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May 27, 2022

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, BC
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)
Revised Renewable Gas Program Application – Stage 2 (Application)
Errata to the Application dated May 27, 2022

On December 17, 2021, FEI filed the Application referenced above and on May 16, 2022, FEI filed its responses to round one information requests (IRs) in the above referenced proceeding. In the course of responding to certain round one IRs, FEI identified five pages in the Application[1] that required correction.

This Errata filing contains the following corrections to the Application.

Description	Revised Page/Item	IR Response
Application, Section 8.4	Page 114, Table 8-1	BCSEA IR1 4.19
Application, Section 8.6	Page 122, Figure 8-3	BCSEA IR1 11.1
Application, Section 8.6	Pages 123 to 125 Figures 8-4, 8-5, and 8-6	BCUC IR1 12.3.2

Appendix A to this Errata filing contains the affected pages in blacklined format. For ease of referencing for the record of this proceeding, Appendix B contains a consolidated version of the Application incorporating the affected pages from this Errata filing.

[1] Exhibit B-11.

FEI notes that, as discussed in the response to BCUC IR1 20.1, FEI suggested further revisions to the proposed tariffs filed in Appendix D to the Application which have not been included in this Errata filing. Final tariff changes, if approved, will be filed as part of a compliance filing following the BCUC's Decision on the Application.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Interveners

Appendix A

ERRATA DATED MAY 27, 2022 – BLACKLINED PAGES

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%	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 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

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Notes for rate schedule naming conventions:

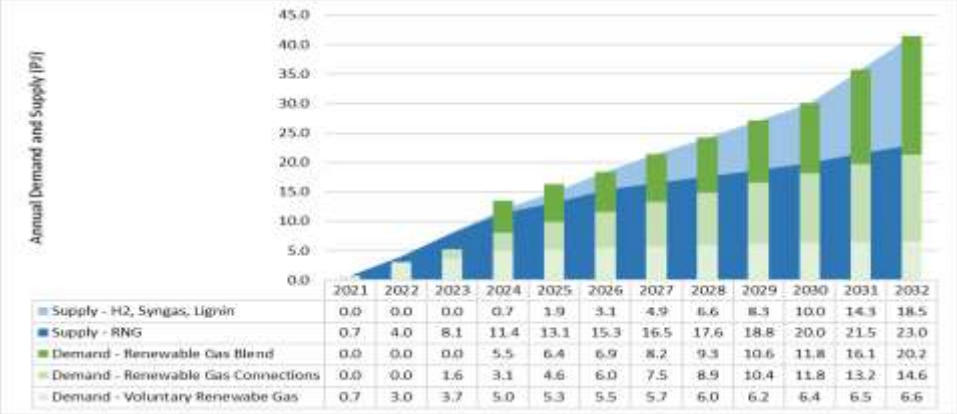
LC: Low Carbon
PLC: Permanent Low Carbon
VLC: Vehicle Low Carbon

In the table above, FEI lists the amended and the new rate schedules for the proposed Renewable Gas Program. Note that FEI is proposing a new RS 7LC for customers in RS 7 to have access to the Voluntary Renewable Gas offering; this customer group previously did not have a designated rate schedule under which they could receive Renewable Gas. All new and amended rate schedules can be found in Appendix D-2.

In summary, the LCG Account will capture all Renewable Gas recoveries and associated volumes through the LCG Charge and the S&T LC rider. The LCG Charge and the S&T LC rider are explained in detail in the following sections.

- Renewable Gas Connections are in the range of 14 thousand to 16 thousand per year and the composition is similar to the recent past (approximately 98 percent RS 1, and the remainder RS 2 and RS 3);
- The Voluntary Renewable Gas offering for Sales Customers will continue to see growth in RS 1 and, 2 from existing natural gas customers consistent with past customer subscriptions for Renewable Gas;
- The forecasts for larger volume commercial customers was based on past growth trends and forecasts from Key Account Managers per individual discussions with these customers; and
- The NGV demand forecast is based on an estimate provided by the Key Account Managers factoring how their demand could change with the proposed LCG Charge.

Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Supply - H2, Syngas, Lignin	0.0	0.0	0.0	0.7	1.9	3.1	4.9	6.6	8.3	10.0	14.3	18.5
Supply - RNG	0.7	4.0	8.1	11.4	13.1	15.3	16.5	17.6	18.8	20.0	21.5	23.0
Demand - Renewable Gas Blend	0.0	0.0	0.0	5.5	6.4	6.9	8.2	9.3	10.6	11.8	16.1	20.2
Demand - Renewable Gas Connections	0.0	0.0	1.6	3.1	4.6	6.0	7.5	8.9	10.4	11.8	13.2	14.6
Demand - Voluntary Renewabe Gas	0.7	3.0	3.7	5.0	5.3	5.5	5.7	6.0	6.2	6.4	6.5	6.6

This demand and supply forecast was used to calculate customer bill impacts shown in Figures 8-4 to 8-6. To isolate the impact to customers' bills from increasing Renewable Gas supply and changes in carbon tax, FEI has held all other rates at the current approved levels[113] and held customer count, use per customer and total demand equal to those in FEI's Annual Review for 2021 Rates.

The following three figures display the annual bills of customers in each of RS 1, 2 and 3, by service type (Renewable Gas Connections, Voluntary Renewable Gas for Sales Customers and remaining sales customers). Each figure includes years 2024, 2028 and 2032 on the x axis with the annual dollar amount on the y axis. At the top of each set of columns, in a text box, is the

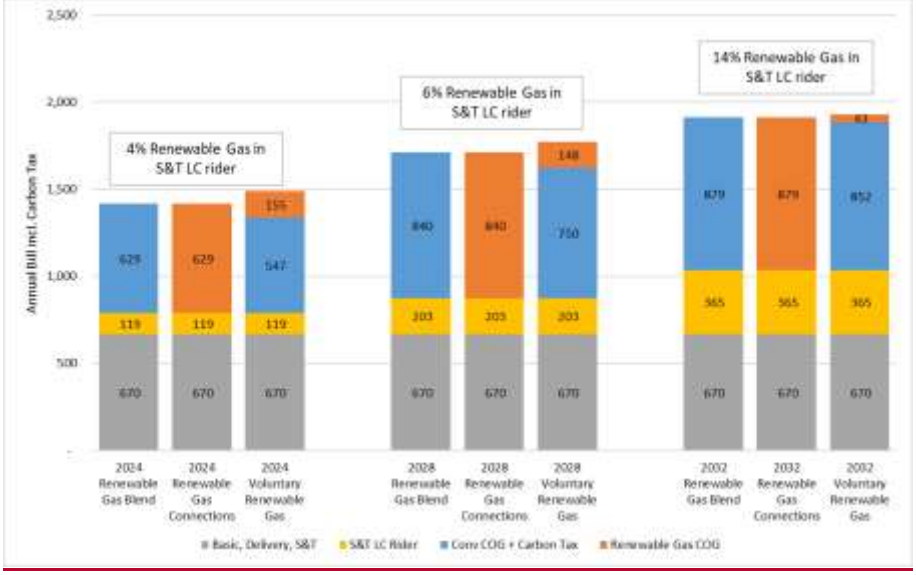
[113] Approved as at November 5, 2021.

percent of Renewable Gas delivered[114] and costs recovered through the S&T LC rider. Each column represents one of the Renewable Gas Program offerings:

- Renewable Gas Blend for sales customers (that are not Renewable Gas Connections customers or Voluntary Renewable Gas customers);
- Renewable Gas Connections; and
- Voluntary Renewable Gas for sales and T-Service customers.

The columns are stacked with the cost of each of the components of the bill set out in the legend on the graph. The grey stack includes the costs for the basic charge, delivery and storage and transport (S&T) charges for conventional natural gas. The yellow stack is the cost of the Renewable Gas Blend recovered through the S&T LC rider. The blue portion is the cost of conventional natural gas plus the carbon tax recovered from sales customers and voluntary customers. The orange stack shows the LCG Charge for Renewable Gas.

Figure 8-4: Annual Bill for Rate Schedule 1



For RS 1, FEI used a UPC of 83.1 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. The voluntary customer's bill is higher than new residential and existing residential because of the elected percentage of Renewable Gas which carries a $7 per GJ premium as discussed in Section 8.4.1. All else equal,

[114] FEI currently estimates Renewable Gas supplied through the S&T LC rider to be at 4 percent in 2024, 6 percent in 2028 and 14 percent in 2032 based on the remaining forecasted supply.

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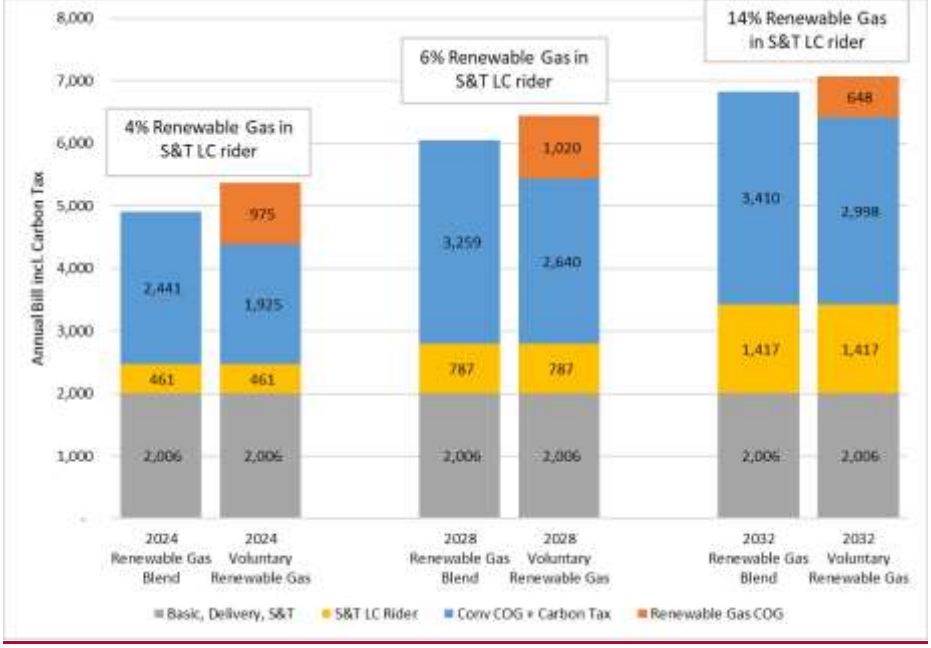
a non-voluntary RS 1 residential customer's bill will increase from approximately $1,420 in 2024 to $1,910[115] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

Figure 8-5: Annual Bill for Rate Schedule 2



For RS 2, FEI used a UPC of 332.4 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. FEI used the average of 24 percent for elected Renewable Gas for the voluntary customer's bill. The voluntary customer's bill is higher than new residential and existing residential because of the elected percentage of Renewable Gas which carries a $7 per GJ premium as discussed in Section 8.4.1. All else equal, a non-voluntary RS 2 small commercial customer's bill will increase from approximately $4,915 in 2024 to $6,830[116] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

[115] The increase equates to 35 percent over 8 years or a 3.8 percent compound annual growth rate.
[116] The increase equates to 39 percent over 8 years or a 4.2 percent compound annual growth rate.

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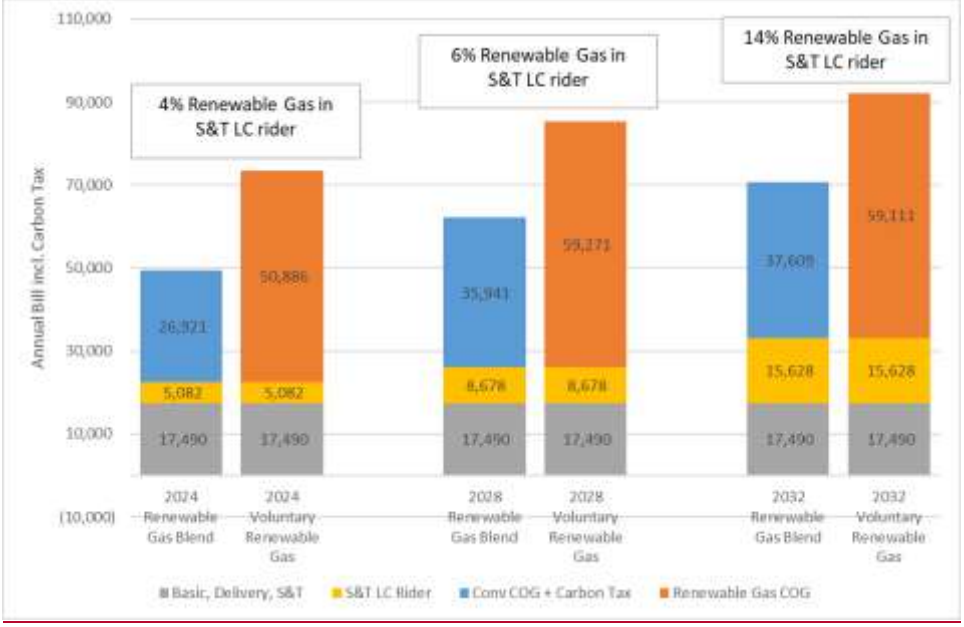
Figure 8-6: Annual Bill for Rate Schedule 3



For RS 3, FEI used a UPC of 3,555.5 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. FEI's experience has shown that voluntary customers in RS 3 elect to take 100 percent of their gas as Renewable Gas; consequently, the voluntary customer's bill is markedly higher than new residential and existing residential because of the high elected percentage of Renewable Gas which carries a $7 per GJ premium. All else equal, a non-voluntary RS 3 large commercial customer's bill will increase from approximately $49,490 in 2024 to $70,730[117] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

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8.7 *MITIGATING RISKS OF DEMAND AND SUPPLY BALANCING*

As discussed in Section 6.3, FEI will increase its Renewable Gas supply to respond to provincial policy directives. These supply volumes are expected to be greater than the demand FEI anticipates from Renewable Gas Connections and Voluntary Renewable Gas customers.

FEI will manage the variability in both supply and demand to mitigate risks. As FEI's sources of Renewable Gas become more diversified, the supply side risk is reduced. Supply mitigation

[117] The increase equates to 43 percent over 8 years or a 4.6 percent compound annual growth rate

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Appendix B

ERRATA DATED MAY 27, 2022
CLEAN CONSOLIDATED VERSION

FORTISBC ENERGY INC.

Comprehensive Review and Application for Approval of a Revised Renewable Gas Program

December 17, 2021

Table of Contents

List of Appendices

Index of Tables

Index of Figures

1. INTRODUCTION AND APPROVALS SOUGHT

1.1 *INTRODUCTION AND OVERVIEW*

FortisBC Energy Inc. (FEI or the Company) files this Comprehensive Review and Application for a Revised Renewable Gas Program (Application or Comprehensive Review) in compliance with British Columbia Utilities Commission (BCUC) Order G-35-21 which established a two-stage process for the review of the Renewable Gas Program (formerly referred to as the Biomethane Program). In this Application, FEI provides its comprehensive review and assessment of the Renewable Gas Program and requests approval of a revised Renewable Gas Program including necessary tariff changes, cost recovery methods, and regulatory treatment for new and revised Renewable Gas services. FEI uses the term Renewable Gas throughout this Application to refer collectively to the low carbon gases or fuels that the utility can acquire under the *Greenhouse Gas Reduction (Clean Energy) Regulation* (GGRR), which are: Renewable Natural Gas (RNG or biomethane), hydrogen, synthesis gas and lignin.

The Renewable Gas Program to date has been successful in achieving its objectives based on the policies in place at the time it was designed, and has established Renewable Gas as a low carbon energy that can meet GHG reduction objectives in the Province. However, the Renewable Gas Program now needs to change in response to evolving government climate policies, customer needs for Renewable Gas, and the significant increase in Renewable Gas that FEI is acquiring pursuant to the GGRR. Without a response from FEI, federal, provincial and municipal regulations and policies focused on reducing GHG emissions threaten the long-term viability of the gas delivery system and energy choice for British Columbians. This is due to mandates in the CleanBC Plan and CleanBC Roadmap for overall GHG reductions from the gas supply, regulations and policies that restrict gas service in the new residential construction sector, and GHG reduction mandates or goals that may cause customers to leave the system if there is not a viable Renewable Gas solution to meet their needs.

As set out in this Application, Renewable Gas can provide a low carbon energy solution that meets these challenges, and thereby maintains the long-term viability of the gas delivery system and energy choice for British Columbians. FEI considers that maintaining a diversified energy system is in the best interest of all energy consumers in BC and leverages the combined strengths of the gas and electric systems to deliver energy to British Columbians.

FEI's key proposals in this Application are summarized below:

- FEI proposes a new Renewable Gas Blend for sales customers under which all customers who purchase their gas from FEI (sales customers)[1] will be provided with a base level of Renewable Gas as part of their regular gas service. Subject to available supply, FEI expects to begin a one percent blend on January 1, 2024. FEI will charge customers for the Renewable Gas Blend they receive through a Sales & Transport Low Carbon (S&T

[1] Sales customers are those served by Rate Schedules (RS) 1, RS 2, RS 3, RS 4, RS 5, RS 6 and RS 7.

LC) rider and apply to the BCUC on an annual basis to set this rider. As FEI acquires increased volumes of Renewable Gas as enabled by the GGRR, the Renewable Gas Blend will increase over time to enable FEI to meet the new provincial CleanBC targets for greenhouse gas (GHG) emissions, and balance supply and demand. This service will result in rapid and significant GHG emission reductions across all sectors served by FEI and will be seamless for customers.

- FEI proposes a new Residential Gas Connections service under which FEI will permanently provide 100 percent Renewable Gas to new residential dwellings attaching to the system by a service line installed on or after the date of implementation of the service. This new service will allow FEI to provide a low carbon gas service to the new residential construction sector that satisfies local and provincial government requirements for these new buildings. Renewable Gas Connection customers will pay a Low Carbon Gas Charge (LCG Charge) equal to the combination of the Commodity Cost Recovery Charge (CCRC) plus carbon tax, i.e. the equivalent rate as other gas customers. This new service will enable FEI to continue to add customers, encouraging the efficient use of the existing gas delivery system and providing energy choice for British Columbians.

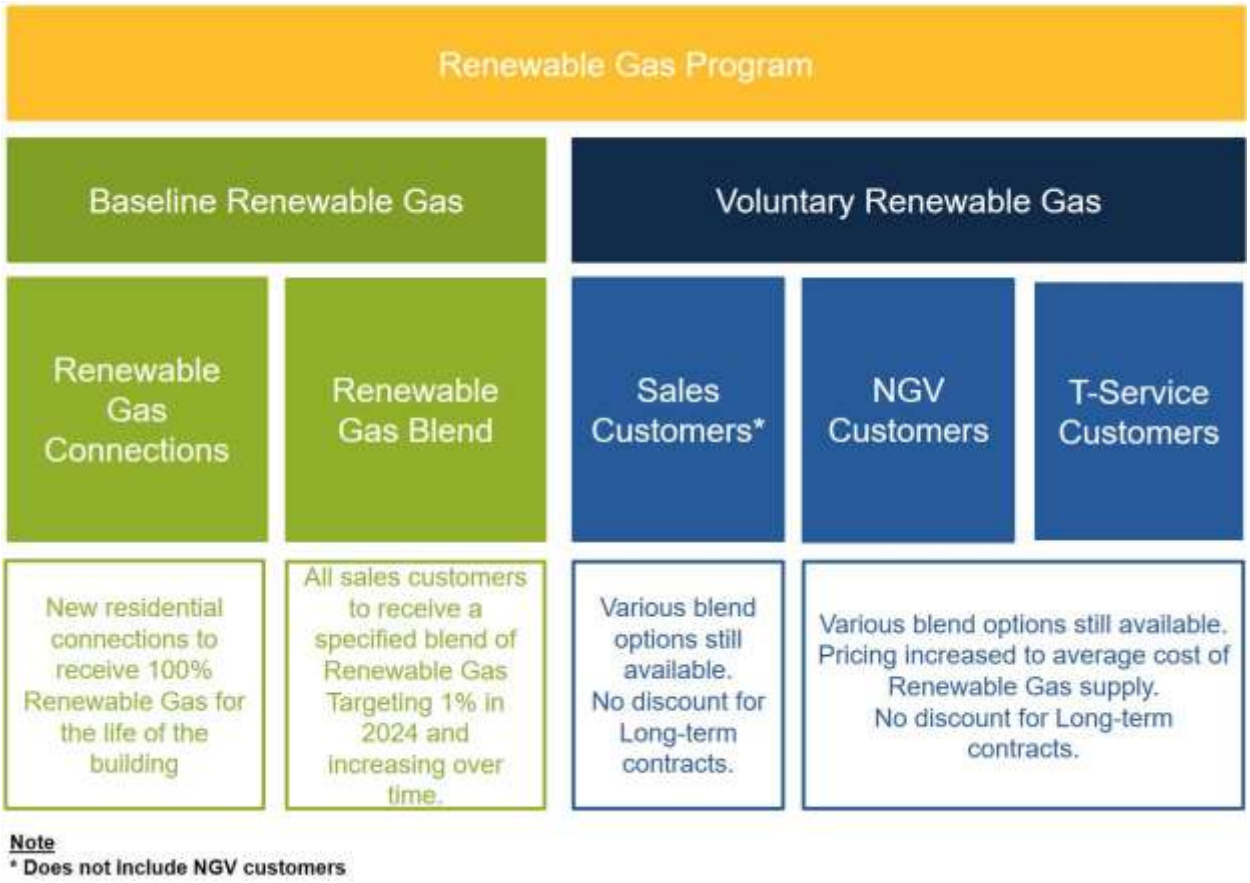
- FEI proposes modifications to its existing Voluntary Renewable Gas offering whereby customers in all rate schedules can choose to purchase up to 100 percent Renewable Gas to meet GHG emission reduction targets. This service will enable FEI to continue to offer a low carbon gas solution to those customers that need to reduce their GHG emissions to meet internal or externally imposed targets. FEI is proposing modifications to extend the Voluntary Renewable Gas offering to Rate Schedule (RS) 7 customers, increase the price for Natural Gas Vehicle (NGV)[2] and Transportation Service (T-Service)[3] customers to equal the weighted average cost of Renewable Gas supply, and eliminate the $1 per GJ discount for long-term contracts. The Voluntary Renewable Gas offering is essential for FEI to meet the needs of and retain customers who require higher volumes of Renewable Gas. Providing a low carbon gas solution for these customers will encourage the efficient use of the gas delivery system and provide energy choice for British Columbians.

The structure of FEI's proposed Renewable Gas Program is illustrated in Figure 1-1 below.

[2] NGV customers have access to the market created by the BC Low Carbon Fuel Standard whereby they can monetize carbon credits to offset their costs and encourage their use of Renewable Gas. In addition, Renewable Gas consumed by this sector will not contribute to the CleanBC Roadmap target for the gas system to reduce emissions from natural gas used to heat homes and buildings and power industries or home. It is therefore appropriate that they pay a rate that recovers the full cost of any Renewable Gas

[3] T-Service customers are large volume customers that purchase their natural gas commodity from a marketer. As T-Service customers will not be subject to the S&T LC rider for sales customers, it is appropriate that they pay a rate that recovers the full cost of any Renewable Gas.

Figure 1-1: Revised Renewable Gas Program



FEI has conducted extensive consultation on its proposals, including engagement with 176 individual stakeholders. The results of this engagement process indicate substantial support for FEI's proposed amendments to the Renewable Gas Program. FEI has received 85 letters of support from stakeholders and one from the Musqueam Indian Band, all of which are attached in Appendix F to this Application.

FEI submits that its Application is in the public interest and should be approved.

1.2 *PERMANENT RATE REQUEST EFFECTIVE FEBRUARY 1, 2022*

FEI is requesting permanent approval of a new Rate Schedule (RS) 7B effective February 1, 2022.

FEI's current Renewable Gas Program does not offer Renewable Gas service to Rate Schedule 7 General Interruptible Service customers. As FEI has received expressions of interest from RS 7 customers, many of whom recently moved back to FEI's bundled sales service from Transportation Service rate schedules, a new RS 7B is required to meet the needs of these customers. With the growth of Renewable Gas supply and the re-opening of FEI's Renewable Gas Program, for consistency and fairness, RS 7 customers should have the same ability to

access the Renewable Gas Program as other customers do under Rate Schedules 1B, 2B, 3B, 5B, and 11B.

FEI's proposed RS 7B is included as Appendix D-1 and aligns with the Renewable Gas Program as currently approved. FEI proposes to begin offering service under the proposed RS 7B commencing on February 1, 2022.

1.3 *APPROVALS SOUGHT*

Pursuant to sections 59 to 61 of the Utilities Commission Act, FEI requests the following approvals to be effective on the beginning of the first quarter[4] that is at least 5 months after the BCUC's final Order in this proceeding:

a) Approval of FEI's proposed Renewable Gas Connections service as described in Sections 7 and 8 of the Application and the corresponding new RS 1PLC, RS 2PLC, RS 3PLC and RS 5PLC in Attachment D-2 of the Application.

b) Approval of FEI's proposed changes to the Voluntary Renewable Gas offering as described in Sections 7 and 8 of the Application, and the corresponding new and amended Rate Schedules in Attachment D-2 of the Application, specifically:

    a. Approval to replace RS 1B, RS 2B, RS 3B, RS 5B, RS 7B and RS 11B with RS 1LC, RS 2LC, RS 3LC, RS 5LC, RS 7LC and RS 11LC as set out in Appendix D-2;

    b. Approval of the amendments to RS 46 in Attachment D-2; and

    c. Approval of the new RS 3VLC and RS 5VLC in Attachment D-2.

c) Approval to change the name of the Biomethane Variance Account to the Low Carbon Gas Account, and approval of the Low Carbon Gas Account as described in Section 8 of the Application.

d) Approval to change the name of FEI's Biomethane Energy Recovery Charge to the Low Carbon Gas Charge.

e) Approval to discontinue the Unsold Biomethane Premium Deferral Account.

Pursuant to sections 59 to 61 of the Utilities Commission Act, FEI requests the following approvals to be effective January 1, 2024 or such later date to be proposed by FEI based on sufficient Renewable Gas supply and the filing of amended rate schedules for review and approval by the BCUC three months prior to the actual implementation date:

f) Approval of FEI's proposed Renewable Gas Blend as described in Sections 7 and 8 of the Application.

[4] i.e., January 1, April 1, July 1, or October 1, in order to align with FEI's quarterly gas cost filings.

g) Approval to cease the Biomethane Delivery rate rider and to begin the use of the S&T LC rider

h) Approval to discontinue the BVA Balance Transfer Account.

A draft order sought is included in Appendix G-2.

1.4 REGULATORY PROCESS

FEI considers that a written regulatory process would be appropriate for the review of this Application. The following is an initial proposed regulatory timetable which takes into consideration avoiding deadlines during the school spring break in March.

Table 1-1: Proposed Regulatory Timetable

Action	Dates (2022)
BCUC Issues Procedural Order	Thursday January 6
FEI Publishes Notice	Week of January 17
Intervener Registration	Thursday, January 27
Workshop	Thursday, February 3
BCUC IR No. 1	Thursday, February 10
Intervener IR No. 1	Thursday, February 17
FEI Response to IRs No. 1	Monday, April 4
Written Submissions on Further Process	Thursday, April 14

FEI has proposed a Workshop as part of the regulatory process to review key elements of the Application and answer questions. FEI has provided a draft procedural order in Appendix G-1. FEI notes that the draft procedural order also includes the permanent approval sought with respect to the new RS 7B as discussed in Section 1.3 above.

FEI is seeking a BCUC decision on the Application by October 30, 2022, so that FEI can implement the proposed changes to its Renewable Gas Program by the second quarter of 2023. FEI wishes to implement the proposed changes to its program as soon as practicable to mitigate the impacts of policies that are restricting the use of the gas system. After the BCUC's Decision, FEI will require up to fives months to implement the billing system and other changes to enable the proposed new rate schedules and rates for customer enrolment. FEI will also need to align the proposed rate changes with its quarterly gas filings, meaning that the implementation date will need to be January 1, April 1, July 1 or October 1 of the year.

1.5 CONCORDANCE TABLE TO SCOPE ITEMS LISTED IN ORDER G-292-20

In Appendix C to Order G-292-20, the BCUC identified a preliminary list of scope items which FEI confirmed would be addressed in this Application, following its comprehensive review of the

Renewable Gas Program. These are listed below along with the where they can be located in the Application:

Table 1-2: Concordance Table to Scope Items Listed in Order G-292-20

	Scope Item in Order G-292-20	Application Section
1	Considering the BC government's CleanBC Policy and stated objectives, among other factors, what is the market outlook for Renewable Natural Gas (RNG) supply and demand in BC over the next ten years?	FEI described the Clean BC Policy in Section 3.4.1. FEI's Renewable Gas Market Outlook is described in Section 6.3. FEI discusses the forecast volumes of Renewable Gas supply and customer demand in Section 8.6.
2	If the current maximum amount of RNG that FEI can acquire while remaining within the limit set out in the Greenhouse Gas Reduction (Clean Energy) Regulation is insufficient to meet the forecast RNG demand, what options would be available to FEI for resolving the imbalance?	Section 3.6.1 discusses the amendments to the GGRR that have enabled the acquisition of more Renewable Gas.
3	What is FEI's load resource balance for RNG over the next ten years based on its forecast of RNG demand relative to contracted RNG supply? I. How does FEI plan to meet any gaps in the load resource balance? II. To the extent FEI plans to meet this gap with additional supply, how should this be done? III. To the extent that the supply is notional, please explain notional supply, and how it works for RNG purchased outside of BC. IV. To the extent FEI plans to purchase carbon offsets to meet this gap, how should this be done? If carbon offsets are purchased to meet RNG demand, how do the costs of carbon offsets compare with the average cost of RNG supply and how are these costs recovered?	Measures to balance supply and demand are discussed in Section 8.7.
4	Detail the environmental attributes associated with any current or future RNG supply. How should environmental attributes associated with RNG supply be valued and who should be entitled to claim those environmental attributes?	Environmental Attributes can vary by customer segment. For customers in the building sector, see Section 7.4. For NGV customers, see Sections 5.7.2 and 7.4.
5	What is FEI's forecast of the RNG Program costs over the next ten years and the extent of cross subsidization from FEI's non-bypass customers if the current BERC rate methodology is maintained?	FEI discusses customer bill impacts in Section 8.6.

	Scope Item in Order G-292-20	Application Section
6	Considering FEI's load resource balance for RNG, what are the risks that the RNG Program becomes oversubscribed again in the short to medium term if the current BERC rate methodology is maintained?	FEI's Renewable Gas Market Outlook is described in Section 6.3. FEI's proposals include additional Renewable Gas services to balance supply and demand of Renewable Gas as discussed in Section 7.4 FEI's Renewable Gas Market Outlook is described in Section 6.3. FEI discusses the forecast volumes of Renewable Gas supply and customer demand in Section 8.6. Measures to balance supply and demand are discussed in Section 8.7.
7	How does FEI's RNG Program impact its risk profile in the short, medium, long term?	Section 4 of the Application describes how leveraging the gas system to reduce emissions is critical to lowering emissions for British Columbians and reduces risk to FEI and its customers.
8	What should the Panel consider in their evaluation of and any approvals related to the Assessment Report?	The Assessment Report was accepted by Decision and Final Order G-242-21
9	What are the implications of not approving the Assessment Report?	The Assessment Report was accepted by Decision and Final Order G-242-21
10	Any other relevant matters?	FEI has addressed various other relevant matters throughout the Application.

1.6 *ORGANIZATION OF REMAINDER OF APPLICATION*

The remainder of this Application is organized as follows:

Table 1-3: Organization of Application

Section	Section Name	Description
2	Program History and Evaluation	Describes the history of FEI's Renewable Gas Program from the establishment of FEI's Biomethane Program in 2010 to the filing of this Application, including the regulatory background, and provides FEI's evaluation of the program to date.
3	Evolution of Climate Change Policy	Reviews the climate policy that led to the development of the Renewable Gas Program in 2010, and the changes in public energy policies at the federal, provincial and local government levels since that time, which are driving the proposed changes to the Renewable Gas Program in this Application.

Section	Section Name	Description
4	A Diversified Energy System is in the Best Interest of British Columbians	Discusses the value of gas delivery infrastructure for delivering energy to customers and how leveraging the capabilities of the gas infrastructure will enable the reduction of GHG emissions in BC more quickly and with less disruption than other measures.
5	What Customers Need from a Renewable Gas Program	Discusses the diverse segment of customers FEI serves and how their energy needs have evolved to meet their environmental goals. These include complying with policy and regulation and/or corporate Environmental, Social, and Governance (ESG) targets while requiring cost effective and reliable energy.
6	Growth in Renewable Gas Supply	Explains FEI's forecast for the growth in Renewable Gas supply over the next 10 years and describes how this supply side growth is responsive to government renewable energy plans, as well as supply-side risks and mitigation strategies.
7	Proposed Renewable Gas Program	Describes the needs for and FEI's proposed revisions to the Renewable Gas Program required to respond to provincial policies to reduce emissions from the gas supply, local government and other policies restricting gas delivery to the new residential construction sector and the need for Renewable Gas from customers seeking additional emissions reduction.
8	Accounting Treatment, Program Mechanics, Rate Setting and Customer Bill Impact	Describes FEI's proposed regulatory treatment and rate setting framework, including a review of the customer bill impacts.
9	Program Expenditures, Administration, and Reporting	Describes the implementation of FEI's proposed tariffs, the ongoing administration of and reporting on the Renewable Gas Program, and expenditures required for successful implementation.
10	Consultation and Engagement	Details FEI's public consultation and engagement, including interveners, industry and government in relation to this Application along with a overview of the letters of support received for the Application.
11	Conclusion	This section concludes the Application

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2. PROGRAM HISTORY AND EVALUATION

This section provides a history of FEI's Renewable Gas Program from the establishment of FEI's Biomethane Program in 2010 to the filing of this Application, including the regulatory background, and provides FEI's evaluation of the program to date.

In particular, FEI outlines how the Renewable Gas Program has evolved over the past 10 years in response to lessons learned and to changes in market conditions, as well as how the availability of Renewable Gas itself has contributed to changes in policy and customer expectations within BC. FEI then provides an evaluation of the success of the Renewable Gas Program at meeting the objectives identified at the time of its development and through subsequent refinements, which supports FEI's conclusion that the program has been successful at meeting customer expectations and supporting provincial government policy objectives over the past decade.

This section is organized as follows:

- Section 2.1 summarizes how the program was initially developed by reviewing the initial impetus for a Renewable Gas service, and describes how the program evolved through subsequent regulatory proceedings, including the rate setting and cost recovery mechanisms that support the operation of the Renewable Gas Program.
- Section 2.3 provides FEI's evaluation of how the current Renewable Gas Program has fared in pursuit of the objectives identified at the time of its development.

2.1 *PROGRAM ORIGIN AND DEVELOPMENT*

FEI first applied for BCUC approval of the Biomethane Program in 2010 in response to changes in government policy and regulation to reduce GHG emissions and in order to provide a service that addressed evolving customer expectations towards energy at that time. In 2011, FEI was the first utility in North America to offer RNG service for sale to customers, which entailed the purchase of biogas and/or biomethane for sale to its customers through an end-to-end business model. As noted above, the program was developed in response to the evolving energy policy developments that took place around 2010 including, in particular, the introduction of the *Clean Energy Act* (CEA), as described below.

The CEA was introduced by the provincial government in 2010 to address a number of government policies, including the reduction of GHG emissions in BC. Specifically, in 2010 the CEA included the following objectives:[5]

> (d) to use and foster the development in British Columbia of innovative technologies that support energy conservation and efficiency and the use of clean or renewable resources;
>
> …

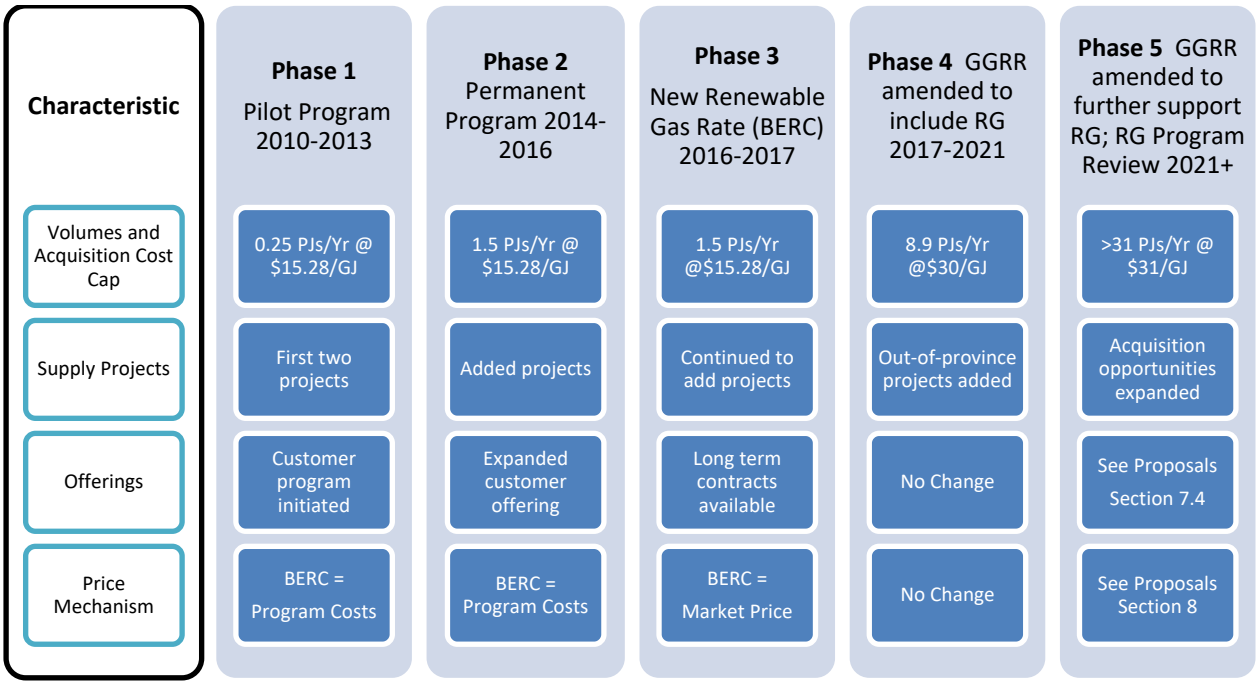
[5] Part 1, Section 2 British Columbia's energy objectives: https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/10022_01

> (g) to reduce BC greenhouse gas emissions;
>
> (i) by 2012 and for each subsequent calendar year to at least 6 percent less than the level of those emissions in 2007….;
>
> …
>
> (h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia;
>
> …
>
> (j) to reduce waste by encouraging the use of waste heat, biogas and biomass.

Together, these objectives provided a compelling reason for FEI (Terasen Gas at the time) to pursue a Renewable Gas program, reflecting the need to begin reducing GHG emissions associated with the natural gas system. In FEI's view, the utility had a central role to play in achieving the objectives of the CEA by pursuing innovative initiatives such as developing renewable resources, reducing GHG emissions, reducing waste by using biogas and biomass, and promoting energy efficiency.

During this period, FEI also began seeing a growing desire from its natural gas customers for an alternative to conventional natural gas that had a lower emissions profile. As a utility serving the majority of BC, FEI recognized that it could play a key role in reducing emissions, by introducing Renewable Gas into its gas system and garnering interest from customers for Renewable Gas, and that its competence in operating the gas system was a natural fit with Renewable Gas suppliers. The utility's experience in delivering gas, along with all of the supporting functions associated with this activity, made FEI the appropriate organization to make Renewable Gas broadly available within BC. In the years that followed the program's introduction, FEI has contributed to the growth of Renewable Gas supply, and provided customers with the opportunity to reduce their environmental footprint by subscribing to the Renewable Gas Program. As summarized in Figure 2-1 below, the history of the Renewable Gas Program since 2010 can be described over five phases.

Figure 2-1: Evolution of the Renewable Gas Program



Phase 1: Renewable Gas Pilot Program (2010-2013)

On June 8, 2010, FEI (then Terasen Gas Inc.) filed an Application for the Approval of a Biomethane Service Offering and Supporting Business model, including the approval of two supply projects (2010 Biomethane Application). In the 2010 Biomethane Application, FEI's proposed biomethane service offering was designed to support government policy increasingly focused on the use of renewable energy, energy efficiency and the reduction of GHG emissions.

On December 14, 2010, the BCUC issued its Decision and Order G-194-10 (2010 Decision) on FEI's 2010 Biomethane Application, authorizing FEI to move forward with a Biomethane Program for a two-year pilot period and approving the two supply projects. In its Decision, the BCUC noted:[6]

> The Commission Panel is cognizant of the new post CEA environment which is challenging TGI to innovate and adapt its utility service model. In this regard, the Commission Panel agrees with Terasen and the CEC that it is in the long term interest of all Terasen utility customers that new initiatives contribute to retention and the addition of throughput in the system, which will result in system costs being spread over a larger base.

At the time of its approval, the Renewable Gas Program allowed for an annual maximum supply volume purchase of 250 thousand GJs and a maximum supply price for delivered biomethane on the system of $15.28 per GJ, thereby minimizing any impact to non-RNG customers in the event that demand did not materialize as anticipated. The Renewable Gas Program was limited to

[6] 2010 Decision, p. 51.

residential[7] and commercial[8] customers who could take up to a 10 percent volume of RNG. The program was structured to fully recover biogas acquisition and upgrading costs as a commodity cost from voluntary customers with a Biomethane Energy Recovery Charge (BERC) rate set to match projected supply costs. By electing to participate in the program, customers paid the BERC rate on the biomethane portion of their natural gas consumption, which was initially set at a 10 percent biomethane blend.

At the outset of the pilot program, the BERC rate was set at $9.904 per GJ below the maximum price for delivered biomethane on the system of $15.28/GJ. This rate was based on a forecast of program costs and was subject to an annual rate setting (adjustment) process. The BCUC also approved a deferral account, the Biomethane Variance Account (BVA), to capture the costs incurred by FEI to procure and process biomethane as well as the revenues collected through the BERC rate. The BVA accumulated any differences between the program's costs and revenues. The annual rate setting process was arithmetic, taking into consideration the balance in the BVA along with expected sales and purchases over the following forecast period.

During the pilot phase, which took place between June 2011 and the end of 2012, FEI focused on demonstrating that the Renewable Gas Program was viable and that customers would voluntarily subscribe and pay a premium to reduce their emissions. Over 4,600 customers enrolled in the pilot phase of the program, which FEI considered to be a success. Based on this success and forecast demand, FEI determined that a permanent Renewable Gas offering was viable.

Phase 2: Approval of the Permanent Renewable Gas Program (2013)

In December 2012, FEI filed its Biomethane Post Implementation Report and Application for Approval of the Continuation and Modification of the Biomethane Program on a Permanent Basis (2012 Biomethane Application), seeking approval from the BCUC to make the program a permanent customer offering. In addition to making the program permanent, FEI sought an increase in the maximum supply volume to 1.5 PJ/year in order to serve anticipated future demand. In its 2012 Biomethane Application FEI also highlighted how the program advanced policy objectives at all levels of government as follows:[9]

1. Biogas is a renewable energy resource, and upgrading Biogas to produce Biomethane for direct consumption in heating appliances is the most efficient use of that renewable resource.
2. The production and use of Biomethane is carbon neutral because producing and consuming Biomethane will not add to the amount of Carbon released into circulation.
3. The use of Biomethane in place of a GHG-positive energy source (such as natural gas) results, all else equal, in a net reduction in GHGs.

[7] Rate Schedule 1B.
[8] Rate Schedules 2B, 3B, and 11B.
[9] Biomethane Service Offering: Post Implementation Report and Application for Approval of the Continuation and Modification of the Biomethane Program on a Permanent Basis, December 19, 2012, p.17.

On December 11, 2013, the BCUC issued its Decision and Order G-210-13 (2013 Decision). In its 2013 Decision the BCUC approved FEI's request to make the program permanent, noting the program's importance in supporting the province's energy objectives:[10]

> This Biomethane Program is a departure from FEI's traditional distribution role in that FEI has taken on the responsibility for marketing the biomethane. The Panel has approved FEI's continuation in this role because the Biomethane Program supports the Province's energy objectives.

Moreover, the BCUC approved FEI to provide higher proportion blends of RNG (including a 100 percent designation) and expanded the program to customers on Vancouver Island and in Whistler, following the approval of amalgamation and common rates.

In its 2012 Biomethane Application FEI also proposed that biomethane inventory in the BVA that could not be sold at the established BERC rate be sold at a discounted rate and the costs related to the discounted sale be recovered through the Midstream Cost Reconciliation Account (MCRA), subject to approval of the BCUC.[11] In the 2013 Decision, the BCUC approved this proposal and directed that if unsold biomethane inventory was moved to the MCRA, the dollar balance transferred to the MCRA would be calculated using the prevailing Commodity Cost Recovery Charge (CCRC) at the time of the transfer (Commodity Value), for recovery from FEI's sales customers.[12] The BCUC also approved the Unsold Biomethane Premium deferral account (UBPDA) to capture the difference between the Commodity Value of the volume of unsold and unsalable biomethane to be transferred to the MCRA and the selling price of that volume at the BERC rate. UBPDA balances would then be recovered from all FEI non-bypass customers, through a rate rider. To date, FEI has not needed to file an application for the transfer of biomethane from the BVA to the MCRA or to use the UBPDA.

During the period following the 2013 Decision, as biomethane supply expanded and the associated cost of the supply increased, FEI increased the BERC rate to recover these additional costs. In particular, the updated BERC rate reflected modifications to the allocation of costs, such that costs included in the BVA for recovery from biomethane customers included Renewable Gas Program marketing and administration costs and interconnection costs from future supply projects. These costs were not reflected in the BERC rate prior to the 2013 Decision.

The BCUC also recognized in its 2013 Decision that the price of biomethane may rise to a level that discourages participation in the Renewable Gas Program. In such a circumstance, the BCUC's guidance was that it may be appropriate to set the BERC rate below cost, thereby maximizing the volumes sold while minimizing the unsold cost impact borne by the remainder of FEI ratepayers. The BCUC stated:[13]

[10] 2013 Biomethane Decision, p. 45.
[11] 2013 Decision, p. 69.
[12] 2013 Decision, p. 69.
[13] 2013 Decision, p. 72.

> In this circumstance, the Panel is of the view that it may be appropriate to set the BERC at a lower rate, and recover the difference between the BERC and the fully allocated costs of acquiring the biomethane through the Biomethane Premium deferral account previously discussed. This strategy may enable FEI to maximize the revenues from the Biomethane Program.

As a result of this potential, the BCUC directed FEI to make an application for approval of a lower BERC rate should the price of biomethane rise to levels where participation in the program was negatively impacted.

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.

Phase 3: Introduction of a New BERC Rate Methodology (2016)

On August 28, 2015, FEI submitted its Application for Approval of Biomethane Energy Recovery Charge (BERC) Rate Methodology (2015 BERC Application) in response to the lack of growth in program participants due to the rising cost of biomethane. Within the 2015 BERC Application, FEI responded to customer expectations by proposing a new BERC rate based on a partial cost of recovery methodology (as opposed to the prior full cost recovery methodology) and a long term contract offering for large volume customers.

