Diane Roy
Vice President, Regulatory Affairs

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (604)576-7349
Cell: (604) 908-2790
Fax: (604) 576-7074
www.fortisbc.com

December 23, 2021

Industrial Customers Group
c/o #301 – 2298 McBain Avenue
Vancouver, BC V6L 3B1

Attention: Mr. Robert Hobbs

Dear Mr. Hobbs:

Re: FortisBC Inc. (FBC)

2021 Long-Term Electric Resource Plan (LTERP) and Long-Term Demand-Side Management Plan (LT DSM Plan) (Application)

Response to the Industrial Customers Group (ICG) Information Request (IR) No. 1

On August 4, 2021, FBC filed the Application referenced above. In accordance with the regulatory timetable established in British Columbia Utilities Commission Order G-314-21 for the review of the Application, FBC respectfully submits the attached response to ICG IR No. 1.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

1. Reference: Exhibit B-1, BC Clean Energy Act Objectives, Section 1.4.2, Table 1-3, p. 11

"To reduce BC GHG emissions (i) by 2012 and for each subsequent calendar year to at least 6% less than the level of those emissions in 2007, (ii) by 2016 and for each subsequent calendar year to at least 18% less than the level of those emissions in 2007, (iii) by 2020 and for each subsequent calendar year to at least 33% less than the level of those emissions in 2007, (iv) by 2050 and for each subsequent calendar year to at least 80% less than the level of those emissions in 2007, and (v) by such other amounts as determined under the Greenhouse Gas Reduction Targets Act."

1.1 Please provide an estimate of FBC's electricity portfolio GHG emissions as they were in 2007, 2012, 2016 and for each year in 2017 and thereafter?

Response:

The table below provides an estimate of FBC's electricity portfolio GHG emissions for 2012, 2016 and each year thereafter. FBC's GHG emissions for 2007 are not available. The values are the estimated GHG emissions from imported electricity as reported to the BC Ministry of Environment.

Year	GHG Emissions (tonnes CO2e)
2007	Not Available
2012	72,946
2016	42,217
2017	59,411
2018	77,202
2019	55,680
2020	38,918

2. Reference: Exhibit B-1, Section 2.3.6, p. 49

"Should an emerging use, such as EVs for example, be shown to have a unique usage profile that impacts costs, the Company may need to consider rate options that reflect such new or changing electricity use by its customers. By designing and pricing rates on a cost basis, any benefits or incremental costs that result from the widespread adoption of new technologies will predominantly accrue to those customers that choose to participate without unduly impacting the rates of other customers."

2.1 Please comment on whether residential time-of-use rates designed to encourage EVs to charge in non-peak periods of the day are contemplated by FortisBC?

<u>Response:</u>

Please refer to the response to BCUC IR1 37.1.

3. Reference: Exhibit B-1, Section 2.5.3, p. 73

"The base case, as shown below, is based on the cost of the weighted average of known FEI RNG supply contracts as of 2020 plus an inflation rate of 2 percent annually for each forecasted year. FBC notes that both price forecasts do not include the potential of other forms of renewable gases, such as green hydrogen, which may be acquired at different prices than RNG. These other forms of renewable gases could potentially be acquired at lower prices, which would have the effect of lowering the future RNG total portfolio cost."

3.1 Please provide the weighted average of known FEI RNG supply contracts as of 2020? Please explain the reference to "known" FEI RNG supply contracts and explain the differences, if any, from committed or contract FEI RNG supply?

Response:

Please refer to the response to BCUC IR1 2.1. In the context of the preamble to the IR above, "known" has the same meaning as "contracted" RNG supply.

3.2 Please provide the RNG blend of FEI's current portfolio? Please provide the RNG blend of FEI's planned portfolio in 2030 and 2040?

