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May 16, 2022

Residential Consumer Intervener Association
c/o Midgard Consulting Inc.
Suite 828 – 1130 W Pender Street
Vancouver, B.C.
V6E 4A4

Attention: Mr. Peter Helland, Director

Dear Mr. Helland:

Re: FortisBC Energy Inc. (FEI)

Revised Renewable Gas Program Application – Stage 2 (Application)

Response to the Residential Consumer Intervener Association (RCIA) Information Request (IR) No. 1

On December 17, 2021, FEI filed the Application referenced above. In accordance with the amended regulatory timetable established in British Columbia Utilities Commission Order G-103-22, FEI respectfully submits the attached response to RCIA IR No. 1.

FEI has retained John J. Reed, Chairman and Chief Executive Officer of Concentric Energy Advisors, Inc. (Concentric), to provide his independent, expert opinion in response to a number of IRs related to ratemaking principles and FEI's proposed pricing of Renewable Gas services in the Application. Please refer to the attachment to the cover letter to FEI's response to BCUC IR No. 1 for a copy of the resume and testimony list of John J. Reed. In accordance with Section 14.02(e) of the BCUC's *Rules of Practice and Procedure*, FEI has identified the responses provided by Concentric.

For convenience and efficiency, FEI has occasionally provided an internet address for referenced reports instead of attaching lengthy 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:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

APPLICATION SECTION 2: PROGRAM HISTORY AND EVALUATION

1.0 Reference: Exhibit B-11, Stage 2 Application, Page 14

Section 2.1 – Program Origin and Development

At the above noted location FEI states:

"During the period following the 2013 Decision until January 2015, the BERC rate increased from $11.696 per GJ to $14.414 per GJ by the end of 2014. By this time, it was apparent to FEI that the BERC rate had increased to a level that discouraged enrollment in the program and had the potential to result in costs from unsold biomethane not being recovered from the voluntary program participants. In response to this market signal, FEI concluded that the price setting mechanism of the program needed to be adapted to suit market conditions. More specifically, RNG had to be sold at a price customers were willing to pay, otherwise much of the volume of RNG purchased by FEI would go unsold, and therefore, the reduction in GHG emissions enabled by the program would go unfulfilled."

1.1 Please discuss accuracy of the statement that initial voluntary purchasers paid the actual costs of the Biomethane program, but that when the program expanded to the volumes being purchased as of the end of 2014, the number of voluntary purchasers willing to pay actual costs of the biomethane program had been exhausted?

Response:

It is not entirely accurate to say that at the end of 2014 the number of consumers willing to pay actual costs of the existing RNG Program had been "exhausted" at the time.

In particular, the willingness of participants to pay for RNG appears to be more related to the price differential between conventional natural gas and RNG, as opposed to the cost of RNG in isolation. The existing RNG Program experienced a persistent, upward trend in net customer additions from its launch until 2014. Over the course of 2014 into 2015, the cost of conventional natural gas decreased, while the cost of RNG increased slightly over the same period. As a result, the premium paid for RNG increased from $6.93 as of January 2014 to $10.44 as of December 2015. This resulted in a decline in monthly residential additions, as customers appear to have felt the cost differential between conventional natural gas and RNG was too great to justify paying for the associated benefits.

For clarity, between 2014 and 2015, the actual volume of RNG purchased by FEI did not increase significantly. Please refer to the response to CEC IR1 8.1.

1.2 Please confirm that as the volumes of biomethane being purchased by FEI increased, the marginal cost of biomethane increased?

a) If not confirmed, please provide the relationship between volume of biomethane purchased and marginal cost.

Response:

Not confirmed. The cost of biomethane is not necessarily correlated with the associated volume. Costs of biomethane may depend upon market factors, such as the pricing offered by other off-takers, the cost of developing the project, taking into consideration the associated required return by investors and inflation of project costs. Downward pressure on the cost of biomethane is typically correlated to the volume. That is, larger projects tend to result in a lower cost per gigajoule.

As the Renewable Gas production market grows in line with demand, FEI expects that technological advances will lower production costs.

1.3 Why did FEI not change or limit the blend of biomethane and natural gas to reduce the pricing for the voluntary program participants so that all the purchased biomethane cleared the market?

Response:

The pricing mechanism for biomethane was established through various proceedings before the BCUC, as outlined in Section 2 of the Application. When FEI reached the conclusion described in the preamble, it submitted an application to the BCUC to reduce the pricing for program participants to encourage the clearing of all purchased biomethane in the market. This change had the intended effect, as described in the FEI Biomethane Energy Recovery Charge (BERC) Rate Assessment Report, filed August 12, 2020 in compliance with Order G-133-16 (2020 BERC Rate Report).

2.0 Reference: Exhibit B-11, Stage 2 Application, Page 18

Section 2.2.2 – Changes to the BERC Rate to Restore Program Growth

At the above noted location FEI states:

"Growth in customer enrolments in the Renewable Gas Program was steady following its launch in 2011; however, by the beginning of 2014, the program began experiencing a challenge to its continued success. As of January 2014, the rate of new enrolments dropped from approximately 200 customers per month to approximately 20 customers per month (a 90 percent decline in new enrolments). As of January 2015, the program's total number of participants began declining from month to month. As FEI described in its 2015 BERC Application, the premium paid for Renewable Gas over conventional gas had increased to the point of discouraging voluntary customers from enrolling in the Renewable Gas Program. In that application, FEI provided feedback from large volume customers that the BERC rate was too high to consider increasing their purchase volumes. As a result, FEI filled its 2015 BERC Application requesting approval from the BCUC to change the BERC rate setting methodology in order to address declining program enrolments due to the apparent price sensitivity of customers. FEI's request was approved, and in its 2016 Decision the BCUC identified three overarching objectives that guided its reasoning in approving the revised BERC methodology:

1. *Maximize the recovery of program costs from RNG customers;*
2. *Manage biomethane inventory; and*
3. *Establish a BERC rate setting mechanism that is robust, effective, and provides regulatory efficiency."*

2.1 Please indicate what FEI believes to be the price elasticity of demand for Renewable Gas? Please present the information in a table showing the expected volume of demand relative to specific prices.

Response:

Please refer to Section 5.8 of the Application. FEI has no further information on the price elasticity of demand for Renewable Gas.

2.2 Please comment on how the price elasticity of demand for renewable natural gas has changed over the past ten years.

Response:

Please refer to the response to RCIA IR1 2.1.

2.3 Please indicate what FEI believes to be the price elasticity of demand for natural gas? Please present the information in a table showing the expected volume of demand relative to specific prices.

Response:

FEI relies on third party studies for its elasticity assumptions. In 2019, FEI retained the services of the Posterity Group to advise FEI on the values to use for price elasticity for natural gas demand for its load forecasting. The Posterity Group conducted an extensive literature search of fuel and sector specific price elasticity of demand values and recommended the following values:

Table 1: Natural Gas Short Run and Long Run Elasticity Values

	Short Run (SR) Values			Long Run (LR) Values		
	SR Min	**SR Reference Case**	**SR Max**	**LR Min**	**LR Reference Case**	**LR Max**
Residential	-0.030	-0.278	-0.670	-0.100	-0.380	-0.880
Commercial	-0.055	-0.205	-0.530	-0.125	-0.350	-0.990
Industrial	-0.067	-0.709	-3.680	-0.142	-0.700	-0.700

The reference values in the above table are from the elasticity values for natural gas by sector provided by the State of Washington's Department of Commerce while the minimum and maximum values are based on an extensive literature review of various elasticity studies. The reference case indicates an increase in price elasticity of natural gas compared to previous assumptions.[1]

Price elasticity is represented numerically and calculated as the percent change in quantity demand divided by the percent change in price. A value of >1 is considered "elastic", as the change in quantity demanded is greater than the change in price. A value of <1 is considered "inelastic", as the change in quantity demanded is less than the change in price.

For instance, a long-term residential price elasticity of -0.38 in the reference case means that for every one percent increase in natural gas price, the demand may fall by 0.38 percent.

[1] In the 2016 LTGRP the residential price elasticity was assumed to be at -0.2.

2.4 Has FEI considered how demand for natural gas may be impacted by the higher nominal cost that will be passed through to non-RG consumers based upon the proposed RG cost recovery mechanisms proposed in this filing?

a) If yes, please provide details.

b) If not, why not.

Response:

Note that under the proposed Renewable Gas Program, all of FEI's sales customers will be Renewable Gas consumers, receiving and paying for Renewable Gas to varying degrees.

As part of this Application, FEI has not considered how the demand for conventional natural gas may be impacted by the inclusion of increasing volumes of Renewable Gas in the gas supply mix. It is difficult to assess how demand for conventional natural gas will be impacted as FEI starts to decarbonize its gas supply. In particular, demand is a function of a complex number of factors which include base drivers such as population growth, household formation, the price of conventional natural gas and the price of other fuels, changing policy environment and the changing costs of energy consuming equipment from innovation and changing market conditions. FEI describes various scenarios regarding the long term demand for gas in its 2022 Long-Term Gas Resource Plan.

2.5 From 2010 to 2022, please provide a graph and table showing both the annual price of renewable gas and of conventional gas (and noting the premium paid for Renewable Gas).

Response:

Please refer to the requested graph and table below. Note the revised BERC rate was implemented in October 2016.

Figure 1: CCRC Rate, RNG rate, and RNG Premium from 2010 to 2022

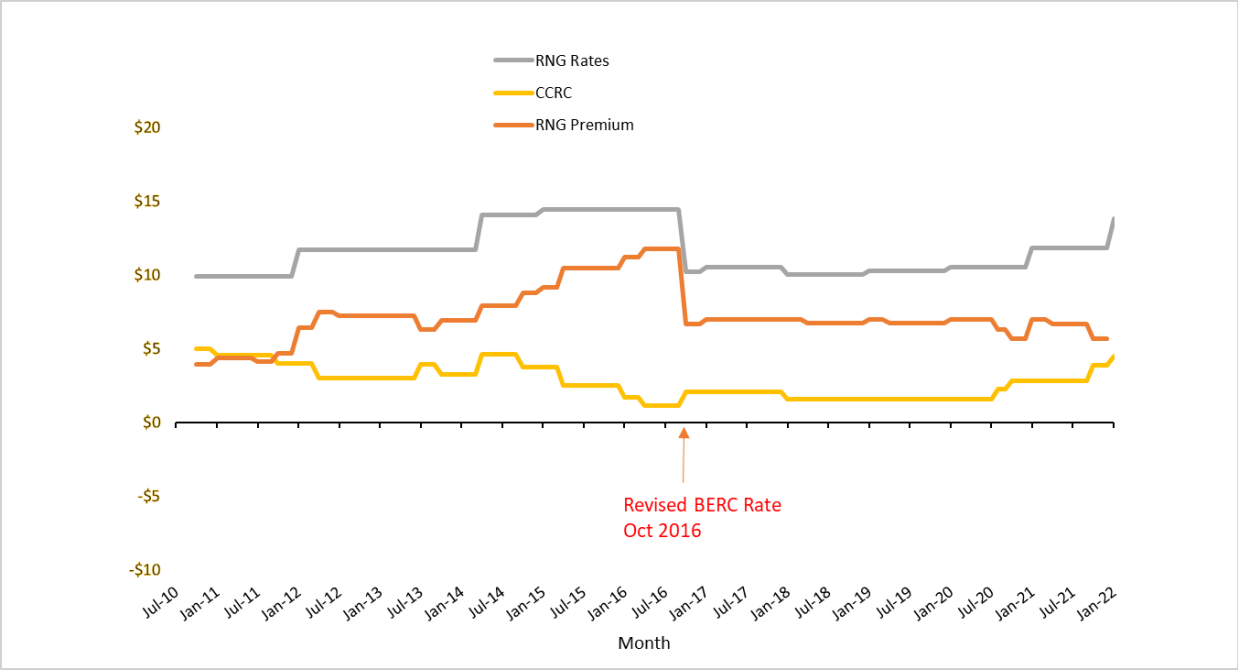


Table 1: RNG rate, Carbon Tax, CCRC Rate, and RNG Premium from 2010 to 2022

Date	RNG Rate	Carbon Tax	CCRC	RNG Premium
10-Oct	$9.90	$0.99	$4.98	$3.93
10-Nov	$9.90	$0.99	$4.98	$3.93
10-Dec	$9.90	$0.99	$4.98	$3.93
11-Jan	$9.90	$0.99	$4.57	$4.34
11-Feb	$9.90	$0.99	$4.57	$4.34
11-Mar	$9.90	$0.99	$4.57	$4.34
11-Apr	$9.90	$0.99	$4.57	$4.34
11-May	$9.90	$0.99	$4.57	$4.34
11-Jun	$9.90	$0.99	$4.57	$4.34
11-Jul	$9.90	$1.24	$4.57	$4.09
11-Aug	$9.90	$1.24	$4.57	$4.09
11-Sep	$9.90	$1.24	$4.57	$4.09
11-Oct	$9.90	$1.24	$4.01	$4.66
11-Nov	$9.90	$1.24	$4.01	$4.66
11-Dec	$9.90	$1.24	$4.01	$4.66
12-Jan	$11.70	$1.24	$4.01	$6.45
12-Feb	$11.70	$1.24	$4.01	$6.45
12-Mar	$11.70	$1.24	$4.01	$6.45
12-Apr	$11.70	$1.24	$2.98	$7.48
12-May	$11.70	$1.24	$2.98	$7.48

Date	RNG Rate	Carbon Tax	CCRC	RNG Premium
12-Jun	$11.70	$1.24	$2.98	$7.48
12-Jul	$11.70	$1.49	$2.98	$7.23
12-Aug	$11.70	$1.49	$2.98	$7.23
12-Sep	$11.70	$1.49	$2.98	$7.23
12-Oct	$11.70	$1.49	$2.98	$7.23
12-Nov	$11.70	$1.49	$2.98	$7.23
12-Dec	$11.70	$1.49	$2.98	$7.23
13-Jan	$11.70	$1.49	$2.98	$7.23
13-Feb	$11.70	$1.49	$2.98	$7.23
13-Mar	$11.70	$1.49	$2.98	$7.23
13-Apr	$11.70	$1.49	$2.98	$7.23
13-May	$11.70	$1.49	$2.98	$7.23
13-Jun	$11.70	$1.49	$2.98	$7.23
13-Jul	$11.70	$1.49	$3.91	$6.29
13-Aug	$11.70	$1.49	$3.91	$6.29
13-Sep	$11.70	$1.49	$3.91	$6.29
13-Oct	$11.70	$1.49	$3.27	$6.93
13-Nov	$11.70	$1.49	$3.27	$6.93
13-Dec	$11.70	$1.49	$3.27	$6.93
14-Jan	$11.70	$1.49	$3.27	$6.93
14-Feb	$11.70	$1.49	$3.27	$6.93
14-Mar	$11.70	$1.49	$3.27	$6.93
14-Apr	$14.07	$1.49	$4.64	$7.94
14-May	$14.07	$1.49	$4.64	$7.94
14-Jun	$14.07	$1.49	$4.64	$7.94
14-Jul	$14.07	$1.49	$4.64	$7.94
14-Aug	$14.07	$1.49	$4.64	$7.94
14-Sep	$14.07	$1.49	$4.64	$7.94
14-Oct	$14.07	$1.49	$3.78	$8.79
14-Nov	$14.07	$1.49	$3.78	$8.79
14-Dec	$14.07	$1.49	$3.78	$8.79
15-Jan	$14.41	$1.49	$3.78	$9.14
15-Feb	$14.41	$1.49	$3.78	$9.14
15-Mar	$14.41	$1.49	$3.78	$9.14
15-Apr	$14.41	$1.49	$2.49	$10.44
15-May	$14.41	$1.49	$2.49	$10.44
15-Jun	$14.41	$1.49	$2.49	$10.44
15-Jul	$14.41	$1.49	$2.49	$10.44
15-Aug	$14.41	$1.49	$2.49	$10.44
15-Sep	$14.41	$1.49	$2.49	$10.44
15-Oct	$14.41	$1.49	$2.49	$10.44
15-Nov	$14.41	$1.49	$2.49	$10.44

