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January 31, 2020

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
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Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

Filing of Biomethane Purchase Agreements between FEI and Tidal Energy Marketing Inc.

Response to the British Columbia Utilities Commission (BCUC) Panel Information Request (IR) No. 1

On January 16, 2020, the BCUC issued Panel IR No. 1 to FEI. FEI respectfully submits the attached response to BCUC Panel IR No. 1.

If further information is required, please contact Scott Gramm, Manager, Renewable Natural Gas, at (604) 576-7242.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Doug Slater

Attachments

cc (email only): Registered Parties



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1 **A. INTERPROVINCIAL RENEWABLE NATURAL GAS TRANSPORTATION**

2 **1.0 Reference: INTRODUCTION**

3 **FEI Final Argument, p. 1**

4 **Transportation of Renewable Natural Gas**

5 FortisBC Energy Inc. (FEI) states on page 1 of its Final Argument:

6 FEI's BPAs with Tidal are for the purchase of renewable natural gas from
7 projects in Niagara Falls and London, Ontario. The "Niagara BPA" establishes
8 the terms and conditions on which Tidal will provide renewable natural gas from
9 a landfill project located in Niagara Falls, Ontario to FEI at the Huntingdon
10 interconnection point on FEI's system. The "London BPA" establishes the terms
11 and conditions on which Tidal will provide renewable natural gas from an organic
12 waste digestion project located in London, Ontario to FEI at the Huntingdon
13 interconnection point.

14 1.1 Please confirm that natural gas can physically flow from the project locations in
15 Niagara Falls and London, Ontario, to the Huntingdon interconnection point on
16 the FEI system, and describe the operational layout that would allow the
17 renewable natural gas (RNG) to flow from the two production facilities in Ontario
18 to the interconnection point on the FEI system.

19
20 **Response:**

21 A clear physical connection exists between the pipeline system in Ontario where the RNG is
22 produced and FEI's pipeline system in BC. The connection is from Enbridge Gas Inc.'s Ontario
23 Pipeline system, to TC Energy's Canadian Mainline, to TC Energy's NGTL Pipeline system and
24 then to the Westcoast Pipeline system to Huntingdon.

25 Under normal operating conditions, the prevailing direction of gas flow in Canada is from west to
26 east via TC Energy's Canadian Mainline system. Gas could physically flow from east to west if
27 the production-consumption balance in either region changed. Specifically, gas could flow east
28 to west if eastern Canada became a net producer and western Canada became a net
29 consumer. Pipeline operators would need to configure the pipeline to accommodate westerly
30 gas flow, and then the RNG molecules from the Tidal BPAs could be physically delivered to
31 Huntingdon.

32 However, the physical delivery of the RNG molecules is not required for FEI's acquisition of
33 RNG to be a prescribed undertaking under the GRR or for FEI's customers to claim the GHG
34 reductions resulting from the RNG. As discussed in FEI's Application and previous responses
35 to information requests (IRs) and further in response to BCUC Panel IR 1.1.3 below, the
36 delivery of the RNG from the project locations in Niagara Falls and London, Ontario to FEI's
37 system will be by displacement. Since gas molecules are indistinguishable, interchangeable
38 and comingled in the pipeline system, purchasers of conventional or renewable natural gas

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1 generally do not physically consume the same gas molecules that they purchase. Please also
2 refer to the response to BCSEA IR 1.1.2.

3
4

5

6 1.2 Please confirm whether FEI expects that RNG would physically flow from the two
7 production facilities in Ontario to the Huntingdon interconnection delivery point on
8 the FEI system under normal operating conditions.

9

10 **Response:**

11 For the reasons explained in the response to Panel IR 1.1.1, FEI expects that the RNG would
12 not physically flow from the two production facilities in Ontario to the Huntingdon interconnection
13 delivery point on the FEI system under normal operating conditions. Rather, as discussed in
14 response to Panel IR 1.1.3, the RNG would be delivered to FEI by displacement.

15

16

17

18 1.3 Please describe how RNG injected into pipelines at Niagara Falls and London,
19 Ontario, will physically displace conventional natural gas from entering BC's
20 pipeline network.

21

22 **Response:**

23 The RNG produced at the facilities in Ontario will cause an equivalent reduction in the amount
24 of gas that flows towards Ontario from Western Canada, thereby displacing conventional natural
25 gas molecules and reducing the amount of conventional natural gas that is produced and
26 injected into the system.

27 The diagrams below illustrate delivery by displacement. As illustrated in the diagram, the end
28 result is:

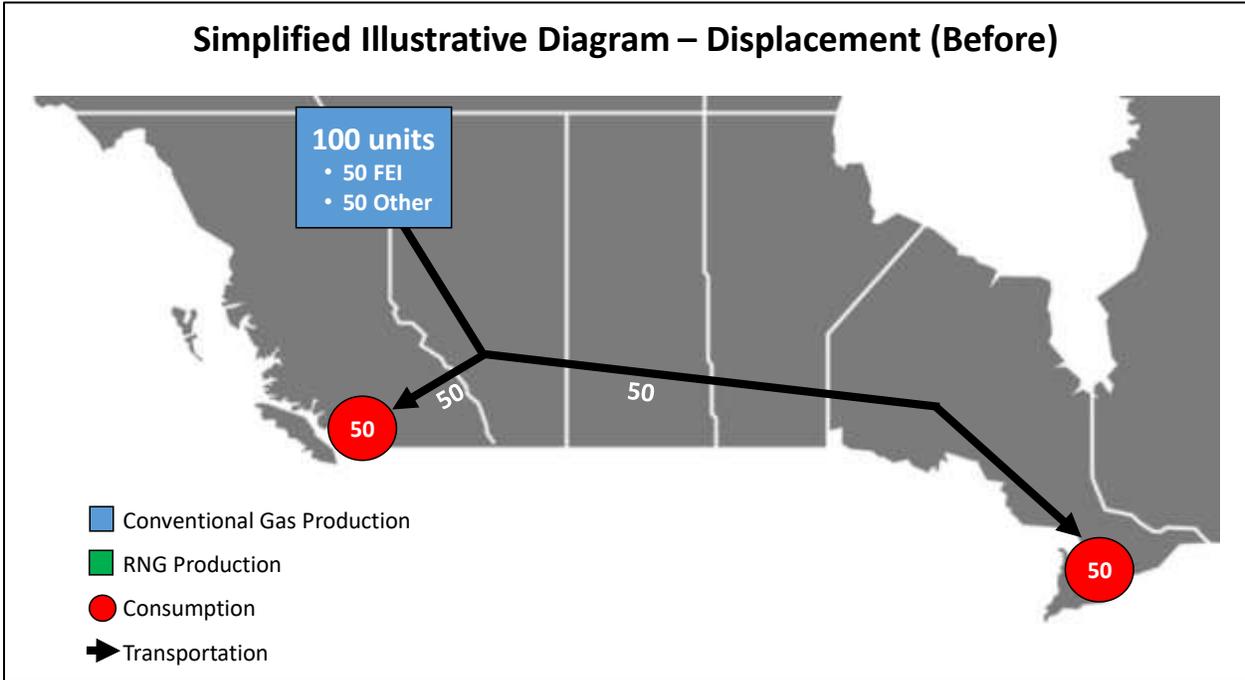
29 • A reduction in the flow of gas from west to east which reflects the delivery, by
30 displacement, of RNG to FEI; and

31 • A reduction in the amount of conventional natural gas that is produced and injected onto
32 the system.

