



Doug Slater
Director, Regulatory Affairs

Gas Regulatory Affairs Correspondence
Email: gas.regulatory.affairs@fortisbc.com

Electric Regulatory Affairs Correspondence
Email: electricity.regulatory.affairs@fortisbc.com

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (778) 578-3874
Cell: (778) 214-3842
Fax: (604) 576-7074
Email: doug.slater@fortisbc.com
www.fortisbc.com

October 24, 2019

Commercial Energy Consumers Association of British Columbia
c/o Owen Bird Law Corporation
P.O. Box 49130
Three Bentall Centre
2900 – 595 Burrard Street
Vancouver, BC
V7X 1J5

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Energy Inc. (FEI)
Project No. 1599033
Revelstoke Propane Portfolio Amalgamation Application (the Application)
Response to the Commercial Energy Consumers Association of British
Columbia (CEC) Information Request (IR) No. 1

On July 18, 2019, FEI filed the Application referenced above. In accordance with the British Columbia Utilities Commission Order G-201-19 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to CEC IR No. 1.

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: October 24, 2019
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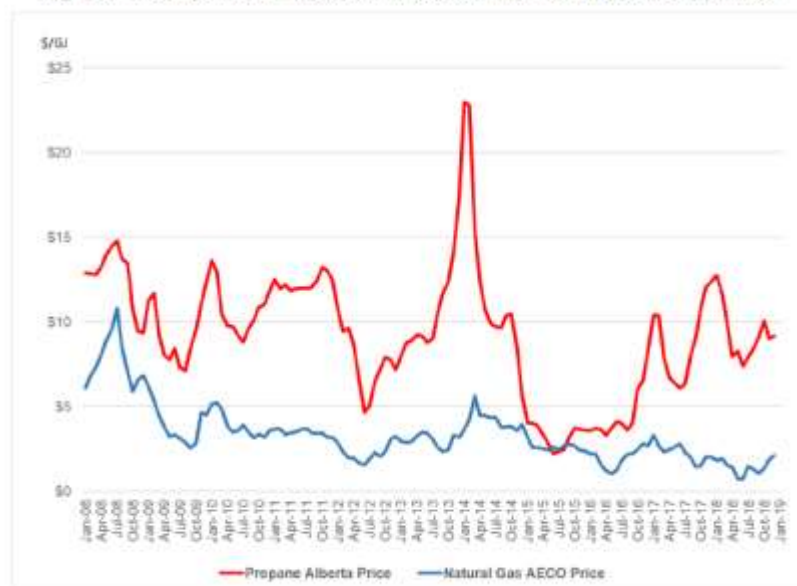
1. Reference: Exhibit B-1, page 1 and page 4

1.1 BACKGROUND

FortisBC Energy Inc. (FEI or the Company) currently operates a satellite, off-grid propane distribution system that serves approximately 1,500 residential and commercial customers in the Revelstoke area. Currently, propane is supplied to Revelstoke by railcars and tanker trucks, where it is offloaded into storage tanks, vaporized as needed, and distributed to customers through an underground piped distribution system. When the piped propane system was first introduced to Revelstoke in 1991, it was because Revelstoke was located at too great a distance from the natural gas distribution system and its forecast load was insufficient to make connection economic. Although FEI's customers in Revelstoke are charged the same delivery rate as those in other regions across BC (except Fort Nelson), they are charged a different cost for energy¹ relative to FEI's natural gas customers. Commodity prices for propane have historically been more volatile and higher than natural gas prices on an energy equivalent basis. As a result, Revelstoke propane customers have had less predictable and higher energy costs relative to FEI's natural gas customers. To address this disparity, FEI is applying to amalgamate its propane supply portfolio costs with its natural gas supply portfolio costs (the Application).

In this Application, FEI is proposing to amalgamate the Revelstoke propane supply costs with the FEI midstream natural gas supply resource costs in the Midstream Cost Reconciliation Account (MCRA) and to implement a revised propane gas cost rate setting mechanism. The proposed rate setting mechanism will provide Revelstoke customers with propane rate stability that matches the stability of FEI's natural gas customer rates, and can provide propane commodity rate relief to Revelstoke customers.

Figure 2-1: Comparison of Historical Propane and Natural Gas Commodity Prices



1.1 Please provide a brief history explaining why Revelstoke is not on FEI's natural gas distribution system.

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1

2 **Response:**

3 Since 1990, the least cost method for providing energy service in Revelstoke was to acquire
4 propane to vapourize and distribute through the local distribution grid. The cost of FEI's facilities
5 in Revelstoke has been included as part of the total FEI delivery costs for both Revelstoke and
6 all other natural gas customers (i.e., they were never separated). It was only the propane
7 commodity cost that was tracked separately and recovered at FEI rates plus a rider specific to
8 Revelstoke customers.

9

10

11

12 1.2 Please provide a graph with commodity prices per GJ for propane and natural
13 gas dating back to 1991.

14

15 **Response:**

16 Please refer to the response to BCUC IR 1.1.2.

17

18

19

20 1.3 Please provide a table comparing the total cost per GJ (as would occur on a
21 customer bill) for a propane and natural gas customer for each rate class dating
22 back to 1991. Please include each geographic area for the period prior to
23 postage stamp rates.

24

25 **Response:**

26 Please refer to response to BCUC IR 1.1.1 and associated Attachment 1.1 for discussion and
27 the requested table of total cost per GJ for propane and natural gas customers.

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1 **2. Reference: Exhibit B-1, page 1**

In this Application, FEI is proposing to amalgamate the Revelstoke propane supply costs with the FEI midstream natural gas supply resource costs in the Midstream Cost Reconciliation Account (MCRA) and to implement a revised propane gas cost rate setting mechanism. The proposed rate setting mechanism will provide Revelstoke customers with propane rate stability that matches the stability of FEI's natural gas customer rates, and can provide propane commodity rate relief to Revelstoke customers.

By capturing the small quantities of propane purchased for Revelstoke's requirements within the MCRA, alongside FEI's midstream natural gas supply resource costs, the cost fluctuations associated with the market price of propane will be neutralized. This results from combining a relatively small quantity of propane portfolio costs that is historically and typically more volatile, with a significantly more substantial quantity of natural gas midstream costs that is historically more stable than propane costs. Under the amalgamated cost portfolio, FEI proposes to set the same gas cost recovery rates for both FEI's natural gas customers and Revelstoke's propane customers.² Propane customers will continue to pay higher carbon tax rates than natural gas customers, in alignment with BC's energy objectives.

2

3 2.1 Please provide a discussion of FEI's impetus for undertaking this application.
4 What factors indicated a need for change and when did FEI initially identify this
5 requirement? Please provide any reports or studies to support the evidence.

6

7 **Response:**

8 Please refer to the response to BCUC IR 1.9.2.1.

9

10

11

12

13 2.2 Please provide a discussion of any alternatives that FEI considered in response
14 to the requirement.

