



May 3, 2018

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| <b>BCUC REGULATION OF ELECTRIC VEHICLE<br/>CHARGING SERVICE INQUIRY EXHIBIT A-26</b> |
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Iain Myrans  
Manager, Government Relations, Canada  
Tesla Motors Canada ULC  
1325 Lawrence Avenue East  
Toronto, ON M3A 1C6  
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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. Myrans:

Further to your March 15, 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 TESLA MOTORS CANADA ULC**

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**A. BASIS FOR EV CHARGING SERVICE REGULATION EXEMPTION**

**1.0 Reference: Exhibit C28-2, pp. 5, 9  
Competitiveness**

On page 5 of Exhibit C28-2, Tesla Motors Canada ULC (Tesla) states:

In those few situations where the competitive market is not providing an adequate supply of EV charging infrastructure (such as in remote communities and multi-unit dwellings) it may be appropriate for regulated utilities to participate more actively in the EV charging market. Unlike competitive charging companies which do not use ratepayer funds, a regulated utility that participates in the EV charging market with ratepayer funds should have their activities overseen by the Commission.

- 1.1 Please clarify or confirm that Tesla is of the view that a regulated public utility participating in this market will have an unfair advantage due to the existence of utility ratepayers (e.g. uneven playing field).
- 1.2 In Tesla's view, would public utility involvement potentially stifle competition and discourage third-party investments in the EV charging service market?
- 1.3 In Tesla's view, if the regulatory definition of public utility did not apply to EV charging infrastructure to site hosts / third-parties, would commercial entities 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.

On page 9 of Exhibit C28-2, Tesla states:

As such, utilities should be permitted to engage in make-ready projects or deploy charging infrastructure while generating a return. Make ready projects are more suited to recovery through the regulated rate base, while charging station installations may be more suited to nonregulated operations given that charging station operations are end-use service and should not be deemed to be the retailing of electricity.

- 1.4 Please discuss, in the view of Tesla, what criteria or key considerations could define whether the supply of EV charging infrastructure is "adequate". 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 considerations?
- 1.5 Does Tesla consider that in an environment where public utilities participate more actively in the EV charging market (or a defined segment of the market such as remote communities and

multi-unit dwellings) that the public utilities' involvement should continue indefinitely? If not, does Tesla have a view on the circumstances that should lead to a "deregulation" of the market or segment of the market over time?

**2.0 Reference: Exhibit C28-2, p. 4  
Consumer protection and safety standards**

On page 4 of Exhibit C28-2, Tesla states:

The Commission should not regulate competitive, end-use services such as EV charging. While effective consumer protections and safety standards must apply, the provision of EV charging services is not a monopoly service and does not represent distribution or retail of electricity. EV charging is a comprehensive end-use service that requires substantial planning and coordination with site hosts and permitting authorities in condensed periods of time to keep pace with growing EV adoption and to provide a good EV driver experience.

- 2.1 Please elaborate on the consumer protections and safety standards that are mentioned in Tesla's submission. Please include specific aspects that are applicable at Tesla's EV charging stations located in BC.
- 2.2 Please discuss the installation, operations, and maintenance requirements of public EV charging stations. For instance, are there any requirements established for which installations, operations, and maintenance of public EV charging stations must be handled by trained and certified electricians? Are there any permit/inspection process?
  - 2.2.1 Please distinguish any differences between public EV charging stations and home EV charging.
- 2.3 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.

**B. INVESTMENT DECISION**

**3.0 Reference: Exhibit C28-2, pp. 3–4  
Competitiveness, captivity and investments**

On page 3 of Exhibit C28-2, Tesla states:

Tesla is planning significant investment in additional EV charging infrastructure in the province during 2018 and beyond.

...

Tesla has developed a global network of over 8,400 Superchargers – Tesla's DC Fast charging solution

...

Currently, the majority of Tesla customers have complimentary use of the Supercharger network and the electricity is paid for by Tesla or site hosts.

...

For customers without a referral code, they get 400 kWh of complimentary Supercharger credits a year. For use above that amount, and for all Model 3 owners, customers are charged \$0.20 per minute of charge when the connector is operating at or below 60 kilowatts, and \$0.40 per minute of charge when it is operating above 60 kilowatts.

- 3.1 Please summarize the market share of Tesla in BC for:
- Electric vehicles
  - DC fast charging infrastructure.
- 3.1.1 Please describe how the capital costs and technical specifications of Tesla's Superchargers compare to other DCFC stations.
- 3.2 Please explain why different Tesla vehicle owners are subject to different rates.
- 3.3 Please identify other jurisdictions where the Tesla Supercharger network is subject to utility regulation.
- 3.3.1 Please identify other jurisdictions where the Tesla Supercharger network is granted a utility exemption. Explain whether Tesla was granted a full exemption or partial exemption.
- 3.4 Please briefly summarize any market entry opportunities and barriers specific to automaker funded charging stations.

On page 4 of Exhibit C28-2, Tesla states:

80% of charging activity typically happens in the home and the vast majority of trips require no public fueling infrastructure.

...

