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March 31, 2022

B.C. Sustainable Energy Association
c/o William J. Andrews, Barrister & Solicitor
70 Talbot Street
Guelph, ON
N1G 2E9

Attention: Mr. William J. Andrews

Dear Mr. Andrews:

Re: FortisBC Inc. (FBC)

2021 Long-Term Electric Resource Plan (LTERP) and Long-Term Demand-Side Management Plan (LT DSM Plan) (Application) – Project No. 159924

Response to the B.C. Sustainable Energy Association (BCSEA) Information Request (IR) No. 2

On August 4, 2021, FBC filed the Application referenced above. In accordance with the regulatory timetable established in British Columbia Utilities Commission Order G-24-22 for the review of the Application, FBC respectfully submits the attached response to BCSEA IR No. 2.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

19.0 Topic: Scenario Load Drivers

Reference: Exhibit B-2, responses to BCUC IR 15.5, pdf p.45

In response to BCUC IR 15.5, FBC provides a table with summaries of the penetration levels of scenario load drivers.

19.1 Does "N/A" in a cell of the table mean no penetration? If not, please explain each instance of "N/A" in the table.

Response:

FBC confirms that "N/A" indicates no penetration by a particular load driver within a scenario.

19.2 In light of the government's ZEV legislation, why is the Light Duty EV driver considered to be "N/A" in Scenario 2?

Response:

As discussed in Section 4.1.2, the Lower Bound Scenario 2 is not intended to reflect a single coherent narrative of a possible future world, but rather to understand the notional upper limit of load decreases that could be expected under the (highly improbable) confluence of load drivers that only decrease load. As the light-duty EV charging load driver is a load driver that increases load, it is excluded from this Lower Bound Scenario 2, along with other load drivers that increase load.

20.0 Topic: Clean market purchases

Reference: Exhibit B-6, response to BCSEA IR 3.1, pdf 5

FBC refers to RECs (renewable energy credits) in its discussion of the availability of clean electricity from the market going forward. It states:

> "FBC is confident that clean electricity will be available for FBC to purchase from the market going forward. In developing the clean market adder proxy, FBC had discussions with Northwest Power and Conservation Council (NPCC) and IHS Market (IHS), as well as reviewed other utilities' IRPs, and understood that as utilities in the Pacific Northwest build additional renewable generation, <u>there could be an oversupply of RECs (renewable energy credits) in the future</u> (as discussed in Section 2.5.7). Additionally, FBC has held exploratory talks with Powerex on purchasing clean market electricity, which is further solidified through <u>Powerex adopting their Clean Energy Trade Standard as of January 1, 2021.</u>" [pdf p.5, underline added]

20.1 Please elaborate on how RECs (renewable energy credits) relate to future market purchases of clean electricity by FBC.

<u>Response:</u>

As discussed in the response to BCUC IR1 1.9, any clean market purchases that FBC may make would need to come from a source that is recognized in BC as clean, and FBC would ensure that there is no double counting of clean energy attributes. FBC intends to pursue a transition to clean market purchases in cooperation with Powerex, under the CEPSA Agreement. If FBC purchases clean market electricity through the CEPSA agreement, those purchases would most likely follow the parameters described in Powerex's Clean Energy Trade Standard (Standard).

Under Powerex's Standard, RECs are recognized as evidence of clean supply, but only to the extent that they are coupled with the delivery of that clean supply. In other words, if the REC has been sold on a stand-alone basis, separate from the delivery of the electricity produced, this supply would not be recognized as clean under the Standard.

20.1.1 Does one REC represent 1 MWh of clean electricity generated by a renewable energy facility? Who determines whether a renewable energy facility qualifies?

<u>Response:</u>

Under the Western Renewable Energy Generation Information System (WREGIS), one REC is issued for each MWh or determined equivalent of renewable energy produced. Renewable energy generating units would have to register and be approved by the WREGIS, which has external oversight by a WREGIS committee and a Stakeholder Advisory committee.

20.1.2 Would FBC (or Powerex under the CEPSA for FBC) acquire RECs separate from the associated electricity?

Response:

Please refer to the response to BCSEA IR2 20.1.

20.1.3 Is FBC's acquisition of RECs predicated on the establishment of a BC 100% Clean Electricity framework?

Response:

FBC intends to transition to clean market purchases regardless of the establishment of a BC 100 percent Clean Electricity framework.

20.1.4 Please describe Powerex's "Clean Energy Trade Standard"? Does it include RECs?

Response:

Powerex publishes the "Clean Energy Trade Standard" on their website.[1] Please also refer to the response to BCSEA IR2 20.1.

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[1] https://powerex.com/environmental/clean-energy-trade-standard.

21.0 Topic: Shifting EV charging load

Reference: Exhibit B-6, IR response to BCSEA 4.1, pdf 7 and 4.2, pdf 8

FBC says in response to BCSEA IR 4.1 that it would require BCUC approval to implement a demand response program for EV charging and that it expects to submit its next DSM plan (for 2023 to 2027) in 2022.