Date	RNG Rate	Carbon Tax	CCRC	RNG Premium
15-Dec	$14.41	$1.49	$2.49	$10.44
16-Jan	$14.41	$1.49	$1.72	$11.21
16-Feb	$14.41	$1.49	$1.72	$11.21
16-Mar	$14.41	$1.49	$1.72	$11.21
16-Apr	$14.41	$1.49	$1.14	$11.78
16-May	$14.41	$1.49	$1.14	$11.78
16-Jun	$14.41	$1.49	$1.14	$11.78
16-Jul	$14.41	$1.49	$1.14	$11.78
16-Aug	$14.41	$1.49	$1.14	$11.78
16-Sep	$14.41	$1.49	$1.14	$11.78
16-Oct	$10.21	$1.49	$2.05	$6.67
16-Nov	$10.21	$1.49	$2.05	$6.67
16-Dec	$10.21	$1.49	$2.05	$6.67
17-Jan	$10.54	$1.49	$2.05	$7.00
17-Feb	$10.54	$1.49	$2.05	$7.00
17-Mar	$10.54	$1.49	$2.05	$7.00
17-Apr	$10.54	$1.49	$2.05	$7.00
17-May	$10.54	$1.49	$2.05	$7.00
17-Jun	$10.54	$1.49	$2.05	$7.00
17-Jul	$10.54	$1.49	$2.05	$7.00
17-Aug	$10.54	$1.49	$2.05	$7.00
17-Sep	$10.54	$1.49	$2.05	$7.00
17-Oct	$10.54	$1.49	$2.05	$7.00
17-Nov	$10.54	$1.49	$2.05	$7.00
17-Dec	$10.54	$1.49	$2.05	$7.00
18-Jan	$10.04	$1.49	$1.55	$7.00
18-Feb	$10.04	$1.49	$1.55	$7.00
18-Mar	$10.04	$1.49	$1.55	$7.00
18-Apr	$10.04	$1.74	$1.55	$6.75
18-May	$10.04	$1.74	$1.55	$6.75
18-Jun	$10.04	$1.74	$1.55	$6.75
18-Jul	$10.04	$1.74	$1.55	$6.75
18-Aug	$10.04	$1.74	$1.55	$6.75
18-Sep	$10.04	$1.74	$1.55	$6.75
18-Oct	$10.04	$1.74	$1.55	$6.75
18-Nov	$10.04	$1.74	$1.55	$6.75
18-Dec	$10.04	$1.74	$1.55	$6.75
19-Jan	$10.29	$1.74	$1.55	$7.00
19-Feb	$10.29	$1.74	$1.55	$7.00
19-Mar	$10.29	$1.74	$1.55	$7.00
19-Apr	$10.29	$1.99	$1.55	$6.75
19-May	$10.29	$1.99	$1.55	$6.75

Date	RNG Rate	Carbon Tax	CCRC	RNG Premium
19-Jun	$10.29	$1.99	$1.55	$6.75
19-Jul	$10.29	$1.99	$1.55	$6.75
19-Aug	$10.29	$1.99	$1.55	$6.75
19-Sep	$10.29	$1.99	$1.55	$6.75
19-Oct	$10.29	$1.99	$1.55	$6.75
19-Nov	$10.29	$1.99	$1.55	$6.75
19-Dec	$10.29	$1.99	$1.55	$6.75
20-Jan	$10.54	$1.99	$1.55	$7.00
20-Feb	$10.54	$1.99	$1.55	$7.00
20-Mar	$10.54	$1.99	$1.55	$7.00
20-Apr	$10.54	$1.99	$1.55	$7.00
20-May	$10.54	$1.99	$1.55	$7.00
20-Jun	$10.54	$1.99	$1.55	$7.00
20-Jul	$10.54	$1.99	$1.55	$7.00
20-Aug	$10.54	$1.99	$2.28	$6.27
20-Sep	$10.54	$1.99	$2.28	$6.27
20-Oct	$10.54	$1.99	$2.84	$5.70
20-Nov	$10.54	$1.99	$2.84	$5.70
20-Dec	$10.54	$1.99	$2.84	$5.70
21-Jan	$11.83	$1.99	$2.84	$7.00
21-Feb	$11.83	$1.99	$2.84	$7.00
21-Mar	$11.83	$1.99	$2.84	$7.00
21-Apr	$11.83	$2.31	$2.84	$6.68
21-May	$11.83	$2.31	$2.84	$6.68
21-Jun	$11.83	$2.31	$2.84	$6.68
21-Jul	$11.83	$2.31	$2.84	$6.68
21-Aug	$11.83	$2.31	$2.84	$6.68
21-Sep	$11.83	$2.31	$2.84	$6.68
21-Oct	$11.83	$2.31	$3.84	$5.68
21-Nov	$11.83	$2.31	$3.84	$5.68
21-Dec	$11.83	$2.31	$3.84	$5.68
22-Jan	$13.81	$2.31	$4.50	$7.00

2.6 Was the change in willingness to pay the premium for RG over conventional gas driven by dis- economies of scale for RG, price changes in conventional gas (e.g. reductions in the perceived multiplier in RG costs vs conventional gas), or other factor? Please discuss.

Response:

FEI understands the question to be referring to the period in early 2015 when the program's total number of participants began declining from month-to-month. Please refer to the response to RCIA IR1 1.1.

2.7 How does FEI's forecast for conventional gas pricing affect FEI's outlook on customers' willingness to pay an increased price for RG?

Response:

FEI understands this question to be referring to the willingness of Voluntary Renewable Gas customers to pay an increased price for Renewable Gas, when compared to conventional natural gas service, and if the forecast for conventional natural gas affects this willingness to pay.

Please refer to Section 5.8 in the Application for a description of the challenges involved in determining customers' willingness to pay for Renewable Gas. FEI notes, however, that conventional natural gas prices have increased over the last year and customers are continuing to sign up for Renewable Gas.

3.0 Reference: Exhibit B-11, Stage 2 Application, Page 19-20

Section 2.2.2 – Changes to the BERC Rate to Restore Program Growth

At the above noted location FEI states:

"Similarly, in addition to growth in total customers, the volume of RNG sold and the total RNG revenues FEI earned after the implementation of the revised BERC rate increased. Figure 2-3 below shows how the annual sales volume of RNG increased from approximately 163 Terajoules (TJs) in 2016 (when the revised BERC rate was implemented) to approximately 315 TJs by the end of 2019. Moreover, Figure 2-4 below shows how FEI's total RNG revenues increased after the implementation of the revised BERC rate methodology over the same period."

Figure 2-3: Renewable Gas Program Annual Sales Volume

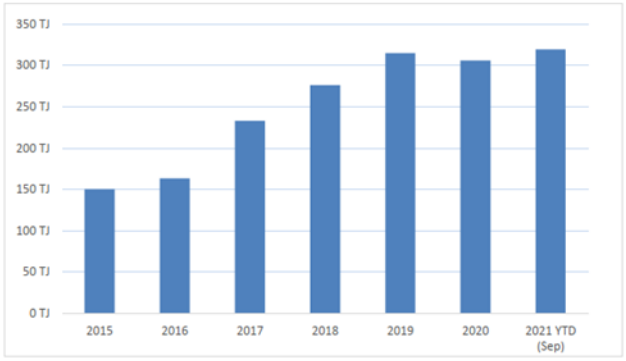
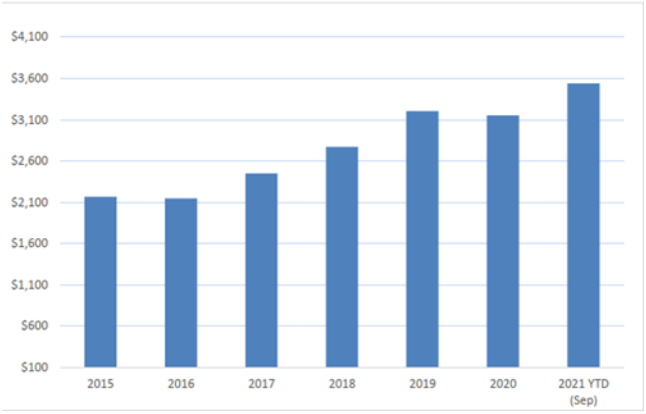


Figure 2-4: Renewable Gas Program Annual Sales Revenue[25]



3.1 What was the annual cost of the Renewable Gas commodity, and the annual total program cost, for the years 2015 through 2021 (YTD) (i.e. corresponding to the periods in Figure 2.3 and 2-4)?

Response:

FEI has set out in the following table the annual cost to acquire Renewable Gas (Total $000) including the volume acquired and the total acquisition cost per GJ.

Table 1: Renewable Gas Acquisition Cost

		2015	2016	2017	2018	2019	2020	2021
Direct RG Acqusition /Production Cost	$000	1,922	2,985	3,389	5,630	5,361	6,392	19,266
Direct RG Administration	$000	185	696	771	1,314	470	1,776	2,261
Total	$000	2,107	3,681	4,160	6,944	5,831	8,167	21,526
Purchase Volume	TJ	132.6	133.7	153.8	323.1	315.2	306.0	790.0
$/GJ	$/GJ	15.89	27.53	27.05	21.49	18.50	26.69	27.25

3.2 Please discuss the impact that having conventional gas as a substitute for Renewable Gas has on the willingness to pay for Renewable Gas.

Response:

FEI does not have robust analysis on customers' willingness to pay for Renewable Gas. However, based on the feedback presented in Appendices B-1 and B-2, views regarding the use of conventional natural gas as a substitute for Renewable Gas, and the associated cost considerations, likely varies by customer type and as between individual customers.

For example, customers without firm and committed GHG emission reduction targets, either internally adopted or imposed by regulations, or customers who do not feel strongly inclined to do something about climate change, may be more unwilling to voluntarily purchase Renewable Gas as the price spread between Renewable Gas and conventional gas increases. Conversely, FEI believes that customers who feel strongly about taking action on climate change, or those with firm and committed GHG emission reduction targets, are more likely to seek alternative forms of low carbon intensity energy, instead of reverting to conventional natural gas, as the price of Renewable Gas increases relative to the alternatives.

3.3 In municipalities with GHGi bylaws, given that electricity is the only substitute for Renewable Gas because conventional gas (or gas blends with small percentages of Renewable Gas) are not available options for new construction, please discuss the impact upon willingness to pay for Renewable Gas that are compliant with municipal bylaws?

Response:

Please refer to the response to BCUC IR1 13.7.

3.4 Has FEI estimated the price premium that ratepayers would be willing to pay for electricity versus Renewable Gas in cases where both fuels meet municipal GHGi bylaw requirements?

a) If yes, please provide details of the estimate and the methodology used to estimate the difference.

b) If no, please explain why not.

Response:

Please refer to the response to BCUC IR1 13.7.

4.0 Reference: Exhibit B-11, Stage 2 Application, Page 21

Section 2.2.2 – Changes to the BERC Rate to Restore Program Growth

At the above noted location FEI states:

"As evidenced by increased customer enrolments, volumes of RNG sold and associated revenues, the revised BERC rate methodology has proven successful in achieving the three objectives set out by the BCUC in its 2015 BERC Decision. In particular, FEI has generated RNG revenue to a degree that was not possible under the original BERC rate and was able to manage biomethane inventory without the need to transfer any cost of unsold biomethane to non-RNG customers."

4.1 Does FEI manage its Renewable Gas inventory by using gas storage? If not, why not?

Response:

Note that FEI's volume of RNG supply has been relatively limited in the past, and until 2021 FEI experienced a shortfall in supply versus customer demand. Therefore, storage has not been a significant consideration.

RNG inventories are not currently tracked through FEI's off-system and on-system storage facilities. Under the current regulatory constructs and business models, RNG and conventional natural gas volumes and their associated costs are tracked separately via different gas cost deferral accounts. RNG may be held as unsold inventory within one of these accounts (i.e., the BVA). The monthly activity, including inventory aging based on first-in, first-out (FIFO) methodology, is reported within the Fourth Quarter Gas Cost Report that FEI files with the BCUC annually. During the past two years, January 1, 2020 to December 31, 2021, the age of the RNG inventory has remained very low, usually between zero and 1 month, and at no time exceeding three months. The inventory quantity at December 31, 2020 was zero, and the inventory quantity at December 31, 2021 was approximately 209 TJ. FEI notes though that because RNG is the same molecule as natural gas, RNG can be stored and operate in the same way as conventional natural gas.

4.2 Why cannot designated Renewable Gas be stored from one time period to another?

Response:

RNG may be held in inventory from one time period to another. Please refer to the response to RCIA IR1 4.1. However, as discussed in the 2015 BERC Rate Methodology Application,[2] and BCUC Order G-133-16, unsold biomethane older than 18 months each year or greater than 250,000 GJ may be transferred out of the BVA to the Midstream Cost Reconciliation Account (MCRA) at the prevailing Commodity Cost Reconciliation Account (CCRA) rate on January 1 each year.

4.3 Please discuss how FEI currently uses storage to manage Renewable Gas inventories and deliveries.

Response:

Please refer to the response to RCIA IR1 4.1.

[2] Application for Approval of Biomethane Energy Recovery Charge Rate Methodology, August 28, 2015.

5.0 Reference: Exhibit B-11, Stage 2 Application, Page 21

Section 2.2.3 – Feedback from Program Participants

At the above noted location FEI states:

"Over the course of its 10 years in market, the Renewable Gas Program has gained the interest, acceptance, and satisfaction of customers. As an opt-in service offering for which program participants pay a premium over the price of conventional natural gas, customer satisfaction is a key metric that FEI considers to be indicative of overall program success."

5.1 How are program participants made aware of the cross-subsidization they are receiving from non- participants? Please provide details.

Response:

All of FEI's rates, including the BERC, are determined by the BCUC in public processes which canvass matters relevant to the setting of rates in detail, including the application of ratemaking principles. Once rates are approved by the BCUC, FEI considers that customers are more concerned with the end cost of their energy, rather than the justification of the underlying rate in accordance with ratemaking principles.

5.2 Based on the feedback program, what is the change in participant willingness to continue participating in the program if participants are required pay full costs of their participation?

Response:

FEI understands the statement "pay full costs of their participation" to mean that participants would pay for the full cost of Renewable Gas acquisition on a per GJ basis.

