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October 24, 2024

First Things First Okanagan Climate Action
434 Scott Avenue
Penticton, BC
V2A 2J8

Attention: Sue Kirschmann

Dear Sue Kirschmann:

Re: FortisBC Energy Inc. (FEI)

Application for Approval of a Certificate of Public Convenience and Necessity (CPCN) for the Okanagan Capacity Mitigation Project (OCMP) (Application)

Response to First Things First Okanagan Climate Action (FTFO) Information Request (IR) No. 1

On July 30, 2024, FEI filed the Application referenced above. In accordance with the regulatory timetable established in BCUC Order G-227-24 for the review of the Application, FEI respectfully submits the attached response to FTFO IR No. 1.

For convenience and efficiency, if FEI has provided an internet address for referenced reports instead of attaching the documents to its IR responses, FEI intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Interveners

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| FortisBC Energy Inc. (FEI or the Company) Application for Approval of a Certificate of Public Convenience and Necessity (CPCN) for the Okanagan Capacity Mitigation Project (OCMP) (Application) | Submission Date: October 24, 2024 |
| Response to First Things First Okanagan Climate Action (FTFO) Information Request (IR) No. 1 | Page 1 |

Topic: PROJECT NEED AND JUSTIFICATION

Reference: Exhibit B-1, Section 3, pages 11 & 18

1.0 2023 Peak Demand Forecast

In 3.2, page 11, FEI states that the 2023 Peak Demand Forecast "...confirms that there will be a capacity shortfall on the ITS by the winter of 2026/2027 that cannot be addressed with the short-term temporary mitigation measures that FEI has already implemented".

"Renewable Natural Gas" (RNG) is produced at FEI's Kelowna Biogas Plant from biogas captured at the Glenmore landfill¹.

1.1 Please indicate what volume this locally produced RNG contributes to the local gas supply.

Response:

The total amount of RNG produced from the Kelowna Biogas Plant at the Glenmore Landfill is expected to average 60 terajoules (TJ) per year (approximately 0.16 TJ per day), with a relatively flat output over the year. This is the estimated equivalent of providing heating and hot water requirements for 630 homes per year.

For comparison, the forecast peak demand capacity shortfall in the winter of 2028/29, with all temporary short-term mitigation measures, is approximately 8 TJ per day, or approximately 50 times the daily production of the Kelowna Biogas Plant.

1.1.1 Please discuss the feasibility of avoiding capacity shortfall by 'stockpiling' RNG at FEI's Biogas Plant when a cold weather event is predicted and/or increasing RNG production during the event.

Response:

"Stockpiling" RNG at FEI's Kelowna Biogas Plant is not a feasible approach to mitigating a capacity shortfall.

When operating, RNG facilities produce a relatively consistent quantity of energy over time. They cannot quickly scale production and they have physical limits that cap maximum production. As such, any sort of "stockpiling" would have to be accomplished through storing the energy produced over the course of the year and injecting the stored energy during the winter peak.

These energy storage solutions would be no different from Alternatives 2 (CNG Storage Facility) and 3 (LNG Production and Storage Facility), as described in Section 4.3.2 of the Application, and

¹ <https://www.kelowna.ca/city-services/waste/glenmore-landfill#gas>

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the challenges associated with these alternatives driving infeasibility are all applicable to any RNG stockpiling solution.

In 3.4 on page 18, “FEI acknowledges that the changing emission requirements for new buildings will have an impact on the usage of natural gas; however, until such time as the impact of the building code changes begin to materialize, and particularly in the years prior to 2030, the ITS will be in a capacity shortfall during a 1 in 20-year cold weather event, and FEI must put infrastructure in place to meet this expected shortfall.”

Due to climate change, there is a growing need to provide cooling in dwellings. Consequently, some gas customers are switching to electric heat pumps for both heating and cooling, thus reducing the consumption of fossil gas. The City of Kelowna has a [Home Energy Navigator Retrofit Roadmap](#) program which supports the electrification of existing buildings.