15

16 **Response:**

17 Please refer to the response to BCUC IR 1.8.3 for a comparison of alternatives that involve
18 capital investment by FEI (i.e., physical pipeline and virtual CNG/LNG pipelines) that FEI has
19 investigated in the past to address rate stability and provide rate relief for Revelstoke
20 customers. Please also refer to the response to BCUC IR 1.12.3 for other non-capital solutions
21 that FEI has explored to address the objectives of this Application.

22

23

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2.3 Why did FEI decide to do this at this time as opposed to when FEI applied for amalgamation and postage stamp rates in 2012?

Response:

Please refer to the responses to BCUC IRs 1.9.2, 1.9.2.1, and 1.9.3.

2.4 Please identify and quantify any incremental costs that FEI experiences supporting different rates for propane and natural gas commodities.

Response:

Please refer to the response to BCUC IR 1.3.2. The effort required to set the commodity related charges for both FEI's natural gas customers and Revelstoke's propane customers is similar whether the two gas cost portfolios are amalgamated or not.

2.5 Is FEI able to generate any O&M or other cost savings as a consequence of the proposed amalgamation?

Response:

No. Please refer to the response to BCUC IR 1.3.2.

2.5.1 If no, please explain why not.

Response:

Please refer to the response to BCUC IR 1.3.2.

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1 2.5.2 If yes, please identify and quantify the potential cost savings.

2

3 **Response:**

4 As discussed in the response to BCUC IR 1.3.2, FEI is not expecting any O&M efficiencies from

5 the proposed amalgamation.

6

7

8

9 2.5.2.1 To whom would the cost savings accrue? Please explain.

10

11 **Response:**

12 Please refer to the response to CEC IR 1.2.5.2.

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1 **3. Reference: Exhibit B-1, page 5 and 6**

2.2 COMMODITY RATE STABILITY SUPPORTS BRITISH COLUMBIA'S ENERGY OBJECTIVES

This Application proposes changes to reduce future commodity rate volatility for FEI's Revelstoke propane customers. The proposed mechanism will provide Revelstoke propane customers with propane rate stability matching that of FEI natural gas customer rates and, based on the historical relationship between the natural gas and propane commodities, could also reduce annual energy bills for Revelstoke propane customers. Volatile energy input costs in a specific region can be a disadvantage to households and businesses that can lead to diminished economic development and job creation opportunities. FEI believes that stabilizing propane rates is beneficial for Revelstoke customers and may contribute to encouraging other Revelstoke energy users to switch from higher-carbon heating oil to propane.⁶ As such, the proposed changes support the following two of BC's energy objectives under section 2 of the *Clean Energy Act*.⁷

(h) to encourage the switching from one kind of energy source or use to another that decreases greenhouse gas emissions in British Columbia; and

(k) to encourage economic development and the creation and retention of jobs.

3.1 Please provide a Bonbright analysis for the proposal.

Response:

Please refer to the response to BCUC IR 1.9.6.

3.2 Please provide a list of costs and benefits for Revelstoke ratepayers and a list of costs and benefits for non-Revelstoke ratepayers.

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1 **Response:**

2 Please refer to response to BCUC IR 1.3.1.

3

4 **4. Reference: Exhibit B-1, page 7**

Since the 2016/17 contracting year, FEI's Revelstoke propane supply portfolio has included a combination of fixed price purchases for the winter season and floating price purchases throughout the year for delivered propane, as well as the localized propane tank storage. The cost of the propane supply portfolio is currently captured in the Propane Cost Deferral Account (PCDA) and is accounted for separately from FEI's natural gas supply portfolio cost. With this Application, FEI proposes to:

1. Amalgamate its Revelstoke propane supply portfolio costs with its natural gas supply portfolio costs by transferring the December 31, 2019 closing balance of the PCDA to FEI's existing MCRA as an opening balance adjustment, effective January 1, 2020;
2. Starting January 1, 2020, capture all Revelstoke propane supply portfolio costs in the MCRA; and
3. Eliminate the PCDA.

5

6 4.1 Please place the application establishing the Propane Cost Deferral Account on
7 the evidentiary record.

8

9 **Response:**

10 FEI is unable to locate a copy of the application filed seeking approval to establish the Propane
11 Cost Deferral Account, however, please refer to Attachment 4.1 for a copy of BCUC Order G-
12 72-90 which approved the establishment of a Revelstoke deferral account to capture propane
13 price variances.

14 BCUC Order G-72-90 refers to the BC Gas Inc. (BC Gas) application dated September 19, 1990
15 in which BC Gas sought approval of Gas Tariff Rate Schedules and an accounting Deferral
16 Account covering the supply of piped propane vapour in the City of Revelstoke; FEI is unable to
17 locate a copy of this September 19, 1990 submission.

18

19

20

21 4.2 Could a deferral account be utilized to smooth volatility in the propane
22 commodity? Please explain why or why not.

23

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1 **Response:**

2 It is possible to use a deferral account to smooth volatility in the commodity price of propane.
3 FEI notes that FEI's current, as well as the proposed, rate setting methodology for Revelstoke's
4 propane costs are both utilizing deferral accounts that indirectly provide a certain degree of
5 volatility dampening in propane commodity rates. For example, the current rate setting
6 methodology for Revelstoke's propane cost recovery rates involves the use of the Propane Cost
7 Deferral Account (PCDA) to capture the variances between the actual and the forecast cost of
8 propane; these PCDA imbalances are then recovered or refunded via the propane cost recovery
9 rates using a 12-month amortization period which does provide a certain level of dampening of
10 the volatility in the propane commodity prices.

11 Both Option 1 and Option 2 in the Application provide a revised rate setting methodology that
12 amalgamates the propane and natural gas supply costs as well as utilizing the existing MCRA
13 deferral account in order to provide an even greater level of volatility dampening in the propane
14 commodity prices for Revelstoke customers than the current methodology. Therefore, to a
15 certain degree, FEI continues to use a deferral account to smooth volatility in this Application.
16 FEI notes that variances captured within the MCRA deferral account would be amortized over a
17 24-month period compared to the current 12-month amortization period of Revelstoke propane
18 costs variances.

19
20

21
22 4.2.1 If yes, what kinds of terms would FEI recommend to smooth volatility in
23 the propane commodity? Please explain.

