

Diane Roy Vice President, Regulatory Affairs

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May 16, 2022

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

Attention: Mr. William J. Andrews

Dear Mr. Andrews:

Re: FortisBC Energy Inc. (FEI) Revised Renewable Gas Program Application – Stage 2 (Application) Response to the B.C. Sustainable Energy Association (BCSEA) Information Request (IR) No. 1

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

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

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



If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only):	Commission Secretary
(),	Registered Parties



1	Α.	2030 (GHG Er	nissions Cap for Natural Gas Utilities
2	1.0	Topic	:	CleanBC Roadmap to 2030
3 4 5		Refere	ence:	Exhibit B-11, Application for a Revised RNG Program, 3.4.1.1 CleanBC Roadmap - GHG Reduction Standard: Emissions Cap for Natural Gas Utilities
6		On pa	ge 87 o	f the Application, FEI states:
7 8 9 10			"Prov delive from g Footno	incial government policy seeks to transition the gas system away from ring fossil natural gas to delivering Renewable Gas, and to cap emissions gas used to heat homes and business at 47 percent below 2007 levels. Date: CleanBC Roadmap to 2030, pg 29."
11		The C	leanBC	Roadmap to 2030 states in part on page 29:
12 13 14 15			"To h require lower and po	elp drive this transition, we will introduce a GHG emissions cap that will e gas utilities to undertake activities and invest in technologies to further GHG emissions from the fossil natural gas used to heat homes and buildings ower some of our industries.
16 17 18 19 20			Follow of CO Since gas) a those	ing further modelling and analysis, the cap will be set at approximately 6 Mt 2e per year for 2030, which is approximately 47% lower than 2007 levels. emissions from gas consumption are linked to industry (excluding oil and and the built environment, the cap is consistent with emissions targets for sectors. [Roadmap, p.29]
21 22 23 24 25 26 27 28 29		1.1	For the cap, p 2030, 6 Mt o 2030 compa curren 42 PJs	e throughput that FEI understands will be subject to the 2030 GHG emissions lease provide a table showing the forecast amount of gas combustion in by conventional natural gas, Renewable Gas, and total, that corresponds to f CO2e emissions, with the following assumptions: zero Renewable Gas in (as a baseline), the 2021 delivered volume of Renewable Gas (for arison), 15% Renewable Gas (i.e., approximately 30 PJs in 2030), and FEI's t estimate of Renewable Gas deliveries in 2030 (equivalent to approximately s of Renewable Gas by 2032 [p.79]).
30	<u>Resp</u>	onse:		
~ 4				

FEI understands the question to be asking what the amount of throughput would be at the four different levels of Renewable Gas that results in 6 Megatonnes (Mt) of CO2e emissions. To undertake the requested calculation, FEI has used a lifecycle emissions factor of 0.060 Mt CO₂ per PJ for conventional natural gas and 0.010 Mt CO₂ per PJ for Renewable Natural Gas (RNG). As requested, FEI has provided four tables, one with zero RNG, one with 0.6 PJ RNG which is

36 the volume delivered in 2021, one with 30 PJ RNG, and the final with 42 PJ RNG. FEI has also



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1 assumed that all of the Renewable Gas is RNG; however, the actual mix in the future may also

2 include syngas, lignin and hydrogen which have different carbon intensities.

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Table 1: Natural Gas and Total Gas throughput assuming 0 PJ Renewable Gas

Tabla 1	Throughput	Mt CO2
	(PJ)	Emissions
Conventional Natural Gas	100.0	6.0
Renewable Natural Gas	-	-
Total	100.0	6.0

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Table 2: Natural Gas and Total Gas throughput assuming 0.6 PJ Renewable Gas

Tabla 2	Throughput	Mt CO2	
	(PJ)	Emissions	
Conventional Natural Gas	99.9	6.0	
Renewable Natural Gas	0.6	0.0	
Total	100.5	6.0	

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Table 3: Natural Gas and Total Gas throughput assuming 30 PJ Renewable Gas

Table 3	Throughput (PJ)	Mt CO2 Emissions
Conventional Natural Gas	95.0	5.7
Renewable Natural Gas	30.0	0.3
Total	125.0	6.0

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Table 4: Natural Gas and Total Gas throughput assuming 42 PJ Renewable Gas

Table 4	Throughput (PJ)	Mt CO2 Emissions
Conventional Natural Gas	93.0	5.6
Renewable Natural Gas	42.0	0.4
Total	135.0	6.0

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As is shown, at increasing blends of Renewable Gas, FEI can maintain or increase the throughput
 on the system thereby mitigating rate increases as compared to a scenario with no Renewable
 Gas. Please also refer to the response to BCUC IR1 1.1 for a discussion regarding the 2030 GHG

- 14 emissions cap.
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 1.1.1 Please discuss the implications for the amount of energy efficiency and conservation savings required to meet the 2030 cap of 6 Mt of CO2e emissions, in conjunction with increased volumes of Renewable Gas.
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1 Response:

Please refer to the response to BCUC IR1 1.1 for an estimate of the energy efficiency andconservation savings that will help meet the 6 Mt cap.

The amount of energy efficiency is not directly relevant to this proceeding, but information on
energy efficiency scenarios is included in Section 5 of FEI's 2022 Long Term Gas Resource Plan
(LTGRP).

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- 1.1.2 Please clarify what quantity and proportion of FEI's system throughput FEI is assuming will be subject to the 2030 GHG emissions cap.
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13 Response:

As discussed in response to BCUC IR1 1.1, FEI is not aware of the design details of the proposed 2030 GHG emissions cap, but FEI understands that the cap will include emissions from residential and commercial buildings and industrial sectors, which FEI has assumed at this time includes T-Service customers, but not natural gas for vehicles. Therefore, all gas utility throughput, except gas used as a fuel for vehicles, would be included in the cap. This implies the cap would apply to gas consumption in BC of approximately 235 PJ or 11.5 Mt of GHG emissions.

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231.2Please provide a table showing FEI's current, and forecast 2030, gas deliveries by24the relevant categories such as sales gas customers, sales gas customers25excluding NGV, NGV, transport customers, bypass customers and total.

27 Response:

The table below provides preliminary long-term annual forecasting data for gas demand in the requested categories as provided in FEI's 2022 LTGRP.

FEI does not forecast long-term annual demand as between bypass and non-bypass customers and so has not included these categories. Please also note that the Renewable Gas demand included in the table below varies from the demand shown within this Application because supply and demand for Renewable Gas is evolving with provincial GHG policy and will continue to do so in the near term. Finally, the Renewable Gas volume included in the table below is greater than the level of supply that was used when developing this Application as it was developed more recently.



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Table 1: Forecast of FEI Annual Demand (PJ)

	Sales Service Customers		T-Service Customers		Low Carbon Transportation Customers (CNG/LNG)		
Year	NG	RG	NG	RG	NG	RG	Total
2021	141	0	68	0	2	0	212
2022	136	4	65	2	2	0	209
2023	131	7	63	3	9	0	214
2024	126	10	60	5	19	1	222
2025	122	13	58	7	27	3	229
2026	117	16	55	9	32	4	234
2027	113	20	52	12	37	6	238
2028	109	23	49	14	44	8	246
2029	104	26	46	17	45	9	248
2030	100	30	44	19	47	11	251

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1.3 Please provide a table showing FEI's current, and forecast 2030, gas deliveries by category limited to the categories to which the 6 Mt of CO2e emissions cap applies. Please specify the Renewable Gas assumptions.

10 Response:

11 Please refer to Table 1 in the response to BCSEA IR1 1.2 (Sales Gas Customers and T-Service 12 Customers columns).

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- 16 1.4 Does FEI agree with the Roadmap that a 2030 GHG emissions cap of 17 approximately 6 Mt of CO2e is approximately 47% lower than 2007 GHG 18 emissions levels for the applicable categories of gas throughput? If not, please 19 explain.
- 21 Response:

22 Confirmed, although there are some small differences in the associated GHG emissions between 23 BC's official GHG inventory¹ (based on data from Statistics Canada and Environment and Climate

https://www2.gov.bc.ca/gov/content/environment/climate-change/data/provincial-inventory. 1

FORTIS BC^{**}

1 2	Change Canada) and FEI's billing data. FEI is working with the provincial government to address these differences and create a common basis for regulating GHG emissions reductions.				
3 4					
5 6 7 8 9 10 11 12	 1.5 In FEI's understanding, does the 2030 GHG emission Northern Gas and other gas utilities in BC as well as FE rough estimate of the size of the cap applicable to FEI in 2 basis for the estimate, such as the cap being allocat throughput. Response: 	ons cap include Pacific I? If so, please provide a 2030. Please indicate the red according to system			
13	Please refer to the response to BCUC IR1 1.1.				
14 15					
16 17 18	On page 29 of the Application, EEI says "Details on the cap	are under development.			
19 20	however, FEI sees the <u>potential Renewable Gas supply require</u> and 65 PJs by 2030." [pdf p.38, underline added]	ments being between 45			
21 22 23 24	1.6 Please discuss how FEI made the estimate that between by 2030 would be required to meet the 2030 cap. Please Please identify the factors that cause the range of between	n 45 and 65 PJs of RNG specify the assumptions. en 45 and 65 PJs.			
25	Response:				
26	Please refer to the responses to BCUC IR1 1.1 and 1 1.2.				
27 28					
29 30 31 32 33	 1.7 Is the estimate of potential Renewable Gas supply requ 45 and 65 PJs by 2030 based on the assumption that the Renewable Gas with no reduction in throughput? 	uirements being between he cap is met entirely by			
34	Response:				
35 36	No, please refer to the response to BCUC IR1 1.1 where FEI discusses activities and investments that will contribute to meeting the cap.	s the emissions reducing			
37					



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1 2 3 4	On page 29, <u>of gas utilitie</u> 87 FEI says	FEI says the GHG emissions cap will apply to "the gas used by <u>all customers</u> as including residential, commercial and industrial sectors," whereas on page the cap will apply to "gas used to heat homes and business."
5 6 7 8 9	1.8 Plea emis custo Wha	se clarify FEI's understanding of the breadth of application of the GHG sions cap. Will it apply to gas used by all residential, commercial and industrial omers? If so, does this include both sales customers and transport customers? t about bypass customers? What about Natural Gas for Vehicles customers?
10	Response:	
11	Please refer to the I	response to BCSEA IR1 1.1.2.
12 13		
14 15 16 17 18	1.9 In FE FEI's Response:	El's understanding, will the GHG emissions cap include GHG emissions from own use of gas, including metered gas, and losses and unaccounted for gas?
10	EEL doos not vot kr	ow whether the GHG emissions can will include GHG emissions from EEI's
20	own use of gas, inc	luding metered gas, and losses and unaccounted for gas.
21		



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1 B. Renewable Gas Blend

2	2.0	Topic:		Renewable Gas Blend
3 4 5		Refere	ence:	Exhibit B-11, Application for a Revised Renewable Natural Gas Program, p.2, pdf p.11; Figure 7-1, pdf 94; s 7.3.2, Identification of Potential Program Design Alternatives, pdf 101
6		On pag	ge 2 of t	he Application, FEI states:
7 8 9 10			"As FE the Re provinc supply	I acquires increased volumes of Renewable Gas as enabled by the GGRR, newable Gas Blend will increase over time to enable FEI to meet the new and CleanBC targets for greenhouse gas (GHG) emissions, and balance and demand." [pdf p.11]
11 12 13 14 15		2.1	Would Connee would o the Rei	FEI agree that if the BCUC does not approve the Renewable Gas ctions Program then it would be appropriate for the Renewable Gas that otherwise have gone to the Renewable Gas Connections Program to go to newable Gas Blend Program? If not, why not?
16	<u>Respo</u>	nse:		
17 18 19 20	If the R decisio otherw could g	Renewal on and rise wou go to a v	ble Gas determi uld have variety c	Connections service was not approved, FEI would need to study the entire ne how it would respond and how to allocate the Renewable Gas that gone to Renewable Gas Connections customers. The Renewable Gas of areas, including but not limited to, Renewable Gas Blend customers.
21 22				
23 24 25 26 27	Respo	2.2	Please a progr	define "Renewable Gas Blend." Please clarify if Renewable Gas Blend is am name, a service, or a proportion (percentage).
28 29 30 31 32	"Renew design in their custorr approv	wable G ate a se r gas se ners will red by t	Bas Bler ervice ur ervice. 1 increas he BCU	nd" is a term that FEI has adopted for the purposes of this Application to inder which all FEI sales customers will receive a portion of Renewable Gas The proportion of Renewable Gas included in the gas service to all sales se from year-to-year, as allowed by the growth in Renewable Gas supply. If JC, the term Renewable Gas Blend service may or may not ultimately be

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used in public-facing materials.

