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February 28, 2023

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

Attention: William J. Andrews

Dear William J. Andrews:

**Re: FortisBC Energy Inc. (FEI)
Revised Renewable Gas Program Application – Stage 2 (Application)
FEI Rebuttal Evidence to the B.C. Sustainable Energy Association (BCSEA)
Intervener Evidence**

In accordance with the amended regulatory timetable established in British Columbia Utilities Commission Order G-28-23, FEI hereby files its Rebuttal Evidence to the BCSEA Intervener Evidence in the above referenced proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Parties



Biomethane Energy Recovery Charge Rate Methodology and Comprehensive Review of a Revised Renewable Gas Program

**Rebuttal Evidence
of FortisBC Energy Inc.**

**to the Intervener Evidence filed by the
BC Sustainable Energy Association (BCSEA)**

February 28, 2023

1 **1. REBUTTAL TO EVIDENCE OF ENERGY FUTURES GROUP**

2 **Q1: What is the purpose of this Rebuttal Evidence?**

3 A1: In this Rebuttal Evidence, FEI responds to the evidence of the Energy Futures Group
4 (EFG) filed by the BC Sustainable Energy Association (BCSEA) (Exhibit C1-11). The
5 capitalized terms in this Rebuttal Evidence are defined in the Application. For example,
6 “FEI” or the “Company” refers to FortisBC Energy Inc.

7 Although FEI has addressed a number of matters in this Rebuttal Evidence, FEI’s silence
8 on any particular matter should not be construed as agreement.

9 **Q2: Please summarize the evidence of EFG.**

10 A2: EFG’s evidence compares the total energy costs (both capital and operating) over a 20-
11 year period for an average new residential dwelling using: (1) renewable natural gas
12 (RNG) as part of FEI’s proposed Renewable Gas Connections service (RNG Scenario);
13 and (2) electricity (Electricity Scenario). EFG’s analysis is confined to costs incurred for
14 space heating, hot water, cooking and clothes drying. EFG concludes that FEI’s
15 Renewable Gas Connections service would be a more costly solution than electricity for
16 the average new residential dwelling. In particular, according to EFG’s analysis, the NPV
17 of the combined operating and capital costs for the RNG Scenario would be \$50,312, while
18 the Electricity Scenario would be \$37,262.

19 **Q3: Please summarize your response to EFG’s evidence.**

20 A3: EFG makes three errors with respect to the inputs to its analysis which materially change
21 the results. Specifically:

- 22 1. EFG has understated the capital costs for gas and electric water heaters.
- 23 2. EFG has overstated the gas connection cost for customers.
- 24 3. EFG inappropriately compares the average cost of RNG acquisition (incremental
25 clean energy) to the rolled-in cost of clean electricity; the comparison should be
26 the rolled-in cost of gas, including RNG, to the rolled-in cost of electricity.

27 After these input errors are corrected for, the results show that both RNG and electricity
28 can be used to deliver heat to residential homes at similar overall costs.

1 **Q4: On page 3 of its evidence, EFG states: “Any rebates or incentives that may be**
 2 **available were excluded from the analysis. Sales taxes and the BC Carbon Tax were**
 3 **also excluded from the analysis.” And on page 4, EFG states: “Incentives or rebates**
 4 **for equipment purchases were excluded from both scenarios.” Have these costs**
 5 **been properly excluded as part of determining the costs of an electric heat pump**
 6 **water heater and a gas water heater tank in EFG’s analysis?**

7 A4: No. The costs for a gas water heater tank and an electric heat pump water heater of \$2,776
 8 and \$3,410, respectively, on page 3, Table 1, of EFG’s evidence do in fact include
 9 incentives and taxes.

10 In footnote 3, EFG states that its main source for these capital costs is Attachment 17.1
 11 to FEI’s response to BCSEA IR2 17.1 (Exhibit B-45). However, in this attachment, the cost
 12 of a natural gas water heater without any rebates, incentives or taxes is \$2,800, and the
 13 cost of an electric heat pump water heater without any rebates, incentives or taxes is
 14 \$4,200 (the first line of the table below). The amounts referenced by EFG were taken from
 15 the last line of the table below, and were after consideration of rebates, PST (where
 16 applicable) and GST. For ease of reference, FEI has reproduced the table from
 17 Attachment 17.1 below.