24
25 **Response:**

26 Please refer to the response to CEC IR 1.4.2.

27

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5. Reference: Exhibit B-1, page 8 and 9

3.2 CHANGES TO COMMODITY RATE SETTING FOR REVELSTOKE CUSTOMERS

When amalgamating the costs of the propane supply portfolio with the costs of FEI's natural gas supply portfolio, it is necessary to develop a new mechanism for setting the propane gas cost recovery rates for FEI's Revelstoke propane customers. FEI considered two options for calculating the propane gas cost recovery rates for Revelstoke customers: 1) equal gas cost recovery and 2) a five-year rolling average of the price difference between propane and natural gas. The remainder of this section discusses the two options in detail. This includes an illustration of the commodity related charges for both FEI's natural gas customers and Revelstoke propane customers under each option using the following assumptions:

- Commodity related charges are effective January 1, 2020, assuming the amalgamation occurs on January 1, 2020;
- Annual consumption of 50 GJ;
- Energy quantities are based on FEI's Revelstoke propane demand forecast for 2020 (see Section 4.1);
- Forecast natural gas midstream commodity related costs for January to December 2020 are based on FEI's 2019 Second Quarter Gas Cost Report, accepted on June 14, 2019, under BCUC Letter L-29-19;
- Forecast propane gas costs for January to December 2020 are based on FEI's Revelstoke 2019 Second Quarter Gas Cost Report, approved on June 13, 2019, under BCUC Order G-129-19; and
- Forecast closing balance of PCDA as of December 31, 2019 is based on FEI's Revelstoke 2019 Second Quarter Gas Cost Report, approved on June 13, 2019, under BCUC Order G-129-19.

3.2.1 Option 1 - Equal Gas Cost Recovery

Option 1 treats Revelstoke propane customers and FEI's natural gas customers the same with respect to the commodity related charges. Under this option, Revelstoke propane customers would pay the same gas cost recovery rates as FEI's natural gas customers. Table 3-1 below illustrates this treatment with reference to RS 1 based on the assumptions shown in Section 3.2 above. Please refer to Appendix A-1 for the calculation of the commodity related charges under Option 1 for FEI rate schedules (RS 1 to 7), including Revelstoke customers.

Table 3-1: Illustration of Equal Gas Cost Recovery Option

Line	Particular	Reference	FEI Natural Gas	Premium Multiplier	Revelstoke
1	<u>Rate Schedule 1 (Residential Service) - January 1, 2020</u>				
2	Commodity Related Charges				
3	Cost of Gas per GJ (\$/GJ)	Appendix A-1, Line 15	1.549		
4	Storage and Transport per GJ (\$/GJ)	Appendix A-1, Line 67 + Line 72	1.233		
5	Total Commodity Related Charges per GJ (\$/GJ)	FEI: Line 3 + Line 4; Revelstoke: Line 5 x Multiplier	2.782	x 1.000	2.782
6	Carbon Tax Rate (\$/GJ)	Current Rate from April 2019 to March 2020	1.986		2.407
7					
8	Average Demand per Year (GJ)		50.00		50.00
9	Total Commodity Related Charges (\$)	Line 5 x Line 8	139.10		139.10
10	Carbon Tax (\$)	Line 6 x Line 8	99.32		120.36
11	Total Commodity Related Charges, incl Carbon Tax (\$)	Line 9 + Line 10	238.42		259.46
12					
13	Annual difference between FEI Natural Gas and Propane (\$)				21.04

5.1 Why did FEI assume average annual consumption of 50 GJ?

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1

2 **Response:**

3 Please refer to the responses to BCUC IRs 1.5.1 and 1.5.3.

4

5

6

7 5.2 Please provide average annual consumption for each rate class.

8

9 **Response:**

10 Please refer to the response to BCUC IR 1.5.1.

11

12

13

14 5.3 Please reconstruct the table using average residential annual consumption.

15

16 **Response:**

17 Please see revised Table 3-1 below which is based on 53.8 GJ, the 10-year average use rate
18 per year as listed in the response to BCUC IR 1.5.1 for residential propane customers in
19 Revelstoke.

Line	Particular	Reference	FEI Natural Gas	Premium Multiplier	Revelstoke
1	<u>Rate Schedule 1 (Residential Service) - January 1, 2020</u>				
2	Commodity Related Charges				
3	Cost of Gas per GJ (\$/GJ)	Appendix A-1, Line 15	1.549		
4	Storage and Transport per GJ (\$/GJ)	Appendix A-1, Line 67 + Line 72	1.233		
5	Total Commodity Related Charges per GJ (\$/GJ)	FEI: Line 3 + Line 4; Revelstoke: Line 5 x Multiplier	2.782	x 1.000	2.782
6	Carbon Tax Rate (\$/GJ)	Current Rate from April 2019 to March 2020	1.986		2.407
7					
8	Average Demand per Year (GJ)		53.80		53.80
9	Total Commodity Related Charges (\$)	Line 5 x Line 8	149.67		149.67
10	Carbon Tax (\$)	Line 6 x Line 8	106.87		129.51
11	Total Commodity Related Charges, incl Carbon Tax (\$)	Line 9 + Line 10	256.54		279.18
12					
13	Annual difference between FEI Natural Gas and Propane (\$)				22.64

20

21

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1 **6. Reference: Exhibit B-1, page 12 and page 20**

Table 3-3: Incremental Midstream Rate Impact to FEI's Natural Gas Customers

Line	Particular	Reference	Option 1 - Equal Cost Recovery	Option 2 - 5-Year Rolling Average- Indexed
1	Estimated FEI Revelstoke Propane Costs (\$000s)	See note 1	2,239	2,239
2	Estimated Propane recovery via Commodity Recovery Charge (\$000s)	See note 2	(373)	(1,144)
3	Total Propane Costs transfer to FEI MCRA (\$000s)	Line 1 + Line 2	1,865	1,094
4				
5	FEI Natural Gas Total Midstream Costs (\$000s)	See note 3	149,526	149,526
6	FEI MCRA Amortization (\$000s)	See note 4	13,907	13,907
7	TOTAL Natural Gas Midstream Costs (incl. MCRA Amortization)	Line 5 + Line 6	163,433	163,433
8				
9	Revelstoke Propane Demand Forecast (2020F) - TJ	Appendix A, Line 1 (RS-1R, 2R, 3R)	241	241
10	FEI MCRA Demand (Natural Gas Only) - TJ	Appendix A, Line 1 (RS-1 to 7)	138,206	138,206
11	TOTAL Demand (Natural Gas & Propane) - TJ	Line 9 + Line 10	138,447	138,447
12				
13	Average Midstream Rate - Natural Gas Only (\$/GJ)	Line 7 / Line 10	1.183	1.183
14	Average Midstream Rate - Natural Gas & Propane (\$/GJ)	(Line 3 + Line 7) / Line 11	1.194	1.188
15				
16	Average Midstream Rate Impact to FEI's Customer (\$/GJ)	Line 14 - Line 13	0.011	0.006
17	% Average Midstream Rate Impact to FEI's Customer	Line 16 / Line 13	0.93%	0.51%

1 - Appendix A, Line 11; Forecast Jan to Dec 2020 based on FEI Revelstoke 2019 Q2 Gas Cost Report

2 - Appendix A, Line 17; Assumed Commodity Cost Recovery Charge of \$1.549 per GJ (Eff. Jan 1, 2019) plus Propane Premium Multiplier

3 - Forecast Jan to Dec 2020 based on FEI 2019 Q2 Gas Cost Report, exclude T-Service UAF

4 - Forecast as of Jan 1, 2020 based on FEI 2019 Q2 Gas Cost Report (1/2 of Pre-Tax Amortization MCRA Deficit/(Surplus))

Table 5-1: Summary of Average Annual Bill Impact for Revelstoke Propane and FEI Natural Gas Customers (RS 1 to 3)²²

Rate Schedule	Average UPC (GJ)	Average Annual Bill Impact (\$)	Average Annual Bill Impact (%)
Revelstoke Customers (Propane)			
Rate Schedule 1 - Residential Service	50	\$ (407)	(45%)
Rate Schedule 2 - Small Commercial	300	\$ (2,116)	(49%)
Rate Schedule 3 - Large Commercial	6,650	\$ (48,259)	(56%)
FEI's Mainland and Vancouver Island (Natural Gas)			
Rate Schedule 1 - Residential Service	90	\$ 0.98	0.12%
Rate Schedule 2 - Small Commercial	340	\$ 4.00	0.16%
Rate Schedule 3 - Large Commercial	3,770	\$ 33.72	0.15%

6.1 Under each option please provide the range of bill impacts for FEI's natural gas customers by rate class in dollars per year.

