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November 7, 2017

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

Project No. 3698899

2016 Rate Design Application (the Application)

Response to the British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2

On December 19, 2016, FEI filed the Application referenced above. In accordance with Commission Order G-109-17 setting out the Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to BCUC IR No. 2.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties

FortisBC Energy Inc.

A. CHAPTER 2 – APPROVALS SOUGHT

62.0 Reference: APPROVALS SOUGHT

Exhibit B-1, Section 3.3.4, p. 3-11; Exhibit B-5, BCUC IR 12.2 and 12.3, pp. 51–52

Frequency of rate design

On page 3-11 of Exhibit B-1, FEI explains that "[t]here have been two significant rate design proceedings since the 1991 Phase A and 1993 Phase B rate design proceedings. These two proceedings occurred in 1996 and 2001."

In response to BCUC IR 12.3, FEI stated:

> FEI is of the opinion that a COSA study that is completed every 4 to 6 years is a reasonable time period to consider if there are issues that need to be raised in a regulatory proceeding, but that significant changes in FEI's business may require more frequent examination of specific limited scope issues.

62.1 Please explain if FEI considers it beneficial and efficient to perform a rate design each time an updated COSA study is carried out. If not, please explain your response.

Response:

FEI does not consider it to be beneficial or efficient to perform a rate design each time an updated COSA study is carried out.

FEI believes that updating the COSA study every four to six years would be reasonable. The COSA study would show whether there is any need for rebalancing. However, completing a full rate design every four to six years would likely not be warranted. A full rate design is a complex exercise which takes into account many factors beyond updating the COSA study. The additional rate design analysis performed by both internal and external resources takes considerable time and effort and has cost implications, including the legal, Commission, intervener and other administration costs involved with a full rate design application.

Performing a rate design could be beneficial if the COSA study highlights issues that need to be addressed, or if there is a significant change in FEI's business that requires analysis of customer groups and their rates. Further, rather than completing a full rate design, it is possible to carry out narrowly focused rate design applications, such as adjusting the rates or rate structure of one rate schedule, without causing negative impacts on customers served in other rate schedules.

For this reason, the need for rate design should be assessed on a case by case basis each time a COSA study is performed or significant change in FEI's business occurs.

62.2 Please explain FEI's views on the frequency of rate design taking into consideration the frequency of performing COSA studies and FEI's response to BCUC IR 12.3.

Response:

When COSA studies are completed every four to six years it would be reasonable to assess whether there are COSA-based reasons to conduct a rate design application at that time. Since rate design can be triggered by factors other than COSA results or RC ratios being outside of a range of reasonableness, FEI believes that the process for determining the frequency of rate design applications, whether comprehensive or narrowly focused, should be more fluid, although it would be reasonable to expect a comprehensive rate design about once every 10 years. For instance, the need for a comprehensive rate design in the current application was strongly influenced by the amalgamation of three utilities. In other cases government policy changes, such as, for example, when the current focus on energy efficiency and conservation was established, have triggered rate design applications for individual rate classes. Adding new service offerings to address changing customer needs is also a form of rate design that may be unrelated to COSA study results.

In response to BCUC IR 12.2, FEI explained that:

> FEI estimates 2,000 hours in total for FEI and 900 hours in total for Fort Nelson. In total, the internal fully-loaded labour cost is estimated in 1 the range of $275 thousand, split 70 percent to FEI and 30 percent to Fort Nelson (FEI notes, however, that Fort Nelson will receive 0.00244 percent of FEI's labour costs through the shared services allocation and not a separate allocation for the internal costs of the COSA). In addition to internal labour, FEI has incurred $100 thousand of external consultant costs to review and provide an expert opinion on the COSA and supporting studies for FEI and $5 thousand for Fort Nelson to date.

62.3 Please explain the incremental costs, time and effort in person-hours to prepare rate design proposals for regulatory review, after the completion of a COSA study for each of FEI and Fort Nelson. Please explain if any external resources are required.

Response:

As explained in the response to BCUC-FEI IR 1.12.2, just like the resources required to prepare a COSA study, the resources and incremental costs, time and effort required to prepare rate design proposals for regulatory review can vary depending upon the underlying issues identified, whether there are significant changes to FEI's business, and the extent to which external consultants are engaged.

FEI has captured rate design related costs, including those related to the COSA, in the Rate Design Application deferral account. FEI does not track costs for COSA and Rate Design separately. To respond to this IR, FEI has made a rough estimate of the costs (internal and external resources), time and effort to prepare rate design proposals for this Application. Internal resources have been utilized extensively in the preparation of the rate design proposals for FEI and Fort Nelson with this Application. Although FEI has not tracked the internal labour hours associated with the rate design proposals for FEI and Fort Nelson, FEI estimates approx. 1,900 hours in total for FEI and about 700 hours in total for Fort Nelson. In total, the internal resources labour cost is estimated in the range of $245 thousand, split approximately 70 percent to FEI and 30 percent to Fort Nelson. (FEI notes, however, that Fort Nelson will only receive 0.244 percent of FEI's labour costs through the shared services allocation and not a separate allocation for the internal costs of the COSA). In addition to internal labour, FEI has recorded $428 thousand of external consultant, legal, PACA and hearing room costs for the stakeholder information sessions and workshops associated with the rate design for future recovery in the Rate Design Application deferral account.

B. CHAPTER 7 – RATE DESIGN FOR RESIDENTIAL CUSTOMERS

63.0 Reference: RATE DESIGN FOR RESIDENTIAL CUSTOMERS

Exhibit B-5, BCUC IR 18.3.1, pp. 79–80; BCUC IR 17.2, pp. 71–72; BCUC IR 18.4, pp. 81–82

Exhibit B-1, Section 7.5.1, p. 7-17

Residential customer use data

In response to BCUC IR 18.3.1, FEI explained that, under the proposed rate design, "the minimum annual consumption under which the customer does not pay the allocated customer-related costs decreases to approximately 37 GJ per year. … Similarly, the minimum annual consumption required to recover total fixed costs in both scenarios [existing rate design and proposed rate design] is close to FEI's average use at approximately 80 GJ."

In response to BCUC IR 17.2, FEI provided a table showing a breakdown of the number of residential customers for different levels of annual normalized consumption from 2011 to 2015 using 10 GJ increments.

63.1 Please state for each year from 2011 to 2015 the number of residential customers with an annual consumption (i) up to 37 GJ; and (ii) up to 80 GJ.

Response:

The requested data is provided in the table below:

Annual Consumption, GJ	2011	2012	2013	2014	2015
0-37	121,091	124,387	131,136	128,159	134,577
0-80	425,895	435,729	464,767	458,536	475,218

63.2 Please complete, extrapolating where necessary, the following table using 2015 historical data to show the number and percentage of residential customers that are:

- low-income/not low-income with an annual consumption up to 37 GJ.
- low-income/not low-income with an annual consumption greater than 37 GJ.

Category	Residential Customers with Annual Consumption:				Total	
	Up to and including 37 GJ		Greater than 37 GJ			
	Number	%	Number	%	Number	%
Low-income						
Not low-income (1)						
Total					879,080	100%

(1) - Customers that are not classified as low-income customers.

Response:

FEI does not collect the actual income levels of its customers and therefore cannot provide the requested data.