FEI based its BERC rate proposal on an analysis of participation rates in the program versus the BERC rate premium over conventional natural gas, as well as customer feedback. FEI expected that this methodology would minimize the potential rate impact to non-program participants from unsold biomethane volumes. FEI also proposed to use two distinct BERC rates: a Short Term Contract BERC Rate (Short Term BERC Rate) and a Long Term Contract BERC rate (Long Term BERC Rate), as follows:

- **The Short Term BERC Rate** is set once per year effective each January 1 at the BCUC approved Commodity Cost Recovery Charge (CCRC) plus the current carbon tax applicable to natural gas customers and a premium of $7.00 per GJ. The $7.00 BERC rate premium was appropriate based on historical evidence that showed the program had relatively stable growth during the time that the BERC rate was $7.00 to $8.00 greater than the approved CCRC.
- **The Long Term BERC Rate** is calculated using the same method as the Short Term BERC Rate, effective each January 1 in a year where a long term contract is executed, less a discount of $1.00 per GJ. The Long Term Contract offering and the Long Term

BERC Rate are only available to customers who can purchase a minimum volume of 60 thousand GJs of Renewable Gas over a commitment period of not less than five years.

This market-driven update to the program, which was intended to encourage renewed participation in the program, was approved by the BCUC in its Decision and Order G-133-16 (2016 Decision) on August 12, 2016, including approval of the two BERC rates as proposed by FEI. Changing the rate charged to customers in response to market signals (as opposed to the direct cost) and enabling FEI to offer long-term contracts were changes to the program which were favourably received by customers and produced a steady increase in customer demand for RNG in the period following 2016. As discussed above, the BVA was approved in the 2010 Decision to capture the costs incurred by FEI to procure and process biomethane and the revenues collected through the BERC rate, thereby accumulating any differences between costs and revenues. In the 2016 Decision, the BCUC approved the annual transfer of any under-recovered costs captured in the BVA to the BVA Balance Transfer rate base deferral account for recovery from non-bypass customers through the BVA rate rider[14] embedded in delivery charges. The BVA rate rider is approved in FEI's delivery rate setting applications.

Phase 4: Amendment of GGRR to Include Renewable Gas Supply (2017)

In the spring of 2017, the provincial government amended the GGRR which, among other things, indicated that the acquisition of RNG is a prescribed undertaking subject to two conditions, namely:[15]

1. the public utility paying no more than $30/GJ; and
2. the total volume of RNG purchased in a calendar year not exceeding 5 percent of the total volume of natural gas provided by a public utility to its non-bypass customers in 2015 (or 8.9 PJs/year for FEI).

Since that time, FEI has steadily increased the quantity and variety of RNG supply contracts, and sold all purchased RNG volumes to customers. With the combination of increased customer demand for RNG and lower than anticipated supply volumes, FEI temporarily closed the Renewable Gas Program to new subscribers in August of 2019. FEI attributes the increased customer demand for RNG to the perceived value of the Renewable Gas Program in reducing GHG emissions, and importantly, allowing certain customer classes to comply with increasingly stringent emission reduction regulations. Public sector building owners, municipalities, and public transportation entities were all expressing interest in purchasing significant volumes RNG at this time.

[14] The BVA rate rider recovers the cost in the BVA Balance Transfer deferral account.
[15] https://www.bclaws.gov.bc.ca/civix/document/id/oic/arc_oic/0161_2017, accessed Dec 8, 2021.

Phase 5: Further Amendment to the GGRR and Renewable Gas Program Review (2021)

In May 2021, the provincial government amended the GGRR further, increasing acquisition cost cap and volumes and expanding acquisition opportunities:[16]

1. Enabling utilities to acquire and supply green and waste hydrogen, synthesis gas and lignin, in addition to RNG.
2. Increasing the amount of RNG, green and waste hydrogen, lignin and synthesis gas that utilities (such as FEI and Pacific Northern Gas) can acquire and make available to their customers from five percent to fifteen percent of the total annual supply of natural gas;
3. Broadening the methods by which utilities can obtain Renewable Gas to include producing it or upgrading it themselves for injection into the pipeline, paying a third party to produce it or upgrade it for pipeline injection, or purchasing hydrogen, synthesis gas or lignin to displace the use of natural gas at customer facilities; and
4. Increasing the price cap utilities can pay to acquire Renewable Gas from $30 to $31 per GJ for contracts for purchase signed after March 31, 2021[17] and increasing the price cap annually by inflation.

FEI's Renewable Gas Program has remained unchanged since its last update in 2016, despite operating within an evolving environment that has strained the program in its current form, and necessitated the changes proposed in this Application.

The 2016 Decision directed FEI:

> …to file a comprehensive assessment report for Commission approval at the earlier of the application by FEI for a transfer of biomethane inventory from the Biomethane Variance Account to the Midstream Commodity Reconciliation Account or four years after the date of issue of this decision, whichever comes first (Assessment Report). In the event FEI commits all available supply through the Long Term Contract offering prior to the earlier of these two events, FEI is directed to file the Assessment Report at that time.[18]

On August 12, 2020, FEI filled the 2020 BERC Rate Assessment Report, which demonstrates that the revised BERC rate was successful at increasing program participation, associated sales volumes, and resulting revenues.

The BCUC established a two-stage regulatory review process wherein Stage 1 would focus on the review the 2020 BERC Rate Assessment Report in light of the objectives established in the 2016 Decision. The Stage 1 review process concluded with the issuance of the BCUC's Decision

[16] https://www.bclaws.gov.bc.ca/civix/document/id/oic/oic_cur/0306_2021, accessed Dec 8, 2021.
[17] Or, where the utility is producing the Renewable Gas, where the decision to construct the production facilities is made after March 31, 2021.
[18] 2016 Decision, p. 51.

and Order G-242-21 dated August 12, 2021. The Stage 2 review process was established to review FEI's Application for changes to its Renewable Gas service offering (this Application) following FEI's comprehensive review and assessment of the Renewable Gas Program.

2.2 *PROGRAM EVALUATION AND SUCCESS TO DATE*

FEI considers that the Renewable Gas Program has been successful to date as it has achieved the objectives identified at the time of its development. This section provides FEI's evaluation of the program's success at achieving these objectives and explains how the program has been positively received by customers and government. Section 2.3.2 is a condensed version of section 2 of the 2020 BERC Rate Assessment Report.

2.2.1 Meeting the Initial Objectives of the Renewable Gas Program

In 2010, FEI identified several objectives for the Renewable Gas Program when it applied to the BCUC for approval of the program's pilot phase. The primary objectives of the pilot phase were to confirm producer reliability in order to ensure stable Renewable Gas supply, and assess consumer interest in the new Renewable Gas offering. In its communications about the program, FEI sought to:

1. Generate awareness and understanding of biomethane as a renewable energy and its availability today;
2. Generate awareness and understanding about the Renewable Gas program;
3. Stimulate interest and participation in the program; and
4. Maintain participation and support for the program.

More broadly, FEI stated in the 2010 Biomethane Application that the program would:[19]

- Meet the demands of FEI's customers in a safe, reliable and economical manner; and
- Promote government's energy policy objectives favouring the use of renewable energy, the efficient use of energy, and reducing GHG emissions.

The pilot phase of the Renewable Gas Program successfully achieved the above objectives. While the program was novel at the time of its inception in 2010, FEI has gained the confidence of customers who voluntarily signed up to purchase RNG and its suppliers who have made substantial capital investments to reliably supply RNG to FEI over a long period of time.

In particular, and importantly, the program structure has met the needs of FEI's customers by providing them with a variety of service offerings to meet their respective energy goals, including blends or 100 percent RNG. By late 2012, FEI had enrolled over 4,600 customers in the Renewable Gas Program, reflecting an over 400 percent increase from the 1,100 customers

[19] 2010 Biomethane Application, p. 1.

enrolled at the end of 2011. This increase demonstrates the increased awareness of the Renewable Gas Program and interest from customers.

In the 2012 Biomethane Application, FEI reiterated that the Renewable Gas Program would enable FEI to meet the demand of its customers in a safe, reliable and economical manner.[20] FEI further noted that the development of biomethane as an energy resource would promote government policy, including the energy objectives set out in the CEA favouring the use of renewable energy, the efficient use of energy, and the reduction of GHG emissions.[21]

After the program was made permanent in 2013, customer enrolments continued to increase for a period of approximately 2 years. In December 2014, the Renewable Gas Program had over 6,800 subscribers and had delivered over 308 thousand GJs[22] of RNG to its subscribers.

2.2.2 Changes to the BERC Rate to Restore Program Growth

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:[23]

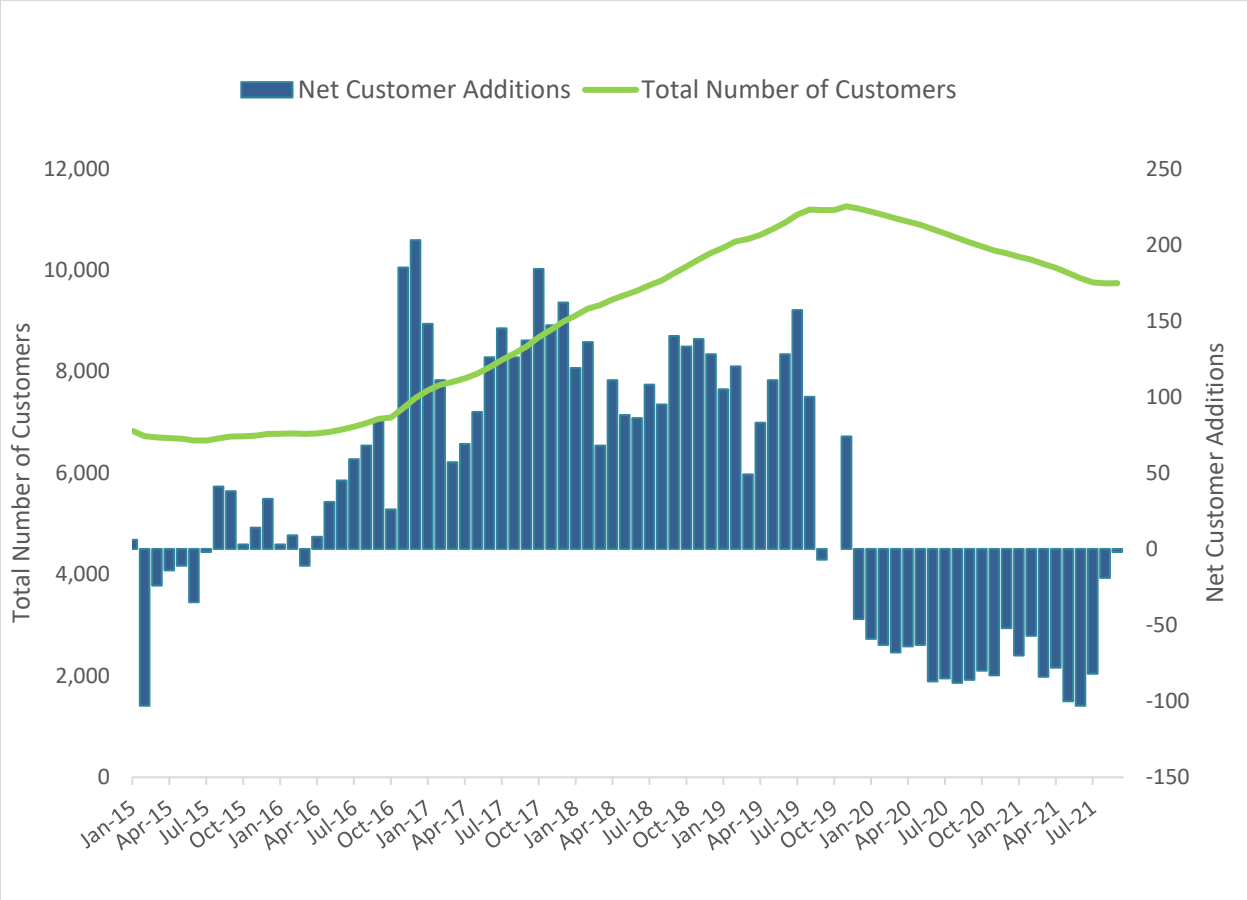
1. Maximize the recovery of program costs from RNG customers;
2. Manage biomethane inventory; and
3. Establish a BERC rate setting mechanism that is robust, effective, and provides regulatory efficiency.

Following this decision, and as explained in brief in Section 2.2 above, FEI implemented the updated Short Term BERC Rate on October 1, 2016, with the price premium for Renewable Gas set to $7.00 above the price of conventional gas plus carbon tax. After introducing the new methodology, the rate of customer additions to the RNG Program again increased steadily,

[20] 2012 Biomethane Application, p. 2
[21] ibid.
[22] Cumulative total of all renewable natural gas volumes delivered to customers between the program inception and December 31, 2014.
[23] 2016 Decision, p. 17.

resulting in an increase in overall customer enrolment. Figure 2-2 below shows the monthly net customer additions and number of total customers enrolled in the Renewable Gas Program during the period of October 2016 to the end of 2019. As the figure shows, the total number of program participants increased by 58 percent from approximately 7,100 customers when the revised BERC Rate was introduced to 11,200 by the end of 2019 (as shown by the solid green line in Figure 2-2).[24] The majority of this growth can be attributed to residential customers enrolling in Rate Schedule 1B.

Figure 2-2: Renewable Gas Program Monthly Net Customer Additions and Total Customers



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.

[24] The reduction in customer enrolments beginning in late 2019, as shown in Figure 2.2, was due to a temporary closure of the Renewable Gas Program to new participants. During this time period some existing customers continued to exit the program for various reasons. This situation was described in the 2020 BERC Rate Report.

Figure 2-3: Renewable Gas Program Annual Sales Volume

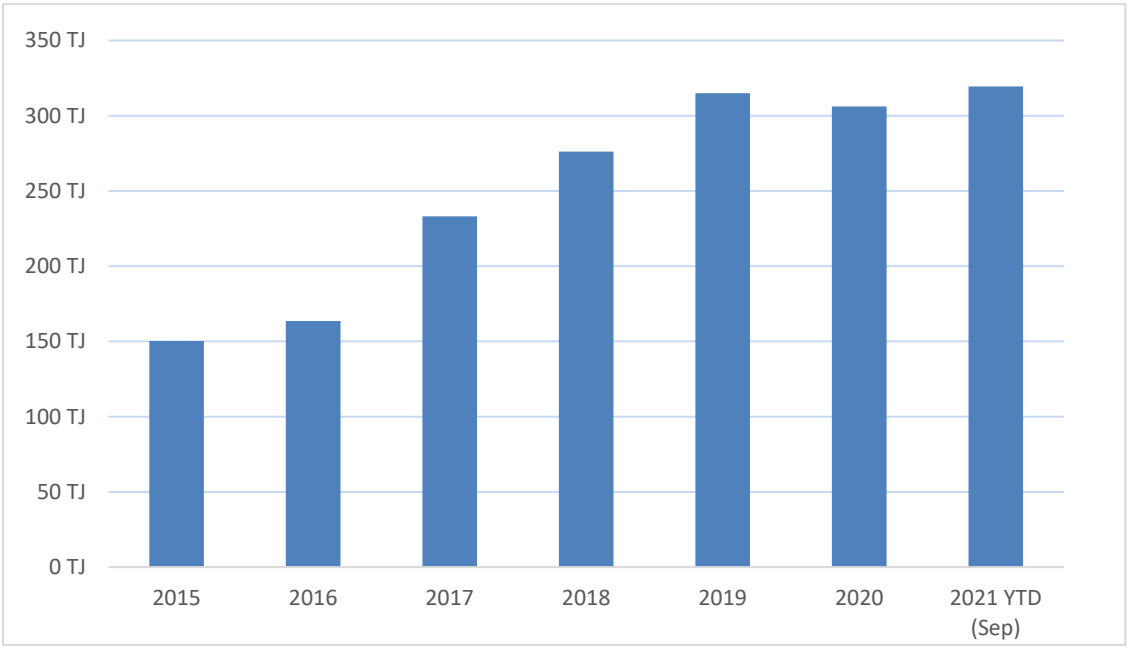
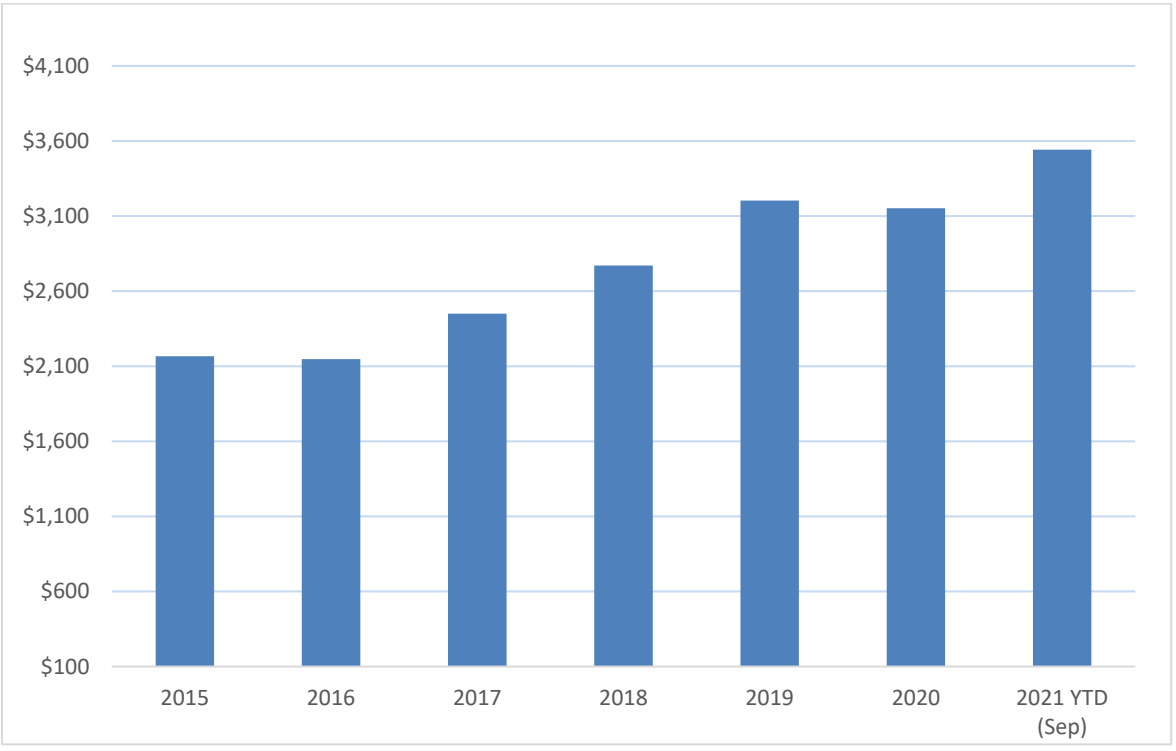


Figure 2-4: Renewable Gas Program Annual Sales Revenue[25]



[25] Note that 2020 BERC Rate Methodology Comprehensive Assessment Report the Renewable Gas Program sales revenue for 2018 was misreported as $3,264 thousand in Figure 4, p. 10. The actual Renewable Gas Program

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. Ultimately, the BERC Rate mechanism has proved to be robust, effective, and has provided for regulatory efficiency. The BCUC 2021 Decision and Final order G-242-21 stated "*The Panel agrees with all parties that the purposes of Stage 1 have been fulfilled, and that the Assessment Report adequately addresses the reporting requirements directed in Order G-133-16*.[26]"

2.2.3 Feedback from Program Participants

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. In the 2012 Application, FEI provided feedback it had received from residential and commercial program participants, including the following:

- *"It is an excellent program; a solution for the future."*
- *"It's important that people make choices that lead to better futures and by doing these things as consumers, we help facilitate that change over time."*
- *"I feel a sense of personal satisfaction, being a part of driving change."*
- *"Here's how you can do your bit for the planet in a relatively painless and effortless way. And really, what's it going to cost you? Less than a cup of coffee or a latte."*
- *"We signed up for renewable natural gas because it's good for the environment and good for business."*
- *"Renewable natural gas is another step in the right direction for our business and the environment."*
- *"We want to be a leader. By taking on this initiative, we hope to make an impact on the environment. My suggestion to other businesses is to seriously consider it."*

In 2021, FEI conducted a survey of its current Renewable Gas Program customers[27] and asked, among other questions, how satisfied they were with the program. As shown in Figure 2-5 below, 61 percent of respondents indicated they were either very satisfied or somewhat satisfied and a

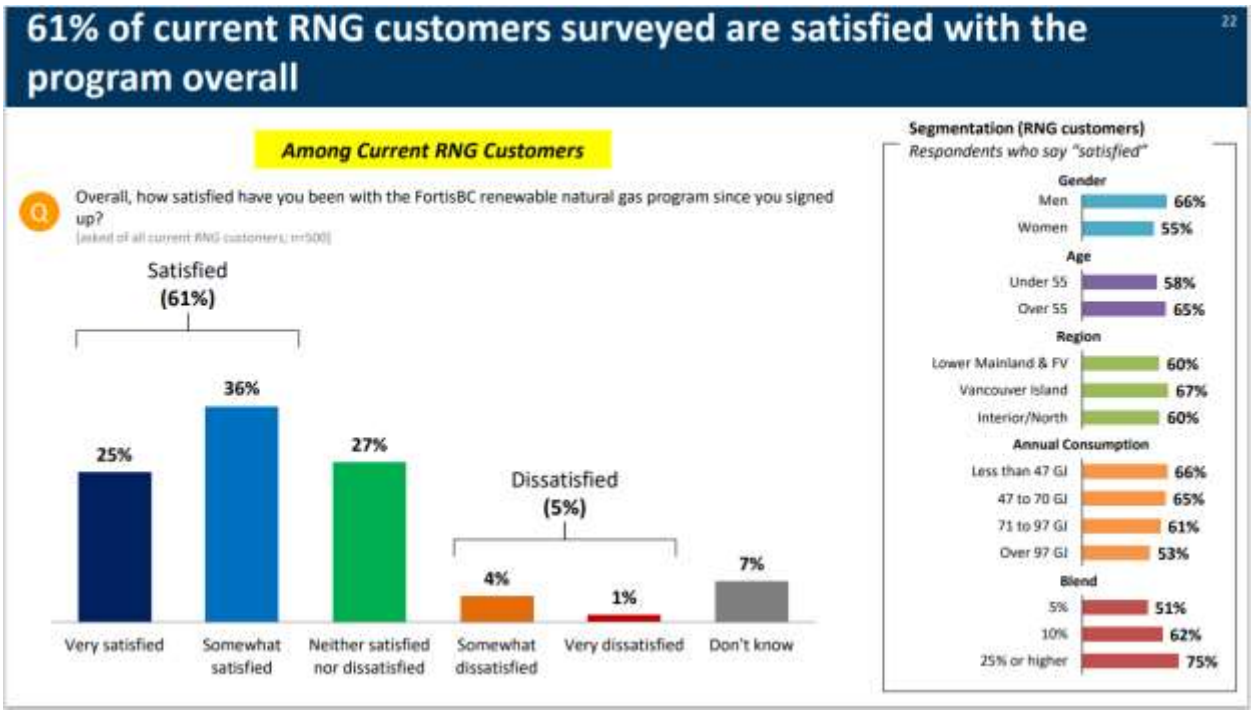
sales revenue for 2018 was $2,771 thousand as shown here in Figure 2-4. The error in the 2020 Report affected only the figure. The tables of monthly revenues provided the correct data.

[26] 2021 Decision, p. 6.

[27] Pleaser refer to Appendix B-1, p. 22.

further 27 percent indicated they were neither satisfied nor dissatisfied. Only 5 percent of respondents indicated they were dissatisfied.

Figure 2-5: Current Renewable Gas Program Participant Satisfaction



Moreover, customers who opted for RNG proportions of 25 percent or higher reported even greater satisfaction than other participants. For this group, the customers that reported being satisfied was 75 percent.

Overall, the feedback and data provided above confirms that the majority of participants are satisfied with the Renewable Gas Program offerings. Currently there are more than 9,500 customers enrolled in the Renewable Gas Program across various rate classes.[28] While most participants in the program are single-family residential customers, interest from large volume institutional and transportation sector customers has increased since 2017. These customer classes are seeking low carbon energy options in response to government regulations or their own Environmental, Social, and Governance (ESG) objectives. RNG is an attractive energy solution for large volume institutional and NGV customers because it enables emissions reductions and, importantly, because it is easily substituted for conventional gas – meaning it does not require any additional upgrades or investment in capital (i.e., RNG is a "drop in" fuel).

These customers have also been attracted by the current price of RNG which, while at a premium compared to conventional natural gas, is attractive given the associated GHG emission reductions. Customers who own and/or operate buildings, and who have firm and committed

[28] RS 1B, RS 2B, RS 3B, RS 5B and RS 11B.

emission reduction targets, have found that the price of RNG is competitive with other energy solutions to achieve these targets.[29] NGV customers have found that the current price of RNG attractive[30] and these customers can also generate credits under BC's Low Carbon Fuel Standard (BC-LCFS),[31] which can then be sold in the credit market to generate revenue. Many large volume commercial and transportation sector customers are interested in the program and those who are eligible often express interest in the long term contract offering in order to ensure security of supply as well as a competitive price.

2.2.4 Acceptance of the Renewable Gas Program by the Provincial Government

The Renewable Gas Program has gained acceptance from the provincial government as a way of providing customers with safe, reliable, lower carbon energy. When the program was launched it became one of several of the utility's initiatives responding to provincial climate policy with the purpose of reducing GHG emissions, including the 2007 BC Energy Plan, 2008 BC Bioenergy Strategy, and the CEA. The importance of Renewable Gas in reducing GHG emissions and achieving the province's energy objectives has been recognized by the provincial government though the implementation of policies and regulations that explicitly contemplate or incentivize the use of biomethane, in particular:

- Order-in-Council 245/2011 amended the *Carbon Tax Regulation* to provide a refund of the carbon tax paid on volumes of biomethane purchased in BC. This meant that purchasers of biomethane were exempt from carbon tax on the biomethane portion of their natural gas.
- On February 3, 2012, the provincial government announced BC's Natural Gas Strategy which includes developing biomethane opportunities. Line item 6 under the heading "Natural Gas is a Climate Solution" states: "Encourage biomethane opportunities, including offering consumers low-carbon natural gas."
- On October 25, 2012, the BC Climate Action Secretariat confirmed that public sector organizations would receive recognition for their purchases of biomethane as a credit against their obligations to be carbon neutral.

Moreover, the provincial government has recognized the role Renewable Gas will play in decarbonizing the gas system as part of the effort to reduce BC's GHG emissions through both the CleanBC Plan (released on December 5, 2018) and the CleanBC Roadmap (released on October 25, 2021). Therefore, Renewable Gas has been recognized by the provincial government as essential to achieving the province's climate policy objectives.

[29] Appendix B-1.
[30] Ibid.
[31] Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act and Renewable and Low Carbon Fuel Requirements Regulation, known collectively as British Columbia's Low Carbon Fuel Standard.

2.3 *SUMMARY*

The Renewable Gas Program has achieved the objectives for which it was first developed and, with refinement, has continued to address the needs of FEI's customers. The program represents an innovative response to government policy and customer expectations over the past decade. In particular, the program has supported the provincial government's energy objectives by increasing the volume of renewable energy consumed by British Columbians and reducing GHG emissions. Further, FEI's customers that have participated in the Renewable Gas Program have recognized the value of Renewable Gas as a low carbon energy alternative for which they are willing to pay a premium in order to reduce their GHG emissions.

Both customers and government sought a lower carbon energy source enabling reductions in GHG emissions, which the Renewable Gas Program has delivered. In particular, the program's existing framework has worked well in the context of the relatively low Renewable Gas volumes FEI has acquired over this period, which amounted to approximately 250 thousand GJs in 2020. Ultimately, the Renewable Gas Program has delivered benefits to the utility, government and customers over the past decade, within the operating environment for which it was developed.

As discussed in Sections 3, 4 and 5, the program's operating environment has evolved and become more complex. The majority of participants during the first 10 years were fairly homogeneous in their expectations and the regulations addressing GHG emissions were less of driving a factor. Today, different customer segments have increasingly different motivations to purchase Renewable Gas. These motivations appear to be primarily driven by regulatory changes, but may also be attributable to internal objectives to address GHG emissions. In its current form, as a simple opt-in program, the Renewable Gas Program will be unable to provide value to market participants in the years ahead. The next sections explore how the operating environment, including both government policy and customer expectations, has evolved and hence the need to explore how the Renewable Gas Program should be revised to serve all gas customers, and maintain the viability of the gas delivery system into the future.

3. EVOLUTION OF CLIMATE CHANGE POLICY

3.1 *INTRODUCTION*

In this section, FEI reviews the climate policy that led to the development of the Renewable Gas Program in 2010, and the changes in public energy policies at the federal, provincial and local government levels since that time, which are driving the proposed changes to the Renewable Gas Program in this Application.

When FEI first sought approval from the BCUC for the Biomethane Program in 2010, the development of Renewable Gas was still in its infancy and the program was designed to meet the needs of customers who were seeking a lower carbon gas offering. At that time, government climate policy contemplated the reduction of GHG emissions, but did not include specific targets or requirements for the use of energy in specific sectors of the economy. As described in this section, the scope of climate policies has changed since the approval of the Biomethane Program, including the introduction of the CleanBC Roadmap which sets GHG emissions reduction targets across all sectors of the economy and, in particular, the building, transportation and industrial sectors. At the same time, climate policy at all levels of government has recognized the expanded use of Renewable Gas, including RNG and hydrogen, as key to achieving climate targets. In subsequent sections of this Application, FEI identifies how its proposed Renewable Gas Program supports these emission reduction policies.

This section is organized as follows:

- Section 3.2 provides an overview of the evolution of climate policies since the 2010 Biomethane Application.
- Section 3.3 describes federal climate policies.
- Section 3.4 describes provincial climate policies.
- Section 3.5 describes municipal and local government policies.
- Section 3.6 describes the policies encouraging growth in Renewable Gas supply.

3.2 *OVERVIEW OF EVOLUTION OF CLIMATE POLICIES*

FEI developed the Biomethane Program in 2010 in response to provincial climate policy and also as a solution for customers wanting a lower carbon gas offering. At the time of filing the 2010 Biomethane Application, the framework for provincial energy policy was the 2007 BC Energy Plan which committed the province to: (1) addressing climate change by harnessing clean and renewable energy to reduce overall GHG emissions; and (2) a renewed focus on the efficient use of energy sources. The provincial government's commitment to reducing GHG emissions and increasing the development of clean energy were re-affirmed in the 2010 speech from the throne and through the subsequent passage of the CEA. The CEA listed energy objectives to be

considered by the BCUC, as discussed in Section 3.2. Further, the BC-LCFS[32] was enacted in BC in 2008 and provided standard mandates for Carbon Intensity (CI) limits on regulated fuel types, including gasoline and diesel. While this policy did not have an immediate effect on the uptake of Renewable Gas for vehicles, FEI has since enrolled customers that use Renewable Gas in combination with conventional natural gas in their vehicles. Together, these objectives provided a compelling reason for FEI to pursue a Renewable Gas Program. In FEI's view, it had a central role to play in achieving the objectives of the CEA by pursuing renewable resources and in promoting energy efficiency

FEI's proposals in the 2010 Biomethane Application established the Renewable Gas Program, and included proposals for constructing facilities to upgrade biogas to biomethane for injection into the distribution system, and for a Renewable Gas offering. It also advanced the above-noted government policies favouring the use of renewable energy sources and reducing GHG emissions. In particular, the Renewable Gas Program has enabled FEI to play a central role in achieving the objectives of the CEA by pursuing innovative initiatives such as partnering with suppliers to develop renewable energy sources, reducing GHG emissions, and reducing waste by using biogas and biomass instead of conventional natural gas.

Since the 2010 Biomethane Application, policies to reduce GHG emissions at the federal, provincial and local levels have expanded. These policies aim to increase energy supply from renewable sources, including Renewable Gas, in conjunction with the implementation of other initiatives to address climate change. To illustrate the evolution of governmental polices over the intervening period, Figure 3-1 below shows the climate policies at the time of the filing of the 2010 Biomethane Application and policies that have been announced or implemented since then.

[32] Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act and Renewable and Low Carbon Fuel Requirements Regulation, known collectively as British Columbia's Low Carbon Fuel Standard.

Figure 3-1: Growth in Climate Change Policies since the 2010 Biomethane Application

As the figure above shows, the majority of policies have been implemented from 2016 and onwards. In the sections below, FEI describes these federal, provincial and local government policies, including those policies that have yet to be implemented.

3.3 *FEDERAL GOVERNMENT POLICIES*

Following the introduction of the Renewable Gas Program, the federal government released a number of policies targeting a reduction in Canada's GHG emissions, which are discussed below.

In 2016, the federal government published the Pan-Canadian Framework on Clean Growth and Climate Change in collaboration with provincial and territorial governments, and in consultation with Indigenous peoples. The framework was developed to meet Canada's emissions reduction targets, grow the economy, and increase resilience in the face of a changing climate.[33] As the framework recognizes: "taking strong action to address climate change is critical and urgent. The cost of inaction is greater than the cost of action."[34]

In 2018, the federal government introduced a number of policies, including the creation of the Clean Fuel Standard (CFS) and the implementation of a federal carbon taxation system.

First, the CFS targeted GHG emissions by reducing the carbon content of the fuels used for transportation and heating purposes. A draft updated plan was released in 2020 and states that producers and distributors of liquid fuels like gasoline, diesel and oil, which are mainly used in the

[33] https://www.canada.ca/content/dam/themes/environment/documents/weather1/20170119-en.pdf.
[34] https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/introduction.html.

transportation sector, must reduce their carbon content by 2.6 percent by 2022 and 13 percent (below 2016 levels) by 2030.[35]

Next, the federal government passed the *Greenhouse Gas Pollution Pricing Act*, implementing a federal carbon taxation system first announced in 2016, under which provinces were required to place a price on carbon of at least $10 per tonne of carbon dioxide equivalent emissions. The price would rise by $10 per tonne a year for the next four years, reaching $50 per tonne by 2022. In December 2020, the federal government announced that it planned to increase the price on carbon as part of a push to meet and surpass Canada's goal of reducing greenhouse gas emissions by 30 percent (below 2005 levels) by 2030. Under this revised plan, the price on carbon would rise by $15 per tonne a year for the next eight years beginning in 2023, reaching $170 per tonne in 2030. As discussed below, the BC provincial government has also implemented its own system of carbon taxation and has announced its intention to align with the latest federal amendments in the CleanBC Roadmap; therefore, the *Greenhouse Gas Pollution Pricing Act* does not apply in BC.

Lastly, in 2020 and 2021, the federal government updated the GHG emission targets for 2030 and 2050. For 2030, the federal government committed to a reduction of 45 percent from 2007. For 2050, the federal government committed to net zero emissions.

3.4 *PROVINCIAL GOVERNMENT POLICIES*

Provincial climate change policy has also developed significantly since 2010, creating new challenges and opportunities for FEI and its customers. Similar to the federal policies outlined above, the provincial government has demonstrated a commitment to reducing GHG emissions.

In 2017, the provincial government enacted the *Climate Change Accountability Act*[36] (CCAA) which included targets for reducing GHG emissions in BC. The CCAA includes targets of 16 percent below 2007 levels by 2025, 40 percent by 2030, 60 percent by 2040 and 80 percent by 2050.[37] The CCAA also includes a climate change accountability framework, which includes an independent advisory committee and detailed annual reporting on actions taken to reduce emissions and manage climate change risks.

The CCAA requires the Minister of Environment and Climate Change to establish sector-specific targets for GHG reductions by March 31, 2021 and to then review these targets by the end of 2025 (and at least once every five years thereafter). In March 2021, sectoral targets for 2030 were established, expressed as a percentage reduction from 2007 sector emissions. The reductions expected are 27 to 32 percent for transportation, 38 to 43 percent for industry, 33 to 38 percent

[35] https://www.canada.ca/en/environment-climate-change/services/managing-pollution/energy-production/fuel-regulations/clean-fuel-standard/about.html.
[36] [SBC 2007] Chapter 42.
[37] https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/legislation.

for oil and gas, and 59 to 64 percent for buildings and communities.[38] The targets will apply a more focused and directed approach to reducing emissions in these sectors.

3.4.1 CleanBC Plan and Roadmap to 2030

In 2018, the provincial government released its CleanBC Plan aimed at reducing emissions while creating jobs and economic opportunities. This plan laid out a path for BC to reach 75 percent of the 2030 GHG reduction targets, with the remaining 25 percent reduction still to be determined. FEI's target of 15 percent Renewable Gas (equating to approximately 30 PJs by 2030) came out of the 2018 Clean BC Plan.

On October 25, 2021, the provincial government released the CleanBC Roadmap to 2030 (CleanBC Roadmap) as part of its commitment to achieve the provincially legislated GHG reduction target of 40 percent below 2007 levels by 2030.[39] A key aspect incorporated into the CleanBC Roadmap is the sectoral emissions targets. The sector-by-sector approach is intended to help the province meet its GHG emissions reduction goal by 2030 by introducing legislatively enforced accountability measures. The key priorities identified in the CleanBC Roadmap pertaining to these sectoral emissions targets include emissions reductions in the building, transportation, and industrial sectors, including an emissions cap for natural gas utilities. The policies in relation to each of these sectors along with the proposed increases to the carbon tax are described below.

3.4.1.1 CleanBC Roadmap - GHG Reduction Standard: Emissions Cap for Natural Gas Utilities

The 2018 CleanBC Plan enabled gas utilities to reduce emissions by increasing the renewable content of their gas stream to 15 percent renewable content by 2030. Displacing 15 percent of the gas supply with Renewable Gas would increase the annual supply of Renewable Gas in FEI's system to approximately 30 PJs.

The provincial government's approach with respect to the emissions of natural gas utilities was recently updated in the CleanBC Roadmap with the introduction of a GHG emissions cap. The cap, if introduced into legislation, will limit the overall emissions from the gas used by all customers of gas utilities including residential, commercial and industrial sectors. This is the first policy of this kind in Canada which places an obligation on gas utilities to reduce emissions on behalf of their customers. The cap, as laid out in the CleanBC Roadmap, is set at 6.11 Mt of CO_2e per year at 2030. This represents a 47 percent reduction in GHG emissions from 2007 levels, and will require utilities to increase Renewable Gas content, increase investments in energy efficiency and employ other mechanisms to lower emissions. FEI expects that Renewable Gas content exceeding 15 percent will be required to meet this lower emission threshold by 2030. Details on the cap are under development; however, FEI sees the potential Renewable Gas supply requirements being between 45 and 65 PJs by 2030.

[38] https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action/sectoral-targets.
[39] https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf.

3.4.1.2 CleanBC Roadmap - Building Sector

A new carbon pollution standard will be incorporated into the BC Building Code to support a transition to zero-carbon new buildings by 2030. The standard will be performance-based and will be achieved using renewable and low carbon fuels, including Renewable Gas, in addition to building and equipment standards. Local governments will initially have the option to voluntarily adopt the new carbon pollution standard; however, the provincial government will mandate the standard through provincial regulation starting in 2024. As the extract from the CleanBC Roadmap provided below shows, the provincial government has identified Renewable Gas as a mechanism to achieve zero-carbon in new construction by 2030:

> **Zero-carbon new construction by 2030**: Current requirements for new construction focus on energy efficiency without directly addressing the issue of GHG emissions. Since natural gas is still a dominant, low-cost energy source for buildings, efficiency requirements alone are not enough to meet our climate targets. That's why we're adding a new carbon pollution standard to the BC Building Code, supporting a transition to zero-carbon new buildings by 2030. We're already working with local governments to develop voluntary carbon pollution standards. Those communities will serve as pilots for future province-wide requirements. The standard will be performance-based, allowing for a variety of options including electrification, low carbon fuels like renewable natural gas, and low carbon district energy. In 2023, we'll review our progress and, based on what we've learned, we'll start phasing in provincial regulations over time (2024, 2027, 2030). We'll also incorporate energy-efficiency standards for existing buildings into the BC Building Code starting in 2024.[40]

In addition, the CleanBC Roadmap lays out a plan that after 2030, all new space and water heating equipment sold and installed in BC will need to be at least 100 per cent efficient. The Roadmap identifies that electric heat pumps, gas heat pumps, and hybrid gas and electric heating systems will be able to be installed after 2030.

3.4.1.3 CleanBC Roadmap - Transportation Sector

The *Greenhouse Gas Reduction (Renewable & Low Carbon Fuel Requirements) Act* and the *Renewable & Low Carbon Fuel Requirements Regulation*, which are collectively known as the BC-LCFS, focus on reducing environmental impacts of transportation fuels. The BC-LCFS sets CI reduction targets each year with the goal of 20 percent total reduction by 2030.

Organizations generate credits by using fuels with a CI below the targets and receive debits for fuels with a CI above the targets. Each credit represents 1 tonne of carbon dioxide equivalent that was either removed from the atmosphere or not released into the atmosphere as the result of

[40] Page 40, https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf.

direct, beyond business-as-usual action by a project proponent. These credits can be traded between companies or banked for future use.

Conventional natural gas is below the current CI threshold in the BC-LCFS. FEI's Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) transport customers can earn credits under the BC-LCFS and sell them to other organizations, reducing the cost of adopting a low carbon transportation solution. As an even lower carbon fuel, Renewable Gas presents an opportunity for FEI's customers in the transport sector to further exceed the CI threshold in the BC-LCFS, earn more credits with Renewable Gas, and sell the credits to offset the costs of the Renewable Gas supply.

The CleanBC Roadmap states that the provincial government will increase the stringency of the BC-LCFS. New targets will be developed for medium and heavy-duty vehicles, as the costs and difficulty to electrify these vehicles remain high. The provincial government also intends to modernize the legislation governing the BC-LCFS, including expanding it to cover marine and aviation fuels beginning in 2023. The BC-LCFS is described further below in Section 5.7.2.

3.4.1.4 CleanBC Roadmap - Industrial Sector

The CleanBC Roadmap sets out that all new large industrial facilities need to have a plan to achieve net-zero emissions by 2030 and demonstrate alignment with BC's interim 2030 and 2040 targets. Moreover, emitters of methane will be required to reduce their emissions 75 percent by 2030 and have emissions close to zero by 2035. FEI will explore opportunities for Renewable Gas to serve these sectors as they seek low-carbon alternatives. It is unclear at this point how these industrial requirements overlap with the emission cap for utilities.

3.4.1.5 CleanBC Roadmap - BC Carbon Tax

As discussed above, the provincial government has also implemented its carbon taxation system and, as such, the *Greenhouse Gas Pollution Pricing Act* does not apply in BC. The provincial carbon tax is $45 per tonne ($2.31/GJ) as of April 1, 2021 and is currently proposed to increase at the same level as the federal carbon tax plan – escalating at $15 per tonne per year after 2022 and reaching $170 per tonne by 2030. This would have the effect of increasing the carbon price on a gigajoule of natural gas to approximately $8.40 by 2030. In BC, the provincial government has recognized the emission reduction benefits of Renewable Gas through a biomethane credit which provides a benefit to purchasers of biomethane blended with conventional natural gas. The credit is equal to the carbon tax payable on the specified volume or percentage of biomethane,[41] thereby incentivizing customers to transition to a lower-carbon fuel.

3.5 *MUNICIPAL AND LOCAL GOVERNMENT POLICIES*

An area of significant change since the Renewable Gas Program was developed is the evolution of municipal and local government to reduce emissions which have the effect of constraining the

[41] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/125_2008#part4.1.

use of natural gas in buildings. Before the provincial government released the CleanBC Roadmap in late 2021, the climate and energy policies at the local government level were evolving at a much faster pace than either provincial or federal policy. The majority of local governments in BC signed the BC Climate Action Charter, a voluntary agreement between the BC provincial government and Union of BC Municipalities under which each local government signatory commits to take action on climate change. In doing so, municipalities and local governments began undertaking their own initiatives, in addition to provincial efforts, to reduce emissions. In recent years, 34 municipalities in BC have also declared climate emergencies, including Surrey, North and West Vancouver, Vancouver, Burnaby, Richmond, New Westminster, and Port Moody.

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.

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

A number of local governments have adopted the BC Energy Step Code (Step Code) along with a GHGi[42] target for new building construction projects. The Step Code is an optional provincial building code that provides the tools for municipalities to adopt a higher level of energy efficiency in new construction that goes above and beyond the requirements of the BC Building Code. Local governments can reference the Step Code in a policy, program or bylaw, requiring that builders then comply with the Step Code for new construction projects. The Step Code is a fuel neutral code (i.e., does not specific the type of fuel used to achieve the target) and focuses on improved energy efficiency for the building, such as a tighter building envelope and the use of higher efficiency mechanical equipment. As its name suggests, the Step Code is structured as a tiered energy performance code with improved energy performance targets applicable in each tier. The Step Code is discussed further in Appendix A.

In addition to the Step Code, some local governments have developed and implemented their own GHGi targets for new building construction projects. The addition of GHGi targets, in conjunction with Step Code performance targets, means that only an energy source with lower carbon emissions can be used in new construction.

[42] Greenhouse Gas Emissions intensity (GHGi) is the total annual GHG emissions from all the energy use for the operation of a building. GHGi is calculated per square meter per year, by multiplying the total amount of a building's energy use in one year by the carbon intensity of each energy source and dividing it by the building's gross floor area. The unit of measure is in $kgCO_2e/m^2$ per year.

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.

Some of the common current GHGi target levels added to the Step Code and their impact on gas appliance use using conventional natural gas are set out in the table below.

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.

One example of a local government adopting its own policies in addition to the Step Code is the District of North Vancouver (DNV), which passed a bylaw adopting a low carbon energy approach in December 2020. The new bylaw came into effect on July 1, 2021 and offers two compliance paths for new construction buildings. Part 9[43] residential buildings (i.e., single family home, coach houses, townhouses) have to be designed and constructed to meet either Step 5 (see Appendix A for detail on the five Step Code levels) of the Step Code with a GHGi of 3kg $CO_2e/m^2/yr$ or Step 3 with a Low Carbon Energy System (LCES). The DNV refers to the LCES as one "*that uses primarily low carbon energy sources to provide heating, cooling, and hot water for a building, and has a total modelled greenhouse gas intensity of no more than 3kg $CO_2e/m^2/yr$.*[44] The current GHGi baseline for new construction using conventional natural gas is in the range of approximately 11 to 27 kg CO_{2e}/m^2 for homes.

In order for FEI to serve a new Part 9 building customer in the DNV, FEI would need to provide Renewable Gas (and the percent of Renewable Gas would vary depending upon many factors including but not limited to the building archetype, see page 6, Appendix A) and FEI must ensure

[43] Part 9 is reference to Part 9 of the BC building code which is intended for single family and small commercial buildings.
[44] https://www.dnv.org/building-development/energy-step-code.

the building occupant uses Renewable Gas for the life of the building. However, with FEI's current Renewable Gas Program, FEI cannot satisfy municipal requirements because of the lack of permanency due to the voluntary nature of the program. As such, FEI is not able to provide service to newly constructed residential homes in the DNV. While some builders and developers may install a convenience gas appliance (e.g., a gas cooktop or BBQ), the additional installation costs mean most builders or developers instead opt to use only electricity.