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- 372.3Please confirm, or otherwise explain, that FEI is not saying that if the Renewable38Gas Blend proposal is accepted then FEI will call all gas delivered to sales

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FORTIS BC"		FortisBC Energy Inc. (FEI or the Company) Revised Renewable Gas Program Application – Stage 2 (Application)	Submission Date: May 16, 2022
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1 2 3 4 5 6 7	Response: Confirmed.	customers "Renewable Gas Blend" simply because RNG comproportion (initially 1%) of the gas that is otherwise conventional for delivered to sales customers.	prises a small
8 9 10 11 12 13 14 15	2.4 <u>Response:</u>	Please confirm, or otherwise explain, that FEI's proposal is that th toward the Renewable Gas Blend Program is exclusively for that not used for any other RG service or program (such as Voluntary F or Renewable Gas Connections).	e RG that goes Program and is Renewable Gas
16 17 18 19 20 21	FEI confirms Blend servic customers vi and Voluntar	that the Renewable Gas volumes sold to customers through the F e will be accounted for separately from any Renewable Gas vo a any other Renewable Gas offerings, including the Renewable Ga y Renewable Gas services.	Renewable Gas olumes sold to as Connections
22 23 24 25 26	2.5 <u>Response:</u>	Please confirm, or otherwise explain, that "Renewable Gas Blend" as "Alternative B. Renewable Gas Blend" [p.92, pdf p.101].	is not the same
27 28 29 30 31 32	The differenc discussed in the <u>only</u> Ren of <u>several</u> off	e between the Renewable Gas Blend and "Alternative B. Renewable the referenced section of the Application is that the latter considere ewable Gas offering. As proposed by FEI, the Renewable Gas Blend erings.	e Gas Blend" as ed the blend as d service is one

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- 34 On page 99, FEI says that 1% RG of the approximately 140 PJs a year of sales gas would 35 equal 1.4 PJs per year of RG. On page 29, FEI says that the CleanBC target of 15% RG by 2030 would require 30 PJ RG per year. 36



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2.6 For greater certainty, please confirm, or otherwise explain, that FEI is not suggesting that the Renewable Gas Blend Program <u>alone</u> will enable FEI to meet the new provincial CleanBC targets for GHG emissions.

5 **Response:**

6 The Renewable Gas Blend, Renewable Gas Connections, and Voluntary Renewable Gas 7 services are all mechanisms for FEI to provide Renewable Gas to its customers. The Renewable 8 Gas sold through all three of these services, except Renewable Gas sold to NGV customers, will 9 contribute to meeting the new CleanBC Roadmap target for GHG emission reductions from 10 natural gas use.

11 While, in theory, FEI could potentially use the Renewable Gas Blend alone as the mechanism to 12 meet the 2030 CleanBC Roadmap target, this approach would be challenging, given that 13 CleanBC signals new legislation regarding all new buildings to be zero carbon by 2030. Further, 14 this approach would not meet the other needs for the Renewable Gas Program, including meeting 15 local government requirements for new residential connections and the needs of customers 16 seeking higher percentages of Renewable Gas. Ultimately, this approach would undermine the 17 viability of the natural gas system, reduce energy choice for British Columbians, and lead to a 18 less reliable, less resilient, and less affordable energy system in British Columbia.



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1	3.0	Topic:	:	Renewable Gas, Hydrogen, Synthetic Gas, Lignin
2 3		Refere	ence:	Exhibit B-11, Application for a Revised Renewable Natural Gas Program, 6.3.1.2 Hydrogen Gas; 6.3.1.3 Synthesis Gas, 6.3.1.3 Lignin
4 5 6		3.1	What is the Re	s the carbon intensity of the Hydrogen Gas that FEI intends to acquire under enewable Gas Program?
7	Respo	onse:		
8	The G	GRR cı	urrently	permits FEI to acquire the following types of hydrogen:
9 10	•	Hydroo renewa	gen der able res	ived from water using electricity that is generated primarily from clean or sources, or
11 12	•	Waste by the	hydrog public u	en, as defined in the <i>Clean or Renewable Resource Regulation</i> , purchased utility.
13 14 15 16	While t British produc	the GGI Columb ction me	RR doe: oia Hydr ethods, i	s not define the carbon intensity of these hydrogen production methods, the rogen Strategy calculates the GHG emissions intensity of different hydrogen including the methods stated above. ²
17 18 19 20 21	FEI ge intensi BC Hy depen- throug	enerally ty thres drogen d on a n h a life	intends hold of Strateg umber o cycle as	s to acquire hydrogen that surpasses the recommended federal carbon 36.4 gCO2e/MJ, as detailed in the Hydrogen Strategy for Canada ³ and the ly. ⁴ The actual carbon intensity of a specific hydrogen production project will of factors. The carbon intensity of any source of hydrogen can be determined ssessment.
22 23 24 25 26	In BC, grid e hydrog reform produc	hydrog lectricity gen pro ation of ce hydro	ien prod y for el oduction f methai ogen wit	Juction is likely to take advantage of available primary resources, including lectrolytic hydrogen production from water, grid electricity for pyrolytic from methane with carbon capture in solid form, or natural gas for ne to produce hydrogen with carbon capture and storage. These methods th a low-carbon intensity relative to conventional natural gas.
27 28 29 30	As the the ad upstrea hydrog	carbon dition o am and jen pro	intensit f renew pipeline duction	y of the primary resources used to produce hydrogen reduce over time (e.g., vable energy sources come online), the natural gas supply chain mitigates e methane emissions, and the underlying technologies driving these different processes mature (e.g., through carbon capture and sequestration), the

31 carbon intensity of the hydrogen produced will shift towards a zero-carbon threshold.

² <u>https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf</u>.

³ <u>https://www.nrcan.gc.ca/sites/nrcan/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf.</u>

⁴ <u>https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/electricity/bc-hydro-review/bc_hydrogen_strategy_final.pdf.</u>

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1 2		
3 4 5 6	3.2	Would FEI agree that most methods of creating Hydrogen Gas do not produce zero-carbon hydrogen gas?
1	<u>Response:</u>	
8	Please refer to	o the response to BCSEA IR1 3.1.
9 10		
11 12 13 14 15	3.3 Response:	How will FEI account for the carbon intensity of the Hydrogen Gas in the Renewable Gas portfolio?
16 17 18 19	FEI will accou way as it does and accounte the weighted	Int for the carbon intensity of hydrogen in the Renewable Gas portfolio in the same for RNG in the portfolio, in that the carbon intensity of each source will be measured d for in the overall portfolio. The overall portfolio average carbon intensity will reflect average carbon intensity of all the sources of Renewable Gas.
20 21		
22		
23	On pa	ge 77, FEI states:
24 25 26 27 28		"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.
29 30 31 32		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)." [pdf p.86]
33 34 35 36	3.4	What is the carbon intensity of the Synthesis Gas that FEI intends to acquire under the Renewable Gas Program? Is the carbon intensity different at the point of production than at the point of use?



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1 Response:

The production of syngas from biomass is detailed in section 3.3 of the *BC Renewable and Low-Carbon Gas Supply Potential Study*.⁵ In sub-section 3.3.3 of the study, the carbon intensity score of syngas is stated as 3.2 grams per megajoule. When syngas is used to directly displace conventional natural gas use in an industrial plant, the carbon intensity at the point of production is the same as at the point of use.

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3.5 How will FEI account for the carbon intensity of the Synthesis Gas in the Renewable Gas portfolio?

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13 Response:

The carbon intensity of each source of synthesis gas will be measured through a life cycle assessment and accounted for in the overall Renewable Gas portfolio, such that the overall portfolio average carbon intensity will reflect the weighted average carbon intensity of all the sources of Renewable Gas.

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- 21 On page 77, FEI states:
- 22 "Lignin is a complex, energy-rich organic molecule found in large quantities in 23 biomass (wood). It is the natural glue that holds a tree and other plants together. 24 Lignin is generated as a by-product of the kraft80 pulping process contained in the 25 liquid black liquor.81 Lignin can also be precipitated out of black liquor in a refined 26 form. Biomass-based fuels such as lignin can offer a zero-carbon alternative to 27 natural gas using a displacement business model. Lignin is not a gas, and 28 therefore cannot be injected into the gas system. Rather, if an industrial customer 29 is able to use lignin instead of natural gas, it can provide an option to reduce 30 emissions." [pdf p.86]
- 3.6 Please explain why FEI refers to lignin as a zero-carbon alternative to natural gas.
 32 What is the carbon intensity of the Lignin that FEI intends to acquire under the
 33 Renewable Gas Program?

⁵ <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/renewable-gas-study-final-report-2022-01-28.pdf?sfvrsn=cb5ca1fd_0</u>.



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1 Response:

FEI has engaged with prospective suppliers of lignin that have completed life cycle carbon intensity analyses for the lignin supply. These analyses conclude that lignin, when used at industrial operations to displace natural gas use, will be a zero-carbon or net negative carbon alternative to natural gas.

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- 3.7 How will FEI account for the carbon intensity of the hydrogen gas in the Renewable Gas portfolio?
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12 Response:

13 FEI assumes that this question was meant to refer to lignin as opposed to hydrogen. The carbon

14 intensity of each source of lignin will be measured through a life cycle assessment and accounted

15 for in the overall portfolio, such that the overall portfolio average carbon intensity will reflect the

16 weighted average carbon intensity of all the sources of Renewable Gas.



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1	C.	Transport Cu	istomers and NGV Customers
2	4.0	Topic:	Transport Customers and NGV Customers
3 4 5		Reference:	Exhibit B-11, Application for a Revised RNG Program, pp104, 112, 116, pdf pp.113, 121, 125; Table 8-1: LCG Charge and S&T LC Rider Summary, p.114, pdf p.123
6 7 8 9		FEI proposes current Biome BVA rider "co includes both	that the Storage and Transportation Low Carbon Rider will replace the ethane Variance Account (BVA) delivery rate rider. [p.112, pdf p.121] The ellects costs in excess of recoveries from all non-bypass customers, <u>which</u> <u>T-Service and sales customers.</u> " [p.104, pdf p.113, underline added]
10 11 12		4.1 Please that th	e BVA rider applies to all sales customers.
13	Respo	onse:	
14 15 16 17	Confirr or T-S custom from sa	med. NGV cust service custom ners, in addition ales customers	comers take service through a mix of rate schedules and can be either sales iters. Currently, the BVA rider applies to the delivery rates of all sales in to T-Service customers. In contrast, the S&T LC rider will only be collected s.
18 19			
20 21 22 23 24		FEI also prop applied only t customers. [p	boses that the Storage and Transportation Low Carbon Rider would be to non-NGV sales gas customers and not to transport customers or NGV .116, pdf p.125]
25 26 27 28		4.2 Please custor Blend	e confirm, or otherwise explain, that FEI's proposal is that T-Service ners and NGV customers will pay nothing toward either the Renewable Gas Program or the Renewable Gas Connections Program.
29	<u>Respo</u>	onse:	
30 31	Not co states	nfirmed. The p that the S&T L(reamble to this question does not reflect page 116 of the Application, which C rider will be charged to all sales customers, but not to T-Service customers.
32 33	Theref Progra	ore, NGV cus im whether the	tomers that are sales customers will contribute to the Renewable Gas by purchase Renewable Gas or not.
34	T-Serv	vice customers	(whether NGV customers or otherwise) will only pay for Renewable Gas if

- 35 they are purchasing Renewable Gas through the voluntary program.



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4.3 Please confirm, or otherwise explain, that FEI's proposal is that T-Service customers and NGV customers may elect to purchase <u>no</u> Renewable Gas under the Voluntary Renewable Gas Program.

6 Response:

- Confirmed. The Voluntary Renewable Gas service is voluntary (i.e., opt-in); therefore, customerscan elect not to purchase any Renewable Gas.
- 9
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 12 4.4 Does FEI consider that the *CleanBC Roadmap to 2030* objectives for GHG emissions reductions from gas utility customers do not apply to T-Service
- customers and to NGV customers?

16 **Response:**

- 17 Please refer to the response to BCSEA IR1 1.1.2.
- 18
- 19
- 20
- 214.5Please explain how T-Service customers purchase Renewable Gas under the22Voluntary Renewable Gas Program, given that T-Service customers do not23purchase gas from FEI.
- 24

25 **Response:**

T-Service customers would continue to purchase Renewable Gas under the Voluntary Renewable
Gas service under Rate Schedule 11LC, the same way that they can today under Rate Schedule
11B. Rate Schedule 11B agreements can be executed by the Shipper Agent or by the Shipper.
Under Rate Schedule 11B, Renewable Gas can be purchased and sold directly to the Shipper
Agent (Gas Marketer), who would then sell it to their shippers directly, or the Shipper Agent can
nominate Renewable Gas on behalf of a Shipper and FEI would invoice the Shipper directly for
any Renewable Gas volume purchases.

Alternatively, T-Service customers could elect to become sales customers in the appropriate rate
 schedule. In doing so they would then pay the S&T LC rider and also be able to purchase
 Renewable Gas at the LCG Charge that is a combination of CCRC + Carbon Tax + \$7.00/GJ.

Lastly, the customer or marketer could procure Renewable Gas directly from a Renewable Gasproducer rather than from FEI.

