BRITISH COLUMBIA

June 6, 2018

Mr. Patrick Wruck
Commission Secretary
British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck:

Please find enclosed responses from the British Columbia Ministry of Energy, Mines and Petroleum Resources to Information Requests No.1 received as part of the British Columbia Utilities Commission Inquiry into the Regulation of Electric Vehicle Charging Service (Project No.1598941) from:

- the British Columbia Utilities Commission (Exhibit A-20);
- the BC Sustainable Energy Association and Sierra Club BC (Exhibit C6-3);
- the Commercial Energy Consumers Association of BC (Exhibit C24-12);
- ChargePoint (Exhibit C25-6); and
- the Vancouver Electric Vehicle Association (exhibit C30-5).

If you have any questions regarding these responses or require any further information, please contact Shannon Craig at Shannon.Craig@gov.bc.ca or 778-698-7016.

Thank you.

Sincerely,

Les MacLaren
Assistant Deputy Minister
Electricity and Alternative Energy Division

Enclosures

Ministry of Energy, Mines and Petroleum Resources
Electricity and Alternative Energy Division
Mailing Address: PO Box 9314, Stn Prov Govt Victoria, BC V8W 9N1
Location: 4th Floor 1810 Blanshard Street Victoria, BC

BC Ministry of Energy, Mines and Petroleum Resources
Response to Information Request No. 1 from the Commercial Energy Consumers Association of BC

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

Project No. 1598941

June 6, 2018

---

1. Reference: Exhibit C19-2, Page 2

- encouraging the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia.

1.1 Given that the percentage of EVs car sales each year is very low now, albeit climbing rapidly, and that this will remain the case for some time yet into the future has the government policy for a low carbon future in transportation focused on the emissions from ICE vehicles, particularly given that the potential for efficiencies with known technology is available and increasingly present in the market?

RESPONSE:

Yes, both the provincial and federal governments have taken action to reduce emissions from ICE vehicles. In BC, the *Greenhouse Gas Reduction (Renewable & Low Carbon Fuel Requirements) Act* and the Renewable & Low Carbon Fuel Requirements Regulation were introduced to:

- **reduce British Columbia's reliance on non-renewable fuels;**
- **help reduce the environmental impact of transportation fuels; and**
- **contribute to a new low-carbon economy.**

As a result of this legislation, between 2010 and 2016, the release of over 6.37 million tonnes of greenhouse gas emissions was avoided.

Federal initiatives to reduce emissions from ICE vehicles include:

- **implementing a 2007 excise tax on fuel-inefficient vehicles; and**
- **setting GHG emissions limits for new light-duty vehicles under the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations.**

1.2 Has MEMPR made any evaluations with respect to regulating the minimum level of emissions rating for vehicles sold in the Province at some time as part of a move to a low carbon economy?

RESPONSE:

No, MEMPR has not made any evaluation of this type. As noted above in the response to question 1.1, the federal government has set GHG emission limits for new vehicles.

2. **Reference: Exhibit C19-2, Page 2**

> The Province is active in promoting the uptake of zero emission vehicles (ZEVs), including battery-electric, plug-in hybrid, and fuel cell vehicles. The Province's Clean Energy Vehicle Program ("the CEV Program") includes point-of-sale incentives for electric and hydrogen vehicles, investments in charging and fuelling infrastructure, additional support for fleets to adopt ZEVs, and investments in research, training and outreach.[3] The CEV Program is intended to encourage and accelerate the adoption of ZEVs in British Columbia for both their environmental and economic benefits. The CEV Program vision is to

2.1 Does MEMPR have a quantitative analysis of the environmental and economic benefits for ZEVs to which it refers as the best information available and if so could that please be provided.

RESPONSE:

In terms of environmental benefits, MEMPR is undertaking new modelling and analysis in collaboration with the Climate Action Secretariat (Ministry of Environment and Climate Change Strategy). This work will inform upcoming policy and program development by MEMPR. To date, the CEV Program has used previous modelling results suggesting an average of 60 tonnes reduction in tailpipe greenhouse gas emissions over the life of a light-duty ZEV. Note that this value is lower than the 84.45 tonne figure used by Scrap-It (referenced in the response to question 3.2 below) because the CEV program figure is based on a comparison between a new EV and a new (rather than an older model) ICE vehicle.

With regards to economic benefits, MEMPR commissioned a Clean Energy Vehicle Economic Opportunities Assessment which is publicly available at https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/cev_economic_opportunities_final_report.pdf

2.2 When determining incentive support for the CEV Program, does the MEMPR have a quantitative assessment of the limits to how much should be provided as incentives to achieve those benefits?