The adoption of GHGi targets at the local government level has resulted in a complex patchwork of regulations across BC. The implementation of GHGi levels, and the range of targets that have been set vary substantially, from 3-6 $kgCO_{2e}/m^2$, with some municipalities indicating a desire to move to 1 $kgCO_{2e}/m^2$. Municipalities may adopt a GHGi regulation for the entire geographic bounds of a city, as seen in the DNV, but limit the application of such regulation to certain building types or sub-building types. Similarly, GHGi requirements may be set at the permit level for a specific home or development or may be required via a rezoning application. In some cases municipalities may use a combination of one or more of these mechanisms to effect the desired GHG reduction outcome. 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.

3.5.2 Incentives to Encourage GHG Emissions Reduction in New Construction

In addition to the variety of GHGi targets being applied to buildings, local governments also rely on incentives for builders to reduce emissions in new construction projects. Similar to GHGi targets, the approaches taken by local governments often differ and may only apply to specific projects rather than the entire geographic scope of the municipality or local government.

FEI provides two public examples of local governments incentivizing developers to use a renewable energy (rather than natural gas) below; however, there are many more instances

where a developer, through the zoning negotiation process, has been deterred from installing natural gas service.

- **City of Surrey:** The council for the City of Surrey has recently approved a Zero Carbon Incentive to be applied to new buildings built in the Darts Hill Neighbourhood.[45] The incentive is intended to encourage the construction of zero carbon operation buildings. The Zero Carbon Incentive allows for additional densities measured in Floor Area Ratio (FAR), or Units Per Hectare (UPH). To qualify for the incentive, buildings must have 100 percent of the operational energy needs of the site and building met with non-polluting energy, including heating, hot water, and cooking, and the building must not be connected to a fossil fuel supply grid. This is in addition to any Step Code and City of Surrey energy and sustainability provisions already in effect.

- **District of Squamish:** On April 20, 2021, the District of Squamish adopted a Low Carbon Incentive Program Bylaw[46] to encourage the construction of buildings that use low carbon energy sources such as electricity rather than high carbon energy sources such as fossil fuels. The focus of the energy use is ongoing operations, most notably space and water heating appliances such as furnaces or hot water tanks. The Low Carbon Incentive would apply community-wide to all new residential development within certain zoning. The proposed incentive structure is to establish a new base maximum floor area ratio in the subject zones that is one third of the existing maximum density. This reduced density would be the density that could be achieved for buildings that use higher carbon energy sources such as natural gas powered furnaces or hot water tanks. Developments that utilize low carbon energy sources could achieve a bonus maximum floor area ratio, which would be the equivalent of the current density. Given the significant density bonus for low carbon development, it is expected that most builders would utilize low carbon energy sources such as electricity to meet the city requirements and gain the added floor area ratio.

In addition to this direct financial impact on developers, city planners exert influence on builders to conform to local government policies that reduce emissions, whether adopted in a bylaw or other policy. Further, city planners currently favour electricity-based solutions, often reflecting a lack of understanding at the planning level or a concern about the existing program's lack of permanence as discussed in Section 3.5.1 above. As a result, city planners are often resistant to builders or developers proposing Renewable Gas solutions for their buildings. From a practical perspective, builders and developers are reticent to unnecessarily add to their project costs (direct financial impact) or cause delay to the approval of permits (indirect financial impact), and therefore, conform to local government policies as implemented by city planners. Ultimately, narrowing the available low-carbon energy solutions to electricity alone impedes the ability of

[45] Darts Hill Neighbourhood Concept Plan: https://www.surrey.ca/sites/default/files/media/documents/DartsHillNCP.pdf.
[46] District of Squamish, Low Carbon Incentive Program: https://squamish.ca/yourgovernment/projects-and-initiatives/2020-zoning-bylaw-update/low-carbon-incentive/.

customers to choose gas as their preferred energy source and prohibits FEI from connecting new customers in this sector.

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

The Premier's mandate letter to the Attorney General and Minister responsible for Housing indicates that local governments will be granted greater autonomy to set building policies and emissions reduction targets at their discretion:

> Build on our government's work to require new buildings and retrofits to be more energy efficient and cleaner by supporting local governments to set their own carbon pollution performance standards for new buildings. [47]

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.

Increased regulatory oversight at the local government level is evident with the release of the CleanBC Roadmap, in which the provincial government describes adding a new carbon pollution standard to the BC Building Code in order to support a transition to zero-carbon new buildings by 2030. Local governments will serve as pilots for future province-wide requirements. The provincial standard will be performance-based, allowing for a variety of options including electrification, low carbon fuels like Renewable Gas, and low carbon district energy. 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.

In 2023, the province will review progress on the GHGi standards and start phasing in provincial regulations over time. In the meantime, local governments will continue to create a patchwork of bylaws and regulations across the province.

3.5.4 Reducing Emissions in Existing Buildings

FEI's existing customers are also affected by the local government regulations and other policies that require reductions in emissions. An example of this type regulation is the City of Vancouver's Climate Emergency Action Plan, which aims, amongst other measures, to cut the carbon pollution

[47] Premier's mandate letter to the Attorney General and Minister responsible for Housing, November 26, 2020: https://www2.gov.bc.ca/assets/gov/government/ministries-organizations/premier-cabinet-mlas/minister-letter/eby_mandate_2020_jan.pdf.

from building operations in half from 2007 levels by 2030. This is to be accomplished by requiring a switch from fossil fuel-based space heating and hot water systems to renewable energy-based systems beginning in 2025. Commercial buildings have similar limits and policies in place.

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

The above list only includes local governments that FEI is aware of having climate actions plans whereby the emissions from existing buildings is addressed. The list is not necessarily exhaustive.

3.5.5 Municipal and Local Government Summary

Local governments have adopted a number of strategies, policies and bylaws designed to lower emissions in the built environment. The voluntary nature of the current Renewable Gas Program does not meet the permanency requirements of these policies. FEI's proposals in this Application offer an opportunity for FEI to provide a Renewable Gas service that conforms to local government policies, in conjunction with education regarding the benefits and availability of Renewable Gas as a viable solution in the energy market.

3.6 *POLICIES ENCOURAGING RENEWABLE GAS SUPPLY*

The CEA has been the key piece of legislation enabling an increase in the supply of Renewable Gas. When FEI applied for approval of what was then called the Biomethane Program in 2010, the energy objectives in the CEA, including the objective to reduce GHG emissions and reduce waste by encouraging the use of waste heat, biogas and biomass[48] supported FEI's development of the program. Since that time, the Lieutenant Governor in Council (LGIC) has prescribed undertakings to encourage public utilities to acquire Renewable Gas to reduce GHG emissions. These are described below.

3.6.1 Legislative Framework: The CEA and GGRR

On March 21, 2017, the LGIC issued OIC 161/2017 approving an amendment to the GGRR related to RNG as follows:

[48] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/10022_01#section2.

> (3.7) A public utility's undertaking that is in the class defined in subsection (3.8) is a prescribed undertaking for the purposes of section 18 of the Act.
>
> (3.8) The public utility acquires renewable natural gas
>
> (a) for which the public utility pays no more than $30 per GJ, and
>
> (b) that, subject to subsection (3.9), in a calendar year, does not exceed 5% of the total volume of natural gas provided by the public utility to its non-bypass customers in 2015.

This GGRR amendment has facilitated the growth in RNG supply projects over the last four years by allowing FEI to acquire RNG up to a maximum price of $30 per GJ (supply volumes and projects are further described in Section 6).

More recently, in 2021, the provincial government amended the GGRR to broaden its scope and further increase the production and use of Renewable Gas, including renewable energy from green and waste hydrogen in BC, to reduce GHG emissions. The changes to the GGRR supporting growth in Renewable Gas supply include:

- Enabling utilities to acquire and supply green and waste hydrogen, synthesis gas[49] and lignin, in addition to RNG.
- Increasing the amount of RNG, green and waste hydrogen, lignin and synthesis gas that utilities (such as FEI and Pacific Northern Gas) can acquire and make available to their customers from five percent to fifteen percent of the total annual supply of natural gas;
- Broadening the methods by which utilities can obtain Renewable Gas to include producing it or upgrading it themselves for injection into the pipeline, paying a third party to produce it or upgrade it for pipeline injection, or purchasing hydrogen, synthesis gas or lignin to displace the use of natural gas at customer facilities; and
- Increasing the price cap utilities can pay to acquire Renewable Gas from $30 to $31 per GJ for contracts for purchase signed after March 31, 2021[50] and increasing the price cap annually by inflation.

The GGRR amendment enables FEI to be more flexible, stimulates investments in renewable energy and accelerates growth of Renewable Gas supply in the gas system. The changes to the GGRR will enable FEI to help to achieve the CleanBC Plan objectives, which enable a 15 percent renewable gas content in the natural gas system by 2030. Further, with the recent introduction of

[49] The CleanBC Roadmap inadvertently referred to this as synthetic gas, when it should be synthesis gas. Synthesis gas (or syngas) and lignin can be produced from biomass and used to displace the use of natural gas for industrial heat applications. Please refer to Section 6.3.1 of the Application for further details.

[50] Or, where the utility is producing the Renewable Gas, where the decision to construct the production facilities is made after March 31, 2021.

the CleanBC Roadmap in October 2021, FEI expects supply volumes to exceed 15 percent. This Application is consistent with growth in supply of this kind.

BC is the first province in Canada to pass legislation to encourage the production of Renewable Gas, including hydrogen. The GGRR supports the provincial government's hydrogen strategy, as described below, which includes goals to increase the production and use of renewable and low-carbon hydrogen to help achieve climate targets under CleanBC.

3.6.2 Hydrogen Policies

Hydrogen is a new and viable option for decarbonizing the gaseous fuel stream. While the potential for hydrogen has been around for many decades, the price advantage and robust natural gas supply chain has made if difficult for hydrogen to make inroads in the energy sphere. However, with increasing GHG reduction mandates, hydrogen is now seen as a viable option for decarbonizing the gas system, as recognized in the amendments to the GGGR permitting the acquisition of hydrogen described above.

Both the federal and provincial governments have a hydrogen strategy that is further outlined below.

3.6.2.1 Canada Hydrogen Strategy

The Hydrogen Strategy for Canada lays out a plan to position Canada as a global leader in clean renewable fuels. The strategy shows that, with the use of clean hydrogen, Canada can achieve net-zero goals by innovating and embracing new technologies. Canada is one of the top ten producers in the world today and is well positioned to decarbonize many sectors of the economy. The Hydrogen Strategy aims to position Canada as a world-leading producer, user and exporter of clean hydrogen and associated technologies. Areas of focus include[51] :

> Production: as Canada is rich in feedstocks such as water, electricity, fossil fuels and biomass and it is well positioned to become a top global producer of clean hydrogen.
>
> Distribution and storage: leverage Canada's extensive natural gas pipeline network, combined with new storage and distribution assets, to move hydrogen from production to end-use locations.
>
> Heat and power: develop a suite of tools and resources to blend low-carbon intensity hydrogen into Canada's natural gas networks, for use in both industry and the built environment.

[51] https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf.

Feedstocks for industry: develop policies that will ensure long-term certainty to encourage private sector investment and innovation for hydrogen can be used as an energy source and feedstock in industrial processes.

3.6.2.2 BC Hydrogen Strategy

For BC to meet its climate targets, renewable and low-carbon hydrogen will play a critical role and the BC Hydrogen strategy[52] lays out the actions that the provincial government will take to growing the hydrogen economy. Recognizing the potential of hydrogen in the province, industry and researchers will work together to outline the provincial government's plan to accelerate the production and use of low carbon hydrogen and be a world leader in the growing hydrogen economy.[53] These government supply strategies provide the backdrop for growing FEI's Renewable Gas supply portfolio.

The provincial government's hydrogen strategy includes 63 actions the province intends to pursue over short, medium and long term durations. The BC Hydrogen Strategy is meant to "accelerate the production and use of renewable and low-carbon hydrogen and be a world leader in the growing hydrogen economy." The Hydrogen Strategy includes:[54]

- Support for blending hydrogen with natural gas 2020-2025:
  - Establish a regulatory framework for injecting hydrogen into the natural gas and propane distribution systems
  - Include hydrogen as a prescribed undertaking under the GGRR
  - Partner with a utility to review the infrastructure requirements to accommodate up to 100 percent hydrogen in the distribution system55
- Support hydrogen injection trials into natural gas and/or propane distribution systems 2025-2030:
  - Mandate that new or modified natural gas or propane pipelines be hydrogen compatible
  - Support the introduction of hydrogen-tolerant equipment
  - Explore the role of hydrogen in meeting the CleanBC 15 percent renewable gas target

[52] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf.
[53] Page 5, https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf.
[54] https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf.
[55] Some of these activities are already underway.

- 2030-beyond:
    - Support large-scale hydrogen injection into the natural gas and propane distribution systems

In 2019, FEI and the province commissioned the BC Hydrogen Study that identified the significant role that hydrogen could play in achieving deep decarbonization goals.[56] Securing additional sources of Renewable Gas from a diversified group of suppliers will provide greater reliability of FEI's Renewable Gas supply. The study also identifies how the natural gas infrastructure is a strategic asset both for the transportation and the storage of hydrogen, with the ability to blend hydrogen into the natural gas in the system.

3.6.3 Partnering with Local Governments to Increase Renewable Gas Supply

Local governments have played a key role in partnering with FEI to increase the supply of Renewable Gas. Over the last few years, FEI has integrated increasing volumes of Renewable Gas into its system working with local governments such as the City of Kelowna, City of Vancouver, City of Surrey, Metro Vancouver, and the Capital Regional District:

- The Glenmore Landfill supply project was developed working in co-operation with the City of Kelowna to capture biogas created from landfill waste, upgrade it to RNG and inject it into the natural gas distribution system.
- The Surrey Biofuel facility closed loop organics processing operation collects and processes curbside organic waste from Surrey residents and businesses. Biogas produced by the facility is captured and upgraded to Renewable Gas.
- At the City of Vancouver's landfill, the conversion of landfill gas to Renewable Gas will be used in City vehicles and facilities and supports efforts to increase Renewable Gas supply and reduce emissions. The construction of the biogas facility is currently ongoing and FEI anticipates it to be complete by December 2024.
- Through the partnership between Metro Vancouver and FEI, a new facility has been constructed and is operational at the Lulu Island Wastewater Treatment plant in Richmond that generates biogas as a by-product of the wastewater treatment process.
- FEI has signed a supply contract with the Capital Regional District (CRD) for the CRD to supply RNG to FEI. This entails the construction of a new facility that will upgrade the biogas generated at Hartland Landfill to RNG.
- Additional discussions are ongoing with other communities including Indigenous communities, such as the Semiahmoo First Nation, interested in becoming Renewable Gas suppliers.

[56] https://bcbioenergy.ca/resources/bcbn-publications/british-columbia-hydrogen-study/.

FEI believes the gas delivery system and use of its existing gas infrastructure has significant additional potential to reduce emissions in BC across various sectors of the economy quickly and affordably and with minimum disruption. FEI discusses the role of the gas delivery system in the following Section 4.

3.7 *SUMMARY*

In this Section, FEI has described how climate policy at all levels of government is focused on reducing carbon emissions. The level of alignment between governments is indicative of a majority view in Canada, and a consensus in the scientific community, that addressing emissions is a key public interest. Given these realities, it is apparent that a transition to a lower carbon economy is well underway.

Through its Renewable Gas Program and other efforts, FEI has been at the forefront of efforts to decarbonize the natural gas supply to meet policy and customer desires. However, the policy environment has moved beyond what the original Renewable Gas Program was intended to offer. To ensure that Renewable Gas is a viable solution, a comprehensive update to the existing Renewable Gas Program offerings is required. Specifically, a Renewable Gas Program that can offer a permanent Renewable Gas supply for new buildings and a decarbonization of the existing system load is required. The proposals recommended in this Application will support government policy by advancing the use of Renewable Gas, providing our customers with offerings to reduce emissions in the various sectors including buildings, transportation and industry.

4. A DIVERSIFIED ENERGY SYSTEM IS IN THE BEST INTEREST OF BRITISH COLUMBIANS

4.1 *INTRODUCTION*

In this section, FEI discusses the value of the gas delivery system for delivering energy to customers and how leveraging the capabilities of the existing gas system will enable the reduction of GHG emissions in BC more quickly and with less disruption than other measures. A robust gas delivery system also complements other energy systems and ensures greater resiliency and energy affordability for all British Columbians.

FEI's assets will be critical to achieving government GHG emission targets. In particular, the extensive coverage and interconnectivity of the gas system makes the system a critical vehicle to deliver low carbon energy to British Columbians. Further, as a "drop-in fuel", Renewable Gas is an energy source that meets the objectives of all three levels of government (as discussed in Section 3), does not require significant expansions in energy delivery, does not require users to acquire new end use equipment, and as such, leads to relatively quick, easy and cost effective GHG reduction solutions.

This section is organized as follows:

- Section 4.2 explains why a diversified energy system is in the best interest of British Columbians.
- Section 4.3 sets out the significant and valuable benefits of the gas delivery system, including: effectively and efficiently meeting peak demand; maintaining energy redundancy; and keeping energy bills affordable for customers.
- Section 4.4 discusses how the existing gas delivery system can deliver rapid and long-term GHG emission reductions.

4.2 *A DIVERSIFIED SYSTEM IS NEEDED TO TRANSITION TO A LOWER CARBON ECONOMY*

FEI recognizes the important role it will play in an evolving energy landscape and that its contributions, through initiatives like the Renewable Gas Program, are key to reaching emission reduction targets at all levels. As federal, provincial and local governments enact policies that seek to reduce GHG emissions, FEI has proactively responded by aligning its operations and services with the needs of its customers and the need to meaningfully address climate change.

As outlined in Section 3.4, the provincial government has recognized that all potential forms of decarbonization must be leveraged in order to achieve an 80 percent reduction in emissions below 2007 levels by 2050. Reflecting the need to decarbonize the economy, FEI developed the Clean Growth Pathway to 2050 and established its 30BY30 target to reduce its customers GHG emissions by 30 percent by 2030.

As society contemplates the optimal pathways and investments needed to achieve BC's low carbon energy future, it is clear that leveraging the existing gas and electricity energy delivery systems is critical. High performing electric and gas delivery systems provides BC with greater flexibility in its energy options, greater affordability for its residents, greater system reliability and resiliency, and allows the optimal energy source to be used for a given application. FEI has more than 50,000 kilometres of existing piped energy delivery infrastructure located throughout the province and significant energy storage capacity, which are assets that can be leveraged and are needed to meet peak day and seasonal energy demand.

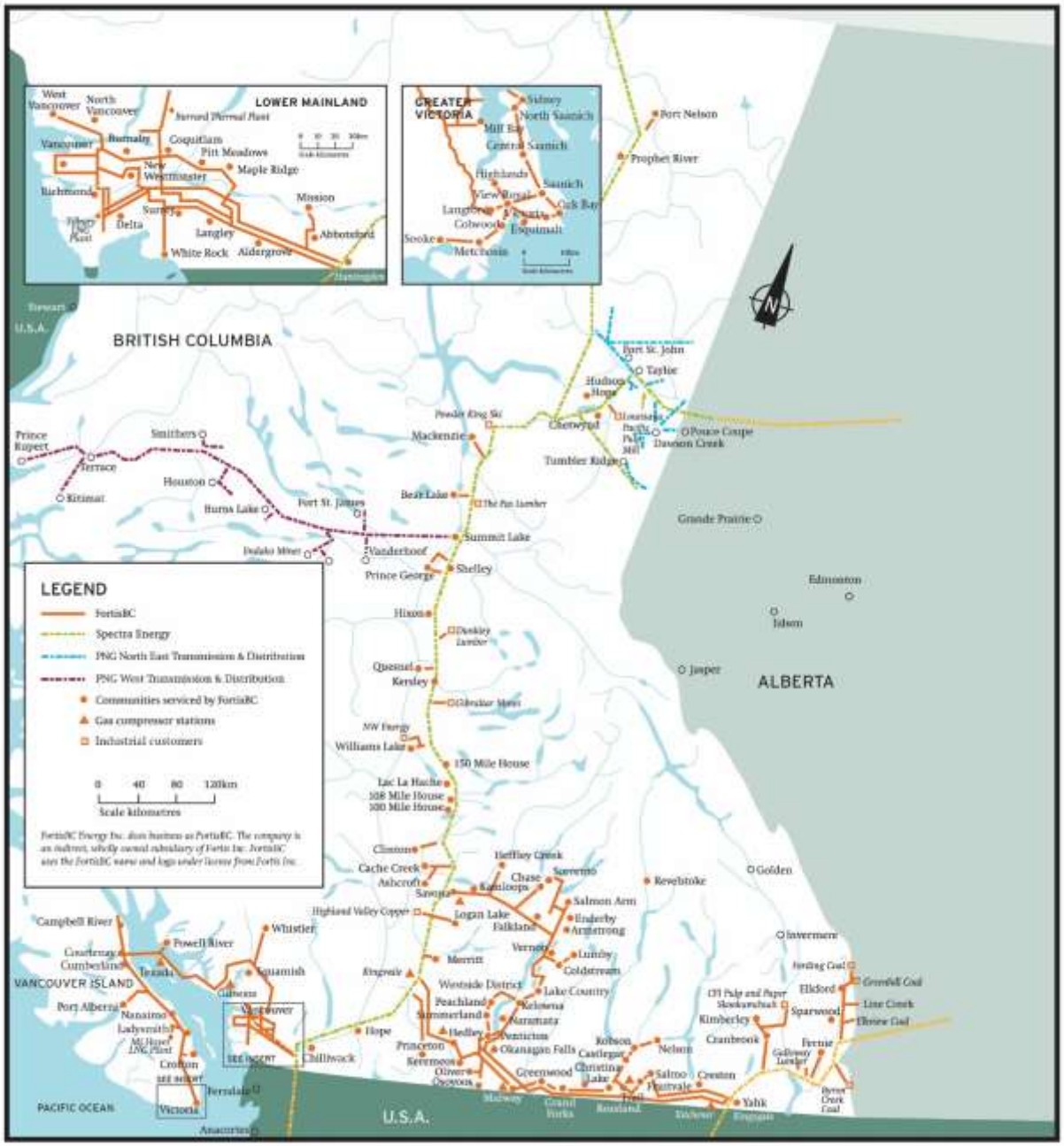
FEI expects that energy efficiency and the increased use of Renewable Gas will be the largest contributor's to FEI's avoided GHG emissions. Moreover, FEI expects new and different low carbon solutions to become commercially feasible over the intervening period, including hydrogen injection, direct hydrogen delivery, electrical energy storage (battery or other forums of storage), discrete generation, and hydrogen fuel cells – a number of which could be delivered through existing gas infrastructure.

In the sections that follow, FEI discusses the significant and valuable benefits of the gas delivery system and how it can deliver rapid and long-term GHG emission reductions to meet the government policies discussed above.

4.3 *THE BENEFITS OF THE GAS DELIVERY SYSTEM ARE SIGNIFICANT AND VALUABLE*

Gas infrastructure in the province is a multi-billion dollar asset, resulting from over 70 years of sustained development, which provides reliable, safe, affordable and high-quality energy services to British Columbians. Building a gas system today to replace the existing system would be cost prohibitive, making the existing system even more valuable to British Columbians. FEI operates over 50,000 kilometres of energy delivery infrastructure and has invested in significant energy storage capacity. Over three million British Columbians currently rely on natural gas service, with over 58 per cent of households in the province using natural gas as their primary heating source. The figure below illustrates the extent of FEI's infrastructure in the province.

Figure 4-1: Natural Gas Infrastructure Serving BC



The benefits of gas are reflected by FEI's continued customer growth. In 2018, FEI achieved its highest rate of customer growth, including new customers converting their home heating systems from high carbon fuels such as heating oil to natural gas helping to achieve the provincial government's GHG reduction targets. The marketplace recognizes that FEI delivers affordable, high-quality, reliable and safe energy services.

The continued use of the gas delivery infrastructure is a critical component of a decarbonized energy system in British Columbia and will mitigate cost of energy impacts to customers over the long term. As such, consumer preference for gas as an affordable energy source that can also be low-carbon should be recognized and harnessed. The proposed changes to the Renewable Gas Program, along with the growth of Renewable Gas supply, will help FEI to leverage the benefits of the gas delivery system, while reducing GHG emissions consistent with government policy, the utility's internal GHG-reduction strategies and the expectation of its customers.

As discussed below, FEI's gas delivery system:

- Has been designed to effectively and efficiently meet peak demand – serving customers when they need it most;
- Maintains energy redundancy in conjunction with other low carbon energy solutions; and
- Keeps energy costs affordable for customers by leveraging existing system benefits in the face of a period of increased investment due to the energy transition.

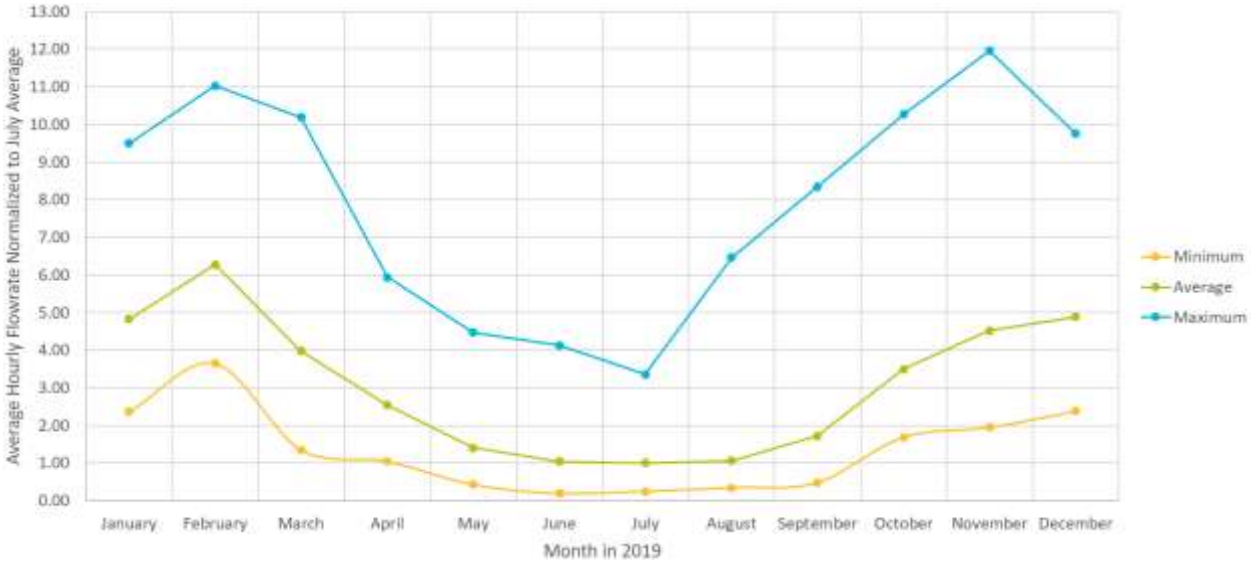
In Section 4.4, FEI discusses how the gas delivery system can deliver rapid and long-term GHG emission reductions in furtherance of government policy objectives.

4.3.1 Effectively and Efficiently Serves Peak Demand

One of the gas delivery system's unique characteristics and primary strengths is its ability to meet extreme peaks in demand, primarily driven by the heating needs of its customers during the winter months. Seasonal changes in heat demand (referred to as "peak load" or "peak demand") can be up to 400 to 500 percent greater than the utility's average demand. FEI's system can store, ramp up, and deliver high volumes of energy on short notice and can handle large changes in volumes over time without operational, reliability, or financial strain. In particular, the gas delivery system is designed to deliver significant volumes of energy in order to meet demand on very cold days.[57] This is demonstrated by the following graphic that shows the variance between summer low delivery volumes and winter high delivery volumes on the FEI gas system.

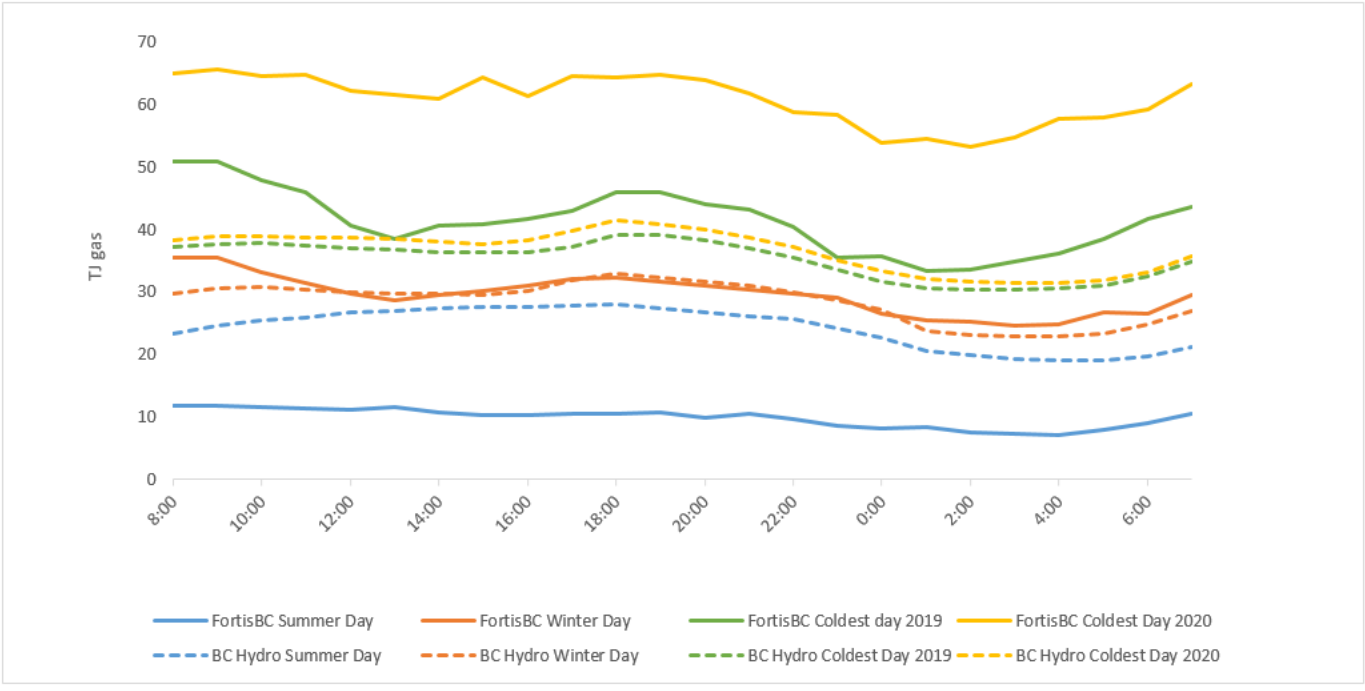
[57] For example, on the coldest day in 2019, the volume of gas delivered was 40 percent higher than an average winter day and over three times the energy delivered on a summer day.

Figure 4-2: 2019 Delivery Volumes on FEI's Gas System



Electricity systems are designed to deliver for peaks as well but the differences between low volume deliveries and peak deliveries are much smaller than the gas system. The following chart shows gas and electricity deliveries over a 24 hour period on summer day, a winter day, the coldest day in 2019 and the coldest day in 2020. As the graph demonstrates, the gas system is able to deliver nearly six times the capacity on the coldest day compared to an average summer day. In addition the gas system delivers twice the capacity of the electricity system on the coldest day.

Figure 4-3: Hourly Gas and Electricity Demand in BC



4.3.2 Maintains the Resiliency of the Province's Energy System

Maintaining the reliability and resiliency of the province's energy delivery system benefits all British Columbians who, as noted above, depend on the natural gas system for a number of essential functions. When energy systems are disrupted, it can cause significant hardship for those affected – as evidenced by the extreme weather-related disruptions in November 2021 caused by heavy rainfall and flooding. Having multiple forms of energy delivery provides for greater resiliency and minimizes the impact to customers when service is disrupted. 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.

This composition serves to provide greater resiliency to the energy delivery system should one source of energy be compromised. For example, in the event of a power outage, many consumers can still run a gas fireplace or cooktop. Diversification is beneficial to all energy consumers, avoids over-reliance on one energy stream, and ultimately prevents the risk or inconvenience created when a customer is left without energy to heat their home or operate their business. The importance of energy resiliency is magnified in the face of extreme climate-driven weather events.

4.3.3 Keeping Energy Bills Affordable for Customers

FEI's assets will play a critical role in the transition towards a lower carbon economy. Given the critical role of the gas system in transitioning to a lower-carbon economy, FEI has recognized the need for alternative energy products and services, such as the Renewable Gas Program, which leverage its existing assets while also reducing GHG emissions. Transitioning to a lower-carbon future will nonetheless come with increased costs, and FEI remains mindful of the need to continue servicing its customers while expanding its lower-carbon energy solutions to a broader customer base now and in the future. While FEI's need to invest in load growth opportunities in both the traditional and non-traditional parts of its business, investments in the gas system will benefit ratepayers in the long term.

Maintaining or increasing throughput on the system benefits all customers in mitigating increased energy bills. Typically customers that switch to alternative energy sources are those that can most afford to do so, as we have seen with the adoption of electric vehicles, which then leaves those remaining, who are not in a financial position to switch, bearing the increased costs. Furthermore, FEI's Demand-side Management programs, while having the effect of increasing rates, enable customers to invest in energy efficiency upgrades that in-turn decrease energy bills for consumers as their energy use declines.

A new energy economy is emerging, where energy consumers compare their energy bill to the cost of the next source of decarbonization in the future of the low carbon economy. The clean

energy momentum will define energy costs based on low carbon and renewable energy sources and technologies, which will then also shape the measure of affordability for energy. Renewable gas has the benefit of being a drop-in fuel that avoids the cost of conversion and retrofits when there are multiple demands on a household for GHG reductions in the low carbon economy.

The flexibility of a diverse energy system will also enable FEI to innovate and adapt as part of low carbon economy, and in response to continually evolving policy environment, while achieving a balance between affordability and low emissions for current and future customers. FEI considers a diversified energy delivery system, taking advantage of existing gas infrastructure, to be the cost-effective solution for energy consumers over the long term.

4.4 *GAS DELIVERY SYSTEM CAN DELIVER RAPID AND LONG-TERM GHG REDUCTIONS*

The gas delivery system is capable of contributing the largest and most rapid GHG emissions reductions across various sectors of the economy, including the building, transportation and industrial sectors. This can be achieved through the continued use the province's gas infrastructure in conjunction with "drop-in" fuels such as RNG and hydrogen, improvements in energy efficiency, along with other key mitigation options like carbon capture and storage. For example, FEI's contributions towards the achievement of the provincial government's 2018 CleanBC Plan, using Renewable Gas delivered through FEI's existing distribution system, will provide 75 percent of the plan's total emissions reductions in the built environment. The emission reductions under the CleanBC Roadmap will be even greater. The magnitude of these reductions support FEI's view that the provincial government expects the gas system will continue to play a central role in its strategy to reduce GHG emissions in this sector.

FEI's response to government policy has appropriately focussed on developing alternative energy products and services that leverage its existing assets while reducing their lifecycle carbon intensity. As this Application demonstrates, the growth of Renewable Gas as part of FEI's energy portfolio is essential to reducing GHG emissions in the province. As a "drop-in" fuel, Renewable Gas does not require significant expansion in energy delivery and end use infrastructure, meaning the displacement of conventional natural gas can be undertaken in an expedient and cost-effective manner as compared to other energy solutions.

Importantly, FEI's existing gas delivery system will continue to be used and useful, allowing FEI to continue to affordably deliver lower-carbon energy to its customers when they need it most.

4.4.1 FEI's Assets will Play a Role in Decarbonizing Important and Difficult to Decarbonize Sectors in BC

FEI's existing gas infrastructure serves important sectors of the economy in BC, and is well-suited to deliver low-carbon solutions to difficult-to-decarbonize end-uses, including the building, transportation and industrial sectors.

In the building sector, FEI can achieve emissions reductions in several ways, including: by helping its customers invest in energy efficiency upgrades, growing the Company's available Renewable Gas supply, and exploring carbon capture technologies. Over the past 10 years, FEI has invested over $386 million in energy efficiency, reducing customers' annual energy usage by 5.5 petajoules (PJs) on the gas system. The energy savings attributable to the gas delivery system have resulted in a cumulative reduction of 2.3 Mt of GHG emissions. As discussed in detail in Section 6 of the Application, FEI is also rapidly growing its Renewable Gas supply, with the number, scale and diversity of projects growing. Renewable Gas provides a "drop-in" solution to reduce emissions in buildings with homeowners or business owners continuing to use the gas appliances they are familiar with and without the need for homeowners or business owners to replace their equipment or undertake extensive building upgrades.

The transportation sector accounts for 40 per cent of BC's total emissions, making it a key sector where FEI can achieve significant and immediate carbon reductions with technology that is available today. FEI already provides innovative and clean technology enabling lower emissions throughout the transportation sector; however, decarbonization of this sector is challenging and will require the use of all available tools including cleaner transportation systems, increased investment in fuelling infrastructure, the development of clean trade corridors, and, importantly in the context of this Application, displacing high-carbon transportation fuels with cleaner fuels like natural gas, RNG, biofuels or hydrogen.

FEI anticipates that the province can achieve substantial emissions reductions by increasing its efforts to displace higher carbon fuels in the medium and heavy duty vehicle and marine transport sectors. First, by converting medium and heavy duty truck fleets and transit vehicles to liquefied natural gas (LNG) or compressed natural gas (CNG), the utility is helping the province meet its carbon emission reduction goals while helping operators save on fuel costs. Second, BC has had early success in advancing LNG in the domestic marine sector, which represents a foundation to build upon for other marine markets. For example, BC Ferries launched their fifth LNG vessel in 2019 and Seaspan Ferries operates two LNG vessels in BC waters since 2017. Both BC Ferries and Seaspan have plans to add more LNG vessels in 2022.

The gas delivery system will also lead to significant GHG reductions in industry by delivering renewable gas to industrial customers and harnessing the ability of industry to produce and consume renewable energy on-site. Many industrial energy consumers have significant potential to produce and/or consume synthesis gas, lignin and hydrogen that will displace natural gas consumption. These are important opportunities for BC as they will provide sources of Renewable Gas supply as well as providing economic opportunities for BC industries. There are also important opportunities to continue to invest in industrial energy efficiency improvements and other carbon reducing activities such as carbon capture, utilization and storage.

4.4.2 Reducing GHG Emissions Internationally

FEI can also leverage the potential of the gas sector to reduce GHG emissions internationally through LNG marine refuelling (referred to as bunkering) and LNG exports. FEI has the infrastructure in place, as FEI has completed construction of its first LNG expansion project at the

Tilbury facility which includes a new storage tank and additional liquefaction capacity. The Tilbury LNG facility is located on the Fraser River, giving access to vessels transiting international shipping routes, allowing LNG to be efficiently shipped to East Asia and along the west coast of America either by ISO container or bulk carrier. It is also an efficient and cost effective fuel supply for local, coastal, and international ship fleets.

4.5 *SUMMARY*

The climate policy imperatives being implemented at all levels of government are directly influencing and accelerating the need for the decarbonization of the natural gas system. In alignment with these policies, FEI is pursuing projects and changes to its products and services to address the need for emissions reduction, serve customer needs, and maintain the long-term health of the utility. FEI's assets, including the existing gas system, are critical to achieving GHG emission targets while maintaining affordability for British Columbians. Further, the continued use of the gas system will provide significant energy resiliency. The extensive coverage and interconnectivity of the gas network makes the system a critical vehicle to deliver low carbon across the province, and enables reductions in difficult to decarbonize sectors. The potential GHG emission reductions realized through FEI's proposed Renewable Gas Program are ultimately enabled through the versatility of Renewable Gas as a "drop-in fuel" in conjunction with the value of FEI's existing gas delivery system, which together enable FEI to deliver affordable lower-carbon energy to its customers when they need it most.

5. WHAT CUSTOMERS NEED FROM A RENEWABLE GAS PROGRAM

5.1 *INTRODUCTION*

This section summarizes the information reviewed and gathered by FEI through one-on-one interactions with customers and stakeholders, surveys and customer research. As part of its review of the Renewable Gas Program, FEI reviewed information gathered from customers and stakeholders through one-on-one interactions, surveys and other research and reached out to customers and stakeholders to better understand:

- The energy requirements of customers;
- How the need to reduce GHG is affecting the decisions customers make with respect to their energy requirements;
- How customers are reducing their GHG emissions; and
- The role of government, utilities, and energy consumers in reducing GHG emissions.

In general, FEI understands that customers want their gas service to be affordable and reliable, for it to provide comfort and convenience, for it to be efficient, and increasingly, for it to have low emissions. These gas service attributes are raised by each of FEI's customer classes, including its residential, commercial and industrial customers, with the weight placed on each attribute varying between each customer class, and sometimes within a customer class. The focus on reducing GHG emissions has emerged more recently, as customers seek to balance energy costs with reducing emissions.

The existing Renewable Gas Program was originally designed in response to government policy and customer expectations observed in the late 2000s and has served the needs of customers well. The program's early participants were primarily composed of residential customers who were concerned about their personal environmental impact, or provincial public sector organizations that were required to reduce their GHG emissions. In the intervening period, government policy and energy use have shifted to focus on emission reduction measures. For example, customers are now faced with increasing carbon taxes on GHG emissions that are currently expected to reach $8.40/GJ by 2030. In addition, some customers are subject to financial penalties and/or rewards for reducing their emissions, which strongly influences their demand for low carbon gas service. Given this backdrop, many potential program participants have service needs that the existing Renewable Gas Program does not adequately address, including providing a carbon neutral offering to new residential construction. Other customers are financially incentivised to use Renewable Gas, and pricing needs to be set appropriately for these customers.

This section is organized as follows:

- Section 5.2 describes customer feedback, research and surveys that have been completed in recent years.
- Section 5.3 describes the different residential customer segments and their various energy needs.
- Section 5.4 describes small commercial customer and their energy needs.
- Section 5.5 describes large commercial customer segments and their various energy needs.
- Section 5.6 describes industrial customer energy needs for various end uses.
- Section 5.7 describes how natural gas vehicle customer needs have changed over the years.
- Section 5.8 describes the challenges of performing a price elasticity analysis for Renewable Gas customers.

5.2 CUSTOMER FEEDBACK, RESEARCH AND SURVEYS

FEI gathers information regarding customer preferences, energy requirements, and energy use through one-on-one interactions with customers and stakeholders, including builders/developers, architects/engineers, HVAC contractors, and through surveys and customer research. This section outlines the information gathered and some of the key findings with respect to Renewable Gas.

5.2.1 Interactions with Customers and Stakeholders

The majority of feedback and information that FEI gathered from customers and stakeholders, including builders/developers, architects/engineers, and HVAC contractors, was through one-on-one interactions with FEI staff. FEI has approximately 40 staff in the roles of Residential/Commercial Energy Solutions Managers and Commercial and Industrial Account Managers who primarily work with their respective customer segments to assist them with their energy needs and provide energy solutions. Each staff member has an average of five interactions with customers a day, amounting to more than 1,000 interactions annually. These interactions can range from brief conversations, for example, to confirm unknown or outstanding information, to multi-hour conversations that require in-depth problem solving.

FEI staff work with builders and developers from the initial conception of a building project to its subsequent occupancy, which, for a large project, can amount to hundreds of hours of work. Further, FEI staff regularly meet with developers to help define building plans and locations for heating equipment and bring in equipment providers to facilitate education sessions for interested customers. Through these interactions with customers, FEI learns about the requirements of its customers, their energy needs, their goals or the goals of the project being developed, and how energy solutions can be tailored to service their energy needs.

Working with HVAC contractors, as well as equipment manufacturers, FEI staff learn about the qualities and benefits of their products and gain further understanding about the various end uses customers are looking for. FEI staff also learn about the competing electric options and what contractors and manufacturers believe are customers' perceptions of the gas and electric products. With the benefit of this information and understanding, FEI staff are in a position to promote gas equipment options to builders and developers as well as other HVAC contractors.

The efforts described above collectively amount to over 40,000 interactions, and thousands of hours of conversations with customers and stakeholders. Since the late-2000s, when FEI implemented a renewed focus on customer attachments and account management, FEI's capture rate for new residential construction has increased to over 80 percent annually.[58] As a result, FEI has increased its gas throughput over the last decade from the addition of these new customers which has helped to keep rates affordable for all customers.

From the insights gained from customers and stakeholders through these interactions, FEI has a robust understanding of the energy needs of consumers. Given the evolution of government policy with respect to emission reductions, FEI is well-placed to participate in, and contribute to, the transition to a lower-carbon economy. In particular, and importantly, these customer insights reinforce the need for the suite of solutions proposed in this Application.

Based on knowledge and discussions with customers some of the broad themes that emerge are:

1. **Customers Value Multiple Attributes of Gas Service:** Customers want gas service to be affordable, reliable, provide comfort and convenience, and to be efficient and have low emissions. These attributes are present in all customer classes, with the weight of each attribute varying between the circumstances of each customer class.
2. **Need to Balance Affordability and Emission Reductions:** Many customers want to reduce emissions, but also want the source of their energy to be affordable.
3. **Natural Gas is Preferred More Than Other Energy Sources:** Feedback from customers indicate they would rather have a home with natural gas over other energy forms. This is corroborated in Section 5.2.2.2 below from FEI's Renewable Gas Surveys.
4. **Customers Value the Benefits of Natural Gas:** For many years, FEI's customers have indicated that they want natural gas and the benefits it provides them in their home or business. In recent years, customers have increasingly sought to reduce their emissions and energy usage, and are looking to FEI to provide solutions that do not compromise the affordability, comfort, convenience and reliability of conventional natural gas.
5. **Customers Are Not Always Aware of Emissions Reduction Policies:** There is often a knowledge gap between FEI and its customers regarding the governmental policies that have been or are being implemented to reduce GHG emissions in BC and what these policies might mean to the energy services they currently receive.

[58] In the late 2000s, FEI's capture rate was approximately 57 percent.