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4.6 What quantity of Renewable Gas did T-Service customers, and NGV customers, purchase under the Voluntary Renewable Gas Program in the most recent year for which data is available? What percentage of T- Service, and NGV, throughput does that represent?

7 <u>Response:</u>

8 The sales volume for 2021 and percentages of total throughput are noted below in the table.

9

Table 1: Renewable Gas Sales Volume (GJ)

RG Sales Volumes for NGV and T-Service Customers	2021	2021
	RG Sales Volume	Percentage (%)
		of Throughput
NGV	209,708	7.5%
T-Service	275,946	0.5%

The consumption of Renewable Gas by NGV customers is 7.5 percent of the total NGV throughput for 2021 and the consumption of Renewable Gas by T-Service customers represents approximately 0.5 percent of total T-Service throughput in 2021.

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- 4.7 How much Renewable Gas does FEI expect T-Service customers, and NGV
 18 customers, to purchase annually under the Voluntary Renewable Gas Program.
 19 What percentage is that of the T-Service, and NGV, throughput?
- 20

21 **Response:**

Please refer to the response to BCUC IR1 26.1.1 which provides the requested demand forecastfor both NGV and industrial customers.

As a percentage of the total throughput that FEI forecasts for NGV customers, Renewable Gas sales represent approximately 28 percent in 2022, and decreases to approximately 6.6 percent by 2030. The decrease is attributable to the significant increase in throughput for transpacific vessel fueling. Both NGV and industrial customers may enroll either as sales customers or as T-Service customers. As a result, FEI cannot say with certainty how much of the forecast demand would materialize under T-Service rate schedules. For context, the total throughput from T-Service rate schedules⁶ in 2020 was approximately 60 PJ.

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Rate Schedules 22, 23, 25, 27, and 46.

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Of the potential Renewable Gas supply requirements of between 45 and 65 PJs 4.8 by 2030 to meet the 6 MT CO2e cap, what quantity of RG does FEI expect will be paid for by T-Service customers, and NGV customers, under FEI's proposal?

5 **Response:**

6 The potential Renewable Gas supply of between 45 and 65 PJ by 2030 is the amount that FEI 7 estimates will be required to meet the provincial government's GHG emission cap for gas utilities. 8 As emission reductions made by NGV customers using Renewable Gas will not contribute toward 9 achieving the GHG emissions cap, Renewable Gas sold to NGV customers must be in addition to the estimated 45 to 65 PJ. It is unclear at present if or how FEI could be responsible for reducing 10 11 the carbon intensity of the gas from T-Service customers that is procured and delivered by 12 marketers as the provincial government has not yet determined how this would work. As such, 13 FEI is not in a position to forecast how much of the 45 to 65 PJ will be procured or paid for by T-14 Service customers.

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- 18 On pages 104-105, FEI states:
- 19 "T-Service customers and marketers have expressed concern of the added cost 20 associated with the BVA rider and the lack of any environmental or program benefit 21 (i.e. there is no actual RNG being delivered to them by FEI). The current BVA rider 22 is approximately five cents on the delivery charge and, if the current mechanism 23 for the BVA delivery rider remains, the rider will increase as more volumes of 24 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 25 26 environmental benefits." [pp.104-105, pdf pp.112-113, underline added]
- 27 4.9 Would FEI agree that, like all FEI customers, T-Service customers benefit from the 28 reduction in GHG emissions in BC funded in part by the BVA rider?
- 29

30 **Response:**

31 All British Columbians benefit from reductions in GHG emissions as a result of the Renewable 32 Gas FEI procures. Under the existing BERC mechanism, all customers pay the costs of RNG. Under the proposed Renewable Gas Program, FEI has moved to a model where only those 33 34 receiving Renewable Gas in their gas supply pay for the costs of the program. Larger industrial 35 customers are trade exposed, and as such, increases in costs can result in these industries taking 36 measures to lower costs, such as moving jurisdictions. Further, gas marketers have expressed 37 concern that under the existing program, T-Service customers pay the carbon tax but also the 38 BVA rider and do not receive any Renewable Gas. These customers and marketers felt that 39 paying the BVA rider without any direct benefit would add costs to their service, without any 40 reduction in the customer specific emissions, and as such could make certain industries 41 uncompetitive.

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4.10 Would FEI agree that T-Service customers and NGV customers benefit from the existence and operation of the FEI gas distribution system, just as non-NGV sales customers do?

8 **Response:**

9 Yes, T-Service and NGV customers benefit from the existence and operation of FEI's gas 10 distribution system. As such, the cost of the gas distribution system, which is allocated to these 11 customers through FEI's cost of service allocation (COSA) studies, is used to determine their 12 basic, delivery and demand charges. These charges, which are independent from, and unrelated 13 to, the cost of acquiring and upgrading Renewable Gas, are the mechanism by which T-Service 14 and NGV customers pay for the use of FEI's gas distribution system.

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184.11Would FEI agree that its argument that "As proposed, the Renewable Gas19Program will help maintain the long-term viability of the gas delivery system and20energy choice for British Columbians" [p.85, pdf p.94] applies to T-Service21customers, and NGV customers, as well as to non-NGV sales customers?

23 Response:

Yes, FEI continues to view its proposed Renewable Gas Program, which encompasses T-Service customers, NGV customers and non-NGV sales customers, as being instrumental in maintaining the long-term viability of the gas delivery system and energy choice for British Columbians. Please also refer to the response to BCSEA IR1 4.12 where FEI explains how T-Service and NGV customer groups will continue to access the Renewable Gas Program.

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- 31
- 4.12 Would FEI agree that if T-Service customers, and NGV customers, were included
 in the Baseline Renewable Gas Programs then they would receive and pay for
 environmental and program benefits?
- 3536 Response:

NGV and T-service customers are, by definition, not eligible for the Renewable Gas Connections
 service. However, FEI clarifies that all NGV <u>sales</u> customers will participate in the Renewable
 Gas Blend service. Only T-Service customers (NGV or otherwise) are excluded from the
 Renewable Gas Blend service.



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- 1 The program is structured so that Renewable Gas costs are recovered from customers for whom
- 2 FEI procures and sells the Renewable Gas. T-Service customers (NGV or otherwise) will pay for
- 3 and receive benefits from the program if they elect to take Renewable Gas service through Rate
- 4 Schedule 11LC. These customers will be charged the full acquisition cost, and will benefit from
- 5 avoided costs (i.e., provincial carbon tax) on the portion of gas they take as Renewable Gas and
- NGV customers will be eligible to apply for carbon credits under the BC-LCFS. T-Service (NGV
 or otherwise) customers also have the ability to move from T-Service to sales and therefore
- 8 receive and pay for the Renewable Gas Blend.
- 9 Renewable Gas Connections and Renewable Gas Blend customers are additions to the
 10 Renewable Gas Program predominately in response to evolving government climate policies,
 11 including local government GHGi targets. FEI has structured these service offerings to adhere to
- 12 these policies, to ensure continuity of gas service to customers.
- 13
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- 164.13If T-Service customers, and NGV customers, pay nothing toward the cost of the17Baseline Renewable Gas Programs, as FEI proposes, would FEI agree that for18non-NGV sales customers to be financially indifferent to T- Service customers' and19NGV customers' purchases under the Voluntary Renewable Gas Program the20price of Renewable Gas should be based on the marginal cost of Renewable Gas21supply, not the average cost of Renewable Gas supply?
- 2223 **Response:**
- Please refer to the response to BCSEA IR1 4.12 where FEI notes that NGV sales customers will
 participate in the Renewable Gas Blend service and therefore will pay the S&T LC rider.
- FEI understands marginal cost to mean the marginal cost of acquisition, being the change in total acquisition cost that comes from purchasing one additional unit of Renewable Gas.

28 FEI does not agree that the price of Renewable Gas for T-Service and NGV customers should be 29 the marginal cost. Using marginal cost as the price point for Renewable Gas sales to NGV and 30 T-Service customers implies that all other customers have a priority right to Renewable Gas 31 supplies up to the margin, or that NGV and T-Service customers have a priority right to Renewable 32 Gas supplies at the margin, which is not the case. Instead, NGV and T-Service customers have 33 the same right to purchase any GJ of Renewable Gas as any other customer (i.e., not only 34 volumes purchased at the margin). There are also practical problems to this approach; namely, 35 how to define Renewable Gas at the margin. The demand for new supplies of Renewable Gas is a function of the demand by all customer segments, not only NGV and T-Service customers. 36

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- 404.14Would FEI agree that requiring non-NGV sales gas customers to pay for the41Baseline Renewable Gas Program and not requiring transport gas customers to



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pay for the Baseline Renewable Gas Program would provide a financial incentive for customers to switch from sales gas to transport service?

- 4 <u>Response:</u>
- 5 FEI agrees that there could be some incentive to avoid the cost of Renewable Gas by switching
- 6 to T-Service; however, a decision by a customer to switch to T-Service is complex and a number
- 7 of impediments make switching less likely.
- 8 First, FEI expects the Province to implement emissions reduction targets for industry, which 9 typically take service as T-Service customers, as part of the legislation implementing the CleanBC 10 Roadmap. As it is unlikely T-Service customers will be exempt from incurring costs to reduce
- 11 emissions from their use of natural gas, FEI expects T-Service customers will have to evaluate
- 12 options to meet GHG reductions targets on their own or sign up for Renewable Gas from FEI.
- 13 Second, once a customer leaves sales service for T-Service, FEI cannot guarantee that there will
- 14 be capacity to allow them back into sales service should they request it, which increases supply
- 15 risk for those customers. These sales customers will therefore have to weigh increasing costs of
- 16 Renewable Gas with the security of supply.
- 17 Third, there may also be incentives for customers to switch from T-Service to sales. Customers
- 18 have moved back to sales service since the 2018 pipeline rupture on the T-south system, in part
- 19 so that they do not have to worry about gas procurement and upstream capacity. Similarly,
- 20 customers may want to move to sales service to receive the Renewable Gas Blend without having
- 21 to make a decision on voluntary options.
- 22 Consistent with FEI's transportation service model, FEI has designed the Renewable Gas offering
- 23 for T-Service customers so that they can make the choice that best suits their needs.
- 24
 25
 26
 27 4.15 Please explain how FEI's proposed Renewable Gas Program is not unduly discriminatory in its treatment of non-NGV sales customers, T- service customers and NGV customers.
 30
 31 <u>Response:</u>
- 32 The following response is provided by Concentric.

The proposed treatment of non-NGV sales customers as compared to T-Service customers and NGV customers is not unduly discriminatory because T-Service and NGV customers are not similarly situated when compared to sales customers. A discussion of the treatment of NGV and T-Service customers is found in Section 7.4.3.2 of the Application. Please also see the response to BCUC IR1 13.2 which includes a discussion of just versus unjust discrimination.



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1 As discussed in Section 7.4.3.2 of the Application, the CleanBC Roadmap introduced a new cap 2 on natural gas utilities to reduce GHG emissions from the use of conventional natural gas in 3 certain sectors of the economy, including buildings and industry (but not transportation), to 47 4 percent lower than 2007 levels, by 2030. As a result of this policy, any volume of Renewable Gas 5 sold to NGV customers means that FEI ratepayers must purchase additional Renewable Gas in 6 order to achieve the reduction target. Should these volumes be sold to NGV customers at less 7 than the cost of acquisition, FEI sales customers will also bear the cost of reducing the emissions 8 of the transportation sector, in addition to the cost of reducing the emissions for the proposed 9 GHG emissions cap for gas distribution utilities. FEI's proposal addresses this concern by having

10 NGV customers pay the full Renewable Gas acquisition cost.

11 It is also important to recognize that Renewable Gas has a higher value to NGV customers than 12 to other customer types. NGV customers receiving CNG service and LNG service in British 13 Columbia are eligible for Part 3 fuel supplier status under the BC-LCFS. NGV customers who 14 purchase their own gas supply from a gas marketer are also eligible. Part 3 fuel suppliers that 15 reduce the carbon intensity of their fuel relative to the baseline carbon intensity identified in the 16 BC-LCFS can generate credits which can be sold in the credit market. In effect, the current BC-17 LCFS provides these customers with a financial incentive to reduce their GHG emissions by 18 purchasing Renewable Gas, as discussed in Section 5.7.2 of the Application.

Under FEI's proposal, T-Service customers will also pay the full cost of Renewable Gas if they choose to purchase Renewable Gas under Rate Schedule 11LC. T-Service customers have elected to purchase their own commodity, rather than receive it from FEI, and therefore are not similarly situated to sales customers. T-Service customers also have the option to move to sales service and receive Renewable Gas via the S&T LC rider and, if they wish, incremental volumes through the Voluntary Renewable Gas service.