Response:

RNG currently makes up 100 percent of FEI's renewable gas supply portfolio. The *Greenhouse Gas Reduction (Clean Energy) Regulation* (GGRR) enables FEI to acquire hydrogen, lignin and synthesis gas, in addition to RNG. FEI currently forecasts that by 2030 RNG will continue to make up more than 50 percent of FEI's renewable gas supply portfolio. By 2040 and beyond, as other forms of renewable gas and low-carbon fuels develop at scale, the share of RNG in FEI's renewable gas supply portfolio will likely constitute less than 50 percent.

3.3 Please provide forecasts of the blend targets of FEI gas sales from RNG supply and the blend targets of FEI gas sales from "other forms of renewable gases, such as green hydrogen"? Is there a portfolio standard for RNG supply established by the GGRR or any other regulation?

Response:

Please refer to the response to ICG IR1 3.2 for the blend targets of FEI gas sales from renewable gases. Currently, there is no portfolio standard in BC that prescribes blend targets of gas sales from RNG supply or from other forms of renewable gases such as green hydrogen.

3.4 Please comment on the advantages and disadvantages of FBC entering into RNG supply contracts directly with producers for the two RNG fueled SCGT plants in Portfolio C3?

Response:

To source RNG supply for the RNG-fueled SCGT plants, FBC could purchase the RNG from FEI through its Renewable Gas Program or contract for RNG supply directly with an RNG producer or producers.

FBC expects that securing the RNG from FEI would be the optimal solution. This option would take advantage of FEI's existing Renewable Gas Program and portfolio of renewable gas contracts which would result in reliable supply.

FBC sees no advantage to acquiring the RNG directly itself, as FBC would not anticipate more secure delivery of supply nor a better price than purchasing it from FEI. This option would also have the disadvantages of being more costly to develop and would require more lead time associated with entering into a contract for available and sufficiently reliable supply.

3.5 Are all known RNG supply contracts capped at $30 per GJ?

Response:

Under the GGRR, FEI's RNG supply contracts are capped at $30 per GJ for purchases and production up to March 31, 2021, and are capped at $31 per GJ then escalated by BC CPI for each year thereafter, for purchases and production after March 31, 2021.

4. Reference: Exhibit B-1, Section 2.5.3, p. 73

"As FBC is filing this LTERP at a time so close to the new GGRR amendment, the future impact of these different forms of renewable gas has not been modelled for this LTERP. The forecast, therefore, relies upon the current range of expected RNG costs of between about $20 to $30 per GJ over the planning horizon."

4.1 Please provide sensitivity analysis for Portfolios C3, B2 and C4 under different RNG cost assumptions, for example, an expected RNG cost of $20 and $30 per GJ?

Response:

The expected RNG costs of between about $20 and $30 per GJ over the planning horizon refers to the "Low" and "Base" RNG price forecast scenarios, respectively, as shown on page 10 of Appendix E. FBC used the higher "Base" RNG price forecast for all portfolio scenarios presented. RNG costs are only used to determine the marginal cost of dispatch associated with RNG SCGT resources. Portfolio C4 does not include any RNG resources; therefore, the RNG related cost impact for portfolio C4 is zero.

Portfolios C3 and B2 select the RNG SCGT resources for capacity purposes and these RNG SCGT resources would be dispatched to provide energy in the peak hours of the year. As the RNG SCGT resources are not a cost-effective form of energy relative to alternative energy sources in the portfolio (such as market energy), the use of the RNG price forecast "Base" or "Low" is not anticipated to have a material impact on the dispatch of portfolios C3 or B2. Given the relatively higher cost of energy, the RNG SCGT resources are economically incented to minimize their dispatch in either price scenario.

As shown in the response to BCUC IR1 29.7, the greatest model dispatch occurs in portfolio C3 later in the planning horizon and results in an RNG volume of slightly less than 100,000 GJ annually. Therefore, the annual difference in costs of $20 and $30 per GJ for RNG SCGT units requiring 100,000 GJ annually is approximately $1 million, which is the equivalent of having slightly less than a $1 per MWh impact on the LRMC of portfolio C3.