5.2.2 Renewable Gas Surveys

In order to better understand the current views and attitudes of customers regarding Renewable Gas, FEI engaged a third party consultant, Innovative Research, to carry out several customer surveys on its behalf. The survey methodology was designed to ensure an impartial result and all survey and interview responses were anonymized to preserve the privacy of respondents. The surveys and interviews performed involved mass market customers, small business and existing RNG customers. The results indicate that respondents:

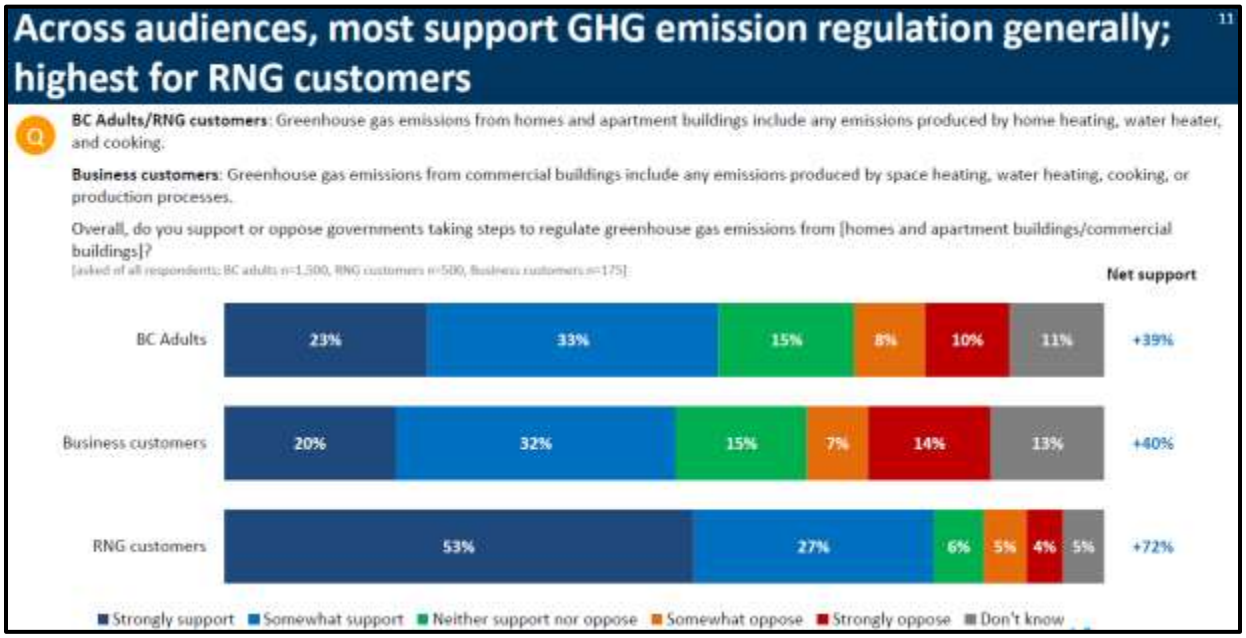
1. Support emissions regulations for building projects that are consistent across the province.
2. Desire continued access to natural gas service.
3. Support FEI's Renewable Gas investments and consider Renewable Gas to be part of the solution for reducing GHG emissions.
4. Remain conscious of the cost of Renewable Gas.

Summaries of the survey results are provided in Appendices B1 and B3 and summarized below.

5.2.2.1 Support for Consistent Building Emissions Regulation

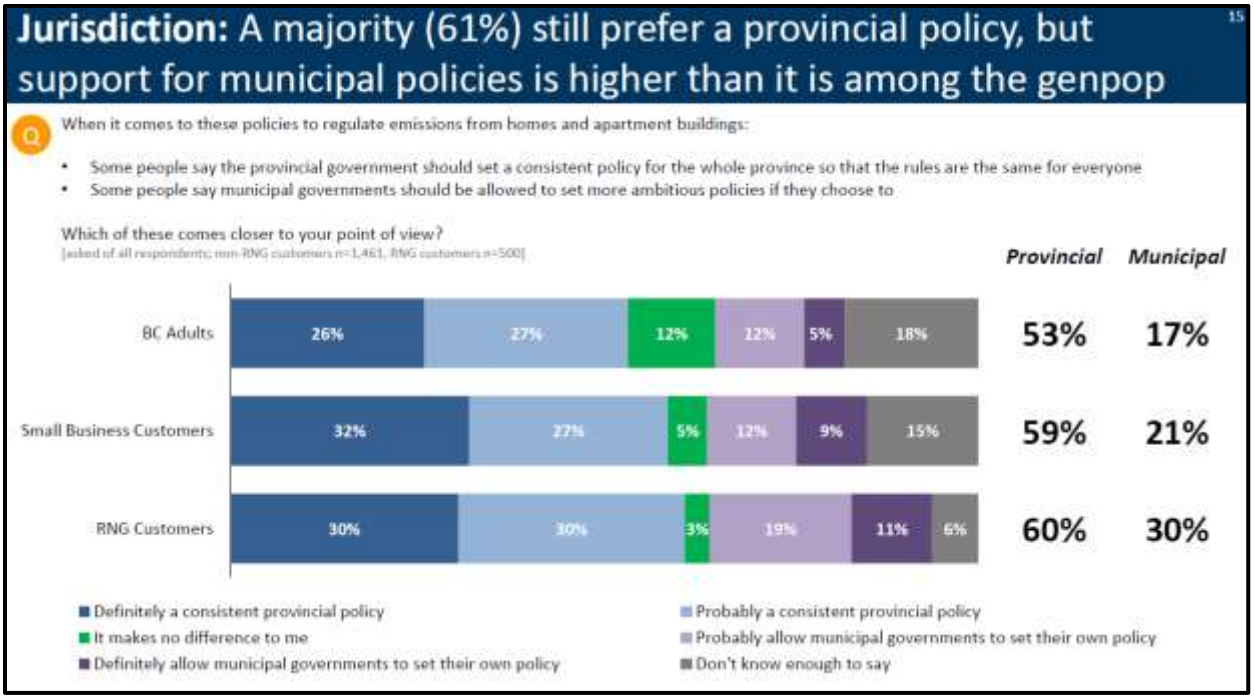
There is support among survey respondents for regulating building emissions to address climate change.

Figure 5-1: Support for Building Emissions Regulation



However, the majority of respondents indicated a preference for a consistent approach across the province with respecting to building-related policies, as opposed to those at the local government level.

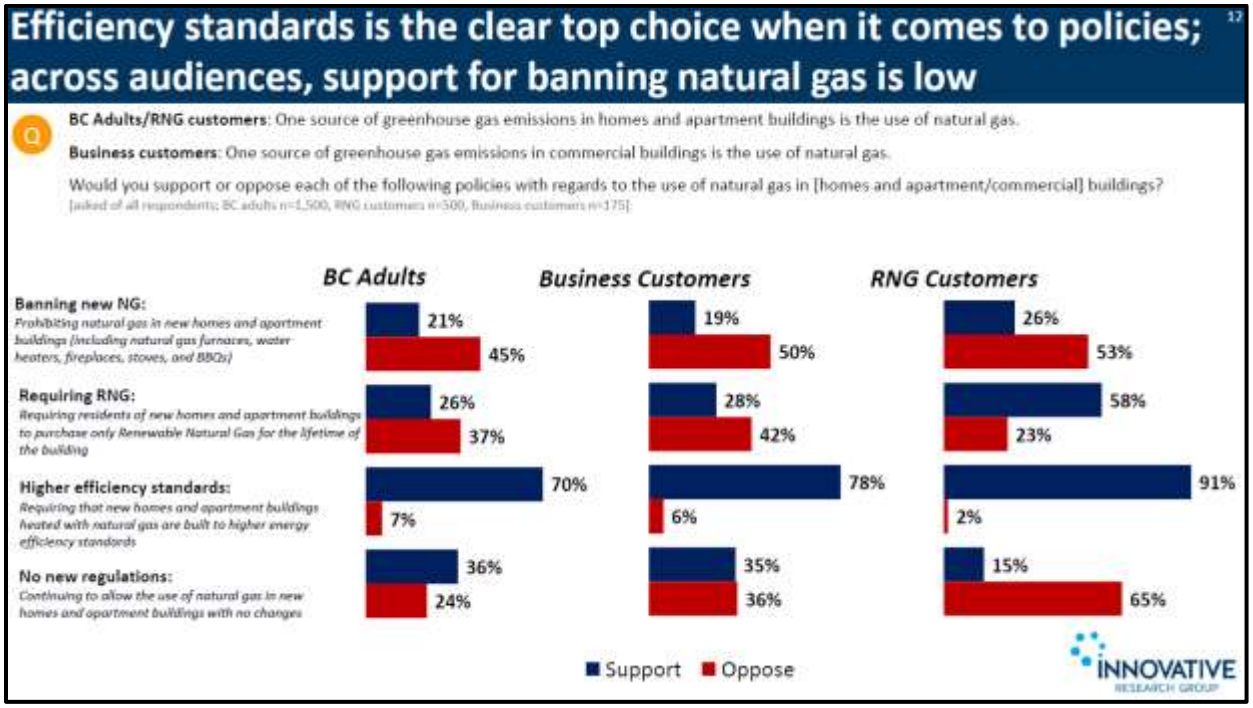
Figure 5-2: Preference for a Consistent Province Wide Policy



5.2.2.2 Support for Maintaining Access to Gas Service

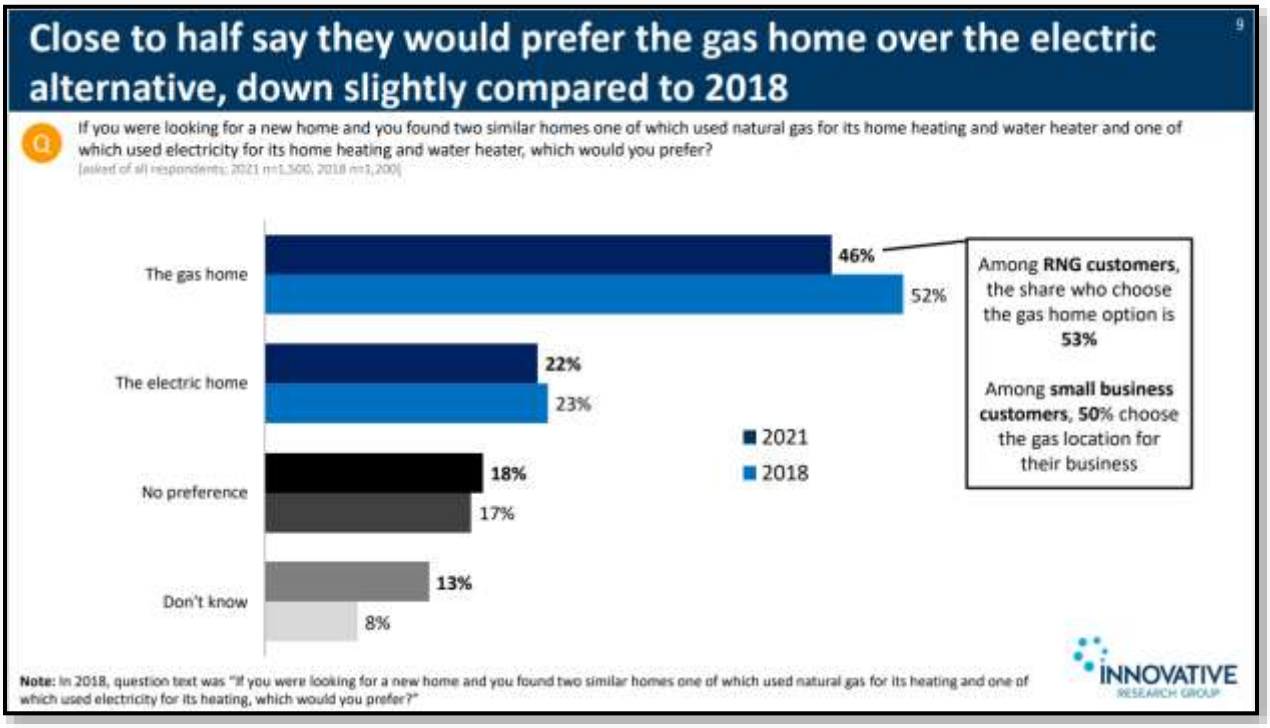
The survey indicates that there is little support for policies that would ban or limit access to natural gas. Respondents indicated a preference for energy efficiency policies as compared to other policies, including banning natural gas in new buildings.

Figure 5-3: Opposition to Restricting Access to Natural Gas



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



5.2.2.3 Support for Renewable Gas Investments and the Role of Renewable Gas in Emission Reductions

The majority of respondents support investments being made into Renewable Gas, and believe that Renewable Gas has a role to play, among a mix of energy sources, in reducing GHG emissions in BC.

Figure 5-5: Support for FEI Investing in Renewable Gas Program

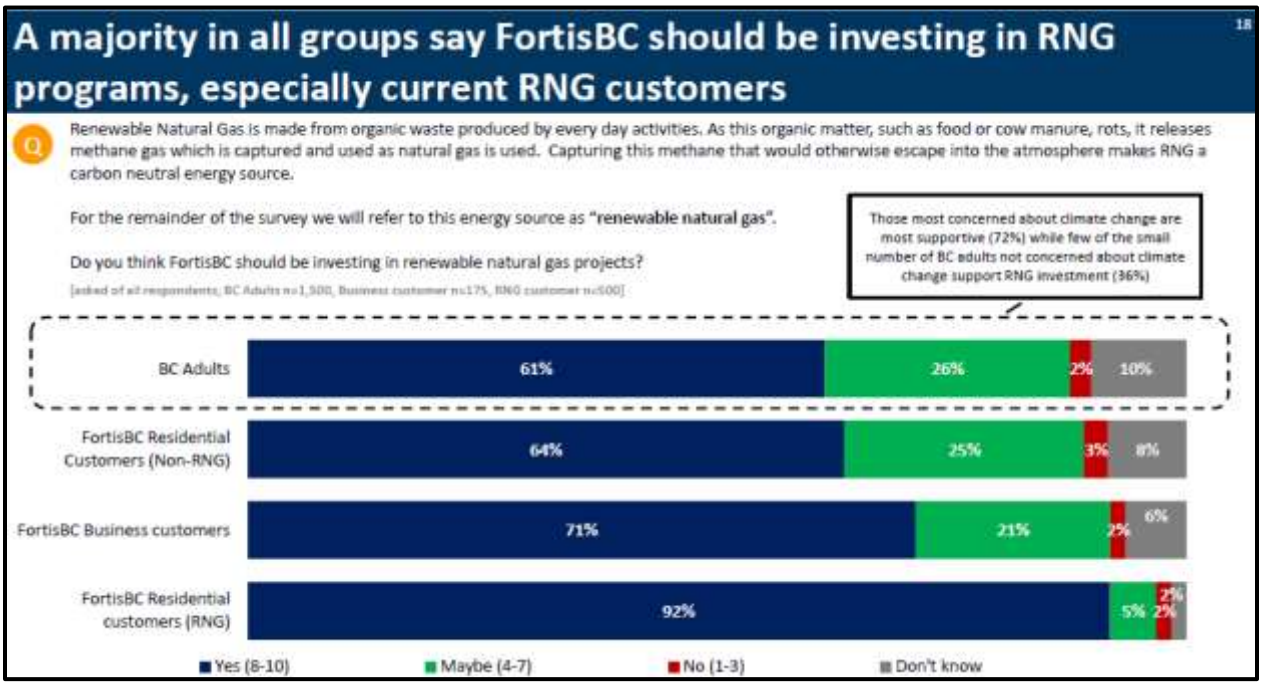
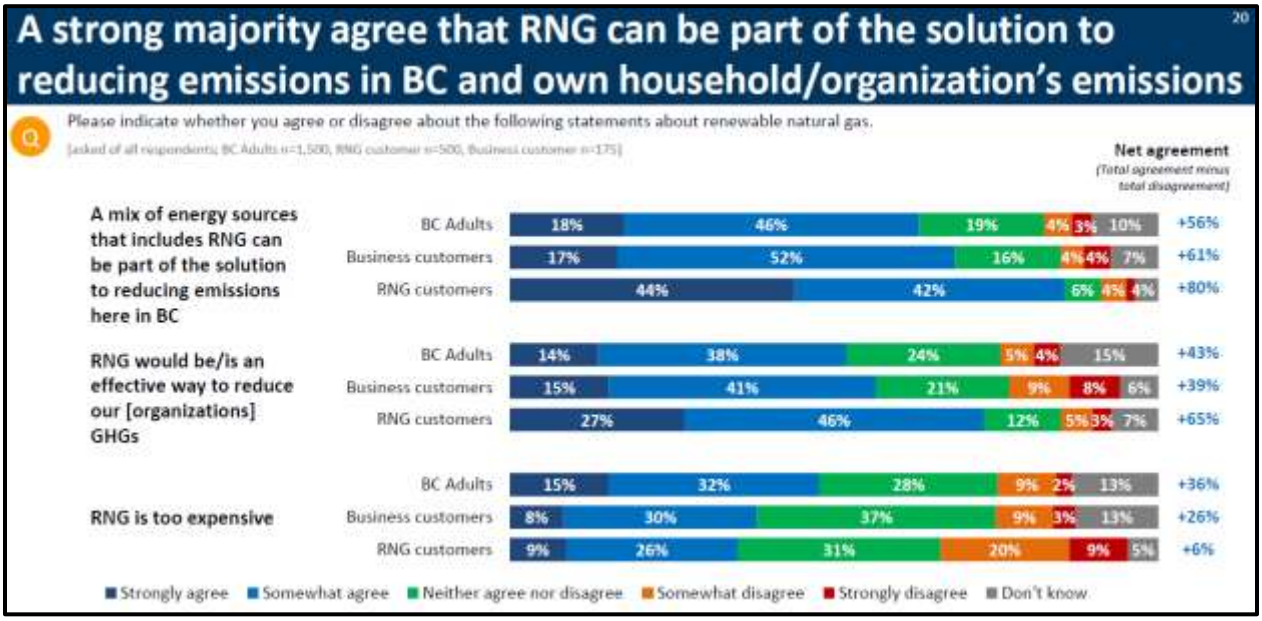


Figure 5-6: Support for Renewable Gas as Part of the Solution for Reducing BC's Emissions



5.2.2.4 Affordability of Renewable Gas Remains a Concern

As discussed in Section 2.2, in response to the rising costs and the associated drop in program participation, the BCUC approved an adjusted BERC rate methodology in 2016. All customer segments remain sensitive to the premium paid for Renewable Gas above conventional natural gas, and therefore, the likelihood of signing up for Renewable Gas service declines as the cost to the consumer increases.

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

Based on the survey results summarized above, customers want safe, reliable and affordable gas service. Customers enjoy the comfort and convenience of gas in their homes and buildings and want to be able to choose their preferred energy source to meet their specific needs, as evidenced in the supporting letters discussed in Section 5.3 below. Customers also value consistency across the province in meeting building emission regulations and want the ability to use Renewable Gas to meet governmental policy objectives where they can avoid costly retrofits of their equipment. Importantly, all customer classes are concerned about the price paid for energy services and are sensitive to the premium paid for Renewable Gas above conventional natural gas.

The sections that follow describe the expectations of residential, commercial and industrial customers in more detail.

5.3 RESIDENTIAL CUSTOMERS

Residential customers can be broadly categorized into three segments:

1. those in an existing home connected to the gas system;
2. those in an existing home converting to gas service from another energy source (such as propane); and
3. those constructing or moving into a newly constructed home.

FEI Key Account Managers have thousands of interactions with builders, end use customers, contractors and manufactures every year. Through these one on one interactions, FEI has gained significant understanding of the needs and desires of the market segment. This, combined with survey data, has helped FEI understand the segment and as a result see strong customer attachments. This information is also valuable in shaping the Renewable Gas Program.

All of these residential customer segments are cost conscious, while other attributes, including comfort, convenience, reliability and energy efficiency, all factor into their selection of energy solutions. While environmental goals rank highly, these goals do not come at the expense of other attributes provided by natural gas. A discussion of these residential segments follows.

5.3.1 Existing Homes Connected to the Gas System

Residential customers make up the largest proportion of FEI's customer base. Even though there are many differences between the customers in this group, it is still considered the most homogenous of FEI's rate schedules. Below FEI highlights some common expectations among residential customers.

First, energy use is not top of mind for residential customers with existing homes that are already connected to the gas system and, as a result, there is low engagement and low awareness of energy. Energy costs for some customers make up only a small portion of their daily or monthly expenses, while for other residential customers, energy costs make up a large portion of their expenses, forcing customers to choose between competing financial priorities. Based on internal customer billing research, FEI understands that so long as a customer's bill is stable, or at a minimum what the customer expected, then they are more likely to be content with their gas service. However, if the bill is higher than expected, then the customer may not be content and their opinion of gas as their preferred energy source can change.

Secondly, these customers expect their gas service to be operational when it is needed, providing them with heating (space and water), gas for cooking, and other uses (e.g., convenience appliances). FEI understands through conversations with customers that this segment of residential customers want a comfortable and warm place to live and a convenient way to cook when they need it, as opposed to an energy solution. Energy, in the form of natural gas, is therefore the tool for meeting those needs, and importantly, must be reliable in order to serve the various needs of residential customers. In particular, customers have remarked that they are able to continue using gas during power outages (for cooking, fireplaces, BBQs and also water heating). This highlights the resiliency benefits of a diversified energy supply. Customers are also increasingly installing natural gas back-up generators to provide power during electrical outages.

Third, this segment of residential customers is concerned about the environment and wants to reduce their GHG emissions; however, they often do not know how to reduce emissions in practice. Customers require assistance in this regard and look to utilities, like FEI, to help provide them with energy solutions. While these customers are willing to pay an incremental amount to reduce the emissions of the gas supply they use, like other customer classes, they are not willing to pay more than they have to and would want to pay less if they could.

The existing Renewable Gas Program is instructive when translating what customers say they want (i.e., to reduce their GHG emissions) into what people are actually willing or able to do (i.e., to sign up and pay a premium for Renewable Gas). To date, FEI has approximately 9,500 residential customers receiving Renewable Gas out of a residential customer base of approximately 970,000. Most of these customers have elected to take either 5 or 10 percent Renewable Gas blends. At these Renewable Gas blend levels, a customer currently pays approximately $5 - $10 more per month on their bill. 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.

5.3.2 Existing Homes Converting to Gas Service

Conversion customers are homeowners that are converting from oil, propane, wood or other energy sources, to natural gas alone or in combination with other energy sources.

There are typically three reasons for a customer to fuel switch:

- **Equipment Failure:** The most common driver for customers wishing to convert to gas service is when their original energy equipment fails and needs to be replaced, often at the end of its useful life. This type of customer will be incurring costs no matter the solution selected and the customer generally aware of the efficiency and cost advantage of natural gas equipment, but is not able to justify the expense of replacement equipment until it is absolutely necessary**.**
- **Major Renovation:** This type of customer is upgrading their existing home to either enhance their lifestyle, or update a home that was recently purchased. Either way, the customer understands the lifestyle, comfort and convenience of gas equipment and appliances, along with the associated energy cost savings, and wants to incorporate gas equipment in their renovation.
- **Economic:** While not as common a reason for customers to undertake fuel switching, this type of customer is motivated to realize energy cost savings and sees moving to natural gas (and away from another energy source) as a way to meet this goal.

Based on survey data and one-on-one interactions with customers and potential customers, the following are the priorities and expectations of customers converting to natural gas.

- Benefiting from cost savings in the both short and long term;
- Obtaining safe and reliable service installation and equipment;
- Installing high efficiency rated equipment; and
- Enhancing their lifestyle and increasing their comfort and convenience.

While the reduction of GHG emissions rarely arises with this group, FEI has had opportunities to engage conversion customers on this topic. Almost unanimously, these customers are concerned for the environment and are motivated to make some moderate adjustments in their lives so long as there is little or no additional incremental cost. Moreover, for customers moving from higher GHG-emitting fuels such as oil or propane, they understand the benefits of moving away from higher carbon fuels.

Ultimately, most conversion customers are willing to take Renewable Gas service so as long as there is very little or no cost to them. Very few of this customer type are aware of Renewable Gas as an energy solution or its associated benefits, and consider that the attributes of conventional natural gas meet their expectations. FEI's proposed changes to the Renewal Gas Program have been designed to address these barriers by, in particular, shifting away from an opt-in only structure.

5.3.3 Newly Constructed Homes

New homes can be built in areas that were not previously occupied by housing, or as part of the turnover of the existing housing stock. The turnover of building stock through the tearing down of existing buildings is particularly important in British Columbia as the province's teardown rate is nearly double the national average (at approximately 2 percent in 2020).[59] If this teardown rate remains unchanged, all of the province's building stock will be replaced within 50 years. 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.

There are also two types of new construction activity, "spec builders" who build homes for the mass market and "custom home builders" who build homes on a one-off basis.

Spec builders often choose equipment to maximize profit, whereas custom home builders choose equipment in consultation with their client, the home owner. In both cases, the builder or developer is generally seeking to return a profit and complete the required work expeditiously. Builders and developers incorporate gas appliances and equipment into their buildings in an effort to sell the homes more quickly and to obtain the targeted profit. Each type of new construction activity is discussed below.

[59] Teardown rate from FEI's 2021 Conservation Potential Review.

Spec Builders

Natural gas equipment and appliances (like all home appliances) are installed only if the builder believes they will assist in selling the home. As discussed in Section 3.5, municipalities and local governments are increasingly incorporating more stringent GHG emissions standards into the building approval process which can have the effect of removing gas as a building solution.

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. This means they have not resisted the imposition of local government policies that have the effect of excluding natural gas equipment, as there is no competitive advantage or disadvantage if a builder and all of its competitors cannot install natural gas.

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.

Custom Home Builders

While the vast majority of homes built in BC are constructed by spec builders, there are a significant number of homes built by custom home builders.

Customer satisfaction is very important to custom home builders and they are therefore more sensitive to the needs of their client. Similarly, clients see custom home builders as a “subject-matter expert” on all things related to building a home, including the choice of energy and the installation of associated appliances. Custom home builders expect safe and convenient installation of gas service to the building, and that the appliances and uses of gas should enhance the building and comfort of the client. They also tend to expect that the gas service will be installed at no cost to them, though depending on the circumstances of their project this is not always possible.

Like spec builders, custom home builders may not actively oppose governmental policies that prevent the installation of natural gas, but are nonetheless well-positioned to educate their clients on the benefits of gas (or Renewable Gas) as a viable option. Renewable Gas can offer a way that spec builders can deliver the benefits their clients are looking for, while complying with local government policies.

5.4 *SMALL COMMERCIAL CUSTOMERS*

FEI’s commercial Energy Solutions Managers and Key Account Managers gain valuable insight into the small commercial customer segment from many one-on-one interactions with customers each year. FEI understands that Small commercial customers are more similar to residential customers than to large commercial or industrial customers from an energy understanding and

usage perspective. However, the businesses are not homogeneous and range from strip malls, to restaurants, coffee shops, fitness studios, large retail space, and laundromats etc. As noted above, for many residential customers energy use is not top of mind and they typically have not explored energy costs and options for reducing emissions or how policy could effect their use of energy. This is no different in the small commercial sector. Small commercial customers are generally less sophisticated than large commercial customers and this is reflected in their choice and use of energy. Broadly speaking, energy is an input into the business operations for most small commercial customers (restaurants, laundromats and some other manufacturing facilities are an exception). The use of natural gas in this sector also mirrors that of the residential sector, with natural gas primarily used for space heating, hot water heating and cooking (for food service customers). There is some process load for these customers such as small laundromat and light manufacturing but the primary use is to for space and water heating.

Cost is the primary driver when selecting an energy source for small commercial customers, followed by ease of use and reliability, because customers in this sector generally have tight profit margins. Any way to reduce costs or keep costs down is appreciated because it has a direct effect on the business' bottom line. Therefore, to date, natural gas has proven to be an attractive option given its price advantage over electricity.

Small commercial customers also value ease of use and reliability when selecting an energy source. Gas equipment is easy to use, extremely reliable, can last many years, and be repaired rather than replaced in many cases, making it desirable for small commercial customers. Further, in general, gas transmission and distribution systems experience significantly fewer outages than electric networks. This is a desirable trait of gas systems as the more frequent disruptions of the electric system can have a substantial effect on small businesses. In many cases, buildings can still be heated with gas boilers during a power outage, which would not be possible if heating was provided by electricity. In addition, more customers are installing back-up gas generators to provide added reliability.

Through one-on-one interactions with small commercial customers, FEI understands that these customers' sentiments regarding climate change and GHG reductions are similar to residential customers. FEI's experience is that they believe that GHG emissions should be reduced and are in favour of efforts to do so; however, more than residential customers, small commercial customers only want to reduce emissions to the extent it does not impact the cost or reliability of their energy service. This is illustrated by the low adoption of Renewable Gas within this sector to date.[60] Ultimately, a large proportion of small commercial customers do not want to pay more than they have to for energy to reduce their emissions.

[60] Far less than one percent of commercial customers currently receive Renewable Gas service.

5.5 *LARGE COMMERCIAL CUSTOMERS*

Similar to the residential and commercial sectors, FEI's Key Account Managers have thousands of interactions with Large Commercial Customers annually. Through these interactions, FEI has gained valuable insight into how this customer segment is addressing emission reduction.

FEI's large commercial customer segment covers a diverse group of customers with unique drivers when it comes to their desire to purchase Renewable Gas. The segment includes institutional customers such as schools, universities and hospitals, public sector customers such as municipal, provincial and federal government customers, and various commercial establishments encompasses retail, office, hotels, property management and manufacturing, etc.

When it comes to reducing their GHG emissions, these customers have a range of alternatives available to achieve their internally or externally mandated emissions reduction targets. The available alternatives include purchased carbon offsets, investments in energy efficiency, fuel switching to electricity or opting into Renewable Gas service. Moreover, all of these alternatives can be combined in ways to suit their buildings or their budgets. For example, a customer could choose to electrify their domestic hot water heating, while replacing their conventional space heating boiler with a high efficiency model, and subscribing to 100 percent Renewable Gas.

As the size and complexity of the building system increases, so do the possible permutations for achieving reduced GHG emissions using the available alternatives. Large commercial customers are sensitive to the price of Renewable Gas and, if they believe the price is too high to suit the specific context of their building, they will use other alternatives to meet their energy needs and emissions obligations.

Large commercial customers can be subdivided into two categories that strongly influence their choice of Renewable Gas:

1. Those with government mandated GHG emission reduction targets, and who must incur costs to comply with those targets; and
2. Those that do not have such mandates, but may increasingly adopt corporate ESG climate change targets. While this customer segment may not be required to meet specific emissions targets, the CleanBC Roadmap may place an indirect obligation on all customer segments including large commercial customers to reduce emissions.

Both categories of customers are subject to increasing carbon tax on natural gas consumption, and both may be subject to further regulation as a result of the CleanBC Plan and CleanBC Roadmap. Each group bases their decisions related to energy on a variety of factors such as safety, reliability, resiliency, affordability, diversity, and GHG emissions. The first customer category is subject to direct regulations that require them to reduce their emissions and incur costs to do so and, as such, they have been more motivated to purchase Renewable Gas, and more likely to have expectations relative to any Renewable Gas service offering than the second large commercial customer category. Each customer category is addressed below.

5.5.1 Customers with Mandated Emission Reduction Targets

Public sector organizations in BC, such as hospitals, universities, schools and other provincial government entities must comply with BC's Carbon Neutral Government requirements. Introduced under the *Climate Change Accountability Act* in 2007, the Carbon Neutral Government Program requires these customers to achieve carbon neutrality via a number of means, including purchasing Renewable Gas. The Carbon Neutral Government Program creates a willingness amongst these customers to participate in the Renewable Gas Program as a means of achieving carbon neutrality; however, given the available alternatives to reduce emissions (e.g., electrification and/or energy efficiency), the economics of Renewable Gas are an important consideration driving this category of customers.

The energy choices of municipalities are driven by emission reduction targets that are largely self-adopted and have a strong motivation to purchase Renewable Gas if it is competitive and feasible when compared to the other alternatives. Climate change policies and GHG emission targets are a recent development at the municipal level and represent a change in these customers' expectations relative to the energy they consume.

5.5.2 Customers without Directly Mandated Emission Reduction Targets

For other large commercial customers such as those that occupy office towers, manage retail stores, or hotels, manufacturing, and restaurants etc., the motivation to participate in a Renewable Gas offering is not as strong. Many of these customers prefer to continue with using conventional natural gas. The decision to purchase Renewable Gas and integrate it into their energy mix is impacted by multiple considerations such as meeting their corporate mandates related to ESG investment, complying with local government policies and most importantly, managing their operating costs.

However, there are indications that the expectations of some of these customers relative to their energy consumption may change in the lead up to 2030 due to: (1) the increase in the carbon tax through 2030; (2) the growing importance that many larger organizations are placing on corporate ESG initiatives, often targeting reduced GHG emissions; and (3) while these customers may not be directly mandated to reduce emissions, the CleanBC Roadmap provides for an indirect obligation for these organizations to advance and support the province in meeting its climate policy targets. Taken together, these changes may prompt non-public sector large commercial customers to seek out or expect low carbon options for their energy supply.

5.6 *INDUSTRIAL CUSTOMERS*

FEI's industrial customer group represents a wide range of industries and end uses including pulp and paper, forest products, mining, refineries, chemical, cement, various manufacturing industries, greenhouses, agriculture and food and beverage processors. Natural gas equipment is the primary means of generating heat for manufacturing processes, including product drying, process heating, and industrial processes, in addition to space heating. For many of these process there is a requirement for thermal heat produced from combustion that electrical

appliances are not able to meet. Natural gas is often the best alternative for this customer group as it has the lowest emissions of the fossil fuels, is reliable and low cost.

The industrial sector is generally focused on managing their costs and the competiveness of their business, potentially both locally and internationally. Decisions related to energy are based on a variety of factors such as safety, reliability, resiliency, profitability, diversity, and their corporate sustainability and ESG plans as a tool to help them meet their corporate sustainability goals.

While the industrial sector has not shown interest in Renewable Gas during the initial ten years of the Renewable Gas Program, more recently, inquiries from industrial customers have been on the rise and more industrial customers are adding ESG goals to their corporate objectives. As such, industrial customers are beginning to show interest in Renewable Gas as both a potential Renewable Gas purchaser and/or a Renewable Gas supplier.

Managing operating costs will be a key driver of this customer segment. As many of these customers compete internationally, and are energy intensive and trade-exposed industries, increased costs for energy can drive them to move to different jurisdictions. In other words, carbon policies that are too stringent or result in increased costs can lead to "carbon leakage" - the movement of a business to a jurisdiction that has less stringent policies. FEI expects that the ability to use Renewable Gas with their existing natural gas equipment to meet their sustainability goals could be an important factor for the industrial sector to manage the overall capital and operating costs.

5.7 *NATURAL GAS VEHICLE CUSTOMERS*

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 NGV[61] 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.

5.7.1 Drivers for Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG) and Renewable Gas for NGV Customers

FEI has observed increased pressure in Canada and globally for the transportation sector to find innovative solutions to reduce its GHG emissions to fight climate change. The transportation industry at large is seeing demand for zero and near-zero emission solutions. While electric vehicles are effective for light duty transportation requirements, there are few credible low carbon alternatives to Renewable Gas today for medium to heavy transportation customers. Moreover, for customers who already use CNG, the switch to Renewable Gas to achieve emission reduction

[61] In order to avoid naming confusion with T-Service or "Transportation" customers, for the purpose of this application, customers who use gas for in vehicles and shipping will be referred to as "Natural Gas Vehicle" (NGV) customers, instead of "Natural Gas for Transportation" customers.

targets is relatively easy as Renewable Gas is a direct substitute for conventional natural gas, requiring no incremental capital investment to the NGVs or infrastructure.

Existing CNG and some LNG customers are requesting Renewable Gas to meet their own corporate emission targets, in addition to supporting government policy.[62] As a drop-in fuel, Renewable Gas can reduce emissions from CNG and LNG vehicle operation even further. For example, a natural gas bus operating on CNG reduces GHG emissions by approximately 33 percent,[63] nitrous oxide (NOx) emissions up to 45 percent,[64] sulphur oxide emissions up to 60 percent[65] and particulate matter emissions over 90[66] compared to the equivalent diesel bus. A natural gas bus operating on renewable compressed natural gas (RCNG) will achieve all of the NOx, SOx and particulate matter reductions as a CNG bus, but the GHG emissions of the RCNG bus will be 90 percent lower than a diesel bus.[67] Switching from diesel to natural gas provides the first line of reducing emissions, with the adoption of Renewable Gas is effective means of reducing emissions further.[68]

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

The BC-LCFS was enacted in BC in 2008. The standard mandates Carbon Intensity (CI) limits on regulated fuel types, including gasoline and diesel as described in Section 3.2. These CI limits are currently below the actual CI of diesel and become increasingly stringent each year.

The BC-LCFS has created an incentive for NGV customers to become fuel suppliers to generate credits for sale in the carbon credit market. NGV customers are eligible to become fuel suppliers once they purchase CNG, or in some cases LNG, under an applicable FEI tariff. Customers can generate credits by switching from diesel to CNG or LNG as these fuels have lower carbon content. Customers can increase the credit if they take a further step to move to Renewable Gas. Once credits have been generated, and validated by the province, they can be sold in the credit market. The sale price of credits is not stable, as it is influenced by both supply and demand. The credit price has generally increased in recent years, and most recently has been in excess of $400/credit.

[62] Appendix B-2, Large Volume Customer Interviews, p. 9.
[63] British Columbia Low Carbon Fuels Compliance Pathway Assessment, Accessed December 9, 2021 at: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/pathway_assessment_2017.pdf.
[64] An Emission and Performance Comparison of the Natural Gas C-Gas Plus Engine in Heavy-Duty Trucks, Accessed Dec 9, 2021 at: https://afdc.energy.gov/files/pdfs/32863.pdf.
[65] Guidance Document on the Sulphur in Diesel Fuel Regulations, Accessed December 9, 2021 at: https://ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=0885D2DC-1&offset=5.
[66] An Emission and Performance Comparison of the Natural Gas C-Gas Plus Engine in Heavy-Duty Trucks, Accessed Dec 9, 2021 at: https://afdc.energy.gov/files/pdfs/32863.pdf.
[67] British Columbia Low Carbon Fuels Compliance Pathway Assessment, Accessed December 9, 2021 at: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/pathway_assessment_2017.pdf.
[68] Appendix B-2, Large Volume Customer Interviews, p. 40.

For context, for an NGV customer using Renewable Gas instead of diesel, the sale of carbon credits at $400/credit would equate to approximately $25/GJ.[69] While there is no guarantee that these price levels will hold, even at a more modest $180/credit sales price, NGV customers could earn revenue from the sale of credits of approximately $11/GJ consumed.[70] This potential revenue stream has generated increased interest from NGV customers in Renewable Gas[71]. 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.

5.8 *CUSTOMER SENSITIVITY TO PRICE OF RENEWABLE GAS*

In the 2016 Decision the BCUC identified one of the objectives of the revised BERC methodology as being to maximize the recovery of program costs from RNG customers. In the information requests to the 2020 BERC Rate Assessment Report, questions were raised by the BCUC, the Commercial Energy Consumers of B.C., and the BC Old Age Pensioners et al. on the revenue maximizing price. FEI has attempted to determine the elasticity of demand for Renewable Gas offered to customers through an opt-in program. The elasticity of demand could be used to identify the revenue maximizing price for Renewable Gas. Data limitations, however, make it impractical to perform a robust analysis that could serve as the basis for Renewable Gas price setting.

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.

FEI does have historical program participation data versus the premium charged for Renewable Gas, as described in the 2015 BERC Rate Application. Even so, this information is not truly market data since customers' Renewable Gas purchase decisions are determined by social and environmental considerations which are less stable than consumer preferences for the goods and

[69] Estimated based on 2022 maximum allowable limit under the BC-LCFS and assuming 1,000 GJs Renewable Gas consumption per year. 1,000 GJs equals to approximately 64 credits under the BC-LCFS. Calculation is as follow: 64 credits times $400 per credit divided by 1,000 GJs.
[70] Calculation is as follow: 64 credits times $180 per credit divided by 1,000 GJs.
[71] Refer to Appendix B-2- Large Volume Customer Interviews, pg. 7.

services for which elasticity is normally measured. Elasticity is also likely influenced by customer obligations and alternatives for reducing emissions, which are changing rapidly. The information presented in the 2015 BERC Rate Application pointed to a maximum premium of approximately $8/GJ, beyond which enrolment subsequently fell. Since the update to the BERC, the price premium for RNG has been fixed at $7/GJ. As this number has not varied, any participation data collected since the new BERC was implemented provides no insight into the demand response to changes in price, which is the consumer behaviour that is being measured by price elasticity.

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.

A further alternative that FEI considered for gaining insight into price elasticity was to examine the price elasticity of demand for Renewable Gas in other similar markets. This alternative is not practical, however, since comparable offerings are not available elsewhere (as described in Section 7.3). Even if there were similar offerings in other jurisdictions, comparisons could be problematic. Decisions on energy purchases are made within a jurisdictional context where various energy options with different environmental attributes are available at prices that do not necessarily correspond to those found in BC. Attitudes to climate change and consumer action to mitigate societal impacts will strongly influence customer preferences in differing jurisdictions. Without suitable comparable offerings, a cross jurisdictional analysis simply cannot be performed.

5.9 *SUMMARY*

Despite changing regulations and a greater drive to reduce emissions, customers still broadly favour natural gas as it is affordable, reliable and provides customers with comfortable heating and other requirements. However, customers are looking for the utility to reduce emissions on their behalf. Many customers are required to reduce the carbon intensity of the energy they consume while others may be interested in doing so to suit their own objectives. Beyond the carbon tax, which is set to rapidly increase to $8.40/GJ by 2030, different customer types face different financial penalties and/or rewards for reducing their emissions. These differential circumstances impact the value that Renewable Gas provides and strongly influence the demand for Renewable Gas service from different customer segments. Customers generally want to minimize their cost of compliance. They will therefore not respond to an indirect policy measure that does not directly assign an obligation, like a GHG reduction standard. They will not likely purchase sufficient volumes of Renewable Gas to meet such a standard voluntarily. FEI's Renewable Gas Program must therefore be adapted to suit the needs of the different segments of customers FEI serves and the changing policy landscape.

6. GROWTH IN RENEWABLE GAS SUPPLY

6.1 *INTRODUCTION*

In this section, FEI describes the history, current status, and future of its Renewable Gas supply. FEI's Renewable Gas supply started small, with only one supplier providing approximately 41 thousand GJs of RNG per year in 2011. Since then, the number, scale and diversity of projects has grown, and FEI expects a continued expansion of supply projects and Renewable Gas volumes. A significant amount of Renewable Gas will need to be acquired by FEI to meet the 15 percent target set through the CleanBC Plan, and even more will be required to meet the GHG emissions cap for natural gas utilities identified in the CleanBC Roadmap. FEI's current growth outlook is to attain the 15 percent Renewable Gas target set through the CleanBC Plan,[72] and grow the Renewable Gas supply portfolio on a trajectory to meet the targets in the CleanBC Roadmap.[73] To meet these targets, FEI will incorporate new types of Renewable Gas, including green and waste hydrogen, lignin and synthesis gas, which are becoming commercially viable solutions. FEI also believes that the inclusion of these newer forms of Renewable Gas will allow FEI to scale up its gas purchases to meet the requirements of the CleanBC Roadmap. Based on the experience it has gained over the first 10 years of the Renewable Gas Program, FEI is in a position to rapidly grow its Renewable Gas supply to support government climate policy targets and reduce GHG emissions for the benefit of all customers and British Columbians.

The subsections below are organized as follows:

- Section 6.2 discusses how FEI's Renewable Gas supply has grown from 2011 to 2021 and how the pace of growth is expected to increase in the coming years and is on track to meet the 15 percent CleanBC Plan target by 2030.
- Section 6.3 explains how FEI is diversifying its supply portfolio to include hydrogen, lignin and synthesis gas and is forecasting to meet the 15 percent CleanBC Plan target by 2030.
- Section 6.4 describes how FEI is mitigating Renewable Gas supply risks by diversifying the projects in its portfolio along with other strategies.

6.2 *FEI'S RENEWABLE GAS SUPPLY HAS BEEN INCREASING*

FEI has significantly increased its supply of Renewable Gas since starting the Renewable Gas Program in 2010. This section discusses FEI's current supply status, recent growth performance, ongoing supply development, and the near-term supply outlook. This section also demonstrates FEI's proven capabilities and experience in developing Renewable Gas production capacity and building a network of suppliers across North America. These capabilities have enabled FEI to offer the most significant and longest running Renewable Gas program in North America.

[72] A 15 percent Renewable Gas target corresponds to an annual throughput of approximately 30 PJs of Renewable Gas.
[73] https://cleanbc.gov.bc.ca/.

6.2.1 Growth in Supply Has Been Substantial Since Program Inception

The number of operating facilities supplying FEI with RNG has increased from one in 2011 to ten in 2021, and FEI has increased annual purchases of RNG each year over this time period. Much of the growth in new supply projects has occurred over the last three years, and has included innovations such as the first RNG supply from out-of-province, and the first RNG supply delivered via virtual pipeline. In 2021, FEI saw the greatest increase to both the number of suppliers and the volume of supply since the Program's inception, with the addition of three new RNG producing facilities. FEI is currently receiving RNG from ten operating RNG plants located both within and outside of BC. An eleventh is currently producing and storing RNG until it can begin delivering it to FEI in January 2022. By the end of 2022, FEI expects to see a total of seventeen facilities supplying RNG. Please refer to Figure 6-1 below which shows the number of RNG supply projects in each year since the Renewable Gas Program was introduced.

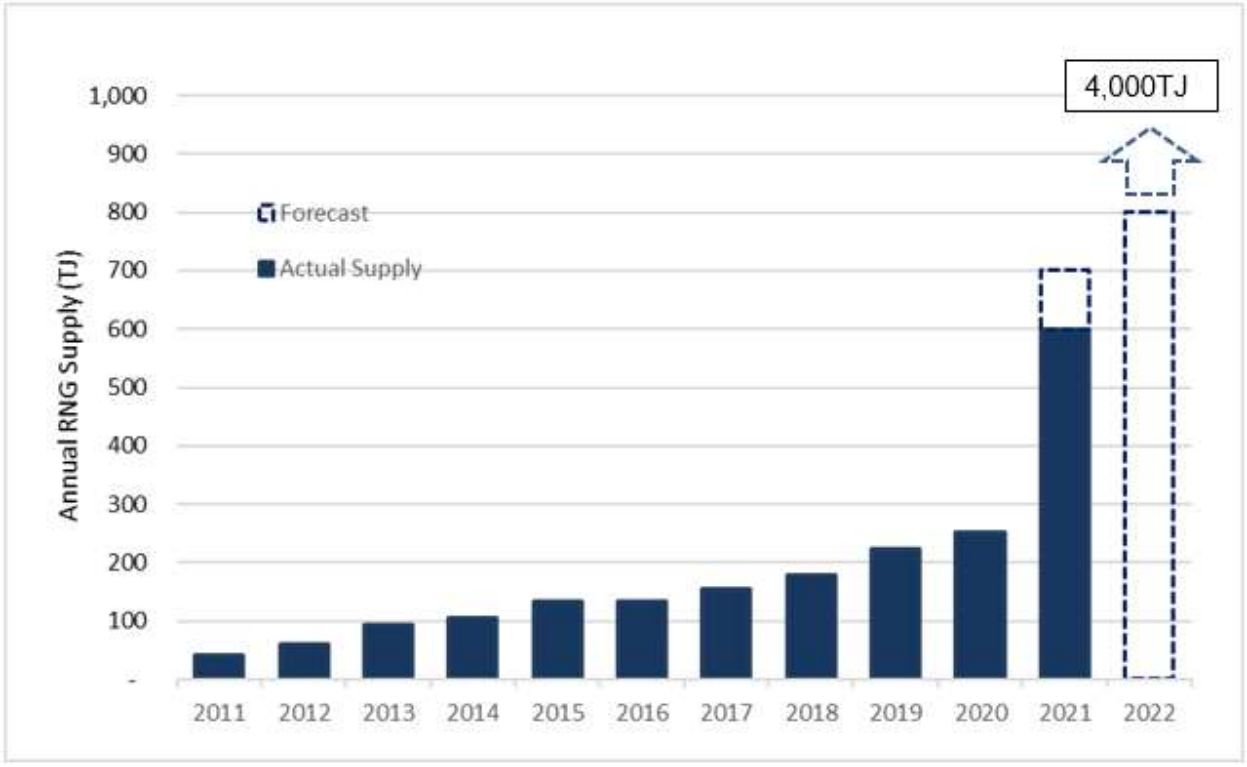
Figure 6-1: Number of Operating RNG Supply Projects

The volume of RNG supply acquired by FEI has also grown each year since 2011. In 2011 the volume of RNG delivered was 41 thousand GJs. By the end of 2021, the volume delivered is expected to be between 600 and 700 thousand GJs. Further, FEI projects that the volume of RNG supply produced by FEI's current 10 RNG supplying facilities in 2022 will be greater than in 2021 because FEI will be able to acquire a full year of supply from the new facilities rather than a partial year as was the case in 2021.

