

Diane Roy Vice President, Regulatory Affairs

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May 16, 2022

My Sea to Sky P.O. Box 2668 Squamish, BC V8B 0B8

Attention: Mr. Eoin Finn, B.Sc., Ph.D., MBA

Dear Mr. Finn:

Re: FortisBC Energy Inc. (FEI)

Revised Renewable Gas Program Application – Stage 2 (Application)

Response to the My Sea to Sky (MS2S) Information Request (IR) No. 1

On December 17, 2021, FEI filed the Application referenced above. In accordance with the amended regulatory timetable established in BCUC Order G-103-22 and as amended in Exhibit A-11 for the review of the Application, FEI respectfully submits the attached response to MS2S IR No. 1.

In other proceedings,¹ the BCUC has set out its expectations regarding the appropriate style and substance of IRs under Rules 13.01-13.02 of the *Rules and Practice and Procedure*. In particular, the BCUC stated:

The BCUC reminds all interveners that the purpose of IRs is not to enable the author of the IR to introduce evidence. The purpose of IRs is to elicit relevant information on the evidentiary record or to clarify or test existing evidence to contribute to a better understanding by the BCUC of the relevant issues in the proceeding. Any statements that are included in the preamble to an IR should be restricted to providing context for a question relevant to the proceeding submitted by the party to whom the IR is directed.

Finally, whereas letters of comment are intended to provide for any member of the public to contribute views, opinions, and impact or potential impact, with respect to a matter before the BCUC, IRs must not be letters of comment.

¹ In the matter of the *FEI Application for a CPCN for the Advanced Metering Infrastructure Project,* in its letter dated September 28, 2021 (Ex. A-15).



MS2S has provided preambles to information requests that contain a significant amount of content with which FEI takes issue. In many instances, the manner in which MS2S has framed its information requests appears to attempt to provide intervener evidence, which is procedurally improper. A preamble to an information request is not evidence and, as affirmed by the BCUC, its only purpose is to provide context for why the intervener is asking the question.

FEI has responded to the information requests by focusing on the questions themselves, rather than parsing and rebutting each preamble. However, FEI wishes to be clear that the preambles contain inaccuracies and characterizations that FEI does not accept. As such, FEI's silence regarding the content of a preamble should not be interpreted as agreement.

FEI will object to any attempt by MS2S to rely on the content of preambles to its information requests in final argument.

Finally, 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): Registered Parties



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1Issue 1:100% RNG - Ratepayers' gas supply. In this application, FEI proposes that all
new buildings within reach of its distribution network will be supplied with "100%3RNG1", commencing in 2024. Concurrently, all other FEI residential ratepayers will
be supplied with a 1% RNG/fossil gas mix. Both will pay a rate rider estimated at
\$ \$0.63/GJ.

6 **Questions:**

71.iHow can FEI promise to supply "100% RNG" to new buildings in BC, and only 1%8RNG to other customers (both by 2024)? As there is a common supply pipe system9to neighbouring buildings, would not all ratepayers receive the same ~ 1% (by102024), 4% (by 2028) and 11% (by 2032) RNG supply?

12 **Response:**

Please refer to the response to BCOAPO IR1 10.1, where FEI describes how it supplies various
blends of Renewable Gas to different customers based on the principle of receipt by
displacement.

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191.iiNewbuild owners don't appear to have a choice in this allocation. Nor do other20ratepayers. If all ratepayers actually receive the same supply blend, is the recent21public statement² (by FEI's Joe Mazza, Vice President of energy supply and22resource development) that: "If approved by the BCUC, this would give every23British Columbian a choice on how best to reduce GHG emissions from their new24home" not highly misleading to the vast majority of ratepayers?

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26 Response:

FEI does not agree that the statement is misleading. Builders currently do not have an opportunity to receive conventional natural gas where local government building regulations effectively make electricity the only energy option available to new residential consumers. The proposed Renewable Gas Connections service restores energy choice in FEI's service territory by once again making gas service a viable alternative to electricity.

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¹ In this discussion, RNG and Biomethane are terms that will be used interchangeably to describe methane derived from decomposition of organic matter. References to fossil gas (FG) describes gas derived (principally) from fracking of shale beds in N.E. BC. 100% RNG refers to the proportion of RNG in the gas mix notionally supplied to newbuilding ratepayers.

² <u>https://www.newswire.ca/news-releases/fortisbc-proposes-to-provide-100-per-cent-renewable-gas-to-all-new-homes-883720299.html</u>.



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1.iii What issues will this allocation pose for those municipalities that have enacted zoning by-laws (described in Sec. 3.5 of the application) restricting gas connections to new buildings and/or offered inducements to builders and developers to "go electric"? Is this simply a way to circumvent these municipal restrictions and incentives?

7 <u>Response:</u>

8 FEI disagrees with the question's premise that its proposed Renewable Gas Connections service

9 will pose "issues" for local governments. Rather, this offering provides a viable option, other than

10 electricity, for customers where local governments have adopted GHG intensity regulations.

Please refer to the response to BCOAPO IR1 7.1, where FEI describes the dichotomy betweenlocal government regulations and provincial policy.

Local governments have, in some instances, created a patchwork of regulations which complicates compliance and planning for both the industry and FEI. In this Application, FEI has proposed revisions to the Renewable Gas Program that take into consideration the public policy objectives of local and provincial governments.

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- 201.ivWhat implications does this "100% RNG" allocation have for the carbon tax new-21home ratepayers will pay on their FEI gas service?
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23 Response:

Renewable Gas Connection ratepayers will be eligible for full relief from carbon tax through the
biomethane tax credit. However, their rate will be set equal to the cost of conventional natural gas
plus carbon tax in order to maintain energy cost parity with similar customers not enrolled under
the Renewable Gas Connections service.

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- 311.vWhy did FEI not adopt a simpler and arguably fairer and more consistent with the32Bonbright Principles of Ratemaking- approach of distributing the added cost of33biomethane across all rate schedules/ ratepayers?
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35 **Response:**

36 Please refer to the responses to BCUC IR1 13.2 and 16.2, where FEI describes how its approach

37 is fair and consistent with Bonbright's ratemaking principles. Please also refer to the response to

38 BCUC IR1 23.4 where FEI applies Bonbright's ratemaking principles to the scenario where only

39 the S&T LC rider recovers all the Renewable Gas Program costs.