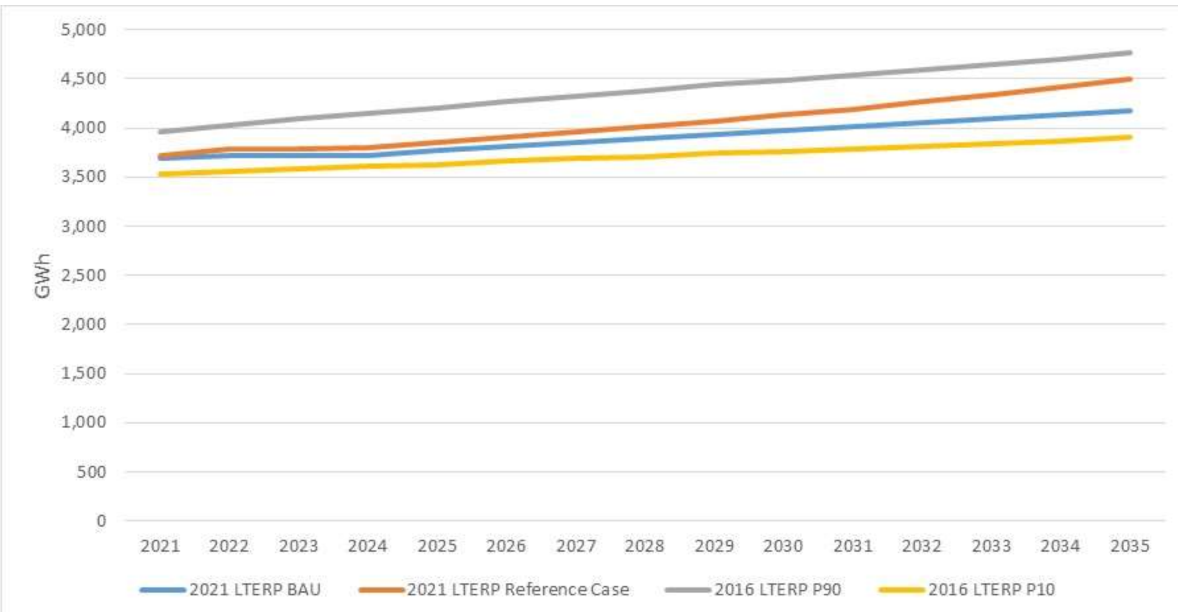
5. Reference: Exhibit B-1, Section 3.4, Load Forecast Summary, Figures 3-3, 3-4 and 3.5, pp. 86-88

5.1 Please provide figures which compare the 2021 LTERP BAU and Reference Case forecasts against the P10, Reference and P90 forecast from the FBC 2016 LTERP.

Response:

The figure below shows the 2021 LTERP BAU, 2021 LTERP Reference Case, 2016 LTERP P90 and 2016 LTERP P10 load forecasts from 2021 to 2035.

FBC notes that the current BAU and Reference Case load forecasts are both well centered between the P10 and P90 limits from the 2016 LTERP load forecast.



6. Reference: Exhibit B-1, Section 8.1, DSM Levels, Table 8-1, pp. 151-152

"The fact that FBC had below-target energy savings in recent program results indicates that it may not be readily feasible to achieve higher levels of DSM."

6.1 Please explain why the Low DSM Scenario does not have incremental savings compared to the Base DSM Scenario?

Response:

The Low DSM Scenario represents a DSM Scenario having incentive levels, participation, and energy savings below that of the Base DSM Scenario. Thus, the Low DSM Scenario did not have any incremental savings compared to the Base DSM Scenario.

6.2 Please provide a comparison table of expected (or forecast) energy savings versus actual energy savings by DSM program and by year since 2017?