Figure 6-2 below depicts the annual RNG supply volumes that FEI has received from its suppliers over the past ten years and forecasts for 2021 and 2022. The year-over-year growth in supply

demonstrates continued performance improvement. In 2022, FEI is forecasting RNG supply volumes to reach 4,000 TJs, marking a significant increase in supply compared to previous years. The 4,000 TJs is the aggregate of all volumes expected from the 10 facilities currently supplying RNG to FEI, plus the additional 6 facilities FEI expects to begin supplying in 2022.

Figure 6-2: Total RNG Supply History and Short Term Forecast



6.2.2 Near-Term Supply Outlook Supports Meeting the CleanBC Plan

FEI has gained significant experience over the last 10 years in both securing and managing Renewable Gas supply, and expects to meet the CleanBC Plan target of 15 percent Renewable Gas by 2030.

From an operations perspective, FEI has increased its operating competence and has been interfacing with a greater number of facility operators, including experience with suppliers from outside of BC. This experience has improved FEI's ability to secure and manage Renewable Gas supply, and will provide a strong base to continue to grow both the number of suppliers and the volume of Renewable Gas.

Table 6-1 below provides details on all of FEI's current contracted supply projects and their associated volumes. The table includes projects that are providing RNG in 2021 and projects that are anticipated to begin providing RNG in the near future.[74]

Table 6-1: Contracted RNG Supply Projects

	1	2	3	4	5	6	7	8	9
	Project	Type	Province/State	BCUC Approval Status	Start/Anticipated Start Date (Month-Year)	Contract Max Annual Volume (TJ/Yr)	Proportion of Total Max Contract Volume (%)	Expected Annual Volume (TJ/Yr)	Proportion of Total Expected Volume (%)
Existing	Fraser Valley Biogass	Farm Digester	BC	Approved	Sep-10	91	0.7%	67	0.7%
Existing	Columbia Shushwap Regional Dist.	Landfill	BC	Approved	Jan-13	40	0.3%	16	0.2%
Existing	Kelowna Landfill	Landfill	BC	Approved	Jun-14	118	0.9%	62	0.6%
Existing	Seabreeze Farms	Farm Digester	BC	Approved	Feb-15	120	0.9%	90	0.9%
Existing	City of Surrey	Organics Processing	BC	Approved	Jul-18	160	1.2%	75	0.8%
Existing	Tidal Stormfisher	Organics Processing	ON	Approved	Aug-20	237	1.7%	180	1.8%
Existing	Lulu Island Waste Water	Waste Water	BC	Approved	Jun-21	100	0.7%	40	0.4%
Existing	Lethbridge Biogas	Farm Digester	AB	Approved	Aug-21	475	3.5%	225	2.3%
Existing	Shell Energy	Waste Water	IA	Approved	Aug-21	692	5.1%	519	5.3%
Existing	Faromor CNG	Farm Digester	ON	Approved	Oct-21	120	0.9%	60	0.6%
Existing	**Total Existing (TJ/Yr)**					**2,153**	**15.9%**	**1,334**	**13.7%**
Anticipated	Assai Energy	Landfill	PA	Approved	Jan-22	1,600	11.8%	1,200	12.3%
Anticipated	Dicklands Farm	Farm Digester	BC	Approved	Jul-22	160	1.2%	100	1.0%
Anticipated	Walker RNG	Farm Digester	ON	Approved	Jul-22	160	1.2%	120	1.2%
Anticipated	Tidal Niagara	Landfill	ON	Approved	Aug-22	694	5.1%	675	6.9%
Anticipated	Net Zero Waste	Organics Processing	BC	Approved	Oct-22	173	1.3%	130	1.3%
Anticipated	GrowTEC	Farm Digester	AB	Approved	Oct-22	140	1.0%	80	0.8%
Anticipated	Evergreen (Oshawa) Environmental	Organics Processing	ON	Approved	Oct-22	390	2.9%	300	3.1%
Anticipated	City of Vancouver	Landfill	BC	Approved	Nov-23	298	2.2%	250	2.6%
Anticipated	Matter	Farm Digester	BC	Approved	Jul-23	100	0.7%	75	0.8%
Anticipated	Tidal GSE	Hydrogen Reduction	ON	Approved	Sep-23	800	5.9%	600	6.1%
Anticipated	Delta RNG	Landfill	BC	In Progress	Jan-23	1,200	8.8%	740	7.5%
Anticipated	EPCOR	Waste Water Treatment	AB	Approved	Mar-23	280	2.1%	210	2.1%
Anticipated	RDFFG	Landfill	BC	In Progress	Mar-23	94	0.7%	80	0.8%
Anticipated	Tidal Rockford	Landfill	IL	Approved	Jun-23	841	6.2%	486	5.0%
Anticipated	Bradam Hamilton	Carbon Energy	ON	Approved	Jul-23	1,500	11.1%	1,125	11.5%
Anticipated	Capital Regional District	Landfill	BC	Approved	Sep-23	280	2.1%	238	2.4%
Anticipated	Bradam Napanee	Carbon Energy Recovery	ON	Approved	Oct-23	1,500	11.1%	1,125	11.5%
Anticipated	REN Energy	Wood Biomass	BC	Approved	Dec-23	1,200	8.8%	900	9.2%
Anticipated	**Total Anticipated (TJ/Yr)**					**11,410**	**84.1%**	**8,434**	**86.3%**
	Grand Total Volume (TJ/Yr)					**13,563**	**100.0%**	**9,768**	**100.0%**

Columns 6 and 8 of Table 6-1 above show the contracted maximum volume (column 6) and the expected annual volume (column 8) for each RNG supply project. The expected annual volume is the volume FEI presents in its volume forecasts and takes into account FEI's past experience with the initial output of new RNG supply projects. In particular, new supply projects have not historically operated at the full maximum value at first and may take time to ramp up their production to maximum volumes. As shown in the bottom row of column 8, FEI's total Expected Annual volume is approximately 9,768 TJs per year.

Columns 7 and 9 of Table 6-1 show the proportion that each project represents as a percentage of FEI's total maximum contracted volume (column 7) and as percentage of FEI's total expected annual volume (column 9). These percentages provide an indication of the supply side risk associated with an interruption from any one supplier. As columns 7 and 9 show, most suppliers

[74] Among existing projects the Quadrogen project ceased operations in June 2021. It is not included in the total number of current operating facilities.

provide a small proportion of FEI's total supply volume. As such, increasing the number of suppliers will tend to further reduce the supply-side risk associated with any one project's volume.

Based on the totals set out Table 6-1, FEI has already secured contracts with suppliers to provide half of the supply required to meet the CleanBC Plan target of 15 percent Renewable Gas by 2030. Given the scope of business development activities including discussions with additional suppliers currently underway, FEI believes it will be able to meet or exceed the targets set through the CleanBC Plan, and is well placed to meet the more stringent targets contemplated in the CleanBC Roadmap.

6.3 *FEI IS DIVERSIFYING THE COMPOSITION OF ITS PORTFOLIO AND PLANNING TO MEET THE CLEANBC PLAN TARGET*

As described above, FEI has increased volumes substantially since the inception of the Renewable Gas Program. Based on the totals in Table 6-1, FEI is halfway to meeting the CleanBC Plan target of 15 percent Renewable Gas by 2030. FEI also recognizes that with the recent release of the CleanBC Roadmap and the GHG reduction standard described therein, the amount of Renewable Gas required to support public policy will exceed 15 percent. In this section, FEI describes the future makeup of FEI's Renewable Gas portfolio, diversification of supply, and short and long-term forecasted volumes, demonstrating how FEI will substantially increase its Renewable Gas supply portfolio to meet provincial climate action objectives.

6.3.1 Diversifying the Composition of the Renewable Gas Portfolio

FEI's current Renewable Gas portfolio consists solely of RNG. However, as permitted under the GGRR, FEI is also working with suppliers to acquire hydrogen, synthesis gas and lignin. FEI expects that it will be able to meet the target in the CleanBC Plan with the inclusion of these additional Renewable Gases. In the subsections below, FEI describes each of the Renewable Gases that FEI plans to include in its Renewable Gas portfolio.

6.3.1.1 Renewable Natural Gas (RNG)

RNG (or biomethane) is produced via anaerobic digestion processes that contribute GHG savings through reduced methane emissions, displacement of fossil fuels, reduced fertilizer use and in some cases, direct use of the CO_2 produced. The biomethane is produced as organic material is broken down by bacteria (anaerobic decomposition) and would be generated regardless of any human intervention. RNG provides the benefit of capturing and upgrading this methane, which would otherwise be released into the atmosphere, for use as a renewable fuel that displaces conventional natural gas.

Further, in the absence of a project that captures and uses this methane, it would have otherwise been released into the atmosphere adding to global warming impacts. The global warming potential, or "atmospheric heating equivalency", of methane and carbon dioxide, which is the main greenhouse gas constituent emitted from the combustion of methane, is stated in the 2020 BC

Best Practices Methodology For Quantifying Greenhouse Gas Emissions[75] as 25 and 1, respectively. In simple terms, this means that each molecule of methane has 25 times heat trapping potential as one molecule of CO_2. Utilizing RNG for heating and other purposes converts biomethane to carbon dioxide, preventing it from directly entering the atmosphere, thus reducing overall greenhouse gas emissions.

Existing BC Government policy considers RNG (biomethane) captured from organic waste (including agriculture, landfill, or wastewater sources) to be a carbon-neutral fuel source.[76,77,78] In this context, carbon-neutral status means that both combustion and life-cycle emissions do not contribute any net carbon dioxide emissions to the atmosphere. The CO_2 generated from combustion of RNG is considered to be biogenic, or non-additive to atmospheric carbon.

From a lifecycle perspective, the emissions savings from displacing conventional natural gas production with RNG far outweigh biomethane production emissions. The expected greenhouse gas sinks in the biomethane life cycle that reduce greenhouse gas emissions include:

- Methane capture and destruction from landfill gas, manure management, and wastewater treatment. Under baseline conditions, organic material would typically decompose and release methane directly into the atmosphere;
- Avoided emissions from the combustion of conventional natural gas, and
- Avoided life cycle emissions from the extracting and processing natural gas.

6.3.1.2 Hydrogen Gas

Hydrogen is a gaseous chemical element with the symbol 'H' and atomic number '1' that is composed of two hydrogen atoms. When burned, hydrogen produces no carbon emissions.

As described in Section 3.6.2, hydrogen presents a significant opportunity to complement RNG in decarbonizing the provincial gas supply. There is strong policy support to develop hydrogen as a low-carbon fuel within the energy mix to meet long-term decarbonization goals. For instance, the BC Hydrogen Strategy states: "Large-scale deployment of renewable and low-carbon hydrogen will play an essential role in reducing B.C.'s emissions."[79]

FEI is involved with multiple national and international joint initiatives that aim to rapidly develop a hydrogen ecosystem capable of producing and distributing hydrogen affordably as part of a lower carbon energy supply. Through its involvement, FEI intends to learn best practices from pioneering hydrogen projects that may be applied in BC. As FEI's understanding of hydrogen

[75] https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf.
[76] https://www2.gov.bc.ca/assets/gov/taxes/sales-taxes/publications/ct-001-natural-gas-biomethane-sellers.pdf.
[77] http://www.energybc.ca/cache/biofuels/www.energyplan.gov.bc.ca/bioenergy/PDF/BioEnergy_Plan_005_0130_web0000.pdf#:~:text=The%20BC%20Bioenergy%20Strategy%20sets%20us%20on%20a,into%20bioenergy.%20Bioenergy%20provides%20new%20opportunities%20for%20agriculture.
[78] https://bcbioenergy.ca/wp-content/uploads/2011/07/Bioenergy-Guide-2010-final-updated-May-2011.pdf
[79] CleanBC, BC Hydrogen Strategy (2021), p. 5. Accessed at: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf.

production, distribution and end-use applications develops, FEI will pilot projects that will test the use of hydrogen in closed systems. FEI is currently progressing to pre-feasibility planning and technical analyses for introducing hydrogen into the gas distribution network before 2025 and is evaluating large-scale projects for the centralized production and distribution of hydrogen.

Currently, natural gas is the primary resource used globally for hydrogen production and, in conjunction with technologies such as carbon capture, the resulting hydrogen is considered a low-carbon energy source. Further, when using renewable primary energy resources such as clean electricity or biomass, the resulting hydrogen is considered carbon-free. Therefore, hydrogen represents the largest potential source of carbon-free Renewable Gas.

6.3.1.3 Synthesis Gas

Synthesis gas (or syngas) is a gaseous fuel produced through the gasification of biomass. Gasification is a thermochemical process that occurs when biomass is heated in an oxygen-starved environment to produce a synthetic gas, which contains carbon monoxide and hydrogen. Any reasonably dry biomass can be converted to synthesis gas.

While synthesis gas is not suitable for direct injection into the natural gas system, it can displace conventional natural gas at a point of use or be used as a feedstock for upgrading via a methanization process step to create RNG (which can then be injected into the existing natural gas system).

6.3.1.4 Lignin

Lignin is a complex, energy-rich organic molecule found in large quantities in biomass (wood). It is the natural glue that holds a tree and other plants together. Lignin is generated as a by-product of the kraft[80] pulping process contained in the liquid black liquor.[81] Lignin can also be precipitated out of black liquor in a refined form. Biomass-based fuels such as lignin can offer a zero-carbon alternative to natural gas using a displacement business model. Lignin is not a gas, and therefore cannot be injected into the gas system. Rather, if an industrial customer is able to use lignin instead of natural gas, it can provide an option to reduce emissions.

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

Based on a 10-year forecast of Renewable Gas supply, FEI anticipates that by 2032 it will have surpassed the 15 percent (of approximately 30 PJs) target for Renewable Gas set through the CleanBC Plan. FEI developed the 10-year forecast based on actual historical purchases of

[80] The kraft process is a method for producing paper. It entails the treatment of wood chips with a hot mixture of water, sodium hydroxide, and sodium sulfide and includes several steps, both mechanical and chemical in the production of paper.

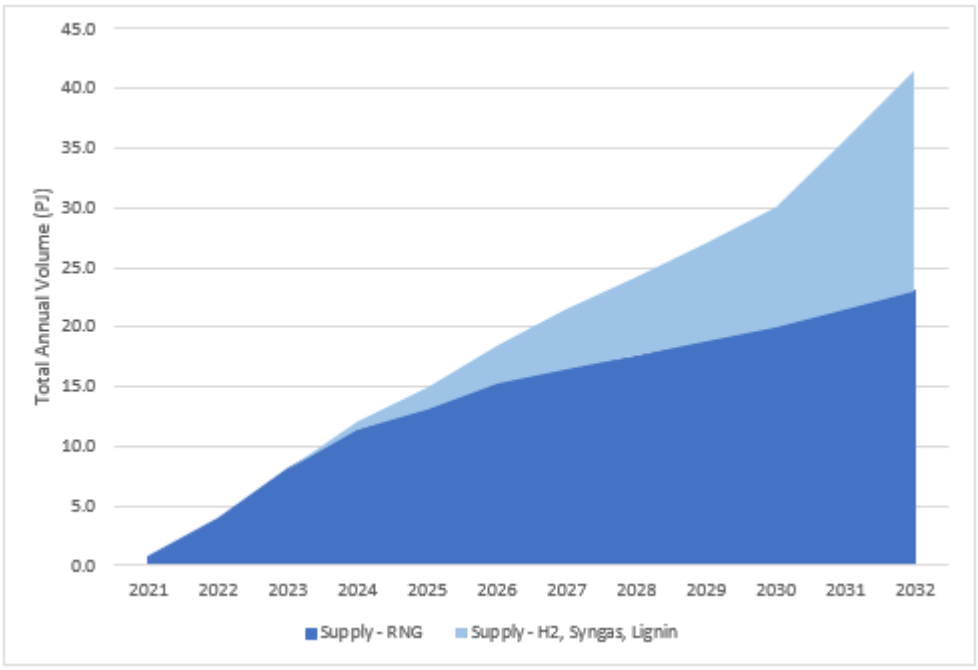
[81] Black liquor is a by-product of the kraft process, which removes the lignin, hemicelluloses and other extractives from the wood to free the cellulose fibers.

Renewable Gas, executed supply agreements, prospective supply agreements and an extrapolation of the current acquisition trend out to 2032.

Figure 6-3 below shows the result of FEI's 10-year Renewable Gas forecast. The forecast can be divided into two time periods, as described below:

- The forecast until 2026 is based primarily on existing and prospective supply agreements. During this period, FEI also expects to begin pilot and pre-commercial stage projects using alternate forms of Renewable Gas; however, these volumes are expected to be relatively low initially. Commencing in 2025, FEI expects to increase supply from alternate forms of Renewable Gas, such as hydrogen and synthesis gas.
- From 2027 and onwards, the forecast incorporates FEI's expectation of further growth in the use of hydrogen, synthesis gas and lignin.

Figure 6-3: 10-Year Renewable Gas Supply Forecast



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.[82] This is more than twice the anticipated energy output from the Site C dam, and enough energy to heat approximately 891,000 homes in BC.[83,84]

[82] 1 PJ = 277.778 GWh.
[83] Assumes 46 GJs/Year consumption to heat each home.
[84] Site C will provide 1,100 megawatts (MW) of capacity, and produce about 5,100 gigawatt hours (GWh) of electricity each year: https://www.bchydro.com/energy-in-bc/projects/site_c.html.

Below FEI explains the basis for the short-term forecast (from 2022 to 2026) and then discusses the longer-term period (from 2027 to 2032).

6.3.2.1 Short-Term Supply Forecast: 2022-2026

FEI developed its short-term supply forecast (2022-2026) by considering existing and prospective supply agreements, consisting primarily of RNG supply from within and outside of BC. FEI has made significant progress in increasing contracted Renewable Gas supply for future deliveries beyond 2021. FEI currently has 27 RNG supply agreements that have been approved by the BCUC[85]. These projects are expected to supply a total volume of Renewable Gas of just under 10 PJs per year, with a potential maximum supply volume of approximately 13 PJs annually once these RNG facilities are fully operational between 2025 and 2026.

FEI's past experience with RNG projects over the last decade has provided important understanding of the development of projects of this kind and how these projects come on-stream. FEI used this information to model the probability of supply volumes and timing of projects using Monte Carlo simulations. The model was used to validate the supply projections described in Figure 6-3 above and gives FEI added confidence in its 10-year supply forecast for RNG supply.

6.3.2.2 Long-Term Supply Forecast: 2027-2032

FEI's Renewable Gas forecast (from 2027 to 2032) builds on the existing expected Renewable Gas projects up to 2026, adding potential projects from that point forward. The supply forecast for this period (years 6 to 10 of the forecast) uses the existing trajectory of RNG acquisition and then layers on forecast acquisition of the other forms of Renewable Gas. Due to a lower relative certainty in this period, the supply forecast is based upon current trends, current rates of successful acquisition contracts, and available data. FEI also recognizes that future changes to the policy environment in BC may result in changes to FEI's supply forecast, including the need to increase supply by 2030. However, it is clear that the potential for Renewable Gas growth is significant based on FEI's view of the market.

FEI also relied on available research data to gauge the long-term RNG market supply potential, including various studies that forecast the range of achievable Canadian RNG supply potential.[86,87,88] These studies show that there is approximately 61 to 82 PJs of supply potential per year by 2030. Other studies forecast the current range of achievable RNG supply potential in

[85] One of these is the Quadrogen project which ceased operations in June 2021 and therefore not included in Table 6-1 above.
[86] Salim Abboud et al., Potential Production of Methane from Canadian Wastes, 2010.
[87] Canadian Biogas Association, Canadian Biogas Study: Benefits to the Economy, Environment and Energy - Technical Document, 2013.
[88] TorchLight Bioresources Inc., Renewable Natural Gas (Biomethane) Feedstock Potential in Canada, 2020.

the United States, indicating approximately 350 to 460 PJs per year of supply that rises to 630 to 857 PJs per year beyond 2030.[89,90,91]

As discussed in Section 6.3.2 above, FEI has forecast an increase in alternative forms of Renewable Gas (i.e., hydrogen, synthesis and lignin). These gases are expected to be produced at an achievable scale of up to 400 PJs per year in BC, entering the supply mix beginning in 2024/2025 and increasing until 2032, reflecting the province's abundant natural resources.[92]

Therefore, as FEI continues to acquire RNG from suppliers in BC and across North America, and starts developing and scaling alternative forms of Renewable Gas, FEI expects there to be sufficient supply available to meet or exceed the CleanBC Plan target of 15 percent Renewable Gas by 2030. Furthermore, FEI is currently working with the provincial government to complete an updated Renewable Gas Potential study that will further increase the future supply available to FEI's Renewable Gas Program.

6.4 *STRATEGIES TO MITIGATE POTENTIAL RISKS IN SUPPLY GROWTH*

FEI has developed and implemented strategies to mitigate Renewable Gas supply growth risk. The current supply forecast for Renewable Gas can be affected by external factors such as equipment failure, feedstock supply challenges and weather events. In this section, FEI will discuss how these supply risks are mitigated by increasing FEI's supply volumes within BC and outside of BC, monitoring new technology, diversifying the supply portfolio, working with stakeholders to get products ready for market and working with government to update policies in order to enable growth.

6.4.1 Diversity of Supply Mitigates Risk of Lower than Expected Volume

FEI faces supply risk where volumes from suppliers are lower than expected. As noted in Section 6.2.2 above, FEI's experience is that new RNG supply projects typically take time to ramp up their production and may not operate at their contracted maximum volume. Operating projects may experience lower than expected performance due to issues, including:

- **Equipment Failures:** RNG facilities are a relatively new energy forum and, as such, the equipment used to create RNG can fail more often than conventional technologies.
- **Feedstock Supply Issues:** Some RNG production facilities (e.g., farm facilities) can have difficulty securing manure or green waste supplies, reducing RNG output.

[89] American Gas Foundation, The Potential for Renewable Gas: Biogas Derived from Biomass Feedstocks and Upgraded to Pipeline Quality, September 2011.
[90] National Research Energy Laboratory, Energy Analysis: Biogas Potential in the United States, October 2013.
[91] American Gas Foundation, Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment, December 2019.
[92] https://www2.gov.bc.ca/assets/gov/government/ministries-organizations/zen-bcbn-hydrogen-study-final-v6_executivesummary.pdf#:~:text=The BC Hydrogen Study was conducted by Zen,study ran from February 2019 to June 2019.

- **Natural Weather Events:** Weather events, such as storms or floods, can cause damage to facilities, reducing RNG supply.
- **Pandemics:** The spread of diseases globally, such as the COVID-19 pandemic, can impact supply chains and reduce energy production generally.

The primary means of mitigating the risk of lower than expected production is to diversify the supply portfolio. Today, FEI has a diverse mixture of supply projects that use different feedstocks and technologies and are located in geographically separate areas. This diversity helps to reduce supply volume risks to the portfolio as all projects in the portfolio will not be subject to the same types of risks. As FEI acquires Renewable Gas from new projects, this will diversify the portfolio further and reduce risk. In addition, there are now suppliers that are themselves aggregators of RNG supply, meaning they have a diverse supply of projects within their own portfolio – thereby reducing supply risk. By contracting with these aggregators, FEI may be able to secure a firmer supply, effectively transferring supply risk to the supplier.

6.4.2 Early-Mover Advantage Mitigates Competition Risk

A second supply risk is competition from other purchasers of Renewable Gas. FEI has mitigated this risk to an extent by being a "first-mover" in the market and has an established regulatory path with known guidelines for supply agreements, particularly with respect to RNG. This established history in the Renewable Gas market is attractive to suppliers who are interested in long-term offtake agreements with a high degree of certainty of regulatory approval.

Even so, an increasing number of entities in other jurisdictions, including Énergir in Quebec, are now seeking Renewable Gas supply. Further, the market for RNG is maturing and competition for supply is increasing. Over time, more and more market actors will develop the expertise and proven pathways to purchase RNG and other Renewable Gases. Therefore, to ensure FEI has access to supply at reasonable costs, FEI is working to secure biogas-derived Renewable Gas supply early in this decade rather than waiting for the market to mature further.

6.4.3 Gas System Readiness Risk Mitigation

There are technical and regulatory barriers to integrating alternate forms of Renewable Gas, such as hydrogen, into the gas system. These barriers could delay the use of hydrogen, synthesis and lignin to provide FEI's customers with low carbon energy services. FEI is undertaking steps to ensure that the existing gas pipeline system can accommodate other forms of Renewable Gas and, as applicable, that there are alternative methods to deliver these gases to customers. FEI is working internally, with the federal and provincial governments, and other industry participants including other utilities to remove barriers and advance the adoption of hydrogen for the whole of the province. The steps taken by FEI to date are discussed in the sections below.

6.4.3.1 Gas System Readiness, System Planning and Deployment Strategy

FEI has over ten years of experience acquiring and injecting RNG into the existing gas system. As volumes of Renewable Gas increase, further system wide feasibility analysis is required to ensure that the gas system can manage these increasing volumes, including in particular:

- Examining system extensions and upgrades required to connect producers of Renewable Gas where these producers are located in regions of BC without gas pipeline infrastructure connecting to the existing gas system.
- Assessing the blending of hydrogen into the gas supply, including a technical readiness evaluation. FEI is also in the process of testing how hydrogen interacts with pipeline materials, components and other equipment on its system, enabling hydrogen transport as a blend in the gas system, and the feasibility of hydrogen transport via repurposed high-pressure transmission pipelines with a long-term goal of repurposing segments of existing natural gas networks for the delivery of 100 percent hydrogen gas.
- Analyzing how the gas system can accommodate distributed gas production, at a scale large enough to meet FEI's Renewable Gas objectives, as more geographically diverse supply is brought on the system.

These efforts and analyses will provide insight into how FEI can evolve its operational practices to allow more flexibility within its existing system, allowing for increased Renewable Gas injection into the system.

6.4.3.2 Industry Collaboration, Research and Development, Feasibility Work and Sector-Specific Approaches

The development of hydrogen, wood-to-RNG, synthesis gas, and lignin as low-carbon fuels will require a number of innovative solutions. FEI's understanding of Renewable Gas production, distribution and end-use applications continues to expand. As such, FEI has also begun developing pilot and pre-commercial demonstration projects that will test hydrogen, synthesis gas and lignin production and the use of these newer forms of low-carbon fuels in a closed system. Given the rapid evolution of technology and the scale-up of Renewable Gas production needed to meet GHG emission reduction goals, FEI expects that there will be opportunities to acquire lower cost supply.

6.4.3.3 Codes, Standards and Regulations

FEI is engaging with the NRCan Codes and Standards working group task force to modify and develop safety and technical standards and set longer-term objectives to transition the regional natural gas network to adopt hydrogen and synthesis gas and lignin. This includes hydrogen-ready infrastructure initiatives, such as the certification of new appliances and equipment and the design of hydrogen-ready compatible natural gas infrastructure.

6.5 *SUMMARY*

FEI is well-positioned to accelerate the growth of its Renewable Gas supply portfolio to meet and exceed the 15 percent Renewable Gas target set through the CleanBC Plan, and is well-positioned well to acquire more Renewable Gas to meet the additional targets that arise from the CleanBC Roadmap. In particular, FEI has gained substantial experience over the last 10 years developing a diverse RNG supply portfolio. Under the CEA and GGRR, FEI will diversify the composition of its portfolio to include hydrogen, lignin and synthesis gas. With these added Renewable Gas options, FEI is confident that it will achieve the growth in Renewable Gas to respond to governmental climate policy objectives. Further, as discussed in Section 9.5 FEI is proposing to file a Program Review five years from the date of the BCUC decision, which will provide an update on how the supply of Renewable Gas has evolved.

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.

7. PROPOSED RENEWABLE GAS PROGRAM

7.1 *INTRODUCTION*

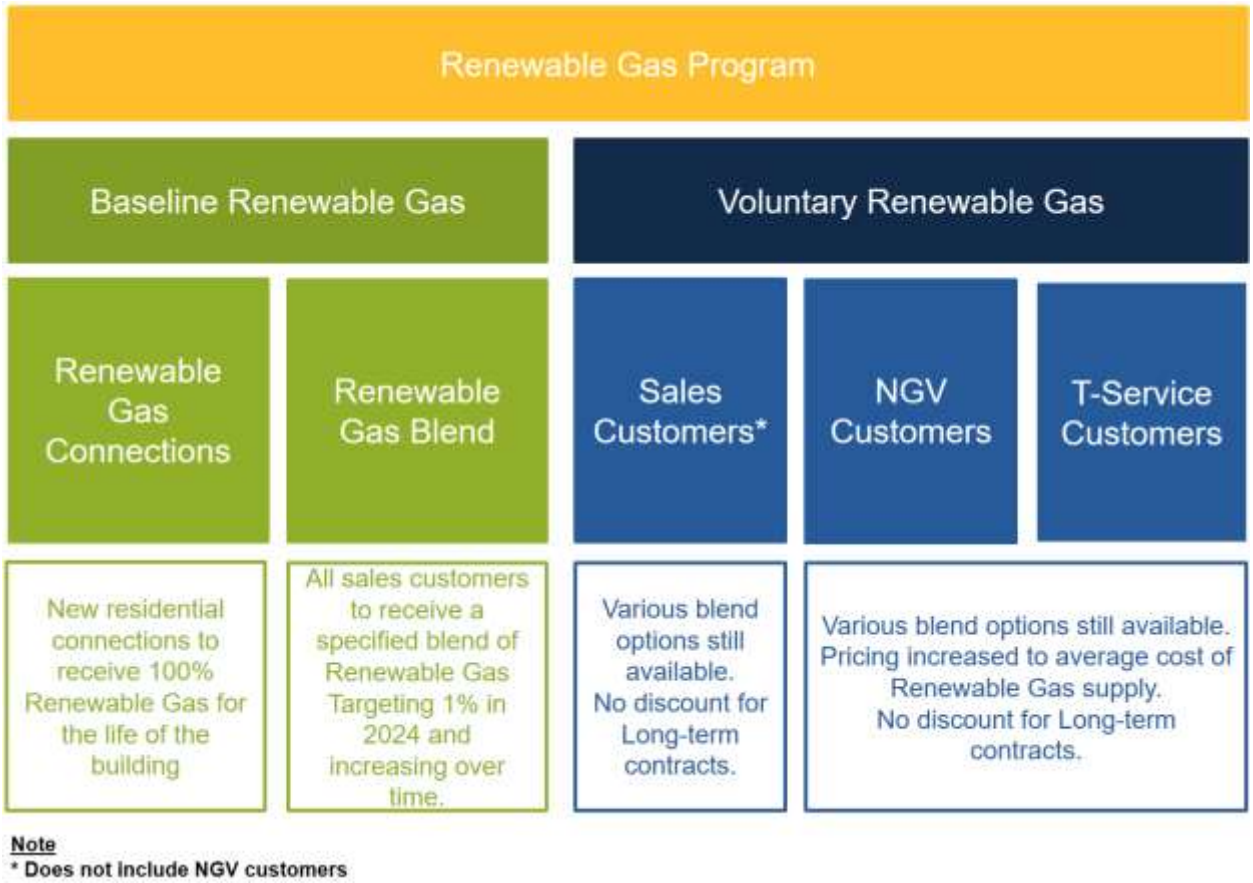
In this section, FEI describes its proposed changes to the Renewable Gas Program. The Renewable Gas Program has been successful in achieving its objectives based on the policies in place prior to 2016. However, to maintain the long-term viability of the natural gas delivery system and energy choice for British Columbians, the Renewable Gas Program now needs to change in response to government emission-reduction targets for the gas supply and corresponding increasing volumes of Renewable Gas, restrictive policies for new residential construction, and customer needs for Renewable Gas.

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.

Figure 7-1 below illustrates the Renewable Gas Program as proposed by FEI.

[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.

Figure 7-1: Revised Renewable Gas Program



Note
*** Does not include NGV customers**

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.

This section is organized as follows:

- Section 7.2 describes how, based on the review in Sections 2 through 6 of the Application, in order to maintain the long-term viability of the gas delivery system and energy choice for British Columbians, the Renewable Gas Program needs to be revised so that it can

meet provincial targets for GHG reductions from the gas supply, restrictive policies for new residential construction, and customer needs for Renewable Gas.

- Section 7.3 describes Renewable Gas programs outside of BC, potential alternatives for the design of the program, and how a mix of a Baseline service and Voluntary Renewable Gas offering, with 100 percent Renewable Gas for all New Residential Connections, was the only alternative that met the identified needs for the Renewable Gas Program.
- Section 7.4 describes in detail FEI's proposals to revise its Renewable Gas Program including its Baseline service and Voluntary Renewable Gas offering.

7.2 *IDENTIFIED NEED FOR A REVISED RENEWABLE GAS PROGRAM*

Based on its comprehensive review and assessment of the Renewable Gas Program in Sections 2 to 6 of the Application, FEI concludes that federal, provincial and municipal regulations and policies focused on reducing GHG emissions threaten the long-term viability of the gas delivery system and energy choice for British Columbians. This is due to mandates for overall GHG reductions from the gas supply in the CleanBC Plan and CleanBC Roadmap, regulations and policies that restrict natural gas service to new residential construction, and GHG reduction mandates or goals that may cause customers to leave the system if there is not a viable Renewable Gas solution to meet their needs.

FEI also concludes that its Renewable Gas Program has been successful in establishing Renewable Gas as a solution to these challenges, as indicated by the GGRR enabling the acquisition of significant volumes of Renewable Gas to meet provincial GHG reduction targets. A revised Renewable Gas Program should therefore be designed to meet the challenges posed by federal, provincial and municipal regulations and policies focused on reducing GHG emissions. Renewable Gas can provide a low carbon energy solution that meets GHG reductions targets for the gas supply, facilitates access to the gas system for New Residential Connections and fosters customer retention, which together can maintain the long-term viability of the gas delivery system and energy choice for British Columbians. As discussed in Section 4 of the Application, a diversified energy system is in the best interest of all energy consumers in BC and leverages the combined strengths of the gas and electric systems to deliver energy to British Columbians.

Therefore, to maintain the long-term viability of the natural gas distribution system and energy choice for British Columbians, FEI needs to revise the Renewable Gas Program to meet the following three objectives:

1. Meet provincial CleanBC targets for GHG emissions and balance Renewable Gas supply and demand;
2. Enable compliance with building regulations to maintain energy choice for New Residential construction; and
3. Meet customer requirements for Renewable Gas to maintain energy choice for existing customers.

Each of these objectives is described below.

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

Provincial government policy seeks to transition the gas system away from delivering fossil natural gas to delivering Renewable Gas, and to cap emissions from gas used to heat homes and business at 47 percent below 2007 levels.[94] While other options such as energy efficiency will contribute towards this emissions cap, Renewable Gas is required to meet these policy goals. A revised Renewable Gas Program must contain mechanisms to ensure enough Renewable Gas can be delivered to a broad range of customers to support these provincial policy objectives.

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.

FEI's current Renewable Gas Program needs to be revised to fully utilize the significant increase in Renewable Gas supply needed to respond to current provincial policy that seeks to cap emissions from gas used to heat homes and businesses.

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

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.

[94] CleanBC Roadmap to 2030, pg 29.
[95] CleanBC Roadmap to 2030, pp. 8-9.

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.

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

A revised Renewable Gas Program must contain services that can meet the range of customers' needs with respect to renewable energy and GHG emission reductions. As described in Section 5, customers have a variety of requirements. At a high level, consumers want to be able to choose their energy source and reduce GHG emissions, but are also cost conscious. At the same time, different customer types are subject to different regulations, have different perspectives on the value of Renewable Gas, and are cost conscious to different degrees.

Three particular customer requirements identified in Section 5 are as follows:

- Public sector building operators have taken an interest in the Renewable Gas Program as one option to achieve their mandated carbon neutrality requirement. NGV customers have also indicated interest in the program as a means of reducing their emissions and participating in the BC-LCFS program's credit market, and the voluntary program works well for these customers generally. However, public sector building owner customers, who have a range of options to reduce their emissions, are more sensitive to the price premium for Renewable Gas over conventional gas than NGV customers, as NGV customers have the ability to generate revenues from the sale of credits in the BC-LCFS credit market.
- Building owners, including home owners or non-public sector commercial building owners, often want action to be taken to address GHG emissions and climate change generally, but are sensitive to the price premium for Renewable Gas. FEI's program history shows that they are not inclined to voluntarily participate in the Renewable Gas program. As the carbon tax increases from $2.31/GJ today to over $8/GJ in 2030, these customers will expect their basic energy supply to be lower in carbon both to address climate change and to manage their energy costs.
- Customers with gas-consuming industrial processes constitute another customer group, although each industrial facility is different and these customers are not as homogenous in their energy needs as homeowners. Industrial customers are subject to carbon tax on the combustion of natural gas as are other customers. The CleanBC Roadmap indicates the province's desire to reduce emissions from the industrial sector, but recognizes that the market for fully decarbonizing large industry in BC is at the emergent stage. Many industries in BC sell their products into international markets, and so must compete with producers in other jurisdictions with less desire to reduce emissions. To date, industrial customers have not expressed a great deal of interest in Renewable Gas. Energy often represents a significant portion of their process costs and, when coupled with a need to compete internationally, they are often highly sensitive to any increases in their energy cost. The province's policy to reduce emissions from industry may drive industrial

customers to purchase Renewable Gas as one of several options at their disposal to reduce their emissions.

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.

7.3 *RENEWABLE GAS PROGRAM DESIGN*

7.3.1 Renewable Natural Gas Programs in Other Jurisdictions: A Made-for-BC Approach is Required

FEI reviewed other RNG programs both in Canada and internationally to determine which features or best practices, if any, could be incorporated into FEI's Renewable Gas Program to meet the needs identified in Section 7.2. Canadian RNG programs were reviewed by FEI directly, while FEI engaged a third party consultant to assist with a review of international RNG programs. The report is found in Appendix C.

Outside of BC, RNG programs are not common, and those that exist are generally in an early stage of development. Some appear to have based their program design on FEI's Program. This affirms FEI's understanding that it is at the forefront of natural gas distribution companies making RNG available to its customers. The RNG offerings that are available to customers are primarily located in Canada, the United States and Europe. In Canada, the only other RNG programs are found in Ontario and Québec.

Enbridge's voluntary RNG program in Ontario began in 2021 and remains small in both scale and scope. The program has been designed with a residential focus and is marketed to residential and low-volume commercial customers. Participating residential and small business customers are charged an extra $2 per month which appears as a separate line item on their bill. The contributions from participating customers are used to fund the incremental cost of RNG (relative to traditional natural gas). Enbridge charges the same Federal Carbon Charge (FCC) regardless of whether or not a customer participates in their RNG program and tracks the variance between the FCC amount remitted to the government and the amount charged to customers in a deferral account. Under this model, the FCC benefit (savings) flows to all customers subject to the FCC, including non-participating customers. Enbridge advocated for this approach because the administrative costs to direct the credit only to program participants would have outweighed the benefits. The OEB commented that this approach more accurately captures the program's intent to offer clean affordable energy to general service system gas customers.[96]

[96] Decision and Order EB-2020-0066, Enbridge Gas Inc., Voluntary Renewable Natural Gas Program Application, September 24, 2020, p. 16: http://www.rds.oeb.ca/HPECMWebDrawer/Record/687754/File/document

Énergir's RNG program in Québec began in 2017, is more developed, and largely resembles FEI's program prior to the 2015 BERC Application. Énergir's program is available to all customer segments; however, gas use among residential customers is less common in Québec than BC. Customers sign up to receive a portion of their gas service as RNG and are charged an amount that approximately equals the cost of RNG acquisition on the volumes of RNG they consume. Énergir's current RNG rate is $0.5194/m^3, or approximately $13.50/GJ. Carbon tax does not apply to RNG volumes consumed in Québec, therefore participants in Énergir's program also experience a cost savings of $0.05424/m^3 on their RNG purchases, resulting in a net price premium for RNG of $0.46516/m^3, or approximately $12.09/GJ.

In the United States, gas utilities in most jurisdictions do not currently have a RNG program for their customers. Often, where utilities are involved with RNG, it is to provide interconnection and transportation services, and not to sell RNG directly to their customers. Utilities in some states such as Vermont, Michigan, Maine and California sell Renewable Natural Gas directly to customers. All of these programs are currently modest in scale and scope, and were created well after FEI's program. In many cases, the programs are new, having only just launched, or will be launching imminently.

For example, in early 2019 SoCalGas filed an application with the California Public Utilities Commission for an Opt-In RNG Tariff. This application was approved for an initial pilot period of two years. SoCalGas is currently in the process of preparing its program for launch. SoCalGas' program will be available to residential, commercial, and industrial customers, while transportation sector customers are not included. Residential customers can opt for a portion of their natural gas delivered as RNG by choosing to spend an additional $10, $25, or $50 per month on RNG. Commercial customers have the option be have 100 percent of their gas be RNG, or select from a series of set dollar amounts, or a percentage of their total gas use. The charges will also include a program fee. All costs of SoCalGas' voluntary RNG program are to be recovered from program participants. Residential customers will have to commit to one year. After one year, they will have the option to change their dollar amount or could participate on a month-to-month basis. Commercial customers will have to commit to a 2-year minimum subscription.

Vermont Gas (owned by Énergir) has one of the longer standing RNG programs in the United States. The program began offering RNG to all of its retail customers as an opt-in program in March 2018. In August 2021 the State of Vermont Public Utilities Commission granted approval to Vermont Gas to include a percentage of RNG as part of its overall supply for all retail customers. Under the approval Vermont Gas will continue to offer a voluntary RNG program to its customers and will gradually increase the proportion of RNG as part of its overall supply over time.

In Europe, RNG offerings come in a variety of forms, including direct injection of RNG into the gas system, delivering RNG to industrial and/or transportation customers directly, and some opt-in service offerings. In the UK and France, organizations such as British Gas and Engie allow customers to subscribe to Green Gas (Gaz Vert for Engie) service for which they charge a premium. In some cases this service is made up of some percentage of RNG, coupled with carbon offsets. Additional details on RNG offerings in Europe are presented in Appendix C.

The consultant did not find any significant RNG programs in Asia, although Japan appears to be preparing for a hydrogen future. Similarly, Australia does not appear to have any RNG programs currently available to the public, though pilot programs such as the Malabar Biomethane Injection project[97] exist to demonstrate the feasibility of injecting biomethane into the gas distribution network. Gas distributors such as Australian Gas networks and ATCO have indicated that they are pursuing hydrogen or biogas injection projects, but this does not appear to be available for sale to the public at present.

Based on the research conducted by FEI and the consultant, FEI was not able to identify any RNG programs in Canada, the United States or Europe that would fully address the needs FEI is seeking to address in this Application. Purely voluntary programs would not likely achieve the nature of uptake required to reduce emissions from the gas system in line with the provincial policy. Direct injection of RNG into the gas system, with all customers contributing towards the costs as is done in some parts of Europe, is simple and reduces GHG emissions broadly and effectively. However, this approach does not meet the degree of decarbonization of the gas supply required for certain customer segments, such as for residential new construction where a higher percentage of RNG is required to meet government regulations.

The combination of a voluntary RNG Program along with a gradual decarbonization of gas supply by including progressively greater amounts of RNG in the overall supply sold to retail customers, as was recently approved in Vermont, has considerable merit. However, without modification, this approach would not allow for the degree of decarbonization required for residential new construction.

FEI concludes that RNG programs in other jurisdictions are generally either at an early stage of development, similar to FEI's program prior to the 2015 BERC Application, or they are of comparatively limited in scale or scope compared to FEI's program needs. Furthermore, for RNG programs implemented by other organizations, their service offerings have been adapted to the policy and legislative framework of the jurisdiction in which they operate. While the objective of reducing GHG emissions is broadly similar across jurisdictions, the specific policy and regulation requirements do not align with those in British Columbia. In this regard, BC is unique. From this jurisdictional review, FEI concluded that revising its Renewable Gas Program to make it fit the needs of FEI's current and future operating context requires the development of a made-for-BC solution.

7.3.2 Identification of Potential Program Design Alternatives

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: A Voluntary Renewable Gas offering would attempt to sell all of the Renewable Gas purchased by FEI and maximize revenues. Potential changes to the existing program could include higher or lower pricing tailored to specific customer

[97] https://arena.gov.au/projects/malabar-biomethane-injection-project/.

types who are motivated to purchase Renewable Gas and for whom Renewable Gas has a high value. The benefits of a voluntary service are that those customers that see value in and are willing and able to pay for Renewable Gas would have it available to purchase. These customers could reduce their carbon tax and emissions, meet any internal or external targets that they may have, and, for NGV customers, earn credits through the BC-LCFS.

B. Renewable Gas Blend: Under this alternative, FEI would blend Renewable Gas volumes with conventional gas to be sold to all sales customers as part of their gas service. Every sales customer would receive a blend of Renewable Gas and conventional gas, and the blend would be the same as that received by every other sales customer. The full acquisition cost of Renewable Gas would be included in the commodity cost and all sales customers would pay the same commodity cost on a per GJ basis. The benefits of this approach is that it is relatively simple to understand and implement, and FEI would be able sell all of the Renewable Gas it purchases without concern that it would be left with unsold inventories. The costs of Renewable Gas would be fully recovered, and would be distributed to all customers on an equivalent $/GJ basis. All customers would also receive the same benefit in the form of reduced GHG emissions on the proportion of their gas service that is delivered as RNG. This benefit could take the form of reduced carbon tax payable, or other benefits depending on the customer and their specific circumstances.

C. Renewable Gas Connections: This alternative would provide all New Residential Connections with Renewable Gas to meet GHG restrictions on new residential construction. New Residential Connections would be all residential dwellings[98] served by a service line installed on or after the date of implementation of the New Residential Connections service, including new construction activity, conversions and retrofits. This service would be designed to provide a gas option that would satisfy local government and other restrictions on new residential construction. FEI considered three options for this service:

(1) 100 percent Renewable Gas to All New Residential Connections: This option would provide 100 percent renewable gas to all New Residential Connections in the province.