Please refer to Appendix B-1 of the Application which describes the responses FEI received in surveys pertaining to the existing Renewable Gas Program. In particular slides 27 and 28 describe the respondents' views with respect to the cost of Renewable Gas:

- Slide 27 demonstrates that the primary barrier to participation in the existing program is the cost of Renewable Gas. As of January 1, 2022, the commodity cost of conventional gas is $4.503/GJ, while the BERC rate (the cost of Renewable Gas) is $13.808/GJ.
- Slide 28 shows that the respondents indicated a reduction in their willingness to enroll in a Renewable Gas program as the price differential between conventional natural gas and Renewable Gas increases. FEI also received similar feedback from large volume customers, as described in Appendix B-2.

This feedback suggests that if participants were required pay the full cost of their participation, their continued willingness to participate in the program on a voluntary basis would be negatively affected. FEI considers that, if participants were required pay the full cost of their participation, participation in the proposed Voluntary Renewable Gas offerings would practically cease, except for: (1) NGV customers who have an opportunity to monetize any tonnes of eligible GHG emission reductions they achieve; and (2) other customers that have requirements or desire to reduce GHG emissions, but are unable to switch to electricity or another low carbon energy type.

Finally, for additional context, the current weighted average cost of FEI's Renewable Gas supply is approximately $23/GJ. In comparison, the cost to customers for conventional natural gas is $4.503/GJ for the commodity, and $2.5588/GJ for carbon tax. Therefore, the cost differential between conventional natural gas and Renewable Gas is approximately $23/GJ – ($4.503/GJ + $2.559/GJ) = $15.938/GJ (as compared to the $7/GJ premium of the current program). As described in the 2015 BERC Rate Methodology Application,[3] FEI witnessed a decline in customer enrolments in the current Renewable Gas Program when the premium customers had to pay for RNG reached approximately $8/GJ.

[3] Application for Approval of Biomethane Energy Recovery Charge Rate Methodology, August 28, 2015.

APPLICATION SECTION 3: EVOLUTION OF CLIMATE CHANGE POLICY

6.0 Reference: Exhibit B-11, Stage 2 Application, Page 32

Section 3.5 – Municipal and Local Government Policies

At the above noted location FEI states:

"Along with these declarations, a growing number of local governments are implementing changes to their building codes, planning guidelines, or zoning bylaws in order to reduce GHG emissions in new building construction projects and in some cases existing building retrofits and improvements. As discussed in turn below, this is being achieved by: (1) establishing GHGi target limits for new construction necessitating the use of low carbon or renewable energy; and (2) incentivizing developers to use electricity as a low carbon solution (or in some cases to not connect to a "fossil fuel supply grid" system). The existing Renewable Gas Program is not designed to meet these GHGi or related emission intensity targets, necessitating FEI's proposals for Renewable Gas Connections in this Application."

RCIA notes that a variety of residential construction, renovation, and maintenance activities trigger the need for residential permits from municipalities. Notably, new construction, major renovations, and gas works permits when replacing major gas appliances such as a furnaces and hot water tanks.

6.1 For a representative set of municipalities, please provide a table that lists the following:

a) GHGi target limits for new construction.

b) Renewable Gas blend equivalencies represented by the GHGi target limits

c) Description of major criteria for residential renovations that trigger GHGi compliance.

d) Flag indicating if GHGi Limits are applicable to replacement of old gas fired space heating appliances with new gas fired appliances

e) Flag indicating if GHGi Limits are applicable to replacement of old gas fired water heating appliances with new gas fired appliances.

f) Flag indicating if GHGi Limits applicable to replacement of old gas fired cooking appliances with new gas fired appliances.

g) Other major notes and assumptions in the table.

Response:

As noted in the Application and below, determining how a residential building can meet a GHGi limit is a very complex analysis that does not lend to generalities or a simple comparison to a level of Renewable Gas. Every residential building is different, with many factors determining its modeled GHGi. A calculation using Renewable Gas is a supplementary step of the GHGi

calculation, beyond the characteristics of the building, which can lower the GHGi factor if it does not meet the threshold set by a given local government.

Further, as noted in the Application, local governments can adopt different GHGi levels for individual buildings, projects, communities or the entire municipality. This further complicates any analysis. As such, FEI's proposed 100 percent Renewable Gas service is the only solution that will meet all known GHGi metrics.

a)

See Tables A-2 (City of Vancouver), A-3 (District of North Vancouver), A-4 (City of Surrey), Table A-6 (City of Burnaby), and A-7 (City of Richmond) in Appendix A of the Application (Exhibit B-11).

b)

GHGi targets and the RNG percentage values are not equivalent or interchangeable. One cannot achieve a GHGi target with a given RNG percentage, unless the RNG percentage is very high (e.g., 100%). Efficiencies of the building envelope, floor area, geometry of the building, orientation, hot water use, solar gain, window sizes and area, climate zone, and baseloads all effect energy use intensity, and fuel choice and equipment efficiency by appliance effects RNG percentage needed to achieve a given GHGi target. Table A-8 in Appendix A of the Application illustrates a sample range of RNG percentage values to achieve a given GHGi, even with keeping the applicable step of the Step Code and climate zone the same.

c), d), e), and f)

FEI is not aware of currently enforced GHGi limits for the replacement of old gas fired equipment.

7.0 Reference: Exhibit B-11, Stage 2 Application, Page 33

Section 3.5.1 – GHGi Target Limits for New Construction to be met with Low Carbon Renewable Energy

At the above noted location FEI states:

"A building using natural gas for space and water heating cannot meet some of the more stringent GHGi targets; however, the carbon intensity of Renewable Gas is low enough to meet the Step Code and municipal GHGi targets. However, without changes to the Renewable Gas Program, only electricity can currently be implemented in a manner that meets the permanency criteria set by local governments. Local governments have yet to view Renewable Gas as a viable low carbon energy source because of perceived uncertainties around Renewable Gas supply and the voluntary structure of the existing Renewable Gas Program, which allows customers to leave the program at any time. As a voluntary opt-in only service, the program currently lacks permanency and therefore does not provide local governments with certainty regarding the GHGi of new construction projects. Therefore, FEI is proposing a Renewable Gas service offering for the life of a building, enabling long-term GHG emission reductions in alignment with the criteria set by local governments."

RCIA notes that FEI is proposing to track new connection customers by meter ID (which maintains its status across time for a property address). Given this fact, it appears that FEI could create a new Rate Class of Non- Voluntary Renewable Natural Gas connections to address the requirement for new construction to meet the GHGi requirement targets.

7.1 Please provide a table of RG blends required to meet the relevant Step Code and representative municipal GHGi targets for new construction.

Response:

Please refer to Table A-8, which is located at pages 9 to 10 of Appendix A to the Application.

7.2 Notwithstanding any regulatory or strategic objections FEI has, please describe what, if any, purely technical barriers exist for FEI to implement a Non-Voluntary Renewable Gas program (see description in RCIA IR 24).

Response:

Based on the preamble to RCIA IR1 24, FEI understand RCIA's reference to "Non-Voluntary Renewable Gas Program" to mean pricing the Renewable Gas Connections service at the weighted average cost of Renewable Gas supply. FEI confirms that the proposed Renewable

Gas Connections service is non-voluntary and that there are no "purely technical barriers" to this service.

Please refer to the response to BCUC IR1 14.1 for why it is not just or reasonable to price the Renewable Gas Connections service at the weighted average cost of Renewable Gas supply, and why doing so would be detrimental to the utility's long term viability, and ultimately, the affordability of rates for all customers.

Please refer to the responses to BCUC IR1 13.2 and 16.2 for a discussion how FEI's proposal to set the rate for customers under the Renewable Gas Connections service to reflect the rolled-in or average cost of providing those services: (1) is cost-based and consistent with longstanding ratemaking principles and regulatory, including BCUC, practices, (2) will not result in unjust discrimination, and (3) supports economic efficiency including the efficient use of existing infrastructure to the benefit of all customers.

8.0 Reference: Exhibit B-11, Stage 2 Application, Page 33

Section 3.5.1 – GHGi Target Limits for New Construction to be met with Low Carbon Renewable Energy

At the above noted location FEI provides the following table:

Table 3-1: Common Examples of GHGi Targets for New Single Family Homes

GHGi Levels	Natural Gas Appliance Use to Meet Target
6 $kgCO_{2e}/m^2$	Domestic hot water only, or convenience gas appliances only such as fireplace, cooktop and/or BBQ
3 $kgCO_{2e}/m^2$	Convenience gas appliances only such as fireplace, cooktop and/or BBQ. No space or water heating.
1 $kgCO_{2e}/m^2$	No gas appliances. Note: that at current carbon intensity levels, electricity is unlikely to meet this target in many buildings.

The RCIA notes that at BC Hydro's current Tier 1 price of 8.58 cents/kWh and Tier 2 price of 12.87 cents/kWh for electricity, the marginal price for electricity is equivalent to $23.83/GJ and $35.75/GJ respectively.

8.1 If supplied today, please provide a table of the expected cost for Renewable Gas that would be compliant with the representative municipal GHGi bylaws listed in FEI's response to RCIA IRs 6.1 and 7.1.

Response:

The table above showing GHGi levels represents the common targets that new buildings must meet in a number of local governments. FEI has provided examples of the level of Renewable Gas that may be required to meet the GHGi targets for a number of different building types in Appendix A to the Application. It is not possible to provide a specific level of Renewable Gas that is required to hit a specific GHGi target as the fuel is only one input to the GHGi calculation. Other mechanisms used to meet the GHGi targets include changes to equipment and building envelope. Because of this, FEI is unable to provide the requested table.

Ultimately, the only level of Renewable Gas that will meet all targets set by local governments is 100 percent. Supply must also be permanent. Please refer to the response to BCUC IR1 7.2 for the Renewable Gas portfolio supply price used in the development of this Application.. FEI notes that the existing price for electricity supplied by BC Hydro for residential customers is $0.0950 per kWh ($26.39/GJ) and $0.1408 per kWh (($39.11/GJ) for Step 1 and 2 rates, respectively. However, neither represents the marginal price of electricity.

8.2 What is the expected cost for Renewable Gas that is compliant with current municipal GHGi bylaws in 2030 (expressed in 2022 real dollars)?

Response:

Cost is not a requirement for compliancy with the GHGi requirements set by local governments. The carbon intensity and permanence of the energy source (such that calculating a GHGi meets the municipal threshold), are the relevant factors. In order to meet all known and potential GHGi thresholds, a carbon intensity provided by 100 percent Renewable Gas is required.

However, local governments do not currently allow for a Renewable Gas pathway because the existing program does not contemplate permanency and many local governments are also unsure regarding the carbon intensity of Renewable Gas.

Please see Figure 8.3 in the Application for the volumes of Renewable Gas expected in each of the offerings proposed by FEI.

9.0 Reference: Exhibit B-11, Stage 2 Application, Page 34

Section 3.5.1 – GHGi Target Limits for New Construction to be met with Low Carbon Renewable Energy

At the above noted location FEI states:

"The adoption of GHGi targets at the local government level has resulted in a complex patchwork of regulations across BC. … Therefore, there is no consistency in approach or adoption across FEI's service territory, which makes creating a Renewable Gas offering to meet these inconsistent targets challenging.

To demonstrate the complexity and diversity of rules and regulations at the local government level, FEI provides in Appendix A a description of the approaches taken by a sample of local governments implementing GHGi targets, including the District of North Vancouver, City of Vancouver, City of Burnaby, City of Richmond and City of Surrey.

As noted above, meeting GHGi targets set by local governments can be challenging, leading builders and developers to select electricity, which they perceive to be simpler, instead of gas-based energy solutions. While it is possible for a developer to opt to add in a convenience gas appliance, this adds both costs and emissions which may need to be counted in the building design. This can impact building approval timelines and potentially impact a final building permit approval. Therefore builders and developers design their houses to be 100 percent electricity to ensure a timely approval from a municipality. It is expected that municipalities with policies like North Vancouver and Vancouver will see very few new residential gas attachments as a result of the GHGi targets unless there is a viable Renewable Gas solution."

9.1 Please list the major challenges and potential solutions to those challenges, with respect to the comment quote above regarding meeting inconsistent targets.

Response:

Overlapping non-prescriptive energy efficiency performance targets set by provincial and local governments, and GHGi targets that vary as between communities, result in uncertainty throughout the design and construction of residential dwellings in BC. In particular, the Homebuilder Association of Vancouver (HAVAN) outlines the potential cost and construction schedule impacts associated with disparate home energy performance policies in their May 2021 *Government Relations Report*.[4] Due to the performance-based approach of the Step Code, achieving the efficiency metrics varies due to a number of factors, including: the building archetype; Step Code level; building design; mechanical equipment; and climate zone.

[4] https://havan.ca/wp-content/uploads/2021/07/GR21_StepCodeRequirements-V7.pdf.

Please refer to Appendix A to the Application which outlines the major challenges associated with meeting the Step Code and GHGi targets using Renewable Gas blends (i.e., not 100 percent Renewable Gas).

The potential solutions to meeting the GHGI targets and Step Code targets are outlined in Table A-8 of Appendix A where GHGI metrics are cross-referenced against Step Code levels to determine the required Renewable Gas blend that would meet the variety of local government targets.

9.2 What is stopping the relevant municipalities (e.g District of North Vancouver, City of Vancouver, City of Burnaby, City of Richmond and City of Surrey) from outright banning FEI infrastructure?

Response:

There are a variety of factors that may stop a local government from seeking to ban FEI's infrastructure, including public interest considerations, not having the support of its constituents, and jurisdictional issues.

10.0 Reference: Exhibit B-11, Stage 2 Application, Page 36

Section 3.5.3 – Local Governments to be Granted Greater Autonomy to set GHGi Targets

At the above noted location FEI states:

"Increasing the autonomy of local governments to set emissions reduction targets could further limit energy choices for customers and create unequal access to gas service in FEI's service territory without a viable Renewable Gas solution. A new building in a municipality with a strict building GHGi target will not have access to FEI's gas system and service, while another new building across the street without a GHGi target will be able to continue to use the gas system.

…

The adoption of the carbon pollution standard into the BC Building Code will pave the way for all new buildings to be zero carbon by 2030, which in the long term could potentially improve the consistency of regulations through a single provincial building code measure across the entire province. It is FEI's understanding that, in the interim, the carbon pollution standard will provide local governments with the regulatory authority to adopt GHGi targets for buildings in their municipality. These communities will serve as pilots for future province-wide requirements."

10.1 If a Non-Voluntary Renewable Natural Gas program was available (i.e. one in which the builder determined the type of fuel service available for the building), would this not provide equal access as it currently enacted today (e.g. a choice between a natural gas product and an electricity product)?

Response:

A renewable gas program that assured permanence of GHG emission reductions for the life of the building, at a cost equivalent to other building archetypes, would provide equal access to marketplace for the homebuilder or homeowner.

11.0 Reference: Exhibit B-11, Stage 2 Application, Page 37

Section 3.5.4 – Reducing Emissions in Existing Buildings

At the above noted location FEI states:

"The following local governments have approved climate action plans to address carbon emissions in existing buildings:

- *City of Victoria*
- *City of North Vancouver*
- *District of West Vancouver*
- *Port Moody*
- *City of New Westminster*
- *Whistler*
- *District of Squamish*
- *Saanich"*

11.1 What percentage of FEI's total energy deliveries do buildings in these communities represent?

Response:

FEI is not able to isolate "buildings only" and as a result the following table contains the aggregate residential and commercial demand percentages for each municipality/community.