33

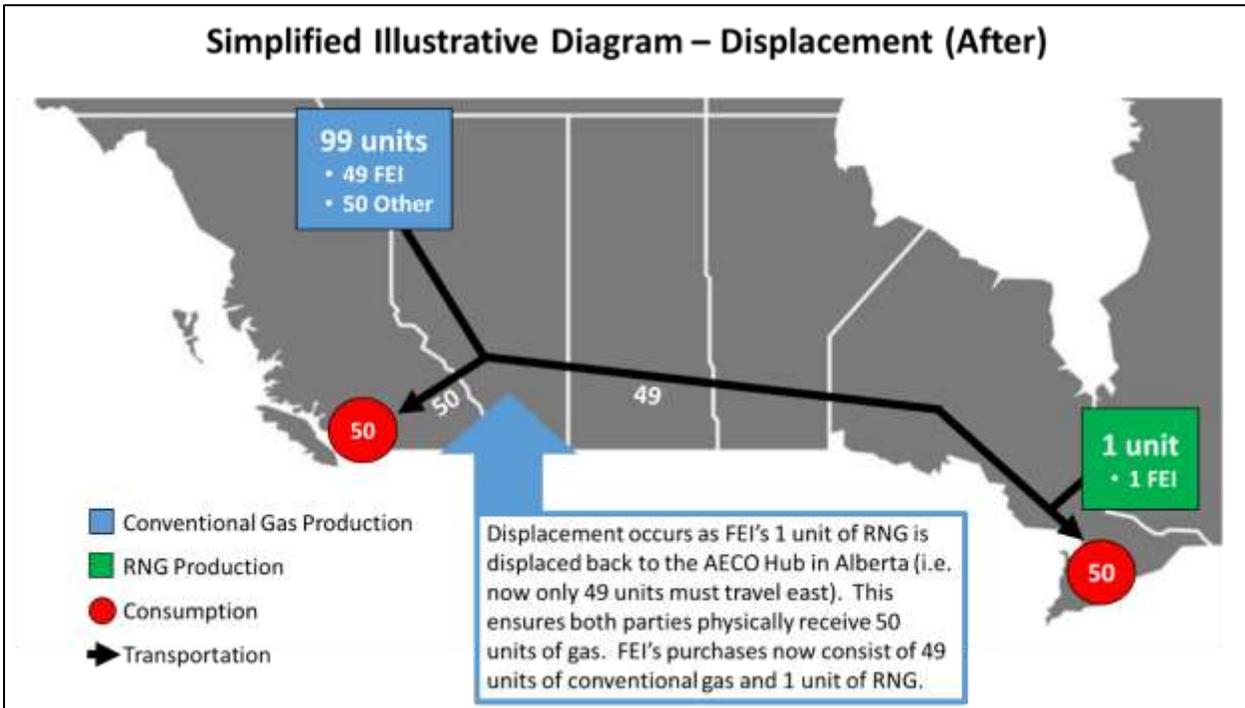
34 Using displacement, Tidal can contractually provide RNG to FEI in BC.

Simplified Illustrative Diagram – Displacement (Before)



1
2

Simplified Illustrative Diagram – Displacement (After)



3
4

5 To provide context, FEI's conventional natural gas purchases also do not necessarily flow
 6 directly to FEI, but may be delivered by displacement. For example, as explained in FEI's
 7 response to BCSEA IR 1.1.2, the notional delivery of conventional natural gas or supply by
 8 displacement is common with storage agreements. FEI's gas contracting portfolio includes re-



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- 1 delivery or exchange agreements in-place with its contracted storage capacity at Mist (Oregon)
- 2 and Jackson Prairie (Washington). These agreements allow FEI to receive gas at Huntingdon
- 3 and FEI will then transfer (or notionally deliver) an equivalent amount of gas at the storage
- 4 facility out of its account.

- 5 For more information on the notional delivery of gas, please refer to the responses to BCUC IRs
- 6 1.1.1, 1.5.1 and BCSEA IR 1.1.2.

- 7

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1 **B. LOCATION OF PHYSICAL GREENHOUSE GAS EMISSION REDUCTION**

2 **2.0 Reference: INTRODUCTION**

3 **FEI Final Argument, p. 1**

4 **Physical Greenhouse Gas Emission Reduction**

5 FEI states on page 1 of its Final Argument:

6 While the production of the renewable natural gas will occur in Ontario, FEI's
7 purchase of the renewable natural gas will reduce greenhouse gas emissions in
8 BC, as greenhouse gas emission reductions are accounted for at the end use.

9 2.1 Please confirm whether the physical volume of greenhouse gases emitted into
10 the atmosphere at the end use is reduced when FEI customers use renewable
11 natural gas instead of conventional natural gas.

12
13 **Response:**

14 Since conventional and renewable gas molecules are indistinguishable, the combustion of both
15 renewable and conventional natural gas results in the same “physical volume” of GHGs emitted
16 into the atmosphere at the end use. However, the emissions resulting from the combustion of
17 RNG is not adding new carbon to the atmosphere and is, therefore, considered carbon neutral.
18 The BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions explains it this
19 way:

20 The CO₂ released *to* the atmosphere during combustion of biomass is assumed
21 to be the same quantity that had been absorbed *from* the atmosphere during
22 plant growth. Because CO₂ absorption from plant growth and the emissions from
23 combustion occur within a relatively short timeframe of one another (typically
24 100-200 years), there is no long-term change in atmospheric CO₂ levels. For this
25 reason, biomass is often considered “carbon-neutral” and the Intergovernmental
26 Panel on Climate Change (IPCC) *Guidelines for National Greenhouse Gas*
27 *Inventories* specifies the separate reporting of CO₂ emissions from biomass
28 combustion...¹

29
30 This is why carbon dioxide created by combustion of RNG derived from organic matter is not
31 considered to be a net GHG emission – it does not add net-carbon to the atmosphere, but it
32 makes use of existing carbon in the atmosphere.

33 Thus, the location of physical combustion of the RNG is not relevant to the issue of accounting
34 for GHG emissions and the associated benefits. Rather, it is the fact that emissions reductions
35 occur and where they are counted that is relevant. In this regard, FEI's BPAs cause emissions
36 reductions to occur and the associated emission reductions are counted by FEI in a manner

¹ At page 11, footnote 14. Online:
<https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2017-pso-methodology.pdf>.

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1 consistent with FEI's other RNG purchases within BC, and consistent with GHG emissions
2 trading and carbon offsets markets around the world. This is reflective of the fact that GHG
3 emissions are not a local issue. Rather, climate change is a global issue and any actions taken
4 to reduce GHGs and reduce climate change impacts benefit all, no matter their location.

5 Nevertheless, the proposed BPAs reduce GHG emissions in BC by increasing the amount of
6 RNG supply available to FEI's customers.² Specifically, as discussed below:

- 7 • FEI's acquisition of the RNG will result in reductions in GHG emissions at the end use
8 because it will result in transportation customers switching from diesel to CNG or LNG;
9 and
- 10 • FEI's acquisition of RNG will result in emissions reductions due to the reduction in the
11 use of conventional natural gas.