In response to BCSEA IR 4.2, FBC lists the following required activities to implement a full EV demand response program:

> "1. Develop a business case for the full program based on results from the demand response pilot;
>
> 2. Include the business case inputs and cost-effective results in the next DSM Plan;
>
> 3. Receive BCUC approval for the full program as part of the next DSM Plan;
>
> 4. Expand the demand response pilots into a full program. Expansion may include:
>
> a. Broadening the geographical area of potential participants;
>
> b. Expanding the number of measures included in the program;
>
> c. Expanding the marketing approach to encourage program participation; and
>
> d. Changing the incentive structure to support more sustained program participation."

21.1 What is the current status of FBC's development of a full EV demand response program for inclusion in its 2023-2025 DSM Expenditure Plan?

Response:

FBC is currently piloting a program that includes demand response for residential EV chargers. Early customer recruitment is complete, and FBC has successfully conducted its first demand response event as of March 2022. The pilot will be complete in Q1 2023, with some preliminary results expected in Q3 2022. FBC intends to include residential demand response, including EV demand response, in its upcoming DSM Expenditure Plan.

For further discussion on the steps required to implement this program, please refer to the response to RCIA IR2 40.1.

22.0 Topic: EV Fleet or Employee Charging Infrastructure

Reference: Exhibit B-1, Section 2.3.2 Electric Vehicles, p.41, pdf p.71; Exhibit B-6, FBC Response to BCSEA IR 7.2, pdf p.13

FBC states:

> "FBC no longer intends to file for approval of a rate for commercial customers related to fleet or employee-charging infrastructure as was contemplated when the LTERP was drafted. Rather, FBC intends to develop a program under the electrification provisions of Greenhouse Gas Reduction (Clean Energy) Regulation (GGRR) that will assist in the acquisition, installation or use of charging infrastructure. FBC intends to file an application for deferral account treatment for costs related to incentive funding for light-duty fleet charging infrastructure in early 2022." [pdf p.13, underline added]

22.1 Please further describe the program FBC is developing to assist in the acquisition, installation or use of charging infrastructure.

Response:

The program that FBC is developing will offer funding to customers installing workplace or fleet EV charging infrastructure. The application is still under development and may change; however, it is currently planned to provide funding to customers with a required minimum annual power consumption per charger installed. The intent of the program is to work in concert with the available provincial and federal funding options through programs such as CleanBC and the federal Zero Emission Vehicle Infrastructure Program, respectively. This will allow FBC to support the deployment of customer-owned EV charging infrastructure.

22.1.1 Is the program focused on the "fleet or employee charging infrastructure for light-duty fleet and workplace vehicles" that was previously being considered for a new commercial rate?

Response:

Confirmed.

22.1.2 Which categories of customer would pay for program?

Response:

As currently contemplated, the program would be targeted at commercial customers that plan to install EV charging infrastructure for either light-duty fleet vehicle or workplace charging for employees. While the cost of the program would be amortized into the rates of all customers, this would be offset by the revenue from the increased energy usage of program participants over time.

23.0 Topic: Small scale distributed generation

Reference: Exhibit B-1, s. 6.5.1, Distributed Generation (DG), pdf 168; Exhibit B-6, IR response to BCSEA 8.2, pdf 16

In response to BCSEA IR 8.2, FBC says in part:

> "The extent to which DG affects power losses and voltage profiles depends on the type of DG technology, penetration levels, and the location of its connection to the grid. Depending on its location, the integration of DG can reduce power losses on the transmission and distribution network, but as the penetration level increases, the power losses may begin to increase."

23.1 Please explain how an increase in the penetration level of distributed generation can increase power losses.

Response:

This scenario is most likely when there are high levels of DG penetration in areas that are distant from a substation. In such cases, if the electric demand of nearby customers is low during periods of high generation, this can result in reverse power flow on the lines with the potential for increased system losses.

24.0 Topic: SCGT GHG emissions

Reference: Exhibit B-6, BCSEA IR 11.4, pdf 20

In its response to BCSEA IR 11.4, FBC states

> "When organic waste like food scraps, cow manure or sewage decomposes, biogas is created through a biological process such as anaerobic digestion. That raw biogas can be captured and purified to create renewable natural gas (RNG). Biogas is identified as a clean and renewable resource under the CEA, consequently RNG derived from biogas is equally considered to be carbon neutral (i.e., with no reportable scope 1 GHG emissions). Therefore electricity energy generated using RNG as a fuel source is also considered a clean resource." [pdf p.19, underline added]

24.1 Please indicate the provincial GHG emissions reporting regime under which FBC would report GHG emissions (if any) from the production of electricity using RNG. If there is a document that specifies the GHG emissions intensity of electricity generated from RNG, please file a copy.