Response:

The following tables provide a comparison of the approved Expenditures Plans' expected energy savings versus actual energy savings by DSM program and by year since 2017. For 2021, actual energy savings are not yet known and so a comparison to the latest forecast has been provided. Program area names were changed in FBC's 2019-2022 DSM Plan from those used in 2017 and 2018.

Program	Annual Energy Savings (MWh)			
	2017 Approved Plan	2017 Actual	2018 Approved Plan	2018 Actual
Residential Total	7,755	10,154	5,903	5,157
Home Renovation Rebate	364	187	301	225
Behavioural	3,097	20	240	67
Rental	508	295	306	87
Heat Pump Water Heaters	17	12	38	38
Appliances	126	494	215	303
Lighting	2,735	8,125	3,337	3,255
Heat Pumps	781	976	1,297	1,127
New Home Program	126	45	169	54
Low Income Total	2,739	693	1,229	687
Low Income Housing	2,739	693	1,229	687

Program	Annual Energy Savings (MWh)			
	2017 Approved Plan	2017 Actual	2018 Approved Plan	2018 Actual
Commercial Total	13,666	16,115	19,165	23,943
Lighting	10,592	12,580	13,620	17,635
Sm Business Direct Install	0	2,634	0	3,224
Building Improvement	2,931	605	5,290	1,763
Irrigation	144	59	255	249
MURB New Construction	0	237	0	1,073
Industrial Total	1,556	876	1,188	1,615
Industrial Efficiency	1,556	876	1,188	1,615
Total	25,715	27,838	27,486	31,402

Program	Annual Energy Savings (MWh)			
	2019 Approved Plan	2019 Actual	2020 Approved Plan	2020 Actual
Residential Total	6,037	6,501	5,625	7,202
Home Renovation	3,264	3,227	3,916	3,551
New Home	340	112	439	251
Lighting	2,284	3,141	1,122	3,401
Rental Apartment	148	21	148	0
Low Income Total	1,213	1,349	1,214	796
Self Install (ESK)	249	527	249	287
Direct Install (ECAP)	891	636	881	224
Social Housing Support	72	186	83	285
Commercial Total	15,542	14,963	15,467	11,150
Commercial Custom	4,428	6,588	5,346	3,554
Commercial Prescriptive	11,114	8,375	10,121	7,596
Industrial Total	10,037	2,978	10,007	6,795
Industrial Custom	8,226	1,868	8,226	4,491
Industrial Prescriptive	1,811	1,110	1,781	2,304
Supporting Initiatives	-	-	-	209
Total	32,828	25,791	32,312	26,152

Program	Annual Energy Savings (MWh)	
	2021 Approved Plan	2021 Forecast
Residential Total	5,951	7,770
Home Renovation	4,267	3,550
New Home	571	220
Lighting	965	4,000
Rental Apartment	148	0
Low Income Total	1,216	513
Self Install (ESK)	249	59
Direct Install (ECAP)	872	216
Social Housing Support	95	238
Commercial Total	15,291	12,533
Commercial Custom	6,048	5,689
Commercial Prescriptive	9,243	6,844
Industrial Total	10,114	9,022
Industrial Custom	8,226	6,238
Industrial Prescriptive	1,888	2,784
Supporting Initiatives	-	-
Total	32,572	29,838

7. Reference: Exhibit B-1, p. 214 and p. 217, and Table 10-3, p. 169 (also Appendix K, Table K2-1), and Appendix K, 2.2.4, p. 10

"The LRB presented in Section 9 of this LTERP indicates that new supply-side resources other than market energy purchases are not required until at least 2030 based on existing resources and committed contracts, the Reference Case load forecast, current market energy conditions and the proposed level of DSM. However, actual load requirements and DSM program uptake by customers may not match the forecasts, meaning that resources may be needed sooner or later than expected. As part of its ongoing resource planning activities, FBC will continue to assess the LRB on a periodic basis to see if any changes in resources might be required."