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- 1.vi FEI suggests that BC's building replacement rate is about 2% per annum. If less than half of those are potential FEI customers (i.e. within reach of its pipe network), then less than 6% of BC's new buildings might use "100% RNG" by 2030. How does that slow pace square with BC's sectoral target of 58%-64% reduction in buildings emissions by 2030?
- 8 9

10 **Response:**

11 The Province's sectoral targets apply to the entire building stock in BC, including existing 12 buildings, building replacement stock and new construction on greenfield sites. As a result, the

13 reach of the proposed Renewable Gas Program is broader than the replacement of BC's existing

14 housing stock.

15 The three components of the proposed Renewable Gas Program (i.e., the Renewable Gas 16 Connections, Renewable Gas Blend, and Voluntary Renewable Gas services) collectively ensure 17 the distribution of all Renewable Gas acquired by FEI to its customers, regardless of the uptake 18 of any one aspect of the program. While no single component of the program, and no single 19 segment of gas customers, would likely be sufficient to achieve BC's sectoral target, the overall 20 Renewable Gas Program will be well-positioned to achieve the policy objectives of reducing GHG 21 emissions. 22 In Section 7.1 of the Application, FEI discusses how the three components of the Renewable Gas

23 Program work together to reduce the GHG emissions from natural gas use in BC. First, the 24 Renewable Gas Connections service targets residential new construction. Second, the Voluntary 25 Renewable Gas service allows customers with a need or desire to purchase additional volumes 26 of Renewable Gas to be able to do so. Third, the Renewable Gas Blend service enables FEI to 27 deliver Renewable Gas to all sales customers as part of their regular gas service, creating an 28 additional path for FEI's existing natural gas system to advance the provincial government's GHG 29 emission reduction objectives. Further, this service provides a mechanism to scale up the 30 provision of Renewable Gas as new supply is acquired pursuant to the GGRR, thus decarbonizing 31 the new and existing building stock.

As noted in Section 6.3.2 of the Application, FEI is already significantly ramping up its Renewable Gas supply and will acquire more to meet its obligations under the CleanBC Roadmap. FEI has also secured contracts with suppliers to provide half of the supply required to meet the CleanBC Plan target of 15 percent Renewable Gas by 2030. Given FEI's Renewable Gas supply development activities, including discussions with additional suppliers currently underway, FEI expects to meet the targets set through the CleanBC Plan and the more recent CleanBC Roadmap.

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1.vii Further to 1.vi above, how does that square with the "CleanBC Roadmap to 2030" cap of 6.1 megatonnes from gas utility customer emissions by 2030 – a 47% reduction according to FEI?

Response:

Please refer to the response to BCUC IR1 1.1 where FEI discusses the CleanBC Roadmap and
the cap on gas utility customer emissions.



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- Issue 2: Rate fairness. Several Intervenors, Interested Parties and Commenters have noted concerns with rate fairness in the scheme FEI is proposing. Ratepayers don't appear to have a choice in this allocation. Following are some questions to clarify the rate structure being proposed:
- 5 **Questions:**
- 6 2.i Please explain the fairness of a rate structure that charges a residential ratepayer 7 paying an additional \$7/GJ for a 10% RNG: 90% fossil gas (FG) mix in his/her gas 8 supply, while the ratepayer in a new building next door gets "100% RNG" supply 9 for an additional \$0.63/GJ rate rider. Why would either party consider this fair? 10 Especially when both ratepayers are receiving exactly the same mix of RNG to 11 fossil gas?
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13 Response:

FEI's proposed pricing mechanisms are fair and equitable. Please refer to the responses to BCUCIR1 13.2 and 16.2.

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- 192.iiWon't the <1% (~ 9,600) FEI customers enrolled in the existing voluntary</th>20Renewable Gas Program be reluctant to continue voluntary participation if they21see new buildings receiving "100% RNG" for little/no RNG premium?
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23 Response:

FEI does not believe that the approval of the Renewable Gas Connections service will have a material impact on existing customers enrolled in the Voluntary Renewable Gas service. These customers can be characterized as "early adopters", and therefore, are likely the most committed to GHG emission reductions. As such, FEI does not see that offering 100 percent Renewable Gas to new residential connections will have a negative effect on these customers. These customers may also be encouraged that FEI is expanding the Renewable Gas Program which, as proposed, will further reduce emission reductions in furtherance of public policy goals.

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- 342.iiiPlease explain the rate and gas mix supply effects of this proposal on (i) bypass35customers; (ii) T-service customers; and (iii) LNG (RS46) customers. Will they pay36the RNG rate rider charge? How will this change as the percentage of Renewable37Gas in the supply increases over time?
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1 Response:

- None of these customer groups will pay the S&T LC rider. Bypass customers are all T-Service
 customers so they also will not pay the S&T LC rider.
- 4 Customers from these groups can request to purchase Renewable Gas from FEI using Rate
- 5 Schedule 11LC where the charge for Renewable Gas is set to the full acquisition cost.
- 6 As the percentage of Renewable Gas supply grows, these groups of customers will be unaffected.
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1	Issue 3:	Extra-provincial biomethane supply. Expanding the limited supply of RNG from
2		external (to BC) sources has been highlighted by FEI both as a project constraint
3		and a key project success factor. This is because of the limited capacity to expand
4		BC-based biomethane ³ [footnote 3 content below]. FEI has opted for contracting
5		with suppliers from outside BC. In Fig. 6- FEI's "15% RNG by 2030" goal would
6		require ~30PJ of renewable gas (RG). The RNG Supply report (see Issue 5
7		following) predicts that, without technological advances, RNG supply maximum will
8		be ~ 12PJ (5% of gas supply/demand) . FEI's graph (below) shows an RNG supply
9		of ~ 20PJ (10% of supply) by 2030.

"Within the short-term, theoretical RNG production potential is estimated to be up to 7.6 PJ/year. However, theoretical RNG production potential is the maximum amount of RNG that could be produced using the most favourable assumptions. Theoretical RNG production potential doesn't take into account certain realities, such as potential feedstock unavailability, or less than 100% capacity production at AD (anaerobic digestion) plants. Achievable RNG production potential is the amount of RNG that could be produced using realistic assumptions.

In the short-term, achievable RNG production potential is estimated to be up to 4.4 PJ/year.

Long-term achievable RNG production potential, using projected increased feedstock availability and assuming no significant technology advancements, is estimated to be up to 11.9 PJ/year. Long-term achievable RNG production potential, using increased projected feedstock availability and assuming significant advancements in wood RNG technology, is estimated to be up to 93.6 PJ/year; this estimation depends heavily upon the assumed availability of forestry feedstock.