12 ***FEI's Acquisition of RNG Results in End-Use Emissions Reductions***

13 As discussed on page 9 of the Application, the use of RNG in the NGT market will reduce GHG
14 emissions at the end-use because customers seeking a GHG neutral transportation solution
15 may switch to CNG or LNG in anticipation of electing to participate in FEI's RNG program. For
16 example, the switch to CNG from diesel in and of itself reduces GHGs by 10 – 30 percent.³
17 Switching to RNG from conventional CNG further reduces GHG emissions by approximately 75
18 percent.⁴ These reductions in GHG emissions will physically occur in BC.

19 ***FEI's Acquisition of RNG Results in Emissions Reductions due to the reduction in the*** 20 ***use of Conventional Natural Gas***

21 GHG emissions are reduced as a result of the substitution of conventional natural gas with
22 methane derived from decaying organic material that is captured and injected into the pipeline
23 system. Capturing and injecting RNG into a gas pipeline provides a one-to-one reduction in
24 carbon dioxide emissions because the resulting carbon dioxide emitted at the end-use is
25 captured from a biogenic process and is not adding net new carbon into the atmosphere.

26 The displacement of conventional natural gas by the injection of RNG, as illustrated in response
27 to BCUC Panel IR 1.1.3, also avoids the emissions associated with gas production because the
28 conventional natural gas remains in the ground at the point of production, including in locations
29 such as British Columbia and Alberta.

30 ***Comparison to FEI's Other RNG BPAs***

31 FEI's other RNG BPAs result in the same reduction in carbon dioxide emissions by displacing
32 the combustion of conventional natural gas as well as the notional delivery of the RNG to the
33 end user. As an example:

² Exhibit B-1, p. 9.

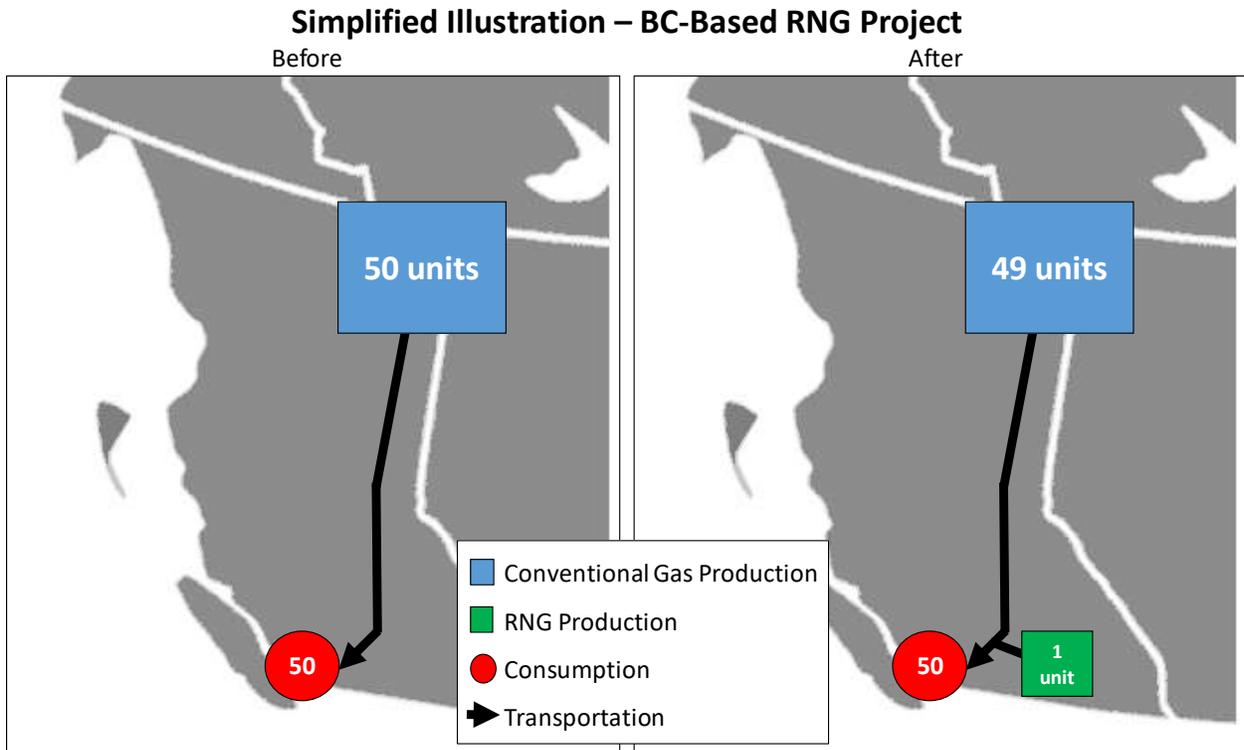
³ Switching from diesel to natural gas, taking into account efficiencies, energy density and carbon intensity. Weighted average Carbon intensity of diesel is just above 90 gCO₂e/GJ vs about 65 gCO₂e/GJ for natural gas.

⁴ Switching to RNG as a drop-in replacement for CNG based on a weighted average carbon intensity of 20 gCO₂e/GJ.

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- 1 • Fraser Valley Biogas injects gas in the Eastern part of the Abbotsford natural gas system.
- 2
- 3 • An FEI customer in Prince George may purchase the RNG, and if required to report their
- 4 emissions to the BC Climate Action Secretariat, would be entitled to recognize the
- 5 associated emissions reduction.
- 6 • Due to the flow of gas in the immediate region and within BC generally, the end-use
- 7 customer in Prince George will not physically consume the RNG gas molecules they
- 8 purchased. Rather, the RNG is delivered notionally.
- 9 • However, the end result is a reduction in carbon emissions by avoiding the use of
- 10 conventional natural gas, which remains in the ground at the point of production in
- 11 locations such as British Columbia and Alberta.

12
13 Please refer to the simplified illustrative diagram below:



14
15
16
17
18 2.1.1 If not confirmed, please explain where the most significant reduction of

19 greenhouse gases physically released into the atmosphere would occur

20 under the proposed BPAs.

21

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1 **Response:**

2 Under the proposed BPAs, the most significant reduction in greenhouse gases physically
3 released into the atmosphere would occur in the vicinity of the RNG production as a result of
4 substituting the RNG for conventional gas at the point of combustion. However, FEI has a
5 contractual right to claim the benefit of that reduction and, in fact, it is FEI's purchase of the
6 RNG that causes the reduction in use of an equal amount of conventional natural gas. Further,
7 as discussed in the response to BCUC Panel IR 1.3.1, under the legislation in BC, FEI's
8 customers - the end users - are able to claim a reduction in their GHG emissions in BC.

9 Finally, FEI notes that it is not a requirement for a prescribed undertaking under the *Clean*
10 *Energy Act* or the GRR that any particular portion of the GHG reduction occur in a particular
11 location. The reduction in GHG emissions resulting from the BPAs can be claimed in BC.

12

13

14

15 2.2 Please explain how the location of physical greenhouse gas (GHG) emission
16 reduction from the proposed Biomethane Purchase Agreements (BPAs)
17 compares to the location of physical GHG reduction under FEI's existing BPAs
18 within BC.

