



May 3, 2018

Sent via eFile

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BCUC REGULATION OF ELECTRIC VEHICLE CHARGING SERVICE INQUIRY EXHIBIT A-21
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Re: British Columbia Utilities Commission – An Inquiry into the Regulation of Electric Vehicle Charging Service – Project Number 1598941 – Information Request No. 1

Dear Mr. Allan:

Further to the March 16, 2018 filing of written evidence on behalf of AddÉnergie Technologies Inc., 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 ADDÉNERGIE TECHNOLOGIES INC.

A. INVESTMENT DECISION

**1.0 Reference: Exhibit C20-2, pp. 2–4, 9
Investment / future competitiveness**

On page 2 of Exhibit C20-2 AddÉnergie Technologies Inc. (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...

On page 9 of Exhibit C20-2, referencing public DCFC and curbside and MURB residential charging, AddÉnergie states:

A competitive market serving all British Columbians is unlikely to develop without significant utility investment.

- 1.1 In other jurisdictions that AddÉnergie is active in, have private third-party investments in DCFC stations been observed? If so, please explain any key differences with BC.
- 1.2 Please discuss whether AddÉnergie believes that there are circumstances where a competitive market could develop naturally for DCFC, curbside, or MURB residential charging, or for particular geographic locations in BC.
- 1.3 Please discuss whether AddÉnergie has a view on how an EV charging market comprised of a significant proportion of public utility owned EV charging could transition to a competitive market.
 - 1.3.1 Please discuss if AddÉnergie has a view on any key indicators that would demonstrate that the EV charging market or sub-set of the market (such as DCFC) is sufficiently mature to operate competitively. For example, should this be the number of EVs fleet in BC, number of EV charging stations/ports per EV, distance measured between public EV charging stations, or some other measures?

**2.0 Reference: Exhibit C20-2, p. 6
Exhibit C15-2, p. 2
DCFC - third-party investment**

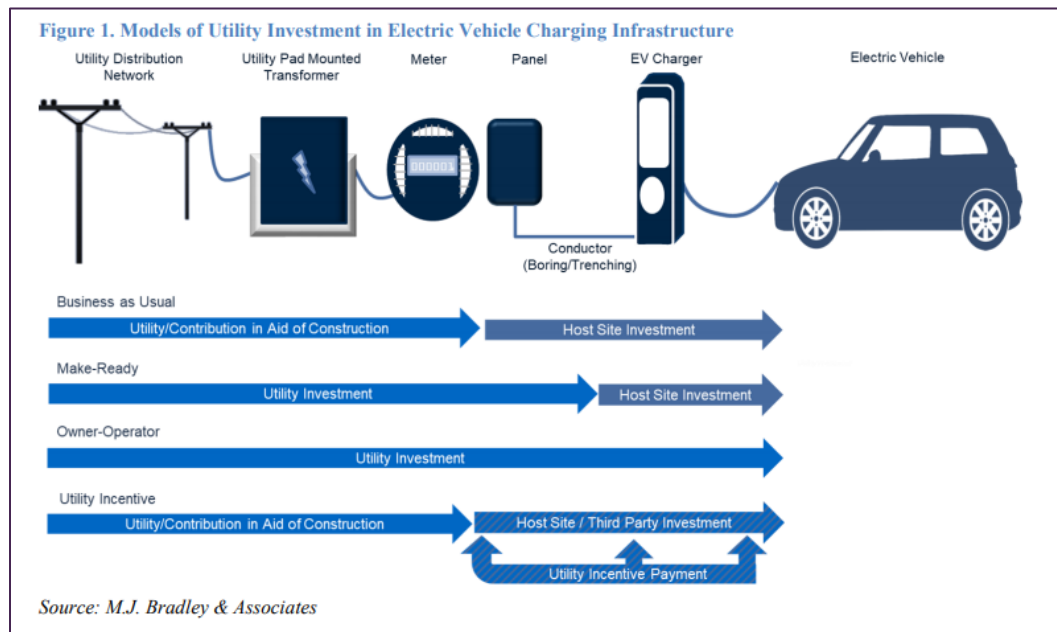
On page 6 of Exhibit C20-2, AddÉnergie states:

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.

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.



2.1 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.

**3.0 Reference: Exhibit C20-2, p. 8, Appendix A
DCFC business model and economics**

On page 8 of Exhibit C20-2, AddÉnergie states:

The Generic Model attached at Appendix A illustrates how a cost model without demand charges can improve the number of charging scenarios (i.e., by increasing the number of daily DCFC users) in which a DCFC charging host can recover its reasonable capital and operational cost expenses within 10 years.

3.1 Please confirm that the 10 year recovery period is a reasonable proxy for the useful life of a DCFC station currently available in the market.

In Appendix A of Exhibit C20-2, AddÉnergie provides a Generic DCFC Financial Model.