It should be noted that short and long-term RNG production potentials are total amounts of RNG that could be produced based on available feedstocks and RNG technology, and assuming a maximum RNG purchase price of \$28/GJ. RNG production potentials therefore do not estimate total amount of RNG that could be produced at lower price points (i.e., \$16/GJ or \$20/GJ). As such, actual RNG production in B.C., which will depend heavily upon the market price for RNG, may be lower".



Figure 1: RNG Production Potential without Technology Advancements at \$28/GJ

In the supply study, the assumed short-term price of RNG is \$28/GJ. That is ~ 7 times the current \$4/GJ rate charged to residential NG accounts. In a market with BC Government-subsidized heating and cooling alternatives available, and local municipal zoning and building permit restrictions on new fossil-fuel devices, how will there not be significant attrition in FEI's customer base once the cost of gas service escalates so?

³ Quoting from the 2017 study of the potential supply of RNG in BC: <u>https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/resource supply potential for renewable natural gas in bc public version.pdf.</u>



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Table 6-1 ("Contracted RNG Supply Projects") of the application, which is

reproduced below, shows that ~80% (7,845 of 9,768 GJ expected annual gas volumes) of contracted RNG is from sources external to BC, principally from Ontario, Pennsylvania and Iowa.

	1	2	3	4	5	6	7	8	9
	Project.	Туре	Provinc e/State	BCUC Approval Status	Start/Anticipate d Start Date (Month-Year)	Contract Max Annual Volume (TJ/Yr)	Proportion of Total Max Contract Volume (%)	Expected Annual Volume (11/Yr)	Proportion of Total Expected Volume (%)
	Fraser Valley Biogass	Farm Digester	BC	Approved	Sep-10	91	0.7%	67	0.7%
	Columbia Shushwap Regional Dist.	Landfill	BC	Approved	Jan-13	40	0.3%	16	0.2%
	Kelowna Landfill	Landfill	8C	Approved	Jun-14	118	0.9%	62	0.6%
-	Seabreeze Farms	Farm Digester	BC.	Approved	Feb-15	120	0.9%	90	0.9%
1	City of Surrey	Organics Processing	BC	Approved	Jul-18	160	1.2%	75	0.8%
EC.	Tidal Stormfisher	Organics Processing	ON	Approved	Aug-20	237	1.7%	190	1.8%
-	Lulu Island Waste Water	Waste Water	BC	Approved	Jun-21	100	0.7%	40	0.4%
	Lethbridge Biogas	Farm Digester	AB	Approved	Aug-21	475	3.5%	225	2.3%
	Shell Energy	Waste Water	IA.	Approved	Aug-21	692	5.1%	519	5.3%
	Faromor CNG	Farm Digester	ON	Approved	Oct-21	120	0.9%	60	0.6%
	Total Existing (TI/Yr)			Contract Contract		2,153	15.9%	1,334	13.7%
	Assai Energy	Landfill	PA	Approved	Jan-22	1,600	11.8%	1,200	12.3%
	Dicklands Farm	Farm Digester	BC	Approved	Jul-22	160	1.2%	100	1.0%
	Walker RNG	Farm Digester	ON	Approved	Jul-22	160	1.2%	120	1.2%
	Tidal Niagara	Landfill	ON	Approved	Aug-22	694	5.1%	675	6.9%
	Net Zero Waste	Organics Processing	BC	Approved	Oct-22	173	1.3%	130	1.3%
	GrowTEC	Farm Digester	AB	Approved	Oct-22	140	1.0%	80	0.8%
	Evergreen (Oshawa) Environmental	Organics Processing	ON	Approved	Oct-22	390	2.9%	300	3.1%
-	City of Vancouver	Landfill	8C	Approved	Nov-23	298	2.2%	250	2.6%
ŝ	Matter	Farm Digester	BC	Approved	Jul-23	100	0.7%	75	0.8%
de la	Tidal GSE	Hydrogen Reduction	ON	Approved	Sep-23	800	5.9%	600	6.1%
Ŧ	Delta RNG	Landfill	BC	In Progress	Jan-23	1,200	8.8%	740	7.5%
*	EPCOR	Waste Water Treatment	AB	Approved	Mar-23	280	2.1%	210	2.1%
	RDFFG	Landfill	BC	In Progress	Mar-23	94	0.7%	80	0.8%
	Tidal Rockford	Landfill	見	Approved	Jun-23	841	6.2%	485	5.0%
	Bradam Hamilton	Carbon Energy	ON	Approved	Jul-23	1,500	11.1%	1,125	11.5%
	Capital Regional District	Landfill	BC	Approved	Sep-23	280	2.1%	238	2.4%
	Bradam Napanee	Carbon Energy Recovery	ON	Approved	Oct-23	1,500	11.1%	1,125	11.5%
	REN Energy	Wood Biomass	BC	Approved	Dec-23	1,200	5.8%	900	9.2%
	Total Anticipated (TI/Yr)					13,410	84.1%	8,434	86.3%
	Grand Total Volume (TJ/Yr)					13,563	100.0%	9,768	100.0%

Table 6-1: Contracted RNG Supply Projects

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Questions:

- 73.iHas FEI really exercised its best efforts to obtain RNG from BC sources? We note8that FEI did not even submit a bid on a recent RFP process in the District of9Squamish for biogas capture from its municipal waste site (the District opted for10flaring⁴ it to CO2 as a better climate option than letting it vent as methane into the11atmosphere).
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- 13 Response:
- 14 Please refer to the response to Force of Nature IR1 9.
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⁴ https://www.squamishchief.com/local-news/landfill-flare-installed-and-operating-in-squamish-4855066.

FORTIS BC^{**}

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As the environmental benefits of biomethane captured from biomass in a 3.ii 1 2 jurisdiction enure to the benefit⁵ of that jurisdiction and the achievement of its 3 climate targets, please explain how, in the absence of any agreed/recognized inter-4 provincial or international mechanism for accrediting, transferring and auditing 5 those benefits, FEI purports to separate the "environmental attributes" of 6 externally-produced biomethane to BC's jurisdiction, although not a molecule of 7 that gas will likely ever reach the Province.