Response:

Please refer to the table below for the range of bill impacts under proposed Option 1. FEI notes that there is no rate relief for Option 2 and the annual variances between Revelstoke and FEI's

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1 natural gas customers will true-up over a 5-year period. Please refer to the response to BCSEA
2 1.8.1 for further discussion.

Rate Schedule	Range of UPC - 2018 Actual (GJ)	Minimum Bill Impact (\$)	Minimum Annual Bill Impact (%)	Maximum Bill Impact (\$)	Maximum Annual Bill Impact (%)
Revelstoke Customers (Propane)					
Rate Schedule 1 - Residential Service	0 - 669	\$ -	-	\$ (5,451)	(52.56%)
Rate Schedule 2 - Small Commercial	0 - 2,439	\$ -	-	\$ (17,200)	(52.87%)
Rate Schedule 3 - Large Commercial	2,872 - 28,717	\$ (20,842)	(54%)	\$ (208,399)	(56.48%)
FEI's Mainland and Vancouver Island (Natural Gas)					
Rate Schedule 1 - Residential Service	0 - 4,765	\$ -	-	\$ 52	0.15%
Rate Schedule 2 - Small Commercial	0 - 21,466	\$ -	-	\$ 4	0.16%
Rate Schedule 3 - Large Commercial	0 - 45,411	\$ -	-	\$ 34	0.15%
Rate Schedule 4 - Seasonal Firm Gas Service	0 - 22,898	\$ -	-	\$ 183	0.21%
Rate Schedule 5 - General Firm Service	4 - 83,582	\$ 0.04	0.00%	\$ 686	0.23%
Rate Schedule 6 - Natural Gas Vehicle Service	28 - 5,766	\$ 0.11	0.01%	\$ 23	0.08%
Rate Schedule 7 - General Interruptible Service	0 - 179,834	\$ -	-	\$ 1,439	0.21%

3
4
5

6 6.2 Under each option please provide the maximum bill impact to natural gas
7 customers by rate class in dollars and %.

8
9 **Response:**

10 Please refer to the response to CEC IR 1.6.1.

11
12

13 6.3 Under each option please provide the range of bill impacts for FEI's propane
14 customers by rate class in dollars per year.

15
16 **Response:**

17 Please refer to the response to CEC IR 1.6.1.

18
19

20
21 6.4 Under each option please provide the maximum bill impact to propane customers
22 by rate class in dollars and %.

23
24 **Response:**

25 Please refer to the response to CEC IR 1.6.1.

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1 **7. Reference: Exhibit B-1, page 12 and page 13**

Table 3-3: Incremental Midstream Rate Impact to FEI's Natural Gas Customers

Line	Particular	Reference	Option 1 - Equal Cost Recovery	Option 2 - 5-Year Rolling Average- Indexed
1	Estimated FEI Revelstoke Propane Costs (\$000s)	See note 1	2,239	2,239
2	Estimated Propane recovery via Commodity Recovery Charge (\$000s)	See note 2	(373)	(1,144)
3	Total Propane Costs transfer to FEI MCRA (\$000s)	Line 1 + Line 2	1,865	1,094
4				
5	FEI Natural Gas Total Midstream Costs (\$000s)	See note 3	149,526	149,526
6	FEI MCRA Amortization (\$000s)	See note 4	13,907	13,907
7	TOTAL Natural Gas Midstream Costs (incl. MCRA Amortization)	Line 5 + Line 6	163,433	163,433
8				
9	Revelstoke Propane Demand Forecast (2020F) - TJ	Appendix A, Line 1 (RS-1R, 2R, 3R)	241	241
10	FEI MCRA Demand (Natural Gas Only) - TJ	Appendix A, Line 1 (RS-1 to 7)	138,206	138,206
11	TOTAL Demand (Natural Gas & Propane) - TJ	Line 9 + Line 10	138,447	138,447
12				
13	Average Midstream Rate - Natural Gas Only (\$/GJ)	Line 7 / Line 10	1.183	1.183
14	Average Midstream Rate - Natural Gas & Propane (\$/GJ)	(Line 3 + Line 7) / Line 11	1.194	1.188
15				
16	Average Midstream Rate Impact to FEI's Customer (\$/GJ)	Line 14 - Line 13	0.011	0.006
17	% Average Midstream Rate Impact to FEI's Customer	Line 16 / Line 13	0.93%	0.51%

1 - Appendix A, Line 11; Forecast Jan to Dec 2020 based on FEI Revelstoke 2019 Q2 Gas Cost Report

2 - Appendix A, Line 17; Assumed Commodity Cost Recovery Charge of \$1.549 per GJ (Eff. Jan 1, 2019) plus Propane Premium Multiplier

3 - Forecast Jan to Dec 2020 based on FEI 2019 Q2 Gas Cost Report, exclude T-Service UAF

4 - Forecast as of Jan 1, 2020 based on FEI 2019 Q2 Gas Cost Report (1/2 of Pre-Tax Amortization MCRA Deficit/(Surplus))

2

Table 3-4: Incremental Midstream Rate Impact to FEI's Natural Gas Customers (Based on 2014 Historical Peak Propane Supply Cost)

Line	Particular		Option 1 - Equal Cost Recovery	Option 2 - 5-Year Rolling Average- Indexed
1	Estimated FEI Revelstoke Propane Costs (\$000s)	See note 1	3,904	3,904
2	Estimated Propane recovery via Commodity Recovery Charge (\$000s)	See note 2	(461)	(1,413)
3	Total Propane Costs transfer to FEI MCRA (\$000s)	Line 1 + Line 2	3,443	2,491
4				
5	FEI Natural Gas Total Midstream Costs (\$000s)	See note 3	149,526	149,526
6	FEI MCRA Amortization (\$000s)	See note 4	13,907	13,907
7	TOTAL Natural Gas Midstream Costs (incl. MCRA Amortization)	Line 5 + Line 6	163,433	163,433
8				
9	Revelstoke Propane Demand Forecast (2020F) - TJ ⁵	Appendix A, Line 1 (RS-1R, 2R, 3R)	298	298
10	FEI MCRA Demand (Natural Gas Only) - TJ	Appendix A, Line 1 (RS-1 to 7)	138,206	138,206
11	TOTAL Demand (Natural Gas & Propane) - TJ	Line 9 + Line 10	138,504	138,504
12				
13	Effective Midstream Rate - Natural Gas Only (\$/GJ)	Line 7 / Line 10	1.183	1.183
14	Effective Midstream Rate - Natural Gas & Propane (\$/GJ)	(Line 3 + Line 7) / Line 11	1.205	1.198
15				
16	Midstream Rate Impact to FEI's Customer (\$/GJ)	Line 14 - Line 13	0.022	0.015
17	% Midstream Rate Impact to FEI's Customer	Line 16 / Line 13	1.86%	1.27%