25 Overall, this information indicates that NGV customers are not similarly situated to non-NGV sales 26 customers. Charging a different price for a different service is just discrimination where that 27 service is distinguishable from the default service, and where the value of that service to the 28 customer is materially different. In FEI's proposal, NGV customers voluntarily pay FEI to acquire 29 fully-decarbonized supply, which is distinguishable both as a matter of cost causation and value. 30 Therefore, charging the directly assigned stand alone cost to those customers is "just 31 discrimination". Similarly, T-Service customers are not sales customers, unless they elect to 32 purchase renewable gas from FEI, and will not contribute to any shortfalls in the recovery of 33 Renewable Gas costs. Therefore, their exemption from the S&T LC rider does not amount to 34 unjust discrimination.

- 35
- 4.16 What measures does FEI intend to implement to reduce the GHG emissions from
 37 the combustion of natural gas by FEI's T-Service customers, and NGV customers?
- 38



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1 Response:

2 FEI's proposed Renewable Gas Program provides the opportunity for all T-Service and NGV

customers to voluntarily purchase Renewable Gas and reduce their GHG emissions. Industrial
 customers are also able to participate in energy efficiency programs to further reduce their
 emissions.

Any additional measures that FEI may implement to reduce emissions from T-Service and NGV
customers will need to be informed by more information from the provincial government on its
approach regarding the GHG emissions cap for gas utilities and the GGRR.

- 9 Please refer to the response to BCSEA IR1 1.1.2 for additional context.
- 10 11 12 13 Would it be feasible for FEI to redesign the Baseline Renewable Gas Program 4.17 14 (Renewable Gas Blend and Renewable Gas Connections Program) to include 15 transport customers and NGV customers? Please outline the key elements of such 16 an approach. 17 For example, could the Storage and Transportation Low Carbon rider be 4.17.1 18 attached to the delivery portion of the invoice so that it would be paid by 19 T-Service customers as well as sales customers? 20
- 21 Response:

NGV sales customers are part of the Renewable Gas Blend service. Once FEI commences the

Renewable Gas Blend service,⁷ NGV sales customers will receive a portion of their energy as
 Renewable Gas. If these customers elect to take more⁸ energy as Renewable Gas, then the price

they will pay for that additional Renewable Gas will be at the full acquisition cost.

FEI could not redesign the Renewable Gas Connections service to include NGV sales customers or T-Service customers (NGV or otherwise). NGV customers use gas for vehicles, not residential connections. T-Service customers (NGV or otherwise) purchase their own commodity, which is incompatible with FEI providing 100 percent Renewable Gas for the life of the building.

30 FEI could have designed the Renewable Gas Blend to include T-Service customers, but considers 31 that excluding these customers best addresses the current public policy environment, and 32 balances the needs of FEI and its customers. As discussed in the response to BCSEA IR1 4.16, 33 consistent with FEI's transportation service model, FEI has designed T-Service to enable these 34 customers to choose the service that best suits their needs and expects that T-Service customers 35 will need to weigh various factors in choosing their service, including the cost of reducing their own GHG emissions against the cost of purchasing Renewable Gas from FEI. NGV customers, 36 37 whether T-Service or sales service, are also subject to the BC-LCFS. FEI considers that T-Service 38 customers are best placed to choose the level of Renewable Gas service they wish to use given

⁷ Expected to commence in 2024.

⁸ More than the amount included as Renewable Gas Blend.

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- 1 their own particular regulatory requirements, including taking into account the number and value 2 of any credits they may receive under the BC-LCFS for the use of Renewable Gas if they are
- 3 NGV customers.
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- 5
- 6

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7 4.18 If transport customers and NGV customers do not participate in, and pay their 8 share of, the Baseline Renewable Gas Program, should any reductions in FEI's 9 throughput necessary to meet the forthcoming 2030 GHG emissions cap come 10 first from the transport customer and NGV customer segments?

12 Response:

13 Please refer to the response to BCSEA IR1 1.1.2. While the laws and regulations relating to how 14 to account for GHG reductions, and to whom GHG reductions are attributed, are not yet finalized. 15 FEI understands based on the CleanBC Roadmap, that when it delivers Renewable Gas to a non-16 NGV customer (whether sales or T-Service), the associated GHG reductions will count towards 17 the policy target of 47 percent emissions reduction in the CleanBC Roadmap, whereas the 18 Renewable Gas FEI sells to NGV customers will not contribute to that target.

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- 20
- 21
- 22 4.19 In Table 8-1: LCG Charge and S&T LC Rider Summary [p.114, pdf p.123], is it a 23 mistake that the S&T LC Rider for T-Service is shown as "TBD Annually" rather 24 than Not Applicable?
- 25
- 26 Response:
- 27 Confirmed, the S&T LC rider for T-Service should be "Not Applicable" instead of "TBD Annually".
- 28 FEI provides a revised version of Table 8-1 reflecting this change below.



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

		T-Service			
	Baseline R	enewable Gas	Volun	tary Renewable	e 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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1 D. Company Use Gas

2 5.0 Topic: Company Use Gas

Reference: Exhibit B-11, Application for a Revised RNG Program,

In Pacific Northern Gas's Application for a Low Carbon Energy [GGRR Renewable Gas]
Portfolio currently under review by the BCUC, PNG proposes to deliver a portion of its
Renewable Gas supply to "loads associated with its own operations and recover the
associated cost of that supply through the Company Use Gas Cost Rate from all sales
and transport customers." [Exhibit B-1, p.27, pdf p.34] PNG says that "A portion of LCE
[Renewable Gas] supply will be directed to PNG's own facilities to lower PNG's direct
(Scope 1) greenhouse gas emissions." [Footnote 2, p.1, pdf p.8]

- PNG includes both metered and unmetered gas in "Company Use Gas." However, PNG
 proposes to deliver Renewable Gas only to the metered portion of it Company Use Gas.
 PNG states:
- 14 "Company Use Gas demand originates from several sources on the PNG systems including office space and water heating, compressor fuel, line heaters, venting 15 16 and blowdowns, process plant fuel use, losses due to third party damage, fugitive 17 emissions and lost and unaccounted for gas volumes. The quantities of gas consumed or released through blowdowns, venting or fugitive emissions are 18 19 determined through engineering calculations and estimates, while the quantities of 20 natural gas combusted in office furnaces, hot water heaters, shop boilers, line 21 heaters and compressors is metered directly. To ensure verifiable claims on emissions reductions associated with the supply of LCE, PNG intends to deliver 22 23 LCE supply only to the metered portion of its Company Use Gas demand." [p.27, pdf p.34, underline added] 24
- PNG proposes to recover the cost of Renewable Gas supply consumed by PNG through
 a "Company Use Gas Cost Rate" from all natural gas service customers in PNG-West,
 Fort St. John and Dawson Creek. [p.27, pdf p.34]
- 5.1 Would FEI consider allocating Renewable Gas to its own Company Use Gas (fully
 or the metered portion) in order to reduce FEI's direct (Scope 1) greenhouse gas
 emissions? If not, why not?
- 31
- 32 Response:

Yes, FEI is currently evaluating the allocation of Renewable Gas, beyond the Renewable Gas
Blend, to its own Company Use Gas in order to reduce direct (Scope 1) greenhouse gas
emissions.

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5.2 Please provide a table showing estimates of FEI's annual metered, unmetered, and total Company Use Gas, and, for comparison, the annual amount of Renewable Gas proposed for the Renewable Gas Connections Program. Please state the assumptions.

6 Response:

FEI is unclear on how Pacific Northern Gas breaks down its company use gas (as referenced in
 the preamble); as a result, FEI has only provided total company use gas, along with the requested

9 comparator of the amount of gas for the Renewable Gas Connections service.

10 For 2020, total Company Use Gas was equivalent to 1.3 PJ of natural gas, and as a comparator,

- 11 FEI expects to deliver an average of 7 PJ of Renewable Gas per year for years 2023 through
- 12 2030 through the Renewable Gas Connections service. The Renewable Gas Connections service
- 13 is only one of FEI's programs to reduce the utility's GHG emissions. FEI has other programs
- 14 designed with the goal of reducing both Scope 1 and Scope 3 emissions for the utility.
- 15
- 16
- 17
- 185.3Would it be reasonable for FEI's transport customers, NGV customers, and non-19NGV sales customers to pay for their respective shares of the cost of Renewable20Gas for metered Company Use Gas required to deliver gas to these customers?
- 21

22 Response:

While FEI does not currently include any Renewable Gas in its Company Use Gas, FEI is evaluating doing so and will consider how to account for the cost and recovery of Renewable Gas in this context.



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1	E.	Renew	able Gas Connections Program							
2 3	6.0	Topic:	Renewable Gas Connections Program, Local Government Requirements							
4	Reference: Exhibit B-11, Application for a Revised RNG Program,									
5		On pag	ge 85, FEI states:							
6 7 8			"The Renewable Gas Connections service will <u>meet the requirements of local</u> governments for new residential construction, enabling FEI to continue to add <u>customers to the system.</u> " [p.85, pdf p.94, underline added]							
9 10 11 12		6.1	What evidence does FEI rely on for its assertion that the Renewable Gas Connections service will meet the requirements of local governments for new residential construction?							
13	<u>Respo</u>	onse:								
14	Please refer to the response to City of Richmond IR1 6.1.									
15 16										
17 18 19 20 21		6.2	Would FEI agree that adding new customers to the FEI gas distribution system is not, in and of itself, an objective of local governments' requirements regarding the carbon intensity of new residential construction?							
22	<u>Respo</u>	onse:								
23 24 25 26 27	FEI ag an obje constru require on the	rees that ective of uction. T ements of gas sys	at adding new customers to the FEI gas distribution system is not, in and of itself, f local governments' requirements regarding the carbon intensity of new residential The referenced section of the Application highlights that, in addition to meeting the of local governments, FEI's proposals also benefit all customers by maintaining load stem.							
28 29 30 31 32 33	on the gas system. 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. Please refer to Section 3.6.3 of the Application. FEI will continue to work with local governments to find mutually beneficial solutions where FEI's infrastructure continues to play an important role in meeting GHG reduction objectives.									



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1 7.0 Topic: Renewable Gas Connections Program, System Benefits

Reference: Exhibit B-11, Application for a Revised RNG Program, 7.4.2.1 Benefits of Renewable Gas Connections; 8.6 Customer Bill Impacts

- In explaining the benefits of the Renewable Gas Connections Program, FEI states on p.101:
- 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." [pdf p.110]
- 137.1Would FEI agree that the long-term viability of the FEI gas distribution system,14including utilizing assets efficiently and keeping rates affordable, requires15acknowledgment that the combustion of conventional (fossil fuel) natural gas by16utility customers creates increasingly unacceptable levels of GHG emissions, and17that declining throughput is a strategic reality that cannot be entirely reversed by18customer-funded incentives for new connections?

19

20 **Response:**

21 While FEI acknowledges that the declining use of conventional natural gas in buildings and 22 industry in favour of lower carbon energy sources like Renewable Gas is required, FEI does not 23 agree that declining energy throughput on its system is necessarily a strategic reality nor is it the 24 only compliance pathway for meeting emissions reduction targets. As discussed in the response 25 to BCUC IR1 1.1, FEI intends to pursue a mix of compliance pathways to meet BC's climate 26 objectives and policies, including the emissions cap on natural gas utilities. These pathways 27 include measures like energy efficiency, which will reduce throughput, as well as Renewable Gas, which can maintain or grow FEI's throughput. Further, FEI expects that natural and Renewable 28 29 Gas use will increase in the transportation sector to support the shift away from higher carbon 30 fuels like marine bunker oil and diesel.

In FEI's 2022 LTGRP, FEI provides more detailed modeling and analysis on compliance pathways
 to achieve the target, including the role of Renewable Gas and GHG reductions in specific sectors,
 as well as various demand scenarios.

- 34
 35
 36
 37 7.2 Does FEI agree that meeting the 2030 GHG emissions cap will require both reduced throughput and an increased proportion of Renewable Gas in delivered

gas?



2 **Response:**

- 3 Please refer to the responses to BCUC IR1 1.1 and BCSEA IR1 7.1.
- 4

1

- 5
- 6
- 7 7.3 Would FEI agree that existing and unsubsidized new customers will be hard
 8 pressed to reduce their own GHG emissions from applicable delivery gas to 6 MT
 9 CO2e in 2030, even without taking on cross-subsidization of 100% RG for new
 10 residential connections?
- 11

12 Response:

FEI does not agree that there will be cross-subsidization of new residential connections. Pleaserefer to the response to BCUC IR1 13.2.

FEI does not agree that Renewable Gas Connections will increase the burden on FEI's existing customers. The Renewable Gas Connections service will enable FEI to continue adding customers, thereby mitigating rate impacts through a broadened customer base over which to spread fixed system costs.



