' view third-party investment would make economic sense? Please discuss the state of the EV market, including any market metrics if possible, where it would be economic for third-party to invest in EV charging infrastructure.
- 1.2 What particular regulatory and financial challenges do private and public entities face when making investment decisions in EV charging infrastructure?

- 1.3 In Greenlots' view, if the regulatory definition of public utility did not apply to EV charging infrastructure to site hosts/third-parties, would private investors be able to charge a fee for EV charging services and still successfully compete with free EV charging from entities such as municipalities? Please provide any supporting evidence available.

In a report authored Georgetown Climate Center and by M.J. Bradley & Associates, titled "Utility Investment in the Electric Vehicle Charging Grid: Key Regulatory Considerations" dated November 2017¹ (GCC-MJBA Report), on page 9, Figure 1 provides the models of utility investment in EV charging infrastructure: (i) business as usual, (ii) make-ready, (iii) owner-operator, and (iv) utility incentive.



- 1.1 Please discuss the pros and cons of the four business models that are noted in the GCC-MJBA Report. Include considerations such as market growth, business sustainability, customer impacts, public interest, competition, and appropriate level of utility regulation.

**2.0 Reference: Exhibit C20-2, p. 2
Multi-Unit Residential Buildings (MURBs) & Curbside Parking**

On page 2 of Exhibit C20-2, AddÉnergie states:

Direct current fast charger (DCFC) and multi-unit residential building (MURB) home charging are unlikely to be widely and comprehensively deployed in British Columbia without public utility involvement because of the current economic barriers facing charging providers and still-emerging demand for EV charging in many parts of the province. Curbside public charging faces similar cost and also regulatory challenges that are likely to inhibit its widespread deployment.

- 2.1 What difficulties have Greenlots observed regarding the installation and operation of charging infrastructure in MURBs and curbside charging? What products or services does Greenlots offer for this market?
- 2.2 Please discuss which EV charging business model that is most suitable for MURBs (e.g. a public utility or third-party site host owned or operated).

¹ http://www.georgetownclimate.org/files/report/GCC-MJBA_Utility-Investment-in-EV-Charging-Infrastructure.pdf

- 2.3 Please discuss which EV charging business model that is most suitable for curbside public charging (e.g. a public utility or third-party site host owned or operated).

B. TECHNOLOGY

**3.0 Reference: Exhibit C3-2, p. 2
Open Charge Point Protocol (OCPP)**

On page 2 of Exhibit C3-2, Drive Energy states:

...the EVSE owner, who are also clients of vendors, are captive of a monopoly/oligopoly structure in which they are tied to the provider of the hardware (charging station) that they have purchased. As mentioned above, until the smart EVSEs operate on Open Charge Point Protocol [OCPP] like ABB, Easton or Tritium DCFCs, all level 2 hardware is tied to the same company to provide payment processing & service and are very vulnerable to uncompetitive monthly fees and payment processing fee hikes.

- 3.1 Please discuss Greenlots's view on the benefits and drawbacks of using OCPP. Would there be additional costs association with OCPP?

C. RATES

**4.0 Reference: Exhibit C15-2, pp. 3-5
Grid Optimization and Ratemaking**

On page 3 of Exhibit C15-2, Greenlots submits that regulated utility involvement can facilitate efficient utilization of the electric grid and put downward pressure on all ratepayers of the utility.

- 4.1 Please elaborate on specific methods that utility participation can encourage better grid use and lower rates. How would this be measured?

On page 4 of Exhibit C15-2, Greenlots states:

[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.

On page 5 of Exhibit C15-2, Greenlots states:

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.

- 4.2 Please elaborate on how benefits, such as avoiding fossil fuel emissions and efficient grid use, can be incorporated into traditional cost of service ratemaking (or other types of regulated public utility ratemaking).
- 4.3 Please elaborate on how environmental benefits and costs can be accounted for in traditional cost of service ratemaking, or other types of regulated public utility ratemaking.

On page 4 of Exhibit C15-2, Greenlots states:

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.

4.4 In the absence of dynamic pricing options as described in the preamble, what is Greenlots' view on other rate structures that could be employed by public utilities to charge EV charging station site hosts?

**5.0 Reference: Exhibit C1-2, p. 13
Rate design – charging station to EV customer**

On page 13 of Exhibit C1-2, British Columbia Hydro and Power Authority (BC Hydro) states: "It may be possible to differentiate time-based charges to vary based on vehicle capacity to address such fairness issues."

5.1 What is Greenlots' view on alternative rate structures, such as BC Hydro's suggestion to differentiate time-based charges to vary based on vehicle capacity?

5.2 Please explain whether Greenlots' systems would be able to differentiate EV charging rates based on vehicle capacity.

D. HYDROGEN FUEL CELL TECHNOLOGY

**6.0 Reference: Exhibit C15-2, p. 1; Exhibit C19-2, p. 2
Fuel Cell Electric Vehicle (FCEV)**

On page 1 of Exhibit C15-2, Greenlots states:

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.

On page 2 of Exhibit C19-2, British Columbia Ministry of Energy, Mines and Petroleum Resources states that "The Province is active in promoting the uptake of zero emission vehicles (ZEVs), including battery-electric, plug-in hybrid, and fuel cell vehicles."

6.1 Please discuss whether Greenlots has any involvement in FCEVs and/or FCEV fueling infrastructure.