1 - Estimated based on historical highest propane cost at FEI Revelstoke 2014 Q4 Gas Cost Report

2 - Assumed Commodity Cost Recovery Charge of \$1.549 per GJ (Eff. Jan 1, 2019) plus Propane Premium Multiplier

3 - Forecast Jan to Dec 2020 based on FEI 2019 Q2 Gas Cost Report, exclude T-Service UAF

4 - Forecast as of Jan 1, 2020 based on FEI 2019 Q2 Gas Cost Report (1/2 of Pre-Tax Amortization MCRA Deficit/(Surplus))

5 - Assume all conversion to occur in 2020

3

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7.1 Under the scenario depicted in Table 3-4, the % midstream rate impact to FEI's customers is about double that shown in Table 3-3. Is it fair to say that the total bill impacts would be roughly double as well under the scenario in Table 3-4? Please explain why or why not and quantify if there is a material difference.

Response:

Confirmed that if the midstream rate impact in percentage is doubled, all else being equal, the total bill impact in dollars is also doubled.

It is also important to note that the percentage changes in midstream rate shown in Table 3-3 and Table 3-4 are just the average rate impact across all rate schedules. They cannot be used directly to determine the midstream rate impact or the total bill impact of each individual rate schedule.

Please refer to Table 5-1 of the Application to find the total bill impact for an average natural gas customer in Rate Schedule (RS) 1, 2, and 3 under the scenario depicted in Table 3-3 of the Application. For the total bill impact for an average natural gas customer in RS 1, 2, and 3 under the scenario depicted in Table 3-4, please refer to the table below.

Rate Schedule	Average UPC (GJ)	Average Annual Bill Impact (\$) - Table 3-4	Average Annual Bill Impact (%) - Table 3-4
FEI's Mainland and Vancouver Island (Natural Gas)			
Rate Schedule 1 - Residential Service	90	\$ 1.97	0.25%
Rate Schedule 2 - Small Commercial	340	\$ 7.74	0.32%
Rate Schedule 3 - Large Commercial	3,770	\$ 67.65	0.30%

7.1.1 If there is a material difference other than being approximately double, please provide bill impacts for each rate class under the scenario from Table 3-4.

Response:

Please refer to the response to CEC IR 1.7.1.

1 **8. Reference: Exhibit b-1, page 14**

Table 3-5: Comparison of Propane Gas Cost Recovery Rates Calculation Options

	Option 1 – Equal Natural Gas and Propane Cost Recovery	Option 2 – Five-Year Rolling Price Difference
Mitigates Propane Rate Volatility	Yes	Yes
Provides Rate Relief for Revelstoke Propane Customers	Yes	No
Midstream Rate Impact for FEI Natural Gas Customers	Small	Small
Supports BC's Energy Objectives	Yes	Yes

2

Fully amalgamating the propane and natural gas portfolio costs on an equal basis (as proposed in Option 1) ensures that FEI customers in Revelstoke do not experience differing cost of energy recovery rates due to their location within FEI's service territory. This supports equality of investment and job creation across the province. With the exception of Revelstoke and Fort Nelson¹⁷, FEI's customers already pay the same cost of energy recovery rates no matter where they are located within the service area. FEI's Revelstoke propane customers are different from FEI's natural gas customers because they use a different fuel type. However, geographical location itself is the key cause for this difference in fuel type. As such, applying equal cost of energy recovery rates to FEI's Revelstoke propane customers represents an improvement to the current situation in line with the accepted principle of common rates across geographical locations within FEI's service territory.

Further, neither of the options preclude future review of potential options to upgrade the Revelstoke propane system to natural gas, which may include consideration of alternatives such as a natural gas pipeline, liquefied natural gas (LNG) supply, or compressed natural gas (CNG) supply in consideration of both the economic and non-financial benefits at the time.

3

4 8.1 Please confirm that FEI is requesting Option 1.

5

6 **Response:**

7 Confirmed. Please also refer to the response to BCUC IR 1.2.3.

8

9

10

11 8.2 Did FEI consider any other alternatives?

12

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1 **Response:**

2 Please refer to the response to BCUC IR 1.12.3.

3
4

5
6 8.2.1 If yes, please provide.

7

8 **Response:**

9 Please refer to the response to BCUC IR 1.12.3.

10
11

12

13 8.2.2 If no, please explain why not.

14

15 **Response:**

16 Please refer to the response to BCUC IR 1.12.3.

17
18

19
20 8.3 Please identify any instances in BC in which customers are charged the same
21 commodity rates for different commodities.

22

23 **Response:**

24 Please refer to the response to BCUC IR 1.9.7.

25
26

27

28 8.4 Please provide any instances that FEI is aware of in which the same commodity
29 rates are charged for different commodities in other jurisdictions.

30

31 **Response:**

32 Please refer to the response to BCUC IR 1.9.7.

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8.5 Please confirm that FEI is proposing to create a cross-subsidy of Revelstoke propane customers by natural gas customers.

Response:

Confirmed that FEI's proposal will shift cost recovery from Revelstoke customers to all FEI gas (natural gas and propane) customers. Please refer to the response to BCUC 1.9.4 for a discussion of how a degree of cross-subsidization already exists and is accepted within FEI's natural gas service territory. As explained in the response to BCUC IR 1.8.3, the proposed changes represent an innovative, least-cost, non-capital method for mitigating the rate volatility and rate premium experienced by FEI's Revelstoke customers in line with the accepted principle of common rates across geographic locations within FEI's service territory.

8.5.1 Please identify the primary purpose in doing so.

Response:

Please refer to the response to CEC IR 1.8.5.

8.5.2 Please provide a discussion of the importance of proceeding quickly, versus deferring for 1, 3, 5 or 10 years.

Response:

FEI does not foresee any technical or procedural reasons that would prohibit deferring the implementation of the proposed amalgamation. However, any deferral would leave the rate disparity experienced by FEI's Revelstoke customers unresolved and would leave these customers without the benefits of the proposed amalgamation.

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8.6 Is there currently customer demand for natural gas, LNG or CNG in Revelstoke?

Response:

Customer demand in Revelstoke results from the delivery of safe, affordable and reliable energy. Therefore, FEI believes that customers are largely indifferent towards which commodity is delivered, either propane or natural gas (piped, compressed or liquefied), all else being equal. However, FEI notes that some customers may prefer the reduced emissions offered by natural gas over propane, all else being equal.