RESPONSE:

The CEV Program works broadly to stimulate market transformation of the transportation sector to CEVs for environmental and economic benefits. To date, the total government investment in the CEV Program has been $72 million. This investment is expected to stimulate $300 million in CEV sales in BC, and $30 million in private, municipal and federal government funding. The CEV Program operates

at a minimum of a 1:1 funding leverage ratio. MEMPR assesses support for the total CEV Program and each program under the CEV Program against emissions and adoption commitments, and market uptake. Increased use of CEVs in BC helps to shift spending from imported transportation fuels to locally-produced electricity and hydrogen, while stimulating jobs and economic development in the local clean technology sector.

2.3 Does MEMPR have any assessment of the required conditions for transformation of the transportation market to low carbon options to no longer require incentives?

RESPONSE:

MEMPR anticipates that incentives will no longer be needed when the differential in the purchase price of ZEVs and equivalent ICE vehicles approaches $2,000 or less.

3. Reference: Exhibit C19-2, Page 3

fuel they supply. An agreement under the Renewable and Low Carbon Fuel Requirements Regulation allows a fuel supplier to receive compliance credits in exchange for investing in a new Scrap-It incentive. Scrap-It provides $3,000 to customers who scrap an old vehicle and purchase a used electric vehicle, and $6,000 for customers who purchase a new electric vehicle.[5] The incentive is able to be combined with the CEV Program incentive, allowing a total incentive of up to $12,000 for hydrogen fuel cell EVs, and up to $11,000 for battery EVs.

3.1 For how long does MEMPR expect the Scrap-It incentive to be available?

RESPONSE:

The current agreement with Scrap-It under the Renewable and Low Carbon Fuel Requirements Regulation has a stated intent to renew the agreement annually until 2021, with a review of the program in 2020. If MEMPR sees a continuing need for incentives, the program may be extended beyond 2021.

3.2 Please explain the basis upon which compliance credits are earned (ie. The dollar value per what unit of investment over what period of time.) or whatever other metric is used to provide the compliance credits.

RESPONSE:

Compliance credits are based on an MEMPR/Scrap-It assessment that an EV results in 84.45 tonnes of avoided GHG emissions over its lifetime, based on the lifecycle carbon intensity of fuels as assessed under the Renewable and Low Carbon Fuel Requirements Regulation. The agreement awards these credits to the fuel supplier after Scrap-It reports that the internal combustion vehicle has been scrapped and the electric vehicle has been licensed. The value of the incentive is a private commercial arrangement between the fuel supplier and Scrap-It.

4. Reference: Exhibit C19-2, Page 3 & 4

The Province is also working with other jurisdictions to promote the uptake of ZEVs. Under the Pan-Canadian Framework on Clean Growth and Climate Change, federal, provincial and territorial governments committed to work with industry and stakeholders to develop a Canada-wide ZEV strategy by 2018.[6] This strategy will be ambitious and will build on existing initiatives, such as light-duty vehicle

The Pacific Coast Collaborative (PCC) is a joint initiative of California, Oregon, Washington, and British Columbia to accelerate a vibrant, low-carbon economy on the West Coast. On October 28, 2013, the

In 2015, BC became the 14th jurisdiction to sign on to the International ZEV Alliance, which is a collaboration of national and subnational governments working together to accelerate adoption of ZEVs. Members of the Alliance are striving to make all new passenger vehicles in their jurisdictions ZEVs by no later than 2050.[8]

plug-in hybrid vehicles) and hydrogen fuelling infrastructure (for fuel cell vehicles). The British Columbia Electric Vehicle Infrastructure Project ("the EVIP"), launched in 2012, was led by BC Hydro and supported by the Province of British Columbia, the federal government, municipalities and the private sector. The EVIP led to the installation and operation of over 500 Level 2 charging stations for public use in urban areas across the province, and 30 DC fast-charging stations along major transportation

In 2016, the PCC and the cities of Los Angeles, Oakland, Portland, San Francisco, Seattle and Vancouver signed the Pacific North America Climate Leadership Agreement, which includes a commitment to create a comprehensive Pacific Coast ZEV charging network along major highway systems from Southern California to British Columbia and accelerate the deployment of residential, workplace and public charging infrastructure in major population centers.[9]

4.1 Does MEMPR view the breadth of the collaborations it has entered into sufficient in population size and commitment to a low carbon economy to move the automobile industry manufacturers to be able to market and produce ZEVs to a higher percentage of new sales to meet the BC Climate Change goals or will further expansion and deepening of the commitments of the collaboration be required?

RESPONSE:

MEMPR expects that automobile manufacturers will respond to demand for ZEVs and numerous automobile manufacturers have publicly announced that they are increasing their numbers of ZEV models. The collaborations BC has entered into include addressing education and awareness, infrastructure and training. EV charging is an important component of the collaboration to date. BC will continue to expand and deepen collaboration with other jurisdictions on increasing the number of ZEVs on the road.