8 9 Response:

10 The environmental benefits of biomethane benefit the jurisdiction where the environmental 11 attributes are owned and retained. Through its RNG supply agreements with RNG suppliers, FEI 12 is the sole owner of all environmental attributes, including the GHG reductions associated with 13 RNG throughout the duration of the contract. GHG reductions may not be claimed by any other 14 entity other than FEI, and therefore cannot be used in compliance with any other GHG reduction 15 policy or program outside of BC without FEI's consent. No other province or state is counting the 16 GHG reductions from RNG supplied to FEI from their territory and the environmental benefits will

- 17 be recognized in British Columbia.
- 18 Please refer to the response to BCOAPO IR1 10.1 which explains how the displacement model 19 for gaseous and electrical energy functions in North America and that the molecules of methane, 20 whether from conventional or renewable natural gas, often are not physically delivered between 21 counter-parties. The displacement of methane molecules creates capacity differences across the 22 continental gas system and a detailed book and claim accounting system ensures that there is no
- 23 double counting and that the system remains in balance.
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- 27 3.iii Please explain how, if biomethane and fossil gas produce the same combustion 28 emissions (H2O, CO2 and uncombusted methane- CH4), adding any percentage 29 of biomethane to FEI's gas supply will help achieve BC's 2030 sectoral target of 30 58-64% emissions reduction for Buildings & Communities.
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32 Response:

33 As discussed in the response to CEC IR1 3.2, the carbon intensity of RNG is lower than 34 conventional natural gas because RNG is created from methane that is already part of the 35 biogenic process, and the emissions factor from RNG is nil, in accordance with the 2020 BC Best

³⁶ Practices Methodology for Quantifying Greenhouse Gas Emissions.

⁵ Other than the global benefit (Methane molecules move about the whole of Earth's atmosphere) of such reductions, of which BC would benefit slightly, comprising about 1/7,000th of the earth's surface.



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1 Please also refer to the responses to the City of Richmond IR1 12.4 and 12.8 for the emission

factors of Renewable Gas, including how FEI's RNG portfolio had a lifecycle emission factor of
 negative 22.4kgCO2e/GJ in 2021.

As such, displacing conventional natural gas with RNG reduces carbon emissions and contributes
to the achievement of BC's climate targets. Please refer to the response to BCUC IR1 1.1 for a
description of the role of renewable and low-carbon gases in achieving the targets of the CleanBC
Roadmap.

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- 113.ivPlease explain how, if biomethane and fossil gas produce the same combustion12emissions, adding any percentage of biomethane to FEI's gas supply will help13achieve the 47% reduction (to ~6.1 megatonnes p.a.) in BC Gas Utilities' customer14emissions, as required by CleanBC's "Roadmap to 2030".
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16 **Response:**

- 17 Please refer to the response to MS2S IR1 3.iii.
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- 213.vPlease explain why fossil gas, with "environmental attributes" transferred from22biomethane produced outside BC and only notionally delivered to the Province,23should be declared a "Renewable Natural Gas" portion of FEI's gas supply that is24exempt from BC's Carbon Tax.
- 2526 <u>Response:</u>
- 27 Please refer to the response to MS2S IR1 3.ii.
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- 30 31 3.vi Fortis has estimated that the hike in Provincial (and Federal) carbon tax rates to 32 \$170/tonne will add about \$8/GJ to the cost of commodity fossil gas by 2030. That 33 is roughly four times the current ~\$2/GJ rate. The only Canadian provinces with a 34 carbon tax are BC, Alberta and Quebec. No U.S. states have a carbon tax. Please 35 explain why allocating the "environmental attributes" of biomethane captured in 36 Ontario, Pennsylvania or Iowa to a BC entity is not simply a scheme designed to 37 capture a tax benefit available in BC but not in those jurisdictions? 38



1 **Response:**

- 2 Please refer to the response to MS2S IR1 3.ii.
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As the environmental and financial benefits of out-of-province biogas capture 3.vii benefit the jurisdictions where the capture occurs, does FEI still⁶ claim to have policy support from the Provincial Government for including out- of-province supplies of biomethane within the RNG portfolio?

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11 **Response:**

12 FEI disagrees that the environmental and financial benefits of out-of-province biogas capture only

13 benefit the jurisdiction where the capture occurs. Please refer to the response to MS2S IR1 3.ii

14 for more information on how environmental benefits are tracked and how FEI retains the

environmental benefits of the Renewable Gas. 15

16 FEI confirms it has policy support from the provincial government through the Greenhouse Gas 17 Reduction (Clean Energy) Regulation to acquire RNG from out-of-province.

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21 In the BC Government's supply study (referenced above), the assumed short-term 3.viii price of RNG is \$28/GJ. That is ~ 7 times the current \$4/GJ rate charged to 22 23 residential FG accounts. In a market with BC Government- subsidized heating and 24 cooling alternatives available, and local municipal zoning and building permit 25 restrictions on new fossil-fuel devices, how will there not be significant attrition in 26 FEI's customer base once the cost of gas service escalates so?

28 Response:

29 First, FEI notes that the comparison above does not account for the carbon tax or its escalation

30 to approximately \$8.40 per GJ by 2030 (making the comparison approximately two times instead

31 of seven times).

In an earlier BCUC hearing (FortisBC Energy Inc. (gas) Section 71 Filing of Biomethane Purchase Agreement between FEI and Shell North America (Canada) Inc.) on RNG, FEI answered this question thus: "The Provincial Government is supportive of the growth and development of FEI's RNG program and out-of-province supply is necessary to achieve the targets in the CleanBC plan. FEI believes that, provided the environmental benefits for the out-of-province RNG are realized in British Columbia, the Provincial Government would support the inclusion of out-of-province RNG within FEI's RNG portfolio. With the Tidal BPAs, FEI has secured the rights to the environmental attributes and benefits which will contribute toward the Provincial Government's GHG reduction targets in BC.



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- Second, the study referenced in the question is from 2016. Please refer to the response to BCUC IR1 2.1 where FEI discusses an updated study, titled *BC Renewable and Low-Carbon Gas Supply Potential Study,* conducted in partnership with the BC Bioenergy Network and the Ministry of Energy Mines and Low-Carbon Innovation.⁷ This new study revises the supply potential and costs of renewable and low-carbon gases from the study referred to in the question. The estimated production cost of RNG in BC from anaerobic digestion in the Maximum Scenario in 2030 and
- 7 2050 is \$26 and \$19.7 per GJ, respectively, which is lower than the quoted \$28 per GJ.