"Given that no new supply-side resources are required before 2030, FBC expects that it would submit its next LTERP in approximately five years from the submission date of this LTERP, in 2026. This would provide FBC with enough lead-time to assess the load drivers and load forecast, updated LRB, assess transmission and distribution requirements and DSM and available supply-side resource options and costs before any new resources may be required after 2030. If FBC's periodic assessment of the LRB indicates the need for new resources sooner than contemplated in this LTERP or if FBC's access to market energy changes such that it is no longer reliable or cost effective, FBC would likely submit a LTERP or supplemental update filing sooner than five years from the submission of this LTERP in order to meet the LTERP objectives in the interests of its customers."

"Development and permitting lead times are an important consideration in the planning process because, for most projects, the lead time could be a minimum of 4 years, and up to 8 years for complex projects."

7.1 Please explain the reference to "development" in the quote above? Does "development" include engineering, cost estimates, risk assessment, and other pre-permitting tasks? Do the lead times provided in Table 10-3 include "development"?

<u>Response:</u>

FBC confirms that "development" includes engineering, cost estimates, risk assessment, and other pre-permitting tasks. The lead times in Table 10-3 include "development".

7.2 Please provide the available lead time for the new resources that may be required by 2030, assuming a submission date of the LTERP, in 2026 and a decision date one year later. Given the lead times identified in Table 10-3 and the submission date of the next LTERP, in 2026, please identify all resource options found in Table 10-3 that have a short enough lead time to meet the forecast supply-side resources that may be required by 2030?

Response:

Please refer to the response to CEC IR1 57.1.

7.3 Given Footnote 187 explanation of the lead times in Table 10-3 - "permitting and construction time", please provide separate line items for the permitting and construction times for each resource option and provide further details of the "permits" that FBC expects to obtain within the lead times and before construction begins? For example, does FortisBC expect to obtain all regulatory approvals, including BCUC approval, and complete First Nations consultation and accommodation during the lead times provided in Table 10-3? If not, for the resource options included in Portfolios C3, B2 and C4 please 1) revise the lead times in Table 10-3 to include regulatory approvals and First Nations consultation and accommodation, and 2) (based on the revised lead times) provide the expected filing date of the next LTERP in order to meet an in-service date of 2030?

Response:

FBC expects to obtain all regulatory approvals, including BCUC approval, and complete Indigenous consultation and accommodation during the lead times provided in Table 10-3. These lead times were developed as part of the collaboration with BC Hydro on its updating of its Resource Options Inventory through external consultants and consultations with subject matter experts; however, FBC does not have specific details behind the development of these estimates.

Permitting is project specific, and the permitting process for a project will depend on both the size of the project and the ownership of the land. Larger projects may require a Federal environmental assessment (EA) process, while smaller projects may be reviewed under the Provincial EA process. Fee simple land, Provincial Crown land, Reserves with a land code, and Reserves without a land code may each require a different assessment process.

In 2016, the Province provided guidance on the permitting of clean energy projects in the booklet *Clean Energy Production in BC, An Inter-Agency Guidebook for Project Development*.[1] Although that guidance needs to be updated to reflect subsequent changes in the permitting process, it

[1] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/natural-resource-use/land-water-use/crown-land/land-use-plans-and-objectives/natural-resource-major-projects/major-projects-office/guidebooks/clean-energy-projects/clean_energy_guidebook.pdf

does provide an indicative overview of the permitting process for various clean energy generation technologies.

It is FBC's understanding that BC's independent power producer industry has already secured lands and conducted early development and permitting on many of the more viable renewable energy projects in BC, and some of these projects may already be "shovel ready". Procuring power from these projects may reduce the timelines required.

7.4 Please comment on the lead times necessary to procure RNG for the two RNG supplied SCGT plants in Portfolio C3? Do the lead times in Table 10-3 account for the lead times necessary to procure RNG for the two RNG supplied SCGT plants in Portfolio C3?