The results of FEI's 2012 REUS indicate that approximately 18 percent of survey respondents with a self-declared income of less than $30,000 (2011 tax year) had an annual consumption of less than 37 GJ. The 2012 REUS results, however, are not a reliable predictor of the overall percentage of FEI's residential customers that are low income because survey respondents did not all self-report their income levels. The REUS did not attempt to target customers on the basis of income, so it is not known whether the percentage of respondents with <$30,000 income is representative of the percentage of these customers in FEI's residential customer base as a whole.

63.11 Please reproduce the table in response to the previous question using an annual consumption threshold of 80 GJ instead of 37 GJ.

Response:

Please refer to the response to BCUC-FEI IR 2.63.1.

In response to BCUC IR 18.4, FEI stated that the "Basic Charge for the residential group collects approximately 45 percent of the customer and demand related costs; consequently, the balance of these costs must be recovered through the volumetric charge."

On page 7-17 of Exhibit B-1, FEI states: "In the current residential rate structure, the current basic charge of $11.84 (when calculated as the average fixed monthly amount) recovers about 44% of the customer costs and only about 27% of the total of customer and demand costs allocated to the residential rate schedule."

63.12 Please reconcile the two statements in the preamble above which have different figures for the percentage of the total customer and demand-related costs recovered by the residential basic charge.

Response:

FEI revises its response to BCUC-FEI IR 1.18.4 to state as follows:

> "Basic Charge for the residential group collects approximately 27 percent of the customer and demand related costs; consequently, the balance of these costs must be recovered through the volumetric charge."

The original response to BCUC-FEI IR 1.18.4 was incorrect as it calculated the ratio of Basic Charge to customer-related costs only.

64.0 Reference: RATE DESIGN FOR RESIDENTIAL CUSTOMERS

Exhibit B-1, Section 7.8.1, p. 7-22; Exhibit B-5, BCUC IR 20.4.1, pp. 87–88; Exhibit A2-10, p. 16

Bill impact analysis

64.1 Please expand each of the two tables provided in response to BCUC IR 20.4.1 by splitting the 0 GJ annual consumption category into four categories: 0–10 GJ; 11–20 GJ; 21–30 GJ; and 31–40 GJ and adding a column with the number and percentage of total customers in each annual consumption category. For annual consumption, please round to the most appropriate whole number.

Response:

The following table provides the bill impact of increasing the Basic Charge by 10 percent.

Annual Consumption	Annual Bill impact due to the 10% increase in Basic Charge			
	Dollar Amount	Percentage of Total Bill	Number of Customers	Percentage of Customers
0 GJ	$14.0	10.0%	7,965	0.9%
1-10 GJ	$13.7	8.2%	23,682	2.6%
11-20 GJ	$11.6	4.3%	30,460	3.4%
21-30 GJ	$10.0	2.8%	39,957	4.5%
31-40 GJ	$8.2	1.9%	52,239	5.8%
40-45 GJ	$7.0	1.4%	31,422	3.5%
60-65 GJ	$4.0	0.5%	43,518	4.9%
80-85 GJ	$0.0	0.0%	42,893	4.8%
100-105 GJ	$(3.0)	-0.3%	31,031	3.5%
120-125 GJ	$(7.0)	-0.6%	18,796	2.1%

The following table provides the bill impact of increasing the Basic Charge by 15 percent.

Annual Consumption	Annual Bill impact due to the 15% increase in Basic Charge			
	Dollar Amount	Percentage of Total Bill	Number of Customers	Percentage of Customers
0 GJ	$21.0	15.0%	7,965	0.9%
1-10 GJ	$20.5	12.4%	23,682	2.6%
11-20 GJ	$17.5	6.5%	30,460	3.4%
21-30 GJ	$15.0	4.2%	39,957	4.5%
31-40 GJ	$12.4	2.8%	52,239	5.8%
40-45 GJ	$10.0	2.1%	31,422	3.5%

Annual Consumption	Annual Bill impact due to the 15% increase in Basic Charge			
	Dollar Amount	Percentage of Total Bill	Number of Customers	Percentage of Customers
60-65 GJ	$5.0	0.8%	43,518	4.9%
80-85 GJ	$0.0	0.0%	42,893	4.8%
100-105 GJ	$(5.0)	-0.5%	31,031	3.5%
120-125 GJ	$(10.0)	-0.8%	18,796	2.1%

On page 7-22 of Exhibit B-1, FEI states that "any rate design proposal should consider the bill impact to customers and should be implemented in a way that avoids rate shock to customers."

On page 16 of Exhibit A2-10, Elenchus states:

> In addition, large percentage increases in fixed charges are common in cases where utilities have a relatively low basic monthly charge and increase the charge by a relatively small dollar amount, especially in cases where the utility maintains a rounded amount (for example, an increase from $20 to $25 would constitute a 25% increase but would typically not be considered to result in rate shock).

64.2 Does FEI agree with Elenchus' statement? If not, please explain why not.

Response:

FEI agrees with Elenchus' statement that a larger percentage increase in fixed charge may not result in rate shock.

As explained on page 7-19 of Exhibit B-1, other factors in addition to bill impacts weigh against increasing the Basic Charge. Even though a bill impact as a result of increasing the Basic Charge does not result in a rate shock for a residential customer, it is still a factor that FEI has considered weighing against increasing the Basic Charge.

Therefore, FEI believes that a one-time increase of 5 percent to the Basic Charge and a corresponding decrease to the volumetric Delivery Charge as proposed in the Application achieves a reasonable balance among competing rate design considerations.

In BCUC IR 20.4.1, the second table provided the bill impact of increasing the Basic Charge by 15 percent. The table shows that customers with average consumption, between 80–85 GJ, will experience no increase in their total bill and customers with 0 GJ annual consumption will experience the highest bill increase at 15 percent of total bill, which corresponds to an increase of $21/year or $1.75/month.

64.3 Would FEI be open to a one-time 15 percent increase in the Basic Charge that has no impact to the average customer, considering Elenchus' statement above and that the monthly dollar increase for customers with 0 GJ consumption is $1.75? If not, please explain why not.

Response:

FEI does not believe a one-time 15 percent increase in the Basic Charge would reflect the best balance of various competing rate design considerations. A one-time 15 percent increase in the Basic Charge and corresponding decrease in volumetric delivery charge was one of the options that was initially considered by FEI[1] (other options include no increase, 5 percent and 10 percent increase). However, after considering both qualitative and quantitative aspects of changes to residential rates (including but not limited to the impact on government energy policies, stakeholders' feedback, bill impacts, rate stability and cost causation), FEI concluded that the proposed one-time 5 percent revenue neutral increase to the residential Basic Charge achieves the best balance. Further, as explained in response to BCUC-FEI IR 1.18.2, FEI is also concerned that larger percentage increases to the Basic Charge may begin to cause low volume customers to cease taking natural gas service altogether. As explained in response to BCUC-FEI IR 2.65.7, this would result in lost revenues that, because of the largely fixed cost nature of natural gas delivery service, are not offset by commensurate cost reductions, leaving other customers with net costs to bear.

[1] Slide 39 of FEI's rate design stakeholder consultation workshop provided a bill impact analysis for a 15 percent revenue-neutral increase to Basic Charge.