8 Third, the estimated \$26 to \$19.7 per GJ is effectively equivalent to between \$94 and \$71 per 9 MWh. This compares to the cost of new clean electricity supply of BC Hydro's Site C project which 10 was \$83 per MWh at an assumed capital cost of \$7.9 billion. Under BC Hydro's revised project 11 budget for the Site C project, the new estimated capital cost is approximately \$16 billion. Scaling 12 the \$/MWh amount in a proportional manner would double the \$83 per MWh, although FEI has 13 not been able to confirm this figure. In other words, the projected cost of renewable and low 14 carbon gas is likely half the marginal cost of electricity from the Site C project.

15 Finally, the Guidehouse report titled Pathways for British Columbia to Achieve its GHG Reduction

16 Goals (Pathways Report)⁸ concludes that a strategy that emphasizes significant electrification

- 17 would be \$100 billion more costly than a strategy that uses both the electricity and gas systems.
- 18 Further, the required infrastructure investments to handle broad-scale electrification of building
- 19 heat is approximately double that of using renewable and low-carbon gases. As such, it is in the
- best interest of British Columbians to have a diversified energy system, including both the gas
 and electric systems, providing low carbon energy. This approach provides choice for consumers,

If FEI (and others) can buy biomethane from anywhere in the world, declare it to

- and electric systems, providing low carbon energy. This approach provides choice for consumers,
 is less costly than an electric-only solution, and will achieve emission reductions more quickly.
- 23
- 24
- 25 26
- 27

be notionally delivered to BC (by the artificial separation of its "environmental attributes" from the gas), and receive carbon tax relief on it, then what incentive is

- attributes" from the gas), and receive carbon tax relief on it, the
 there for any developer to develop a BC-based biogas facility?
- 30

31 Response:

3.ix

There is a strong incentive to develop projects in BC. Regardless of location, the primary incentive for any project is the economic benefit for the project developer. When considering other benefits, communities in BC have the opportunity to both manage waste and derive economic benefit. In addition to the revenue associated with the sale of biomethane (in this case, to FEI), there may be other sources of revenue such as tipping fees. Within BC, there are some opportunities for

⁷ BC Renewable and Low Carbon Gas Supply Potential Study, <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.

⁸ https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/guidehousereport.pdf?sfvrsn=dbb70958_0#:~:text=In%202018%2C%20FortisBC%20Energy%20Inc.%20%28FortisBC%29% 20developed%20its,%28BC%29%20achieve%20its%20greenhouse%20gas%20%28GHG%29%20emissions%20 targets.



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- 1 developers to take advantage of local funding and/or grants. These grants specifically encourage
- 2 development of projects in BC. For example, the CleanBC Communities Fund has been used to 3 partially fund at least one project.
- For clarification, FEI does not currently purchase RNG from "anywhere in the world", but rather
 from projects which are directly connected to the contiguous North American natural gas system.
 This is directly analogous to the electric system and the ability to buy renewable electricity across
- 7 North America.
- 8 One of the primary benefits of procuring from a wider range of projects across a wider jurisdiction 9 is the potential for lower costs, and therefore, lower impact to the rates of FEI customers. FEI 10 sources RNG supply both within and outside BC, as supply projects are evaluated with a
- 11 consideration of balancing the location and quality of supply with the associated costs.



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- Issue 4: Is FEI's "RNG" really RNG? Neither the Clean Energy Act not its companion 1 2 GGRR regulation define the term "Renewable Natural Gas". A common 3 understanding is that it is the gaseous product of biomass decomposition refined 4 to 90%-plus methane content. Biomethane is fully interchangeable with fossil gas⁹ 5 (FG). The concept of RNG is clear enough-capturing and combusting biomethane to CO2 which would otherwise vent into the atmosphere as biogas is 6 7 beneficial to the extent that methane's GWP (global warming potential) is 86 times 8 worse than CO2, measured over 20 years.
- 9 MS2S does not believe that much of this biogas product can be truly labelled as "clean" or "green". Transferring the hood ornament from your neighbour's Tesla onto your SUV 10 11 does not transfer any right to call yours a zero- emission vehicle. To label much of the 12 biogas as RNG would set an inaccurate precedent for what the term means within the 13 energy industry. A 1% blend of renewable natural gas (RNG) should not mask the 99% of fossil gas that is still being burned and a high level of greenhouse gases (GHGs) still being 14 15 emitted. We suggest that BC adopts a better standard for naming fossil fuel blends - like 16 FG99, FG90 etc. - representing 99% and 90% fossil gas blends, respectively.
- Production of Renewable Natural Gas (RNG) can currently be achieved by two general methods. Biogas can be produced within anaerobic digestion (AD) plants, or it can occur within landfills and be collected using wells and pipes. Biogas produced in landfills is known as landfill gas (LFG). Once captured, biogas or LFG can be upgraded to RNG. This process involves cleaning and refining the biogas or LFG to remove carbon dioxide and other contaminates so that it meets natural gas pipeline specifications. Most captured biogas is used locally to power the operations of the waste treatment plants.
- In the case of anaerobic digestion of farmyard manure (FYM), eight of FEI's 28 anticipated biomethane sources are these. Research¹⁰ into its decomposition has revealed that, left to decompose <u>aerobically</u> in the fields, or collected and spread in slurry form as an excellent natural fertilizer, it emits CO2, but almost no methane. When accumulated in an

⁹ Fossil methane and biomethane <u>can</u> be distinguished by their different compositions of Carbon isotopes (fossil gas has lower C₁₂: C₁₃, C₁₄ proportions than biomethane, a fact which has assisted satellite detection of the origin of methane leakages).

¹⁰ Reproduced from source: <u>https://thecounter.org/misbegotten-promise-anaerobic-digesters-cafo/</u>. The question is, do the environmental benefits of anaerobic digesters justify significant—and ongoing—public investment? Critics say absolutely not. While biogas from digesters may be renewable, it is hardly "clean" or "green" in the way most people understand those concepts. The biogas produced through anaerobic digestion is a mix of methane, carbon dioxide, and other trace gases. Burning biogas for energy converts methane into carbon dioxide, and also produces carbon monoxide, nitrogen oxides, sulfur dioxide, and other hazardous air pollutants. The carbon dioxide generated during anaerobic digestion and during the combustion of methane is released into the atmosphere. But are digesters even necessary? The terms clean, green and renewable are often intentionally and unintentionally confused. Around 80 percent of digesters in the U.S. are on dairy farms, but methane emissions from manure deposited on fields from pastured cows are virtually nil. Manure releases methane only when it decomposes in oxygen-free (anaerobic) conditions, like a pit or lagoon. Most of the livestock farms that store manure in pits or lagoons are large concentrated animal feeding operations (CAFOs) where animals are confined for more than 45 days of the year. So, critics say, anaerobic digesters are solving problems only created by largescale factory farming in the first place, problems that are avoided in more sustainable systems, especially pasture-based ones. See also https://www.iowaagliteracy.org/ArticleFile/File/DA7E4B56-6438-4B9F-8975-EB77E18E84F0/Lesson%207%20MethaneEnergy4Iowa.pdf https://dec.vermont.gov/airand guality/permits/source- categories/anaerobic-digesters.