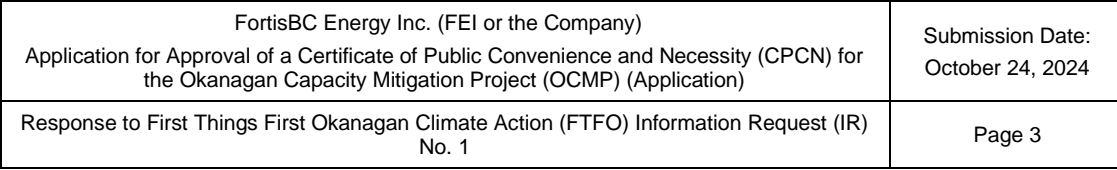
1.2 Please indicate if FEI has obtained annual statistics on the number of buildings that have switched from gas to electric heat pumps in the area of anticipated shortfall and if not, why not.

1.2.1 Please discuss the impact of these retrofits on peak gas usage in the area.

1.2.2 Please explain how the retrofit trends could affect the need for new FEI infrastructure to meet the expected shortfall, as well as the need for a long-term capacity solution for the Okanagan.

Response:

FEI does not have the requested information. FortisBC Inc. (FBC), the electric utility, has administered the Province’s fuel switching rebates in its electricity service area, as well as its own FBC heat pump rebate for electrically heated homes, for many years. Given that customers have differing preferences and arrangements (and uptake of efficiency programs is optional for customers), FBC offers electric heat pump rebates and FEI offers the dual-fuel heating system rebate. The latter reduces a portion of annual gas load, but also importantly, avoids electric peak demand impacts on the FBC electric system. Please also refer to the response to BCUC IR1 2.1.



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23 2.1.1 Please comment on the electric power capacity in the Kelowna area

24 including the effects of the following:

25 2.1.1.1 demand-side management techniques including time-of-use

26 tariffs and peak shaving via battery storage; and

27 2.1.1.2 the recently amended electrical code which now provides new

28 guidelines for calculating minimum amperages for residential

29 dwellings.

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1 **Response:**

2 FBC's 2021 Long Term Electric Resource Plan (LTERP)², accepted by the BCUC in December
3 2022³, sets out and explains its long-term plan for meeting the forecast peak demand and energy
4 requirements of customers with demand-side and supply-side resources over the 20-year
5 planning horizon. The LTERP compares energy and capacity load forecasts against current
6 resource capabilities and evaluates the potential for load reduction with DSM initiatives and other
7 options specific to electric vehicle (EV) charging. In Section 8 of the 2021 LTERP, FBC discussed
8 the various DSM scenarios analyzed, as well as the capacity savings provided which, at that time,
9 ranged from 62 to 73 MW for the entire FBC system. Additionally, even after undertaking DSM,
10 Section 9, which presents FBC's reference case scenario and at that time, did not contain any
11 building electrification, showed that energy resource gaps begin in 2023 and capacity gaps begin
12 in 2031. In the subsequent Kelowna Electrification Case Study, FBC demonstrated how there are
13 electric grid power capacity constraints in the City of Kelowna, and that alternate scenarios with
14 electrification could result in significant infrastructure requirements.

15 In Section 13 of the 2021 LTERP, FBC also stated that new resources may be required earlier
16 than expected in the reference case scenario, including demand-side management techniques
17 and load shifting initiatives. In addition to the need for generation resources to supply customers
18 with electricity, FBC's electric system, which delivers the energy to customers, requires system
19 improvements in order to continue providing reliable supply to its customers, particularly within
20 the Okanagan region.⁴ In a more recent filing than the LTERP, FBC explained that load growth in
21 this area is being driven by population growth, BC Government planning legislation changes,
22 electrification of heating loads, electric vehicle (EV) loads, and municipal planning legislation
23 changes resulting in redevelopment and densification of existing buildings in the area.⁵

24 Nonetheless, the OCMP is responding to increasing customer-driven peak demand for gas.
25 Electric DSM and code changes do not impact the immediate need for additional capacity into the
26 region and are, therefore, not an alternative to the OCMP. Please also refer to the response to
27 BCUC IR1 2.1.

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31 2.1.2 Please describe any mapping that FEI (perhaps in conjunction with
32 FortisBC Inc) has done to identify service areas that may experience a
33 shortfall in fossil gas but have a projected surplus in electrical capacity.

² The 2021 LTERP can be uploaded from either the BCUC web site:
<https://www.bcuc.com/OurWork/ViewProceeding?applicationid=922>, Exhibit B-1,
or the FortisBC web site: <https://www.fortisbc.com/about-us/corporate-information/regulatory-affairs/our-electricity-utility/electric-bcuc-submissions/resource-plans-for-electricity/2021-long-term-electric-resource-plan-and-long-term-demand-side-management-plan>.