65.0 Reference: RATE DESIGN FOR RESIDENTIAL CUSTOMERS

Exhibit B-1, Section 7.5, pp. 7-17 to 7-19; Exhibit B-5, BCUC IR 20.4, p. 87

Fixed and variable cost recovery

Based on information from Table 7-5 in the Application and BCUC IR 20.4, Commission staff put together the table below:

Description	Existing Basic Charge	Percentage Increase in the Basic Charge *(with offsetting decrease in volumetric charge)*		
		5%	10%	15%
A) Daily Basic Charge ($/day)	0.389	0.4085	0.4279	0.4474
B) Monthly Basic Charge ($/month) [A*365.25/12]	11.84	12.43	13.02	13.62
C) % Recovery of customer-related costs from:				
i) Basic Charge	44%	46%	48%	50%
ii) Volumetric Delivery Charge	56%	54%	52%	50%
D) % Recovery of total customer and demand-related costs from:				
i) Basic Charge	27%	28%	30%	31%
ii) Volumetric Delivery Charge	73%	72%	70%	69%

65.1 Please confirm the accuracy of the table above or revise with supporting calculations and explanations.

Response:

Confirmed.

On page 7-17 of the Application, FEI states that, "[a]s part of the 1996 NSA, the monthly Basic Charge was increased by approximately 11% from $6.32 to $7.00."

65.2 Please provide the share of fixed costs recovery by the Basic Charge for (i) customer-related and (ii) total of customer and demand-related costs *before* and *after* the 1996 NSA.

Response:

The relative proportion of the Basic Charge, before and after the NSA, compared to the unit allocated cost that only includes customer-related and then customer-related plus demand-related is provided in the following table:

	Customer Related Costs	Customer + Demand Related Costs
Basic Charge before 1996 NSA	$ 6.32	$ 6.32
Allocated Unit Costs	$ 17.59	$ 29.88
Proportion	36%	21%
Basic Charge after 1996 NSA	$ 7.00	$ 7.00
Allocated Unit Costs	$ 17.59	$ 29.88
Proportion	40%	23%

On page 7-17, FEI states that its:

> revenue is largely dependent on consumption even though the bulk of the costs associated with the system are fixed in nature. The misalignment between fixed costs and the Basic Charge has been a reoccurring issue in FEI's rate design proceedings. … By Order G-141-09, the Commission approved FEI's 2010-2011 NSA. As part of the 2010-2011 NSA, and in alignment with government's energy conservation policies, the monthly Basic Charge was fixed at 2009 levels and all annual margin increases since 2009 have been allocated to variable volumetric charges.

65.3 Please confirm that in 2009 FEI (then Terasen) proposed that the basic charge and administration fees be held at existing approved 2009 levels "[t]o support our Energy Efficiency and Conservation Program and to meet the evolving needs of our customers" and explained that "Moving towards a larger volumetric component of the bill enhances the ability of our customers to experience benefits gained by reducing their usage through their participation in our EEC programs as well as through their overall energy efficiency awareness."[2]

[2] Terasen Gas Inc. 2010 and 2011 Revenue Requirements and Delivery Rates Application, Part III: Section C – Tab 2, p. 224.

Response:

Confirmed.

65.3.1 If not confirmed, please provide the explanation of why the basic charge has been held constant since 2010. If confirmed, is this still the reason why FEI does not propose to increase the basic charge along with the delivery charge going forward?

Response:

Yes, the reason remains the same. As explained in FEI's response to BCUC-FEI IR 1.5.2, keeping the Basic Charge fixed with periodic updates, and flowing annual general rate increases to the Delivery Charge only, is more aligned with government policies as it increases the volumetric price signals and provides customers who want to invest in demand-side measures with more certainty that the potential savings will pay for the investment they have made.

A further consideration was the feedback received from stakeholder consultation workshops in support of keeping the Basic Charge fixed.

Based on rate design Principle 2 (fair apportionment of costs among customers), an increase in cost recovery through the Basic Charge is desirable." On page 7-18, FEI states that "by holding the Basic Charge constant, higher use customers are bearing a greater share of delivery revenue requirement increases.

On page 7-19, FEI states that "in light of government's energy policy considerations, any increase in the Basic Charge should be done in a manner that does not discourage customers' engagement in energy savings initiatives. As such, a complete alignment between fixed costs and fixed charges is not desirable from an energy conservation and efficiency perspective."

65.4 Considering the majority of the system's costs are fixed, please confirm that, <u>from a fairness principle view only</u>, the ideal scenario would be to recover 100% of the company's fixed costs through the Basic Charge. If not, please explain why not.

Response:

From an economic fairness (cost causation) perspective only, the ideal scenario on an intra-class basis would be to recover 100 percent of customer-related costs through a Basic Charge, 100 percent of demand-related costs through a demand charge and 100 percent of energy-related costs through volumetric energy charge. Recovering the demand-related costs through the Basic Charge would introduce a measure of unfairness to lower volume customers and to higher load factor customers, both of which would be likely to cause lower peak demand on the system. This issue was also highlighted in Elenchus' Rate Design Report:

> It is extremely rare for residential natural gas customers to have meters that record their daily demand due to the high cost of this type of meter. As a result, it is not practical to implement the conceptually optimal three-part tariff structure (fixed basic connection charge, variable volumetric charge and variable demand charge). Consistent with the perception that monthly volumetric consumption is a reasonable proxy for demand, it follows that it is reasonable to recover demand-related costs through the volumetric charge.[3]

65.5 Please confirm that the monthly Basic Charge levels presented in the table in the preamble, if implemented, would be recovering between 28% and 31% of the total customer and demand-related costs, and between 46% and 50% of the customer-related costs. If not, please revise the calculations with supporting information.

Response:

Confirmed.

In BCUC IR20.3, FEI explained that the proposed changes in Basic Charge/volumetric charge will decrease the misalignment between fixed costs and the Basic Charge but the impact of the proposed improvement in alignment will gradually diminish over time as the

65.6 Please explain why FEI's proposal would be better at solving the misalignment of fixed costs and the Basic Charge, which has been a reoccurring issue in FEI's rate design proceedings, than maintaining the adjustment over time by not holding the Basic Charge constant.

[3] Elenchus Rate Design Report, Exhibit A2-10, p. 10.

Response:

FEI has not stated that periodic updates to the Basic Charge will lead to better alignment of fixed costs and revenue recovery through fixed charges than equal percentage increases to Basic Charge and volumetric Delivery Charge in general annual revenue requirement updates. Rather, FEI has stated that the annual increase to the Basic Charge is less aligned with government energy policies as it provides less certainty to customers who want to invest in demand-side measures that energy cost savings will be achieved. As stated elsewhere, FEI's proposal in the Application is based on balancing multiple rate design considerations and improving fixed cost recovery through fixed charges is only one of them.

Furthermore, applying annual increases to the Basic charge, rather than a one-time revenue-neutral increase to Basic Charge, is not a better option than FEI's proposal for a one-time increase to the Basic Charge and subsequent periodic updates. This is because applying annual equal percentage increases to the Basic Charge and volumetric Delivery Charge does not on its own improve the misalignment of fixed costs and fixed charge (the misalignment would remain at the same level as it is today). In addition, as explained above, it would at the same time discourage customer involvement in demand-side measure activities and programs. The matter of fixed cost recovery through fixed charges or volumetric charges will need to be assessed in rate design applications, regardless of whether the basic charge is held flat with occasional adjustments or whether it is adjusted annually with the year-to-year revenue requirement rate changes.

On page 7-18, FEI states that: "the theory suggests that excessively high fixed charges (relative to volumetric charges) can lead to consumption behaviours that result in excessive usage."