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<u>anaerobic</u> digester, FYM yields a much higher methane content, effectively turning the process into a methane manufacturing one. This is hardly congruent with Federal ambitions to reduce methane emissions 45% and oil & gas emissions by 75%, both by 2030.

5 Currently, a third method for producing biogas from wood biomass is under the subject of 6 some R&D. Although demonstration projects have been launched in Gothenburg, Sweden 7 (https://doi.org/10.3389/fenrg.2021.738791) and Boucherville, Quebec (by Gaz 8 Metro/Energir), these are not expected to reach commercial viability in the short run. A woodwaste-to-biomethane proposal by REN Energy International for Fruitvale, BC 9 (https://www.nelsonstar.com/news/renewable-natural-gas-facility-targeted-for-fruitvale/), 10 proposes to produce biomethane from wood-waste via a low oxygen/steam reforming 11 12 process, but does not appear to plan any CCS to deal with the by-product emissions and 13 fly-ash residues. Using wood-waste as feedstock for a low-oxygen process to produce 14 methane in an energy-intensive steam reforming process is arguably more damaging to 15 the environment than leaving it to decay aerobically to CO2 in the woods. The process 16 requires carbon capture and sequestration (CCS) to achieve anything close to carbon neutrality, which is a technology that is to date unproven¹¹ at scale. Also, this method 17 might lead to felling trees—the best carbon capture technology we currently have—to feed 18 19 such a process. That introduces a real danger of subverting the legislated objective of a low-carbon future. 20

21 Questions:

- 224.iIs FEI's RNG really a carbon-neutral gas deserving of the title "Renewable Natural23Gas"... and, with it, exemption from BC's carbon tax levy?
- 24 4.ii Who does FEI think is best situated (legally) to resolve this pressing question?
- 25

26 **Response:**

Yes, FEI's RNG is a carbon-neutral gas. Please refer to the responses to MS2S IR1 3.ii, 3.iii and3.iv.

¹¹ <u>https://www.vice.com/en/article/7kb43x/shell-quest-carbon-capture-plant-alberta.</u>



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1 Issue 5: BC's biomethane supply?

2 In Section 6.3.2, FEI indicates that the RG (renewable gas – of which RNG would be a part) supply pool will need to be around 30 PJ in order to meet the 15% supply figure in 3 4 CleanBC's 2030 targets. It also states (Sec. 3.4.1.1) that "The cap, as laid out in the 5 CleanBC Roadmap, is set at 6.11 Mt of CO2e per year at 2030. This represents a 47 percent reduction in GHG emissions from 2007 levels, and will require utilities to increase 6 7 Renewable Gas content, increase investments in energy efficiency and employ other 8 mechanisms to lower emissions. FEI expects that Renewable Gas content exceeding 15 9 percent will be required to meet this lower emission threshold by 2030. Details on the cap are under development; however, FEI sees the potential Renewable Gas supply 10 11 requirements being between 45 and 65 PJs by 2030".

12 The graph in Section 8.3 reproduced (with some annotation) opposite, shows the likely 13 sources. While RNG would provide two-thirds (20PJ) of that, FEI expects the balance 14 (10PJ) to be supplied by alternate forms of Renewable Gas, and has stated that this will 15 include synthesis gas ("syngas"), hydrogen and lignin.

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



17 Questions:

185.iAs the total gas demand in BC is currently ~ 200PJ (200 million Gigajoules) , how19does 30PJ supply satisfy any of (i) CleanBC's 2030 target of 58%-64% buildings20sector emissions reduction, or; (ii) FEI's "30by30" target or; (iii) the 2030 gas21customer emissions cap of 6.1 megatonnes ?

23 **Response:**

- 24 Please refer to the responses to BCUC IR1 1.1 and CEC IR1 26.3.
- 25

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1 2 3 4 5	5.ii <u>Response:</u>	The graph above shows an RG supply of 30GJ by 2030, but the narrative speaks of a supply requirement of 45-65PJ to meet the 47% reduction target. Please explain the discrepancy?
6 7	Please refer to of 45-65 PJ in	o the responses to BCUC IR1 1.1 to 1.3 where FEI discusses the supply requirement more detail.
8 9		
10 11 12 13 14	5.iii	How and where does FEI expect the supply of synthesis gas ¹² (<u>a mix of hydrogen</u> , <u>CO and CO</u> ₂ that can be used to manufacture methane) to be produced in BC or elsewhere, and by what chemical process?
15	Response:	
16 17 18	 FEI does not know at this time where syngas will be produced. Details pertaining to the production methods, resource potential, and magnitude of natural gas displacement can be referenced in the BC Renewable and Low-Carbon Gas Supply Potential Study.¹³ 	
19 20		
21 22 23 24	5.iv	Relating to 5.iii above, will the CO ₂ by-product of that methane manufacturing process be captured and sequestered?
25	<u>Response:</u>	
26 27 28 29 30 31	FEI interprets this question as referring to syngas. As explained in the response to MS2S IR1 5.iii, syngas is produced from biomass. It does not contain methane and is not a methane manufacturing process. While syngas contains carbon dioxide (CO ₂), it is considered biogenic and does not add net positive CO ₂ to the atmosphere. FEI does not currently intend to capture this CO ₂ ; however, if opportunities emerge to capture and sequester the biogenic CO ₂ , the utility would explore the viability of this pathway to provide net negative carbon syngas.	
32 33		

¹² Syngas has been used as domestic and industrial fuel, but its low energy per unit volume makes it unattractive if it has to be pumped to a distant consumer. For such application, the gas can be **enriched** by transforming it into methane. This is the basis of many <u>coal gasification</u> processes. Observe that the preceding syngas is dangerously poisonous owing to the carbon monoxide it contains.

¹³ <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



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1 2

- 5.v How and where does FEI expect the supply of Hydrogen (H₂) to be produced in BC or elsewhere?
- 34 Response:

5 FEI is currently enabled under section 6 of the GGRR to acquire hydrogen produced from clean 6 electricity via water electrolysis (green) and hydrogen captured from byproduct waste streams in 7 British Columbia. FEI is currently exploring potential candidate sites where hydrogen production 8 would be sited close to customers who would be able to consume it. This close-coupled 9 arrangement of supply and demand is often referred to as a "hydrogen hub" model. There are 10 many potential locations in the Province with potential for hydrogen hubs that could displace 11 certain customers' natural gas consumption either in whole or part.