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Response to BC Sustainable energy Association and Sierra Club (BCSEA) Information Page 30	FortisBC Energy Inc. (FEI or the Company) Revised Renewable Cas Program Application – Stare 2 (Application)	Submission Date:
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1 8.0 Topic: Renewable Gas Connections Program, Rate Impacts

2 3

Reference: Exhibit B-11, Application for a Revised RNG Program, 8.6 Customer Bill Impacts; BCUC Decision and Order G-147-16

- In Decision and Order G-147-16, the BCUC made determinations regarding FEI's system
 extension tests. Under the heading, "Regulatory framework and purpose of system
 extension tests," the Panel states:
- 7 "The applicable legal framework governing system extension policies is sections 8 29, 30 and 58 to 61 of the Utilities Commission Act. In this decision, the Panel 9 considers whether FEI's proposals are: in the public interest; just, reasonable and 10 not unduly discriminatory; and, provide for the consideration and fair treatment of 11 existing and potential customers. The Panel accepts that the purpose and design 12 of the MX Test, service line cost allowance and contribution in aid of construction 13 is to ensure a fair and efficient method of making connections and the fair treatment 14 of customers." [p.i]
- 158.1Does FEI agree that the proposed Renewable Gas Connections Program is a16system extension program?
- 17

18 **Response:**

No. The Renewable Gas Connections service is a gas supply solution driven by and designed to meet local government and provincial policy. The Renewable Gas Connections service is intended to maintain energy choice for new homebuilders and new homeowners by providing a low-carbon gas-based energy option which meets GHGi regulations. Commodity charges, irrespective of this Application, are recovered from all customers on a rolled-in basis. A new customer is not charged the incremental cost of new commodity. This Application mirrors this current practice.

26 FEI does not agree that the regulatory framework governing system extension tests is applicable 27 to the proposed Renewable Gas Connections service. FEI's system extension policies are a 28 mechanism to determine how capital and operating costs (that reside in delivery rates) are 29 recovered, as driven by the addition of new customers. The system extension tests and 30 associated regulatory framework address the costs and benefits of system extension activities 31 where the costs are primarily those of the physical equipment and labour required to provide gas service to new customers, while the benefits are the revenues earned through the delivery charge. 32 33 Gas supply costs are not a factor in the system extension test. The Renewable Gas Connections 34 service is a gas supply solution to meet policy objectives, and all new customers attaching to the 35 system, including those that are provided with 100 percent Renewable Gas, must still meet the 36 system extension test. Given the parameters involved in the system extension test calculation, 37 the results of the test will be unaffected by the Renewable Gas Connections service.

38

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FORTIS BC [*]		Response	Response to BC Sustainable energy Association and Sierra Club (BCSEA) Information Request (IR) No. 1						
1 2	8.2	Does Fl applicat	EI agree that the regulatory framework governing system explete to the proposed Renewable Gas Connections Program?	<pre></pre>					
3 4		8.2.1	If so, please provide the MX Test rate impact analysis for Renewable Gas Connections Program.	or the proposed					
5 6 7	Response:	8.2.2	If not, why not?						
8	No. Please r	efer to the	response to BCSEA IR1 8.1.						
9 10									
11 12 13 14	8.3 Would FEI agree that the 2030 GHG emissions cap of 6 MT CO2e ranalysis of the rate impact of new gas connections on existing custor								
15	<u>Response:</u>								
16 17 18 19 20 21	FEI does not agree that the 2030 GHG emissions cap of 6 Mt CO2e requires a new analysis the rate impact of new gas connections on existing customers. The incremental costs Renewable Gas, and other initiatives such as DSM, to meet the CleanBC Roadmap will be incurred with or without new connections to the system. This Application seeks approval of ho FEI will recover those costs through a variety of offerings, including the proposed Renewable Ga Connections service.								
22 23									
24 25 26 27 28 29 30	8.4	Would F was to p GHG er meeting from the	FEI agree that, in the past, the dominant impact of new cust provide a broader base to cover fixed delivery costs, wherea missions cap of 6 MT CO2e new customers exacerbate th g the GHG emissions cap by increasing throughput and ' e limited available supply paid for by sales customers?	tomers on rates as under a 2030 ne challenge of using up' RNG					
31	<u>Response:</u>								
32 33 34 35	FEI does not agree. Expanding its supply of Renewable Gas, in conjunction with the revised offerings proposed in this Application, will enable FEI to continue adding customers, thereby mitigating rate impacts through a broadened customer base over which to spread fixed system costs.								
36 37									
38									



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In section 8.6 of the Application, FEI addresses "Customer Bill Impacts."

8.5 Please provide a quantitative analysis that addresses whether the delivery rate benefit of non-NGV sales customers of adding new residential customers is greater than non-NGV sales customers' cost of providing permanent 100% RNG to new residential customers.

7 <u>Response:</u>

8 Please refer to the response to BCSEA IR1 11.1 for a revision to the Renewable Connections
9 demand which is incorporated into this response. FEI provides the quantitative analysis for
10 Renewable Gas Blend customers below.

- 11 FEI compared the following scenarios:
- Scenario 1: The Renewable Gas Connections service is available and FEI is able to continue to add customers in the building sector, amounting to 10,000 net additions per year with the same use per customer (UPC) as the rate schedule average. The added customers bring incremental volume over which to spread system fixed costs.
- 16 Scenario 2: The Renewable Gas Connections service is not approved and provincial • 17 building stock turnover is approximately 2 percent per year (from FEI's response to BCUC IR1 12.2), resulting in the utility losing 2 percent of its residential and commercial 18 19 customers per year. In this scenario, FEI used the current UPC for its residential and 20 commercial rate schedules multiplied by the decline in customers to determine the 21 declining demand and assumed that the delivery margin required from all customers in a 22 rate schedule is held constant and that constant delivery margin is spread over less 23 customers and less volume resulting in delivery rate increases. These results are the 24 same as those provided in the response BCUC IR1 12.3.2.

The assumptions for each scenario above affect the delivery charge and S&T LC rider. When volume declines, delivery rates and the S&T LC rider increase. FEI has provided the delivery rate impacts, S&T LC rider impacts, and the impacts of both of these charges on annual bills in the tables below. The tables show that, under Scenario 1, FEI is able to continue to add customers in the building sector by serving them 100 percent Renewable Gas, priced as proposed in the Application, resulting in lower delivery rates, a lower S&T LC rider, and lower bills than Scenario 2.



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Table 1: Rate Schedule 1 - Renewable Gas Blend - Scenario Difference

		2024	2025	2026	2027	2028	2029	2030	2031	2032
Scenario 1: RG Blend with RG Connections Offering and Customer Growth of net 10,000 per year										
RS 1										
Charges										
Delivery Charge	\$/GJ	4.732	4.672	4.613	4.555	4.499	4.443	4.388	4.335	4.282
Yearly Change	%		-1.3%	-1.3%	-1.3%	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%
S&T LC Rider	\$/GJ	1.374	1.705	1.924	2.274	2.274	2.515	2.765	3.375	3.964
Yearly Change	%		24.1%	12.9%	18.2%	0.0%	10.6%	10.0%	22.0%	17.4%
<u>Annual Bill</u>										
Delivery Charge and S&T LC Rider	\$	507	530	543	568	563	578	594	641	685
Yearly Change	%		4.4%	2.5%	4.5%	-0.8%	2.7%	2.8%	7.8%	7.0%

Scenario 2: RG Blend RS 1	Bill with	out RG Cor	nections	6 Offering	; and lost	custom	ers at 2%	per year		
<u>Charges</u>										
Delivery Charge	\$/GJ	5.337	5.483	5.631	5.783	5.938	6.096	6.257	6.421	6.589
Yearly Change	%		2.7%	2.7%	2.7%	2.7%	2.7%	2.6%	2.6%	2.6%
S&T LC Rider	\$/GJ	1.387	1.987	2.671	3.309	3.572	4.158	4.800	5.870	6.963
Yearly Change	%		43.3%	34.4%	23.9%	7.9%	16.4%	15.4%	22.3%	18.6%
Annual Bill										
Delivery Charge and S&T LC Rider	\$	559	621	690	756	790	852	919	1,021	1,126
Yearly Change	%		11.1%	11.1%	9.5%	4.6%	7.8%	7.8%	11.2%	10.3%



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Table 2: Rate Schedule 2 - Renewable Gas Blend - Scenario Difference										
		2024	2025	2026	2027	2028	2029	2030	2031	2032
Scenario 1: RG Blend	with RG	i Connec	tions Off	ering and	l Custom	er Growt	h of net	10,000 p	er year	
RS 2										
<u>Charges</u>										
Delivery Charge	\$/GJ	3.638	3.595	3.552	3.511	3.470	3.430	3.390	3.351	3.313
Yearly Change	%		-1.2%	-1.2%	-1.2%	-1.2%	-1.2%	-1.2%	-1.1%	-1.1%
S&T LC Rider	\$/GJ	1.374	1.705	1.924	2.274	2.274	2.515	2.765	3.375	3.964
Yearly Change	%		24.1%	12.9%	18.2%	0.0%	10.6%	10.0%	22.0%	17.4%
Annual Bill										
Delivery Charge and	\$	1,616	1,709	1,766	1,865	1,852	1,916	1,985	2,169	2,346
S&T LC Rider				0.00/	F 60/	0 70/	0 50/	0.00/	0.00/	0.00/
Yearly Change	%		5.7%	3.3%	5.6%	-0.7%	3.5%	3.6%	9.3%	8.2%
Scenario 2: RG Blend	Bill with	out RG (Connectio	ons Offer	ing and l	ost custo	mers at 2	2% per ye	ear	
RS 2										
<u>Charges</u>										
Delivery Charge	\$/GJ	4.075	4.180	4.288	4.397	4.509	4.623	4.739	4.858	4.979
Yearly Change	%		2.6%	2.6%	2.6%	2.5%	2.5%	2.5%	2.5%	2.5%
S&T LC Rider	\$/GJ	1.387	1.987	2.671	3.309	3.572	4.158	4.800	5.870	6.963
Yearly Change	%		43.3%	34.4%	23.9%	7.9%	16.4%	15.4%	22.3%	18.6%

<u>Annual Bill</u>										
Delivery Charge and S&T LC Rider	\$	1,761	1,988	2,244	2,485	2,605	2,831	3,075	3,459	3,850
Yearly Change	%		12.9%	12.8%	10.7%	4.9%	8.7%	8.6%	12.5%	11.3%



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Table 3: Rate Schedule 3 - Renewable Gas Blend - Scenario Difference

		2024	2025	2026	2027	2028	2029	2030	2031	2032
Scenario 1: RG Blend v	vith RG	Connection	s Offering a	and Custon	ner Growth	of net 10,0	000 per yea	ar		
RS 3										
<u>Charges</u>										
Delivery Charge	\$/GJ	3.175	3.141	3.108	3.076	3.044	3.013	2.982	2.952	2.922
Yearly Change	%		-1.1%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
COT LC Didor	ć/ci	1 274	1 705	1 02 4	2 274	2 274	2 515	2.765	2 275	2.004
Sour LC Rider	\$/GJ	1.374	1.705	1.924	2.274	2.274	2.515	2.765	3.375	3.964
Yearly Change	%		24.1%	12.9%	18.2%	0.0%	10.6%	10.0%	22.0%	17.4%
Appual Bill										
<u>Annuar Dill</u> Dolivon/Chargo and										
S&T IC Ridor	\$	16,171	17,228	17,891	19,022	18,909	19,653	20,435	22,495	24,483
Voarly Chango	0/		C 50/	2 00/	C 20/	0.6%	2 00/	4.0%	10 1%	0 00/
really change	/0		0.570	3.070	0.570	-0.076	3.9%	4.0%	10.1/0	0.0/0
Scenario 2: RG Blend E	Bill with	out RG Conr	ections Of	fering and	lost custor	ners at 2%	peryear			
RS 3										
<u>Charges</u>										
Delivery Charge	\$/GJ	3.515	3.596	3.680	3.765	3.852	3.940	4.031	4.123	4.217
Yearly Change	%		2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
S&T LC Rider	\$/GJ	1.387	1.987	2.671	3.309	3.572	4.158	4.800	5.870	6.963
Yearly Change	%		43.3%	34.4%	23.9%	7.9%	16.4%	15.4%	22.3%	18.6%
<u>Annual Bill</u>										
Delivery Charge and	¢	17/126	10 951	22 281	25 152	26 305	28 201	31 300	25 5 21	20 750
S&T LC Rider	ç	17,420	100,01	22,301	23,133	20,353	20,194	51,559	33,331	55,750
Yearly Change	%		13.9%	13.7%	11.4%	4.9%	9.1%	9.0%	13.2%	11.9%



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1 9.0 Topic: Renewable Gas Connections Program, Permanence

2

3

Reference: Exhibit B-11, Application for a Revised RNG Program, 7.4.2 Renewable Gas Connections

- Associated with the proposed Renewable Gas Connections Program, FEI proposes new
 rate schedules for the New Residential Connections service, which FEI describes as
 <u>"permanent."</u>
- FEI proposes that the tariff for all Renewable Gas Connections would attach to the building
 (rather than to the customer) and would specify 100% Renewable Gas service for the life
 of the building. On page 100, FEI states:
- 10"All Renewable Gas Connections will be designated as low carbon and will be11served by a tariff that is tied to the building, rather than the customer. In this way,12the building remains on a gas service receiving 100 percent Renewable Gas for13its life (as opposed to the service tied to the individual customer who may leave14the system at any time.)" [p.100, pdf p.109, underline added]
- 9.1 Please confirm, or otherwise explain, that when FEI uses the term "permanent" to describe the rate schedules for Renewable Gas Connections this means that the rate schedules are to be tied to the building and that 100% RG service is guaranteed for the life of the building.