65.7 At what percentage level would FEI start to find the recovery of its fixed charges, as measured by both the customer-related charges and the total customer and demand-related charges, through the Basic Charge "excessive" and leading to "excessive usage"? Please use company data and/or empirical research to support your response.

Response:

As explained in Section 7.5.2 of the Application, for a natural gas distributor such as FEI, an excessively high fixed charge is more likely to affect customers' participation in DSM programs and activities rather than leading to "excessive usage". This is in part due to natural gas residential customers' low price elasticity of demand. In addition, no matter how much of the

delivery costs are recovered by fixed charges, the midstream costs as well as cost of gas and carbon tax will continue to be recovered in volumetric charges.

FEI does not have any company data and/or empirical research that can indicate at what percentage level a fixed charge can be regarded as excessive. As stated in FEI's response to BCUC-FEI IR 1.5.3, determining an appropriate level of fixed charge recovery for residential customers requires experience-based judgement, along with customers' feedback, and consideration of government policy and other rate design principles discussed in Section 7.3 of the Application.

Currently, FEI's volumetric delivery charge is approximately 50 percent of all the volumetric variable charges (including carbon tax) on customers' bills. Therefore, if delivery costs are entirely recovered through a fixed charge, the average monthly cost saving associated with DSM activities may reduce by almost 50 percent. As discussed in FEI response to BCUC-FEI IR 1.5.3, FEI believes that the recovery of 100 percent of fixed delivery costs with fixed charges would be significant enough to discourage some customers from engaging in energy efficiency measures and, therefore, as explained in Section 7.5.2 of the Application, a complete alignment between fixed costs and fixed charges is not desirable from a government policy perspective. FEI also has concerns about the effect that a high Basic Charge may have on low volume customers, that may decide to stop natural gas service altogether. This would result in lost revenues that, because of the largely fixed cost nature of natural gas delivery service, are not offset by commensurate cost reductions, leaving other customers with net costs to bear.

On page 7-19, FEI states that "a one-time 5% increase in the Basic Charge is not significant enough to discourage customers from engaging in energy savings activities. This is because a significant portion of FEI's costs continue to be recovered through volumetric charges."

65.8 Would FEI agree that the above statement also applies to a one-time 10% or 15% increase in the Basic Charge because, under these two scenarios, there continues to be a significant portion of FEI's costs recovered through the volumetric charges? If not, please explain why not while referring to the table in the preamble above (or the revised one if FEI disagrees with its accuracy).

Response:

FEI agrees that the quoted statement from page 7-19 of the Application may also apply to a one-time 10 or 15 percent increase in Basic Charge, however to a lesser degree. As stated in Section 7.3 of the Application, as well as several IR responses, rate design should strive to strike a balance among competing rate design principles and considerations based on specific

characteristics of customers in each rate schedule. Finding the right balance requires experience-based judgement as well as consideration of various rate design principles and government policies. FEI believes that the one-time 5 percent revenue-neutral increase will achieve this balance and should be approved as proposed in the Application.

65.9 Please complete the table provided in BCUC IR 20.5 using increases in Basic Charge of 10% and 15% and their corresponding decreases in the volumetric charge to keep these changes revenue neutral for RS 1 customers. Please also include a fully functional Excel spreadsheet for the data in the table.

Response:

In the table provided in the response to BCUC-FEI IR 1.20.5, FEI assumed that customers at all consumption levels impose the same level of demand-related costs on the system. However, lower volume customers would, generally speaking, cause a commensurately lower peak demand on the system[4] so the results in the table from BCUC-FEI IR 1.20.5 overstate the true shortfall from low volume customers and the surplus from high volume customers. To correct for this, in the table below, FEI has amended the table from BCUC-FEI IR 1.20.5 by adding two columns (f) and (g) and changing the calculation in column (h).

Column (f) is the demand and energy related cost per customer as derived in the COSA. As described above, lower volume customers cause less demand and energy related costs than higher volume customers; therefore column (g) calculates a ratio of demand and energy related costs based on volume (a) and average use per customer of 81.7 GJ/year[5]. Column (h) then sums the costs that are not covered by the Basic Charge revenue by summing column (g) and the shortfall in column (d), as these are the costs that are to be recovered with the delivery charge.

The requested tables are provided below, and the fully functional Excel spreadsheet is provided in Attachment 65.9. The first table is the revised table for BCUC-FEI IR 1.20.5, the second table sets the Basic Charge at 10 percent higher than the existing charge and the third table sets the Basic Charge at 15 percent higher than the existing charge. In all scenarios the delivery charge is reduced so that total delivery revenues for RS 1 remain unchanged.

[4] Lower volume customers would impose a lower peak day demand than higher volume customers at the same load factor.

[5] A 5 GJ per year customer would cause 5/81.7 of the average demand and energy related costs; $212 x 5 / 81.7 = $13. A 140 GJ customer would cause 140/81.7 of the average demand and energy related costs; $212 x 140 / 81.7 = $363.

Revised Table for BCUC-FEI IR 1.20.5

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
	Annual Consumption (GJ) (a)	Annual Revenue from Proposed Basic Charge (b)	Annual Customer Related Cost based on COSA Results (c)	Difference (d) = (b) - (c)	Difference as a % of Annual Customer Related Costs (d) / (c)	Annual Revenue from Proposed Volumetric Charge (e)	Annual Demand and Energy Related Costs per Customer based on COSA Results (f)	Annual Demand and Energy Related Costs Caused by Peak Day Demand (g) = (a) / 81.7 x (f)	Total Annual Cost based on COSA Results to be recovered through Volumetric Charge (h) = (g) - (d)	Difference (i) = (h) - (e)	Difference as a % of costs to be recovered through Volumetric Charge (i) / (h)
Row 1	5	149	325	(176)	-54%	24	212	13	189	(165)	-87%
Row 2	10	149	325	(176)	-54%	47	212	26	202	(155)	-77%
Row 3	15	149	325	(176)	-54%	71	212	39	215	(144)	-67%
Row 4	20	149	325	(176)	-54%	95	212	52	228	(133)	-58%
Row 5	25	149	325	(176)	-54%	119	212	65	241	(122)	-51%
Row 6	30	149	325	(176)	-54%	142	212	78	254	(111)	-44%
Row 7	40	149	325	(176)	-54%	190	212	104	280	(90)	-32%
Row 8	50	149	325	(176)	-54%	237	212	130	306	(68)	-22%
Row 9	60	149	325	(176)	-54%	285	212	156	332	(47)	-14%
Row 10	70	149	325	(176)	-54%	332	212	181	358	(25)	-7%
Row 11	80	149	325	(176)	-54%	380	212	207	383	(4)	-1%
Row 12	90	149	325	(176)	-54%	427	212	233	409	18	4%
Row 13	100	149	325	(176)	-54%	475	212	259	435	39	9%
Row 14	110	149	325	(176)	-54%	522	212	285	461	61	13%
Row 15	120	149	325	(176)	-54%	570	212	311	487	82	17%
Row 16	130	149	325	(176)	-54%	617	212	337	513	104	20%
Row 17	140	149	325	(176)	-54%	664	212	363	539	125	23%

Basic Charge set at $0.4279/Day (10% higher than existing)