8.6.1 If yes, please quantify.

Response:

Please refer to the response to CEC IR 1.8.6.

8.7 To what extent has FEI investigated the possibility of converting Revelstoke to a) natural gas, b) LNG or c) CNG to date? Please provide any reports or studies that FEI has undertaken.

Response:

Please refer to the response to BCUC IR 1.8.3 where FEI has summarized the results of its previous investigation into a natural gas pipeline and a virtual pipeline using LNG / CNG to connect Revelstoke to natural gas.

8.8 If FEI has not investigated the possibility of converting Revelstoke to natural gas, LNG or CNG, please explain why not, and whether or not it expects to do so in the future.

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Response:

Please refer to the response to BCUC IR 1.8.3. As also noted in the responses to BCUC IR 1.2.8, 1.12.4, and 1.13.1, FEI will continue to investigate potential options to connect Revelstoke to FEI's natural gas distribution system. At this point, FEI is uncertain whether and when any further investigation will take place, but it expects it would file the relevant information resulting from any such investigation as part of any future application to connect Revelstoke to natural gas.

8.8.1 If FEI expects to undertake such studies in the future, please explain when that is expected to occur.

Response:

Please refer to the response to CEC IR 1.8.8.

8.8.1.1 Will the Commission receive such reports? Please explain.

Response:

Please refer to the response to CEC IR 1.8.8.

8.9 Would FEI agree that promoting conversion to propane from other fuels is incompatible with converting Revelstoke to natural gas, LNG or CNG? Please discuss.

Response:

FEI does not agree that promoting conversion to propane is incompatible with converting Revelstoke to natural gas. Converting from propane to natural gas is very straightforward. The existing energy delivery infrastructure including mains, service lines, meters and regulators are compatible with both propane and natural gas. LNG is vaporized before being injected into the delivery system and CNG is injected at normal pipeline pressures, therefore both of these fuels are compatible with Revelstoke's existing energy delivery infrastructure. The changes that a

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1 customer would undertake to convert from heating oil to propane represent a step change
2 towards natural gas. A change from heating oil to propane will require new or nearly new
3 appliances; however, these propane appliances can typically be easily converted to natural gas
4 without replacement.

5

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1 **9. Reference: Exhibit B-1, page 15**

2
3 **4 FORECAST LOAD GROWTH AND IMPACTS ON THE REVELSTOKE**
4 **5 DISTRIBUTION SYSTEM**

Another benefit of the rate stability and rate relief offered to Revelstoke customers by the proposed amalgamation of FEI's propane supply costs into the natural gas supply costs would be accelerated load growth in Revelstoke with conversions from other fuel types (e.g., from heating oil to propane, which would provide associated GHG emissions benefits). This potential load growth could also lead to accelerated capital upgrade requirements for the Revelstoke distribution system. In this section, FEI quantifies the potential impact of conversions on customer delivery rates by using an Upper Bound scenario and calculating the associated delivery rate impact of a large number of conversions occurring in the first year after the proposed changes become effective (i.e., 2020 or Year 1). This, in turn, triggers the need for immediate capital upgrades to the existing propane distribution system in order to serve the additional load. This Upper Bound scenario represents the Upper Bound rate and bill impact on FEI and Revelstoke customers as all conversions and capital upgrades would occur in the first year after the proposed amalgamation rather than gradually over time. FEI believes the Upper Bound scenario is unlikely due to the practicalities involved with conversions (energy users making conversion decisions over time, planning their conversions, purchasing new appliances, having to rely on contractor capacity for completing their conversions, etc.), but this is still useful as it helps to illustrate the Upper Bound rate and bill impact on FEI and Revelstoke customers if conversions occur rapidly.

2

3 9.1 Has the current difference in propane and natural gas costs contributed to
4 customer demand to have natural gas installed in Revelstoke?

5

6 **Response:**

7 Please refer to the response to CEC IR 1.8.6 where FEI suggests that customers demand safe,
8 reliable and affordable energy, and are not necessarily differentiating between natural gas
9 versus propane commodities.

10

11

12

13 9.1.1 If yes, does FEI expect that such demand will be reduced by the
14 proposed change? Please explain why or why not.

15

16 **Response:**

17 Please refer to the response to CEC IR 1.8.6 where FEI notes that some customers may prefer
18 the reduced emissions offered by natural gas over propane, all else being equal.

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9.1.2 Would FEI agree that customers who had recently moved from one fuel source to propane be less interested in supporting the installation of natural gas distribution in Revelstoke? Please explain.

Response:

Two primary objectives for customers connecting to the natural gas system are to obtain energy service reliability and affordability. Through this Application, customers would meet those objectives regardless of whether the commodity provided is natural gas or propane. Therefore, in a scenario which includes a future connection to the natural gas system, FEI believes that customers, whether new or existing, would neither be more or less interested in supporting such a connection.

4.1 UPPER BOUND DEMAND FORECAST

Based on FEI's geographic information system (GIS), FEI identified 1,063 residential dwellings within 30 metres of an existing main in Revelstoke that are currently not FEI Revelstoke propane customers. Since there are incremental connection costs associated with residential dwellings that are greater than 30 metres from an existing main¹⁸, FEI believes these dwellings represent the extent of the customers that are likely to consider conversion to propane service. Since the number and evolution of conversions over time is uncertain, FEI assumed all identified 1,063 residential dwellings will connect to FEI's propane system in Revelstoke in 2020 to illustrate an Upper Bound delivery rate impact¹⁹ on FEI and Revelstoke customers. FEI notes that no conversion additions were forecasted for commercial customers in Revelstoke under this Upper Bound scenario as FEI assumes commercial customers that have the ability to take propane service have done so already.

19

9.2 Please provide estimates for ratepayers (in each rate class if different) to convert to propane from other typical fuel types.

20
21
22
23

Response:

As explained in the response to BCUC IR 1.2.7.1 and 1.2.7.3, FEI intends to upgrade propane storage and distribution mains in Revelstoke if the Application is approved and the forecast demand materializes. However, FEI does not intend to convert any customer end-use appliances.

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25
26
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1 The cost for any ratepayer to convert from one or more existing fuel types to propane is
2 expected to vary widely from premise to premise. Considerations include, but are not limited to:

- 3 • Cost to connect to the main;
- 4 • Cost for the acquisition of new appliances;
- 5 • Potential removal and disposal costs for existing appliances; and
- 6 • Any modifications to the building envelope that might be required.