- 12 The GGRR currently does not contemplate the acquisition of hydrogen through other methods,
- 13 including hydrogen produced from methane with carbon capture and storage or any form of low-14 carbon bydrogen produced outside BC
- 14 carbon hydrogen produced outside BC.
- 15
- 16
- 17

21

185.viRoughly, what proportions of that H2 production will be "green" (i.e., via water19electrolysis), "blue" (i.e., using methane with Carbon Capture and Sequestration20(CCS)) and "Grey" (i.e. using fossil gas without CCS) production methods?

22 Response:

FEI cannot yet confirm what portion of the hydrogen will be produced from clean electricity via water electrolysis (green hydrogen) or produced from methane with carbon capture and storage (blue hydrogen). FEI is not currently enabled to acquire blue hydrogen under the GGRR.

FEI continues to consider and assess all low carbon pathways for the production of hydrogen. For clarity, FEI does not intend to acquire hydrogen produced from methane feedstock without carbon capture and storage (grey hydrogen) because it is not a means of decarbonizing the gas supply.

- 30
- 31
- 32
- 335.viiAs lignin is a solid most suited to local use, will that supply (not further referenced34in the graph in Figure 8.3) be locally-produced (i.e. in BC?) and used? If so, where?35

36 **Response:**

- 37 FEI clarifies that lignin is <u>not</u> a solid. FEI has identified potential for lignin produced from biomass
- 38 at various industrial gas customer operations in British Columbia in order to displace the use of



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natural gas in kilns and other industrial end-use applications. It is too early at this stage to
 determine a supply location.

3 Details pertaining to the production methods, resource potential, physical and chemical

characteristics, and magnitude of natural gas displacement can be referenced in the BC
 Renewable and Low-Carbon Gas Supply Potential Study.¹⁴

¹⁴ <u>https://www.cdn.fortisbc.com/libraries/docs/default-source/news-events/bc-renewable-and-low-carbon-gas-supply-potential-study-2022-03-11.pdf</u>.



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1 Issue 6: RNG and BC's climate objectives:

2 FEI's application (Sec. 3.4) states: "BC's sectoral target for buildings and Communities is a reduction of 58% to 64% by 2030. The provincial government's approach with respect 3 4 to the emissions of natural gas utilities was recently updated in the CleanBC Roadmap with the introduction of a GHG emissions cap¹⁵ on BC's gas utilities, of which FEI 5 represents over 95% by volume and customer base. The cap will limit the overall 6 7 emissions from the gas used by all customers of gas utilities including residential. 8 commercial and industrial sectors. This is the first policy of this kind in Canada which 9 places an obligation on gas utilities to reduce emissions on behalf of their customers".

10 "FEI recognises the "emissions cap¹⁶" challenge posed by CleanBC's Roadmap: The provincial government's approach with respect to the emissions of natural gas utilities 11 12 was recently updated in the CleanBC Roadmap with the introduction of a GHG emissions 13 cap. The cap, as laid out in the CleanBC Roadmap, is set at 6.11 Mt of CO2e per year at 14 2030. This represents a 47 percent reduction in GHG emissions from 2007 levels, and will 15 require utilities to increase Renewable Gas content, increase investments in energy 16 efficiency and employ other mechanisms to lower emissions. FEI expects that Renewable 17 Gas content exceeding 15 percent will be required to meet this lower emission threshold by 2030. Details on the cap are under development; however, FEI sees the potential 18 Renewable Gas supply requirements being between 45 and 65 PJs by 2030." 19

FortisBC's news release of Jan. 20th, 2022 states (emphasis added): "*By capturing and* repurposing methane, *RNG is third-party certified, carbon neutral gas and releases no new* GHG emissions when burned... the application also proposes that existing residential natural gas customers would automatically receive a small percentage of renewable gas as part of their gas supply by 2024. FortisBC's existing voluntary RNG program would continue, providing customers with the option to select how much additional renewable gas they would like to receive".

27 Questions:

- 6.i Please explain the term "third-party certified" as used in the news release. Certified
 by what third-party? Is this certification recognized by the BC Government? What
 guarantees would it give to prevent double- counting?
- 3132 Response:
- FEI's reference to "third-party certified" refers to the verification by an independent third-party of the carbon intensity of any facility that supplies RNG to FEI. In particular, suppliers of RNG to FEI contractually commit to meeting any limits associated with GHG emissions and FEI has a

¹⁵ Note: Footnote omitted in MS2S original.

¹⁶ CleanBC's "<u>Roadmap to 2030</u>" imposes a cap on utility emissions of 6.1 megatonnes of GHGs annually. The announcement stated that "Under the Roadmap to 2030, B.C. will introduce a cap on greenhouse gas emissions for natural gas utilities, encouraging new investment in low-carbon technologies and fuels as well as energy efficiency". The <u>Roadmap to 2030</u> also states that "New large industrial facilities are required to develop plans to reach net zero emissions by 2050".



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- contractual right to audit the facilities. FEI audits all of its supplier facilities and ensures these
 contractual assurances are met. For example, environmental attributes cannot be used by anyone
- 3 other than FEI who has contracted for the supply and associated attributes.

The carbon intensity calculation in FEI's supply contracts is based on the GHGenius model used in the BC Low Carbon Fuel Standard (BC-LCFS), and therefore aligns with the standard set by the BC provincial government. Further, RNG that is used in the transportation sector must also be accepted by the provincial government in order to generate credits under the BC-LCFS.

8 9		
10 11 12 13 14	6.ii	If RNG is, at best, carbon neutral (as FEI's news release states) , how is adding RNG to the gas supply going to contribute to FEI's meeting the emissions cap in CleanBC's roadmap ? Or achieving FEI's "30by30" initiative?
15	<u>Response:</u>	
16	Please refer t	o the responses to BCUC IR1 1.1 and CEC IR1 26.3.
17 18		
19 20 21 22 23	6.iii	At a building replacement rate in BC of 2% per annum (representing maybe 1% of FEI's customer accounts), what progress toward meeting the cap does FEI expect will result from substituting FG with RNG in the gas supply by 2030?
24	Response:	
25	Please refer t	o the response to MS2S IR1 1.vi.
26		
27 28		
29 30 31 32	6.iv	Please clarify the use of the word "new" in the Jan. 20th, 2022 news release. Is this intended to convey the impression to ratepayers that their emissions will be reduced as a result of substituting FG with "carbon neutral gas"?
33	<u>Response:</u>	
34	The word "ne	w" in this context refers to incremental or net GHG emissions to the atmosphere.