Table 1: Energy Delivered by Municipality/Community

Municipalities / Communities	Consumption (PJ)	Percent of FEI Gas Consumption
City of New Westminster	2.1	0.9%
City of North Vancouver	5.0	2.2%
City of Victoria	2.1	0.9%
Distict of Squamish	0.6	0.3%
District of West Vancouver	2.6	1.1%
Port Moody	0.9	0.4%
Saanich	1.6	0.7%
Whistler	0.8	0.3%
Total	**15.7**	**6.9%**

11.2 What natural gas consumption growth rates have these communities experienced over the past 10 years? Please provide the information in a table by community.

Response:

The table below shows the annual growth rates (gas consumption and customer counts) for the residential and commercial classes in the requested communities dating back to 2012. Please note that the consumption data is actual and not weather normalized.

Table 1: Gas Consumption Growth Rate by Community

Gas Consumption Growth Rates	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CAGR
New Westminster	-2.6%	-3.3%	-4.6%	-8.7%	7.3%	13.5%	-6.5%	1.5%	1.0%	1.2%	0.0%
North Vancouver	-6.9%	-3.6%	-4.1%	-9.7%	7.0%	14.2%	-5.9%	0.9%	1.1%	1.0%	-0.1%
Port Moody	-2.2%	-4.6%	-2.6%	-8.3%	4.4%	15.8%	-8.3%	0.6%	0.9%	4.5%	0.0%
Saanich	-6.3%	-2.1%	-6.2%	-14.8%	8.2%	17.7%	-4.6%	6.0%	0.0%	7.5%	0.8%
Squamish	-1.5%	0.7%	0.9%	-1.2%	9.3%	16.2%	-4.2%	8.2%	2.4%	7.3%	3.8%
Victoria	-4.4%	-0.9%	-6.6%	-14.1%	5.0%	10.3%	-4.2%	3.0%	-3.3%	3.4%	-1.0%
West Vancouver	-3.8%	-2.9%	-5.2%	-7.8%	5.7%	13.4%	-7.2%	2.7%	5.3%	1.7%	0.4%
Whistler	-2.2%	-3.2%	1.6%	-8.2%	9.8%	10.9%	-0.9%	2.6%	-7.7%	6.0%	0.9%
Grand Total	-4.8%	-2.8%	-4.4%	-10.0%	6.7%	13.7%	-5.7%	2.3%	0.6%	2.8%	0.1%

Table 2: Customer Growth Rate by Community

Customer Growth Rates	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	CAGR
New Westminster	0.1%	0.5%	1.5%	0.6%	0.8%	3.1%	1.2%	1.0%	0.7%	1.0%	1.0%
North Vancouver	0.2%	0.2%	0.2%	0.4%	0.1%	0.3%	0.6%	0.4%	0.9%	0.0%	0.3%
Port Moody	0.1%	-0.1%	0.1%	-0.2%	0.1%	0.3%	-0.1%	0.7%	0.8%	0.5%	0.2%
Saanich	2.5%	2.5%	2.8%	3.7%	3.2%	5.4%	5.0%	4.8%	3.6%	3.5%	3.4%
Squamish	2.9%	2.6%	3.4%	5.0%	5.2%	5.7%	6.3%	3.7%	3.1%	1.7%	3.7%
Victoria	1.4%	2.3%	2.3%	2.0%	2.7%	2.9%	2.4%	2.3%	2.1%	3.1%	2.2%
West Vancouver	0.1%	0.4%	0.6%	0.0%	0.2%	0.1%	0.4%	0.4%	0.4%	-0.1%	0.2%
Whistler	2.3%	2.7%	1.9%	3.1%	3.8%	4.0%	3.4%	3.9%	1.7%	1.7%	2.6%
Grand Total	0.8%	1.0%	1.2%	1.3%	1.3%	2.0%	1.8%	1.7%	1.5%	1.2%	1.3%

APPLICATION SECTION 4: A DIVERSIFIED ENERGY SYSTEM IS IN THE BEST INTEREST OF BRITISH COLUMBIANS

12.0 Reference: Exhibit B-11, Stage 2 Application, Page 48

Section 4.3.2 – Maintains the Resiliency of the Province's Energy System

At the above noted location FEI states:

"Currently energy in BC is delivered via three main streams:

1. *Electricity: Electricity makes up approximately 20 percent of the energy delivered in BC;*
2. *Natural and Renewable Gas: The gas system delivers approximately 23 percent of the energy delivered in BC;*
3. *Liquid and Solid Fossil Fuels: These fuels make up the remaining 55 percent of the energy delivered in the province."*

12.1 Please provide a table comparing the delivered cost per unit energy for a typical residential ratepayer, for the following fuel sources (including a description of any assumptions / inputs that the table is based upon). Please use a consistent unit of energy across all forms.

a) Electricity - Tier 1
b) Electricity - Tier 2
c) Conventional Natural Gas
d) Renewable Gas
e) Renewable Natural Gas
f) Domestic Regular Gasoline
g) Domestic Diesel Fuel
h) Domestic Heating Oil
i) Domestic Solid Fuels

Response:

FEI does not sell (f) domestic regular gasoline, (g) domestic diesel fuel or (h) domestic heating oil to residential customers, and therefore, is unable to provide the delivered energy costs associated with these fuels. Further, the variability of (i) domestic solid fuels is so large that a single cost of energy would not be meaningful.

In the table below, FEI provides the requested comparison of the variable rates for the remaining energy types, in the form of delivered cost per unit energy for a residential ratepayer as provided by the noted utility. All of the figures are before the basic/customer charge.

Table 1: Cost of Energy Comparison

Fuel			Cost of Energy ($/kWh)
Electricity	BC Hydro*	Tier 1	$ 0.095
		Tier 2	$ 0.141
	FBC	Tier 1	$ 0.124
		Tier 2	$ 0.137
Conventional Natural Gas**	FEI		$ 0.050
RNG (100 percent blend)***	FEI		$ 0.074

* *BC Hydro Rates as of April 01, 2022*

** *Conventional Natural Gas rate includes all variable charges and carbon tax as of April 01, 2022*

*** *RNG rate includes all variable charges as of April 01, 2022 for existing voluntary customers*

Please refer to the response to BCUC IR1 13.7 for heating cost comparisons between RNG and electricity.

APPLICATION SECTION 5: WHAT CUSTOMERS NEED FROM A RENEWABLE GAS PROGRAM

13.0 Reference: Exhibit B-11, Stage 2 Application, Page 52

Section 5 – What Customers Need From a Renewable Gas Program

At the above noted location FEI states:

"For example, customers are now faced with increasing carbon taxes on GHG emissions that are currently expected to reach $8.40/GJ by 2030."

13.1 Please confirm whether the figure "$8.40/GJ" is given in nominal or real dollars.

a) If "$8.40/GJ" is given in nominal dollars, please restate in real dollars and provide inputs/assumptions used in the calculation.

Response:

The expected price of carbon tax in 2030 of $8.40 is in nominal dollars. Assuming a two percent inflation rate, the $8.40 nominal rate can be expressed as $7.169 in real 2022 dollars.

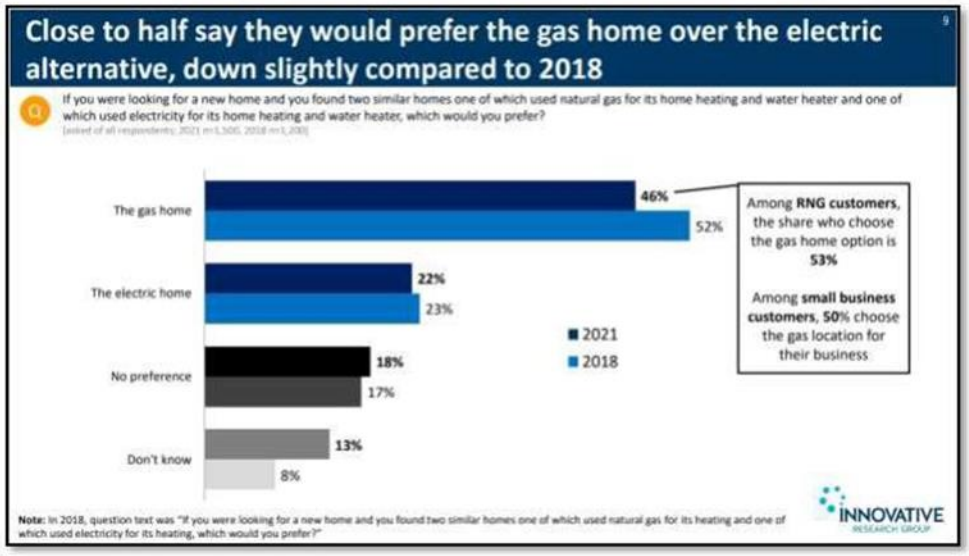
14.0 Reference: Exhibit B-11, Stage 2 Application, Page 57

Section 5.2.2.2 – Support for Maintaining Access to Gas Service

At the above noted location FEI states:

"Further, if given the choice, most respondents would prefer to have the option of gas rather than electricity alone."

Figure 5-4: Preference for a Home with Natural Gas



14.1 Does FEI consider that the finding noted above is an issue that is best addressed by BCUC regulations, or one which is best addressed through the municipal election process? Please discuss.

Response:

FEI must work with the BCUC, the provincial and local governments with respect to matters within their respective jurisdictions, and respect the results of electoral processes. In BC, building code regulations ultimately reside at the provincial level as part of the jurisdiction of the Building Safety Standards Branch, with the exception of the City of Vancouver.

In this proceeding, FEI has proposed the Renewable Gas Connections service for approval by the BCUC, which meets the GHG intensity targets of local governments, preserves access to the gas system for new residential gas customers and maintains the long-term viability of the gas system, which FEI considers is in the public interest.

15.0 Reference: Exhibit B-11, Stage 2 Application, Page 57

Section 5.2.2.4 – Affordability of Renewable Gas Remains a Concern

FEI provided the following figure:

Figure 5-7: Potential RNG Customers are Sensitive to the Premium for Renewable Gas versus Conventional Gas

15.1 Please confirm that the graphic insinuates that a $64/GJ price premium for RNG would result in the reduction of participation of approximately 12% - 25%. If not, please explain the graphic in detail.

Response:

Not confirmed. The chart describes how inclined survey respondents would likely be to voluntarily enroll in Renewable Gas service, relative to the baseline likelihood, at different price-volume points relative to conventional gas service. In the survey, the respondents were presented with eight randomized paired-choice tasks. They selected one of the two alternatives presented 53 percent of the time. At higher costs the respondents indicated a reduction in their likelihood of enrolling relative to the baseline of their responses, as shown in Figure 5-7 in the Application. Conversely, as the cost approaches that of conventional natural gas, the survey respondents indicated a greater likelihood of enrolling relative to the baseline of their responses.

As described in the highlighted box, this slide primarily shows that customers are sensitive to the premium paid for RNG over conventional natural gas.

15.2 Did FEI ask the same questions regarding demand – where conventional natural gas was not available as a substitute (i.e., electricity is the substitute rather than conventional natural gas)?

a) If not please explain why not (since municipal GHGi bylaws are intending to prevent conventional natural gas from being available)?

Response:

No. This survey was part of the information gathering phase that occurred prior to the structure of the revised Renewable Gas Program was finalized. FEI expects that if the same research were undertaken relative to electricity, or any other alternative that could act as a reasonable substitute, that the results would be substantially similar. As such, respondents would indicate that they would be less likely to voluntarily enroll in Renewable Gas service as the price of Renewable Gas increases.

15.3 If FEI had asked a similar set of questions on the basis that electricity is the only substitute, how does FEI anticipate the responses would change?

Response:

Please refer to the response to RCIA IR1 15.2.

15.4 Please discuss the impact that an effective prohibition on conventional natural gas for New Construction Connections in select municipalities has on willingness to pay for RG (for those homeowners wishing to access natural gas).

Response:

Please refer to the response to RCIA IR1 21.7.

16.0 Reference: Exhibit B-11, Stage 2 Application, Page 61

Section 5.1 – Existing Homes Connected to the Gas System

At the above noted location FEI states:

"Despite research suggesting that 46 percent of customers place a priority on emission reductions and the environment, only one percent of customers have elected to participate in the Renewable Gas Program, which represents only 0.1 percent of the throughput on FEI's gas system. This suggests that while customers say they want to reduce their GHG emissions and say they are willing to pay a premium to do so, only a very small number actually take action and sign up for Renewable Gas."

16.1 Why is it fair to existing residential customers that they cross subsidize new residential construction customers so that new residential construction customers receive a product (i.e. Renewable Gas) for which the new residential construction customers are not paying the full costs nor even a premium?

a) How does this approach meet the Bonbright principles? Please discuss.

Response:

The following response is provided by Concentric.

Please refer to the responses to BCUC IR1 13.2 and 16.2. As discussed in those responses, existing customers are not subsidizing new residential construction customers. FEI's Renewable Gas Blend and Renewable Gas Connections services are cost-based and use the same gas system. The cost of gas for Renewable Gas Connection customers should be averaged with existing customers as proposed by FEI, just as would be true for new and existing transmission and distribution costs of serving customers. In an evaluation of cost causation and cost apportionment under Bonbright principles, it is important to recognize that every customer was a new customer when they joined the system, and they were not charged the "new" costs for the energy commodity, delivery or administrative functions they were "causing" when initiating service. If this were the case, FEI's residential delivery rates would need to be adjusted to remove the "Service Line Cost Allowance" for new residential services, and new residential connections would be made to pay the full incremental cost of their delivery service. The same approach could be applied to main expansions and extensions. Such a change would be inconsistent with regulatory practice and policy, including Bonbright's principles.

17.0 Reference: Exhibit B-11, Stage 2 Application, Page 62

Section 5.3.3 – Newly Constructed Homes

At the above noted location FEI states:

"A high tear down rate presents both an opportunity and a challenge as a relatively large proportion of the existing building stock is replaced annually. These customers require a service that will continue to provide them with the option to connect to the gas system."

17.1 Under the proposed changes, please confirm that a teardown and retrofit is considered "new construction" from a meter identification basis, and therefore qualifies the same as a new build on a previously occupied lot for the purposes of determining gas supply (i.e. 100% RG supply).

Response:

New construction is not itself a meter identification basis. In order to be eligible for the Renewable Gas Connections service there must be a new service and meter. This includes an existing building (not currently connected to the gas service) requesting a service line and meter, because they have undertaken building retrofits that mean they require gas. It may also be a new residential building that requires a new service line and meter. In each of these scenarios, the meter would be designated part of the Renewable Gas Connections service, rather than a "new construction" designation

17.2 Why is meter ID and not property ID the key feature of determining "new construction"?

Response:

FEI understands the question's reference to "property ID" to be referring to a civic address, property Identifier, or legal description.

Meter ID more accurately reflects the number of actual customers on the property requiring gas service, as opposed to a property description which may have several buildings that may or may not require gas service. A parent property may also be subdivided or become a strata.

Furthermore, new construction, or new building permits, may be offered to existing residential property lots. Land use of a property does not grandfather building requirements. A new building permit on an existing property would be required to meet the most contemporary building permit requirements.

Ultimately, requiring a new property ID would limit the scope of the Renewable Gas Connections service to only those areas where land has been newly designated for residential construction.

17.3 Are conversions from all electric building to mixed gas and electric buildings considered "new construction" for the purposes of determine gas supply blend?