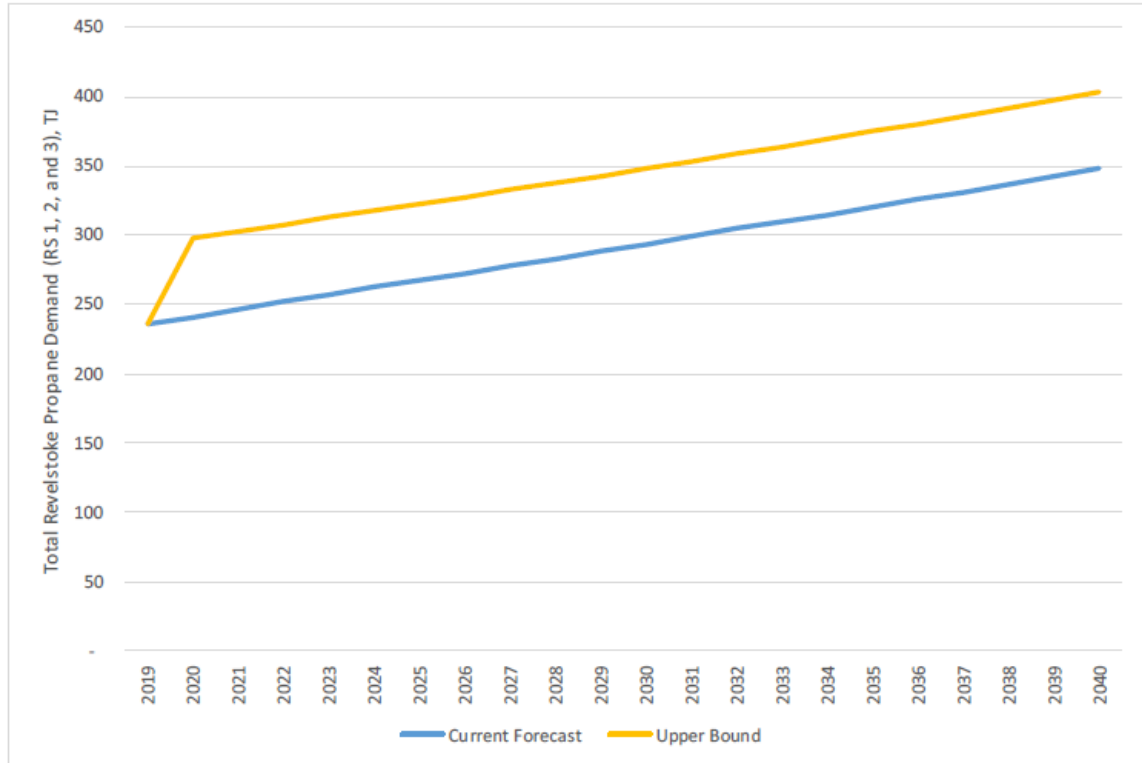
7
8 Due to the number of customers and variety of considerations, FEI is unable to provide an
9 estimate of the ratepayer conversion costs in each rate class. Please refer to the response to
10 BCUC IR 1.7.3.1 for a discussion of historical conversion costs for residential energy users in
11 Revelstoke.

12

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1 **10. Reference: Exhibit B-1, page 17 and 18**

Figure 4-2: Total Annual Propane Demand in TJs



Figures 4-1 and 4-2 above show that, in the unlikely event that all 1,063 residential dwellings identified within 30 metres of an existing main in Revelstoke convert to propane immediately in 2020, the total propane demand in Revelstoke is forecasted to increase by approximately 26 percent, from the current forecast demand of 236 TJ to 298 TJ in 2020. In the following sections, FEI outlines the capital upgrades that would be required to Revelstoke's propane distribution system based on this Upper Bound demand forecast as shown in Figure 4-2 above and the resulting Upper Bound delivery rate impact to both FEI's and Revelstoke's customers if the Upper Bound scenario were to occur.

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4.2 REQUIRED DISTRIBUTION SYSTEM UPGRADES

FEI applied its standard peak demand forecast method to the customer forecasts discussed in Section 4.1. Hydraulic models were then developed to determine the extent of system upgrades required to support the growth within the 20-year forecast horizon under the Upper Bound scenario. Based on the forecasted growth under the Upper Bound scenario, the existing distribution system in Revelstoke will require three additional propane storage tanks and a distribution main upgrade in order to serve Revelstoke's existing customers as well as the additional load from the conversions as described in Section 4.1 above. The capital upgrades will have to be implemented immediately in the first year after the proposed amalgamation of propane and natural gas costs begins as the Upper Bound scenario assumes all additional

conversions occur in the first year after the proposed amalgamation becomes effective. The total capital cost for the upgrade is estimated to be \$2.798 million in 2019 dollars. Table 4-1 below summarizes the estimated cost of system upgrade requirements for the Upper Bound scenario.

Table 4-1: Upper Bound Scenario System Upgrades

System Upgrade Type	Project Description	Project Estimate (2019 \$000s)
Propane Storage	3 new 30,000 USG storage Vessels	\$2,000
Distribution Mains	SI - 1140m x 219 DPPE Oscar St	\$798

10.1 Please provide the likelihood of the Upper Bound scenario occurring.

Response:

Please refer to the response to BCUC IR 1.7.2.

10.2 Please provide any other scenarios relating to demand that FEI has developed with regard to this application, and particularly a 'most likely' scenario.

Response:

FEI, early on, considered scenarios that fell within the Upper Bound scenario, but did not develop these further or attempt to assign a probability or likelihood. As discussed in the response to BCUC IR 1.8.5, FEI included only the Upper Bound scenario in the Application to illustrate the extent of the Upper Bound impact in delivery rates that could be potentially triggered by the proposed amalgamation. The delivery rate impact of this Upper Bound scenario, if it materializes, is small at approximately 4 cents annually for an average FEI natural gas residential customers consuming 90 GJ per year. Any other scenario that requires system upgrades over a number of years beyond year 1 will have lower rate impacts than the Upper

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1 Bound scenario and does not change the fact that the impact of the proposed amalgamation to
2 FEI's non-bypass customers is small.

3
4
5
6 10.3 Is FEI proposing to do the capital upgrades to support the Upper Bound scenario
7 even though it is considered an unlikely scenario, or are the capital upgrades
8 hypothetical? Please explain.
9

10 **Response:**

11 No, FEI is not proposing to perform the capital upgrades in the first year following an approval
12 as described in the Upper Bound scenario. FEI would only install capital upgrades in the future
13 if a larger number of customer attachment requests materializes from the approval of the
14 proposed amalgamation or if increases in demand and/or peak demand occur for other reasons
15 not related to this Application. In addition, the capital upgrades would be distributed through the
16 years of the forecast as needed based on the rate of customer capture realized.

17 As discussed in the response to BCUC IR 1.8.5, FEI used the Upper Bound to illustrate the
18 scenario that represented the greatest potential impact to ratepayers (i.e., the extreme case)
19 and not as a likely scenario representing actual customer attachments in the first year. FEI
20 believes the actual customer attachments would occur over a number of years and capturing all
21 potential conversion customers may be unlikely to be fully realized. The timing of the capital
22 upgrades could therefore be considered hypothetical and the need for the scope of the capital
23 upgrades identified (storage tanks required and/or length of distribution mains installed) would
24 be reduced or deferred if customer conversions are less than described in the Upper Bound
25 scenario.

