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June 2, 2020

Canadian Biomass Energy Research Ltd.  
c/o Matthew J. Jackson, Barrister & Solicitor  
1116 – 207 West Hastings Street  
Vancouver, BC V6B 1H7

Attention: Mr. Matthew J. Jackson

Dear Mr. Jackson:

**Re: FortisBC Energy Inc. (FEI)**  
**Project No. 1599033**  
**Revelstoke Propane Portfolio Cost Amalgamation Application (Application)**  
**Response to Canadian Biomass Energy Research Ltd. (CBER) Information**  
**Request (IR) No. 1 on Rebuttal Evidence**

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On July 18, 2020, FEI filed the Application referenced above. In accordance with the Regulatory Timetable established by British Columbia Utilities Commission Order G-105-20 for the review of the Application, FEI respectfully submits the attached response to CBER IR No. 1 on Rebuttal Evidence.

If further information is required, please contact the undersigned.

Sincerely,

**FORTISBC ENERGY INC.**

***Original signed:***

Doug Slater

Attachments

cc (email only): Commission Secretary  
Registered Parties

FortisBC Energy Inc. (FEI or the Company) Revelstoke Propane Portfolio Cost Amalgamation Application (the Application)	Submission Date: June 2, 2020
Response to Canadian Biomass Energy Research Ltd. (CBER) Information Request (IR) No. 1 on Rebuttal Evidence	Page 1

1   **1.0   Topic:           Correlation between residential use per customer (UPC) and heating**  
2                               **degree days (HDDs)**

3                   **Reference:   FEI Rebuttal Evidence, pp. 1-3, pdf pp. 4-6**

4           Figure 1 shows Revelstoke to have lower Residential UPC than other Interior cities with  
5           similar HDDs, in particular Merritt, Salmon Arm and Greenwood.

6           1.1     Does FEI agree that the higher price of piped propane compared to natural gas is  
7                   a contributing factor for the lower UPC for Revelstoke than in cities with similar  
8                   HDDs, in particular Merritt, Salmon Arm and Greenwood?  
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10   **Response:**

11   As discussed in the response to BCUC IR1 5.2.1, FEI believes there are many factors, including  
12   price, that affect the use rate of Revelstoke customers. However, FEI's analysis of actual data  
13   in the response to BCUC IR1 6.1 demonstrates that the relationship between use rates and  
14   commodity pricing for its Revelstoke customers is inelastic. Therefore, changes in commodity  
15   price only explain a small portion of the variation in use rates.

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19           In Figure 2, *Linear Regression between FEI's Residential UPC and HDD over 54 Cities*  
20           *in FEI's Service Area*, FEI provides a linear regression chart with multiple data points,  
21           some of which are identified with a city name.

22           1.2     Please provide the data used to create Figure 2.

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24   **Response:**

25   Please refer to Attachment 23.3.2 provided in the response to BCUC IR3 23.3.2.

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29           1.3     Please provide three revised versions of Figure 2 showing the results of a linear  
30                   regression analysis for cities in each of the following areas:

- 31                   1. Lower Mainland;  
32                   2. Vancouver Island; and,  
33                   3. Interior.  
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1 **Response:**

2 Please refer to the response to BCSEA IR3 20.10 for the Lower Mainland and Vancouver Island  
3 linear regression analysis. Please refer to the response to BCUC IR3 23.3 for the Interior linear  
4 regression analysis.

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FortisBC Energy Inc. (FEI or the Company) Revelstoke Propane Portfolio Cost Amalgamation Application (the Application)	Submission Date: June 2, 2020
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1    **2.0    Topic:            Potential impact to GHG emissions**

2                    **Reference:    FEI Rebuttal Evidence, pp. 6-7, pdf pp. 9-10**

3                    In Table 3, *Annual Cost Savings and Simple Payback Period of each Conversion Type*,  
4                    FEI states 40 GJ of annual heating demand at line 10, whereas Cornelius Suchy  
5                    estimated total heat energy consumption at 60 GJ per occupied dwelling for end use  
6                    energy (Exhibit C1-9, revised Table 4, pp. 11-12, pdf pp. 12-13).

7                    2.1        Why does FEI assume 40 GJ of annual heating demand rather than 60 GJ?

8  
9                    **Response:**

10                    Assuming propane appliance efficiency of 80 percent, if a Revelstoke residential customer  
11                    consumes 50 GJ of propane per year (UPC), then the propane energy used for heating load  
12                    would be 40 GJ.<sup>1</sup> FEI has relied on actual historical data of 50 GJ for the Revelstoke UPC  
13                    rather than using Mr. Suchy's estimate of 60 GJ which FEI is unable to validate.

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17                    2.2        Please confirm that the 40 GJ estimate is derived solely from data regarding  
18                    piped propane UPC in Revelstoke, and does not include energy for heating  
19                    coming from other sources, such as electricity or wood, that may be used in  
20                    conjunction with or in addition to piped propane heating.

21

22                    **Response:**

23                    Confirmed. As discussed in the response to CBER IR1 2.1, the 40 GJ estimate is based on  
24                    FEI's average UPC of Revelstoke residential customers and does not include the use of  
25                    alternative fuel such as electricity or wood.

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29                    2.3        Please provide an updated Table 3 assuming annual heating demand of 60 GJ  
30                    rather than 40 GJ.

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32                    **Response:**

33                    Please see the table below which assumes the annual heating demand is 60 GJ. FEI does not  
34                    have data to validate the capital costs of equipment for Revelstoke provided by Mr. Suchy.

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<sup>1</sup> 40 GJ divided by 80% efficiency equals 50 GJ UPC.