There are, however, areas in the province where there is less competition to supply charging infrastructure and areas where consumers may have less choice and access to charging solutions. Consumers in multi-unit buildings or renters of homes, often feel captive by their homeowners association or landlords when they request EV charging and are denied due to electrical system upgrade costs. Additionally, consumers in remote areas of the province have seen less privately funded charging infrastructure developed.

- 3.5 Please clarify if the 80% figure quoted refers to all EVs or Tesla vehicles only, and whether this refers to BC or otherwise.
- 3.5.1 Please comment on the extent to which, in the view of Tesla, an increased supply of EV charging stations will affect patterns of home based charging.
- 3.6 Please discuss whether the expansion of EV charging options for consumers in multi-unit buildings or renters of homes without electrical outlet access will increase naturally with increased uptake of EVs.
- 3.7 Please discuss any barriers to third-party funded charging infrastructure funding in remote areas of BC.

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

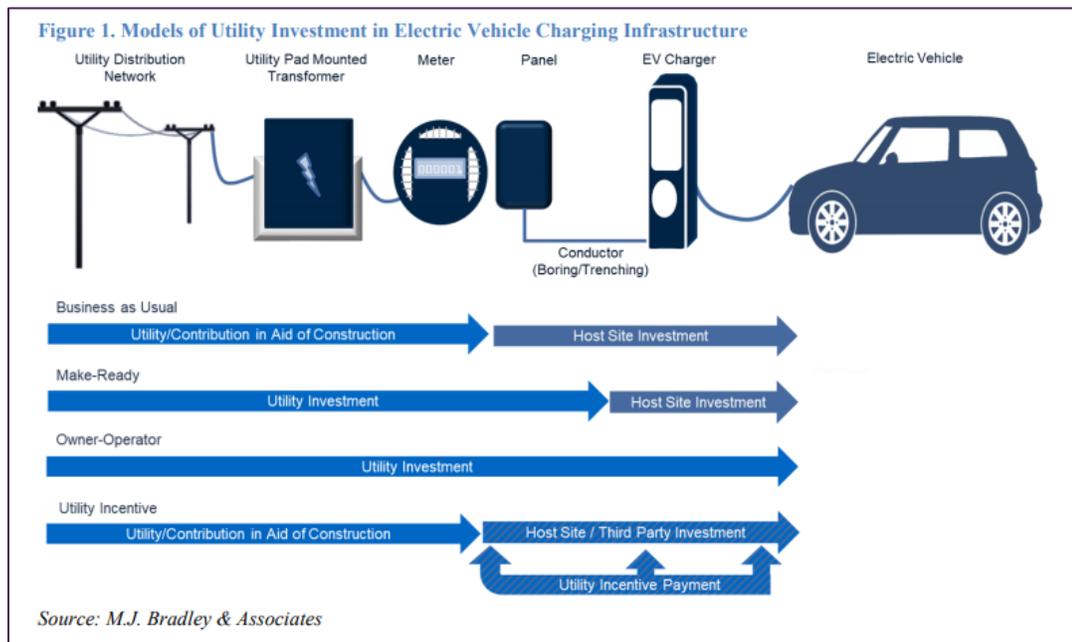
On page 6 of Exhibit C20-2, AddÉnergie Technologies Inc. (AddÉnergie) states:

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.

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 2017<sup>1</sup> (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.



4.1 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.

5.0 **Reference:** Exhibit C28-2, p. 3  
Exhibit C12-2, p. 5  
DCFC – business model and economics

On page 3 of Exhibit C28-2, Tesla states: “At present, Tesla’s B.C. Supercharger stations tend to have between four and twelve DC fast charging stalls.”

On page 5 of Exhibit C12-2, FortisBC Inc. (FBC) indicates that there are 42 DCFC stations and 43 DCFC ports in BC excluding Tesla Superchargers.

5.1 Please discuss what are the most relevant factors when determining the number of ports per station.

<sup>1</sup> [http://www.georgetownclimate.org/files/report/GCC-MJBA\\_Utility-Investment-in-EV-Charging-Infrastructure.pdf](http://www.georgetownclimate.org/files/report/GCC-MJBA_Utility-Investment-in-EV-Charging-Infrastructure.pdf)

- 5.2 Please comment on the benefits and costs of having multiple ports per station as compared to a single port per DCFC station.
  - 5.2.1 Please explain if there are any economies of scale by adding multiple ports per DCFC station? What is the incremental cost for additional charging ports?
  - 5.2.2 Please elaborate on the technical limitations or right of way concerns of having multiple ports at stations.

**6.0 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.

- 6.1 What difficulties have Tesla observed regarding the installation and operation of charging infrastructure in MURBs and curbside charging? What products or services does Tesla offer for this market?
- 6.2 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).
- 6.3 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).

**C. TECHNOLOGY**

**7.0 Reference: Exhibit C28-2, p. 3  
Exhibit C4-2-1, pp. 3–8  
Exhibit C12-2, p. 44–46  
Transcript , Volume 7, p. 338  
Upgrades in technology**

On page 3 of Exhibit C28-2, Tesla states it “is planning significant investment in additional EV charging infrastructure in the province during 2018 and beyond.”