20 Response:

- 21 Confirmed. Please refer to the response to City of Richmond IR1 3.2 for a further discussion on 22 how the proposed Renewable Gas Connections tariff is considered permanent.
- 23

19

- 24
- 25
- 269.2Do the proposed rate schedules for all Renewable Gas Connections provide that27for the life of the building the 100% RG service will be at the expense of all sales28customers except for the S&T LC Rider that will be paid by the Renewable Gas29Connection customer?
- 30
- 31 **Response:**

32 No, the rate for Renewable Gas Connections service is not at the expense of all sales customers.

33 Rather, the Renewable Gas Connections service is designed to meet the needs of customers and

is driven by local government policies seeking to reduce GHG emissions which have, in practice,

35 had the effect of reducing energy choice in the new residential construction sector.

Please refer to the response to BCUC IR1 13.2 for a discussion of vintage pricing and how setting
 rates for new customers that are higher than those charged to existing customers would confer a

38 wealth benefit on the existing customers and, as such, is unduly discriminatory to new customers.



1 2	Please also re the Bonbright	efer to the response to BCUC IR1 16.2 for a discussion on how FEI's proposal meets principles.
3 4		
5 6 7 8	9.3	Does FEI agree that the BCUC always retains jurisdiction under the UCA to modify a rate schedule?
9	<u>Response:</u>	
10 11	Unless the B may direct me	CUC's jurisdiction is constrained, such as through an Order in Council, the BCUC odifications to rate schedules.
12 13		
14		
15	9.4	If the BCUC approves the Renewable Gas Connections Program and the
16 17		associated rate schedules, does FEI agree that the BCUC could at any time in the future change or remove the provision for 100% RG2
18		
19	<u>Response:</u>	
20 21	Please refer t Renewable G	to the response to City of Richmond IR1 3.2, where FEI explains how the proposed Bas Connections tariff will be considered permanent.



1 2	10.0	Topic:	Renewable Gas Connections Program, Market Distortion, Cross- Subsidy
3 4 5		Reference:	Exhibit B-11, Application for a Revised RNG Program, s.7.2.2 Enable Compliance with Building Regulations to Maintain Energy Choice for New Residential Construction
6		On page 87	, FEI states:
7 8 9		"A r Con cons	evised Renewable Gas Program <u>must</u> provide an option for New Residential nections to comply with regulations limiting emissions from new residential struction to maintain energy choice for British Columbians.
10 11 12 13		As c conv drive redu	lescribed in Section 3.5, it is becoming increasingly difficult for FEI to deliver ventional natural gas service to new residential construction. This is primarily on by bylaws and other policies implemented by local governments aimed at using GHG emissions, but FEI's ability to connect new residential buildings will
14 15		be fu	urther restricted with forthcoming amendments to the BC Building Code which rporate a GHGi limit. Provincial government policy also seeks to eliminate
16 17 19		carb deve	on pollution from new nomes.95 These barriers to service leave builders, slopers and home owners without a viable alternative to electricity. Absent a
18 19 20		<u>resic</u> gas	<u>system and will have limited energy choice."</u> [pdf p.96, underline added]
21 22		10.1 Doe resid	s FEI agree that there is a competitive market for heating supply for new dential construction in BC?

2324 **Response:**

There is a competitive marketplace in BC for end-use heating supply equipment such as furnaces, heat pumps, boilers, hot water heaters and fireplaces, for example. There is not, however, a competitive market in BC for the primary energy that is converted, via these appliances, into heat. The only two viable primary energy sources are electricity and natural gas (or Renewable Gas). The suppliers of both services are natural monopolies and they do not operate in a workably competitive market. Please refer to the responses to the BCUC IR1 13 series.

- 31
- 32
- 33 34
- 10.2 Does FEI agree that low-carbon electric heat pumps are a feasible space and water heating solution for new residential construction in BC?
- 35 36
- 37 **Response:**



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1 While electric heat pumps can be a feasible space and water heating solution, it may not be 2 possible, practical or desirable for all customers to use a heat pump for space and water heating. 3 For example, if there is insufficient electricity capacity, all customers may not be able to heat their 4 space or water with electricity. Using a heat pump may also not be practical or desirable for an 5 individual customer due to building design or other reasons such as cost. Moreover, electric heat 6 pumps work less efficiently as temperature drops which will further increase the peak on the 7 electric system, potentially causing rate pressure for customers and capacity pressures for BC 8 Hydro. 9 FEI believes that it is important for customers to have energy choices so that they can choose the solution that best meets their particular needs and that a diversified energy future provides more 10

benefits for British Columbians. Renewable Gas has a very low carbon intensity, which makes it an excellent solution for meeting British Columbia's carbon reduction targets including, in particular, through its use in the building sector. Please also refer to the response to City of Vancouver IR1 4.3 for a discussion of the difficulties in electrifying the new residential construction sector.

- 16
- 17
- 18 19

20

21

- 10.3 Does FEI agree that its proposed New Residential Connections Program relies entirely on cross-subsidization from other non-NGV sales gas customers?
- 22 Response:

23 The following response is provided by Concentric.

No. Please refer to the responses to BCUC IR1 13.2, BCUC IR1 16.2, and BCSEA IR1 10.4. Customers provided with service under the New Residential Connections Program are charged cost-based rates, using average cost pricing, which represents a just and reasonable apportionment of FEI's cost of service.

- 28
- 29
- 29 30
- 3110.4Would FEI agree that cross-subsidization of 100% RG for new residential gas32connections for the life of the premises would materially prejudice the competitive33position of non-gas solutions in the market for heating supply for new residential34construction?
- 35

36 Response:

37 The following response is provided by Concentric.

No. This question is premised on two faulty claims: (1) the Renewable Gas Connections service

39 reflects cross subsidies; and (2) there is a competitive market for energy that is used to produce



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1 heat. Please refer to the responses to BCUC IR1 13.2, 16.2, 17.1 and 17.2 which explain why the 2 pricing for the Renewable Gas Connections service is not cross subsidized and there is not a competitive market for energy that is used to produce heat. Therefore, the Renewable Gas 3 4 Connections Program would not be prejudicial with regard to the providers of non-gas heating 5 supply for new residential construction.

- 6 7
- 8
- 9 How does the proposed Renewable Gas Connections Program jibe with the 10.5 10 general rule that BCUC does not allow a regulated public utility to cross-subsidize 11 a service offering in a competitive market?
- 12
- 13 Response:

14 The following response is provided by Concentric.

- 15 This guestion reflects the same two faulty assumptions as contained in BCSEA IR1 10.4, so refer 16 to the response to that IR. The proposed average cost pricing for the Renewable Gas Connections
- 17 program is consistent with established pricing policies of the BCUC and many other regulators.
- 18
- 19
- 20
- 21 10.6 Please confirm, or otherwise explain, that the <u>purpose</u> of the New Residential 22 Connections Program is to alter the competitive outcome of the market for heating 23 service for new residential construction so as to benefit the prospects of new gas 24 connections and harm the prospects of alternatives such as electricity and district 25 energy systems.
- 26
- 27 **Response:**

28 The following response is provided by Concentric.

- 29 Not confirmed. Please refer to the response to BCUC IR1 17.1.
- 30
- 31
- 32 33 10.7 Would FEI agree that the proposed Renewable Gas Connections Program is 34 explicitly designed not to recover from participating customers FEI's full cost of 35 providing service to those customers. If so, is the proposal contrary to the BCUC's 36 general approach that rates should be set on a cost of service basis? If not, why 37 not?



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1 2	<u>Response:</u>						
3	The following response is provided by Concentric.						
4	No. Please ref	fer to the responses to BCUC IR1 13.2 and 16.2.					
5 6							
7 8 9 10 11 12	10.8	How does FEI justify the proposed cross-subsidization inherent in the proposed New Residential Connections Program in light of the BCUC's many rulings that rates should generally aim to recover the full cost of providing the service and should not distort competitive markets?					
13	Response:						
14	The following	g response is provided by Concentric.					
15	Please refer to	o the responses to BCUC IR1 13.2, 16.2 and 17.1.					
16 17							
18 19 20 21 22	10.9	Please provide the results of any analysis FEI has done on heating options for new residential construction comparing the cost of gas heating with 100% Renewable Gas under the Voluntary RG Program with the cost of electric heat pump systems.					
23	Response:						
24	Please refer to	o the responses to the BCUC IR1 13 series.					
25 26 27 28 29 30	10.10 <u>Response:</u>	Would FEI agree that gas heating with 100% Renewable Gas under the Voluntary RG Program in new residential construction is partially cross- subsidized, currently through the BVA rider and, as proposed, through the S&T LC rider?					
31	The following	g response is provided by Concentric.					
32	No. Please ref	fer to the responses to BCUC IR1 13.2 and 30.1.					
33							



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1 **11.0** Topic: Renewable Gas Connections Program, Demand

Reference: Exhibit B-11, Application for a Revised RNG Program, Figure 8- 3: Forecast Volumes of Renewable Gas Supply, Customer Demand and Allocation to Sales Customers (PJ), p.122, pdf p.131

- 11.1 With reference to the figures in PJs per year for Demand—Renewable Gas Connections from 2021 to 2032, why is the 2023 figure 4.3 PJ when all the subsequent year figures increase by only about 1.5 PJ per year?
- 7 8

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9 Response:

10 When responding to this question, FEI discovered an error in its calculation of Renewable Gas

11 Connections demand. As explained further below, the load required to serve the Renewable Gas

12 Connections service was calculated as starting in 2021, which was in error.

13 The total volume of Renewable Gas required to serve the demand from the Renewable Gas 14 Connections service is each year's demand, building upon the cumulative sum of demand in all 15 prior years. Based on the procedural timeline proposed in the Application upon filing, the 16 commencement date for Renewable Gas Connections service for purposes of forecasting 17 demand for the programs and associated rate impacts is 2023. While FEI correctly adjusted its 18 calculations to eliminate the demand for Renewable Gas Connections customers in forecast 19 Renewable Gas demand for 2021 and 2022, it did not eliminate the build-up of the demand from 20 those two years from the 2023 demand onward. This error resulted in the 4.3 PJ increase in the 21 demand from Renewable Gas Connections in 2023. FEI has corrected for this and provides a 22 revised Figure 8-3 below.

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4 FEI has made corrections to other figures and tables accordingly when responding to all other 5 associated IRs.

6 7 8 9 11.2 Is the forecast supply of hydrogen, syngas and lignin intentionally matched to the demand for Renewable Gas Blend, or is the alignment on the graph coincidental? 10 11 12 Response: The alignment between the supply of hydrogen, syngas and lignin and the Renewable Gas Blend 13 14 demand is coincidental. 15 16 17 18 11.3 What volumes of lignin are included in the supply curve? Please confirm that lignin would not be injected into the general gas system, but would be used on specific 19 20 industrial sites to displace piped gas.



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2 <u>Response:</u>

- 3 Confirmed. Lignin would not be injected into the general gas system, but would instead be
- 4 produced and used in a co-located industrial plant process to displace piped natural gas. As
- 5 discussed in the response to BCUC IR1 3.1, lignin supply is forecast to commence in 2025 at 0.5
- 6 PJ, growing to 2.5 PJ by 2028 and then remain flat thereafter.



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Topic: **Renewable Gas Connections Program**, 1 12.0

- 2 Reference: Exhibit B-11, Application for a Revised RNG Program, Figure 8-4: 3 Annual Bill for Rate Schedule 1; Figure 8-5: Annual Bill for Rate 4 Schedule 2, Figure 8-6: Annual Bill for Rate Schedule 3; Appendix D-5 2, Proposed Tariff Revisions to Enable Renewable Gas Connections 6 and Voluntary Renewable Gas Services
 - 12.1 Does FEI intend that the cross-subsidy of Renewable Gas Connections for RS 1 PLC customers will be borne by RS 1 customers, for RS 2 PLC customers by RS 2 customers, and for RS 3 PLC customers by RS 3 customers?
- 9 10

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11 Response:

- 12 FEI does not agree that there is any cross-subsidy of Renewable Gas Connections customers.
- 13 Please refer to the responses to BCUC IR1 13.2 and 16.2. Furthermore, FEI does not differentiate
- 14 midstream costs for these customer rate schedules; therefore, they are treated the same.
- 15
- 16

- 17
- 18 The proposed rate schedules for Permanent Low Carbon Gas service appear to be limited 19 in their application to single-metered premises.
- 20 12.2 For greater certainty, please confirm, or otherwise explain, that the proposed rate 21 schedules for Permanent Low Carbon Gas service are limited in their application 22 to single-metered premises.
- 23

24 Response:

25 Not confirmed. The proposed rate schedules for Permanent Low Carbon Gas service are 26 generally applied to single-metered premises, as residential premises are typically provided with 27 a single meter, be they single family homes, duplexes, townhouses, or Apartment Blocks. 28 However, this does not preclude a single residential building from having multiple meters and still 29 participating in the offering. For example, vertical subdivisions are Apartment Blocks with multiple 30 meters serving each suite. In this case, each suite is considered a separate premise. Similarly, a 31 duplex may have two meters; however, each dwelling unit is considered a premise.