35 The carbon emissions from the use of RNG are described as "carbon neutral" in the <u>BC Best</u>

^{36 &}lt;u>Practices Methodology for Quantifying Greenhouse Gas emissions.</u>¹⁷ Please also refer to the

 $[\]label{eq:linear} $$ $ https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf. $$$



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- 1 responses to BCOAPO IR1 10.1, CEC IR1 3.2 and City of Richmond IR1 12.4 for further
- 2 discussion on the emissions factors for Renewable Gas.



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- 1Issue 7:Renaming FEI's gas supply. FEI is requesting (Section 8.2) that its accounts for2RNG gas supply be renamed from "Biomethane ..." to "Low Carbon Gas3(LCG)....". However, any blend of biomethane and fossil methane will always be4methane, a highly potent greenhouse gas that is 75% carbon. Renaming it to Low5Carbon Gas (LCG) would at best be highly misleading for consumers and at worst6an Orwellian fraud.
- 7 Questions:
- 8 7.i What would possibly justify renaming methane, a potent greenhouse gas both the
 9 Provincial and Federal Governments are committed to reducing 45% by 2030¹⁸,
 10 as "Low Carbon Gas (LCG)"?
- 117.iiWhat percentage of other non-fossil gases (hydrogen, syngas) in its fossil-gas12supply would FEI think would justify representing it to consumers as "Low-Carbon13Gas" ?
- 14
- 15 Response:
- 16 The changes to the naming conventions are to reflect the inclusion of additional low carbon gas
- 17 supplies, including hydrogen, synthesis gas and lignin, into the Renewable Gas portfolio.

¹⁸ <u>https://www.canada.ca/en/environment-climate-change/news/2021/10/canada-confirms-its-support-for-the-global-methane-pledge-and-announces-ambitious-domestic-actions-to-slash-methane-emissions.html. Canada committed to reducing <u>oil and gas methane emissions</u> by at least 75 percent below 2012 levels by 2030.</u>



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1Issue 8:Future customer demand for RNG: FEI's future rate scenarios (Section 8)2assume that overall customer demand will continue to increase. This despite the3clear signals in the customer focus group results shown in Section 5 of a high4customer sensitivity to the price of gas supply. However, also in Section 5.8, FEI5argues that BC's circumstances are unique and prohibit the application of regular6economic analysis, including price elasticity, to this situation.

There are several peer-reviewed papers discussing the price elasticity of customer
 demand for gas utilities. One¹⁹ of them—<u>from University College London</u>—showing the
 range of findings from several studies, is reproduced below. The findings are consistent,
 and show a negative correlation of price and demand for natural gas, both in the short and
 longer term.

Study	Geographic Area	Sample	Estimated Elasticities ¹	Methodology	
Alberini et al (2011)	USA – household level	1997- 2007	-0.560.69	Several specifications of Static FE model	
			-0.65	GMM estimator	
Dagher (2011)	Colorado, US	1994- 2006	-0.09 (sr) / - 0.23(lr)	Autoregressive Distributed Lag	
Nilsen et al	EU	EU 1	1960-	~ -0.25 (sr)	Number of Homogenous estimators
(2000)		2002	-0.971.5 (lr)		
Nilsen et al (2005)	UK	1960- 2002	-0.10 (sr)	Shrinkage estimator	
			-0.17 (lr)		
Serletis et al (2011)	UK	1980- 2006	-0.28	Static Translog Model – NQ Flexible Functional form	

Table D1: Collated domestic gas price elasticity estimates from academic literature

Summary of studies compiled by University College London

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1. Here 'Ir' refers to long-run estimates and 'sr' refers to short-run.

- 13It is readily apparent to even the casual observer that there are a growing number of cost14and environmental pressures on FEI's gas utility business model, including:
 - Greater competition from BC's major electric utility for space and water heating needs;
 - Municipal regulations incorporating GHG intensity measures alongside raised energy efficiency standards for buildings;
 - The Province's cap on gas utilities' customer emissions;
 - <u>Growing</u> adoption of electric heat pump technology;
 - 19

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/532539/Annex_ D_Gas_price_elasticitie_s.pdf.



Provincial PST cuts and rebates for electric heat pumps, increased PST on fossil-1 2 gas equipment; 3 Cost effects of BC's pending changes to its gas royalty scheme; 4 Effects of rapidly increasing carbon tax on fossil gas-from \$2.30/GJ to an • 5 expected \$8/GJ by 2030; 6 Effects of LNG exports on local NG supply and price; and 7 • Growing interest in (green) Hydrogen, and hydrogen fuel cell engines, as a zero-8 carbon fuel for long- range transportation and industrial uses. 9 **Questions:** 10 11 8.i Given the negative elasticity findings in these studies, and the additional pressures 12 on gas utilities listed above, does FEI want to re-examine the issue of price 13 elasticity in demand for its gas service and present a more realistic demand 14 forecast to the Commission? 15 16 **Response:** 17 As FEI explains in Section 5.8 of the Application, price elasticity studies require demand and price 18 data that reflect market forces, with consumer demand being driven by the pricing of competitive 19 options. Put another way, price elasticity measures the response of consumers to changes in 20 market prices. However, this type of market data is not currently available with respect to FEI's 21 Renewable Gas Program. 22 With respect to the demand forecast, FEI assumes that the guestion is referring to the Renewable 23 Gas demand forecast included in Section 8.6 of the Application which estimates the customer bill 24 impact. Currently, FEI considers the estimated customer rate impact to be reasonable, and 25 therefore sees no reason to re-examine the forecasts provided as part of the Application. 26 27 28 29 8.ii In the BC Government's supply study (referenced previously), the assumed short-30 term price of RNG is \$28/GJ. That is ~ 7 times the current \$4/GJ rate charged to 31 residential NG accounts. In a market with BC Government-subsidized heating and 32 cooling alternatives available, and local municipal zoning and building permit 33 restrictions on new fossil-fuel devices, how will there not be significant attrition in 34 FEI's customer base and gas demand once the cost of gas service escalates so? 35 36 **Response:** 37 Please refer to the response to MS2S IR1 3.viii. 38