³ BCUC Decision and Order G-380-22: https://docs.bcuc.com/documents/other/2022/doc_69291_g-380-22-fbc-lterp-decision.pdf.

⁴ FortisBC 2025-2027 Rate Setting Framework Application, Exhibit B-1, p. C-106.

⁵ FortisBC 2025-2027 Rate Setting Framework Application, Exhibit B-4, BCUC IR1 23.5

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2.1.3 Please summarize any discussions FEI has had with FortisBC Inc and/or local communities (Kelowna, Lake Country, Vernon) regarding ways they could work together to encourage customers to install cold-climate electric heat pumps in the shortfall area.

Response:

FEI has not done any mapping to identify gas or electric areas with shortfalls or surpluses in conjunction with FortisBC Inc. (FBC).

2.1.4 Please describe any measures that FEI has taken or will be taking to help customers assess opportunities to electrify their homes and businesses.

Response:

FEI has multiple programs in market to help customers assess opportunities in homes and businesses; however, the focus is on conservation and energy efficiency of natural gas use and not electrification. Please refer to the responses to BCUC IR1 2.1 and 2.2.

FEI has created a new [dual-fuel heating system rebate](#) for eligible customers who replace their home's older gas heating system with an electric heat pump and high-efficiency gas furnace. In regions colder than Kelowna, e.g. the Yukon, northern BC, the east Kootenays, and Scandinavian countries, cold climate electric heat pumps have proved successful without the need for gas backup⁶.

2.2 Please explain why FEI is offering this dual-fuel rebate in a region where winter temperatures rarely exceed the range where cold-climate electric heat pumps work efficiently.

Response:

Both dual-fuel heating systems and all electric heat pumps provide energy efficiency savings to customers through a higher efficient equipment solution as compared to the existing heating system that the customer is replacing, whether it is a gas furnace, electric baseboard, or other.

⁶ [Air-Source Heat Pump Monitoring Project Technical Report for 2021-2022 \(gov.yk.ca\)](#); [Is Using a Heat Pump in the North Feasible? | B2E \(b2electrification.org\)](#); <https://www.biv.com/news/economy-law-politics/heat-pumps-outperform-gas-even-coldest-temperatures-finds-canadian-researcher-8273254>; [Lessons Learned at -40 °C - Community Energy Association](#); <https://cdn.shopify.com/s/files/1/0562/1753/4534/files/Kanartic-Specs-2023-web.pdf?v=1688669703> (see Kanartic heating specs for cold temperatures down to -30).

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Therefore, in a dual-fuel heating system, the electric heat pump system provides greater heating efficiency during shoulder seasons, saving customers energy use and reducing GHG emissions.

Dual-fuel systems offer a benefit that an all-electric heat pump cannot – they avoid electric peak demand during that highest period of electric demand, and instead the gas furnace and existing gas system serves the load. It is important for utilities to consider the impacts of programs and measures on both the gas and electric systems, and the infrastructure required, especially considering the Kelowna Electrification Case Study⁷ which demonstrated challenges with significant electrification peak demand growth and potential electric infrastructure costs.

Utilities must plan infrastructure and supply on both an annual energy basis and for the single highest (peak) hour of demand in the year, which occurs during the winter in British Columbia. Because utilities need to plan for this peak hour, it is irrelevant how often temperatures exceed the range that field-tested⁸ cold-climate electric heat pumps operate efficiently (or operate at all). Rather, the utility must plan its infrastructure to be able to reliably serve all demand in the coldest single hour, and dual fuel heating systems seek to avoid adding to the electric peak demand.

2.2.1 Has FEI considered replacing their dual-fuel retrofit rebate with one that requires all electric heating systems?

2.2.2 Please discuss what impact such a rebate could have on peak gas usage in the area.

Response:

FEI has not considered replacing its dual fuel heating system rebate with a rebate for electric-only heating systems. Please refer to the responses to BCUC IR1 2.1 and 2.4.

⁷ https://docs.bcuc.com/Documents/Proceedings/2023/DOC_70278_B-20-FEI-Evidentiary-Update.pdf

⁸ In the response to BCUC IR2 119.3 in the FEI 2022 Long Term Gas Resource Plan (LTGRP), FEI provided relevant field studies in the Yukon and Minnesota that demonstrated comparable results to the RDH BC Cold Climate Field Study, which was used in the Kelowna Electrification Case Study analysis.