19

20 **Response:**

21 The location of physical GHG emission reductions from the proposed BPAs compares to the
22 location of physical GHG reduction under FEI's existing BPAs within BC, as follows:

23 • Both result in end-use reductions in GHG emissions in BC to the extent that end-use
24 customers switch from a higher-emitting fuel such as diesel to natural gas.

25 • Both result in the reduction in GHG emissions in the vicinity of the point of production of
26 the RNG.

27 • Both result in the reduction in GHG emissions at the point of production of conventional
28 natural gas, as less conventional natural gas will be produced and injected into the
29 system.

30

31 Please also refer to the response to Panel IR 1.2.1.

32

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1 **C. REGULATORY FRAMEWORK FOR GREENHOUSE GAS EMISSION ACCOUNTING**

2 **3.0 Reference: PROPOSED BIOMETHANE PURCHASE AGREEMENTS IN THE**
3 **PUBLIC INTEREST**

4 **FEI Final Argument, p. 10**

5 **Greenhouse Gas Emission Accounting**

6 FEI states on page 10 of its Final Argument:

7 While the production of the renewable natural gas will occur in Ontario, FEI's
8 purchase of the renewable natural gas will reduce greenhouse gas emissions in
9 BC, as greenhouse gas emission reductions are accounted for at the end use.
10 Claiming reductions in emissions due to the use of renewable natural gas
11 requires a clear contractual path for the environmental attributes, real
12 displacement of conventional gas, and the retirement of environmental attributes
13 upon use. The BPAs with Tidal meet these requirements, such that the reduction
14 in greenhouse gas emissions will be accounted for in B.C. where the renewable
15 natural gas is used.

16 3.1 Please confirm what legislation, regulations or standards prescribe the
17 requirements and accounting methodology that FEI refers to when it states that
18 greenhouse gas emissions reductions are “accounted for at end use” and that
19 “The BPAs with Tidal meet these requirements, such that the reduction in
20 greenhouse gas emissions will be accounted for in B.C. where the renewable
21 natural gas is used.”

22
23 **Response:**

24 FEI describes below the emissions reduction accounting requirements for three categories of
25 end-use (transportation, public sector, and voluntary end-uses), and the application of
26 legislation (if any) governing these categories, including any restrictions on the source location
27 of RNG supply.

28 1. **Transportation:** FEI may sell RNG to transportation customers, including bus fleets,
29 waste haulers, and other fleet operators, who can claim the GHG reductions due to RNG
30 as a credit under the BC-RLCFRA⁵. FEI is able to register its RNG as an eligible fuel
31 under section 6(6) of the BC-RLCFRA. Eligible fuels under the BC-RLCFRA can be
32 produced within and outside of BC. For example, BC imports hydrogenation-derived
33 renewable diesel from Neste Oil Singapore and ethanol from Future Fuels Ltd in Alberta.
34 The carbon intensity of these fuels include both emissions reductions that have occurred
35 during production and also that will occur at the end use. This demonstrates that the
36 BC-RLCFRA recognizes emissions reductions that occur outside of BC.

⁵ Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act.

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1 FEI will be importing RNG in a similar fashion to hydrogenation-derived renewable diesel
2 and ethanol. Under the BC-RLCFRA, the GHG reduction benefit of RNG is calculated
3 by comparing the carbon intensity of the RNG to the carbon intensity of the incumbent
4 fuel.

5 The Tidal BPAs include a requirement for the carbon intensity to be independently
6 verified and to be lower than conventional fuels using the GHGenius evaluation tool.⁶
7 This will ensure that the sale of the RNG will result in credits under the BC-RLCFRA.
8 When the Tidal BPAs are approved, FEI will have the carbon intensity of the RNG
9 registered under section 6(6) of the BC-RLCFRA. FEI's customers will then be able to
10 claim credits under the BC-RLCFRA for the GHG reductions resulting from using RNG.

11 2. **Public Sector:** FEI's public sector customers, such as universities, schools, or
12 hospitals, may purchase RNG to meet their obligations under the Carbon Neutral
13 Government program under the Climate Change Accountability Act (CCAA).⁷ This
14 program uses the SMARTTool for GHG evaluation, which recognizes RNG as an eligible
15 fuel. Public sector customers purchase RNG and account for the emissions reductions
16 for reporting to the BC Government. There is no prohibition against using RNG from
17 outside of BC, and the emissions are accounted for by the public sector facility at their
18 end-use.

19 3. **Voluntary:** FEI has voluntary customers, primarily residential, who do not have
20 statutory obligations to reduce their emissions, but participate in the RNG program
21 voluntarily. At this time, there are no emissions accounting requirements for these
22 customers.

23
24 With respect to the recording of emissions reductions at the end-use, FEI has established a
25 contractual pathway which is equivalent to the direct supply of RNG within BC. FEI describes
26 the contractual pathway and movement of gas below:

- 27 • Under the BPAs, RNG is produced in Ontario at either the London Project or the Niagara
28 Project. The volume of RNG is metered and enters the Enbridge Gas Distribution (EGD)
29 network.
- 30 • On behalf of the producer, EGD moves the gas to the Dawn Hub in Ontario. FEI notes
31 that this process is no different than conventional natural gas purchase. At the point that
32 the gas enters the distribution system, it is comingled and cannot be physically
33 distinguished. The movement of gas is tracked with meter data just like the movement
34 of conventional natural gas from any producer in the EGD service territory. EGD does
35 not have title to any of the gas or the associated environmental benefits. EGD simply

⁶ RNG is a fuel recognized within the GHGenius evaluation tool.

⁷ <https://www2.gov.bc.ca/gov/content/environment/climate-change/public-sector/carbon-neutral>.

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1 moves the RNG and conventional natural gas across its system as equivalent
2 molecules.

- 3 • At the Dawn Hub, the producer passes title of the gas, including its associated
4 environmental attributes, to Tidal. Tidal then moves that gas, along with all of the
5 associated environmental attributes, across Canada (by displacement) to FEI for
6 delivery at Huntingdon. FEI receives the RNG with its associated environmental
7 attributes, at Huntingdon as it would with RNG produced within BC.

8
9

10

11 3.1.1 Please confirm, or explain otherwise, that the accounting methodology
12 referenced has no limitations on the location of supply for renewable
13 natural gas.

14

15 **Response:**

16 Confirmed.

17

18

19

20 3.2 Please describe the regulatory framework in place in British Columbia for
21 accounting greenhouse gas emissions as they relate to biomethane producers
22 and consumers.

23

24 **Response:**

25 Please refer to the response to Panel IR 1.3.1 for discussion of the regulatory framework for
26 accounting for greenhouse gas emissions relating to biomethane consumers.

27 The regulatory framework as it relates to biomethane producers in British Columbia is as
28 follows:

- 29 • Credits under the BC-RLCFRA⁸ are determined by the carbon intensity of the
30 biomethane produced. Biomethane producers can seek approval from government of
31 the carbon intensity of their fuel for the purposes of the BC-RLCFRA.

- 32 • Under the CCAA, biomethane producers must determine the carbon intensity of their
33 product using the 2017 B.C. Best Practices Methodology for Quantifying Greenhouse
34 Gas Emissions⁹. Please refer to the response to Panel IR 1.3.4 for a description of how
35 FEI will apply this methodology to the BPA's.