Response:

From a construction perspective, any existing home that does not currently have a service line and meter that requests gas service would be considered a “conversion”.

18.0 Reference: Exhibit B-11, Stage 2 Application, Page 63

Section 5.3.3 – Newly Constructed Homes

At the above noted location FEI states:

"Natural gas equipment and appliances (like all home appliances) are installed only if the builder believes they will assist in selling the home.

…

The spec building market is highly competitive and, as a result, builders and developers are generally only concerned with the universal application of policies and regulations to avoid competitive disadvantage to them as compared to other builders and developers.

…

In jurisdictions where the installation and use of natural gas is discouraged or disallowed by local government policies, a spec builder expects FEI to address the policy concerns directly with the implementing government. To the extent that the Renewable Gas Program represents a solution to government policies, spec builders and the home buying public will expect the cost of this service to be at or near to the cost of conventional natural gas."

RCIA notes that in today's building environment, many spec builders build electric only housing because the capital cost are lower than installing mixed electrical and conventional natural gas infrastructure, despite natural gas providing significantly lower energy costs to the ultimate owner. As a result, RCIA agrees with the FEI statement that "Natural gas equipment and appliances … are installed only if the builder believes they will assist in selling the home", and that "builders and developers are generally only concerned with the universal application of policies and regulations to avoid competitive disadvantage to them as compared to other builders and developers".

18.1 Given that municipal bylaws prohibit conventional natural gas equally across all builders and developers, what is the basis for the statement that "spec builders ... will expect the cost of this service to be at or near to the cost of conventional natural gas"?

Response:

FEI's comments were made in reference to the price sensitivity of: (1) homebuyers who directly experience the upfront and operating costs associated with their new home; and (2) spec builders who are impacted by increases in construction costs and where the selling price of a newly constructed home is impacted by its ongoing energy costs. In other words, changes in policy, regardless of whether they apply equally to all builders and homeowners in a given area, are of concern as they have a financial impact on these groups.

18.2 In FEI's view, why would spec builders not shift their expectation of cost of service from conventional natural gas to other fuel types (e.g. Renewable Gas or Electricity) when municipal bylaws effectively prohibit conventional natural gas?

Response:

Builders do not have a specific expectation of "cost of service"; rather, they are focused on a home's construction and equipment costs. Builders may also be driven by a customer's desire to have a home with lower operating cost (e.g., gas over electricity). However, builders have shifted their building practices to meet local government requirements in order to receive building permits, thus designing homes with the heating equipment required or favoured by the local government. FEI's Application seeks to expand a builder's energy options where they may otherwise only have a single low carbon energy option (electricity) in certain jurisdictions.

19.0 Reference: Exhibit B-11, Stage 2 Application, Page 67

Section 5.7 – Natural Gas Vehicle Customers

At the above noted location FEI states:

"FEI has observed a considerable shift in the thinking of transportation sector customers in recent years. During the first six years of the Renewable Gas Program's operation, this segment of customers, known as NGV61 customers, expressed only minor interest in purchasing Renewable Gas. During that period, the Program did not have any subscribers from this customer segment. More recently however, NGV customers have shown increased interest in Renewable Gas."

19.1 Is FEI aware of the motivation of NGV customers in pursuing Renewable Gas? For example, is this motivated by factors such as compliance with BC fuel standards? Please discuss.

Response:

FEI believes that customers are motivated to utilize Renewable Gas for transportation due to government regulation, corporate sustainability objectives, and fuel cost reductions (as supported by the customer research found in Appendix B-2). In particular, on pages 7 and 9 of Appendix B-2 to the Application, it is clear that BC-LCFS credits and emission reduction targets are driving demand for Renewable Gas in the transportation sector.

Compliance with the BC-LCFS, and the credit revenue leading to reduced fuel costs for the consumption of low carbon fuels, is an economic driver to adopting Renewable Gas. Organizations with emission reduction targets or mandates are seeking low carbon fuel solutions within their fleet to meet those objectives. Renewable Gas, delivered through the proposed offerings in this Application, is an option to meet those emission targets and mandates.

20.0 Reference: Exhibit B-11, Stage 2 Application, Page 69

Section 5.7.2 – BC's Low Carbon Fuel Standard (BC-LCFS)

At the above noted location FEI states:

"Currently, only in-province Renewable Gas supply is recognized under the BC-LCFS. FEI is working with the province to allow for out-of-province Renewable Gas supply to be recognized and approved under the regulation and therefore allow all Renewable Gas volumes to earn and monetize credits.

The current BERC was designed as a postage stamp rate applied to all customer segments including NGV customers. However, the nature of the BC-LCFS credits and the benefit NGV customers could derive from the sale of BC-LCFS credits was not well understood. Today, NGV customers can access the BC-LCFS credits, while the building sector customers cannot, suggesting a need to align the offering for NGV customers with existing policy."

20.1 In FEI's view, who would receive the benefit of any credits earned (i.e. FEI, or the Renewable Gas customer)?

Response:

Part 3 Fuel Suppliers in the transportation sector who earn BC-LCFS credits also benefit from their sale. FEI has been able to monetize some credits from its sales of conventional CNG and LNG under the current regime, and the revenues from these sales have gone into rates to the benefit of all non-bypass customers.

20.2 With respect to building sector customers accessing BC-LCFS credits, is FEI suggesting that it needs to align itself with policy, or that government regulations need to be changed?

Response:

Building sector customers cannot access BC-LCFS credits. FEI is suggesting that the pricing strategy for Renewable Gas needs to align with public policy, and particularly the CleanBC Plan. Please refer to the response to BC Transit IR1 4.a.

21.0 Reference: Exhibit B-11, Stage 2 Application, Page 69

Section 5.8 – Customer Sensitivity to Price of Renewable Gas

At the above noted location FEI states:

"Price elasticity studies require demand and price data that reflect market forces with consumer demand being driven by the pricing of competitive options. Price elasticity measures the response of consumers to changes in market prices. This kind of market data is not available for voluntarily purchased Renewable Gas. Due to the nature of the various BERC rate setting mechanisms the price has never been based on market forces and has not been allowed to rise and fall with demand."

21.1 Please confirm if price elasticity studies have been performed with regard to conventional natural gas.

Response:

Confirmed. FEI has relied on price elasticity studies conducted by reputable independent research entities for its elasticity estimates. FEI provides the following third-party elasticity studies for reference.

Table 1: Independent Research Entities Price Elasticity Results

Research Institution	Publication date	Natural Gas Price Elasticity of Demand (Residential)		Description
		Short-term	Long-term	
National Renewable Energy Lab[5]	Feb 2006	-0.12	-0.36	This study estimated elasticity values at state and national levels. The numbers presented here are at national level.[6]
Energy Information Administration[7]	Oct 2014	-0.07 to -0.15	-0.21	This study was referenced in FEI's 2014 Long-Term Resource Plan application.
UC Berkley, Energy Institute at HAAS[8]	Jan 2018	-0.23 to -0.17		This study does not separate the long-term and short-term elasticity and provides an average range of estimates.

As illustrated in the table above, natural gas residential customers are largely inelastic to price variations, and elasticity estimates ordinarily range from -0.07 to -0.36 depending on the study's

[5] www.nrel.gov/docs/fy06osti/39512.pdf.

[6] For comparison purposes, Washington State's short-term and long-term elasticities were estimated at -0.16 and -0.21 respectively.

[7] www.eia.gov/analysis/studies/buildings/energyuse/pdf/price_elasticities.pdf.

[8] https://haas.berkeley.edu/wp-content/uploads/2019/05/WP287.pdf.

timeframe. Furthermore, the table above also indicates that elasticity numbers do not change materially over time (the elasticity estimates from NREL's 2006 report and UC Berkley's 2018 report are similar).

The review of published elasticity studies indicates that although price elasticity estimates may change slightly by jurisdiction and over time, these variances do not change the overall conclusion that the majority of natural gas customers are price inelastic.

21.2 Please explain in detail how FEI consumption forecasts are adjusted to account for higher and lower future natural gas prices.

Response:

The impact of gas prices on demand is captured intrinsically in the historical data used for forecasting.

FEI demand forecasts are not adjusted based on future forecasts of natural gas prices. Future gas prices are not an input into the use per customer forecast methods.

21.3 Does FEI have any reason to believe that the price elasticity of demand is materially different for conventional natural gas when compared to Renewable Gas? Please discuss.

Response:

FEI has not undertaken an analysis comparing the price elasticity of demand for conventional natural gas and Renewable Gas. Please refer to Section 5.8 of the Application with respect to the 2015 BERC Rate Application,[9] which describes that prior to the updated BERC Rate mechanism FEI witnessed a notable decline in demand for Renewable Gas when the price premium for Renewable Gas increased relative to conventional natural gas.

21.4 What is the price elasticity of demand for any the various gas products FEI sells?

[9] Application for Approval of Biomethane Energy Recovery Charge (BERC) Rate Methodology, August 28, 2015.

Response:

Please refer to the response to RCIA IR1 21.1.

21.5 What insights into the price elasticity of demand for renewable gas can be derived from the price elasticity of demand for FEI's existing products?

Response:

Please refer to the response to RCIA IR1 21.3.

21.6 Please reconcile the statement quoted above with Figure 5-7 of the application (which appears to provide insight into the price elasticity of demand for Renewable Gas).

Response:

Figure 5-7 of the Application was prepared based on responses to a survey, while the passage quoted in the preamble refers to market data. The information presented in Figure 5-7 is also consistent with the second paragraph following the paragraph quoted in the preamble, reproduced here for convenience (Application, p. 70):

> FEI considered using its customer surveys as a potential alternative source of data as they may collect information on customer perceptions of a fair price for a good or service, including Renewable Gas. The customer surveys described above did query the respondents on price. While survey results can provide some directional insight into customers' thinking on price, there can be a gap between customers' responses to a survey, and the act of enrolling for a service that will cost them more. The history of the program suggests that relatively few customers actually subscribe to a voluntary program, and when they do, they generally opt to receive only five to ten percent Renewable Gas in order to limit the cost impact.

21.7 What does FEI expect the impact upon residential price elasticity will be in those areas that eliminate conventional gas as a fuel option for residential customers? Please provide details of any modelling that FEI has undertaken on this topic.

Response:

FEI understands this question to be asking about the price elasticity for Renewable Gas among residential customers in those geographic areas which eliminate conventional natural gas as a fuel option.

As described in the Appendix A to the Application, various local governments have adopted GHGi targets for residential *new construction* making the use of conventional natural gas all but forbidden in this market. Without an alternative gas solution, over time, conventional natural gas would effectively be eliminated as a fuel option for all residential customers due to turnover in the housing market. The proposed Renewable Gas Connections service will restore a choice between electricity and gas service for builders and developers, thus mitigating any impact to the elimination of conventional natural gas as a fuel option.

Should the price of Renewable Gas be much higher than that of electricity, FEI believes that customers will naturally not take gas service and instead take electricity. Please refer to the response to BCUC IR1 14.1 where FEI forecasts customer attachments if the Renewable Gas Connections service were priced higher than FEI's proposal.

APPLICATION SECTION 6: GROWTH IN RENEWABLE GAS SUPPLY

22.0 Reference: Exhibit B-11, Stage 2 Application, Page 78

Section 6.3.2 – FEI's Short and Long-Term Supply Forecast to Meet the Clean BC Plan

At the above noted location FEI states:

"Over the 10-year period shown in Figure 6-3, FEI's Renewable Gas portfolio is forecasted to grow from approximately 0.7 PJs in 2021 to 41 PJs in 2032 – the latter being equivalent to 11,389 GWhs of low carbon energy provided to British Columbians."

22.1 What are the cost assumptions that accompany these projections? Please provide figures in $/GJ.

Response:

Please refer to the response to BCSEA IR1 15.3.

23.0 Reference: Exhibit B-11, Stage 2 Application, Page 78

Section 6.3.2 – FEI's Short and Long-Term Supply Forecast to Meet the Clean BC Plan

At the above noted location FEI states:

"Given the need to significantly grow its Renewable Gas supply, FEI's existing voluntary Renewable Program on its own is no longer a sufficient mechanism to deliver low-carbon fuels to customers. The proposed amendments to the Renewable Gas Program, described in detail in Section 7, enable FEI to expand its suite of program offerings to its customers to enable the delivery of these increased volumes."

RCIA notes that Section 6 generally discusses supply with little or no reference to price. Supply cannot be estimated without accompanying price or cost assumptions.

23.1 Why is FEI not providing price assumptions in a manner that is similar to what would be required in an Integrated Resource Plan?

Response:

The purpose and primary focus of the Application is to seek approval for a revision to the Renewable Gas Program and associated tariffs, in light of considerable changes to FEI's operating context, most significantly at the policy and building regulation levels.

Section 6 of the Application provides some relevant context as to the future sources of Renewable Gas volumes and Renewable Gas types; however, it is not the purpose of this Application to perform a thorough review of the Renewable Gas supply resource over the longer term, nor to seek approval for supply project pricing. Renewable Gas supply type, volume and cost are reviewed under separate proceedings before the BCUC.

23.2 Describe the steps FEI is taking to optimize the cost per GJ for Renewable Gas, rather than simply trying to buy as much Renewable Natural Gas as possible knowing that the BC regulations allow them to recover costs?

Response:

Please refer to the response to CEC IR1 35.2 regarding how FEI actively negotiates each of its Renewable Gas supply projects to ensure the best value for customers. Factors such as project volumes, price per GJ, speed to market, annual GHG reduction, and carbon intensity play a role in determining the value of a project to FEI's customers. In addition, this Application represents FEI's proposal for expanding its Renewable Gas service options and complying with new local and provincial and regulations which seek to make reductions in the province's use of

conventional natural gas. These proposed revisions to the Renewable Gas Program represent an efficient, market-responsive and practical set of service offerings that relies on just and reasonable rates and that complies with government mandates.

23.3 How can ratepayers confirm the reasonableness of the trade-offs inherent in FEI actions, particularly when it comes to trying to assess the reasonableness of purchases at the margin (i.e., buying amounts that may push the annual deliveries over 15%, etc.)?

Response:

This Application is not seeking approval of supply projects, contracts or pricing. The information provided in Section 6 is to provide context and background to support the Renewable Gas Program offerings. All supply contracts are subject to a review by the BCUC to ensure that they are compliant with current government regulation. The GGRR stipulates a maximum price and volume. Regardless of the limitation on price and volume, FEI endeavors to procure Renewable Gas at the lowest possible price. Offering long-term agreements to suppliers has enabled FEI to secure prices well below the maximum procurement price in the GGRR.

APPLICATION SECTION 7: PROPOSED RENEWABLE GAS PROGRAM

24.0 Reference: Exhibit B-11, Stage 2 Application, Page 84

Section 7 – Proposed Renewable Gas Program

At the above noted location FEI states:

"FEI considered alternatives to respond to the need for change, including: simply updating its voluntary renewable gas offering; a renewable gas blend for all sales customers; and directing Renewable Gas to New Residential Connections.93 FEI determined that a comprehensive program, including a renewable gas blend for all sales customers, 100 percent Renewable Gas for all New Residential Connections, and continuation of a voluntary renewable gas offering, was the only alternative that would maintain the long-term viability of the natural gas delivery system and energy choice for British Columbians.