32 33		
34		
35	12.3	Please explain FEI's rationale for the single-meter limitation. Is this intended to
36		prevent overlap with certain municipal new buildings requirements?
37		



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1 Response:

2 Please refer to the response to BCSEA IR1 12.2.

12.4 Apartment Block is defined on pdf p.316. Does "Apartment Block" include condominiums?

Response:

- 10 Yes, FEI's reference to an "Apartment Block" includes condominiums, as per the definition
- 11 provided in the proposed tariff amendments.



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1 F. Special Areas

13.0 Topic: Municipality of Revelstoke and Fort Nelson Service Area

Reference: Exhibit B-11, Application for a Revised RNG Program, Appendix D-2, Proposed Tariff Revisions

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13.1 Please explain why the Municipality of Revelstoke and the Fort Nelson Service Area are exempted from the "Availability" of the proposed Low Carbon and Permanent Low Carbon rate schedules.

8

9 Response:

FEI excluded Revelstoke because Revelstoke customers would not be eligible to receive a carbon tax credit. Under the *Carbon Tax Act*, it must be possible for a customer to receive biomethane in order to receive a carbon tax credit. Since Revelstoke is disconnected from the gas network, it is not possible for these customers to receive biomethane nor receive a carbon tax credit on their bills.

15 However, upon further consideration, FEI considers that Revelstoke customers should contribute 16 to the cost of GHG reductions required by the rest of FEI's sales customers. Revelstoke 17 customers benefit from an amalgamated midstream cost and energy supply portfolio with the rest 18 of FEI's sales service customers, so it is reasonable and fair that they contribute to the cost to 19 decarbonize this supply by way of including the S&T LC rider on their bills. Accordingly, FEI 20 proposes to amend the tariffs to include Revelstoke in the low carbon blend (LC) tariffs as part of 21 the compliance filing to this Application, so that they will cover some of the cost to decarbonize 22 FEI's gas stream through the S&T LC rider.

FEI applied for common rates for the Fort Nelson Service Area on August 12, 2021 and FEI believes that the common rates application proceeding and decision must be concluded before FEI can determine whether all or parts of FEI's Renewable Gas Program should be applied to the Fort Nelson Service Area.



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1	G.	Natura	al Gas for Vehicles
2 3	14.0	Topic	Voluntary Renewable Gas Program, Natural Gas for Vehicles Reference:
4 5 6 7			Exhibit B-11, Application for a Revised RNG Program, 3.4.1.3 CleanBC Roadmap – Transportation Sector; 5.7 Natural Gas Vehicle Customers; 7.4.3.2 Modification 2: Price of Renewable Gas for Transportation Service and NGV Customers
8		On pa	ge 69, FEI states:
9 10 11 12 13 14			"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." [p.69, pdf p.78]
15		On pa	ge 104, FEI states:
16 17 18			"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." [p.104, pdf p.113]
19 20 21 22 23		FEI pro GHG e to natu in the Renev	ovides two reasons for increasing the Renewable Gas rate for NGV customers: that emission reductions from Renewable Gas consumed by NGV customers (compared ural gas) do not contribute to FEI meeting the 2030 GHG emissions cap described <i>CleanBC Roadmap to 2030</i> ; and that NGV customers can monetize their use of vable Gas under the BC Low Carbon Fuel Standard framework.
24 25 26 27 28 29		14.1	Would FEI agree that, while 100% RG consumed by NGV customers reduces GHG emissions due to the difference between the carbon intensity of RG and the carbon intensity of the displaced natural gas, 100% RG consumed by new customers under the RG Connections Program does not actually <u>reduce</u> GHG emissions, because there is no natural gas displaced?
30	Resp	onse:	
31	FEI u	nderstar	nds the logic of the question to be that no natural gas is displaced through the use

not yet been built and, therefore, are not consuming conventional natural gas. By the same logic,

34 serving new residential construction with electricity would also not reduce GHG emissions.

If the logic of the question is that Renewable Gas Connections would displace electricity, pleaserefer to the response to BC Hydro IR1 1.3.

of Renewable Gas in the residential new construction sector because these new buildings have



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- 1 Similar to serving new residential construction with electricity, adding new 100 percent Renewable
- 2 Gas customers is aligned with the policy goals of local governments to lower the emissions from

3 new residential construction. FEI also notes that its Renewable Gas Connections program will

4 also apply to conversions to gas from higher emitting energy sources.

5 In addition, the proposed Renewable Gas Connections service will have other benefits, including 6 preserving energy choice, allowing the gas utility to continue to be viable and pay for 7 decarbonization initiatives such as acquiring Renewable Gas, which overall results in a more

8 reliable, resilient, and affordable energy system in BC.



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1	Н.	Renewable C	Sas Supply						
2	15.0	Topic:	Renewable Gas Supply						
3 4		Reference:	Exhibit B-11, Application for a Revised RNG Program, Table 6-1: Contracted RNG Supply Projects, p. 74, pdf p.83.						
5		On page 75,	FEI says:						
6 7 8		"As described Renewable G <u>CleanBC Pla</u>	I above, FEI has increased volumes substantially since the inception of the as Program. <u>Based on the totals in Table 6- 1, FEI is halfway to meeting the</u> <u>n target of 15 percent Renewable Gas by 2030."</u> [pdf p.84, underline added]						
9 10 11 12 13 14		15.1 Please the G Existin 15% t specif	e provide a table showing the Total Existing Expected Annual Volume and rand Total Expected Annual Volume in TJ/year and as a percentage of ig annual throughput and Anticipated (2030) annual throughput to which the arget applies. Please provide the TJ/year for the throughput figures. Please y any assumptions.						
15	Respo	onse:							
16	The 15	5 percent Rene	wable Gas target is set out in section 10 of the GGRR, as follows:						
17 18 19		the aggreg of natural gas 2019.	ate amount of all products must not exceed 15% of the total amount ، in GJ, provided by the public utility to its non-bypass customers in						
20 21 22	Refere amour to acq	ence to "all proo nt is approxima uire. The volun	ducts" includes RNG, hydrogen, synthesis gas and lignin, and the aggregate tely 30 PJ. The GGRR sets the volume of Renewable Gas the utility is able nes to which FEI must reduce emissions are those of buildings and industry.						
23 24 25	FEI pro in resp subtra	ovides the follo oonse to BCSE cted the Low (wing table using the Diversified Energy Future (Planning) scenario provided A IR1 1.2 and the supply of Renewable Gas implicit in the Application. FEI Carbon Transportation volumes (LCT) because 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. To determine the percent of Renewable Gas, FEI divided the Renewable Gas implicit in the Application (Line 4) by the annual demand for buildings and industry (Line 3).

Table 1: Renewable Gas as a Percent of Total Throughput for Buildings and Industry

Line											
No.			2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Forecast FEI Annual Demand (BCSEA IR1 1.2)	PJ	209	214	222	229	234	238	246	248	251
2	Less: Low Carbon Transportation (BCSEA IR1 1.2)	PJ	(6)	(13)	(24)	(34)	(40)	(47)	(56)	(60)	(65)
3	Annual Demand for Buildings and Industry	PJ	204	201	198	195	193	191	189	188	186
4	Renewable Gas underpinning Application	PJ	4	8	12	15	18	21	24	27	30
5	Percent (Line 4 / Line 3)	%	2%	4%	6%	8%	10%	11%	13%	14%	16%

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1 2		
3 4 5 6 7	15.2	How much additional Expected Annual Volume of Renewable Gas, above the Grand Total Expected Annual Volume, will FEI need to acquire to meet the 15% target in 2030?
8	Response:	
9 10	Please refer Renewable G	to the response to BCSEA IR1 15.1. FEI anticipates that it will meet its 15 percent Gas target by 2030.
11 12		
13 14	FEI co	ontinues:
15 16 17 18 19 20 21		"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." [pdf p.84
22 23	In sec BC PI	tion 6.3.2 FEI discusses its Short and Long-Term Supply Forecast to Meet the Clean an. Figure 6-3 shows a 10-Year Renewable Gas Supply Forecast.
24 25 26	15.3	Please provide a more-detailed description of how FEI developed the 10- Year Renewable Gas Supply Forecast.
20 27	Response:	
28	FEI develope	d the 10-year Renewable Gas supply forecast based on:
29	• Expec	cted volumes from FEI's operating RNG projects.
30	• Expec	cted volumes from executed and accepted RNG agreements.
31 32 33	 Volun supply estimation 	nes from known prospective, potential supply projects to augment future RNG y. As the prospective supply volume and timing is less certain, FEI weighted the ated volume contribution with a lower contribution per project.
34 35 36	 Based FEI as 2025 	d on FEI's work on hydrogen, syngas and lignin development within FEI's system, ssumed small amounts of hydrogen, lignin and syngas start to be acquired in 2024, and 2028, respectively.



- 1 The supply forecast also reflects FEI's expected cost. RNG is priced based on FEI's experience.
- 2 Hydrogen is priced at near the GGRR maximum, with a lower price later in the forecast based on
- the expectation of hydrogen being produced at scale later in the decade. Syngas and lignin are 3
- 4 internal estimates and reflect discussions with potential suppliers
- 5 For ease of reference, FEI provides the forecast supply curve and expected pricing underlying the bill impact analysis included in Section 8 of the Application below. 6

Table 1: Forecast of Renewable Gas Supply and Average Acquisition Cost

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Supply												
RNG	ΤJ	4,000	8,100	11,400	13,100	15,300	16,500	17,600	18,800	20,000	21,500	23,000
Hydrogen	ΤJ			700	1,400	2,100	2,900	3,600	4,300	5,000	9,000	13,000
Syn Gas	ΤJ							500	1,500	2,500	2,800	3,000
Lignin	ΤJ				500	1,000	2,000	2,500	2,500	2,500	2,500	2,500
Total	TJ	4,000	8,100	12,100	15,000	18,400	21,400	24,200	27,100	30,000	35,800	41,500
Price												
RNG	\$/GJ	22.60	23.07	23.55	24.05	24.55	25.07	25.60	26.13	26.68	27.24	27.82
Hydrogen	\$/GJ			30.50	30.50	30.50	30.50	15.00	15.00	15.00	15.00	15.00
Syn Gas	\$/GJ							22.75	23.00	23.25	23.50	23.75
Lignin	\$/GJ				22.00	22.25	22.50	22.75	23.00	23.25	23.50	23.75
Other Acquisition Costs	\$000	2,771	3,666	3,808	3,884	4,127	4,210	4,294	4,380	4,468	4,557	4,648
Weighted Average	\$/GJ	23.29	23.52	24.27	24.84	25.33	25.76	23.85	24.06	24.31	23.74	23.38

9 Please also refer to the response to BCUC IR1 34.1 for a discussion of the "Other Acquisition 10 Costs".

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- What does FEI expect will be the average supply cost (to FEI) of RNG, hydrogen, 15.4 synthesis gas and lignin, separately and together, in 2030?

17 **Response:**

- 18 Please refer to the response to BCSEA IR1 15.3.
- 19
- 20
- 21
- 22 If possible, please provide the supply cost curve for RG faced by FEI, whether 15.5 23 based on the 10-Year Renewable Gas Supply Forecast or otherwise. If feasible, 24 please also provide separate supply cost curves for RNG, hydrogen, synthesis 25 gas, and lignin. Please state the assumptions. 26



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1 Response:

2 Please refer to the response to BCUC IR1 3.1.



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1	I. Cost of new		of new I	residential gas heating		
2 3	16.0	Topic	:	Data on Gas Usage and Costs for Heating Equipment in New Residential Construction		
4 5	Reference:		ence:	Exhibit B-11, Application for a Revised RNG Program, 5.3 Residential Customers, pp. 59 – 63.		
6 7		BCSE/ useful	A would lifetime	like information on FEI's understanding of the average costs and average s for new residential gas equipment.		
8 9 10 11 12	16.1 Does F energy constr please		Does F energy constru please	El have an analysis of the comparative installation and operating costs and use for a gas furnace versus an electric heat pump in typical new uction for: a single family detached house; half a duplex; a row house? If so, provide the analysis, with the background assumptions.		
13	Respo	onse:				
14 15	Please betwee	e refer t en heat	o the re ing with	sponses to BCUC IR1 13.6 and 13.7 for information on comparative costs Renewable Gas versus heat pumps.		
16 17						
18 19 20 21 22		16.2 16.3	Please efficier to infor Please	e indicate the main source or sources of information on the costs and ncies of residential natural gas equipment for new construction that FEI uses rm its analyses for its DSM planning.		
23 24 25 26 27 28		10.0	piping, that FI heater kind F progra	energy efficiency rating, operating efficiency and average useful lifetime El uses in its analyses for: gas furnaces, gas tankless and storage water s, gas oven/cooktops, and gas dryers used in typical new construction of the El anticipates would be included in the Renewable Gas Connections m.		
29	Respo	onse:				
30 31	FEI re	espectfu ditures	illy sub applicat	mits that these two questions are more relevant to FEI's future DSM ion or FEI's recently-filed LTGRP.		
32 33	As described in the Application, the Renewable Gas Connections service would be required by all new residential connections across BC, irrespective of building codes, equipment lifetimes,					

all new residential connections across BC, irrespective of building codes, ec
 operating efficiencies, appliance types, and minimum efficiency regulations.