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

- 3.2 Please elaborate on the basis for the following assumptions:
 - 3.2.1 Capex for 1st station.
 - 3.2.2 Incremental CAPEX for subsequent stations.
 - 3.2.3 OPEX (maintenance and networking fee).
- 3.3 Please discuss whether, in AddÉnergie’s view, there is likely to be a material change to any of the EV charging station operation assumptions and charging station usage assumptions in the next five years.
 - 3.3.1 Please comment on the possible impact of such changes on the conclusion that “There are relatively limited scenarios in which a station is likely to recover costs within a decade.”
 - 3.3.1.1 If the conclusions were to change in future, would AddÉnergie consider that public utility involvement in the DCFC market would remain appropriate?

B. TECHNOLOGY

**4.0 Reference: Exhibit C20-2, p. 8
Dependability and quality of public charging services**

On page 8 of Exhibit C20-2, AddÉnergie states:

AddÉnergie submits that the dependability and quality of public charging services provided to the consumer should be a central consideration in rate setting. Providing quality equipment, maintenance, monitoring and timely repairs is essential to building consumer trust and to avoid safety and convenience concerns that can result from consumers being stranded at low-quality or inadequately maintained charging infrastructure.

- 4.1 Please describe AddÉnergie’s protocols and response times to emergency and non-emergency customer issues at EV charging stations. Please include specifics that are applicable at AddÉnergie’s EV charging stations located in the province of BC.
- 4.2 Please discuss the manufacturing installation, operations, and maintenance requirements of public EV charging stations. For instance, are there any requirements established for which manufacturing, installations, operations, and maintenance of public EV charging stations must be handled by trained and certified electricians/engineers? Are there any permit, inspection, or testing processes?
 - 4.2.1 Please distinguish any differences between public EV charging stations and home EV charging.
- 4.3 Please discuss whether there are any existing minimum requirements of the owner and/or operator of public EV charging stations to purchase liability insurance, or other insurance, to cover against potential losses.

**5.0 Reference: Exhibit C4-2-1, pp. 3–6
Future technology**

On pages 3-6 of Exhibit C4-2-1, Mr. Flintoff summarises several prospective future technologies that may displace current technologies.

- 5.1 Please explain AddÉnergie’s considerations for changes to battery technology, such as solid-state batteries, when it invests (owns or operates) in DCFC stations.
- 5.2 Please explain AddÉnergie’s considerations for changes to high-capacity charging technology,

such as 350-450kW charging rates, when it invests (owns or operates) DCFC stations.

5.3 Please explain AddÉnergie’s considerations for other changes to technology in the EV market when it invests (owns or operates) in DCFC stations.

**6.0 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.

6.1 Please discuss AddÉnergie’s view on the benefits and drawbacks of using OCPP.

C. RATES

**7.0 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.”

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

7.2 Please explain whether AddÉnergie systems would be able to differentiate EV charging rates based on vehicle capacity.

**8.0 Reference: Exhibit C20-2, p. 7
Exhibit C1-2, p. 7
Measurement Canada**

On page 7 of Exhibit C20-2, AddÉnergie states: “that as of March 6, 2018, Measurement Canada has not certified any commercially available DCFC device to bill on the basis of energy (kWh) or time-related demand (kW).”

On page 7 of Exhibit C1-2, BC Hydro states:

The introduction of a new standard is expected to take some time, and in BC Hydro’s view a Measurement Canada approved DC standard is several years away.

8.1 Has AddÉnergie sought Measurement Canada certification for DCFC devices it manufactures or imports in order for owners or operators to bill an energy-based rate?

8.1.1 If so, please provide a status update on such processes.

8.1.2 If not, does AddÉnergie have any plans to file a request in the future?

8.2 Please explain what difficulties exist in certifying DCFC billing devices for commercial use purposes. Is it unique to EV charging stations?

8.2.1 Are AC Level 2 chargers certified by Measurement Canada to charge by energy?

D. HYDROGEN FUEL CELL TECHNOLOGY

**9.0 Reference: Exhibit C20-2, p. 2; Exhibit C19-2, p. 2
Fuel Cell Electric Vehicle (FCEV)**

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

AddÉnergie Technologies Inc. (AddÉnergie) was founded in 2009 and is a North American leader in electric vehicle (EV) charging solutions with operations in British Columbia, Québec, Ontario and California. AddÉnergie delivers an average of over 100,000 charging sessions per month, including 10,000 fast charging sessions, and has manufactured over 4,500 charging stations, including 150 fast chargers. AddÉnergie owns and operates FLO, which we understand to be Canada's largest EV charging network, and which has more than 30,000 users.

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."

9.1 Please discuss whether AddÉnergie has any involvement in FCEVs and/or FCEV fueling infrastructure.