Footnote 93: New Residential Connections are all residential dwellings served by a service line installed on or after a designated date, including new construction activity, conversions and retrofits. FEI serves a range of residential dwellings, including detached homes, semi-detached homes, row houses, duplexes and quadruplexes, townhouses and multifamily condominiums under RS 1, RS 2, RS 3, or RS 5 depending on the volume of the gas service."

The RCIA contends that a Non-Voluntary Renewable Gas program may be a fairer option for residential ratepayers while achieving materially the same GHG emissions targets. Since the proposed New Residential Connection program is tied to new service line installs (e.g. individual meter ID) and Fortis already tracks different programs by meter ID (e.g. Voluntary Renewable Gas program), there are no technical barriers to implementing a Non-Voluntary Renewable Gas program. Under such a program, New Residential Connections are required to connect using 100% renewable gas that is paid for entirely by the New Residential Connection, thus meeting the Bonbright Principle of cost-causation.

24.1 Please provide a list of the regulatory precedents for ratepayers under the same tariff to receive a differentiated commodity (i.e. conventional natural gas or Renewable Gas) depending on the meter connection date/ID.

Response:

While FEI is unaware of any past precedents where ratepayers under the same tariff received a differentiated commodity depending on the meter connection date/ID, or even where this issue has arisen, it should not be surprising that new solutions will need to be created in response to the unprecedented challenges posed by climate change and the new policies in BC.

However, with respect to the provision of a differentiated commodity under the same tariff, in Order G-245-20, the BCUC approved the amalgamation of FEI's Revelstoke propane supply portfolio costs with FEI's natural gas supply portfolio costs.

24.2 Please explain how the Bonbright principle of cost causation is satisfied when ratepayers under the same tariff receive a differentiated commodity (i.e. conventional natural gas or Renewable Gas) determined by the meter connection date/ID.

Response:

The following response is provided by Concentric.

Please refer to the responses to BCUC IR1 13.2 and 16.2. The nature of the New Residential Connections service does not cause this proposed service to warrant different ratemaking treatment from the existing residential sales service. Fundamentally, charging "new" customers a different rate from "existing" customers represents an unreasonable form of discrimination which creates "acquired rights" and wealth entitlements for customers served off of existing service lines, even when those customers may be "new" to the system as well.

24.3 Under the proposed changes, please confirm that it is solely a service line installation that defines the trigger for a New Residential Connection.

Response:

Confirmed. For clarity, in the proposed tariff language (Appendix D-2 of the Application), a "Permanent Connection Low Carbon Gas Service Customer" is defined as follows: "Means a Customer taking Gas Service for Residential Premises or Eligible Commercial Premises that are connected to the FortisBC Energy System by a service line installed on or after the effective date of the Permanent Connection Low Carbon Gas Service."

24.4 What is the typical scope of work for a service line install?

Response:

The typical scope of work for a service line installation (for both a conventional natural gas customer or for a Renewable Gas Connections customer) is described below.

1. FEI completes the customer application process, identifies environmental, archaeological, and municipal/provincial permitting requirements.

2. For preparation of the service line installation, the construction crew confirms the location of all foreign utilities in proximity to the proposed service location, confirms all permit requirements have been met, and ensures necessary traffic management measures are in place prior to excavation.

3. For installation, a bellhole is excavated on the gas main where a service tee is placed on the gas main with a service line installed, typically in an excavated trench, from the gas main to the meter location on the building. A gas meter set that includes a pressure regulator and gas meter is installed on a service riser. Trench and bellhole are backfilled, compacted and restored to grade. The remediation of hard surfaces (concrete/pavement) are made with temporary materials until such time that permanent repairs can be made.

24.5 What are all the ways a residential customer can trigger a service line install?

Response:

A service line is the only way to receive gas service from FEI. Therefore, if a customer wishes to receive gas service they must request it from FEI. Customers or a builder/developer can contact FEI by phone or online to initiate the service line installation request.

24.6 Can a residential customer trigger a service line installed by any other method than physically performing a service line install (e.g. can it be a volitional declaration with associated payment of funds)?

Response:

No.

24.7 Under what conditions is a meter replacement considered a service line install?

Response:

A meter replacement alone is not considered a service line installation under any conditions.

24.8 What are the average GHG emissions that result from the following types of construction activity:

a) New Construction

b) Conversion

c) Retrofit

Response:

FEI does not have data or expertise in the area of emissions associated with construction activity, and therefore, is not in a position to provide a fulsome response to this question. As far as the energy performance of a home, every home, new construction or retrofit, will have different emissions based upon the amount of energy being used and the type of energy they use (and its associated emissions). The only way to know a specific building's emissions it to analyze each individual building separately.

24.9 Please provide a socio-economic comparison of people who typically engage in new construction, conversion and retrofit, vs. those that continue to use their existing housing stock.

Response:

FEI has not conducted a socio-economic analysis of the people who purchase new homes compared to those who live in existing homes. FEI would expect there to be a broad cross section of socio-economic levels for each type of customer.

Further, since the request for service from FEI is of limited value to outside organizations, there are no organizations (e.g., Statistics Canada or CMHC) that track mortgage levels or income correlated against FEI construction services. Lastly, FEI is required to protect personal information and consequently would not provide organizations customer data for any purpose.

24.10 What is the average expected service life of the following appliances:

a) Natural Gas Furnace

b) Hot Water Tank

c) Cooking Appliance

Response:

Based on publicly available sources:

- Natural gas furnace lifespans range from 15 to 30 years with regular maintenance.
- Hot water storage tanks have a life expectancy of 10 to 13 years. Condensing tankless water heaters have a life expectancy of about 20 years.
- Gas ranges have a life expectancy of about 15 years.

24.11 In cases where a gas works permit is triggered due to appliance replacement (e.g. natural gas furnace replacement at end of life), and municipal bylaws requires a Renewable Gas Connection (i.e.100% RG or electric furnace to be in compliance with bylaws) to replace the gas fired appliance with another gas fired appliance, how can this ratepayer qualify as a Renewable Gas Connection?

a) How will FEI ensure its Renewable Gas Blend customers are protected from municipal bylaws that prohibit the replacement of natural gas fired appliances with a new gas fired appliance while still maintaining compliance with municipal bylaws?

b) Based on the answer to (a) and (b) above, why cannot all customers be deemed 100% RG when they replace their gas fired appliances at end of life?

Response:

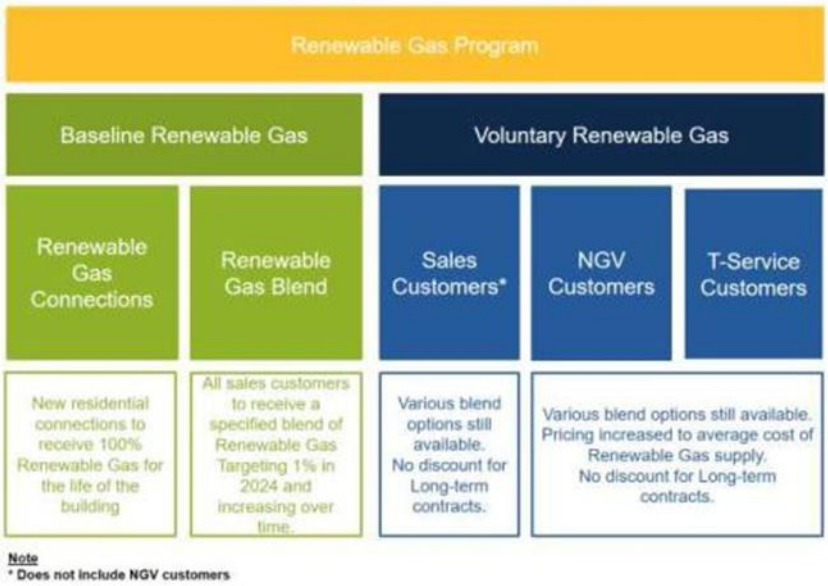
Please refer to the City of Vancouver IR1 6.2.

25.0 Reference: Exhibit B-11, Stage 2 Application, Page 85

Section 7 – Proposed Renewable Gas Program

At the above noted location FEI provides the following figure:

Figure 7-1: Revised Renewable Gas Program



At the above noted location FEI states:

"The revised Renewable Gas Program as illustrated above is designed to meet the needs identified through FEI's review of the program as described in sections 3 to 6 of the Application. The Renewable Gas Connections service will meet the requirements of local governments for new residential construction, enabling FEI to continue to add customers to the system. By incorporating a Renewable Gas Blend for all sales customers, FEI will be able to sell the increasing volumes of Renewable Gas required to meet provincial GHG reduction targets for the gas supply. The Voluntary Renewable Gas offering will continue to give customers the option to purchase up to 100 percent Renewable Gas, allowing FEI to retain those customers that need a low carbon energy solution. As a whole, the proposed Renewable Gas Program will mitigate upward rate pressure that would result from a scenario where FEI's costs increase through the acquisition of Renewable Gas at the same time that government policies result in a loss of FEI's customer base. As proposed, the Renewable Gas Program will help maintain the long-term viability of the gas delivery system and energy choice for British Columbians."

25.1 Please confirm that Renewable Gas Connections customers can consider themselves as purchasing 100% Renewable Gas.

Response:

Confirmed.

25.2 Please describe who would select to be a Voluntary Renewable Gas - Sale Customer when the Renewable Gas Connections option is available at a materially reduced cost?

Response:

The proposed Renewable Gas Connections service is available only to new residential connections customers. These customers do not get to choose the service, but will be automatically designated as a Renewable Gas Connections customer. Because these customers already receive 100 percent Renewable Gas, they do not have the ability to select a higher percentage voluntarily. All other sales customers who wish to purchase a higher concentration of Renewable Gas than is available through the Renewable Gas Blend service may elect to do so through the Voluntary Renewable Gas service. All T-Service customer may also elect to purchase up to 100 percent Renewable Gas through the Voluntary Renewable Gas service.

25.3 Please provide a table that summarizes which customer types (along with rate schedules) that can participate in each of the renewable gas programs listed in Figure 7-1.

Response:

Please refer to the response to BCSEA IR1 4.19 in which a Revised Table 8-1 was provided to make a correction to the S&T LC rider in the T-Service column. FEI provides the requested breakdown of customer types, with the requested information added into the row at the bottom of Revised Table 8-1.

1 **Requested Revised Table 8-1: LCG Charge and S&T LC Rider Summary**

	Sales Customers				T-Service
	Baseline Renewable Gas		Voluntary Renewable Gas		
	Renewable Gas Blend (for Sales Customers)	**Renewable Gas Connections (residential dwellings)**	**Non-NGV Sales**	**NGV Sales**	**T-Service**
Renewable Gas Service	**No Renewable Gas Sign up Required**	**Default 100% Renewable Gas**	**Elect 10% Renewable Gas**	**Elect 10% Renewable Gas**	**Elect 10% Renewable Gas**
Cost recovery via S&T LC rider for decarbonizing gas supply	1%	1%	1%	1%	0%
Cost recovery via LCG Charge for Incremental Renewable Gas % up to required or elected amount	0% 99% for NGV	99%	9%	9%	10%
Total Renewable Gas % Customer Receives	**1%**	**100%**	**10%**	**10%**	**10%**
S&T LC rider (Section 8.4.2)	TBD Annually	TBD Annually	TBD Annually	TBD Annually	Not Applicable
LCG Charge (Section 8.4.1)	Not Applicable	Equivalent to CCRC + carbon tax	CCRC + carbon tax +$7	Renewable Gas weighted average supply cost per GJ ***less*** the S&T LC rider	Renewable Gas weighted average supply cost per GJ
Rate Schedules	1, 2, 3, 4, 5, 6, 7	New Rate Schedules: 1PLC, 2PLC, 3PLC, 5PLC	Rate Schedules 1B replaced by 1LC, 2B replaced by 2LC, 3B replaced by 3LC, 5B replaced by 5LC, and new Rate Schedule 7LC	New Rate Schedules 3VLC and 5VLC, amendments to Rate Schedule 46	Rate Schedule 11B replaced by 11LC Applicable to RS 22, 23, 25 and 27
Customer Type	Residential, Commercial, Industrial and NGV Sales	New Residential Connections[10]	Residential, Commercial, Industrial Sales	NGV Sales	T-Service (commercial, NGV transport, industrial)

2

3

4

5

[10] As per footnote 93 of the Application: New Residential Connections are all residential dwellings served by a service line installed on or after a designated date, including new construction activity, conversions and retrofits. FEI serves a range of residential dwellings, including detached homes, semi-detached homes, row houses, duplexes and quadruplexes, townhouses and multifamily condominiums under RS 1, RS 2, RS 3, or RS 5 depending on the volume of the gas service.

25.4 Please provide, for each of the next 5 years, the quantity of Renewable Gas that FEI anticipates will be delivered to "new residential connections" as represented in Figure 7-1.

Response:

Please refer to the response to BCUC IR1 35.1.

26.0 Reference: Exhibit B-11, Stage 2 Application, Page 87

Section 7.2.1 – Meet Provincial Targets for GHG Emissions and Balance Renewable Gas Supply and Demand

At the above noted location FEI states:

"Further, as FEI acquires significant volumes of Renewable Gas, enabled through the GGRR, to meet provincial policy objectives, FEI needs to be able balance supply and demand. To align with the CleanBC Roadmap, FEI may need to acquire 45 and 65 PJs of Renewable Gas annually. This volume of Renewable Gas may result in a build up of unsold Renewable Gas volumes unless FEI has a means of ensuring that it can all be sold to customers."

26.1 Please confirm that GGRR regulations allow - rather than mandate - that FEI can purchase RNG up to 15% of annual volumes, and that those volumes will be deemed to be a "prescribed undertaking".

Response:

Confirmed. FEI notes that the emissions cap on natural gas utilities announced in the CleanBC Roadmap, which FEI expects to be implemented as the Greenhouse Gas Reduction Standard, will provide a mandate or obligation on FEI to reduce emissions associated with conventional natural gas consumption.

26.2 Please confirm that BCUC's approval of FEI rates must allow recovery of costs associated with "prescribed undertakings", but the mechanism for the recovery is subject to BCUC decision making?

Response:

Confirmed.

26.3 Please confirm that if Renewable Gas customers paid the all-in cost of their Renewable Gas, that there would be no need for FEI to collect incremental revenues related to such Renewable Gas quantities from other customers.

Response:

Renewable Gas customers are paying the full all-in cost of the Renewable Gas. FEI is proposing that, through the three offerings in this Application (i.e., the Renewable Gas Connections, Renewable Gas Blend and Voluntary Renewable Gas services), all costs are recovered from those customers receiving Renewable Gas. Renewable Gas costs are not recovered from customers who do not receive Renewable Gas.

27.0 Reference: Exhibit B-11, Stage 2 Application, Page 87-88

Section 7.2.2 – Enable Compliance with Building Regulations to Maintain Energy Choice for New Residential Construction

At the above noted location FEI states:

"A revised Renewable Gas Program must provide an option for New Residential Connections to comply with regulations limiting emissions from new residential construction to maintain energy choice for British Columbians.

As described in Section 3.5, it is becoming increasingly difficult for FEI to deliver conventional natural gas service to new residential construction. This is primarily driven by bylaws and other policies implemented by local governments aimed at reducing GHG emissions, but FEI's ability to connect new residential buildings will be further restricted with forthcoming amendments to the BC Building Code which incorporate a GHGi limit. Provincial government policy also seeks to eliminate carbon pollution from new homes.95 These barriers to service leave builders, developers and home owners without a viable alternative to electricity. Absent a Renewable Gas service that complies with municipal building regulations, new residential customers will be unable to meet their energy requirements using the gas system and will have limited energy choice.