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
	Annual Consumption (GJ) (a)	Annual Revenue from Proposed Basic Charge (b)	Annual Customer Related Cost based on COSA Results (c)	Difference (d) = (b) - (c)	Difference as a % of Annual Customer Related Costs (d) / (c)	Annual Revenue from Proposed Volumetric Charge (e)	Annual Demand and Energy Related Costs per Customer based on COSA Results (f)	Annual Demand and Energy Related Costs Caused by Peak Day Demand (g) = (a) / 81.7 x (f)	Total Annual Cost based on COSA Results to be recovered through Volumetric Charge (h) = (g) - (d)	Difference (i) = (h) - (e)	Difference as a % of costs to be recovered through Volumetric Charge (i) / (h)
Row 1	5	156	325	(169)	-52%	23	212	13	182	(159)	-87%
Row 2	10	156	325	(169)	-52%	47	212	26	195	(148)	-76%
Row 3	15	156	325	(169)	-52%	70	212	39	208	(138)	-66%
Row 4	20	156	325	(169)	-52%	93	212	52	221	(128)	-58%
Row 5	25	156	325	(169)	-52%	116	212	65	234	(117)	-50%
Row 6	30	156	325	(169)	-52%	140	212	78	247	(107)	-43%
Row 7	40	156	325	(169)	-52%	186	212	104	273	(86)	-32%
Row 8	50	156	325	(169)	-52%	233	212	130	299	(66)	-22%
Row 9	60	156	325	(169)	-52%	280	212	156	325	(45)	-14%
Row 10	70	156	325	(169)	-52%	326	212	181	350	(24)	-7%
Row 11	80	156	325	(169)	-52%	373	212	207	376	(4)	-1%
Row 12	90	156	325	(169)	-52%	419	212	233	402	17	4%
Row 13	100	156	325	(169)	-52%	466	212	259	428	38	9%
Row 14	110	156	325	(169)	-52%	513	212	285	454	58	13%
Row 15	120	156	325	(169)	-52%	559	212	311	480	79	16%
Row 16	130	156	325	(169)	-52%	606	212	337	506	100	20%
Row 17	140	156	325	(169)	-52%	652	212	363	532	120	23%

Basic Charge set at $0.4474/Day (15% higher than existing)

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11
	Annual Consumption (GJ) (a)	Annual Revenue from Proposed Basic Charge (b)	Annual Customer Related Cost based on COSA Results (c)	Difference (d) = (b) - (c)	Difference as a % of Annual Customer Related Costs (d) / (c)	Annual Revenue from Proposed Volumetric Charge (e)	Annual Demand and Energy Related Costs per Customer based on COSA Results (f)	Annual Demand and Energy Related Costs Caused by Peak Day Demand (g) = (a) / 81.7 x (f)	Total Annual Cost based on COSA Results to be recovered through Volumetric Charge (h) = (g) - (d)	Difference (i) = (h) - (e)	Difference as a % of costs to be recovered through Volumetric Charge (i) / (h)
Row 1	5	163	325	(162)	-50%	23	212	13	175	(152)	-87%
Row 2	10	163	325	(162)	-50%	46	212	26	188	(142)	-76%
Row 3	15	163	325	(162)	-50%	69	212	39	201	(132)	-66%
Row 4	20	163	325	(162)	-50%	91	212	52	214	(122)	-57%
Row 5	25	163	325	(162)	-50%	114	212	65	227	(112)	-50%
Row 6	30	163	325	(162)	-50%	137	212	78	240	(102)	-43%
Row 7	40	163	325	(162)	-50%	183	212	104	266	(83)	-31%
Row 8	50	163	325	(162)	-50%	229	212	130	292	(63)	-22%
Row 9	60	163	325	(162)	-50%	274	212	156	317	(43)	-14%
Row 10	70	163	325	(162)	-50%	320	212	181	343	(23)	-7%
Row 11	80	163	325	(162)	-50%	366	212	207	369	(4)	-1%
Row 12	90	163	325	(162)	-50%	411	212	233	395	16	4%
Row 13	100	163	325	(162)	-50%	457	212	259	421	36	9%
Row 14	110	163	325	(162)	-50%	503	212	285	447	56	13%
Row 15	120	163	325	(162)	-50%	549	212	311	473	76	16%
Row 16	130	163	325	(162)	-50%	594	212	337	499	95	19%
Row 17	140	163	325	(162)	-50%	640	212	363	525	115	22%

66.0 Reference: RATE DESIGN FOR RESIDENTIAL CUSTOMERS

Exhibit B-1, Section 7.6, pp. 7-19 to 7-21

Jurisdictional comparison of rates

On page 7-21, FEI states:

> In summary, the jurisdictional comparison study demonstrates that most Canadian natural gas utilities have higher monthly fixed charges for their residential customers than FEI. In addition, the analysis indicates that FEI recovers a lower percentage of its delivery cost in fixed monthly charges than the majority of other Canadian natural gas utilities included in this study. This would suggest that an increase to the residential Basic Charge would not be inconsistent with fixed cost recovery in other jurisdictions.

66.1 Using separate charts, please re-do Figure 7-10 showing:

i. The relative position of FEI with a 5% increase in the Basic Charge and an offsetting decrease in the volumetric charge;

ii. The relative position of FEI with a 10% increase in the Basic Charge and an offsetting decrease in the volumetric charge; and

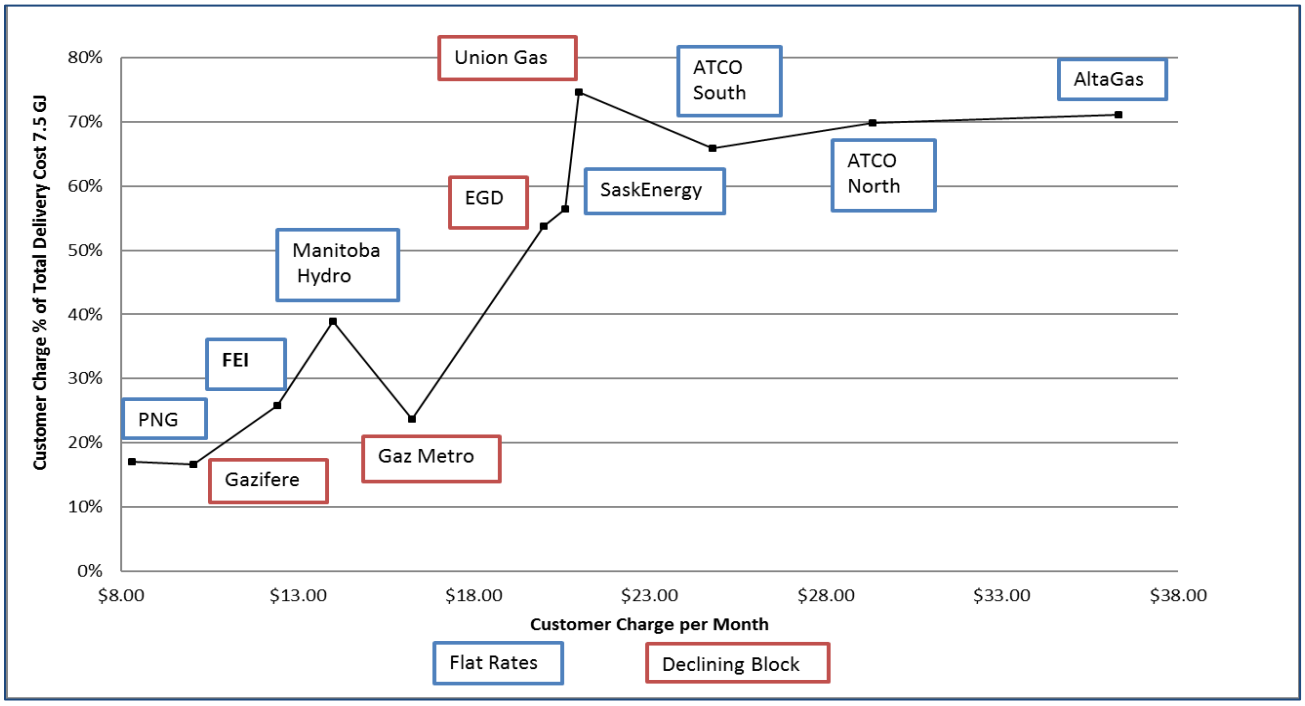
iii. The relative position of FEI with a 15% increase in the Basic Charge and an offsetting decrease in the volumetric charge.