⁸ Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act.

⁹ Ministry of Environment and Climate Change. 2017 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions. p. 11, footnote 14. The methodology states that CO₂ emissions from "biomass [including

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3.3 Please describe the regulatory framework in place in Ontario for accounting greenhouse gas emissions as they relate to biomethane producers and consumers.

Response:

Ontario previously established a regulatory framework for accounting for greenhouse gas emissions, including in relation to biomethane producers and consumers pursuant to its *Climate Change Mitigation and Low-carbon Economy Act*, 2016, S.O. 2016, c. 7 (the “Ontario Legislation”). The provincial government in Ontario repealed the Ontario Legislation on November 14, 2018, and has not replaced it.

The federal government established a nation-wide carbon pricing “backstop” pursuant to the *Greenhouse Gas Pollution Pricing Act*, S.C. 2018, c. 12, s. 186 (Federal Legislation) on June 21, 2018. The Federal Legislation is designed to apply in any province (referred to as a “listed province” in the Federal Legislation) that does not have a carbon pricing regime that is deemed by the Federal government to be equivalent to the carbon pricing regime in the Federal Legislation. The Federal Legislation operates by imposing a fossil fuel charge on certain fossil fuels that are delivered to end users in a listed province and an output-based pricing system that applies to certain industrial emitters of greenhouse gases that are located in a listed province.

The Federal Legislation applies in Ontario and not in BC because Ontario is a listed province under the Federal Legislation and BC is not.

The fossil fuel charge established pursuant to the Federal Legislation does not apply to natural gas including biomethane that is produced or imported into a listed province and is then physically delivered to end users located outside of that province.

3.4 Please explain how the actual carbon intensity of the RNG purchased under the proposed BPAs will be accounted for under BC and Ontario carbon accounting frameworks.

renewable natural gas] is assumed to be the same quantity that had been absorbed from the atmosphere during plant growth. Because CO₂ absorption from plant growth and the emissions from combustion occur within a relatively short timeframe of one another (typically 100-200 years), there is no long-term change in atmospheric CO₂ levels. For this reason, biomass is often considered “carbon-neutral” and the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories specifies the separate reporting of CO₂ emissions from biomass combustion.”
<https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2017-pso-methodology.pdf>.

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Response:

As discussed in the response to Panel IR 1.3.3, Ontario does not currently have a mechanism for accounting for the carbon intensity of RNG. The environmental attributes of the RNG acquired by FEI from Ontario producers will be conveyed by contract to FEI. The actual carbon intensity of the RNG purchased under the proposed BPAs will be accounted for under BC's carbon accounting framework as follows:

- Carbon Intensity (CI) is measured in grams of carbon dioxide equivalent per Megajoule (gCO₂e/MJ). It is calculated by determining the emissions of the project and dividing by the energy produced.
- FEI will calculate emissions using the BC Best Practices Methodology for Quantifying Greenhouse Gas Emissions¹⁰, including:
 - A calculation boundary is put around the project. The boundary refers to which elements of a potential project are included in the calculation. For the purposes of RNG production, this includes all activities that support methane/biogas capture, upgrading biogas to RNG, flaring, and transport of biomass. Displacement of natural gas can be included in this boundary. It is assumed that natural gas produces 50kgCO₂e/GJ.
 - The baseline scenario for greenhouse gas production is identified. The baseline scenario is what is currently happening and what might be expected to happen in the future if no RNG project is undertaken. This refers to the greenhouse gas emissions caused by the way the waste is currently disposed of. Regardless of where the project is located, emissions have to be calculated based on the regulatory requirements in British Columbia. For instance, large landfills are required to collect and flare methane in BC. Since this activity is required by law, it is considered to be the baseline emissions profile.
 - The greenhouse gases that will be created or reduced as a result of this project are identified. Emissions are reduced by capturing methane that is normally released to the atmosphere and by displacing natural gas. Emissions can be caused by methane that is released in the collection process, in upgrading, or in heating the vessel. Emissions can also be caused by the transportation of biomass to the site.
- To calculate the carbon intensity, the difference between the project's emissions and the baseline are calculated. This value is divided by the amount of energy produced to create a carbon intensity measurement in units of gCO₂e/MJ.

¹⁰ <https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2016-17-pso-methodology.pdf>.

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1 In addition to the above methods which are consistent with accepted standards for GHG
2 accounting,¹¹ each source of RNG supply that is used by transport consumers to generate
3 compliance credits under the BC-RLCFRA must be independently verified and registered under
4 a unique fuel code with the Ministry of Energy Mines and Petroleum Resources. As such, FEI
5 will register and seek approval for the carbon intensity of the RNG from Tidal under the BC-
6 RLCFRA.¹²

7
8

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10 3.5 Please confirm, or explain otherwise, that the production facilities in Ontario
11 receive no direct or indirect benefit from the GHG reduction related to the
12 biomethane being purchased by FEI under the proposed BPAs

13

14 **Response:**

15 Confirmed. The Ontario production facilities will not receive any direct or indirect benefit from
16 the GHG reduction related to the biomethane that is being produced under the proposed BPAs
17 and delivered to end users outside Ontario. The Ontario production facilities are contractually
18 precluded from receiving any such benefit because FEI will have contracted for and purchased
19 all of the environmental attributes associated with the RNG under its BPAs with Tidal.

20

21

22

23 3.5.1 Please explain how GHG emissions would be accounted at the RNG
24 production facilities in Ontario under Ontario legislation, before and after
25 the landfill gas recovery operations are in service.

26

27 **Response:**

28 Regarding the biomethane produced under the proposed BPAs and delivered to end users
29 outside Ontario, there are currently no Provincial regulations in Ontario that would require
30 reporting of GHG emissions before or after the landfill gas recovery operations are in service.

31

32

33

¹¹ The GHG Protocol for Project Accounting:
https://ghgprotocol.org/sites/default/files/standards/ghg_project_accounting.pdf; ISO 14064-2: 2006 - Greenhouse gases -- Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

¹² Please also refer to the link for more information on the process for evaluating and approving the carbon intensity of fuels under the BC-RLCFRA and BC-RLCFR Regulation. https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/electricity-alternative-energy/transportation/renewable-low-carbon-fuels/rlcf008_-_ci_approvals_july_2016.pdf.

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1 3.6 Please discuss if there is any potential that the same physical GHG emission
2 reduction arising from biomethane usage could be accounted twice – both at the
3 production facility and the end use.

4
5 **Response:**

6 No. The same physical GHG emission reduction will not be double counted for the RNG that is
7 being delivered to end users located outside Ontario because, pursuant of the BPA agreement,
8 FEI has secured all of the environmental benefits in its agreement with Tidal. Please also refer
9 to the response to Panel IR 1.3.5.1. Additionally, FEI has the right under Section 12 of the
10 Transaction Confirmation of the BPAs to confirm compliance with Tidal’s obligations with
11 respect to GHG emissions reductions.

12
13

14
15 3.7 Please explain what federal or inter-provincial regulatory oversight is in place to
16 ensure that the same physical GHG emission reductions are not accounted for
17 more than once if provinces use different GHG accounting schemes.