Response:

The reporting regime under which FBC would report GHG emissions (if any) from the production of electricity using RNG would be the *BC Greenhouse Gas Emission Reporting Regulation* or any future applicable reporting regulation required by the BC Ministry of Environment and Climate Change Strategy.

For the modeling conducted in the LTERP, FBC has assumed an emissions rate of zero tCO2e[2] per MWh related to the production of electricity using RNG. Since this assumption was incorporated into the LTERP, the Ministry of Environment and Climate Change Strategy published the *2020 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions*,[3] which states an emission factor value equivalent to 0.00106 tCO2e per MWh[4] for RNG.

In its response to BCSEA IR 11.4, FBC states:

> "The table below outlines the key emission assumptions made regarding SCGT and RNG SCGT resources. FBC considered the upstream emissions for both RNG

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2 tCO2e = GHG emissions equivalent to one tonne of CO_2.

3 https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf.

4 Calculated value using the following: Table 1, p. 12 Renewable Natural Gas, CO2e Emission Factor: 0.2932 kg CO2e/GJ; 1 GJ = 277.78 kWh; 0.2932/277.78 = 0.001056 kg CO2e/kWh; 1 Kg = 0.001 tonne; 1 MWh = 1,000 kWh; 0.001056*1,000/1,000 = 0.00106 tCO2e/MWh.

and conventional natural gas. For each MWh of energy dispatched, the following GHG emissions were accounted in the portfolio model:

Resource Type	Direct Emissions: Scope 1	Indirect Emissions: Scope 3
SCGT	0.47 tonnes CO_2e per MWh[1]	0.080 tonnes CO_2e per MWh[2]
RNG SCGT	0.00 tonnes CO_2e per MWh[3]	0.003 tonnes CO_2e per MWh[4]

The footnotes are as follows:

[1] 2018 B.C. Methodological Guidance for Quantifying Greenhouse Gas Emissions January, 2019 (DRAFT) Table 1: EMISSION FACTORS: Stationary Fuel Combustion (GJ) Page 13.
[2] 8.951 kg CO_2e/GJ based on 2019 upstream data as published by BC Oil and Gas Commission.
[3] RNG has zero direct emissions for purposes of GHG Reporting.
[4] Based on 2019 weighted average from the 4 existing RNG facilities that supply to the FEI system.

24.2 Please provide a copy of, or a link to, the BC Oil and Gas Commission data indicating 8.951 kg CO_2e/GJ for conventional natural gas upstream GHG emissions in 2019.

<u>Response:</u>

FBC has adopted a GHG intensity value of 8.951 kg CO_2e per GJ to represent upstream emissions from conventional natural gas production. FBC's source of data for this value was the BC Oil and Gas Commission. Unfortunately, the web-based source data is no longer available, and therefore FBC is unable to provide a copy or link.

Although the original data source is no longer available, the value of 8.951 kg CO_2e per GJ is consistent with values provided in other government reports, peer reviewed publications, and models developed by non-government organizations. The following table shows sources, affiliations, and the comparable GHG emissions rates associated with upstream natural gas production.

Source	Affiliations	Estimated Upstream GHG Emissions (kg CO_2e per GJ)[5]
GHGenius	BC Government Adopted Model	8-10
Globe Advisors[6]	BC Government Commissioned Report	4-5
Liu et al (2021)[7]	Peer Reviewed Publication	6-12
Raj et al (2016)[8]	Peer Reviewed publication	6-10
Pembina Institute[9]	Non-Government Organization	Median Scenario Value: 14

FBC notes that it has proposed RNG-fueled SCGT units within its preferred portfolios in the LTERP as opposed to SCGT units fueled by conventional natural gas. The upstream emissions rate of 8.951 kg CO_2e per GJ does not apply to electricity production from an SCGT unit using RNG fuel.

5 Some values are calculated from data contained within the referenced source.

6 GLOBE Advisors, British Columbia LNG Greenhouse Gas (GHG) Life Cycle Analysis. https://www2.gov.bc.ca/assets/gov/environment/climate-change/ind/lng/british_columbia_lng_greenhouse_gas_ghg_life_cycle_analysis.pdf.

7 Liu, R., Ravikumar, A., Bi, X. T., Zhang, S., Nie, Y., Brandt, A., and Bergerson, J. Greenhouse Gas Emissions of Western Canadian Natural Gas: Proposed Emissions Tracking for Life Cycle Modeling. Environ. Sci. Technol. 2021, 55, 14, 9711–9720 https://doi.org/10.1021/acs.est.0c06353.

8 Raj, R., Ghandehariun, S., Kimar, A., and Linwei, M. A well-to-wire life cycle assessment of Canadian shale gas for electricity generation in China. Energy 2016, 111, 642-652. https://doi.org/10.1016/j.energy.2016.05.079.

9 Pembina Institute. Kniewasser, M. and Horne, M. BC Shale Scenario Tool Technical Report. http://lnginnorthernbc.ca/images/uploads/documents/pembina-bc-shale-scenario-report-June2015.pdf.