Equipment	Space Heating Options			Water Heating Options		
	Gas Furnace	Electric Baseboard	Electric Heat Pump	Gas Water Heater Tank	Electric Water Heater Tank	Electric Heat Pump
Capital Cost	\$18,000	\$9,200	\$21,000	\$2,800	\$1,550	\$4,200
Efficiency Rate	96%	100%	200%	67%	100%	230%
Clean BC Rebate*	\$0	\$0	\$3,000	\$0	\$0	\$1,000
FortisBC Rebate **	\$0	\$0	\$0	\$500	\$0	\$0
Provincial Sales Tax (PST) %	12%	7%	0%	12%	7%	0%
Provincial Sales Tax (PST) \$	\$ 2,160.0	\$ 644.0	\$ -	\$ 336.0	\$ 108.5	\$ -
Goods And services Tax (GST) %	5%	5%	5%	5%	5%	5%
Goods And services Tax (GST) \$	\$ 900.0	\$ 460.0	\$ 1,050.0	\$ 140.0	\$ 77.5	\$ 210.0
Gross Capital Cost	\$ 21,060.00	\$ 10,304.00	\$ 19,050.00	\$ 2,776.00	\$ 1,736.00	\$ 3,410.00

18
 19 **Q5: In Table 1 on page 3 of its evidence, EFG uses a gas connection cost of \$3,704,**
 20 **which it includes as a customer cost in its analysis. Is the “gas connection cost”**
 21 **used by EFG in its analysis properly considered a customer cost?**

22 A5: No. EFG’s gas connection cost of \$3,704 is based on a misunderstanding of FEI’s
 23 response to BCSEA IR1 16.15 (Exhibit B-45). The average connection cost of \$3,704
 24 represents FEI’s incurred capital expenditure required to connect a new customer to the
 25 gas system, and is based on FEI’s activities to connect all different customer types, not
 26 just new home connections. Therefore, it is not a cost that is charged to customers to
 27 connect and should not be included as a customer cost in the analysis.

1 **Q6: What would the appropriate gas connection cost to include in the analysis be?**

2 A6: Most new residential customers need only pay a \$15 administration fee to obtain a gas
3 connection for their home. This would be the appropriate customer cost to include in the
4 analysis. Please note that FEI does not know what BC Hydro charges customers to
5 connect or the cost BC Hydro charges customers to increase/upgrade their electric service
6 to accommodate electric heating needs. As such, FEI has not included these costs in the
7 analysis.

8 **Q7: On page 4 of its evidence, EFG states that “the commodity cost of RNG is based on**
9 **FEI’s average cost of acquiring RNG”. Is this the appropriate commodity cost to use**
10 **in the analysis of the RNG Scenario?**

11 A7: No, EFG has not based its analysis on FEI’s Renewable Gas Connections service as
12 proposed. FEI’s proposal in its Application is that Renewable Gas Connections customers
13 will pay the average cost of gas inclusive of RNG. Further, as discussed in the response
14 to BCUC IR1 13.4 and 14.1 (Exhibit B-17), FEI does not consider a Renewable Gas
15 Connections service based on the average cost of RNG to be viable.

16 FEI also notes that it is not an apples-to-apples comparison to compare the average
17 acquisition cost of RNG to the rolled-in price of electricity. FEI’s marginal cost of acquiring
18 Renewable Gas, including RNG, is higher than its average commodity costs, just as BC
19 Hydro’s or FortisBC Inc.’s marginal cost of acquiring clean electricity is higher than its
20 average electricity costs. For example, FEI estimates that a representative cost of firm
21 power from a new hydroelectric dam would be \$0.16 per kWh, based on a simple scaling
22 of the cost of power using BC Hydro’s estimated construction cost for the Site C dam.
23 Please note that this cost estimate is conservative in that it does not including transmission
24 or distribution costs.¹ This is higher than the BC Hydro Step 2 rate of \$0.1408 per kWh
25 used by EFG in its analysis (which does include transmission and distribution costs).

26 **Q8: What would the appropriate commodity cost to use for the RNG Scenario be?**

27 A8: The only reasonable commodity cost to use for the RNG Scenario is the rolled-in cost of
28 gas inclusive of RNG. This is the commodity cost that FEI has proposed for its Renewable
29 Gas Connections service and the only just and reasonable option for reasons explained
30 in FEI’s Application, responses to IRs, and the Rebuttal Evidence of Mr. John J. Reed,
31 Chairman and Chief Executive Officer of Concentric Energy Advisors Inc. (Concentric),
32 attached as Appendix A to FEI’s Rebuttal Evidence to Kurt G. Strunk. As noted above, a
33 higher commodity cost is also not viable for the Renewable Gas Connections service and
34 is not what FEI has proposed as the rate customers will pay in this Application.

¹ Exhibit C1-11, p. 5.