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BCSEA would also like information on FEI's current cost-effectiveness analysis assumptions regarding energy use and costs for homes and residential appliances in FEI's integrated service territory.

- 16.4 Please confirm the current levels of each rate component plus BVA rider and carbon tax for RS 1, RS 2 and RS 3. Please provide the same information for RS
 PLC 1, RS PLC 2 and RS PLC 3 assuming approval. Please provide FEI's estimate of the proportion of PLC customers and load in RS PLC 1, PLC 2 and PLC 3.
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9 Response:

10 In the first column of numbers in the tables below, FEI sets out the current⁹ levels of each 11 component of RS 1, 2 and 3 plus the BVA Rider and carbon tax (as at April 1, 2022).¹⁰ 12 Understanding that the Low Carbon (LC) and Permanent Low Carbon (PLC) rate schedules in 13 the Application are proposed to commence January 1, 2023, for comparative purposes, FEI has 14 included in the last two columns of numbers the rate schedules that will be in place at that time. 15 FEI has left all charges unchanged, except for the following items: (i) elimination of the BVA Rider, 16 (ii) addition of the expected S&T LC rider, (iii) addition of the Cost of Low Carbon Gas (LCG Charge) which will be set to equal the Cost of Gas plus Carbon Tax in the PLC rate schedules, 17 18 and (iv) the carbon tax charge of \$65 per tonne expected to be in place on April 1, 2023. For the 19 RS 1PLC, RS 2PLC and RS 3PLC rate schedules, FEI shows n/a for carbon tax; noting that there 20 will be a carbon tax charge offset by an equivalent credit.

Charge	Unit	RS 1	RS 1LC	RS 1PLC	Proportion
Basic Charge	per day	0.4085	0.4085	0.4085	
Delivery Charge	per GJ	5.455	5.455	5.455	
BVA Rider	per GJ	0.059	n/a	n/a	
Storage & Transport	per GJ	1.505	1.505	1.505	
Storage & Transport LC Rider	per GJ	n/a	0.265	0.265	
Cost of Low Carbon Gas	per GJ	n/a	n/a	7.792	
Cost of Gas	per GJ	4.503	4.503	n/a	
Carbon Tax	per GJ	2.559	3.289	n/a	
Estimated Load	TJ		81,494	983	1.2%
Estimated Customers	#		969,238	15,000	1.5%

⁹ Approved as at April 1, 2022.

¹⁰ The Province's fiscal year commences April 1 of each year, consequently carbon tax rates change on April 1 of each year. FEI has used the carbon tax rate as at April 1, 2022 because that is the carbon tax rate customers will experience for the majority of the year.

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Charge	Unit	RS 2	RS 2LC	RS 2PLC	
Basic Charge	per day	0.9485	0.9485	0.9485	
Delivery Charge	per GJ	4.165	4.165	4.165	
BVA Rider	per GJ	0.059	n/a	n/a	
Storage & Transport	per GJ	1.542	1.542	1.542	
Storage & Transport LC Rider	per GJ	n/a	0.265	0.265	
Cost of Low Carbon Gas	per GJ	n/a	n/a	7.792	
Cost of Gas	per GJ	4.503	4.503	n/a	
Carbon Tax	per GJ	2.559	3.289	n/a	
Estimated Load	TJ		29,000	52	0.2%
Estimated Customers	#		90,390	162	0.2%
Charge	Unit	RS 3	RS 3LC	RS 3PLC	
Basic Charge	per day	4.7895	4.7895	4.7895	
Delivery Charge	per GJ	3.582	3.582	3.582	
BVA Rider	per GJ	0.059	n/a	n/a	
Storage & Transport	ner Gl	1 212	4 242		
	peros	1.512	1.312	1.312	
Storage & Transport LC Rider	per GJ	n/a	1.312 0.265	1.312 0.265	
Storage & Transport LC Rider Cost of Low Carbon Gas	per GJ per GJ	n/a n/a	1.312 0.265 n/a	1.312 0.265 7.792	
Storage & Transport LC Rider Cost of Low Carbon Gas Cost of Gas	per GJ per GJ per GJ	n/a n/a 4.503	1.312 0.265 n/a 4.503	1.312 0.265 7.792 n/a	
Storage & Transport LC Rider Cost of Low Carbon Gas Cost of Gas Carbon Tax	per GJ per GJ per GJ per GJ	n/a n/a 4.503 2.559	1.312 0.265 n/a 4.503 3.289	1.312 0.265 7.792 n/a n/a	
Storage & Transport LC Rider Cost of Low Carbon Gas Cost of Gas Carbon Tax Estimated Load	per GJ per GJ per GJ per GJ TJ	1.512 n/a n/a 4.503 2.559	1.312 0.265 n/a 4.503 3.289 24,886	1.312 0.265 7.792 n/a n/a 532	2.19

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- 16.5 Please provide any assumptions FEI uses in its planning regarding future natural gas commodity charges. Please provide FEI's recent long term natural gas price forecast.
- 8 9
- 10 Response:

11 As discussed in Section 8.6 of the Application, FEI held all other rates, customer count, UPC and

12 total demand constant so that the bill impacts of the Application reflected only the proposed 13 offerings.

14 Future planning and requests for approval regarding natural gas prices, and the cost of gas FEI

charges its customers, is addressed through FEI's Annual Contracting Plan and Quarterly Gas 15 Cost Reports. FEI has provided below a long-term natural gas price forecast drawn from its 16

Generic Cost of Capital proceeding evidence filed with the BCUC on January 31, 2022. 17



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Year	\$CAD/GJ
2022	4.83
2023	3.96
2024	3.53
2025	3.66
2026	3.80
2027	3.87
2028	4.02
2029	4.18
2030	4.29
2031	4.41
2032	4.47
2033	4.46
2034	4.60
2035	4.64
2036	4.69
2037	4.82
2038	5.04
2039	5.28
2040	5.50

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- 16.6 Please provide FEI's 20- or 30-year forecast of avoided costs used in its DSM planning, with each component and associated value identified by year.
 - 16.7 Please provide the values FEI uses in its DSM planning for a long term forecast of carbon taxation.

11 Response:

FEI respectfully submits that these two questions are more relevant to FEI's future DSMexpenditures application or FEI's recently filed 2022 LTGRP.

16 16.8 Please confirm that FEI does not expect a carbon tax to be applied to RNG or RG.
 17 If not confirmed, please provide the values FEI uses in its DSM planning for a long
 18 term forecast of carbon taxation applicable to RNG/RG.

Response:

21 Confirmed. Please refer to the response to BCUC IR1 25.1 for further details.



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- 1 2 3 4 16.9 Please provide the discount rate used by FEI in its DSM planning. 5 6 Response: 7 FEI respectfully submits that this question is more relevant to FEI's future DSM expenditures 8 application or FEI's recently filed 2022 LTGRP. 9 10 16.10 Please provide FEI's weighted average cost of capital. 11 12 Response: 13 FEI's currently approved¹¹ after-tax weighted average cost of capital is 5.42 percent. 14 15 16 17 16.11 Please provide the inflation rate assumed by FEI in its DSM analyses. 18 19 Response: 20 FEI respectfully submits that this question is more relevant to FEI's future DSM expenditures 21 application or FEI's recently filed 2022 LTGRP. 22 23 24 25 16.12 Please provide by end-use and total the average expected annual gas use for: (a) 26 a newly constructed single family house; (b) one half of a duplex; and (c) a row 27 house, in each of the major climatic zones that FEI uses in its DSM analyses. 28 Please provide these data for homes using natural gas for space heating, water 29 heating, drying clothes, and cooking end uses. 30 31 Response: 32 FEI is unable to provide gas consumption data for new homes separated into the categories 33 requested. 34 FEI derives consumption values for various end-uses and building types from data collected in its
- 35 Residential End Use Survey (REUS). The REUS collects information on the building envelope,
- 36 equipment installed, number of residents and energy use behaviours. That data is then matched



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with 24 consecutive months of consumption data to determine average consumption per
appliance. The REUS was last undertaken in 2017 and all but a small number of dwellings
surveyed were built prior to 2015.

An updated REUS will be issued for customer participation in May 2022. However, as the enduse calculations are also dependent on the sample size, when the data gathering is complete it is unlikely that FEI would have a sufficient number of responses to provide the detail requested.

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 16.13 Please provide for each of the major climatic zones that FEI uses in its DSM
 11
 analysis an estimate of the percentage of newly constructed homes that have
 12
 central air conditioning. Please provide this information for single family detached
 houses, half-duplexes and row houses.
- 14
- 15 **Response:**
- 16 FEI does not have a DSM program involving central air conditioning.
- 17
- 18
- 19
- 16.14 Please provide BTU energy content that FEI assumes for natural gas.
- 20 21
- 22 Response:
- FEI uses GigaJoule (GJ) as the common unit of measure. The BTU content in a GJ is approximately 947,817 as of March 16, 2022.¹²
- 25
- 26
- 27
- 28 BCSEA would also like information on the costs of connecting new homes to the gas 29 distribution system and the costs of interior gas piping within a new home.
- 3016.15Please provide the average cost of connecting a new home in FEI's territory to the
gas distribution system. Please provide the actual total cost for the connection and
indicate the portion of the cost that the customer would pay as well as the portion
that would be spread across FEI's customer base as a shared cost.
- 3435 Response:

¹² As per <u>https://www.inchcalculator.com/convert/energy/</u> and <u>http://convert-to.com/conversion/energy/convert-gj-to-btu.html</u>.



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FEI is not able to provide an average cost to attach a home. The cost to connect a new home to the gas distribution system is determined through system extension requirements, tariffs and associated BCUC approvals. It is also dependent on the scope of the mains, meters and service lines – which are required to connect new homes to the system. These costs are capital

5 expenditures which are offset by the revenues collected through the delivery charges.

FEI does not collect or retain information regarding the type of customer each new main
installation was installed to serve. In order to provide the requested information, FEI would need
to undertake a main-by-main review to determine which attachments were homes versus
commercial attachments, and then apportion costs between customers.

As part of FEI's approved 2020-2024 Multi-Year Rate Plan¹³, FEI's average per customer
 connection capital cost for <u>all</u> new customers (i.e., not limited to new home connections) was
 \$3,704 (i.e., FEI's approved 2019 Base Growth Capital per Customer).

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16 16.16 Please explain under what conditions the home developer must pay for any of the 17 cost of connecting a new home to the gas distribution system. Please provide this 18 information both as it relates to the cost of a service line and meter and as it relates 19 to main extensions, if required.

21 **Response:**

Please refer to sections 10 (Service Lines) and 12 (Main Extensions) of FEI's General Terms and
Conditions for the conditions for connecting a new home or building to the gas distribution system.
Please also refer to section 12.6 for scenarios where a customer would make a financial
contribution in aid of construction. FEI's General Terms and Conditions are available online at the

25 contribution in26 following link.

af	fairs-docum	ents/gas-utility/fortisbc_generaltermsandconditions.pdf
	40.47	Disconstruction the events contribution of home developer twoisely, well
	16.17	Please provide the average contribution a nome developer typically mak
		towards the cost of connecting a new home to the gas distribution system.
R	esnonse [.]	

36 Please refer to the response to BCSEA IR1 16.15.

¹³ MRP Decision and Order G-165-20.

FORTIS BC^{**}

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16.18 Please provide the average cost of the interior gas piping within a new home that would be required to connect gas appliances (furnace, central air conditioner, water heater, oven/cooktop, and dryer) to the gas meter.

8 Response:

9 The exact cost of the interior gas piping within a new home is determined between the builder 10 and the mechanical contractor and is not shared with FEI or publicly available. The cost of interior 11 gas piping likely varies significantly as between homes, the business model of a given contractor 12 and their respective supply chain agreements. However, FEI has been provided an approximate 13 range of costs to connect a gas furnace of \$200 to \$500 (this does not include the costs of the 14 ducting itself). FEI is not able to provide costing information for the additional appliances 15 described, such as water heater, or oven/cooktop, and dryer. FEI notes that an air conditioner is 16 most commonly an electric appliance and would not require gas piping.