In order to maintain energy choice for new potential customers, a revised Renewable Gas Program must provide new residential construction customers with the option to comply with building regulations while still being able to use the gas system."

27.1 Please provide a timeline for when "energy choice for British Columbians" will no longer be maintained?

a) Is this statement backed by evidence or, is it a statement of FEI's opinion?

b) Please confirm that many homes in British Columbia are not connected to a natural gas distribution system but that British Columbians have energy choice despite that fact.

Response:

Please refer to Section 3.5 and Appendix A of the Application for evidence relating to how GHGi targets set in certain cities have limited customer choice of energy supply in new buildings. The lack of permanence in FEI's existing Renewable Gas Program offering, combined with GHGi targets that cannot be met with conventional natural gas, means that customers must select electricity as their source of energy.

FEI acknowledges that there are many homes in BC that are not connected to a gas system. For the majority of these customers, their ability to connect to the gas system is impacted by their proximity to gas infrastructure and/or the sizeable cost for them to connect to the system. In

contrast, customers located close to FEI's network of gas infrastructure that are not prohibited from attaching to the gas system by policy, have energy choice.

27.2 Will a slow down in residential construction potentially lead to a similar adverse outcome?

Response:

No. A slow-down in the residential construction cycle is not connected to the choice of energy or lack thereof as a result of GHGi policies set by local governments. However, a slowdown in the residential construction market will result in fewer customer additions regardless of policies.

27.3 Has FEI assessed the risk to incumbent customers to not have their gas deliveries meet the average mix being targeting in the GGRR regulations?

Response:

The GGRR enables FEI to acquire RNG for delivery to customers in order to reduce their GHG emissions and does not require or specify that there be a target average mix.

27.4 Has FEI assessed the potential demand destruction that higher gas prices will imply for incumbent customers? Please compare that risk to the risk of lower natural gas sales growth relating to estimated future connections of new residential customers (that would receive 100% RG).

Response:

Please see the Guidehouse report titled *Pathways for British Columbia to Achieve its GHG Reduction Goals*[11] (Pathways Report) for a discussion of declining demand and the potential costs of an electrification focused GHG reduction pathway for BC versus a diversified one that optimizes the gas and electric energy delivery systems. One of the main findings of the Pathways Report was that a diversified pathway saves in excess of $100 billion by 2050, while meeting the Province's 80 percent GHG emission reduction goal. The diversified pathway is primarily a lower

[11] Pathways for British Columbia to achieve its GHG reduction goals. Guidehouse. 2020.

cost because it ensures the gas system is used and useful, whereas the electric pathway assumes significant demand destruction and fuel switching.

Please refer to Section 5.8 of the Application, which discusses FEI's available information on the price elasticity of demand for Renewable Gas. However, generally speaking demand for natural gas in households is inelastic to changes in price in the short term given the expense associated with switching to an alternative fuel. While there is potential for demand to decrease as gas rates rise, there would need to be an increase in gas rates and a significant decrease in electricity rates and electrical heating equipment costs to see meaningful changes in customer connections and demand. Further, as noted in the Pathways Report, to meet the decarbonization targets, both gas and electric rates will see increases, moderating any potential risk to lower gas sales.

Furthermore, FEI does not see the adoption of Renewable Gas by new connections to be a risk, but rather, a new opportunity for the growth of low carbon energy in BC. Please refer to the response to RCIA IR1 2.4 for more discussion on this topic. FEI's 2022 Long-Term Gas Resource Plan also evaluates different scenarios for demand based on policy and other drivers.

28.0 Reference: Exhibit B-11, Stage 2 Application, Page 89

Section 7.2.3 – Meet Customer Requirements for Renewable Gas to Maintain Energy Choice for Existing Customers

At the above noted location FEI states:

"Most customers are also sensitive to the price premium paid for Renewable Gas versus conventional gas. Thereby Renewable Gas solutions must be priced in a way that encourages adoption in order to provide a feasible gas solution that maintain energy choice for these segments of customers."

28.1 Is it FEI's experience that most customers are sensitive to the price paid for natural gas, or simply the premium paid for Renewable Gas?

Response:

FEI's experience is that customers are sensitive to the price paid for gas service, which includes the premium paid for Renewable Gas compared to conventional gas where that premium is part of the rate charged. As described in the 2015 BERC Rate Application, when the price premium for RNG in the existing voluntary program increased, prior to the updated BERC Rate mechanism, FEI witnessed a notable decline in demand for RNG.

28.2 What has FEI asked customers about their preferences for subsidizing other customers' purchases of Renewable Gas for new connections? Please provide details.

Response:

FEI does not agree with the premise of this question that customers are subsidizing other customers' purchase of Renewable Gas. Please refer to the response to BCUC IR1 13.2.

FEI has not asked customers about their preferences specific to Renewable Gas for new residential connections. FEI has, however, asked customers about their thoughts on how Renewable Gas should be paid for generally. Please refer to the Application, Appendix B-1, under the section "Who should pay for RNG? How should the costs be shared?"

29.0 Reference: Exhibit B-11, Stage 2 Application, Page 91

Section 7.3.2 – Identification of Potential Program Design Alternatives

At the above noted location FEI states:

"In considering how to update the Renewable Gas Program in light of the needs identified in Section 7.2, FEI considered the following potential program design alternatives:

A. Voluntary Renewable Gas: …

B. Renewable Gas Blend: …

C. Renewable Gas Connections: …"

29.1 Did FEI consider a combination of A and B, wherein customers can buy RG in increments and where any remaining costs attributed to "GGRR prescribed undertaking" will be blended into a single tariff product for the remain residential customers (who are not voluntarily purchasing RG blends)?

a) Would this allocation of costs fail to meet any Bonbright principles? Please elaborate.

Response:

The question, as posed, reflects part of the program proposed by FEI. Customers, other than those required to participate under the Renewable Gas Connections service, have the option of voluntarily having FEI purchase additional amounts of Renewable Gas on their behalf. However, as a point of clarification, FEI is proposing to blend Renewable Gas for all sales customers rather than only residential customers because the program is open to all customers who employ gas to heat existing homes, heat business, and drive business production activities. For a discussion of Bonbright principles, please refer to the responses to BCUC IR1 13.2, 16.2 and 23.4.

30.0 Reference: Exhibit B-11, Stage 2 Application, Page 95

Section 7.3.4 – Only a Comprehensive Program Meets Identified Needs

At the above noted location FEI states:

"Table 7-1 summarizes how each of the alternatives performs with respect to the identified needs. A "✓" signifies that the option meets the need. As illustrated in the table, alternatives A, B and C each meet one of the identified needs and alternative D meets all three."

Table 7-1: All Three Alternatives Required to Meet Program Needs

Alternatives	Provincial Government Policy	Compliance with Building Regulation	Customer Needs for Renewable Gas
A: Voluntary Renewable Gas			✓
B: Renewable Gas Blend	✓		
C: Renewable Gas Connections (Option 1)		✓	
D: Comprehensive Program	✓	✓	✓

The RCIA contends that a Non-Voluntary Renewable Gas program may be a fairer option for residential ratepayers while achieving materially the same GHG emissions targets (i.e. the same as Option D BUT New Residential Connection pay the full cost of their RG supply). Since the proposed New Residential Connection program is tied to new service line installs (e.g. individual meter ID) and FEI already tracks different programs by meter ID (e.g. Voluntary Renewable Gas program), there are no technical barriers to implementing a Non- Voluntary Renewable Gas program. Under such a program, New Residential Connections are required to connect using 100% renewable gas that is paid for entirely by the New Residential Connection, thus meeting the Bonbright Principle of cost-causation.

30.1 Why didn't FEI consider a Non-Voluntary Renewable Gas program for New Residential Connections?

Response:

Please refer to the response to RCIA IR1 7.2.

30.2 Please confirm there are no purely technical barriers to implementing a Non-Voluntary Renewable Gas program for New Residential Connections.

Response:

Please refer to the response to RCIA IR1 7.2.

30.3 Please compare the cost and benefits to existing residential customers and New Residential Connection customers associated with a Non-Voluntary Renewable Gas program?

Response:

Please refer to the response to RCIA IR1 7.2.

30.4 Please compare and contrast the proposed Renewable Gas Connections program with a Non-Voluntary Renewable Gas Connection program using Bonbright principles, including the principle of cost causation.

Response:

Please refer to the responses to BCUC IR1 23.4 and RCIA IR1 7.2.

30.5 What is the expected change in residential property value for New Residential Connection properties that results from implementing the Renewable Gas Connections program?

Response:

The determination of market values of properties values is outside the expertise of FEI. However, property assessment values are determined by several factors according to BC Assessment. When determining the assessed value, BC Assessment appraisers consider the property's unique characteristics, including:[12]

- The location of the home;
- The view from the home;

[12] https://info.bcassessment.ca/Services-products/Understanding-the-assessment-process.

- The size of the home;
- The age of the home;
- Garages, carports, decks, pool, etc.; and
- Comparable sales prices and other real estate market information"

These factors do not include energy costs, and therefore, do not indicate if an FEI customer who owns their residence gets the benefit of a property value lift or discount for being enrolled in the Renewable Gas Connections service.

The following response is provided by Concentric.

It is clear, however, that if vintage pricing were employed whereby existing customers would pay a lower rate than new residential dwelling customers, that would effectively result in a transfer of wealth to the older customer. At a minimum, the customer who initiated service prior to the proposed start date of this program would pay a lower gas supply cost on a going forward basis for no other reason except that they initiated their service before the start date of the proposed program. All else equal, a prospective buyer of the two identical homes would value the former more highly if only because their ongoing gas utility bills in that home would be substantially lower. This differential in the value of the two homes would represent the creation of wealth for the owners of homes entitled to Renewable Gas Blend service, due solely to the adoption of differentiated vintaged pricing for the Renewable Gas Connections service. Creating such wealth entitlements through ratemaking, when the incremental cost of serving a "new" customer is the product of public policy, not the product of differences in the costs imposed by a "new" customer as compared to an "existing" customer, does not comport with the establishment of just and reasonable rates. Refer to the response to BCUC IR1 13.2.

30.6 What is the expected change in residential property value for New Residential Connection properties that results from implementing a Non-Voluntary Price Program as described by RCIA in IR 24?

Response:

Please refer to the response to RCIA IR1 30.5.

30.7 Why is it fair that Renewable Gas Blend (i.e. not Renewable Gas Connections) ratepayers should reduce their underlying property values due to being a Renewable Gas Blend customer and cross subsidize Renewable Gas Connection

customers who get to benefit from a property value lift due to being supplied by 100% Renewable Gas? Discuss and provide quantitative supports to your argument.

Response:

Please refer to the response to RCIA IR1 30.5.

30.8 Please confirm that a New Residential Connection that chooses to purchase RNG under option A is is compliant with gets a check mark for Provincial Government Policy and Compliance with Building Requirements (i.e. gets all three check marks).

Response:

Not confirmed. Table 7-1 is regarding the Renewable Gas Program as a whole, not individual customers. FEI's Renewable Gas Connections service is non-voluntary and permanent (attached to the premises rather than the customer) for all new residential connections.

30.9 Did FEI consider a program that included just A + B? Please discuss why or why not.

Response:

FEI considered and rejected the idea of a program based on A + B only. As discussed in Section 7.3.4 of the Application, all three components of the Renewable Gas Program are required to maintain the long-term viability of the natural gas distribution system while providing greater energy choice for British Columbians. The Renewable Gas Blend service is required for FEI to meet provincial targets for GHG reductions in the gas supply, and to sell the significant volumes of Renewable Gas it is acquiring to meet those targets. The Renewable Gas Connections service is needed to meet restrictive policies for new residential construction and preserve energy choice in this sector. Finally, the Voluntary Renewable Gas service is required to meet customer needs for Renewable Gas greater than what can be provided to all customers under a Renewable Gas Blend service and will preserve energy choice for these customers.

31.0 Reference: Exhibit B-11, Stage 2 Application, Page 100

Section 7.4.2 – Renewable Gas Connections

At the above noted location FEI states:

"All Renewable Gas Connections will be designated as low carbon and will be served by a tariff that is tied to the building, rather than the customer. In this way, the building remains on a gas service receiving 100 percent Renewable Gas for its life (as opposed to the service tied to the individual customer who may leave the system at any time.)

In order to provide for equity between residential dwellings who are mandated to reduce emissions and those who are not, customers served under the Renewable Gas Connections tariff will pay the same effective rate for their gas service as existing customers in similar rate schedules. For example, an existing residential customer pays for the commodity (via the CCRC) as well as a carbon tax, and a customer served under the Renewable Gas Connections tariff served 100 percent Renewable Gas will pay a rate equal to the CCRC + carbon tax. In this way, customers requesting a new service for a residential dwelling are charged the same as any other customer in a residential dwelling already connected to the gas system. They are not compelled to pay a higher price for gas which must be low carbon in order to comply with new municipal regulations."

31.1 Please explain how equity is achieved given that the proposed approach abandons the Bonbright principle of cost causation.

Response:

The following response is provided by Concentric.

As discussed in the responses to BCUC IR1 13.2 and 16.2, and RCIA IR1 16.1, FEI's proposal is consistent with long-standing ratemaking principles, including Bonbright, the BCUC's practices supporting average cost pricing, the NEB's policy regarding no acquired rights, and standard rate-setting approaches applied by the BCUC and throughout North America.

31.2 Please compare and contrast the commodities, their price, their cost, their environmental attributes, the rate schedule they fall under, and their compliance with municipal bylaws.

Response:

a) Rate schedule, rates and costs:

Please refer to Appendix D to the Application.

b) Environmental attributes:

Table A-1 of the Application (Appendix A) provides burner tip emissions factors. The table below shows the difference between conventional natural gas and RNG.

Table 1: Emissions by Fuel Type

RNG versus Natural Gas (Burner Tip)	kgCO2e/GJ (or g CO2e/MJ)
RNG - 2020-BC Best Practice to Quantify GHG Emissions (p. 13)	**0.2932**
NG - 2020-BC Best Practice to Quantify GHG Emissions (p. 13)	**49.87**
Difference in emissions per GJ	**-49.58**

If the GHG emissions factor analysis scope is expanded to include upstream emissions, the GHG savings becomes even larger. Methane is capped at the production facilities from release into the atmosphere as part of the production of RNG from rotting biomass and the emissions factor becomes negative (i.e., carbon negative). Please refer to the response to City of Richmond IR1 12.4 for additional information.

c) Compliance with municipal bylaws:

Renewable Gas:

Please refer to the response to RCIA IR1 8.1 regarding how 100 percent Renewable Gas meets all local government regulations and the need for permanency.

Natural Gas:

Each municipality is different. Many use a GHG intensity metric (GHG/floor area) for compliance with their bylaws, sometimes in combination with penalties to connect to a fossil fuel gas system. Detailed examples can be found in Tables A-3 to A-7 in the Application (Appendix A).