18
19 **Response:**

20 The existing Federal Legislation provides a carbon pricing “backstop” that is intended to
21 harmonize the pricing of greenhouse gas emissions across provinces while retaining flexibility
22 between different provincial regulatory approaches. It does not create a direct federal oversight
23 mechanism over each province’s GHG accounting scheme to ensure GHG reductions are not
24 accounted for more than once. However, in the course of determining which provinces are
25 listed provinces under the Federal Legislation, the federal government did benchmark and
26 evaluate the robustness of provincial GHG accounting systems. BC is not a listed province.

27 FEI is engaged in the Technical Working Group (TWG) of the federal Clean Fuel Standard
28 (CFS). Unlike the BC Renewable and Low Carbon Fuel Requirements Regulation (BC LCFS),
29 the CFS will apply to all fuels. The same physical GHG emission reductions will not be able to
30 be double counted under the Federal CFS once it enters into force because the Tidal BPAs
31 grant to FEI the contractual rights to all of the associated emissions reduction benefits of the
32 RNG.

33
34

35
36 3.8 Please discuss whether any regulations exist in Canada that would allow the
37 transfer of environmental attributes of GHG emissions between provinces,
38 without an agreement for delivery of natural gas.

39

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1 **Response:**

2 There are no federal regulations that would allow the transfer of environmental attributes of
3 GHG emissions between provinces in respect of RNG without an agreement for delivery of the
4 natural gas outside of Ontario.

5
6

7

8 3.9 Please discuss whether large natural gas customers in BC have any options for
9 sourcing their own renewable natural gas that would qualify for an emission
10 reduction under BC regulations.

11

12 **Response:**

13 Large natural gas customers on FEI's natural gas system that use a natural gas marketer to
14 procure their own gas could potentially source their own RNG and arrange to have it delivered
15 onto FEI's system for use at their facility. Some large natural gas customers may even have the
16 ability to produce and consume their own RNG. In either case, the customer would need to
17 consult with the BC government regarding the qualification of associated emission reductions
18 under BC regulations and the applicability of carbon tax rebates.

19
20

21

22 3.10 Please discuss whether FEI customers looking to reduce their greenhouse gas
23 emissions would be able to do so by purchasing carbon offsets from other
24 organizations in BC or other provinces, in the context of the regulatory framework
25 present in BC.

26

27 **Response:**

28 Some of FEI's customers have the option of reducing their GHG emissions by purchasing
29 carbon offsets.

30 • **Public Sector** – Public service organizations or local governments who are obligated to
31 reduce GHG emissions may purchase qualifying carbon offsets under the Carbon
32 Neutral Government program, but those carbon offsets are limited to BC-generated
33 offsets. As discussed in the response to Panel IR 1.3.1, there is no similar restriction
34 preventing the use of RNG from outside of BC.

35 • **Transportation Fuel Suppliers** – Obligated parties under the BC-RLCFRA are only
36 able to purchase compliance credits, not carbon offsets, to meet their obligations.

37 • **Voluntary** – There are no restrictions for customers that do not have statutory
38 obligations that restrict the purchase of offset credits to lower their emissions.

39



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1 There are several advantages to customer participation in FEI's voluntary RNG program over
2 the purchase of carbon offsets. First, purchasing RNG is relatively easy. It is purchased
3 through FEI with the transaction shown on the customer's monthly natural gas bill. Customers
4 also have the flexibility to enroll, select their RNG composition, or exit from the RNG program as
5 needed.

6 Second, RNG provides a clear and direct reduction in emissions for FEI's customers. A
7 gigajoule of RNG can be compared against a displaced gigajoule of conventional gas. This is
8 desirable for many customers because it is a simple way to understand their individual impact.
9 In contrast, carbon offsets can come from a number of projects that are not necessarily related
10 to the natural gas system or the customer's use of natural gas.

11
12

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14 3.11 Please discuss whether an FEI customer purchasing carbon offsets to reduce
15 their carbon footprint would be entitled to the same benefits as a customer
16 purchasing notional RNG through FEI, in the context of the regulatory framework
17 present in BC.

18

19 **Response:**

20 The benefit of carbon offsets varies among FEI's customers. In some cases, the purchase of
21 RNG provides greater benefits where carbon offsets are not an identified compliance pathway,
22 or where RNG generates additional credits which can then be sold. In other cases, the
23 purchase of RNG is preferred, but neutral in terms of benefits. FEI provides examples below.

24 ***Enhanced Benefits from the Purchase of RNG***

25 Carbon offsets are not eligible to generate compliance credits under the BC-RLCFRA; therefore,
26 customers with obligations under the BC-RLCFRA who purchase offsets are not entitled to the
27 same benefits as if they had purchased RNG. This is also the case under the prospective
28 federal Clean Fuel Standards where offsets are not currently listed as a compliance option for
29 obligated parties.

30 Furthermore, customers who use RNG as a transportation fuel reduce their GHG emissions, as
31 they would by purchasing offsets, but would also generate compliance credits under the BC-
32 RLCFRA through the use of RNG.

33 ***Customers Express a Preference for RNG***

34 Public sector organizations may meet their carbon reduction requirements by purchasing either
35 RNG or made-in-BC offsets. FEI's customers participating in the Carbon Neutral Government



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- 1 program,¹³ have expressed a preference to reduce emissions by conserving electricity and fossil
- 2 fuels (including by switching to RNG) over the purchase of carbon offsets.
- 3

¹³ See: <https://www2.gov.bc.ca/gov/content/environment/climate-change/public-sector/carbon-neutral>.

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1 **D. PRICE OF NATURAL GAS**

2 **4.0 Reference: ANNUAL VOLUME OF RENEWABLE NATURAL GAS WILL NOT**
3 **EXCEED MAXIMUM**

4 **FEI Final Argument, p. 11**

5 **No Delay to BC Projects**

6 FEI states on page 2 of its Final Argument:

7 FEI has an opportunity now to secure long-term contracts ahead of other
8 jurisdictions that have been slower in their adoption of renewable natural gas.
9 This opportunity will allow FEI to secure renewable natural gas at better prices
10 than if it were competing for the renewable natural gas with other jurisdictions,
11 leading to lower overall renewable natural gas supply costs for customers

12 4.1 Please provide the average price of conventional natural gas purchased by FEI
13 in 2019.

14

15 **Response:**

16 The average price of conventional natural gas purchased by FEI in 2019 was \$2.083¹⁴ per GJ.
17 This amount represents the volume-weighted commodity costs accounted for in the Commodity
18 Cost Reconciliation Account (CCRA) and the Midstream Cost Reconciliation Account (MCRA).
19 After including the carbon tax of \$1.9243¹⁵ per GJ for 2019, the price is \$4.0073 per GJ.

20 By comparison, the average price of RNG acquired by FEI in 2019 was \$22.927 per GJ. The
21 average price includes the amounts paid to suppliers for finished biomethane as well as the cost
22 for FEI to purchase and upgrade raw biogas.

23 However, as discussed in the response to BCUC IR 1.3.1, the appropriate comparison for the
24 price of RNG is not conventional natural gas, but rather, other renewable alternatives such as
25 electricity. Based on the equivalent cost of \$39.39 per GJ for BC Hydro's Tier 2 residential
26 customer electricity rates, acquiring biomethane at prices up to \$30 per GJ is a cost-effective
27 method of decarbonizing British Columbia's energy system.
28
29

30

31 4.2 Please provide the average price of RNG purchased by FEI in 2019.