(2) Less than 100 Percent Renewable Gas: This option would designate a percentage of Renewable Gas at less than 100 percent Renewable Gas to New Residential Connections.

[98] 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 or RS 3, depending on the volume of the gas service.

(3) Only Municipalities with Restrictive Policies: This option would provide 100 percent (or a lesser percent) Renewable Gas to New Residential Connections only in municipalities with restrictive policies in place for new residential construction.

D. Comprehensive Program: This alternative is to provide a comprehensive program that consists of all three of the above alternatives, including a Voluntary Renewable Gas offering for those customers desiring up to 100 percent Renewable Gas, a Renewable Gas Blend for all sales customers, and a New Residential Connections service designed to meet GHG restrictions on new residential construction.

FEI considered the above alternatives in light of the identified needs described in section 7.2. As described below, FEI concludes that, for New Residential Connections, Alternative C(1) is preferred over C(2) and C(3) and that a Comprehensive Program (Alternative D) is the only alternative that meets all the identified needs. These conclusions are discussed in the following sections.

7.3.3 Renewable Gas Connections Requires 100 Percent Renewable Gas for All New Residential Connections

As noted above, FEI considered three options for Alternative C. FEI concludes that only option 1 – 100 percent Renewable Gas for all New Residential Connections – met the identified need.

FEI rejected option (2) to provide less than 100 percent Renewable Gas to New Residential Connections for the following reasons:

- **Less than 100 Percent will Not Meet All Requirements:** Satisfying the GHGi standard in several Metro Vancouver municipalities like the City of Vancouver will require that new residential homes emit no more than 3 kg CO_2e/m^2/year. For some building archetypes, Renewable Gas blends of approximately 90 percent are required to meet a 3 kg CO_2e/m^2/year target. Other municipalities have adopted similar standards or are signalling the adoption of similar or more aggressive standards. Notably, the City of Surrey is contemplating a GHGi limit of 1 kg CO_2e/m^2/year by 2025[99]. These requirements can be updated anytime to become more restrictive, or additional municipalities could adopt new and more restrictive GHGi limits, creating uncertainty, for which builders are naturally seeking a solution. This means that Renewable Gas at less than 100 percent fails to provide a universal solution for all new residential construction, and there will be continual uncertainty as to its viability.
- **Complexity of Regulations Would Make Compliance Uncertain:** At less than 100 percent Renewable Gas, there will be continued uncertainty as to compliance due to the complexity of local government regulations. The following illustrates this complexity:

[99] To the best of FEI's understanding 100% Renewable Gas would meet a 1 kg CO2e/m^2-Yr metric.

- The GHGi standard is typically applied equally to groups of different building types such as large single family homes, townhomes, medium sized homes, duplexes, and small laneway homes. And yet, since the GHGi is an intensity standard, the size of the home is a critical variable. More specifically, smaller homes require more renewable energy to meet the GHGi standard, because the heating requirements are different for smaller homes. Consequently, there is significant variability of Renewable Gas percentage by the floorspace of a building alone.
- However, floorspace is not the only factor impacting the variability of Renewable Gas required. The GHGi standard is often required alongside Step Code or whole home energy performance requirements. Within the Step Code there are three key performance based metrics, all of which are interdependent. The metrics are performance based (rather than prescriptive), meaning builders must use energy software modelling and on-site testing to demonstrate that both their design and the constructed building meet the requirements of the standard. They may use any materials or construction methods thereby increasing the possible pathways to achieving the desired "step," but at the same time eliminating the possibility of a clear and predictable path to achieving the desired outcome. In other words, choices of building construction such as air tightness, wall and roof insulation, and number of windows directly impact energy use and energy use is a key variable in meeting the GHGi standard. This individuality is true of each building type mentioned earlier such as townhomes, duplexes, laneway homes, etc.
- Another layer of complexity is the regional differences and climate zones in BC and the impact they have on home performance. A home in Whistler may have a different energy profile than the exact same home built in Surrey, or Prince George. This geographic differences alter the Renewable Gas required for homes to meet the GHGi standard.
- One of the key factors that helps to determine a building's energy use is air tightness. A building's air tightness or air leakage from unintended gaps or cracks impacts space heating energy use. However, air tightness cannot be measured until the building's construction is complete. Yet, the building permitting process requires assurance that a building will meet the standard prior to construction.

- **Service at Less than 100 percent Renewable Gas Would Introduce Risk to the Builder or Developer:** As illustrated above, there are multiple factors determining whether or not a new home can comply with local building regulations on GHG emissions. Under these circumstances, any service based on less than 100 percent Renewable Gas would introduce a risk to the builder that the building would not meet the required GHGi standard. This uncertainty and risk would likely be sufficient for builders to not include gas service in their projects. The only way to ensure that a building served by the gas system will meet its emissions reduction obligations pre-construction, during construction, and post construction is for the gas service to be comprised of 100 percent Renewable Gas.

FEI rejected option 3 to provide the service to only municipalities that implemented restricted policies for new residential construction for the following reasons:

- **Administrative Burden and Complexity:** It would be administratively burdensome and complex to have the proportion of Renewable Gas provided to new residential customers vary depending on the particular municipality in which they are located. As noted in Section 3, regulations and policies vary by municipality and specific building projects. Trying to create an offering specific to each municipality and each building project is not possible because of the wide variation in the wording of regulations and approaches to GHG reduction adopted by each municipality. The regional differences and climate zones among cities in British Columbia may further complicate matters, as the geographic differences can alter the Renewable Gas required for homes to meet applicable standard. Further, as noted above, these regulations can and do change with little notice, requiring FEI to regularly update tariffs and constantly change messaging to its employees that work with customers and with the customers themselves. This will lead to outdated information and customer expectations not being met. A single, common percentage of Renewable Gas delivered to all residential new connections is the most practical solution to implement.

Only option 1 - 100 percent Renewable Gas to all New Residential Connections - will meet all restrictive new residential construction policies, will overcome the challenges faced by builders and developers in this sector, and is practical to be implemented.

7.3.4 Only a Comprehensive Program Meets Identified Needs

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	✓	✓	✓

As indicated in the table:

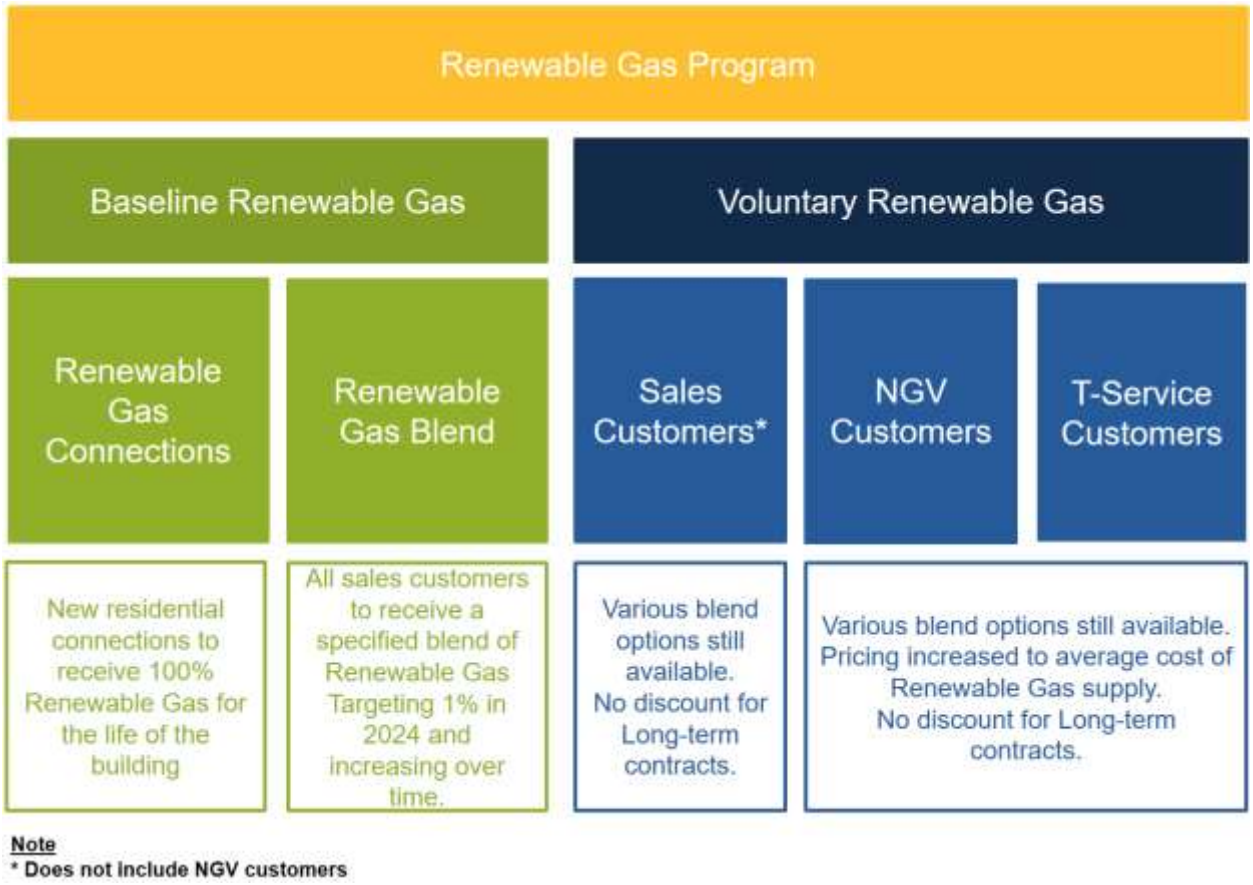
- A Voluntary Renewable Gas Program can meet the needs of customers wishing to purchase Renewable Gas. However, a purely voluntary approach would be unlikely to sell the volume of Renewable Gas that FEI needs to acquire to meet provincial targets, as most customers will not be willing to voluntarily subscribe and pay the premium for that volume of Renewable Gas. A purely voluntary program will also not address the challenges faced in new residential construction due to the policies adopted by municipalities, as customers can opt out of a voluntary service. FEI would be increasingly challenged to add new customers in the residential new construction sector.
- A Renewable Gas Blend can meet provincial targets for GHG reductions in gas supply and enable FEI to balance supply and demand of Renewable Gas. However, a Renewable Gas Blend would not meet the needs of customers wishing to purchases volumes of Renewable above the blend percentage, and FEI would be increasingly challenged to retain these customers. A Renewable Gas Blend would also be insufficient to meet the restrictive policies in the new residential construction sector, which require up to 100 percent Renewable Gas.
- Renewable Gas Connections can meet the specific challenges in the new residential construction sector, but would not meet provincial policy targets or the needs of customers wishing to purchase Renewable Gas on a voluntary basis.

FEI concludes that each of alternative A, B and C is a needed component of the Renewable Gas Program and that only a comprehensive program with all three of these components will maintain the long-term viability of the natural gas distribution system and energy choice for British Columbians. A Renewable Gas Blend 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 target. A Renewable Gas Connections service is needed to meet restrictive policies for new residential construction and preserve energy choice in this sector. A Voluntary Renewable Gas offering is required to meet customer needs for Renewable Gas greater than what can be provided to all customers under a Renewable Gas Blend, and will preserve energy choice for these customers. A comprehensive program is therefore needed to address the identified needs.

7.4 *PROPOSED RENEWABLE GAS PROGRAM*

In this section, FEI provides more detail on its proposals. The structure of FEI's proposed Renewable Gas Program is depicted in the chart below.

Figure 7-2: Revised Renewable Gas Program



In addition to the existing Voluntary Renewable Gas offering (which FEI is proposing to modify as discussed below), FEI is proposing to add a Baseline Renewable Gas service with two components: Renewable Gas Blend and Renewable Gas Connections.

FEI is proposing to begin providing a Renewable Gas Blend whereby all customers who purchase their natural gas from FEI (i.e. sales customers)[100] will receive a percentage of their gas supply as Renewable Gas. Subject to available supply, FEI expects to begin with a one percent blend beginning January 1, 2024. When implemented, FEI will recover the costs of the Renewable Gas from all sales customers through a new Storage and Transport Low Carbon (S&T LC) rider.[101] This rider will be a storage and transport charge reflecting the fact that the cost of Renewable Gas will now be part of the overall costs of the commodity received by sales customers. Please refer to Section 8.4 for further discussion of the S&T LC rider.

FEI is also proposing that all New Residential Connections will receive 100 percent Renewable Gas, which will meet municipal regulations limiting GHG emissions from new buildings, the provincial Building Code, and the policy objectives for new homes in the CleanBC Roadmap.[102]

[100] FEI's sales customers include those in RS 1, 2, 3, 4, 5, 6, and 7.
[101] As discussed in Section 8.
[102] CleanBC Roadmap, p. 9.

New Residential Connections will be charged an overall rate designed to mimic "regular" gas service rates that all other sales customers pay for under the equivalent rate schedule, including consideration of the S&T LC rider they will already be paying. As the driver of the need for 100 percent Renewable Gas for New Residential Connections is government policy, the cost of the incremental Renewable Gas needed above "regular" gas costs should be recovered from all sales customers. This will also preserve energy choice by providing a service that is economically feasible for these customers.

FEI is proposing to continue with its Voluntary Renewable Gas offering with three modifications.

1. Voluntary Renewable Gas offering will be expanded to include Rate Schedule 7 customers. With the addition of RS 7, all customers will be able to purchase up to a 100 percent Renewable Gas blend.
2. NGV customers and T-Service customers will pay a Low Carbon Gas Charge equivalent to the average weighted cost of supply of Renewable Gas.
3. The $1/GJ discount for the rate paid for Renewable Gas under a long-term contract customers will be discontinued.

Each component of the proposed Renewable Gas Program is described in detail below.

7.4.1 Renewable Gas Blend for Sales Customers

Through its Renewable Gas Blend, FEI is proposing that all sales customers[103] receive a percentage blend of Renewable Gas as part of their regular gas service. Based on projected supply, FEI anticipates that, beginning in 2024, the initial blend will be one percent Renewable Gas and 99 percent conventional natural gas. The percentage of Renewable Gas will increase as new supplies of Renewable Gas come online. FEI's sales customers would not need to sign up to receive the Renewable Gas Blend, nor would they have an option to decline the Renewable Gas Blend. The integration of Renewable Gas into the gas supplied to sales customers would be seamless from the customer perspective, with the percentage Renewable Gas blend provided shown on their bill.

FEI will recover the costs of the Renewable Gas Blend through an S&T LC rider designed to recover the costs of the Renewable Gas Program not otherwise recovered from other components of the program. Customers will also receive an offsetting carbon tax credit for any volume of Renewable Gas they receive.

As noted above, the S&T LC rider will be a storage and transport charge reflecting the fact that the cost of Renewable Gas will now be part of the overall costs of the commodity that all sales customers receive. Please refer to Section 8.4 for further discussion of the S&T LC rider, and how

[103] Sales customers are those in Rate Schedules 1, 2, 3, 4, 5, 6 and 7.

it will enable recovery of the costs of the Renewable Gas Program. The mechanics of the proposed accounting and tracking of Renewable Gas are discussed in Section 8.4.2.1.

7.4.1.1 Benefits of Renewable Gas Blend

The Renewable Gas Blend is aligned with provincial policy objectives and will facilitate the balancing of the supply and demand for Renewable Gas. The Renewable Gas Blend will create a path for FEI's existing natural gas system to advance the objectives set out in the provincial government's CleanBC Plan and CleanBC Roadmap. It will also create a mechanism to scale up the provision of Renewable Gas as new Renewable Gas supply is acquired pursuant to the GGRR. As noted in Section 6.3.2, FEI is already acquiring significant Renewable Gas supply, and FEI will need to acquire even more Renewable Gas to meet its obligations under the CleanBC Roadmap which it expects will become part of legislation in late 2022. As FEI brings on additional Renewable Gas supply, the Renewable Gas Blend service will allow FEI to sell any volumes not sold to voluntary or Renewable Gas Connections customers under the Renewable Gas Program.

Introducing a Renewable Gas Blend for all sales customers also helps municipalities to achieve broad GHG emission reductions rapidly and at scale without spending on incentives, or requiring their constituents (and FEI's customers) to incur any capital expenses. Municipalities are attempting to reduce the emissions of existing buildings, but it is difficult, and building owners are especially price sensitive. If municipal regulations are too strict, building owners may avoid complying with the regulation to avoid the increased cost. By introducing a Renewable Gas Blend into the gas supply, FEI is able to achieve a broad-based reduction in GHG emissions in the existing building stock, without requiring any special actions on the part of municipalities or building owners, thus making it as easy as possible for all parties.

For example, in total, residents and businesses in the City of Vancouver (CoV) consume approximately 10 million GJs of gas annually. If FEI provides 1 percent of the gas to the CoV as Renewable Gas that equates to approximately 100 thousand GJs of Renewable Gas, displacing 100 thousand GJs of conventional natural gas. Customers experience a commensurate reduction in their GHG emissions of approximately one percent. In aggregate, the 100 thousand GJs Renewable Gas supplied to Vancouver is approximately the same as 2,200 detached homes switching to zero emission heating, but without the need to change out equipment. From the homeowner's perspective, a reduction of their GHG emissions by blending Renewable Gas into the gas stream requires no investment of time, energy, or money, and the effect on their energy cost is small.

Assuming all FEI sales customers consume approximately 140 million GJs a year, one percent Renewable Gas would equal 1.4 million GJs, or the same as converting over 30 thousand furnaces to electricity (or other low emission energy sources). Critically, these emission reductions can occur rapidly, and at scale, with no required investment of time, effort or money on the part of customers. The end use customer does not need to change any equipment nor sign up for a program. FEI simply reduces the carbon content of the gas stream without the need for additional provincial or municipal regulation at the building level, or for changes in infrastructure on the part of customers, or FEI.

7.4.2 Renewable Gas Connections

FEI is proposing that all New Residential Connections will receive 100 percent Renewable Gas, where New Residential Connections are all residential dwellings[104] served by a service line installed after the date of implementation of the service, including new construction activity, conversions and retrofits. One hundred percent Renewable Gas will comply with municipal regulation (and proposed changes to the BC Building Code) which impose limitations on GHG emissions for new residential construction. The Renewable Gas Connections service also meets the CleanBC Roadmap objectives for new connections. Building regulations and policy dictate many aspects of the design of new buildings. FEI's Renewable Gas Connections responds to changing building emissions policies and creates a viable solution for builders and homeowners to continue to choose gas as their energy source.

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.

As FEI implements the Renewable Gas Blend, New Residential Connections will receive part of their 100 percent Renewable Gas from the Renewable Gas Blend, and a second part from the New Residential Connections service. The cost of Renewable Gas provided through the Renewable Gas Blend will be recovered though the new S&T LC rider. The cost of Renewable Gas provided through the New Residential Connections service will be recovered though a new Low Carbon Gas Charge with the rate charged specific to New Residential Connections. For example, if all sales customers are receiving one percent of their gas as Renewable Gas, customers served under the Renewable Gas Connections tariff will receive 99 percent of their Renewable Gas via the new Low Carbon Gas Charge and one percent via the new S&T LC rider. In this way a customer served under the Renewable Gas Connections tariff does not receive more

[104] 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.

than 100 percent Renewable Gas. The mechanics and reasoning for this approach are elaborated on in Section 8.

7.4.2.1 Benefits of Renewable Gas Connections

FEI's Renewable Gas Connections service maintains access to the natural gas system for the new residential construction sector by providing a gas service for New Residential Connections in alignment with GHG reduction requirements in this sector. By charging the same rate as in the equivalent rate schedules for customers served by existing service lines, Renewable Gas Connections does not impose an undue financial burden on customers living in new residential dwellings attaching to the gas system.

In a new residential construction scenario, the end use customer (residential home owner or occupant) typically does not make the decision on what type of energy to use. They are purchasing or living in a building where the decision is made by someone else, generally the builder/developer or HVAC contractor. The builder/developer or HVAC contractor must comply with local GHGi building regulations and, at present, does not have an option other than to use electricity in certain municipalities. On the other hand, many end-use customers want the benefits of gas service, be it the reliability of gas, the affordable ongoing operating costs, or the lifestyle amenities.

FEI's Renewable Gas Connections service provides an option for the builder/developer/HVAC contractor to adhere to applicable GHG regulations, using high efficiency gas equipment to which they are accustomed, avoiding imposing additional burden or costs on the end-use customer. Local governments will be able to meet their GHGi objectives for new residential construction and the customers will be able to use gas as they would have been able to prior to any GHGi regulation being in place.

From the utility and customer perspective, maintaining access to the gas system for New Residential Connections is central to the long-term viability of the utility, while also utilizing the assets of the utility more efficiently and keeping rates affordable for all customers. Adding customers helps to better utilize existing utility assets while bringing on additional revenue through the new residential construction market.

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.

In summary, FEI's proposed Renewable Gas Connections service is well aligned with public policy in British Columbia, and will meet all existing municipal regulations, restrictions and policy drivers in addition to meeting the pending provincial building code requirements. At 100 percent Renewable Gas, the service would meet GHGi metrics currently proposed for the new residential

construction sector, as discussed in detail in Appendix A. Shown in Table 7-2 below and further described in Appendix A, Renewable Gas has a substantially lower greenhouse gas intensity than BC Hydro's electricity. Furthermore, by requiring that 100 percent Renewable Gas service be attached to the building, rather than the individual customer, FEI ensures the permanency necessary to meet applicable standards.

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

7.4.3 Modifications to Voluntary Renewable Gas Offering

FEI's Voluntary Renewable Gas offering will continue to be available to provide Renewable Gas to customers that wish to purchase amounts above the Renewable Gas Blend. As discussed in section 5, customers have various reasons for wanting to purchase more Renewable Gas than may be sold through the Renewable Gas Blend. These reasons include meeting their own or government-mandated GHG emission reduction goals. The province's *Carbon Neutral Government Regulation* and the BC-LCFS are examples of government regulations that drive customer interest in purchasing large volumes of Renewable Gas. By providing a Renewable Gas option for these customers, the Voluntary Renewable Gas offering helps to maintain the long-term viability of the gas system and maintain energy choice for these customers.

FEI's proposed Voluntary Renewable Gas offering will be structured substantially same as the current Renewable Gas Program as described in section 2 of the Application. Subject to availability of supply, customers can opt in and select the percentage of Renewable Gas they desire. For example, customers under Rate Schedules 1, 2, or 3 can chose percentages of 5, 10, 25, 50 or 100 percent, while Rate Schedule 5 customers can chose a percentage between 5 percent and 100 percent in 5 percent increments. 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

[105] https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf
[106] https://www2.gov.bc.ca/gov/content/environment/climate-change/industry/reporting/quantify/electricity

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.

As FEI implements the Renewable Gas Blend, sales customers subscribed to a Voluntary Renewable Gas offering will see their selected percentage of Renewable Gas comprised of a Baseline of Renewable Gas via the new S&T LC rider and the remainder via the Low Carbon Gas Charge. For example, a sales customer electing to voluntarily receive 10 percent Renewable Gas will receive one percent through the S&T LC rider and nine percent via the Low Carbon Gas Charge. T-Service customers do not receive their gas supply from FEI and therefore are not subject to the S&T LC rider. The Low Carbon Gas Charge and S&T LC rider are further explained in Section 8.4.

Beyond changing the name of the rates for Renewable Gas as noted above, FEI is proposes the following three modifications to the current Voluntary Renewable Gas offering:

1. **Modification 1:** Voluntary Renewable Gas offering will be expanded to include Rate Schedule 7 customers. With the addition of RS 7, all customers will be able to purchase up to a 100 percent Renewable Gas blend.
2. **Modification 2:** NGV customers and T-Service customers will pay a Low Carbon Gas Charge equivalent to the average weighted cost of supply of Renewable Gas.
3. **Modification 3:** The $1/GJ discount for the rate paid for Renewable Gas under a long-term contract for T-Service customers will be cancelled.

These proposals are further explained in the subsections that follow.

7.4.3.1 Modification 1: Expansion of Program for RS 7 Customers

FEI does not currently offer Renewable Gas service for customers in Rate Schedule 7, and expansion of Voluntary Renewable Gas offering to Rate Schedule 7 customers is now needed. Rate Schedule 7 provides an interruptible service for large volume customers that have the ability to switch to an alternate energy source. A customer/building type often found in this rate schedule is hospitals. With the growth of Renewable Gas supply and the re-opening of FEI's Renewable Gas Program, FEI has received a number of requests from customers in this rate schedule for Renewable Gas. Therefore, for consistency and fairness, FEI proposes to add Renewable Gas service for Rate Schedule 7 as part of the Voluntary Renewable Gas offering.

As set out in Section 1.2, FEI is requesting permanent approval of new RS 7B effective February 1, 2022, to offer access to the Renewable Gas Program for these customers as other customers do under Rate Schedules 1B, 2B, 3B, 5B, and 11B. FEI's proposed RS 7B is included as Appendix D-1 and aligns with the Renewable Gas Program as currently approved.

With the approvals sought in this Application, FEI would discontinue all the "B" rate schedules, including 1B, 2B, 3B, 5B, 11B and 7B,[107] with new rate schedules reflecting the Renewable Gas Program as proposed.

7.4.3.2 Modification 2: Price of Renewable Gas for Transportation Service and NGV Customers

FEI proposes that the rate for NGV and T-Service customers be set to recover 100 percent of the average cost of Renewable Gas supply, on a cost per GJ basis. The rationale for this change is discussed below.

There are two reasons for increasing the rate for NGV customers. First, any GHG emission reductions resulting from the sale of Renewable Gas to NGV customers will not contribute to achieving the GHG reduction policy described in the CleanBC Roadmap. The CleanBC Roadmap calls for the gas system to reduce emissions from natural gas used to heat homes and buildings and power industries to 47 percent lower than 2007 levels by 2030. Since Renewable Gas volumes sold to NGV customers cannot contribute to achieve the public policy target, additional Renewable Gas would have to be purchased by FEI ratepayers to meet the GHG emission reduction objectives described in the CleanBC Roadmap. If Renewable Gas is sold to NGV customers at a discount to the cost of acquisition, the effect would be to increase the costs borne by all other ratepayers as more Renewable Gas would need to be purchased to meet the policy objective. By setting the Renewable Gas rate for NGV customers at the average supply cost, gas system ratepayers should be indifferent to the sale of Renewable Gas to NGV customers.

Second, Renewable Gas has a higher value to NGV customers than to other customer types. NGV customers receiving compressed natural gas (CNG) service and liquefied natural gas (LNG) service in British Columbia are eligible for Part 3 fuel supplier status under the BC-LCFS. NGV customers who purchase their own gas supply from a gas marketer are also eligible. Part 3 fuel suppliers that reduce the carbon intensity of their fuel relative to the baseline carbon intensity identified in the *Renewable and Low Carbon Fuel Requirements Regulation* can generate credits which can be sold in the credit market. In effect, the current BC-LCFS provides these customers with a financial incentive to reduce their GHG emissions by purchasing Renewable Gas, as discussed in Section 5.7.2.

The rationale for charging T-Service customers full cost recovery for Renewable Gas is that T-Service customers do not participate in the Renewable Gas services provided to sales customers included in the Renewable Gas Blend. FEI is proposing an elimination of the BVA rider, which collects costs in excess of recoveries from all non-bypass customers, which includes both T-Service and sales customers.

T-Service customers and marketers have expressed concern of the added cost associated with the BVA rider and the lack of any environmental or program benefit (i.e. there is no actual RNG being delivered to them by FEI). The current BVA rider is approximately five cents on the delivery

[107] Assuming RS 7B is approved as proposed in this Application.

charge and, if the current mechanism for the BVA delivery rider remains, the rider will increase as more volumes of Renewable Gas are added to the gas supply. T-Service customers would therefore pay increasing rates via the BVA rider yet not receive any program or environmental benefits.

In place of the BVA rider, FEI is creating a S&T LC rider, which will have associated Renewable Gas volumes, costs for actual volumes, and under recoveries as part of the charge. As these benefits of the delivery of Renewable Gas Blends and the costs are related to sales customers, they are recovered only from sales customers via the S&T LC rider.

Since T-Service customers do not receive any Renewable Gas volumes via the S&T rider, they also do not pay for under recoveries from the Renewable Gas Connections service or Voluntary Renewable Gas offering for sales customers. Instead, T-Service customers will pay the pay the full cost of Renewable Gas (further elaborated on in Section 8.4.1.1) should they require any Renewable Gas. As such, the Rate Schedule 11B price which is available to T-Service customers will change to reflect the full acquisition cost of Renewable Gas.

In summary, FEI will maintain a voluntary Renewable Gas offering for T-Service and NGV customers, while avoiding putting additional cost pressure on sales customers. T-Service and NGV customers are provided with a means of accessing Renewable Gas which supports the provincial government's policy objectives of reducing GHG emissions in sectors that are difficult to decarbonize with electricity, such as process loads, and also provides an avenue for NGV customers to participate in the BC-LCFS.

7.4.3.3 Modification 3: Discontinuation of Price Discount for Long Term Contracts

FEI is proposing to continue offering long-term contracts for customers who meet the long-term contract eligibility requirements of a commitment to purchase no less than 60 thousand GJs in aggregate over a term of no less than five years and no more than ten years. FEI currently has long-term contracts with UBC, Translink and the CoV.

Long-term contracts still provide benefits to both customers and FEI. For eligible customers, the benefit is in the form of supply security for periods of five to 10 years. For FEI, the benefit is in the ability to foresee with confidence a sizeable portion of demand, and to administer the available Renewable Gas supply accordingly.

However, FEI is proposing to remove the $1/GJ discount for any future long-term contracts. The conditions that made the $1/GJ discount a reasonable approach in 2015 are no longer applicable. With the proposed Renewable Gas Blend, FEI does not run the risk of having unsold volumes of Renewable Gas. Given that the revised Renewable Gas Program will provide mechanisms for all Renewable Gas to be sold, FEI does not consider that a discount is necessary or required to encourage long-term contracts.

FEI will continue to file any long-term contracts with the BCUC for approval, so that the BCUC will have the opportunity to review the long-term contracts and ensure they meet the eligibility requirements.

7.5 *SUMMARY*

In summary, FEI's proposed Renewable Gas Program address the context within which the utility now operates by meeting government policies aimed at reducing GHG emissions and providing customers with options designed to suit their needs and the regulations to which they are subject. The Renewable Gas Program will allow FEI to deliver a Baseline of Renewable Gas to all sales customers that can be topped up to 100 percent through the Voluntary Renewable Gas offering if needed, while all New Residential Connections will be permanently served with 100 percent Renewable Gas. The proposed Renewable Gas Program provides the mechanisms by which FEI can match supply to demand, and ensure all Renewable Gas is sold. Therefore, with the revised Renewable Gas Program, GHG emissions in BC will be reduced as quickly as new supply can be brought on line. This will achieve GHG emission reductions across all sectors and customers.

The revised Renewable Gas Program encourages the use of existing gas system assets by both existing and future customers. This helps to mitigate upward rate pressure that could be caused by the increased cost of acquisition of Renewable Gas and a loss of FEI's customer base and demand that would occur absent a Renewable Gas Program that meets policy and regulations. This will help maintain the long-term viability of the gas delivery system and energy choice for British Columbians.

FEI proposes that in five years after a final decision by the BCUC in this proceeding, FEI will file a review of the Renewable Gas Program with any proposed adjustment that may be needed. This would not preclude FEI from bringing forward an application earlier if needed to respond to changes in government policy, the market or in response to challenges with program structure or design. FEI's reporting on the Renewable Gas Program, including the proposed 5-year review, is discussed further in section 9 of the Application.

8. ACCOUNTING TREATMENT, PROGRAM MECHANICS, RATE SETTING AND CUSTOMER BILL IMPACT

8.1 *INTRODUCTION*

This section provides an overview of the accounting treatment of costs and recoveries of the Renewable Gas Program, including the use of the new Low Carbon Gas Account (LCG Account) to account for all Renewable Gas Program costs, Renewable Gas volumes and recoveries. This section also describes the recoveries via the Low Carbon Gas Charge (LCG Charge) and Storage and Transport Low Carbon (S&T LC) rider, the rate setting process and a review of the customer bill impact.

The subsections below are organized as follows:

- Section 8.2 provides an overview of LCG Account, LCG Charge and S&T LC rider and how these work together, including the regulatory accounting treatment.
- Section 8.3 describes how the LCG Account will capture all the Renewable Gas Program costs and volumes.
- Section 8.4 provides details of how the cost recovery mechanism for Renewable Gas works via the LCG Charge and S&T LC rider.
- Section 8.5 provides details of a sample annual customer bill calculation.
- Section 8.6 analyzes the customer bill impact.
- Section 8.7 discusses risk mitigation measures for demand and supply balancing.
- Section 8.8 describes the disposition of the existing Renewable Gas Program related accounts.

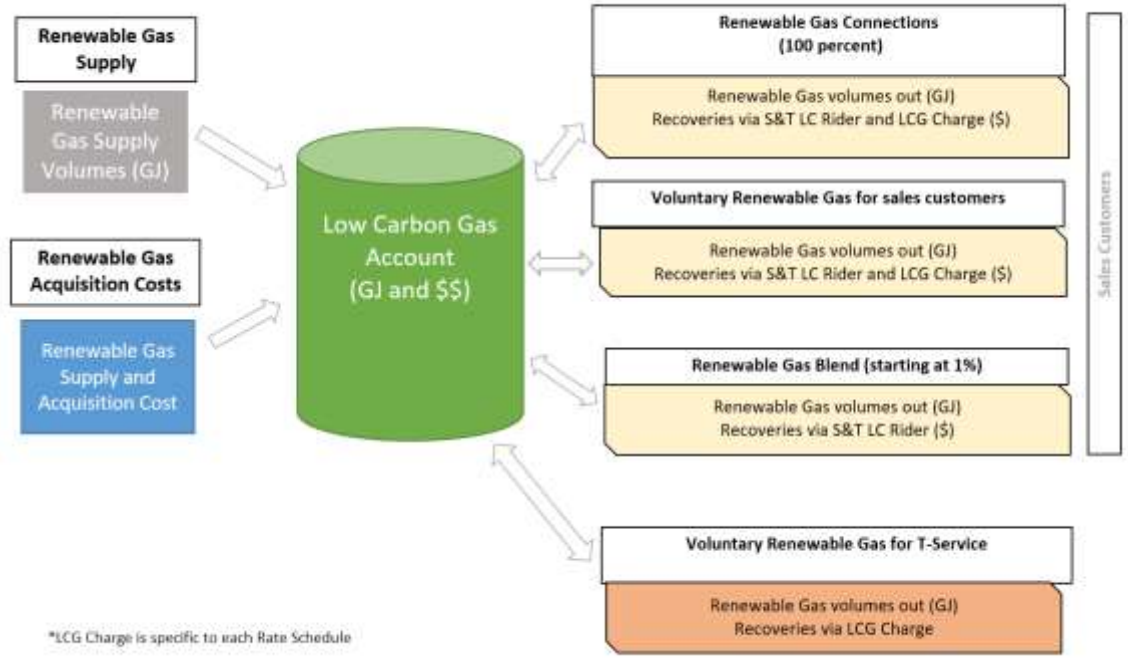
8.2 *OVERVIEW OF LOW CARBON GAS ACCOUNT, LOW CARBON GAS CHARGE AND STORAGE AND TRANSPORT RIDER*

FEI proposes to use the LCG Account, which is the replacement account for the BVA, as the regulatory mechanism to track all Renewable Gas Program supply costs and recoveries, and the associated volumes. Recoveries of Renewable Gas supply costs will be through two charges: the S&T LC rider and the LCG Charge.

FEI will change the name of the BERC to the LCG Charge and the name of the BVA to the LCG Account, as FEI will be expanding its Renewable Gas portfolio beyond biomethane by acquiring other low carbon energy, such as hydrogen, lignin and synthesis gas, as enabled by the GGRR. Similarly, the S&T LC rider will replace the current BVA delivery rate rider.

The figure below illustrates how the LCG Account will function, including the role of the S&T LC rider and the LCG Charges.

Figure 8-1: LCG Account including S&T LC Rider and LCG Charge



Below, FEI provides an illustrative example of the accounting entries that would flow through the LCG Account. The LCG Account functions in the same way as FEI's existing Midstream Cost Reconciliation Account (MCRA).

Example assumptions:

FEI both purchases and sells 7,500,000 GJs of Renewable Gas in the year, such that there is no supply/demand imbalance. To simplify this example, FEI has also assumed that it has forecasted the costs, supply, and demand exactly as they occurred. The purchase and acquisition price is $20 and the CCRC in that year is $4 per GJ, and carbon tax is $2 per GJ. As such, the LCG Charges are as follows[108]:

- Renewable Gas Connections LCG Charge is: $6 per GJ ($4 CCRC + $2 carbon tax)
- Voluntary Renewable Gas for Sales customers LCG Charge is $13 per GJ ($4 CCRC + $2 carbon tax + $7 premium)
- Voluntary Renewable Gas for T-Service customers LCG Charge is $20 per GJ

In this example, one percent Renewable Gas is provided to all sales customers and recovered via the S&T rider at $0.63 per GJ (calculation shown in Figure 8-2 below) and the remainder of the recoveries are through the respective LCG Charges described above.

[108] In this example, there are no sales to NGV customers.

Figure 8-2: Example of LCG Charge, S&T Rider Recoveries and LCG Account

Example Assumptions:	
FEI purchases RG Supply	**7,500,000 GJ**
Cost per GJ (Supply & Acquisition Cost)	**$20**
Total Cost	**150,000,000**
CCRC	$4
Premium	$7
Carbon Tax (CT)	$2
Assume no NGV RG customers	
Assumes no RG supply buffer (i.e. no carryover from the prior year or remaining in the LCG Account)	

Forecast Total Gas Demand		
Total Gas Demand for FEI Sales Customers	100,000,000	**A**
Forecast RG Demand		
RG Demand from RG Connections	500,000	**B**
RG Demand from Voluntary Sales Customers	5,000,000	**C**
RG Demand from T-Service Customers	1,000,000	
	6,500,000	
Remaining RG Supply	1,000,000	**D**
RG Baseline to all Sales Customers	1.0%	**D/A**
Conventional Natural Gas for FEI Sales Customers	93,500,000	**A-B-C-D**

Forecast RG Under Recoveries		**LCG Charge ($)**		**Remaining Blend**	**Recoveries ($)**	**Full Cost Recoveries @ $20**	**Under Recoveries ($)**	
RG Demand from RG Connections	500,000	6	CCRC +CT	99%	2,970,000	10,000,000	7,030,000	
RG Demand from Voluntary Sales Customers	5,000,000	13	CCRC+Premium + CT	99%	64,350,000	100,000,000	35,650,000	
					67,320,000		**42,680,000**	**E**

Under recoveries from RG Connections & Voluntary Sales Customers	42,680,000	**E**
Remaining RG Supply	1,000,000	
Cost per GJ ($)	20	
	20,000,000	**F**
Total Under recoveries	**62,680,000**	**E+F=G**
S&T LC Rider for All Sales Customers	**$ 0.63**	**G/A**

Recoveries via LCGC Charge and S&T rider		**Proportion Applicable to S&T Rider**	**S&T LC Rider ($)**	**S&T LC Recoveries ($)**	**Proportion Applicable to LCG Charge**	**LCG**	**Charge ($)**	**LCC Charge Recoveries ($)**	**Total Recoveries ($)**	**Total RG Volumes (GJ)**
RG Demand from RG Connections	500,000	1%	0.63	313,400	99%	6		2,970,000	3,283,400	500,000
RG Demand from Voluntary Sales Customers	5,000,000	1%	0.63	3,134,000	99%	13		64,350,000	67,484,000	5,000,000
Remaining RG Supply for Sales customers	1,000,000	100%	0.63	626,800	0%	0		-	626,800	1,000,000
Natural Gas for FEI Sales Customers	93,500,000	100%	0.63	58,605,800	0%	0		-	58,605,800	-
RG Demand from T-Service Customers	1,000,000	n/a	n/a	-	100%	20		20,000,000	20,000,000	1,000,000
	101,000,000			**62,680,000**				**87,320,000**	**$ 150,000,000**	**7,500,000**

The summarized entries to be recorded in the LGC Account would be as follows:

1) To record the purchases of Renewable Gas:

DR	LCG Account		$150,000,000	
CR		Renewable Gas Cost Payable		$150,000,000

2) To record the sales of Renewable Gas:

DR	Accounts Receivable		$150,000,000	
CR		Revenues (by rate schedule)		$150,000,000

3) To record the Renewable Gas recoveries through the S&T LC rider:

DR	Cost of Renewable Gas		$62,680,000	
CR		LCG Account		$62,680,000

4) To record the Renewable Gas recoveries through LCG Charge:

DR	Cost of Renewable Gas		$87,320,000	
CR		LCG Account		$87,320,000

In the sections below, FEI discusses in more detail the costs and volumes that will be captured in the LCG Account, the volumes that flow out of the LCG Account to customers, and the associated cost recovery from customers through the S&T LC rider and LCG Charge that are credited into the LCG Account.

8.3 *LOW CARBON GAS ACCOUNT WILL CAPTURE ALL RENEWABLE GAS SUPPLY COSTS AND VOLUMES*

FEI currently tracks both volumes (supplied and sold) and dollars (costs and recoveries) related to the Renewable Gas Program in the BVA. To ensure the appropriate matching of Renewable Gas supply volumes with volumes consumed, Renewable Gas costs and recoveries must be separately tracked from the conventional natural gas commodity. The BVA has been an effective mechanism to do this while providing transparency into Renewable Gas volumes, costs and recoveries. As noted above, FEI proposes to rename the BVA as the LCG Account to reflect the expansion of the Renewable Gas Program to include low carbon energy beyond biomethane.

The costs to be captured in the LCG Account will remain the same as those that were approved by the BCUC for the BVA, and include the following:

Renewable Gas Supply:

- **Payments to suppliers for the acquisition of Renewable Gas**: When FEI enters into a contract with a third party to acquire Renewable Gas, the cost to acquire the Renewable Gas will be captured in the LCG Account. This will include FEI's costs to acquire biomethane, hydrogen, synthesis gas and lignin, as defined under the GGRR, in addition to the current supply of biomethane.
- **Cost of service of FEI-owned interconnections:** If FEI constructs and operates an interconnection enabling the injection of Renewable Gas into FEI's transmission or distribution system, then the cost of that interconnection will be included in FEI's rate base and the associated cost of service accounted for in the LCG Account.
- **Cost of service of FEI-owned Renewable Gas production facilities:** If FEI constructs and operates Renewable Gas facilities, the cost of the facilities will be included in FEI's rate base and the associated cost of service accounted for in the LCG Account.
- **Costs related to the procurement of carbon offsets**: In the event that FEI experiences a shortfall in Renewable Gas supply, carbon offsets may be purchased to ensure sufficient volume exists to cover its obligations. Carbon offsets can be used only in the context of the Voluntary Renewable Gas offering.
- **Costs for the procurement of supply:** FEI's costs incurred to manage the procurement of Renewable Gas supply and the administration of the supply contracts by FEI staff will be included in the LCG Account.

Like the BVA, the LCG Account will also be used to track the volumes of Renewable Gas. FEI will track all volumes of Renewable Gas acquired through its supply contracts with third parties and volumes of FEI's own projects in the LCG Account. This will include volumes of biomethane from existing and future biomethane supply contracts, but also any volumes of hydrogen, lignin or synthesis gas that FEI may acquire as enabled by the GGRR.

In summary, all Renewable Gas supply costs and associated volumes will be recorded in the LCG Account.

8.4 *LOW CARBON GAS ACCOUNT WILL CAPTURE COST RECOVERIES THROUGH THE LCG CHARGE AND THE S&T LOW CARBON RIDER*

FEI proposes to recover the costs recorded in the LCG Account through the LCG Charge and S&T LC rider. As noted above, FEI will replace the BERC with the LCG Charge to more accurately reflect the future composition of the Renewable Gas supply portfolio as enabled by the GGRR. Similarly, the S&T LC rider will replace the current BVA delivery rate rider.

Table 8-1 below provides an illustrative example of how the S&T LC rider and the LCG Charge would apply for each element of the Renewable Gas Program and for each rate schedule. This

example assumes that FEI is providing a Renewable Gas Blend to all sales customers at one percent.

In this example, customers served under Renewable Gas Connections receive 100 percent Renewable Gas:

- Of which one percent is from the Renewable Gas Blend for all sales customers with cost recovery via the S&T LC rider; and
- The remaining 99 percent is through Renewable Gas Connections service with cost recovery through the LCG Charge.

Also in this example, Voluntary Renewable Gas provided to sales/NGV/T-Service customers electing to sign up to purchase a higher Renewable Gas percentage, such as ten percent in this example, will receive:

- One percent Renewable Gas via the Renewable Gas Blend for sales customers; and
- The remaining nine percent through whichever Voluntary Renewable Gas offerings they take.

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%	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 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

Notes for rate schedule naming conventions:

LC: Low Carbon
PLC: Permanent Low Carbon
VLC: Vehicle Low Carbon

In the table above, FEI lists the amended and the new rate schedules for the proposed Renewable Gas Program. Note that FEI is proposing a new RS 7LC for customers in RS 7 to have access to the Voluntary Renewable Gas offering; this customer group previously did not have a designated rate schedule under which they could receive Renewable Gas. All new and amended rate schedules can be found in Appendix D-2.

In summary, the LCG Account will capture all Renewable Gas recoveries and associated volumes through the LCG Charge and the S&T LC rider. The LCG Charge and the S&T LC rider are explained in detail in the following sections.

8.4.1 Low Carbon Gas Charge

The LCG Charge will be the name of the charge for Renewable Gas supplied to FEI's Renewable Gas Connections service and all Voluntary Renewable Gas offerings. Unlike the BERC, which was the same charge for all customers receiving Renewable Gas, the LCG Charge varies for each offering and rate schedule (further described in the "Rate Setting Process" row in the table below).

Table 8-2 below provides details on how the LCG Charge will be applied and set for the applicable Renewable Gas services.

Table 8-2: Cost Recovery via the LCG Charge

Recovery	Renewable Gas Connections (for residential dwellings)	Voluntary Renewable Gas for Sales Customers	Voluntary Renewable Gas for NGV Sales Customers	Voluntary Renewable Gas for T-Service Customers
Applicable Renewable Gas Volume	• S&T LC rider for the percentage of Renewable Gas Blend for sales customers. • LCG Charge for the remaining Renewable Gas is provided via the Renewable Gas Connections	• S&T LC rider for the percentage of Renewable Gas Blend. • LCG Charge for the remaining Renewable Gas provided via the Voluntary Renewable Gas offering.		• No S&T rider • LCG charge for the percentage of Voluntary Renewable Gas selected.
Applicable Rate	CCRC plus carbon tax per GJ.	CCRC plus carbon tax +$7 per GJ.	Forecast Cost of Acquisition per GJ less S&T LC rider	Forecast cost of Acquisition
Rate Setting Process	The LCG Charge will be adjusted quarterly to account for changes in the approved CCRC[109] and the enacted carbon tax[110] per GJ.		Forecast Cost of Acquisition updated annually (described further below)	Forecast Cost of Acquisition updated annually (described further below)

8.4.1.1 Low Carbon Gas Charge – Setting the Forecast Cost of Acquisition for T-Service and NGV Customers

For the purpose of calculating the LCG Charge for T-Service customers and NGV customers, FEI will calculate the forecast weighted average cost of acquisition of Renewable Gas (Forecast Cost of Acquisition), by forecasting the cost of Renewable Gas supply (as described in Section 8.3)

[109] FEI files quarterly cost of gas applications with the BCUC to determine the CCRC.
[110] If the carbon tax changes in any year, the new rate is enacted on April 1. The carbon tax rate for any particular year is typically known well in advance of the April 1 enactment date. Each year FEI proposes to set the quarter 2 LCG Charge for new residential connections equal to the approved CCRC per GJ plus the carbon tax rate per GJ expected to be in place on April 1 of that year.

and dividing the forecast total supply cost by the forecast supply volume of Renewable Gas for the forecast year.