5. Reference: Exhibit C19-2, Page 4

Province, with partial funding for 21 new stations across BC. Most recently, in the Budget Update of September 2017, further Provincial investment in DC fast-chargers was confirmed, with $2 million going into a multi-year joint call with Natural Resources Canada for a targeted additional 80 DC fast-charging stations in BC.

5.1 Does the Province expect that these additional 80 DC fast charging stations in BC will be implemented by BC Hydro and by FortisBC Inc. as utilities with the government contribution?

RESPONSE:

MEMPR expects that BC Hydro and FortisBC will be key parties in the deployment of these DC fast charging stations. However, MEMPR also expects local governments, the private sector and other government ministries may deploy some of the stations.

5.2 Does the government expect to make $25,000 per station available to the private sector that may want to participate in establishing DC fast charging stations?

RESPONSE:

Yes, incentives are available to the private sector.

6. Reference: Exhibit C19-2, Page 6

MEMPR is currently using an EV modeling tool and collaborating with these organizations to determine the number of sites that will be required in the future in order to provide a complete EV charging network that allows reliable travel throughout the province and reduces lineups in urban centres. Initial modeling results indicate that approximately 200 Level 3 charging stations would be required at a minimum to allow for travel along all of BC's primary and secondary highway corridors. This figure would not include the need for more densely located DC fast-charging stations in urban centres. Natural Resources Canada is targeting a distance of approximately 50 kilometres between DC fast-charging stations. This distance is aligned with the Province's planning approach.

6.1 Once BC reaches a level where there is fast charging infrastructure geographically distributed across the Province does MEMPR expect that the remaining expansion will likely be volume driven by profitable operations such that the competitive market would be able and likely to supply the ongoing need or does MEMPR expect the utilities to continue to provide such services indefinitely into the future.

RESPONSE:

MEMPR's view is that both third-party private investments and public utility investments are appropriate in the EV charging service market at this time. MEMPR can't predict whether third-party or public utility investments will be most appropriate in the future because MEMPR can't predict exactly how the EV charging station market will mature and whether/how the economics of EV

charging station ownership will change with increased EV adoption rates and advancements in EV and charging station technology.

7. Reference: Exhibit C19-2, Page 8

> There are a number of advantages and disadvantages associated with public utility involvement in EV charging services. An April 2016 article from the Center for Strategic and International Studies[22] notes that establishing a profitable business model for EV charging infrastructure is challenging because of high upfront investment costs, low and uncertain near-term demand, and competition from home charging. The article notes that some see utilities "as the way to overcome all three of these challenges: utilities can address uncertainty by being told by regulators to install infrastructure (and at a pace directed by the regulator), can address the financing challenges by seeking ratebasing for the infrastructure, and can deploy in the immediate term if directed to do so by public utility commissions. In short, the market challenges faced by third-party EV charging vendors evaporate when the utility is the one doing the installing." Disadvantages of public utility involvement include the potential risk to ratepayers and the potential for stifled competition.

7.1 Would MEMPR like to receive policy recommendations from the Commission's EV Charging Inquiry on the appropriate approach to balancing acceleration of the low carbon transportation market based on utility support, particularly for DC fast charging, and the ongoing development of low carbon transportation as a private sector non-monopoly service?

RESPONSE:

Yes, MEMPR would like to receive policy recommendations from the Commission regarding how to accelerate the growth of EV charging station infrastructure in BC, including how to balance and encourage both third-party private investments and public utility investments in the EV charging station market.

8. Reference: Exhibit C19-2, Page 12

> Based on the experience to date in BC and the experience in other jurisdictions that have allowed public utility involvement in the provision of EV charging services, MEMPR supports a role for public utilities in "kick-starting" the market for EV charging services. A role for public utilities would not preclude other entities from also investing in EV charging services.

8.1 "Kick starting" the DCFC network in BC could certainly be accomplished by BC's electrical utilities relatively quickly and would be a clear role, does MEMPR expect that the regulated monopoly utilities would continue in this business indefinitely as utilities and or would MEMPR like to receive advice from the Commission's Inquiry as to options for transitioning to full private sector competitive market supply.

RESPONSE:

MEMPR can't predict whether third-party or public utility investments will be most appropriate in the future because MEMPR can't predict exactly how the EV charging station market will mature. If the Commission is able to conclude that a full private sector competitive market is the most appropriate future model for the EV charging station market, then MEMPR would be interested in the Commission's advice on how that transition could be achieved. If the Commission concludes that regulated monopoly utilities should continue to play a role, MEMPR would be interested in the Commission's findings regarding the terms and conditions of that role.