Response:

Please refer to the response to ICG IR1 3.4 for FBC's options to source RNG supply for the supply for the two RNG-fueled SCGT plants. The optimal option for FBC would be to acquire RNG supply from FEI's Renewable Gas program.

Procurement for RNG would include successful application to be a customer under the FEI RNG tariffs (currently Rate Schedules 3B, 5B and 11B for non-residential customers), which have recently reopened for customers. As FEI is continually adding new RNG to its portfolio, FBC expects it would be able to secure the limited amount of RNG it would require for an SCGT plant with no additional lead time than that indicated in Table 10-3.

8. Reference: Exhibit B-1, Appendix O, Guidehouse Pathways Study, p. 27

"Renewable gases are a major target for innovation and can play a vital role in the future of the natural gas industry. RNG, hydrogen, and synthetic methane all have great potential for the province. BC has the potential to be a major producer of RNG given its large forestry industry, which produces a large amount of woody biomass. Technical advancements are needed to more efficiently convert wood biomass waste to RNG, and researchers and organizations are identifying recommendations for technological improvement. Assuming this technology meets its potential in the coming years, BC's RNG production potential could be 90 PJ per year, representing almost half of the natural gas currently delivered by FortisBC. (emphasis added)"

8.1 Please provide the volumes and prices expected of RNG from biomass waste?

<u>Response:</u>

The volume and prices of RNG from biomass waste are not known with certainty at this time. RNG from wood biomass feedstock is not yet a mainstream 'off-the-shelf' technology. The overall pathway including resource availability, feedstock supply chain, and technology application needs to mature, with some demonstration projects being built and evaluated before the full technical potential can be realized. Therefore, FEI has not provided a definitive forecast that specifically indicates prices or volumes of RNG derived from wood biomass. However, any RNG from wood biomass that FEI acquires would be within the RNG maximum price and volume limits of the GGRR.

FBC is agnostic as to the source of RNG to meet its requirements provided the RNG meets the definition of a low carbon fuel as expected.

8.2 Please comment on whether the cost of RNG from conversion of wood biomass waste to RNG is included in the price forecast of RNG?

<u>Response:</u>

Please refer to the response to ICG IR1 8.1.

8.3 Please provide further details of the "technical advancements [that] are needed to more efficiently convert wood biomass waste to RNG"?

Response:

Please refer to the response to ICG IR1 8.1.

8.4 Please comment on whether "technical advancements" will be required to supply the RNG assumed in Portfolios C3, B2, and C4?

Response:

FEI's RNG forecast is not dependent upon technical advancement required for wood-to-RNG.

8.5 Please provide FBC rationale for assuming adequate RNG supply under its preferred portfolio?

Response:

FBC expects FEI to acquire enough RNG over the planning horizon to adequately supply FBC's preferred portfolio.

This part of the response has been provided by FEI:

FEI has made significant progress in increasing contracted RNG supply for future deliveries beyond 2021. As of the fourth quarter in 2021, FEI has twenty seven biomethane supply agreements that have been approved by the BCUC. These projects are located in BC, outside BC, and outside Canada and are expected to supply a total volume of RNG of approximately 10 petajoules (PJ) per year with a potential maximum RNG supply volume of approximately 13 PJ annually once these biomethane facilities are fully operational in 2025-26. FEI also expects to begin pilot and pre-commercial stage projects using alternate forms of renewable gas allowed under the GGRR, and expects to increase supply from these alternate forms of renewable gas, which will add to the total amount of renewable gas available. As a result of increased existing supply diversity and the fact FEI continues to acquire RNG from suppliers in BC and from suppliers across North America, FEI's has considerable confidence in its forecast of the expected amount of RNG supply. By 2032, FEI expects its RNG portfolio to have in excess of 40 PJ of renewable gas with a continued upward trajectory.

As discussed in Section 11.3.8, the estimated RNG usage for the two SCGT plants in the preferred portfolio is about 0.75 PJ total demand between 2031 and 2040, which is less than two percent of the available expected supply.