Since NGV sales customers will pay the S&T LC rider which includes some acquisition and under-recovery costs, the S&T LC rider will be subtracted from the Forecast Cost of Acquisition to arrive at the LCG Charge for NGV sales customers.

8.4.2 Storage and Transport Low Carbon Rider

The S&T LC rider will be set annually to recover the Renewable Gas supply costs as set out in Section 8.3 less recoveries from the LCG Charges. This amount will then equal the under-recoveries of Renewable Gas supplied to Renewable Gas Connections and the Voluntary Renewable Gas for non-NGV sales customers, whether due to differences between the supply costs and the rates charged, volume-related over- or under-recoveries, or forecasting true-ups.[111]

The S&T LC rider will be charged to all sales customers, including customers already receiving Renewable Gas via the Renewable Gas Connections and Voluntary Renewable Gas offerings. Customers will also receive an offsetting carbon tax credit for any volume of Renewable Gas they receive via the S&T LC rider.[112]

Establishing the rider for Renewable Gas volumes in storage and transport costs enables FEI to deliver Renewable Gas volumes to its sales customers and capture the cost of Renewable Gas in the cost of the commodity received by sales customers. Delivering Renewable Gas volumes in this way also allows sales customers to receive the offsetting carbon tax reduction.

The S&T LC rider will not be charged to T-Service customers. T-Service customers supply their own commodity and therefore will not receive Renewable Gas through the Renewable Gas Blend for sales customers. T-Service customers do not pay FEI a CCRC charge or an S&T charge, therefore they will not be charge an S&T LC rider.

The process for how FEI will set the S&T LC rider each year is explained in Section 8.4.2.1 below.

8.4.2.1 Setting the Storage & Transport Low Carbon Rider

Like the Storage & Transport charges, the S&T LC rider will be updated annually. Each year, FEI will calculate the S&T LC rider for the following year on a forecast basis. This process will not only set the S&T LC rider but also determine the volume of Renewable Gas deemed to be delivered via the Renewable Gas Blend for sales customers. FEI will file to set the S&T LC rider

[111] The acquisition costs for Renewable Gas is higher than the price paid through the Renewable Gas Connections and Voluntary Program for Sales Customers, consequently there are under recoveries on these volumes.

[112] As discussed in Section 3.4.1.4, the provincial carbon tax is $45 per tonne ($2.31/GJ) as of April 1, 2021 and is currently proposed to increase at the same level as the federal carbon tax plan – escalating at $15 per tonne per year after 2022 and reaching $170 per tonne by 2030. This would have the effect of increasing the carbon price on a gigajoule of natural gas to nearly $8.40 by 2030. In BC, the provincial government has recognized the emission reduction benefits of Renewable Gas through a biomethane credit which provides a benefit to purchasers of biomethane blended with conventional natural gas. The credit is equal to the carbon tax payable on the specified volume or percentage of biomethane, thereby incentivizing customers to transition to a lower-carbon fuel.

approximately one month in advance of the fourth quarter gas cost reporting, to provide time for BCUC staff review, with a decision expected to be issued at the same time as the fourth quarter gas cost.

FEI will calculate the S&T LC rider for the following year based on the projected January 1 opening balance of the LCG Account and forecasts that will consider the following:

- Supply volumes that will account for downtime and unexpected underproduction from existing suppliers and a period of production ramp up for new suppliers;
- Supply costs as described in Section 8.3; and
- Recoveries from Renewable Gas Connections and Voluntary Renewable Gas customers.

The difference between the forecasts of the opening balance, Renewable Gas supply costs (as described in Section 8.3), and the Renewable Gas recoveries will determine the total net cost (cost less recoveries) to be recovered via the S&T LC rider. The total net cost is then divided by the forecast volumes sold to all sales customers to arrive at the S&T LC rider.

The following table provides an example of how FEI will determine the S&T LC rider. In this example, FEI is setting the S&T LC rider for 2025; therefore, the Forecast year is 2025 and the Projection year is 2024. As discussed above, the calculations will be undertaken late in 2024 as FEI prepares its S&T LC rider filing. FEI will use the latest available information including as many months of actuals as possible to project the 2024 ending balances and a forecast of 2025 to determine the inventory of Renewable Gas available, the costs of that inventory and the offsetting recoveries. Lines 7 through 21 of Table 8-3 illustrate the volume and cost accounting mechanism. FEI will calculate the S&T LC rider by dividing the costs (Line 24) by a forecast of total sales volume (Line 25).

Table 8-3: Storage & Transport Low Carbon Rider Calculation

Line No.	Particulars	Projected Amount	Forecast Amount	Reference
1	RG Supply Price ($/GJ)	$ 24.00	$ 23.00	Average price of all RG acquisitions
2	RG Purchased (TJ)	2,000	3,500	Projected/Forecast supply
3	Total RG Supply Cost ($000)	$ 48,000	$ 80,500	Line 1 x Line 2
4	Supply and Contract Mgmt ($000)	$ 2,100	$ 2,100	
5	Total RG Cost ($000)	$ 50,100	$ 82,600	Line 3 + Line 4
6				
7	**RG Inventory in (TJ)**			
8	Open	-	300	Prior Years Closing Balance
9	Additions	2,000	3,500	Line 2
10	Demand New Residential & Voluntary	(1,500)	(2,000)	Projected/Forecast Demand
11	Supply available to Flow as LCG	500	1,800	Line 8 + Line 9 + Line 10
12	Renewable Gas through S&T Rider	(200)	(1,500)	Projected Amount: Note 1; Forecast Amount: - Line 11 + Line 13
13	Close	300	300	Projected Amount: Line 11 + Line 12; Forecast Amount: Desired Inventory Buffer
14				
15	**RG Inventory in dollars ($000)**			
16	Open Inventory at Avg Supply Cost	$ -	$ 22,600	Prior Years Closing Balance
17	Supply Cost	50,100	82,600	Line 3
18	Sales Revenue - New Residential and Voluntary	(22,500)	(34,000)	Line 10 x Avg Price to New Res and Voluntary
19	Net Supply Cost	$ 27,600	$ 71,200	Line 16 + Line 17 + Line 18
20	Renewable Gas cost used to calculate S&T LC Rider	(5,000)	(64,300)	Projected Amount: Note 2; Forecast Amount: - Line 19 + Line 21
21	Close	$ 22,600	$ 6,900	Projected Amount: Line 19 + Line 20; Forecast Amount: Line 1 x Line 13
22				
23	**Storage and Transport Rider**			
24	Renewable Gas cost used to calculate S&T LC Rider		$ 64,300	- Line 20
25	Sales Customer Volume (TJ)		150,000	
26	**Storage & Transport LC Rider ($/GJ)**		**$ 0.43**	Line 24 / Line 25
27				
28	Percent of Renewable Gas Blend for sales customers		**1.0%**	- Line 12 / Line 25
29				
30	**Note 1:** The Projected Amount is the approved percent of RG embedded in customers gas demand			
31	from the prior year's Q4 Gas Cost Report multiplied by an updated projection of gas demand			
32	for the Projected year.			
33				
34	**Note 2:** The Projected Amount is the S&T LC rider approved in the prior year's Q4 Gas Cost Report multiplied			
35	by an updated projection of gas demand for RG (Line 10)			

8.5 *SAMPLE ANNUAL BILL CALCULATION*

As proposed in Section 7.4.2, New Residential Connections will receive 100 percent Renewable Gas and Voluntary Renewable Gas customers will receive a set percent based on what the

customer has elected. Also, as discussed in Section 7.4.1 and as described above, all sales customers, including New Residential Connections and Voluntary Renewable Gas customers, will receive a portion of their gas as Renewable Gas Blend.

As an example, FEI has utilized a situation where one percent is available for the Renewable Gas Blend for sales customers. In this example:

- A Renewable Gas Connections for residential dwellings using 80 GJs per year, would receive 0.8 GJs (or 1 percent) through the S&T LC rider and the remaining 79.2 GJs at the CCRC + carbon tax.
- A Renewable Gas Blend for sales (residential) customer using 80 GJs per year receives 1% of their 80 GJs, or 0.8 GJs as Renewable Gas through the S&T LC rider.
- A Voluntary Renewable Gas residential sales customer with annual demand of 80 GJs electing to receive 10 percent (or 8 GJs) of their gas demand as Renewable Gas, will receive 0.8 GJs of Renewable Gas through the S&T LC rider, the remaining 7.2 GJs Renewable Gas through the voluntary program at the voluntary price of CCRA + carbon tax + $7.00, and 72 GJ of natural gas at the CCRC + carbon tax.

After accounting for carbon tax, Renewable Gas Connection residential dwelling customers served 100 percent Renewable Gas will pay the same annual bill (assuming the same consumption) as existing customers receiving conventional gas and a portion of their annual demand as Renewable Gas through the S&T LC rider (Renewable Gas Blend for sales customers). By using an S&T LC rider to deliver Renewable Gas to Renewable Gas for sales customers, FEI is able to ensure bill parity between new residential connections and existing residential customers. Voluntary customers will pay more as discussed in Section 7.4.3.

The following table sets out how a residential customer's bill will be calculated, following on from the S&T LC rider rate setting example in Table 8-3 above.

Table 8-4: Example of the Calculation for a Residential Customer's Annual Bill

Line No.	Customer Type	Renewable Gas Connections	Renewable Gas Blend	Voluntary Renewable Gas	
1	Annual Demand	80.0	80.0	80.0	
2					
3	Percent RG Required	100%		10%	
4	Percent RG through S&T LC Rider	1%	1%	1%	
5					
6	GJ RG	79.2	-	7.2	Max of (Line 1 x (Line 3 - Line 4) and Zero)
7	GJ RG through S&T LC Rider	0.8	0.8	0.8	Line 1 x Line 4
8	GJ Conventional Gas	-	79.2	72.0	Line 1 - Line 6 - Line 7
9	**Total**	**80.0**	**80.0**	**80.0**	Line 6 + Line 7 + Line 8
10					
11	**Charges and Riders**				
12	Basic Charge	0.4085	0.4085	0.4085	Approved
13	Delivery Charge	4.915	4.915	4.915	Approved
14	Storage and Transport Charge	1.350	1.350	1.350	Approved
15	Storage and Transport LC Rider	0.429	0.429	0.429	
16	Conventional Cost of Gas	3.844	3.844	3.844	Approved
17	LCG Charge	8.593		15.593	Note 1
18	Carbon Tax	4.749	4.749	4.749	Estimated at 2025
19					
20	**Annual Bill Revenue**				
21	Basic Charge	149.21	149.21	149.21	Line 12 x 365.25
22	Delivery Charge	393.20	393.20	393.20	Line 13 x Line 9
23	Storage and Transport Charge	108.00	108.00	108.00	Line 14 x Line 9
24	Storage and Transport LC Rider	34.32	34.32	34.32	Line 15 x Line 9
25	Conventional Cost of Gas	-	304.45	276.77	Line 16 x Line 8
26	LCG Charge	680.57	-	112.27	Line 17 x Line 6
27	Carbon Tax	-	376.12	341.93	Line 18 x Line 8
28	**Total**	**1,365.29**	**1,365.29**	**1,415.69**	Sum of Lines 21 through 27
29					
30	Note 1: Renewable Gas Connections = Carbon Tax (Line 18) + Conventional Cost of Gas (Line 16)				
31	Voluntary Renewable Gas = Carbon Tax (Line 18) + Conventional Cost of Gas (Line 16) + 7)				

The upper section of the table (Lines 6 through 9) determine how much of a customer's gas will be delivered as Renewable Gas, through the S&T LC rider, through the Voluntary Renewable Gas offering for Sales Customers and through the Renewable Gas Connections for residential dwellings customers. Since the S&T LC rider will be included in the calculation of all sales customers' bills, any Renewable Gas demand is first delivered through the S&T LC rider. Then, the volume of Renewable Gas that it takes to fill a customer's Renewable Gas requirements (100 percent for Renewable Gas Connections and the elected percentage for Voluntary Renewable

Gas offering for Sales Customers) is fulfilled via approved rates for those programs. In the example above, the Renewable Gas Connections customer receives one percent of their Renewable Gas volume through the S&T LC rider and 99 percent through LCG Charge.

Lines 11 through 18 set out the charges for customers. As can be seen, all charges are the same across the residential customers except the LCG Charge. For new Renewable Gas Connections, the LCG Charge is the sum of the approved CCRC plus the carbon tax per GJ as discussed in Section 8.4.1. For customers electing Voluntary Renewable Gas for Sales Customers the LCG Charge is the sum of the approved CCRC plus the carbon tax per GJ plus $7 as discussed in Section 8.4.1. For all other residential customers there is no LCG Charge because the only Renewable Gas they receive is through the S&T LC rider.

Finally, lines 20 through 28 are the extension of all charges and volumes to calculate the annual bill. As can be seen, new residential and existing residential customers' annual bills are the same at the same consumption level.

Table 8-4 above shows the calculations that will be included on customers' bills. Similar to the way bills are produced today, some of the line items above will be rolled into a single line item to keep the bills simple and easy for customers to understand. All customers receiving a percentage of Renewable Gas through the Voluntary Renewable Gas, Renewable Gas Connections and through the Renewable Gas Blend will be able to see their total percentage of Renewable Gas on their bill each month. This percentage will also be applied to the customers' Carbon Tax credit on their bills.

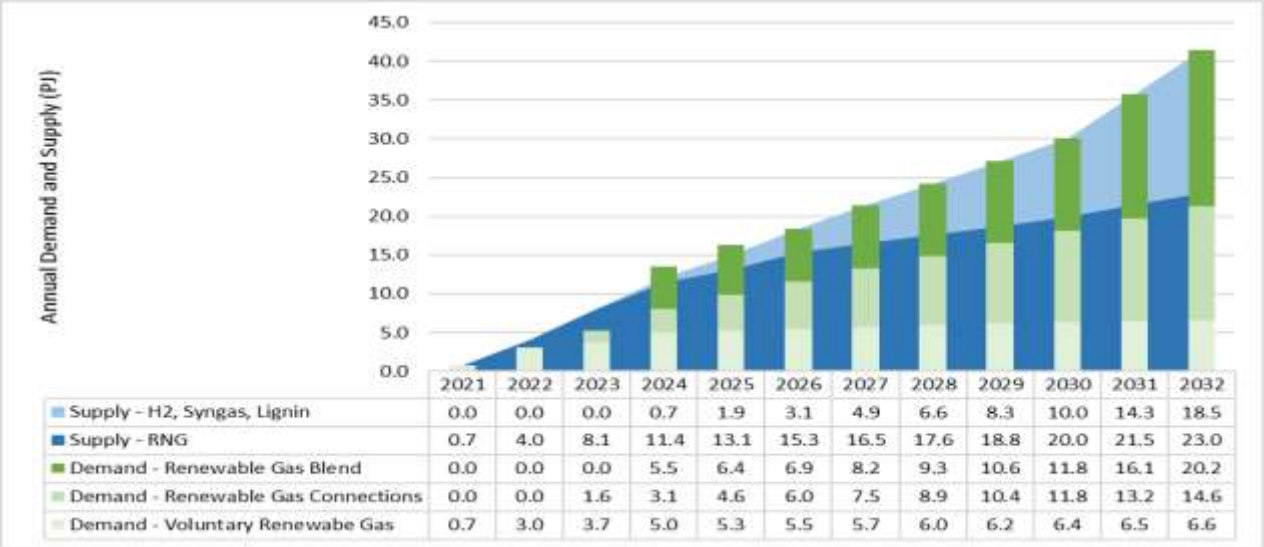
8.6 *CUSTOMER BILL IMPACTS*

In this section FEI provides an estimate of the customer bill impact of the Renewable Gas service based on the Renewable Gas supply forecasts provided in Section 6.3.2 and a forecast of anticipated uptake of Renewable Gas in the Voluntary Renewable Gas offering for Sales Customers, the Renewable Gas Connections and the percentage of gas provided customers via the Renewable Gas Blend for sales customers. Figure 8-3 below shows the Renewable Gas supply forecast out to the year 2032, as described in Section 6.3.2. As discussed in Section 6.3, FEI is forecasting to increase its acquisition of Renewable Gas over time and to reach approximately 42 PJs of Renewable Gas by 2032. As noted in the Roadmap, and as signalled by the Provincial government (in Section 3.4.1.5), the carbon tax is expected to reach $170 per tonne by 2030. Consequently, for this analysis FEI has increased the carbon tax from its current level to $170 per tonne by 2030.

In order to calculate the bill impact, FEI also estimated a ten year Renewable Gas demand forecast from Renewable Gas Connections for residential dwellings, Voluntary Renewable Gas for sales and T-Service customers and the Renewable Gas Blend for sales customers. FEI made the following assumptions to arrive at the demand forecast shown in Figure 8-3:

- Renewable Gas Connections are in the range of 14 thousand to 16 thousand per year and the composition is similar to the recent past (approximately 98 percent RS 1, and the remainder RS 2 and RS 3);
- The Voluntary Renewable Gas offering for Sales Customers will continue to see growth in RS 1 and, 2 from existing natural gas customers consistent with past customer subscriptions for Renewable Gas;
- The forecasts for larger volume commercial customers was based on past growth trends and forecasts from Key Account Managers per individual discussions with these customers; and
- The NGV demand forecast is based on an estimate provided by the Key Account Managers factoring how their demand could change with the proposed LCG Charge.

Figure 8-3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ)



	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Supply - H2, Syngas, Lignin	0.0	0.0	0.0	0.7	1.9	3.1	4.9	6.6	8.3	10.0	14.3	18.5
Supply - RNG	0.7	4.0	8.1	11.4	13.1	15.3	16.5	17.6	18.8	20.0	21.5	23.0
Demand - Renewable Gas Blend	0.0	0.0	0.0	5.5	6.4	6.9	8.2	9.3	10.6	11.8	16.1	20.2
Demand - Renewable Gas Connections	0.0	0.0	1.6	3.1	4.6	6.0	7.5	8.9	10.4	11.8	13.2	14.6
Demand - Voluntary Renewabe Gas	0.7	3.0	3.7	5.0	5.3	5.5	5.7	6.0	6.2	6.4	6.5	6.6

This demand and supply forecast was used to calculate customer bill impacts shown in Figures 8-4 to 8-6. To isolate the impact to customers' bills from increasing Renewable Gas supply and changes in carbon tax, FEI has held all other rates at the current approved levels[113] and held customer count, use per customer and total demand equal to those in FEI's Annual Review for 2021 Rates.

The following three figures display the annual bills of customers in each of RS 1, 2 and 3, by service type (Renewable Gas Connections, Voluntary Renewable Gas for Sales Customers and remaining sales customers). Each figure includes years 2024, 2028 and 2032 on the x axis with the annual dollar amount on the y axis. At the top of each set of columns, in a text box, is the

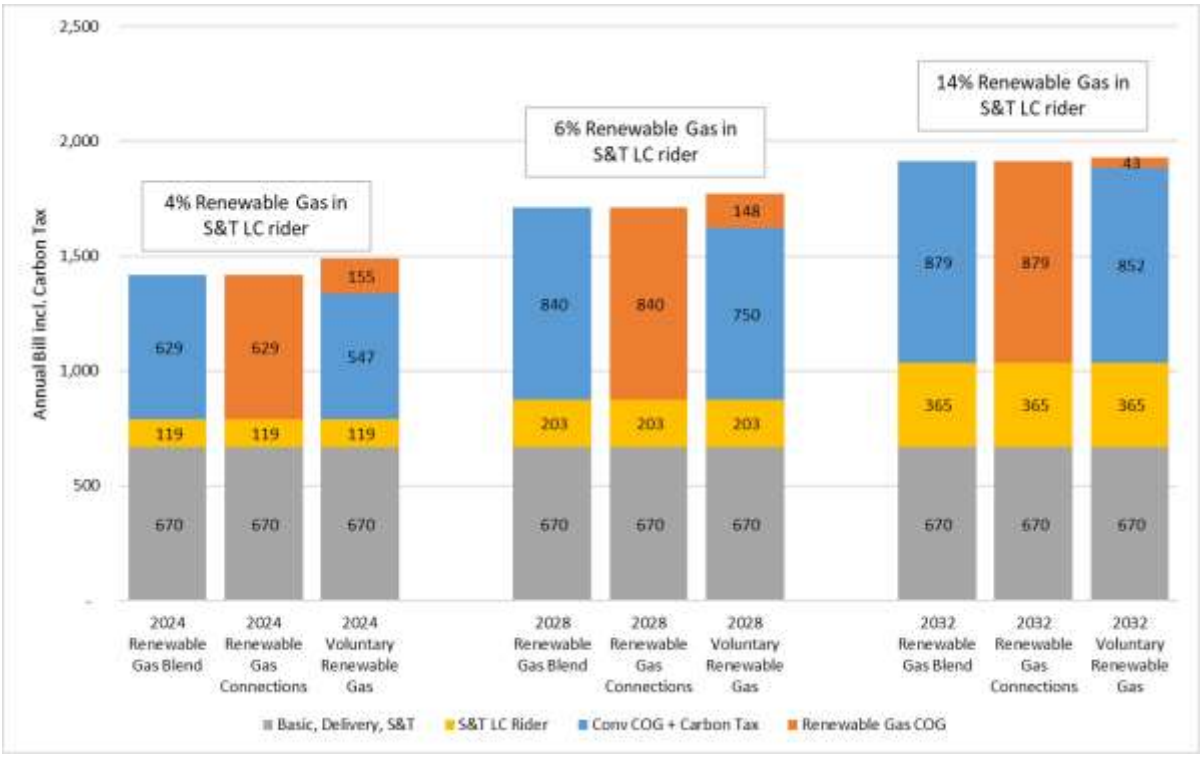
[113] Approved as at November 5, 2021.

percent of Renewable Gas delivered[114] and costs recovered through the S&T LC rider. Each column represents one of the Renewable Gas Program offerings:

- Renewable Gas Blend for sales customers (that are not Renewable Gas Connections customers or Voluntary Renewable Gas customers);
- Renewable Gas Connections; and
- Voluntary Renewable Gas for sales and T-Service customers.

The columns are stacked with the cost of each of the components of the bill set out in the legend on the graph. The grey stack includes the costs for the basic charge, delivery and storage and transport (S&T) charges for conventional natural gas. The yellow stack is the cost of the Renewable Gas Blend recovered through the S&T LC rider. The blue portion is the cost of conventional natural gas plus the carbon tax recovered from sales customers and voluntary customers. The orange stack shows the LCG Charge for Renewable Gas.

Figure 8-4: Annual Bill for Rate Schedule 1

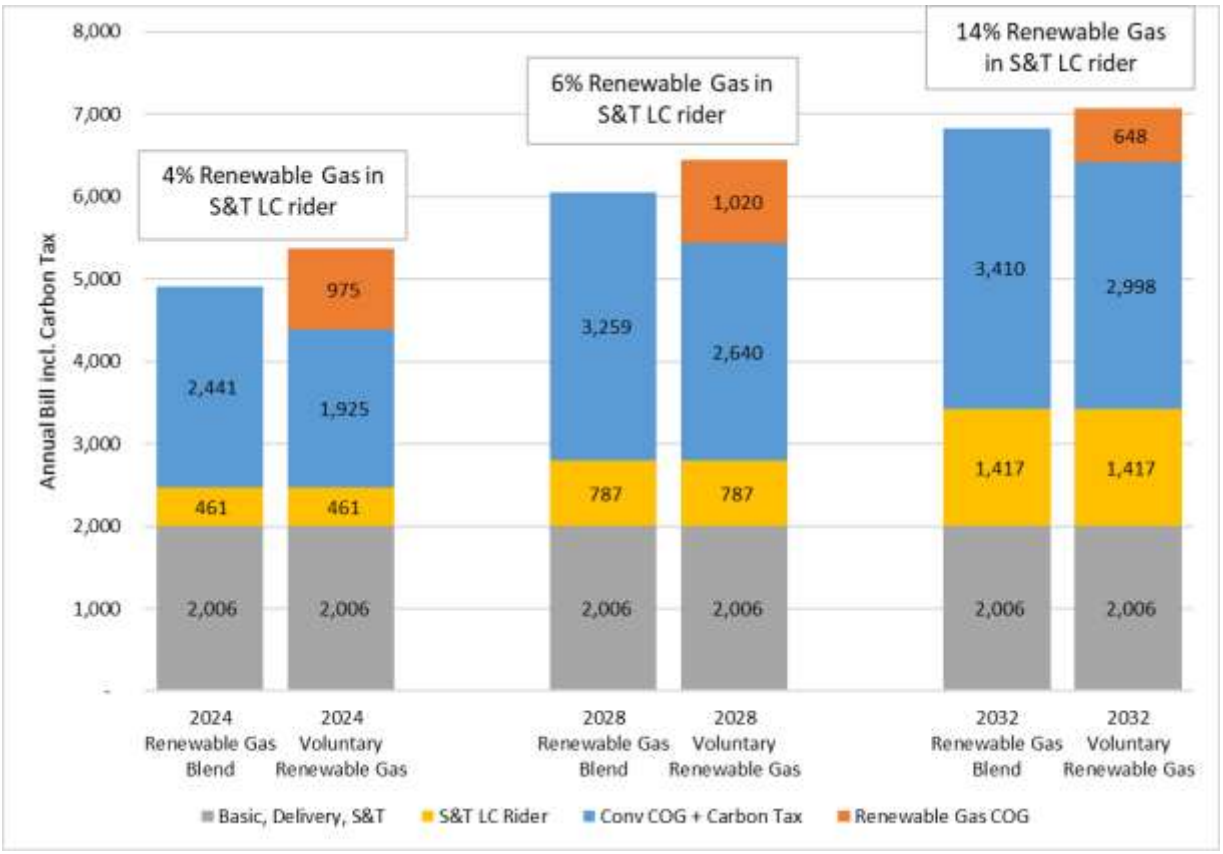


For RS 1, FEI used a UPC of 83.1 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. The voluntary customer's bill is higher than new residential and existing residential because of the elected percentage of Renewable Gas which carries a $7 per GJ premium as discussed in Section 8.4.1. All else equal,

[114] FEI currently estimates Renewable Gas supplied through the S&T LC rider to be at 4 percent in 2024, 6 percent in 2028 and 14 percent in 2032 based on the remaining forecasted supply.

a non-voluntary RS 1 residential customer's bill will increase from approximately $1,420 in 2024 to $1,910[115] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

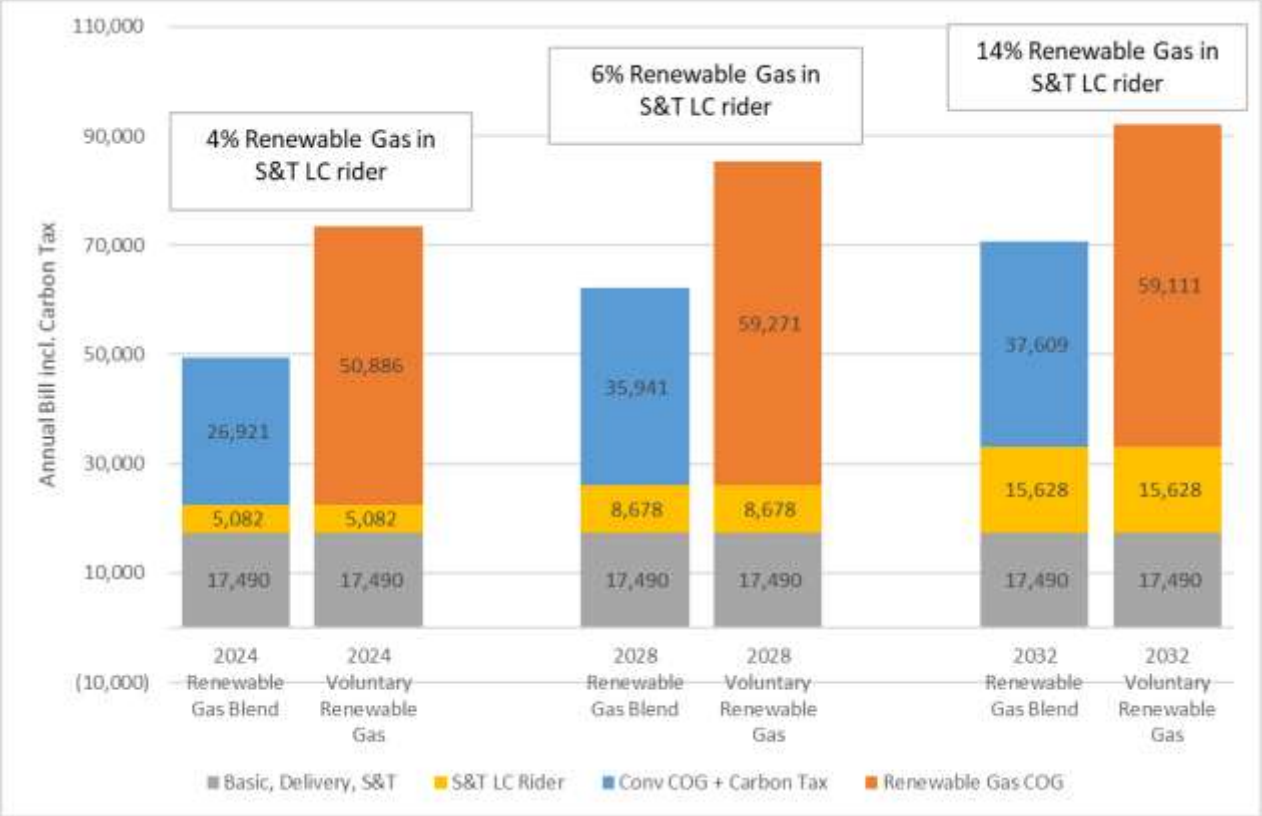
Figure 8-5: Annual Bill for Rate Schedule 2



For RS 2, FEI used a UPC of 332.4 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. FEI used the average of 24 percent for elected Renewable Gas for the voluntary customer's bill. The voluntary customer's bill is higher than new residential and existing residential because of the elected percentage of Renewable Gas which carries a $7 per GJ premium as discussed in Section 8.4.1. All else equal, a non-voluntary RS 2 small commercial customer's bill will increase from approximately $4,915 in 2024 to $6,830[116] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

[115] The increase equates to 35 percent over 8 years or a 3.8 percent compound annual growth rate.
[116] The increase equates to 39 percent over 8 years or a 4.2 percent compound annual growth rate.

Figure 8-6: Annual Bill for Rate Schedule 3



For RS 3, FEI used a UPC of 3,555.5 GJs per year based on the 2021 approved forecast. As can be seen in the figure above, all customers receive some portion of their gas through the S&T LC rider and all pay the same cost for that portion of their Renewable Gas. FEI's experience has shown that voluntary customers in RS 3 elect to take 100 percent of their gas as Renewable Gas; consequently, the voluntary customer's bill is markedly higher than new residential and existing residential because of the high elected percentage of Renewable Gas which carries a $7 per GJ premium. All else equal, a non-voluntary RS 3 large commercial customer's bill will increase from approximately $49,490 in 2024 to $70,730[117] in 2032 from acquisition of supply, increases in carbon tax, and proposals in this Application.

8.7 *MITIGATING RISKS OF DEMAND AND SUPPLY BALANCING*

As discussed in Section 6.3, FEI will increase its Renewable Gas supply to respond to provincial policy directives. These supply volumes are expected to be greater than the demand FEI anticipates from Renewable Gas Connections and Voluntary Renewable Gas customers.

FEI will manage the variability in both supply and demand to mitigate risks. As FEI's sources of Renewable Gas become more diversified, the supply side risk is reduced. Supply mitigation strategies are described in Section 6.4. To manage the variations in demand to ensure both the

[117] The increase equates to 43 percent over 8 years or a 4.6 percent compound annual growth rate

continuity of the service and the integrity of the offerings, FEI may use several options. These include the following, which are applicable to the Voluntary offerings:

- Explore the potential to increase available supply;
- The use of purchased carbon offsets;
- Pause new enrolments into the Voluntary Program; and
- Service curtailment.

In the event that FEI needs to use carbon offsets a third party broker is used to source and purchase carbon offsets on FEI's behalf. Using carbon offsets as a substitute for Renewable Gas requires the purchase of two separate components:

- The first is the actual offset component which includes the environmental attributes associated with the emissions reductions from where the offset was generated. The purchase is typically made based on the emissions reductions equivalent to one GJ of 20 biomethane.
- The second requires the purchase of one GJ of conventional natural gas to which the environmental attributes at attached. An equal amount of conventional gas is transferred from the MCRA at the prevailing commodity rate.

Combining these two components creates a GJ of natural gas with equivalent environmental attributes to one GJ of biomethane. In comparison, when FEI purchases RNG, FEI purchases the molecules of biomethane and associated environmental attributes together.

Carbon offset gas is less costly on a $/GJ basis than Renewable Gas. Based on historical purchases of carbon offsets made by FEI the price range per GJ for the carbon offset component is approximately $0.50 to $1.50. To this must be added the cost of gas transferred from the MCRA at the prevailing commodity rate. The cost of carbon tax must also be factored in, and contributes to increase the cost of carbon offset gas. Carbon offset gas is not eligible for a carbon tax credit; however, FEI provides program subscribers with the credit whether they receive Renewable Gas or carbon offset gas. This credit provided to program participants is a cost that cannot be neutralized by an offsetting reduction of taxes payable to government. The cost of carbon offset gas will be recovered from customers through the LCG Account described in Section 8.3.

As an example, in 2019 the combined cost of 1 GJ equivalent of carbon offset gas was $9.55, which includes an average market cost of $1.00 per GJ for the offset purchase, FEI's cost of conventional gas transfer, and the cost of the lost carbon tax.

While FEI will endeavour to maintain a positive inventory balance of Renewable Gas, FEI may occasionally experience a negative volume balance in the LCG Account. In such cases, FEI will address the imbalance over the following 12 to 24 months by increasing its supply of Renewable

Gas and/or limiting any increases in volumes to its voluntary customers and Renewable Gas Blend for sales customers

8.8 DISPOSITION OF EXISTING RENEWABLE GAS PROGRAM RELATED ACCOUNTS

This section describes the existing BVA Balance Transfer Account and the Unsold Biomethane Premium Deferral Account.

8.8.1 BVA Balance Transfer Account

The BVA Balance Transfer Account is currently used to capture the cost in the BVA that have not been recovered from Renewable Gas program participants and is used to set the BVA rider each year. The account was approved as part of FEI's 2015 BERC Application. Prior to the 2015 BERC Rate Application, the BERC was set to recover all costs in the BVA from participants of the Renewable Gas Program. In the 2015 Decision, the BCUC accepted FEI's proposal to set the BERC as a premium[118] to conventional natural gas plus carbon tax. Since the BERC was less than the acquisition cost of Renewable Gas,[119] there were unrecovered costs left in the BVA each year. The unrecovered costs have been transferred to the BVA Balance Transfer account each year and recovered from all of FEI's non-bypass customers by way of the BVA rider, which is a delivery rate rider.

With the proposed changes to the Renewable Gas Program in this Application, particularly the mechanism to deliver Renewable Gas to all customers through the S&T LC rider, the BVA Balance Transfer account will no longer be required. FEI will retain its use throughout 2023 to close out the balances in the BVA Balance Transfer account[120] at the end of 2022. FEI will discontinue the use of this account after this time, and propose disposition of any residual balances in a future annual review or revenue requirements application.

8.8.2 Unsold Biomethane Premium Deferral Account

In Section 4 of the 2013 Biomethane Decision, the BCUC provided general guidance on cost recovery and the establishment of a deferral account to capture cost associated with the sale or transfer of biomethane at a price below its fully allocated cost. The BCUC approved the establishment of an account to capture unrecovered costs associated with the transfer of biomethane into the UBPDA at the prevailing CCRC:

> To facilitate this recovery, the Panel approves the establishment of an "Unsold Biomethane Premium" deferral account (UBPDA) to which, in this example, $100,000 would be transferred. FEI is directed to recover any balance in the

[118] $7 premium for short term contracts less one dollar for long term contracts subject to a minimum $10 per GJ floor.
[119] Costs in the BVA included acquisition cost of Renewable Gas plus other costs discussed in Section 8.3.
[120] The BVA Rate rider, used to recover the projected 2022 ending balance of the BVA Balance Transfer account, will be calculated in FEI's Annual Review for 2023 rates.

Unsold Biomethane Premium deferral account from all FEI non-bypass customers, through a rate rider, on a timely basis.

With the proposed changes to the program, particularly the Renewable Gas Blend to all sales customers through the S&T LC rider, the UBPDA will no longer be required. The UBPDA has never been used so does not have a balance in the account. Consequently, FEI will no longer require this deferral account effective December 31, 2022.

8.9 *SUMMARY*

FEI considers the proposed regulatory treatment and rate setting mechanisms appropriate and reasonable. FEI has reviewed all rate schedules and identified where changes are required and where new rate schedules are needed to implement the proposals in the Application. FEI's amended and new rate schedules proposed for approval are provided in Appendix D-2. The next section provides details of the implementation, administration and reporting of the Renewable Gas Program.

9. PROGRAM EXPENDITURES, IMPLEMENTATION, AND REPORTING

9.1 *INTRODUCTION*

In this section FEI describes the implementation of the proposed tariffs, the administration and management of the Renewable Gas Program, including education and awareness requirements, and FEI's reporting to the BCUC. This section is organized as follows:

- Section 9.2 describes FEI's plan to implement the proposed tariffs and associated expenditures.
- Section 9.3 describes FEI's administration and management of the Renewable Gas Program
- Section 9.4 describes FEI's plans to educate customers and the public about Renewable Gas.
- Section 9.5 outlines FEI's proposed approach to reporting to the BCUC regarding the Renewable Gas Program.
- Section 9.6 describes FEI's proposal to have a review of the Renewable Gas Program five years after the BCUC's final decision in this proceeding.

9.2 *TARIFF IMPLEMENTATION PLAN*

Assuming a favourable final decision in this proceeding, FEI will implement the proposed Renewable Gas Program changes in two phases.

In the first phase, FEI plans to implement Renewable Gas Connections service for residential dwellings and updates to the Voluntary Renewable Gas offerings. FEI will require up to five months to implement these service, and will need to coordinate their implementation with its quarterly gas cost filings. Therefore, to be effective on the beginning of the first quarter[121] that is at least 5 months after the BCUC's final Order in this proceeding. In Appendix D-2 (Tariff pages), FEI provides proposed tariff changes to its General Terms and Conditions (GT&Cs), its existing rate schedules for Voluntary Renewable Gas offerings, and new rate schedules for the New Residential Connections service.[122]

In the second phase, FEI will implement the Renewable Gas Blend to the gas supply for sales customers by January 1, 2024. Tariff changes for the implementation of this service will be filed for approval three months prior to actual implementation.

[121] i.e., January 1, April 1, July 1, or October 1, in order to align with FEI's quarterly gas cost filings.
[122] In the tariff pages, Voluntary Renewable Gas Service is referred to as Low Carbon Gas Service, Vehicle Low Carbon Gas Service, and Transportation Low Carbon Gas service, and New Residential Connections are referred to as Permanent Connections Low Carbon Gas Service.

Implementation for Renewable Gas Connections for residential customers will require changes to FEI's internal and customer-facing systems, which FEI estimates will take three months to complete. FEI expects the required changes to include changes to the following systems: Customer Attachment Front End (CAFÉ) and reconfiguring billing rates in SAP, SAP's Interaction Client (IC) Web application, Salesforce, and Account Online. During the three-month implementation period, FEI will conduct user acceptance testing (UAT) to ensure systems are functioning as expected before go-live. FEI will also create training materials for Customer Service's billing and contact centre staff, which will be put together during the system updates and testing period. Material preparation includes developing key messaging for staff for handling customer enquiries and training material for system changes and process changes. Training of staff will take a further four to six weeks.

Implementation of the Renewable Gas Blend for sales customers will require updates to billing for all of FEI's sales customers and updates to FEI's systems. User testing and training of customer service staff will also be completed. FEI will begin this work in June 2023 to be ready for implementation on January 1, 2024.

FEI estimates total costs of $208 thousand in the first phase and $185 thousand in the second phase for the implementation work described above. This includes system updates (capital IT costs) of $119 thousand in the first phase and $96 thousand in the second phase, which FEI will fund from its approved IT capital expenditures under its 2020-2024 Multi-Year Performance Based Ratemaking Plan. FEI will record the remainder of the costs, for customer service training, in the LCG Account.

9.3 *PROGRAM ADMINISTRATION AND MANAGEMENT*

The administration and management of the Renewable Gas Program requires resources to carry out a number of activities, of which the primary ones are noted below. Given the relatively small scale of the program to date, a portion of one employee's time has been sufficient to carry out these activities. As FEI expands the Renewable Gas supply and implements the proposals in this Application, FEI will need increased resources to administer and manage the program.

In particular, FEI will require a more robust method of forecasting and tracking supply and demand balances. Today, with the small number of suppliers and voluntary customers in the program, FEI manages supply and demand balances manually in a spreadsheet. As the supply volumes and quantity of customers grow, FEI will need to develop and implement an integrated software solution, leveraging the capabilities of existing systems to the extent possible. Based on FEI's initial estimate, FEI believes this scope of work can be accommodated in existing IT capital budgets for the years 2022 and 2023.

As the Renewable Gas Program expands and becomes more complex to manage, FEI will need to manage the forecasting and reporting for the expanded program, including such activities as:

- Forecasting Renewable Gas demand for the year;

- Matching demand to supply;
- Forecasting Baseline Renewable Gas;
- Preparing management reporting;
- Accounting for environmental benefits and carbon tax credits; and
- Preparing regulatory reporting.

Although FEI estimates that in the near term (two to three years), it will require some additional labour resources as the Renewable Gas Program ramps up, over time there will be synergies with FEI's current Gas Supply department that can be leveraged. For any incremental labour resources required during the remaining two years (2023 and 2024) of the Multi-year Rate Plan (MRP), FEI will provide forecasts of these amounts outside the MRP formula for review by the BCUC in the annual review proceedings.

9.4 *CUSTOMER EDUCATION AND AWARENESS*

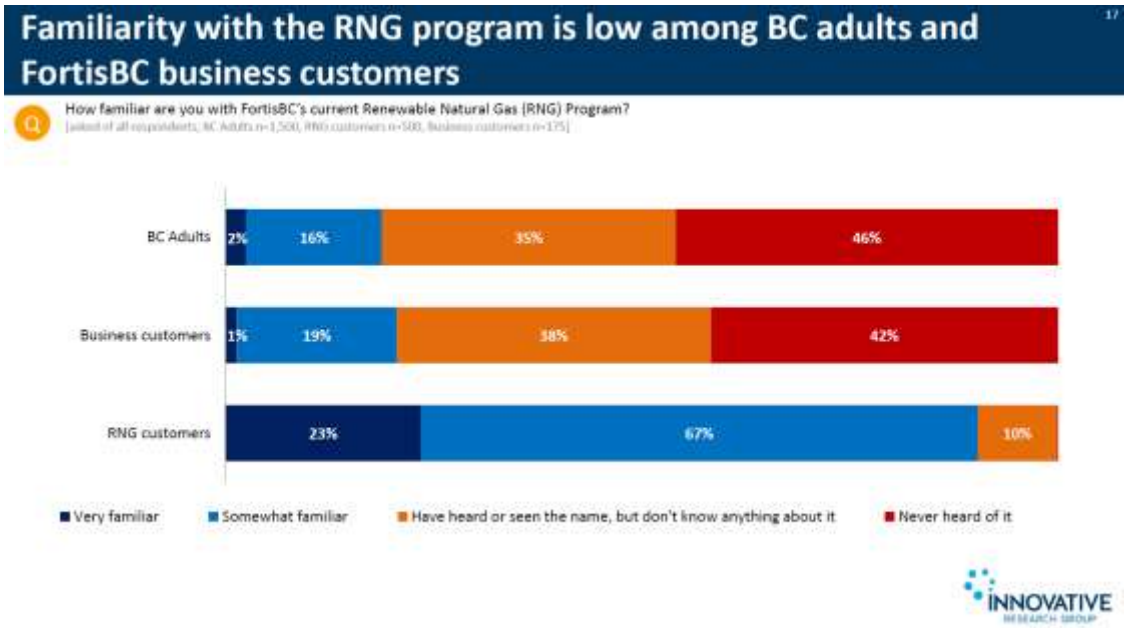
FEI recently resumed its customer education and awareness spending in 2021 and expects to increase these expenditures over the coming years as the Renewable Gas Program expands and FEI implements the proposals in this Application. FEI proposes to forecast its customer education and awareness spending in its annual review or revenue requirement applications, and record actual expenditures as FEI O&M outside the current MRP formula.

In past years, FEI focused its customer education and awareness spending on educating the public about Renewable Gas and encouraging customers to sign up for the program. As per Order G-For ex-16 on the 2015 BERC Application, the Panel supported expenditures on customer awareness and education to inform customers of the Renewable Gas Program. At that time, the expenditures were anticipated to be in the range of $300 thousand per year. Given the limited nature of the program at that time, this amount was reasonable. FEI halted the customer education and awareness spending in 2019 at the time it ceased accepting enrollments in the Renewable Gas Program, when demand exceeded the available supply. With the increase in supply and the re-opening of the program in October 2021, FEI resumed its customer education and awareness efforts and forecasts costs of $340 thousand for 2021.

Through interactions in the development of this Application, stakeholders and customers commonly expressed that they lacked awareness about Renewable Gas. For example, builders and developers informed FEI that they did not know how Renewable Gas is made, how it is carbon neutral, and how it benefits the environment. This sector also has a lack of awareness about the progress that FEI has made in obtaining Renewable Gas supply and maintains some doubt about FEI's' ability to achieve its Renewable Gas supply targets. FEI's commercial Key Account Managers also continue to receive questions from their customers about what Renewable Gas is and how it is made.

Figure 9-1 below illustrates the results of our survey of residential and small business customers on the topic of familiarity with the Renewable Gas Program.

Figure 9-1: Familiarity with the RNG Program is Low[123]



As result of this lack of awareness, knowledge and, in many cases, a lack of confidence in Renewable Gas, the utility is recommending a phased educational awareness approach. This will help drive public understanding of Renewable Gas so British Columbians can see how FEI is contributing to a cleaner BC and how they can participate in reducing their GHG emissions.