32.0 Reference: Exhibit B-11, Stage 2 Application, Page 101

Section 7.4.2 – Renewable Gas Connections

At the above noted location FEI states:

"As discussed in section 3 of the Application, current municipal policies have the potential to result in lower gross customer additions, and over time, an overall drop in the number of customers attached to the system. This risk is compounded by BC's higher residential tear down rate. Absent a service offering that satisfies applicable carbon reduction standards, FEI could continue to lose customers due to teardowns, but will have no ability to add any residential rebuilds, resulting in a loss of throughput and a permanent decline in the customer base."

32.1 Assuming current municipal policies and disapproval of the proposed RG program (e.g. business as usual), please provide a graph of number of residential customers and energy consumed by residential, commercial and industrial customers over the time frame implied by the text.

Response:

FEI expects more local governments to adopt GHGi policies. While there are a number of local governments that have current policies or regulations implementing GHGi limits, or policies encouraging developers to choose energy other than gas, many more are looking at adopting similar policies. For example, the City of Nanaimo is in the process of adopting GHGi restrictions. Both teardowns and new greenfield construction will be affected by the continued adoption of these policies, although industrial customers are not affected by municipal residential and commercial building bylaws.

The net effect of the adoption of these policies is that FEI would eventually see no new connections and a decline in net (existing) customers as teardown buildings do not connect to the gas system. Please refer to the response to BCUC IR1 12.2 where FEI discusses the scenario which assumes that provincial building stock turnover is approximately 2 percent per year and none of those new buildings connect to the gas system, resulting in FEI losing 2 percent of its residential and commercial customers per year.

32.2 Under this "business as usual" scenario, please quantify and discuss the expected consequences to FEI of this loss of throughput and permanent decline in customer base.

Response:

Various future scenarios of demand and customer attachments are explored in FEI's 2022 Long-Term Gas Resource Plan, which was filed with the BCUC on May 9, 2022. For discussion on the costs of declining throughput and fewer customers on the gas delivery system as a result of a decarbonization strategy focused on electrification, please refer to the responses to BCUC IR1 12.2.1, 12.2.3 and 12.3.2.

32.3 Under this "business as usual" scenario, please compare FEI energy prices with BC Hydro energy prices.

Response:

Please refer to the response to BCUC IR1 13.7.

33.0 Reference: Exhibit B-11, Stage 2 Application, Page 102

Section 7.4.2 – Renewable Gas Connections

At the above noted location FEI provides the following table:

Table 7-2: Energy Source Emission Factors

Energy Source	Source of Values	Emission Factor Values		
		$kgCO_2e/GJ$	$kgCO_2e/kWh$	tCO_2e/GWh
Conventional Natural Gas	2020 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions[105] (Table 1, p. 12)	49.87	0.180	179.53
Biomethane (RNG)	2020 BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions (Table 1, p. 12)	0.2932	0.001056	1.06
Electricity	2020 GGIRCA website (Integrated grid for BC Hydro)[106]	11.14	0.040	40.10

33.1 Please add a column to Table 7.4.2 to provide the metric being used by municipalities (i.e., GHG/m3).

Response:

As per Tables A2-A7 of Appendix A to the Application, the emission factor metric used by most local governments is GHGi (GreenHouse Gas Intensity) which is often expressed in kgCO2e/m2 and represents a kg of Carbon Dioxide Equivalent per floor area of a building measured in square metres (m2). This contrasts with an emissions factor of the fuel/energy source itself (Table 7-2). Therefore, the two metrics do not measure the same thing (i.e., GHGi measures emissions per floor area from a given building, while the emission factor of the fuel measures the emissions associated with a unit of energy). The emissions from the unit of energy are then used as an input (one of many) in calculating the GHGi emissions per floor area.

Further, the denominator of a GHGi is floor area, while the denominator of an emissions factor is energy. FEI is not aware of local governments using m3 (cubic metres) in their metrics in BC. While m3 is used in Ontario to describe a unit of Natural Gas (by volume measured at standard conditions), the common unit of measure in BC used by industry is GJ. As such, the GJ used in the denominator is one of the equivalent metrics listed in Table 7-2.

The emission factor of the particular fuel (measured in kgCoe2/gj) is then used to calculate the building emissions intensity (measured in kgCO2e/m2).

34.0 Reference: Exhibit B-11, Stage 2 Application, Page 102-103

Section 7.4.3 – Modifications to Voluntary Renewable Gas Offering

At the above noted location FEI states:

"As ownership of the environmental attributes of any Renewable Gas sold will transfer to customers, customers will benefit from a reduction in the carbon tax payable on any Renewable Gas they purchase.

As discussed further in Section 8 of the Application, FEI is proposing to change the name of the BERC to the Low Carbon Gas Charge to reflect the expanded portfolio of Renewable Gas enabled by the GGRR. With the exception of NGV and T-Service Customers as discussed below, FEI proposes to set the Low Carbon Gas Charge equivalent to the current BERC (i.e. CCRC + carbon tax + $7 premium). FEI considers that the rate setting methodology approved by the BCUC in 2015 continues to be just and reasonable for sales customers, excluding NGV customers. The Low Carbon Gas Charge is further described in Section 8.4.1."

34.1 Since FEI claims that you cannot create Renewable Gas by combining natural gas with an environmental attribute, why can the environmental attributes of Renewable Gas be separated from the Renewable Gas (i.e. why is the subtractive environmental attribute process not also reversible and additive)?

Response:

FEI assumes the statement that "FEI claims that you cannot create Renewable Gas by combining natural gas with an environmental attribute" is intended to represent FEI's submissions in the BCUC's Inquiry into the Acquisition of RNG by Public Utilities in British Columbia. This statement is not an accurate representation of FEI's position. FEI's submission was that the term "renewable natural gas" as used in the GGRR refers to biomethane, not a combination of natural gas with environmental attributes. FEI reiterates that it is supportive of a regime where it could purchase environmental attributes alone and pair them with conventional natural gas.

Purchasing out-of-province RNG is different than FEI purchasing carbon offsets that have come from another GHG reducing activity. Whether FEI purchases RNG within or outside of BC, a molecule of RNG is being produced and is replacing a molecule of conventional natural gas. As discussed in the response to BCOAPO IR1 10.1, RNG is delivered through displacement.

FEI has secured the rights to the environmental attributes and GHG emission reduction benefits of the RNG from its associated supply projects, such that the full value of the RNG will be received by FEI and its customers. As explained in the response to CEC IR1 3.2, RNG is considered low carbon due to the method by which it is produced. FEI purchases supply with the environmental attributes to ensure that FEI owns all aspects of the RNG and that the environmental attributes cannot be sold elsewhere.

34.2 Is it accurate to say that FEI has found that most customers willingness to pay premium for Renewable Gas is approximately $7/GJ plus carbon tax?

Response:

No. After approximately ten years in market, five of which used the pricing model described in the question, most of FEI's customers have not sought to enroll in the Renewable Gas Program. There may be several reasons for this, including the premium, lack of awareness, or lack of acceptance of the product. It would be more accurate to say that the $7/GJ plus carbon tax price has resulted in growth in program participation and sales volumes, allowing FEI to sell all purchased supply volumes, thereby limiting the cost borne by non-participants. Further, as FEI observed in the 2015 BERC Rate Methodology Application,[13] a price much higher than this level led to declining program enrollments at that time.

34.3 Has FEI adjusted the Low Carbon Gas Charge to account for inflation? Please provide details.

a) If not, why not?

Response:

Please refer to the response to BCUC IR1 12.3.2.

34.4 Has FEI adjusted the Low Carbon Gas Charge to account for the increasing marginal cost of acquire Renewable Gas? Please provide details.

a) If not, why not?

Response:

Please refer to the response to RCIA IR1 1.2.

[13] Application for Approval of Biomethane Energy Recovery Charge (BERC) Rate Methodology, August 28, 2015.

34.5 Has FEI adjusted the Low Carbon Gas Charge to account for the increasing customer demand for the program? Please provide details.

a) If not, why not?

Response:

Please refer to Section 7 of the Application for a discussion of how FEI proposes to set the LCG charges for each of its customer groups. The mechanisms proposed are cost-based and unrelated to the demand for Renewable Gas. FEI will continue to monitor the program and, as discussed in Section 9.6 of the Application, has committed to a review of its proposals and the related BCUC decisions after five years.

34.6 How does FEI communicate to ratepayers how much of its Renewable Gas purchases are being defrayed by non-participants in the program - either to program participants or to the broader public?

a) Where would the average residential ratepayer find this information?

Response:

Please refer to the response to RCIA IR1 5.1.

34.7 What fraction of the Renewable Gas program costs are shifted to non-participants?

Response:

Under the existing opt-in RNG Program, the portion of RNG supply costs that is shifted to non-RNG customers is the residual amount between the RNG acquisition costs and the BERC premium described in the question. This amount has varied year-to-year with changes in the cost of gas, carbon tax, the RNG acquisition costs, the volume sold to customers, and the volume purchased from suppliers. For example, in FEI's Annual Review for 2022 Delivery Rates, FEI forecast to recover $7.5 million of the cost of acquiring RNG through the BERC rate, with an additional $11.3 million of RNG acquisitions costs recovered from all non-bypass customers (which also includes customers in the RNG Program). For 2022, the fraction of RNG costs not recovered through the BERC rate was approximately 60 percent.

Under the revised Renewable Gas Program, all FEI sales customers will be Renewable Gas customers, receiving and paying for Renewable Gas supply to varying degrees.

34.8 What is the annual value of the Renewable Gas program costs that are shifted to non-participants?

Response:

Under the revised Renewable Gas Program proposed in the Application, there are no costs shifted to non-participants. All customers bearing a cost of Renewable Gas will receive Renewable Gas.

34.9 How does the FEI proposal maximize the efficient use of storage in order to balance any annual imbalances between contracted quantities of RG and sold quantities of RG? What tools is FEI using to balance inventory and adjust to allow incremental voluntary demand.

Response:

Please refer to the response to BCUC IR1 10.2.

34.10 Why should voluntary customers receive full credit for carbon tax avoidance if they are not actually paying the full price for the Renewable Gas?

Response:

Customers who receive RNG only receive a carbon tax credit for those volumes that are RNG. As prescribed by the Ministry of Finance, the pricing of RNG is separate from the carbon tax credit.

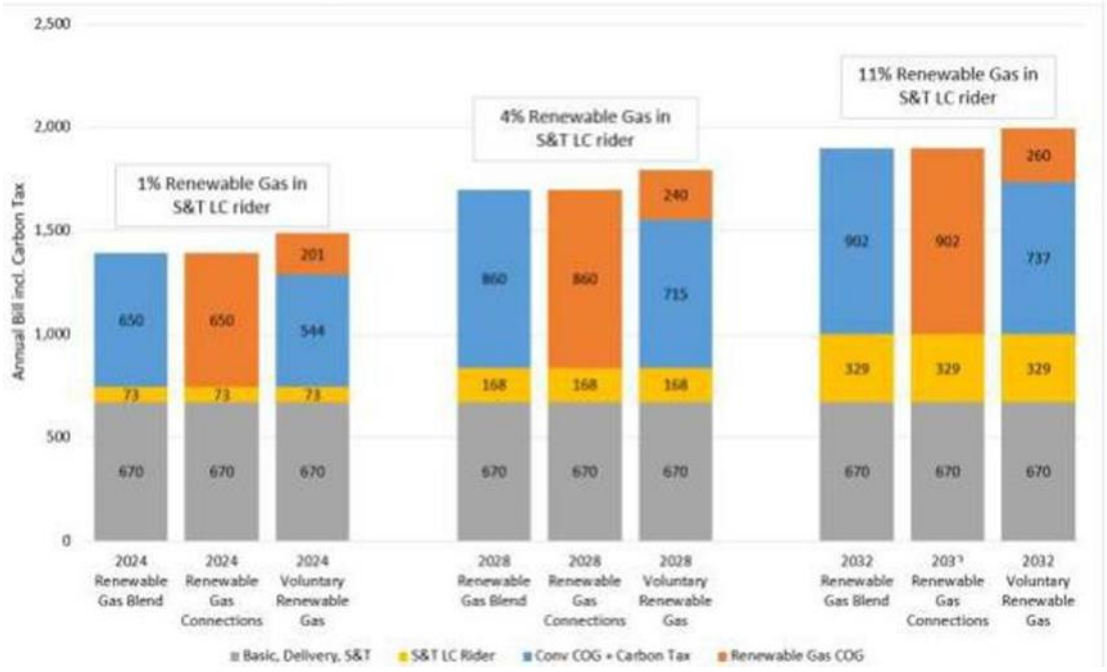
APPLICATION SECTION 8: ACCOUNTING TREATMENT, PROGRAM MECHANICS, RATE SETTING, AND CUSTOMER BILL IMPACTS

35.0 Reference: Exhibit B-11, Stage 2 Application, Page 123

Section 8.6 – Customer Bill Impacts

At the above noted location FEI provides the following figure:

Figure 8-4: Annual Bill for Rate Schedule 1



35.1 Please restate Figure 8-4 along with a supporting table using a Non-Voluntary Renewable Natural Gas approach as described in RCIA IR 24 (i.e. New Residential Connections are required to pay for 100% RG, Existing Customers have a blend of conventional gas and RG as needed to meet GHG targets).

Response:

Please refer to the response to BCUC IR1 14.1 for a discussion of demand of the Renewable Gas Connections customers if the price of acquisition was set to 100 percent.

Please refer to the response to BCUC IR1 12.3.2 for the estimated bill impacts when no Renewable Gas Connections demand exists.

APPLICATION SECTION 10: CONSULTATION AND ENGAGEMENT

36.0 Reference: Exhibit B-11, Stage 2 Application, Page 154

Section 10.3.4 – Emissions Reductions for Existing Buildings

At the above noted location FEI states:

"As part of this consultation process, local government representatives have expressed appreciation for FEI's efforts to reduce GHG emissions, including through the below excerpts from letters of support and resolution."

36.1 Please provide an assessment of the financial impact on home affordability for existing residential ratepayers who are cross subsidizing New Construction Connections.

Response:

FEI disagrees with the premise of the question that existing residential ratepayers would be cross-subsidizing Renewable Gas Connection customers. Please refer to the response to BCUC IR1 13.2 that describes how charging a higher price for energy to new customers can create wealth entitlements to owners of existing residential properties.

Moreover, if Renewable Gas Connections customers were charged a rate higher than that proposed in the Application, FEI would likely see no new connections (please refer to the response BCUC IR1 14.1). As a result, there would be no additional revenue into the Renewable Gas Program from new residential connections, resulting in higher costs to existing customers.

36.2 What percentage of New Construction Connections are rental units compared to existing customers?

Response:

FEI does not monitor the rental and owned status of residential or commercial premises. While there are residential buildings that have been permitted to be constructed as purpose-built rental housing, most new residential construction is market housing in the form of single family houses, townhouses or condominiums which may be purchased and then potentially rented privately. Homeowners may also rent portions of homes (e.g., basement suite). As a result, there are a number of different forms of rental units that cannot be easily tracked.

36.3 Please comment on the impact of energy costs on total rent for renters (i.e. total rent after including the cost of energy).

Response:

Similar to market values of properties, rents and rental agreements are outside the expertise of FEI. Analyses of this kind also present a number of challenges. In particular, rental agreements often employ different mechanisms to include or exclude utility costs. Further, while many rental units may be the result of purpose built rental housing, there is also a significant amount of rental units from smaller businesses or individuals that rent out portions of their homes such as basement suites, which further complicates the impact of energy costs on rent amounts.