32

33 **Response:**

34 Please refer to the response to Panel IR 1.4.1.

¹⁴ FEI has excluded any financial hedging costs or gains in its calculation of the average prices for natural gas purchased in 2019 although the impact would not be material.

¹⁵ $1.9243 = (3/12 \times 1.7381) + (9/12 \times 1.9864)$.

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4.3 Please provide the average RNG commodity price paid by FEI's RNG customers in 2019.

Response:

The average RNG price paid by FEI's RNG customers in 2019 was \$10.170 per GJ. The average price has been calculated based on the ratio of volume taken under the 2019 Short Term BERC rate, which was \$10.287 per GJ, and the 2019 Long Term BERC rate, which was \$10.000 per GJ, both as approved by Order G-230-18. The following table details the calculation of the weighted 2019 BERC price.

Component	Volume TJs ¹	Weighting	\$/GJ	\$/GJ Extended
Commodity Cost Recovery Charge			1.549	
BC Carbon Tax			1.738	
Premium			7.000	
Short Term BERC Rate	185.1	59%	10.287	6.070
Long Term Contract Discount			-1.000	
Calculated Long Term BERC Rate			9.287	
Approved Long Tem BERC Rate (subject to \$10.000 minimum)	129.9	41%	10.000	4.100
2019 Average RNG Price				10.170

¹ volumes as recorded December 31, 2019

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4.4 Please discuss the basis for the FEI's current RNG pricing model.

Response:

On August 28, 2015, FEI filed its Application for Approval of Biomethane Energy Recovery Charge (BERC) Rate Methodology, which set out the mechanisms by which FEI proposed to set the BERC (RNG price). FEI proposed two BERC rates, one for short-term RNG customers and one for long-term RNG customers. On August 12, 2016, the BCUC issued its Decision and Order 133-16 (BERC Decision) which approved what is the current RNG pricing model and mechanisms, as had been proposed in FEI's BERC application. The approved pricing model is described below and is set out in FEI's General Terms and Conditions of its Tariff, in Section 28.4, Price Determination.



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1 As approved by the BCUC in the BERC Decision, FEI sets the RNG price for its customers as a
2 premium over FEI's CCRA. FEI has two RNG prices, one for short-term RNG customers and
3 one for long-term RNG customers who enter into a Long Term Biomethane Contract. Long term
4 RNG contract customers are those with a minimum contract commitment of 60,000 GJs in
5 aggregate over the term of the contract and a term no less than 5 and no greater than 10 years.

6 For short-term RNG customers, FEI sets the BERC Rate each January 1st to be equal to the
7 BCUC approved January 1st CCRA Rate charged per GJ, plus the current British Columbia
8 Carbon Tax rate per GJ applicable to natural gas customers, plus a premium of \$7.00 per GJ.
9 The short-term RNG price is set out under FEI's BCUC-approved Rates Schedules 1B, 2B, 3B,
10 5B, 11B, and 46.

11 The Long-Term BERC Rate is set as a discount of \$1.00 per GJ to the Short-Term BERC Rate
12 at the time the long-term contract is entered into, subject to a minimum contract strike price of
13 \$10 per GJ and including a contract floor price provision that results in the price of biomethane
14 in any period beyond year five of a contract that is not less than the then-prevailing CCRA Rate.
15 The long term contract rate in the year of commencement is the rate that applies throughout the
16 life of the contract, subject to contract escalation, if applicable, and floor price provisions. All
17 long-term contracts are filed with the BCUC for approval as Rate Schedule 11B Tariff
18 Supplements.

19

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1 **E. NO DELAY TO BC PROJECTS**

2 **5.0 Reference: ANNUAL VOLUME OF RENEWABLE NATURAL GAS WILL NOT**
3 **EXCEED MAXIMUM**

4 **FEI Final Argument, p. 11**

5 **No Delay to BC Projects**

6 FEI states on page 11 of its Final Argument:

7 FEI expects to fully utilize all renewable natural gas from prospective projects.
8 FEI does not expect to delay, terminate or curtail any in-province projects as a
9 result of the purchase of renewable natural gas from out-of-province. FEI expects
10 that it will need to develop all of the renewable natural gas supply available within
11 BC, as well as projects outside of BC, to reach the CleanBC plan target of 15
12 percent renewable gas content. The CleanBC plan confirms the critical role that
13 renewable gas will play in reducing emissions, accounting for approximately 75
14 percent of the emissions reduction in the building sector. As a result, FEI sees
15 continued growth and development of the renewable gas portfolio in the future in
16 order to achieve these objectives.

17 5.1 Please confirm that FEI is unaware of any RNG projects in BC that would provide
18 a suitable alternative to the proposed BPAs at the present time.

19 **Response:**

21 FEI confirms that it is pursuing all known and suitable RNG supply projects in BC. While FEI
22 prefers to source RNG supply within BC, its expected RNG volume in BC remains well below
23 the 5 percent supply threshold in the GGRR. Accordingly, there is no benefit to be gained from
24 filtering RNG supply opportunities by location (either inside or outside of BC) at this time.
25 Rather, FEI must pursue all opportunities for the following reasons:

- 26
- 27 • First, RNG supply from outside of BC is needed to achieve the mid- and long-term
28 targets in the CleanBC plan. The CleanBC plan includes a target of 15 percent
29 renewable gas content by 2030 as well as a reduction in overall emissions of 80 percent
30 by 2050.¹⁶ In this context, restricting supply to projects in BC will impact FEI's ability to
31 achieve the objectives of the CleanBC plan which set targets for amounts of greater
renewable gas content than currently allowed under the GGRR volume threshold today.
 - 32 • Second, FEI does not believe that developing RNG projects outside of BC will impede
33 the development of BC-based projects. As discussed in the responses to CEC IRs 1.7.1
34 and 1.7.2, FEI projects available RNG supply within BC based on signed agreements of
35 approximately 1.30 PJs annually. In combination with all known opportunities within BC,
36 the total RNG volume achieved could reach 3.0 PJs, which is well short of the current 5
37 percent volume threshold (approximately 8.9 PJs) in the GGRR (and even further short

¹⁶ <https://www2.gov.bc.ca/gov/content/environment/climate-change/planning-and-action>.

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1 of the CleanBC plan). Accordingly, RNG projects from outside BC are not an alternative,
2 but rather, are a complement to BC-based projects.

3 • Third, demand is currently greater than supply and FEI has curtailed supply to
4 interruptible RNG customers and has suspended new voluntary subscriptions. The
5 immediate availability of RNG from the London BPA is an important consideration in
6 meeting customer demand. As of this filing, FEI has confirmed that the London Project
7 is now operational and could begin supplying RNG to FEI immediately. None of FEI's
8 other BC-based RNG projects are expected to be operational in 2020. FEI will not be in
9 a position to lift this restriction in 2020 without the Tidal supply.