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27
28
29 10.4 Assuming the capital upgrades will only occur if the Upper Bound scenario
30 occurs, what will be the triggering event?
31

32 **Response:**

33 The trigger to install one or more upgrade projects would be Revelstoke's peak demand growing
34 to approximately 128 percent of current peak demand, regardless of whether the Application is
35 approved or the Upper Bound scenario occurs. Should future peak demand begin to exceed
36 this level, additional storage would be required to maintain a minimum seven days supply
37 capability during extreme winter weather. If the proposed amalgamation does not proceed,

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FEI's current forecast does not project that peak demand will exceed 128 percent of current level within the 20 year forecast period.

10.5 Does FEI require a partial level of capital upgrades if it experiences increases but not that which reaches the Upper Bound? Please discuss.

Response:

Please refer to the response to CEC IR 1.10.4

10.5.1 Will the Commission be apprised of any capital upgrades that FEI undertakes as a result of this application?

Response:

FEI continually plans and assesses when to undertake system improvements to ensure safe and reliable service for its customers. How FEI communicates the undertaking of these system improvements will depend on the regulatory rate framework at the time that they are undertaken and the timing and amount of the capital projects. The system improvements contemplated in the Application would be considered Distribution System Improvements. Under FEI's proposed MRP¹ these capital costs would be accounted for as Growth Capital. Growth Capital is proposed to be funded using a formula so the undertaking of these system improvements would not be explicitly requested, but would be undertaken by FEI within the approved Growth Capital funding included in FEI's annual review filings.

10.5.1.1 If yes, when and how would this be reported?

Response:

Please refer to the response to CEC IR 1.10.5.1.

¹ Proposed to be in place from 2020 to 2024 inclusive.

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10.5.1.2 If no, why not?

Response:

Please refer to the response to CEC IR 1.10.5.1.

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11. **Reference: Exhibit B-1, page 20**

5 TOTAL BILL IMPACTS TO FEI AND REVELSTOKE CUSTOMERS

Table 5-1 below summarizes the total cost of commodity recovery rate impact and the total annual bill impact for RS 1 to 3 customers resulting from the proposed amalgamation of FEI's propane and natural gas supply costs and the preferred rate setting Option 1 (equal commodity cost recovery between propane and natural gas). For detailed calculations as well as the total annual bill impact for FEI's RS 4 to 7 customers, please refer to Appendix D. FEI notes the total annual bill impact includes the impact to the commodity cost recovery rate only as discussed in Section 3. There is no delivery rate impact when rounded to three decimal places even under the Upper Bound scenario where all residential dwellings within 30 metres of an existing main convert to propane immediately in the first year of the proposed amalgamation (as discussed in Section 4 above).

Table 5-1: Summary of Average Annual Bill Impact for Revelstoke Propane and FEI Natural Gas Customers (RS 1 to 3)²²

Rate Schedule	Average UPC (GJ)	Average Annual Bill Impact (\$)	Average Annual Bill Impact (%)
Revelstoke Customers (Propane)			
Rate Schedule 1 - Residential Service	50	\$ (407)	(45%)
Rate Schedule 2 - Small Commercial	300	\$ (2,116)	(49%)
Rate Schedule 3 - Large Commercial	6,650	\$ (48,259)	(56%)
FEI's Mainland and Vancouver Island (Natural Gas)			
Rate Schedule 1 - Residential Service	90	\$ 0.98	0.12%
Rate Schedule 2 - Small Commercial	340	\$ 4.00	0.16%
Rate Schedule 3 - Large Commercial	3,770	\$ 33.72	0.15%

11.1 Please provide the above table with Option 2.

Response:

The above table for Option 2 was not provided in the Application as Option 2 does not provide rate relief to Revelstoke's propane customers and it is not the proposed option. Option 2 will have annual variances (which could be positive or negative in any given year) between Revelstoke's propane customers and FEI's natural gas customers, but the annual variances will true-up over a 5-year period. Please also refer to BCSEA IR 1.8.1 for further discussion.

Attachment 4.1



**BRITISH COLUMBIA
UTILITIES COMMISSION**

ORDER
NUMBER G-72-90

PROVINCE OF BRITISH COLUMBIA

BRITISH COLUMBIA UTILITIES COMMISSION

IN THE MATTER OF the Utilities Commission
Act, S.B.C. 1980, c. 60, as amended

and

IN THE MATTER OF an Application by
BC Gas Inc.

BEFORE: J.G. McIntyre,)
Chairman;)
J.D.V. Newlands,) October 4, 1990
Deputy Chairman; and)
W.M. Swanson, Q.C.,)
Commissioner)

O R D E R

WHEREAS BC Gas Inc. - Inland Division ("BC Gas") applied on September 19, 1990 for Commission approval of Gas Tariff Rate Schedules and an accounting Deferral Account covering the supply of piped propane vapour in the City of Revelstoke ("the City"); and

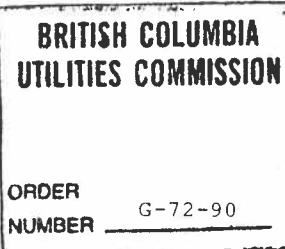
WHEREAS Certificate of Public Convenience and Necessity ("CPCN") No. C-11-90 dated August 16, 1990 approved the BC Gas application to construct and operate a propane grid system in and around the City; and

WHEREAS Commission Order No. G-61-90 approved an Operating Agreement between BC Gas and the City that allows BC Gas to enter into and construct an underground distribution facility on the public thoroughfares of the City; and

WHEREAS the use of a deferral account will allow customers to have a measure of rate stability during a period of fluctuating propane prices; and

WHEREAS the Commission has reviewed the Application and supporting material and finds that the filing of amendments to the filed Gas Tariff of BC Gas is necessary and in the public interest.

.../2



NOW THEREFORE the Commission orders and accepts for filing for BC Gas - Inland Division as follows:

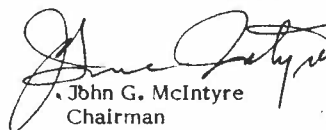
1. Amended Gas Tariff Rate Schedules incorporating rates for propane grid service in the City of Revelstoke, effective immediately:

First Revision of Sheet No. 81.2.
Third Revision of Sheet Nos. 3, 7, 27, 66 and 119.
Fourth Revision of Sheet Nos. 4, 31 and 62.
Ninth Revision of Sheet No. 58.1.
Thirty-second Revision of sheet No. 106.
Thirty-third Revision of Sheet No. 75.
Thirty-fourth Revision of Sheet Nos. 82 and 90.
Thirty-seventh Revision of Sheet No. 61.

2. The Commission approves the establishment of a Revelstoke deferral account to which the average monthly base price of propane above or below \$0.098/litre will be charged.
3. All affected customers in the City of Revelstoke will be provided with an explanation of the rates including riders charged for piped propane grid system service.

DATED at the City of Vancouver, in the Province of British Columbia, this 9th day of October, 1990.

BY ORDER


John G. McIntyre
Chairman