FEI's phased educational awareness approach will include paid media and leveraging media channels required to reach target audiences, including: television, digital, radio and advertisements in billboards and transit shelters. Additionally, FEI will undertake community education outreach to ensure British Columbians have the information they need to make informed decisions about their future energy choices. Increased funding will be required in the early years of the awareness campaign to ensure the intended messaging reaches target audiences. As such, the campaign will begin with a broad launch to introduce Renewable Gas and raise initial awareness, followed by smaller campaigns over longer periods of time in later years. For any incremental educational awareness funding required during the remaining two years (2023 and 2024) of the MRP, FEI will provide forecasts of these amounts outside the MRP formula for review by the BCUC in the annual review proceedings.

[123] Survey of Residential and Small Business Customers, refer to page 17, Appendix B-1.

9.5 *FEI WILL CONTINUE TO REPORT TO THE BCUC*

FEI currently provides information about the Renewable Gas Program to the BCUC through the following reports and filings:

1. As projects are developed, biomethane purchase agreements are filed with the BCUC for acceptance;
2. Each year, FEI provides the BCUC with a BVA Annual Status Report, which provides information on the quantities and costs of biomethane purchased, and quantities and prices for biomethane sold;
3. In its annual review materials, FEI reports on the revenues, capital and O&M related to its biomethane projects to be recovered in rates, provides a continuity of forecast, actual and variance (actual - forecast) biomethane (BERC) revenues and volumes sold by rate schedule and type of contract, and seeks approval of the BVA delivery rate rider; and
4. FEI copies the BCUC on its Annual Report under Section 18 of the *Clean Energy Act* to the Ministry of Energy, Mines and Low Carbon Innovation (EMLI) for biomethane projects that are undertaken through the GGRR.

In addition, BERC rates are adjusted annually as part of the Q4 gas cost report with the rate rider set in the Annual Review process (as indicated above). FEI will continue with this reporting, with some changes, as described below.

Going forward, as projects are developed, FEI will continue to file biomethane purchase agreements, or other low carbon energy applications, with the BCUC for acceptance or approval. With the most recent update to the GGRR and the increases in supply, more efficient approaches to reviewing supply contracts can be explored such as including the Renewable Gas supply contracts in the Annual Contracting Plan, which is filed for review and acceptance by the BCUC once each year.

The setting of rates for the LCG Charge and the S&T LC rider will be different than the mechanism and process currently in place. As noted in Section 8.4, the LCG Charge for sales customers (except for NGV customers) will be reviewed and updated quarterly as part of the regular gas cost quarterly reporting. As the CCRC or the carbon tax changes, these changes will affect the proposed LCG Charge for sales customers and as such must be updated to align with the CCRC and carbon tax charges.

The S&T LC rider will be updated annually. FEI will file an application with the BCUC to set the S&T LC rider approximately one month in advance of FEI's fourth quarter gas cost report to provide adequate time for BCUC review and proceeding, if necessary. This will set the S&T LC rider, but also the volume of Renewable Gas Blend that will be delivered to sales customers as part of their gas supply. Through this process FEI will also apply to set the LCG Charge for NGV customers and T-Service customers.

The BVA Annual Status Report is used to report on unsold volumes of Renewable Gas, explanations of major variances from forecast for renewable gas costs incurred and renewable gas costs recovered, and sets out production and acquisition costs and transfers to the BVA Balance Transfer Account. While the transfers to the BVA Balance Transfer Account process will no longer occur and be replaced through the setting of the S&T LC rider as discussed above, this report continues to be of value as the mechanism by which FEI will report acquisition costs and variances between forecast and actual receipts and sales.

Reporting to the province is continuing at this point but may change in the future. FEI will continue to copy the BCUC on its reports to the provincial government.

9.6 *RENEWABLE GAS PROGRAM REVIEW AFTER FIVE YEARS*

In order to assess the success of the proposed changes to the Renewable Gas Program sought in this Application, FEI proposes to file a Program review five years from the date of the BCUC final decision in this proceeding, given that it will be January 1, 2024 before all of FEI's proposals are fully implemented, and there will need to be adequate time to review and collect information on the Program success. The review will provide an assessment of the revised Renewable Gas Program and whether any further changes or adjustments are needed. This review will include the following components:

- A review of customer feedback on the various components of the Program;
- Annual actual supply versus annual projected supply;
- Annual actual Renewable Gas demand versus annual projected demand;
- Forecast future Renewable Gas supply;
- An assessment of how the Renewable Gas Program has performed against the objectives of the Program; and
- Potential recommended changes to the Renewable Gas Program.

9.7 *SUMMARY*

To successfully implement the proposed changes to the Renewable Gas Program, additional supporting activities such as the implementation of the proposed tariffs and the administration and management of the Renewable Gas Program are necessary. Along with the annual reporting measures described in this section, FEI is proposing to file a Renewable Gas Program Review five years from the BCUC decision. This allows both the Renewable Gas Connections and Renewable Gas Blend to be in place for three full years before developing the Review application.

10. CONSULTATION AND ENGAGEMENT

In this section, FEI provides details of its public consultation and engagement for the Application, including the process, the stakeholders with whom FEI engaged with through this process, the key issues and common themes that emerged, and FEI's responses to the issues raised. FEI engaged with 176 individual stakeholders, including interveners and interested parties, industry, associations, an environmental non-governmental organization, community associations, local and provincial governments. The subset of industry engaged include: builder/developers, energy consultants, trades, building and trades associations, manufacturers and a Renewable Gas supplier. Overall, of those engaged, 85 stakeholders expressed support for FEI's Application in form of a letter. FEI also received a letter of support from the Musqueam Indian Band for a total of 86 letters of support included in Appendix F.

The section is organized as follows:

- Section 10.1 describes FEI's two-phase public consultation process for the Application.
- Section 10.2 sets out the list of 85 stakeholders who provided letters in support of the Application and the common themes that emerged in support of the Application.
- Section 10.3 describes the feedback received from stakeholders and how FEI addressed the questions and comments raised.
- Section 10.4 describes the letter of support of the Application from the Musqueam Indian Band

10.1 *PUBLIC CONSULTATION PROCESS*

Public consultation is an integral component of FEI's application development process and provides an opportunity for stakeholders to ask questions, provide input and inform FEI's proposals.

FEI consulted with a total of 176 stakeholders primarily through one-on-one discussions, and scheduled group meetings from members of organizations. In addition, FEI took the opportunity to gather feedback on the proposals in this Application from the Long Term Gas Resource Plan (LTGRP) Advisory Group during their session. The Renewable Gas Comprehensive review slide deck for the group presentation to the LTGRP Advisory Group is included as Appendix E.

FEI conducted consultation on the Application in two phases. FEI's first phase was aimed at gathering early stage feedback from stakeholders who had experience or interest in Renewable Gas. This helped FEI in arriving at solutions and also helped FEI respond to the BC at the end of June 2021 regarding the scope of the Application. FEI's second phase was oriented towards gathering more specific feedback from a broad range of stakeholders on the specific concepts that FEI developed for the Application. Each phase is described in more detail below.

10.1.1 Phase One (Early Stage Feedback)

FEI conducted the first phase of its public consultation process in the first half of 2021. In this phase, FEI reached out to stakeholders that had expressed an interest in the Renewable Gas Program and/or were further along in their efforts to find options to reduce emissions, as well as interveners[124] and two of the interested parties[125] who registered in the proceeding to review the BERC Assessment Report. The list of 41 stakeholders consulted during this phase is provided in Table 10-1 below.

Table 10-1: Stakeholders Consulted in Phase One

Stakeholder Group	Stakeholder
Interveners /Interested Parties	Absolute Energy BC Sustainable Energy Association (BCSEA) Commercial Energy Consumers Associations of BC (CEC) Movement of United Professionals (MoveUp) Residential Consumer Intervener Association (RCIA) Shell Sentinel Energy Management
Industry /Associations/ Environmental Non-Government Organization	AME Group BC Trucking Association Bernhardt Contracting Building Owners and Managers Association (BOMA) Canadian Institute of Plumbing & Heating (CIPH) Dialog E3 EcoGroup Engineers and Geoscientists BC (EGBC) Focal Engineering Homebuilders Association of Vancouver (HAVAN) Landlord BC Limona Naikoon Onni Pembina Institute RDC Fine Homes Ryan Heating and Air Conditioning SES Consulting Thermal Environmental Comfort Association (TECA)
Local Government/ Community Association	Capital Regional District (CRD)[1] City of Burnaby City of Coquitlam City of Surrey City of Vancouver

[124] Unfortunately, BC Public Interest Advocacy Centre was unavailable at this time, but was available during the second phase of consultation, as discussed below in Section 10.1.2.

[125] FEI reached out to one of the three interested parties in this proceeding by way of the large volume customer interviews, as discussed below in Section 5.5.

Stakeholder Group	Stakeholder
	City of Victoria[1] Climate Caucus Community Energy Association (CEA) District of Saanich[1] District of Squamish Metro Vancouver Township of Langley
Provincial Government	Building and Safety Standards Branch, Ministry of Attorney General and Responsible for Housing (BSSB) Climate Solutions Council Ministry of Energy, Mines and Low Carbon Innovation

Notes:

[1] *FEI informed these municipalities of the company's Renewable Gas Comprehensive Review filing.*

FEI held one-on-one conversations or meetings with each stakeholder to allow for thoughtful and engaged discussions tailored to meet the needs and interests of each stakeholder. Due to health restrictions associated with the COVID-19 pandemic, FEI conducted many of these interactions with stakeholders virtually or over the telephone.

Through these interactions FEI provided:

- An overview of the two stage process for the BERC Rate Assessment Report process[126] and FEI's intent to file an Application later in the year proposing revisions to the existing Renewable Gas Program;
- Background and history of the Renewable Gas Program; and
- Information on the key areas being considered for inclusion within the Application to the BCUC regarding the Renewable Gas Program, including supply forecast, policy environment, customer expectations, service offerings and cost recovery.

FEI sought feedback on the overall approach, content and any gaps in the contemplated scope. Comments, feedback and questions posed by stakeholders are set out in Section 10.3 along with FEI's responses. This feedback helped FEI prepare its letter to the Commission in June 2021.

10.1.2 Phase Two (Feedback on Application Concepts)

FEI conducted phase two of the consultation process in the latter half of 2021. This phase of public consultation provided information beyond that of the first phase, as FEI shared details of the proposals FEI was planning to include in the Application. Except for the one large group presentation to the LTGRP Advisory Group, these sessions were held as one-on-one

[126] Early in the development of this Application, FEI had initially referred to the 100 percent renewable gas service for new residential connections as "Build Green". For clarity, in this Application, the proposed service is referred to as "Renewable Gas Connections".

conversations or meetings with a group of individuals representing the government, organization or association. Many engagement interactions continued to be held virtually or over the telephone; however, as the provincial health authority started their phased relaxation of COVID-19 pandemic restrictions, some more recent engagement interactions began to take place in-person.

During this phase, FEI identified stakeholders with an interest in participating in the Renewable Gas Program, including:

- Those that participated in, or expressed a desire to participate in, Renewable Gas Program;
- Those interested in meeting provincial and municipal climate policy goals;
- Those that expressed an interest in finding solutions to meet building-level emissions regulations such as: builders/developers, energy consultants, and manufacturers; and
- Interveners and interested parties registered in the Stage 1 review of the BERC Rate Assessment Report, which concluded in August 2021.

As noted above, in the second phase of public consultation, FEI provided details of the proposals outlined in this Application, including one-on-one discussions with a total of 155 stakeholders. These stakeholders are listed in Table 10-2 below.

Table 10-2: Stakeholders Consulted in Phase Two

Stakeholder Group	Stakeholder
Interveners /Interested Parties	Absolute Energy BC Public Interest Advocacy Centre (BCPIAC) BC Sustainable Energy Association (BCSEA) Commercial Energy Consumers Associations of BC (CEC) Movement of United Professionals (MoveUp) Residential Consumer Intervener Association (RCIA) Shell Sentinel Energy Management Gary (P'asalath) Johnson
Industry /Associations/ Environmental Non-Government Organization	3rd Generation Homes Ador Properties Group Align West Homes Ltd Archie Johnstone Plumbing & Heating Ltd. Avista Utilities[1] BC Business Council[1] British Columbia Restaurant and Foodservices Association BC Greenhouse Growers' Assn. Beedie Belledune Homes Ltd Boehm Construction Bosa Development

Stakeholder Group	Stakeholder
	Bryans Mechanical
	Building Owners and Managers Association (BOMA)
	Canadian Home Builders Association - British Columbia
	Canadian Home Builders Association - Central Interior
	Canadian Home Builders Association - Central Okanagan
	Canadian Home Builders Association - Fraser Valley
	Canadian Home Builders Association - Northern BC
	Canadian Home Builders Association - South Okanagan
	Canadian Home Builders Association - Vancouver Island
	Canadian Institute of Plumbing & Heating (CIPH)
	Clean Energy Association of BC[1]
	Clear Creek Projects
	Cressey Development Group
	E3 EcoGroup
	Enbala[1]
	EnerTech Solutions Ltd
	Forte Projects Ltd
	FoxRidge Homes
	Fulcrum Development Inc
	Gable Craft Homes
	Gordon N Gordon Interiors Ltd
	Greenlane Renewables
	Guillevin Electrical
	Henderson-Edwards Developments LTD
	HKR Builders Residential and Custom Homes
	Homebuilders Association of Vancouver (HAVAN)
	Homes by Creuzot Construction Ltd
	Homex
	Hearth, Patio & Barbecue Association of Canada (HPBAC)
	Icon Homes Ltd
	Infinity Properties
	J Zsiros Contracting Ltd
	JRS Engineering Building Envelope Consultants
	Large and Co
	Lee's Sheet Metal (2007) Ltd
	Manufactured Housing Association of BC
	Maskeen
	Mastercraft Construction
	Melcor
	Michael Geller & Associates Ltd
	Miles Industries Ltd./Valor
	Millennium Group
	Miracon Development
	Mortise
	Navien Inc

Stakeholder Group	Stakeholder
	Northern Alberta Institute of Technology[1]
	Northwest Gas Association[1]
	NW Natural[1]
	Onni
	Orchards Walk Developments
	Panatch Group
	Pembina Institute
	Pennyfarthing
	Pheasant Hill Homes Ltd
	PJR Holdings Ltd
	Platinum Developments
	Pollution Probe[1]
	Porte Communities
	Puget Sound Energy[1]
	Quadra Homes
	Raicon
	Regent International
	Rinnai America Corporation
	Ryan Heating and Air Conditioning
	Sakura Developments LTD
	Savannah Heating Products Ltd.
	Sendero Canyon
	SFU Renewable Cities[1]
	Shawnigan Lake Developments Ltd
	Sian Group
	Solterra
	Streetside Developments (BC) Ltd
	Talus Green Building Consulting
	Thind Properties Ltd
	TLH Developments Inc
	Trestle Ridge Upper Mission
	Tri-AMM Developments Corporation
	University of Victoria[1]
	Urban Analytics
	Urban Development Institute
	Urban Development Institute – Capital Region
	Vanprop Investments Ltd.
	Victoria Residential Builders Association
	Vipeq's Thermal Corkshield
	Wade Roberts Plumbing Ltd
	Westbow Construction
	Westland Living
	Wilden Construction Corp
	Yanmar Energy Systems Canada Inc.
Industry Partnerships	Andion

Stakeholder Group	Stakeholder
Local Governments	City of Abbotsford[2] City of Burnaby City of Castlegar City of Delta City of Kamloops[2] City of Kelowna[2] City of Port Coquitlam[2] City of Prince George City of Surrey City of Vancouver City of White Rock City of Williams Lake[2] District of Saanich[1] Metro Vancouver Regional District of Central Kootenay (RDCK)[2] Regional District of Central Okanagan (RDCO)[2] Regional District of Kootenay Boundary (RDKB)[2] Regional District of Okanagan-Similkameen (RDOS)[2] Township of Langley
Provincial Government	Building and Safety Standards Branch, Ministry of Attorney General and Responsible for Housing (BSSB) Climate Action Secretariat Ministry of Energy, Mines and Low Carbon Innovation

Notes:

[1] *These stakeholders were part of the LTGRP advisory group session held on December 1, 2021.*

[2] *FEI met with these municipalities on a variety of topics and included FEI's Renewable Gas proposals as part of those discussions. FEI would characterize these interactions as municipalities being informed of the Renewable Gas program and filing, rather than an in depth consultation.*

FEI discussed the following key topics with stakeholders:

- An overview of the regulatory process before the BCUC;
- Background and history of the Renewable Gas Program;
- Changes in the policy environment and customer expectations
- FEI's plans to grow the Renewable Gas supply
- Information on key proposals included in the Application,
- The anticipated timing for filing the Application.

FEI solicited feedback on the proposals contemplated in the Application. Comments, feedback and questions provided by stakeholders are set out in Section 10.3, along with FEI's responses.

10.2 BROAD STAKEHOLDER SUPPORT FOR THE APPLICATION

10.2.1 Letters of Support for the Application from Stakeholders

As listed in Table 10-3 below, FEI has received at total of 85 letters of support, including:

- 81 stakeholders from industry, associations and ENGO
- One from an industry partnership;
- One from an interested party; and
- Two from local governments.

These stakeholders are geographically widespread, including stakeholders from the Lower Mainland, Vancouver Island, the Interior and the Northern regions of BC.

Table 10-3: Letters of Support for this Application

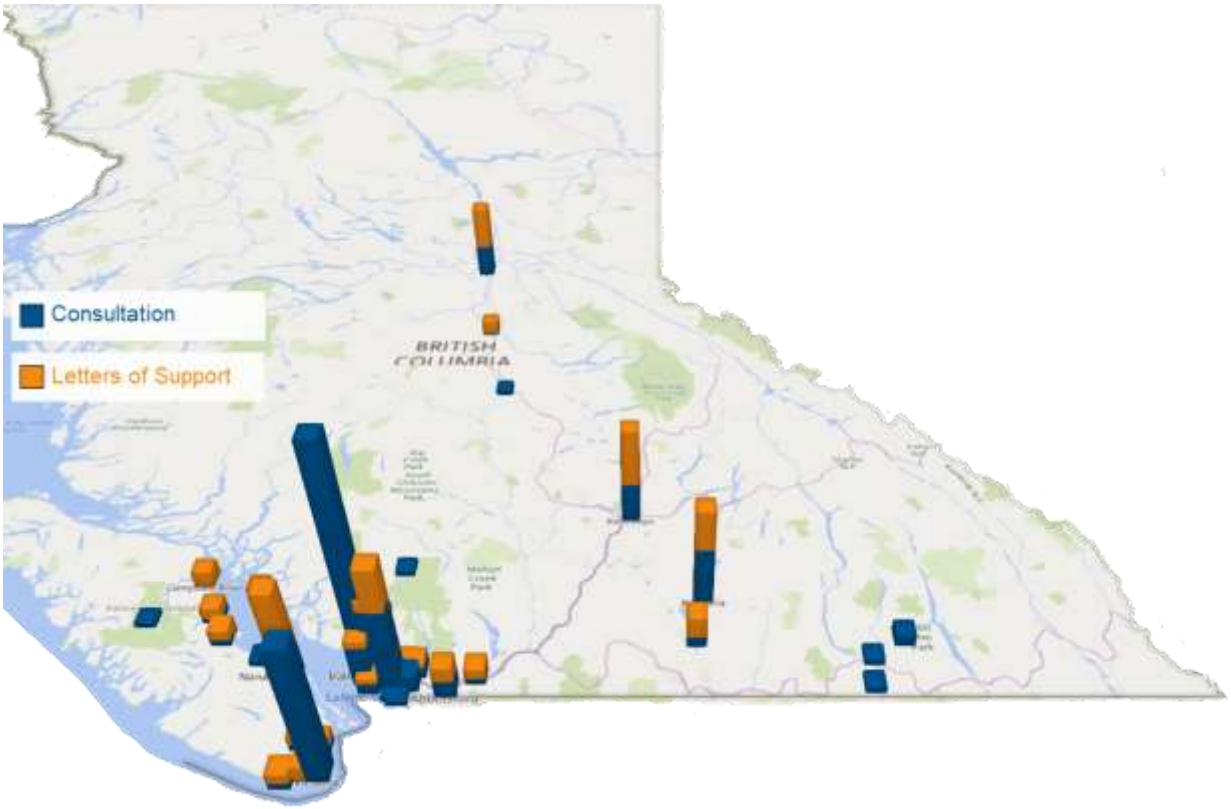
Group	Stakeholder
Industry Partnerships	Andion
Industry /Association/ Environmental Non-Governmental Organization	3rd Generation Homes Ador Properties Group Align West Homes Ltd Archie Johnstone Plumbing & Heating Ltd. BC Restaurant & Foodservices Association Beedie Belledune Homes Ltd Boehm Construction BOSA Development Bryans Mechanical Canadian Home Builders Association - Central Interior Canadian Home Builders Association - Central Okanagan Canadian Home Builders Association - Fraser Valley Canadian Home Builders Association - Northern BC Canadian Home Builders Association - South Okanagan Canadian Home Builders Association - Vancouver Island Clear Creek Projects Cressey Development Group EnerTech Solutions Ltd Fortes Projects Ltd FoxRidge Homes Fulcrum Development Inc Gable Craft Homes Gordon N Gordon Interiors Ltd Greenlane Renewables Guillevin Electrical Homebuilders Association of Vancouver (HAVAN) Henderson-Edwards Developments LTD

Group	Stakeholder
	HKR Builders Residential and Custom Homes
	Homes by Creuzot Construction Ltd
	Homex
	Hearth, Patio, & Barbecue Association of Canada (HPBAC)
	Icon Homes Ltd
	Infinity Properties
	J Zsiros Contracting Ltd
	JRS Engineering Building Envelope Consultants
	Large and Co
	Lee's Sheet Metal (2007) Ltd
	Manufactured Housing Association of BC
	Maskeen
	Mastercraft Construction
	Melcor
	Michael Geller & Associates Ltd
	Miles Industries Ltd./Valor
	Millennium Group
	Miracon Development
	Mortise
	Navien Inc.
	Orchards Walk Developments
	Panatch Group
	Pennyfarthing
	Pheasant Hill Homes Ltd
	PJR Holdings Ltd
	Platinum Developments
	Porte Communities
	Quadra Homes
	Raicon
	Regent International
	Rinnai America Corporation
	Ryan Heating and Air Conditioning
	Sakura Developments Ltd
	Savannah Heating Products Ltd.
	Sendero Canyon
	Shawnigan Lake Developments Ltd
	Sian Group
	Solterra
	Streetside Developments (BC) Ltd
	Talus Green Building Consulting
	Thind Properties Ltd
	TLH Developments Inc
	Trestle Ridge Upper Mission
	Tri-AMM Developments Corporation
	Urban Development Institute – Capital Region

Group	Stakeholder
	Vanprop Investments Ltd. Victoria Residential Builders Association Vipeq's Thermal Corkshield Wade Roberts Plumbing Ltd Westbow Construction Westland Living Wilden Construction Corp Yanmar Energy Systems Canada Inc
Interested Parties	Gary (P'asalath) Johnson
Local Governments	City of Burnaby City of Prince George

To illustrate the geographical spread of the support received throughout FEI's service territory, see Figure 10-1. The Figure shows the location of FEI's consultation efforts and for those who provided letters of support, the location from which they generally operate or do business.

Figure 10-1: Support is Spread across FEI's Service Territory



10.2.2 Common Themes Supporting the Application

In discussions with stakeholders, and based on the comments made in the letters provided in support of the Application, FEI identified the following key themes supporting the Application:

- Stakeholders are seeking energy choice, including Renewable Gas.
- Stakeholders support providing 100 percent Renewable Gas for new residential service connections.
- Stakeholders support leveraging the existing energy system, reflecting the associated efficiency and resiliency benefits.
- Stakeholders are conscious of affordability of energy alternatives and value the choice of Renewable Gas.
- Stakeholders are seeking access to energy choices that meet their needs and those of their customers.
- Stakeholders value environmental stewardship and sustainability.
- Stakeholders are seeking offerings that enable and encourage innovation.

Quotes from stakeholders supporting these themes are provided below.

10.2.2.1 Seeking Energy Choice that Includes Renewable Gas

Builders and developers are seeking energy choice, which includes Renewable Gas, and options when designing mechanical systems to accommodate varying climate zones across BC:

- *"We believe that builders and consumers deserve competition in the energy sector and are thrilled that FortisBC has come up with a carbon neutral option through your 100% Renewable Gas program."* – CHBA Central Interior
- *"The South Okanagan climate zone can get annual temperature fluctuations of 80 degrees. That is why it is imperative for our Builders and Energy Advisors to have options when designing mechanical systems."* – CHBA South Okanagan
- *"We need to have energy options to maintain viable communities and this includes Renewable natural gas"* – Ador Properties Group
- *"As a top goal at Westland is to enhance the communities we build in, we support choice in all innovative ways to build and recognize that renewable gas would offer an excellent energy solution that is safe, reliable and affordable for home owners."* – Westland Living
- *"We see RNG as a key ingredient to a clean energy mix and a carbon neutral future in residential living."* – Wilden Construction Corp
- *"In order to continue building innovative homes in British Columbia that meet environmental and fiscal objectives, we see FortisBC's Renewable Gas as an excellent option that not only help combat climate change but also provide a source of safe, affordable and reliable, carbon-neutral energy"* – Regent International Developments
- *"One opportunity, in the advanced stages of development, is a good waste to energy facility in partnership with Semiahmoo First Nation. The Facility will address a short fall in*

organics waste processing in the region and is expected to provide significant financial returns to the Nation and its members. In addition, the project will enable the construction of a natural gas supply line to the Semiahmoo reserve lands without requiring additional capital investment on the part of the nation. The project will also enable the construction of roads and utility infrastructure on undeveloped portions of the reserve, facilitating future industrial/commercial development opportunities for the Nation. Semiahmoo's long term aspiration is that the availability of energy and economic opportunity will allow more of the Nation's members to return to their traditional lands" – Andion North America Limited

10.2.2.2 Support for Providing 100 Percent Renewable Gas for New Residential Connections

There is support for a new 100 percent renewable gas tariff for all new residential connections at the proposed pricing, as it supports industry, affordability and climate objectives:

- *"We support Fortis's proposal of the tariff on renewable natural gas given the carbon neutral benefits it provides along with application for use in supporting industry and sustainable growth."* – Beedie
- *"The use of renewable gas, which has the lowest emissions factor, takes this one step further by allowing our gas products to become carbon neutral. As a result, our efficient gas-powered heating and cooling solutions work with all building types. We believe that FortisBC's renewable gas application would help the adoption of innovative technologies such as gas fired heat pumps and combined heat and power units (CHP)."* - Lee's Sheet Metal (2007) Ltd.
- *"I recently learned about FortisBC's proposed carbon neutral option through your 100% Renewable Gas program which would seem to be a highly desirable alternative to the use of electric energy in those communities and buildings which are required to be fossil fuel-free"* - Michael Geller & Associates Ltd.
- *"The Fortis Build Green program*[127] *offers factories and home owners additional options in developing affordable overall home manufacturing strategies for a more sustainable building, and home operations."* – Manufactured Housing Association of B.C.
- *"Offering renewable gas to new homes through a proposed RG Rate class by FortisBC will allow new buildings to permanently stay on this resilient and environmentally friendly energy source while meeting carbon emission reduction targets."* - Regent International Developments
- *"The proposal will maintain choice and affordability in the market place for all builders and developers like ourselves and for our home buyers, while helping the government to meet*

[127] Early in the development of this Application, FEI had initially referred to the 100 percent renewable gas service for new residential connections as "Build Green". For clarity, in this Application, the proposed service is referred to as "Renewable Gas Connections".

its climate objectives, regardless of where the GHGI metrics are set" - Orchards Walk Developments

- *"I am excited about the prospect of 100% Renewable gas that would addresses climate concerns while maintaining affordability and choice for builders and homeowners."* - Henderson-Edwards Dev. Ltd
- *"This will help the government meet its climate objectives, regardless of where the GHGI metrics are set"* - HKR Builders Ltd.

10.2.2.3 Resiliency and Efficiency Benefits of Leveraging the Existing Energy System

Stakeholders recognize the benefits of using the existing gas infrastructure from a resiliency and efficiency perspective:

- *"Allowing new homes to utilize the resilient gas infrastructure with renewal gas offers customers choice in their energy needs. As a result, our customers will reduce greenhouse gas emissions while simultaneously enjoying our gas appliances"* - Rinnai America Corporation
- *"Our ever-increasing demand on our electrical grid with larger homes, working from home and fast charging vehicles etc., will certainly challenge our infrastructure and affordability for our new homes and old homes alike."* – Align West Homes Ltd.
- *"I personally feel that using all of any one utility is a mistake, as any glitch in the system could cause serious issues. Especially in the dead of winter."* - Icon Homes Ltd.
- *"Renewable Gas is compatibility with all "traditional" natural gas and/or electric energy systems and will help builders optimize and diversify energy sources, allowing the best combinations of fuel types and technologies that support affordability, reliability, and resiliency of all carbon-neutral energy that power BC's new homes and buildings."* – Pennyfarthing Group

10.2.2.4 Managing the Affordability of Energy Alternatives

Stakeholders are looking for energy choices, such as Renewable Gas, which ensure affordability and value the availability of lower-cost energy alternatives:

- *"The removal of choice for industry and consumers can directly impact affordability and may have a ripple effect, creating further issues down the road."* – CHBA Central Okanagan
- *"This provides housing affordability by providing builders additional design options and lower cost alternatives to other options"* – Raicon Developments Inc.
- *"Relying purely on electricity for our energy is not realistic nor prudent. We need choice to keep energy prices competitive"* – Quadra Homes

- *"The ability to incorporate Renewable Natural Gas into the equation of residential construction and energy management of the home, bring a welcome lower cost option to reduce emissions. These options are effective tools to achieving the provinces CleanBC objectives."* - Guillevin Electrical
- *"As a home builder, we deal directly with new home owners and they are all for energy conservation as it relates to the climate, but they also want an affordable choice."* – 3rd Generation Homes Ltd.
- *"Reducing design options could also impact manufactures and supply chains, likely increasing product pricing which is an important consideration when supply chains are often impacted. Reducing design options could also reduce the skilled labour force which could also drive up prices for product installation."* – Shawnigan Lake Developments Ltd.

10.2.2.5 Meeting the Needs of Customers

Stakeholders are seeking access to energy choices in order to meet the needs of their customers:

- *"Access to renewable natural gas provides home buyers uncompromised access to highly efficient mechanical systems such as condensing gas forced air furnaces and instantaneous gas water heaters without the ecological worry over traditional fossil fuel use. Similarly, it allows homeowners to continue using gas cooking equipment, outdoor recreation options such as barbeques and firepits, and accent features in their homes like gas fireplaces."* – Foxridge Homes
- *"As a builder this proposed tariff will allow me to continue to offer my new homebuyers a choice of energy options while continuing to work towards our zero carbon emission targets."* - Gable Craft Homes
- *"It is my hope that such a tariff would allow homebuyers as many energy choices as possible as we work towards our zero carbon emission targets."* - Large & Co.
- *"Each home we build has a gas range, gas BBQ box and a gas fireplace. All of these are expected features and major selling points in our homes. To be faced with the elimination of these options in new construction would be devastating."* - Henderson-Edwards Dev. Ltd
- *"We're developers and builders and can attest homebuyers view natural gas as a necessary utility both for heating and cooking and, most importantly, as back-up in the event of a power failure particularly in a winter storm event."* - Tri-AMM Developments Corporation
- *"The development industry is facing more and more complexity to reduce emissions, protect the environment, reach new milestones for energy efficiency all while trying to meet the demand and choice of our clients"* - Trestle Ridge Upper Mission

10.2.2.6 Environmental Stewardship and Sustainability

Stakeholders are concerned about the environment, the need to address carbon emissions, greenhouse gas intensity, and the need for environmentally friendly alternatives:

- *"As the environment is on the top of everyone thinking these days, we need to consider all cost effective and environmentally friendly alternatives"* - Homes by Creuzot Construction Ltd.
- *"… it aligns with our core values and general approach to the environment and sustainability by allowing the option for all home owners to access and participate in green alternatives without limits due to costly upgrades of their current fixtures"* – Maskeen
- *"HAVAN does acknowledge that the need to address carbon emissions, greenhouse gas intensity, and greater access to renewable fuel resources has never been more acute, and we are pleased to see as many tools as possible being brought to bear to mitigate, and ultimately reduce the negative effects of a changing climate."* - HAVAN
- *"It is important that we capture our company motto "Your Greener Path" as it is always at the forefront of the decision process on all future projects viability and specs that provides us with the reward that our organization is delivering a tangible qualify product that will serve the customer well in its qualify and performance."* - Maskeen

10.2.2.7 Encouraging Innovation

Stakeholders are seeking offerings that enable and encourage innovation, creativity and success:

- *"We believe having the ability to choose the best types of energy systems and appliances allows the construction industry to continue to build with creativity which in turn, helps drive innovation, consumer choice and affordability."* - Pennyfarthing Group
- *"The innovation under this proposal is encouraging and will ensure that builders will continue to be successful building under the BC Energy Step code with GHG requirements."* – CHBA Central Okanagan & CHBA Vancouver Island
- *"Together with this program, we look forward to playing an important role in helping British Columbia move to an affordable, low carbon, housing future."* - Manufactured Housing Association of BC

10.3 *FEEDBACK FROM STAKEHOLDERS*

In addition to the broad support for the Renewable Gas Program, FEI received a number of comments and questions from stakeholders that required FEI to undertake additional consultation. Below, FEI has identified the specific issue raised and how the issue is addressed through this Application. The questions and issues raised centre on the following key themes, which are discussed in more detail below:

- Low familiarity with biomethane (RNG) and scepticism of its' "renewable" characteristic.

- Meeting provincial and local climate policy targets, including GHGi targets for new construction
- Renewable Gas pricing and energy bill impact
- Emissions reductions for existing buildings.

10.3.1 Low Familiarity with Renewable Natural Gas, its Renewable Characteristic and Carbon Intensity

Comments Received

Some of the questions FEI received related to stakeholders' low familiarity with RNG (biomethane) as a renewable energy option and that it could be utilized with the existing gas pipeline infrastructure and gas appliances. Questions from stakeholders included:

- What is RNG?
- How is it made?
- How is it carbon neutral?
- How is it good for the environment if it is still burning a fuel, and there is still combustion?
- To receive RNG, does the appliance need to be changed?

Some stakeholders were unaware that FEI had a Renewable Gas program, while some were interested in the carbon intensity of FEI's existing RNG and how the carbon intensity of FEI's Renewable Gas will change as the utility's supply portfolio evolves (i.e., through the inclusion of hydrogen).

FEI's Response

The lack of awareness of the Renewable Gas Program is of concern for FEI. Feedback of this kind was primarily received from stakeholders in the building sector and local governments. FEI believes that, along with ongoing engagement, education and awareness regarding the Renewable Gas Program is essential. This is described in Section 9.4.

FEI provided details of how biomethane is made and that its renewable characteristic is that it is sourced from organic waste produced from everyday activities. As organic matter, such as food or cow manure, rots, it releases biogas that is then captured and purified before being injected into the gas system. Biogas comes from wastewater treatment plants, agricultural waste, landfill waste and wood waste.

Moreover, provincial reporting assesses the level of carbon intensity for energy sources such as conventional natural gas, RNG and electricity (among other energy sources). The 2020 B.C. Best

Practices Methodology for Quantifying Greenhouse Gas Emissions[128] sets out the current best practices for quantifying and reporting GHG emissions in buildings from B.C.'s provincial public sector organizations, local governments and communities. The emissions factor reported for RNG is 0.2932 $kgCO_2e/GJ$[129]. FEI will continue to work with the provincial government on emissions reporting, particularly as the portfolio of Renewable Gas expands beyond RNG and includes hydrogen.

10.3.2 Meeting Provincial and Local Climate Policy Targets, including GHGi Targets for New Construction

Comments Received

Stakeholders in the building industry expressed concern about being driven towards restrictive GHGi targets and the practical implications of having only one energy provider with a viable solution. For builder and developers, GHGi targets in buildings met only by electricity has a compounding effect of a more restricted set of design options, mechanical choices, and qualified trades. The inability to diversify their energy selection, and thereby optimize infrastructure and mechanical costs, causes the building industry concern given the associated impact to construction costs – which ultimately leads to affordability concerns for home buyers.

Local governments and the building sector also expressed concern regarding the need for permanence in GHG emission reductions. The current Renewable Gas program is a voluntary opt-in and opt-out offering. This means that where a builder or developer constructs a home or building and enrols in the Renewable Gas Program during construction, the local government has no guarantee that the occupant(s) will continue to receive Renewable Gas for the life of the building. Consequently, the absence of permanence has precluded builders from including gas appliances in their new home. Builders and developers advised that they are seeking FEI to address the need for permanence through a simple, easily enforceable and transparent solution.

FEI's Response

FEI's proposed changes to the Renewable Gas Program will address these concerns and will enable a path to meeting emissions targets in new construction. In particular, and as described in Section 7.4.2, FEI is proposing that for new residential connections where a customer requiring a new service connection (with new service line and meter) will receive 100 percent renewable gas in order to comply with any current or future potential the GHGi or emissions targets regulations set by local governments. FEI will be responsible for ensuring that Renewable Gas is assigned to the building rather than the customer. Stakeholders were supportive of this type of service offering, as describe in Section 7.4.2 above.

[128] https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf.
[129] Table 1, pg 12), https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf.

10.3.3 Pricing and Energy Bill Impacts

Comments Received

Stakeholders expressed concerns regarding pricing and the associated energy bill impact of increasing the Renewable Gas supply at the volumes required to respond to policy objectives.

Builders and some industry stakeholders were less concerned with pricing and bill impacts, as FEI explained how the pricing for New Residential Connections using 100 percent would be structured.

Industry stakeholders were concerned about the pricing of Renewable Gas including, in particular, energy bill increases where they would be paying for the Renewable Gas Program through increased cost and not receiving the environmental attributes. There were additional concerns regarding Renewable Gas volumes of 15 percent or greater and what impact this would have on industrial costs. Some builders and developers were also concerned about the how the 100 percent renewable gas permanent rate could increase over time and impact to residential customer rates.

FEI's Response

To lessen the bill impact and to provide for equity for new residential connection customers who are mandated to reduce emissions versus those who are not, those customers in the New Residential Connections service, receiving 100 percent renewable gas, will pay the same for their gas service as existing customers in similar rate schedules.

The ability through the proposed mechanism, by way of the midstream, to provide Renewable Gas to all customers allows all customers to contribute to reducing emissions and share in the costs.

FEI designed the Voluntary Program, and the cost recovery (through the S&T rider instead of a delivery rate rider) to address customer concerns over the delivery rate impact.

FEI is exploring a portfolio of Renewable Gas and low carbon fuel options that would meet the climate policy mandates and provide more cost effective options to the current RNG supply.

10.3.4 Emissions Reductions for Existing Buildings

Comments Received

Stakeholders were interested to know how FEI plans to address GHG emissions from existing buildings.

Comments from builders expressed concerns around the upfront costs for customers to switch energy sources and the reliability if one energy source was compromised due to an outage or system failure.

FEI also heard concerns that reducing emissions in existing buildings is more challenging than for new construction.

FEI's Response

Renewable Gas offers the benefit of reducing emissions in existing buildings without the need for customers to replace appliances or undergo major building envelope upgrades.

FEI will supply Renewable Gas to all existing sales customers as soon as FEI acquires sufficient supply volumes to do so. Those customers wishing to reduce their emissions further have the ability to do so by electing a higher percentage Renewable Gas blend through FEI's Voluntary Program.

FEI continues to work with local governments that are exploring ways to decarbonize existing buildings in order to find a means to track and meet emission targets for these buildings.

10.3.4.1 Engagement with Local Governments

The process of developing this Application has provided FEI with opportunities to continue educating local government representatives on Renewable Gas, and to share information regarding how the Renewable Gas Program can support local governments with their climate policy strategies. Over the last few months, FEI engaged with representatives from over 23 local governments regarding the Application, including through telephone calls, meetings and presentations with Mayors, City Councillors, Chief Administrative Officers, department Directors, sub-committees, and key local government staff. In total, FEI held discussions with 47 individuals across these local governments. FEI continues to engage with additional local governments.

Through the engagement process it became clear that local governments remain at different stages of developing their own plans addressing emission reductions and the decarbonization of the building sector. The local governments FEI engaged with nonetheless raised common questions and concerns related to Renewable Gas supply, the permanence of Renewable Gas associated with a given premise and the costs associated with Renewable Gas service.

Some local governments, including the City of Vancouver and MetroVancouver, expressed how their climate policy focusses on setting emissions targets for both new construction and existing buildings at a more granular building by building level when a new building is constructed or existing building is renovated. This approach is in contrast with FEI's system-wide approach, but is aimed at the same decarbonization objective. FEI considered this difference and in response, FEI indicated that under its proposed Renewable Gas Connections, FEI would be able to meet the GHGi targets and the permanency requirement for new construction at the building permit stage. Incorporating these attributes was a key design feature of the proposed service. FEI also explained that providing Renewable Gas to all customers through the Renewable Gas Blend, meets both the needs of customers and governmental climate targets for existing buildings. Moreover, emissions reductions in existing buildings can be achieved without specific requirements at the building level that would entail homeowners or business owners changing out their equipment or completing extensive building upgrades. For local governments, to

demonstrate progress towards decarbonization of buildings in their communities, FEI is able to provide communities with an overall report of the emissions reductions in their respective communities at an aggregate level.

Additional questions from local governments related to the amount of Renewable Gas supply FEI has or intends to procure to support the proposed Renewable Gas Program. In response, FEI provided a five year and ten year outlook on Renewable Gas supply and discussed the expansion of its Renewable Gas portfolio, as enabled by the GGRR.

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.

The City of Burnaby stated in their letter of support:

> We believe FortisBC's application is aligned with this plan[130] [and supports economic opportunities in the low carbon industry. More specifically, RNG is a tool that would help achieve the city's GHG targets and home affordability in Burnaby. […]
>
> As we understand FortisBC's application for permanent renewable natural gas for new premises helps builders and residential customers who require new connections to meet building low energy standards through the use of RNG with a small carbon footprint at a rate that is permanent to the life of the home.

The City of Prince George stated in their letter of support:

> Renewable Gas is carbon-neutral and has the lowest emissions factor compared to other fuel types so it helps our community meet greenhouse gas reduction goals and reduces our carbon footprint. Utilizing the resilient gas infrastructure at FortisBC, renewable gas helps create a healthy environment that supports a robust and stable local economy and provides energy choices for homeowners that allow for affordable housing and quality of life for residents.

The City of Delta's Climate Action and Community Liveability Advisory Committee unanimously approved the following resolution:

> That the Climate Action and Community Liveability Advisory Committee supports the FortisBC Renewable Gas application to decarbonize existing and new customers as one of the tools needed to reduce greenhouse gas emissions in Delta and across the region.

The City of Delta's Council supported the Climate Action and Community Advisory Committees recommendation to support FEI's Renewable Gas Application:

[130] Reference to Burnaby's Community Energy and Emissions Plan.

That Delta Council supports FortisBC's Renewable Gas application to decarbonize existing and new customers as one of the tools needed to reduce greenhouse gas emissions in Delta and across the region

10.4 *FEI RECEIVED SUPPORT FOR THE APPLICATION FROM THE MUSQUEAM INDIAN BAND*

As part of FEI's ongoing discussions with Musqueam Indian Band, FEI shared its plans to file an application that would contemplate revisions to its Renewable Gas program. The Musqueam Indian Band expressed further interest and sought more details of FEI's proposals. They have provided a letter in support of the Application, included in Appendix F-5, with an extract of two paragraphs from the letter provided below:

> We work closely with the City and the utilities to ensure that water, sewage, and energy infrastructure (electric and gas) are interwoven safely, effectively, and respectfully into our structures, communities and Lands and we see the vital benefits these systems provide. We support efforts to utilize these physical assets that aim to reduce or eliminate environmental impacts. We therefore FortisBC's Renewable Gas as one solution that only helps meet greenhouse gas intensity (GHGI) targets and climate goals but also drive economic, environmental and social stewardship.[…]
>
> We also see the economic benefit that various sources of energy bring. Renewable energy such as hydro-generated electric power and renewable gases from organic waste help contribute towards the overall recipe that provides comfort, convenience, reliability and resilience in generating power to appliances and heat our homes and our places of work, learning, care and play. We therefore support FortisBC's application to the British Columbia Utilities Commission for a renewable gas tariff. We understand that the new tariff will enable all new buildings to tap into this gas meets all GHGI targets and can help meet the province's climate goals, thus providing clean energy to our community homes and building via environmentally friendly energy solution.

10.5 *SUMMARY*

FEI values comments and feedback from its stakeholders. FEI has completed comprehensive stakeholder consultation with a variety of stakeholders, including proactively discussing details of the Application, addressing concerns, and responding to questions in a timely manner.

The extensive stakeholder consultation conducted by FEI prior to filing this Application has yielded feedback that is reflected in the proposals in this Application. An example is the design feature where FEI is proposing a tariff that meets the GHGI targets in new construction by providing 100 percent Renewable Gas to New Residential Connections the life of the buildings. Stakeholders also indicated their appreciation for FEI's comprehensive response to governmental climate

action goals by increasing its Renewable Gas supply and its proposal to provide a percent of Renewable Gas to all sales customers – increasing over time. Furthermore, stakeholders indicated that by providing 100 percent Renewable Gas to New Residential Connections and the continuation of the Voluntary Renewable Gas offering enables an energy choice that is safe, reliable and continues to utilize the existing gas pipeline infrastructure and gas appliances in homes and businesses.

FEI believes that its proposed revisions to the Renewable Gas Program will meet the needs of stakeholder and its customers, as evidenced by the 86 letters of support for the Application that FEI has received to date.

11. CONCLUSION

FEI's Renewable Gas Program has been successful in achieving the objectives for which it was developed, based on the policies in place over ten years ago. In particular, the program has established Renewable Gas as a low carbon energy that can meet the GHG reduction objectives in BC. Climate regulations and policies such as the GGRR, the CleanBC Plan, and most recently the CleanBC Roadmap, recognize that the expanded use of Renewable Gas will play an important role in reducing GHG emissions from the gas supply in BC and across sectors of the economy.

FEI will continue to partner with local governments and industry to rapidly grow its supply of biomethane, hydrogen and other low carbon fuels in alignment with BC's climate policies and in order to reduce the GHG emissions of the energy it delivers to its customers in the interest of all British Columbians. Without revisions to the Renewable Gas Program, however, the climate regulations and policies introduced by all levels of government threaten the long-term viability of the gas delivery system, the resiliency of the province's energy system, and the energy choices British Columbians will have in the future. As the Application demonstrates, FEI's Renewable Gas Program can be designed to address these evolving governmental climate policies, customer needs for Renewable Gas, and the significant increase in Renewable Gas that FEI is acquiring pursuant to the GGRR, while leveraging FEI's existing gas delivery system.

FEI's proposals are supported by a wide range of stakeholders and, ultimately, will help maintain the long-term viability of the natural gas distribution system and energy choice for British Columbians. FEI submits that its Application is just and reasonable and in the public interest and respectfully requests its approval.