10 • Fourth, as noted in the response to BCUC IR 1.4.1, a thriving marketplace for RNG in
11 BC, supported by out-of-province RNG supply, will create critical mass for RNG in BC.
12 This critical mass will increase confidence in RNG and, therefore, increase investment in
13 RNG and technology in BC. For example, a thriving RNG market will support increased
14 investment in CNG fleets, gas heat pump technology for residential and commercial
15 applications, as well as support the development of new business.

16
17 The Tidal BPAs are a necessary addition to BC-based projects and will contribute to the
18 achievement of climate objectives as well as the continued growth and development of the RNG
19 program, all of which is in the public interest.

20
21

22
23 5.2 Please discuss to what extent FEI considers that it is aware of all current
24 opportunities to purchase significant volumes of RNG within BC.

25

26 **Response:**

27 FEI believes that it is aware of all current projects which can viably be developed in BC for the
28 following three reasons:

29 • First, FEI issued a Request for Expression of Interest (RFEOI) in 2018 to identify new
30 RNG supply opportunities. The results of the RFEOI showed a higher number of projects
31 from outside of BC compared to within the province and confirmed that FEI is aware of
32 the projects which can be developed in BC. Please also refer to response to CEC IR
33 1.8.5 and BCSEA IR 1.8.2.

34 • Second, FEI pursues all viable opportunities with project developers within the province
35 which includes those identified in the RFEOI and those that have arisen since the RFEOI
36 was issued. FEI performs ongoing evaluations of new BC-based RNG opportunities, in
37 addition to the projects identified in the RFEOI, as they arise.

38 • Finally, FEI participates in industry events related to biogas and RNG development in
39 North America. This includes events hosted by local solid waste associations, the
40 American Biogas Council, the Canadian Biogas Association, and the RNG Coalition. The

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1 events are an effective way to identify any new opportunities for projects in early stages
2 of development.

3
4 Based on these activities, FEI currently has an active prospects list of over 15 BC projects with
5 an expected annual volume of about 3.0 PJs. FEI has made potential suppliers aware of its
6 desire to enter into RNG purchase agreements and FEI believes that project developers
7 considering opportunities in BC are aware of FEI's RNG program or the GRR which allows
8 FEI to purchase RNG. Therefore, FEI considers that it is aware of all current opportunities to
9 purchase significant volumes of RNG within BC.

10

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14 5.3 Please discuss to what extent FEI considers that it can estimate the total volume
15 of RNG that will become economical to produce in BC for \$30/GJ, over the entire
16 duration of the proposed BPAs.

17

18 **Response:**

19 While it is difficult to estimate the total supply potential in BC over the 20 year term of the BPAs
20 it is clear that the RNG supply potential currently found in BC means that FEI needs to pursue a
21 mix of supply opportunities, both inside and outside BC, to achieve BC's climate objectives such
22 as the CleanBC plan target of 15 percent renewable gas (approximately 30 PJs per year) by
23 2030.

24 The BC supply potential was estimated in a 2017 report by Hallbar Consulting Inc. and the
25 Research Institute of Sweden (Hallbar study).¹⁷ The Hallbar Study examined the annual RNG
26 supply potential in BC out to 2035, and estimated an annual supply potential of approximately 8
27 to 12 PJs in BC using existing methods of biogas generation.¹⁸ The Hallbar study assumed a
28 \$28 per GJ purchase price, which is closely aligned with the \$30 per GJ GRR threshold price.
29 If the estimate in the Hallbar Study were accurate, 8 to 12 PJs is approximately one third of the
30 approximately 30 PJs needed to meet the CleanBC target for 2030.

31 However, FEI's view is that, in fact, the Hallbar study overestimates the supply potential in BC
32 by 2035 for a number of reasons:

- 33
- 34 • First, the known RNG prospects in BC are approximately 3.0 PJs (refer to the response
35 to Panel IR 1.5.2), which is lower than the short-term achievable level of 4.4 PJs in the
Hallbar study.

¹⁷ Resource Supply Potential for Renewable Natural Gas in B.C. 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.

¹⁸ According to the Hallbar Study, technology advancement, especially in the area of wood-to-RNG technology, is required to surpass the 8 to 12 PJ supply potential.

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- 1 • Second, despite the existence of the \$30 per GJ price signal set by the GRR threshold
2 price, project development has progressed slowly, with FEI's BCUC-approved RNG
3 supply currently at approximately 0.7 PJs. If the Hallbar Study were correct, and there
4 were 8 to 12 PJs of potential supply at an average price of \$28 per GJ, then project
5 development would presumably have progressed more quickly.
- 6 • Third, the Hallbar study overlooked factors such as the willingness of suppliers to
7 develop projects¹⁹, the cost of FEI infrastructure to access the supply²⁰, and social
8 considerations²¹, all of which impact supply potential.

9
10 Without the advancement of technologies, including those that convert woody biomass to RNG,
11 it is unlikely that BC supply will be sufficient to meet the maximum volumes in the GRR of
12 approximately 8.9 PJs, let alone the CleanBC plan target of 15 percent renewable gas
13 (approximately 30 PJs per year) by 2030.

14
15

16
17 5.4 Please discuss the likelihood that FEI may be unable to purchase the entire
18 volume of RNG produced from any RNG projects in BC in the future due to
19 reaching the prescribed undertaking volume limit before the proposed BPAs
20 come to an end.

21
22

Response:

23 The scenario set out in the question is unlikely to occur for the following reasons:

- 24 • First, the GRR does not preclude the acquisition of RNG in excess of the volume limit.
25 Therefore, even if the prescribed undertaking volume limit is reached, FEI may still be
26 able to purchase RNG produced from RNG projects in BC.
- 27 • Second, in the absence of technological advancements, the available supply of RNG in
28 BC makes it unlikely that FEI could reach the prescribed undertaking volume limit with
29 BC projects alone. As shown in the table below, the total volume of current RNG supply
30 projects, known BC projects, and the proposed Tidal BPAs, is 3.9 PJs, which is less than
31 half of the GRR threshold of approximately 8.9 PJs. Therefore, FEI does not expect to
32 reach the GRR volume threshold with BC-based RNG projects. The results are
33 presented in the following table.

¹⁹ Dicklands Farms originally had an approved Agreement in 2013, but has not moved forward with the project due to perceived risk.

²⁰ In 2017, FEI evaluated a farm-based RNG project in Agassiz, but determined that the project was not feasible due to the cost to connect the project to a location on FEI's system where FEI could physically accept the gas.

²¹ In 2019, neighbours of a proposed biogas project on Vancouver Island mobilized in an effort to stop the project. Please refer to <https://nobiogashere.ca/>.



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Scenario	Description	Expected Volume (GJ)	GRR Threshold (PJ)	GRR Threshold Exceeded	CleanBC Target Reached
A	Existing + Approved Projects	0.9	8.9	No	No
B	A + Known BC Projects (100%)	3.0	8.9	No	No
C	A + B + Tidal BPAs	3.9	8.9	No	No

1

2 As discussed in the response to Panel IR 1.5.1, the location of RNG supply projects under the

3 GRR should not be a relevant consideration at this time. The Tidal BPAs contribute towards

4 achieving targets under the CleanBC plan, as well as longer-term goals of achieving emissions

5 reductions of 80 percent below 2007 levels. Accordingly, FEI will need to pursue RNG supply

6 projects, both within the province, and outside of BC.

7