1 The results demonstrate that, even assuming 60 GJ of annual heating demand, there are no  
 2 annual savings to convert to propane from an air-source heat pump, cordwood, or RCEC. FEI  
 3 emphasizes that a conversion from electric heat resistance to propane requires the installation  
 4 of the necessary ductwork to accommodate forced-air heating distribution. However, Mr.  
 5 Suchy's capital cost of equipment does not appear to include those costs. Inclusion of the cost  
 6 to install the necessary ductwork will lengthen the simple payback period.

Line	Particulars	Reference	Conversion to Propane Furnace from:					
			Oil Furnace	Air-source Heat pump	Electric heat resistance	Cordwood	Wood Pellets	RCEC
1	Equipment Cost	Mr. Suchy Evidence, Table 2, Propane Furnace	\$ 4,400	\$ 4,400	\$ 4,400	\$ 4,400	\$ 4,400	\$ 4,400
2	Installation Cost	Mr. Suchy Evidence, Table 2, Propane Furnace	1,000	1,000	1,000	1,000	1,000	1,000
3	Oil Tank Removal	Mr. Suchy Evidence, Table 2, Propane Furnace	1,475	-	-	-	-	-
4	Other Conversion Costs	Mr. Suchy Evidence, Table 2, Propane Furnace	1,150	1,150	1,150	1,150	1,150	1,150
5	Service Line Costs	\$15; Assuming less than 30 meters of FEI's Main	15	15	15	15	15	15
6	Total Capital	Sum of Line 1 to Line 5	\$ 8,040	\$ 6,565	\$ 6,565	\$ 6,565	\$ 6,565	\$ 6,565
7								
8	Annual Energy Consumption (GJ)	Line 10 / Line 9	75	75	75	75	75	75
9	Assumed Propane Appliance Efficiency		80%	80%	80%	80%	80%	80%
10	Annual Heating Demand (GJ)	Mr. Suchy's estimate of total heating demand	60	60	60	60	60	60
11								
12	Original Fuel - \$ per GJ of Heating Load	Mr. Suchy Evidence, Table 1	41.50	14.70	37.80	16.20	24.80	17.60
13	<b>Original Fuel - Annual Heating Bill</b>	<b>Line 10 x Line 12</b>	<b>\$ 2,490</b>	<b>\$ 882</b>	<b>\$ 2,268</b>	<b>\$ 972</b>	<b>\$ 1,488</b>	<b>\$ 1,056</b>
14								
15	Effective Propane Residential Rate - \$ per GJ of Heating Load	Mr. Suchy Evidence, Table 1	\$ 18.30	\$ 18.30	\$ 18.30	\$ 18.30	\$ 18.30	\$ 18.30
16	<b>Propane - Annual Heating Bill</b>	<b>Line 10 x Line 15</b>	<b>1,098</b>	<b>1,098</b>	<b>1,098</b>	<b>1,098</b>	<b>1,098</b>	<b>1,098</b>
17								
18	<b>Annual Savings (\$)</b>	<b>Line 13 - Line 16</b>	<b>\$ 1,392</b>	<b>\$ (216)</b>	<b>\$ 1,170</b>	<b>\$ (126)</b>	<b>\$ 390</b>	<b>\$ (42)</b>
19	<b>Simple Payback (yrs)</b>	<b>Line 6 / Line 18</b>	<b>6</b>	<b>(30)</b>	<b>6</b>	<b>(52)</b>	<b>17</b>	<b>(156)</b>

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At page 6 of FEI's rebuttal evidence, FEI states:

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"From a financial perspective, Table 3 below demonstrates that certain types of conversions provide no operating cost savings (e.g., air-source heat pump, cordwood, and RCEC) while others provide a payback period that is much longer than the estimated life of the propane furnace (e.g., wood pellets). Based on this data, FEI does not believe Mr. Suchy's assertion relating to conversions and associated GHG emissions is correct. Rather, the data suggests that conversion activity will be limited by a lack of savings or long payback periods or both." [underline added]

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In Table B-3, *Splitting Residential Natural Additions into Conversions and New Services*, located at p. 7 of Appendix B of FEI's application (Exhibit B-1, pdf p.43), FEI assumed (based on "internal data," pdf p. 42) that 45% of "naturally" added customers (i.e., customers that would convert in absence of the subsidized rate) would be conversions from non-pipe propane energy sources.

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1           2.4    What Annual Savings (\$) and Simple Payback (years) are the basis for the 45%  
2                    estimate?

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4    **Response:**

5    The 45 percent estimate of natural conversions is not based on annual savings (\$) and/or  
6    simple payback period (years). Rather, FEI's 45 percent estimate is based on the actual  
7    breakdown of new customer additions in Revelstoke between 2012 and 2018, which consists of  
8    55 percent related to new construction and 45 percent related to conversions from alternate  
9    fuels (45 percent).

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13           2.5    If Annual Savings (\$) and Simple Payback (years) used to calculate the 45%  
14                    estimate are different from what is provided in Table 3, please confirm whether  
15                    FEI's estimate of 45% remains the same in both the higher and lower propane  
16                    cost scenarios.

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18    **Response:**

19    Please refer to the response to CBER IR1 2.4 where FEI confirms that the 45 percent estimate  
20    of natural conversions is not calculated from any annual savings (\$) or simple payback period  
21    (years).

22    Please refer to Figure 4-1 of FEI's Application where FEI's Upper Bound scenario estimated a  
23    maximum of 1,063 residential customer attachments as a result of its proposed propane  
24    portfolio cost amalgamation. The 1,063 residential dwellings identified are not currently FEI's  
25    customers but are located within 30 metres of FEI's distribution main. These new attachments  
26    are in addition to the 45 percent of natural conversions as discussed in Appendix B of FEI's  
27    Application.

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