FBC’s Appendix 1 to Exhibit C12-2 (pages 44-46), and Flintoff’s Exhibit C4-2-1 (pages 3-8) discuss the rapidly changing and upcoming technology in the EV charging market, for example wireless charging.

- 7.1 What is Tesla’s vision for the changing technology in the EV charging market?
  - 7.1.1 Could EV charging reach a point in the future where charging is as quick as it is to fill up on gasoline today? If yes, when is Tesla’s estimate of this occurring in the EV charging market?
- 7.2 Please discuss the benefits and drawbacks to participants in the EV charging market of rapidly changing technology. In particular, what can be done to keep current while minimizing the drawbacks?
  - 7.2.1 If EV charging service is regulated, please discuss Tesla’s view on what would be BCUC’s role as a regulator in relation to rapidly changing technology.

At the Nanaimo Community Input Session, Ms. Turner suggested:

... The research that I've done so far has indicated that the battery capacity for a full EV used to be 250 kilometres. It's now up to 383 in the particular vehicle that I was looking at.

In two or three years perhaps that capacity will have increased, and therefore the need for charging stations will be reduced, just by virtue of not being concerned.<sup>2</sup>

7.3 Please comment on Ms. Turner's submission that when vehicle capacity increase, the distance range available will also increase. Thus, the need for charging stations will be reduced.

7.3.1 Please discuss how Tesla's public EV charging station investment decisions differs with non-Tesla public EV charging stations. Does Tesla consider the possible inverse relationship between longer EV distance range and number of charging stations required? How does Tesla determine where to place EV charging stations?

#### D. RATES

##### 8.0 Reference: Exhibit C28-2, p. 3 Rate design – Charging Station to EV Customer

On page 3 of Exhibit 28-2, Tesla states:

For use above that amount, and for all Model 3 owners, customers are charged \$0.20 per minute of charge when the connector is operating at or below 60 kilowatts, and \$0.40 per minute of charge when it is operating above 60 kilowatts.

Tesla's website states: "Where possible, owners are billed per kWh (kilowatt-hour), which is the most fair and simple method."<sup>3</sup>

8.1 If possible, please explain the business model of Tesla charging stations that are not complimentary to Tesla owners. For example, are the rates for Tesla EV charging stations designed to compete with other EV charging service providers, or to breakeven?

8.2 Please clarify whether the \$0.20 per minute of charge when the connector is operating at or below 60 kilowatts, and \$0.40 per minute of charge when it is operating above 60 kilowatts rate structure is unique in the province of BC, applied universally across Canada, across North America, or other.

8.3 Please explain why Tesla's chosen rate design is most preferable for its existing Supercharger network. What other rate design options have Tesla considered and why were they rejected?

8.3.1 If any different, what is Tesla's most preferable rate design for its Supercharger network around the world? Would the preferred rate design structure vary based on EV charging station voltage availability or other technical specifications?

8.3.2 Does Tesla provide any Level 2 charging stations? Please provide the most preferred rate design if any different than the Tesla Superchargers.

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<sup>2</sup> Transcript, Volume 7, p. 338.

<sup>3</sup> [https://www.tesla.com/en\\_CA/support/supercharging](https://www.tesla.com/en_CA/support/supercharging)

**9.0 Reference: Exhibit C20-2, p. 7  
DCFC – 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).”

- 9.1 Has Tesla sought certification for Tesla-built supercharging meters from Measurement Canada?
  - 9.1.1 If so, please provide any details available of the current status of any application.
  - 9.1.2 If not, does Tesla have any plans to file a request in the future?
- 9.2 Please clarify whether Tesla’s \$0.20 per minute of charge when the connector is operating at or below 60 kilowatts, and \$0.40 per minute of charge when it is operating above 60 kilowatts rate structure requires certification from Measurement Canada.
  - 9.2.1 If so, please indicate whether this measurement is certified by Measurement Canada.
  - 9.2.2 If not, please explain why certification by Measurement Canada is not necessary.

**E. STORAGE AND GRID STABILITY**

**10.0 Reference: Exhibit C28-2, pp. 8–9  
Grid optimization and impact**

On page 8 of Exhibit C28-2, Tesla states that “the Commission should also allow customers to combine host and charging loads for billing purposes, which would encourage more efficient use of existing capacity and prevent potential double-charging for use of the same utility infrastructure.”

- 10.1 Please elaborate on how combined billing could facilitate efficient capacity use and prevent potential double charging.
- 10.2 Please identify specific jurisdictions that have implemented a billing practice as described.

On page 8 of Exhibit C28-2, Tesla states: “Combining loads could also facilitate the use of onsite storage and generation to help the customer and utility meet some of the increased capacity.”

- 10.3 Please elaborate on specific ways combining loads can facilitate onsite storage and generation.

On page 9 of Exhibit C28-2, Tesla states: “Increasing the utilization of the fixed costs, especially during off-peak periods, reduces the per unit cost of the fixed assets.”

- 10.4 Please elaborate on methods for increasing utilization during off-peak hours.