Response:

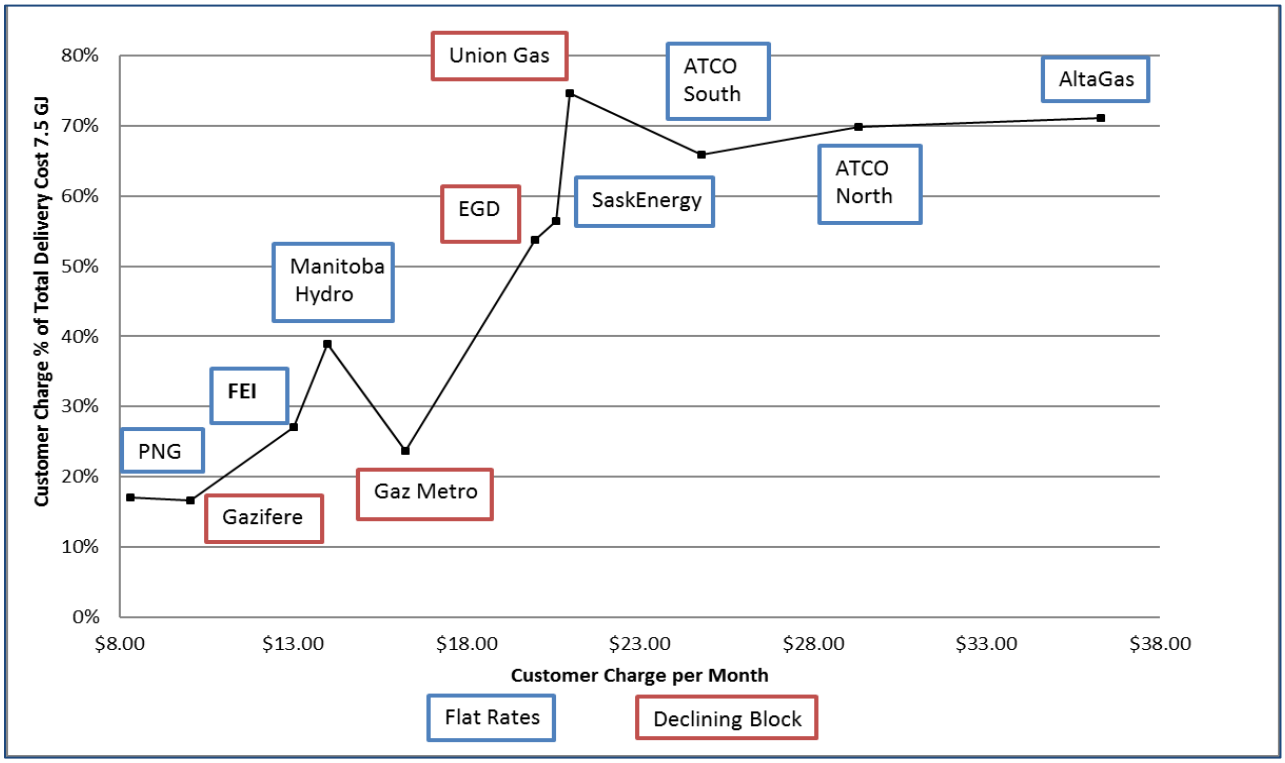
The requested graphs are provided below.

As can be seen from the graphs, despite the general shift of FEI's position to the upper right side of the graph, the relative position of FEI's Basic Charge calculated as a monthly dollar amount and as a percentage of total delivery charge for an average 7.5 GJ monthly consumption is maintained.

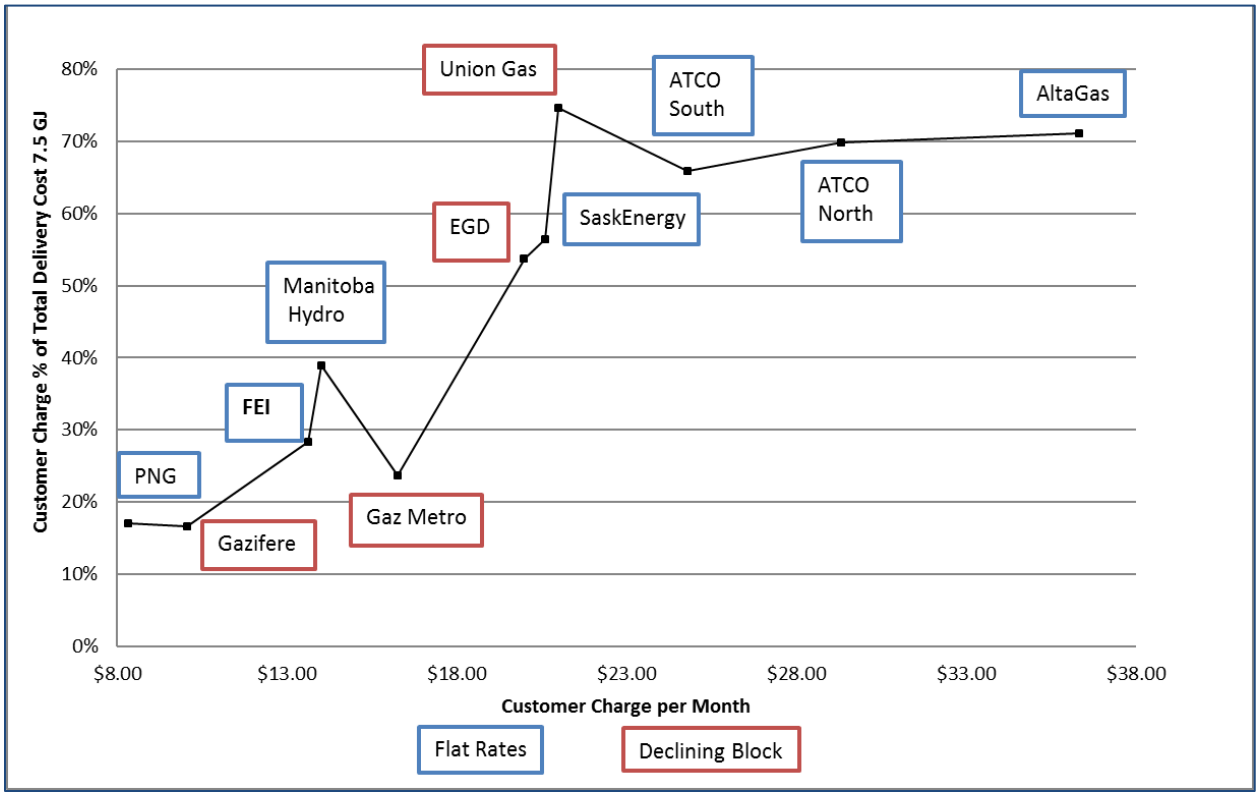
Residential Rate Structures for Various Canadian Natural Gas Distributors (5% revenue-neutral increase to Basic Charge)



Residential Rate Structures for Various Canadian Natural Gas Distributors (10% revenue-neutral increase to Basic Charge)



Residential Rate Structures for Various Canadian Natural Gas Distributors (15% revenue-neutral increase to Basic Charge)



66.2 Please comment on whether FEI maintains the same relative position among Canadian natural gas utilities in each of the revised figures.

