

**Date Submitted:** May 04, 2021

**Proceeding name:** BC Hydro Public EV Fast Charging Rate

**Are you currently registered as an intervener or interested party:** Yes, Interested Party

**Name:** Kelly Carmichael

**City:** Surrey

**Province:** British Columbia

**Email:**

**Phone number:**

**Comment:**

I think the price is not reflective of what it would cost exempt utilities from being able to provide the service.

**Has Attachment:**

True

Kelly Carmichael



▶ **Ms Marija Tresoglavic, Acting Commission Secretary**

British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC  
V6Z 2N3

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**Dear Ms Tresoglavic:**

I have been following the submissions made by other interested parties, and found the debate about the appropriate way of billing EV drivers for their use of the DCFC charging stations interesting, many EV drivers have decided that they shouldn't pay for the use of the station at all, and only pay for the commodity they received from using the station regardless of the time they may have spent using the equipment.

I have a unique perspective into this topic, as a researcher at BCIT, my activities include purchasing, installing and maintaining (6) 50kW DCFC stations since 2014, many are similar to those being deployed by BC Hydro and Fortis BC. While these stations do have the ability to report energy usage of charging sessions, they do not contain an energy meter that would satisfy Measurement Canada's requirement for a revenue grade meter for billing. As you are probably well aware, Measurement Canada does not currently have any testing standards to approve a revenue grade DC energy meter. It would be possible to attach a revenue grade AC meter to the input of the DCFC and then alter the DCFC charging controller to use that meter for measuring power and energy. Doing so would create new problems, each DCFC station I have reviewed uses different technologies to convert AC to DC power, the efficiency of the stations is different, and even housekeeping loads such as heating and cooling circuits would contribute to one station using more energy to charge one EV over another. There would also be a significant cost in implementing such a solution in that it would probably require the vendor to recertify the product as they would be making material changes to the way the equipment operated. Metering Equipment that measures the DC energy delivered to the customer would be better than using upstream AC metering.

BCIT and BC Hydro have tested hardware from many of the leading DCFC equipment providers over the years, most did not hold up well in the field, and required significant onsite maintenance. AddEnergie is a Quebec based manufacturer, we have found their hardware to be the most reliable out of all the stations we tested. AddEnergie has been selected by Fortis and BC Hydro as the equipment of choice for their DCFC network because of the reliability and ability to operate in extreme temperature ranges.

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AddEnergie's IT platform for billing currently offers only time-based billing in Canada, I have been told that as they resolve the revenue grade metering issue, they will update their IT platform to allow a mixture of time and energy for billing.

To give clarity to the issue of what is fair for all users of the DCFC station, we should keep in mind there is a finite number of minutes in a day that the DCFC station can be used, based on the usage patterns I have observed the upper limit is about 580 minutes of use per day on average, you cannot operate the station at 100% utilization during average days, because the station would be overwhelmed on peak days such as holiday travel days. We can calculate the total amount of money that needs to be recovered from the users for the stations to break even by dividing that money across the users using different metrics, such as time or energy, but reducing the costs for 1 class of customers means another class of customers will need to pay more. We should try to ensure that the prices are fair for all classes of customers.

Below are 3 real world examples, using 3 different pricing models.

The pricing is similar to what Fortis BC is charging. \$0.60/kWh, \$0.26/min, \$0.20/min + \$0.14/kWh. Each pricing model would collect the same total amount of revenue based on the current fleet and charging behavior, but each pricing model will influence the behavior of the users.

Vehicle	Minutes	Energy	Price by kWh	Price by Min	Hybrid Price
Nissan LEAF	28	13.4	\$ 8.04	\$ 7.56	\$ 7.48
Mitsubishi Outlander	25	1.5	\$ 0.90	\$ 6.75	\$ 5.21
Tesla 3	63	46.9	\$ 28.14	\$ 17.01	\$ 19.17

I would suggest that the hybrid pricing is the fairest, followed by pricing by time, and pricing by energy is the least fair at distributing costs across all users appropriately, yet this example shows that all 3 users would have chosen a different pricing model that best suits their own interests.

Based on the fact that revenue grade metering doesn't exist for DCFC stations today, and not having a decision by Measurement Canada that would enable use of non-revenue grade metering for billing purposes, a time-based billing solution is the best solution available at this time. When the metering issue is resolved, it may be appropriate to review if a hybrid price tariff using both time and energy delivered would be more appropriate. I do not see a pure kWh rate as something achievable until the network operators start deploying 10's of charging connectors per site, and then expand the number of connectors as needed to keep up with the demand.

After reviewing BC Hydro's application, I believe they have undervalued their 50kW service by about 20% which could be seen as trying to maximize their utilization at the expense of private companies trying to offer similar services. We have all seen the lineups at gas stations when there is a price war happening and one gas station is 20% cheaper than the rest.

BC Hydro has tried to show a competitive landscape using DCFC pricing by municipal and private operators. I think this is a flawed approach at this time because those operators had to reduce their prices because they were competing against BC Hydro's large network of FREE chargers.

**Kelly Carmichael**  
April 30, 2021