1 **Q9: Provide an estimate of FEI’s rolled-in cost of RNG.**

2 A9: FEI provides an estimate of its rolled-in cost of RNG for 2023 in the table below.

3 **Table 1: FEI’s Proposed RNG Rate Components**

	in nominal 2023 \$	
	Fixed	Variable (\$/GJ)
Basic Charge (per month)	\$ 12.43	
Delivery Charge		\$ 5.933
Storage and Transport Charge		\$ 1.134
Storage and Transport LC Rider		\$ 0.265
Equivalent Cost of Conventional Gas		\$ 5.160
Equivalent Cost of Carbon Tax		\$ 3.290
Total	\$ 12.43	\$ 15.782

4
5 The values presented in the table above are consistent with EFG’s approach except that
6 FEI has used the approved tariff rates as at January 1, 2023 and the legislated carbon tax
7 rate which comes into effect on April 1, 2023. As proposed by FEI, the cost of RNG to the
8 Renewable Gas Connections customer is equal to the cost of conventional natural gas
9 plus the cost of carbon tax on a per GJ basis. This provides Renewable Gas Connections
10 customers a cost of service equivalent to that of other similarly situated customers, and is
11 consistent with the proposal in the Application.

12 **Q10: Would any other changes be needed to EFG’s RNG Scenario to include a forecast**
13 **of rolled-in costs of RNG?**

14 A10: Most of the gas cost components can remain fixed over the forecast period, as per the
15 analysis provided by EFG. However, the cost of the carbon tax should match the planned
16 increases to the carbon tax currently recommended by the government. For simplicity, FEI
17 has used the expected carbon tax rates as on April 1 of each year, as being representative
18 of the carbon tax for the whole year.

19 The carbon tax values and resulting total RNG costs to 2030 are presented below. Please
20 note that the total RNG Cost in Table 2 is calculated by taking the nominal 2023 costs, as
21 shown in Table 1 above, and discounting them back to 2022, as per EFG’s original
22 analysis. The resulting discounted values are carried forward through the entire forecast
23 period, with the exception of the carbon tax which updates annually. As a result of this
24 discounting, the total RNG Cost for 2023 in Table 2 is somewhat less than that shown in
25 Table 1. After 2030, FEI considers that it is reasonable for the purposes of the analysis
26 to have the costs of the carbon tax and RNG remain fixed.

Table 2: Forecast Carbon Tax and Rolled-in RNG Costs to 2030

Cost	2023	2024	2025	2026	2027	2028	2029	2030
Equivalent Cost of Carbon Tax per GJ	\$ 3.29	\$ 4.02	\$ 4.75	\$ 5.48	\$ 6.21	\$ 6.94	\$ 7.67	\$ 8.40
Total RNG Cost per GJ	\$ 15.54	\$ 16.27	\$ 17.00	\$ 17.73	\$ 18.46	\$ 19.19	\$ 19.92	\$ 20.65

Q11: What are the results of the analysis if the inputs are corrected?

A11: FEI has updated EFG’s Excel based spreadsheet analysis filed in Confidential Exhibit C-11-1 to correct for the three inputs discussed above. The updated results for the RNG Scenario are provided in Table 3 below.

Table 3: NPV of Lifecycle Costs by End Use – Updated RNG Scenario

	Renewable Natural Gas Scenario	Electrification Scenario
Heating	\$20,439	\$24,201
Water Heating	\$10,053	\$9,399
Cooking	\$2,441	\$2,642
Drying	\$1,773	\$2,095
Gas Connection Costs	\$12	\$0
Gas Fixed Monthly Charges	\$2,066	\$0
Total	\$36,784	\$38,337

As shown in Table 3 above, when the analysis is corrected for the inputs discussed above, the combined capital and operating cost to the customer appears to be somewhat more favourable for the gas customer. However, the difference is not large, and as noted by EFG, the electricity analysis does not factor in BC Hydro’s Step 1 rates,² nor do the capital costs account for differential tax treatment or incentives. However, the analysis demonstrates that the costs in the RNG Scenario and Electricity Scenario would likely be much closer for most homeowners than was suggested by EFG’s evidence.

This finding is consistent with the response to BCUC IR1 13.7 which indicates that the NPV of the heating costs for the home with RNG priced equivalent to conventional natural gas is broadly similar to the heating costs of a home using electric heat pumps. In other words, both gas and electric systems can provide clean, low carbon energy to customers for a similar cost. As discussed in the response to BCUC IR1 17.1, however, rebates and subsidies tilt the playing field in favour of electricity, despite the relative cost parity that the analysis shows.

² Exhibit C1-11, p. 5.

1 **Q12: Does this conclude your rebuttal to EFG?**

2 A12: Yes.