Response:

Please refer to the response to BCUC-FEI IR 2.66.1.

67.0 Reference: RATE DESIGN FOR RESIDENTIAL CUSTOMERS

Transcript, Volume 5, p. 491-492, Exhibit B-1, Section 12.1 to 12.3, pp. 12-4 to 12-7

Rate design and rebalancing

During the SRP, FEI was asked "What if [the rate class's] revenue-to-cost ratio was inside the range of reasonableness but either below or above unity. Does that become a non-factor or is it still one of the factors to be considered among many?" FEI's response was:

> MS. TABONE: We view it as a non-factor. And the reason is, when we look at any number between 90 to 110 we're saying if they're 92 percent they're meeting their cost of service. And so, we don't distinguish between 92 and 102, for example. We basically say if they're in that range that's as close as we can get to measuring whether they're paying their cost of service or not. And so, you have to take some kind of range at some point and break it off whether it's above and below and whether they're paying their fair share. But we don't think that the gradation between, you know, 92 percent and 93 percent is significant given all the uncertainty and the estimates and judgment in a cost of service study. So, we would say as long as they're in that range they're the same as each other. (Emphasis added)

On page 12-4, Table 12-1 shows that $786.4 thousand in total revenue reduction from FEI's rate design proposals occur primarily due to a revenue reduction of $754.2 thousand associated with the proposed RS 22 rate changes. FEI further states: "As RS 1 is the only rate schedule with an R:C ratio of less than 100%, FEI proposes to shift the $786.4 thousand deficit to RS 1. The shift represents an approximate annual bill impact of 0.1% for RS 1 customers and results in an increase to the Delivery Charge per GJ by $0.011."

On page 12-6, FEI states:

> As shown in Table 12-2 [COSA R:C and M:C Results after Rate Design Proposals], all rate schedules are within the range of reasonableness of 90% to 110%, except for RS 22A, and RS 6/RS 6P." FEI further states: "As RS 1 is the only rate schedule with an R:C ratio of less than 100%, FEI proposes to shift the $61.7 thousand deficit to RS 1. The shift represents an approximate annual bill impact of 0.01% (rounding to 0.0%) for RS 1 customers.

67.1 Given FEI's SRP statement above, please explain why FEI chose to distinguish between the RS 1 R:C ratio of 95.6% (less than 100%) and those of the other rate

classes with R:C ratios above 100% but below 110% and use this distinction as a factor to justify shifting all of the revenue deficits to RS 1.

Response:

The distinction was made not only because the RS 1 R:C ratio was the only R:C ratio below 100 percent, but also because RS 1 has the most capacity to absorb these amounts with the lowest bill impact to individual customers. This approach also reflects standard utility practice with respect to revenue rebalancing.

The range of reasonableness should be taken as the guideline for whether revenue rebalancing needs to occur for particular rate schedules. All rate schedules with RC ratios within the range of reasonableness should be considered equal in terms of not needing rebalancing. However, once it has been determined that rebalancing should be done, because one or more rate schedules are outside the range of reasonableness or for other reasons, judgment needs to be exercised as to the most appropriate manner to spread the rebalancing. In applying judgment, it is standard utility practice with respect to revenue rebalancing to take into account the R:C ratios of the rate schedules and move rate schedules closer to unity. From a practical perspective, this practice is likely more acceptable to customer groups, since for customer groups above unity but within the range of reasonableness, the approach implied by the question would move their R:C ratios further away from unity. In accordance with this standard practice, FEI adjusted rate schedules above the range of reasonableness to the nearest range of reasonableness boundary (i.e. closer to unity) and applied the revenue rebalancing amounts to rate schedules below unity. As stated above, this approach was also favoured because RS 1 has the most capacity to absorb the revenue with the lowest bill impact to individual customers.

While it would not be unreasonable for the revenue reduction and rebalancing amounts to be shared among all rate schedules within the range of reasonableness, this would not reflect standard practice or FEI's recommended approach for the reasons discussed above.

67.2 Please explain if the revenue reduction of $786.4 thousand and the rebalancing amount of $61.7 thousand should be shared among all rate classes that had an R:C ratio within the range of reasonableness in order to be consistent with FEI's own SRP statement above, since "as long as they're in that range they're the same as each other."

Response:

Please refer to the response to BCUC-FEI IR 2.67.1.

67.3 Please revise Table 12-2, Table 12-3 and Table 12-4 to show the impact of sharing the revenue reduction of $786.4 thousand and the rebalancing amount of $61.7 thousand among all rate classes that were within the 90% to 110% range of reasonableness.

Response:

For rate schedules with R:C ratios between 90 percent to 110 percent range of reasonableness FEI has used that rate schedule's delivery margin to allocate the revenue reduction of $786.4 thousand and the rebalancing amount of $61.7 thousand. FEI provides updated tables below.

Table 12-2 (adjusted): COSA R:C and M:C results after Rate Design Proposals (updated)

Rate Schedule	Initial COSA		Revenue Shift ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals	
	R:C	M:C			R:C	M:C
Rate Schedule 1 *Residential Service*	95.6%	93.1%	499.1	0.1%	96.4%	94.3%
Rate Schedule 2 *Small Commercial Service*	101.3%	102.5%	(1,034.3)	-0.4%	102.3%	104.3%
Rate Schedule 3/23 *Large Commercial Sales and Transportation Service*	101.6%	103.3%	1,277.5	0.6%	103.7%	107.7%
Rate Schedule 5/25 *General Firm Sales and Transportation Service*	104.9%	112.2%	86.6	0.1%	106.4%	116.1%
Rate Schedule 6/6P *Natural Gas Vehicle Service*	131.2%	159.1%			131.7%	160.4%
Rate Schedule 22A *Transportation Service (Closed) Inland Service Area*	109.5%	109.8%			113.0%	113.4%
Rate Schedule 22B *Transportation Service (Closed) Columbia Service Area*	99.7%	99.7%	2.7	0.1%	103.2%	103.2%
Rate Schedule 22 *Large Volume Transportation Service*	1425.5%	1864.4%	(754.2)	-3.4%	100.0%	100.0%

Rate Schedule *(rates not set using allocated costs)*	Initial COSA		Revenue Shift ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals	
	R:C	M:C			R:C	M:C
Rate Schedule 4 *Seasonal Firm Gas Service*	147.4%	550.9%	13.3	1.9%	150.2%	578.3%
Rate Schedule 7/27 *General Interruptible Sales and Transportation Service*	139.6%	712.3%	(90.7)	-0.3%	139.3%	713.6%

1 **Table 12-3 (adjusted): COSA R:C and M:C results after Rate Design Proposals and Rebalancing**

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate Schedule 1 *Residential Service*	96.4%	94.3%	39.2	0.0%	96.4%	94.3%
Rate Schedule 2 *Small Commercial Service*	102.3%	104.3%	11.0	0.0%	102.3%	104.3%
Rate Schedule 3/23 *Large Commercial Sales and Transportation Service*	103.7%	107.7%	8.1	0.0%	103.7%	107.7%
Rate Schedule 5/25 *General Firm Sales and Transportation Service*	106.4%	116.1%	3.2	0.0%	106.4%	116.1%
Rate Schedule 6/6P *Natural Gas Vehicle Service*	131.7%	160.4%	(61.7)	-16.5%	110.0%	119.0%
Rate Schedule 22A *Transportation Service (Closed) Inland Service Area*	113.0%	113.4%			113.0%	113.4%
Rate Schedule 22B *Transportation Service (Closed) Columbia Service Area*	103.2%	103.2%	0.2	0.0%	103.2%	103.2%
Rate Schedule 22 *Large Volume Transportation Service*	100.0%	100.0%			100.0%	100.0%

Rate Schedule *(rates not set using allocated costs)*	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate Schedule 4 *Seasonal Firm Gas Service*	150.2%	578.3%			150.2%	578.3%
Rate Schedule 7/27 *General Interruptible Sales and Transportation Service*	139.3%	713.6%			139.3%	713.6%

2

Table 12-4 (adjusted): FEI Rate Proposal Summary

Rate Schedule	Estimated COSA-Based 2018 Rates	Proposed Rate Changes	Estimated 2018 Rates After Proposed Changes
RS 1 – Residential			
Basic Charge (daily)	$0.3890	$0.0195	$0.4085
Delivery Charge ($/GJ)	$4.821	($0.079)	$4.742
RS 2 – Small Commercial			
Basic Charge (daily)	$0.8161	$0.1338	$0.9499
Delivery Charge ($/GJ)	3.850	($0.182)	3.668
RS 3/RS 23 – Large Commercial			
Basic Charge (daily)	$4.3538	$0.4402	$4.7940
Delivery Charge ($/GJ)	$3.189	$0.004	$3.193
RS 4			
Basic Charge (Monthly)	$439	Nil	$439
Delivery Charge ($/GJ) Off Peak	$1.278	$0.114	$1.392
Delivery Charge ($/GJ) Extended Period	$2.183	($0.018)	$2.165
RS 5/RS 25			
Basic Charge (Monthly)	$587.00	Nil	$587.00
Delivery Charge ($/GJ)	$0.887	$0.003	$0.890
Demand Charge ($/Month/GJ)	$21.596	$3.00	$24.596
RS 6/RS 26			
Basic Charge (Monthly)	$61	Nil	$61
Delivery Charge ($/GJ)	$4.873	($1.318)	$3.555
RS 7/RS 27			
Basic Charge (Monthly)	$880.00	Nil	$880.00
Delivery Charge ($/GJ)	$1.455	($0.012)	$1.443
RS 22			
Basic Charge (Monthly)	$3,664.00	Nil	$3.664.00
Firm Demand Charge ($/Month/GJ)	n/a		$22.478
Firm MTQ ($/GJ)	n/a		$0.150
Interruptible MTQ ($/GJ)	$1.060	($0.171)	$0.889

67.3.1 Please explain, with calculations, how FEI would determine the sharing amount or allocation for each rate class.

Response:

Please refer to the response to BCUC-FEI IR 2.67.3.

C. CHAPTER 8 – RATE DESIGN FOR COMMERCIAL CUSTOMERS

68.0 Reference: RATE DESIGN FOR COMMERCIAL CUSTOMERS

Exhibit B-5, BCUC IR 21.6, pp. 94–95

Economic crossover point

In response to BCUC IR 21.6, FEI stated that "a review of revenue to cost ratios and rates is to be undertaken by FEI approximately every five years, and any necessary revenue rebalancing and changes to rates, including the realignment of the crossover point, can be done at that time."

FEI further stated that:

> ...if a trigger threshold difference were to be established, it should be large enough to leave a persistent price signal if left unaddressed. For that reason, FEI suggests that it be set at a plus or minus 500 GJ difference between the economic crossover point and the RS 2 – RS 3 consumption threshold… 500 GJ of annual load difference would be outside the year-to-year swings in consumption that might be expected to occur for customers with annual consumption near the 2,000 GJ level. A plus-or-minus 500 GJ movement in the economic crossover would also be outside the range of fluctuations in the economic crossover caused by gas cost changes.

68.1 Please provide the historical rates, including each rate component but excluding the rate riders, for RS 2 and RS 3 for the past 5 years, and what the crossover point is at the end of each rate change in a functional excel spreadsheet.

Response:

The following table shows the Basic Charge ($/Day), Delivery Charge ($/GJ), Storage and Transportation Charge ($/GJ), Cost of Gas ($/GJ), and Economic Crossover annual volume (GJ) for Rate Schedules 2 and 3.

The economic crossover volume is calculated as follows:

(Basic Charge RS3 – Basic Charge RS2) X 365.25 days, which is divided by

(Sum of Delivery Charge, Storage & Transportation Charge and Cost of Gas for RS2) minus

(Sum of Delivery Charge, Storage & Transportation Charge and Cost of Gas for RS3).

A functional spreadsheet is included as Attachment 68.1.

	2013			
	Jan. 1st	Apr. 1st	July 1st	Oct. 1st
Rate Schedule 2				
Basic Charge $ / Day	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161
Delivery Charge $ / GJ	$ 3.099	$ 3.099	$ 3.006	$ 3.006
Storage & Transportation Charge $ / GJ [1)]	$ 1.265	$ 1.265	$ 1.265	$ 1.265
Cost of Gas Charge $ / GJ	$ 2.977	$ 2.977	$ 3.913	$ 3.272
Rate Schedule 3				
Basic Charge $ / Day	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538
Delivery Charge $ / GJ	$ 2.617	$ 2.617	$ 2.543	$ 2.543
Storage & Transportation Charge $ / GJ [1)]	$ 0.999	$ 0.999	$ 0.999	$ 0.999
Cost of Gas Charge $ / GJ	$ 2.977	$ 2.977	$ 3.913	$ 3.272
Economic Crossover (GJ)	1,727	1,727	1,772	1,772

	2014				
	Jan. 1st	Apr. 1st	July 1st	Oct. 1st	Nov. 1st
Rate Schedule 2					
Basic Charge $ / Day	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161
Delivery Charge $ / GJ	$ 3.064	$ 3.064	$ 3.064	$ 3.064	$ 3.079
Storage & Transportation Charge $ / GJ [1)]	$ 1.392	$ 1.392	$ 1.392	$ 1.392	$ 1.392
Cost of Gas Charge $ / GJ	$ 3.272	$ 4.640	$ 4.640	$ 3.781	$ 3.781
Rate Schedule 3					
Basic Charge $ / Day	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538
Delivery Charge $ / GJ	$ 2.587	$ 2.587	$ 2.587	$ 2.587	$ 2.599
Storage & Transportation Charge $ / GJ [1)]	$ 1.184	$ 1.184	$ 1.184	$ 1.184	$ 1.184
Cost of Gas Charge $ / GJ	$ 3.272	$ 4.640	$ 4.640	$ 3.781	$ 3.781
Economic Crossover (GJ)	1,886	1,886	1,886	1,886	1,878

Note:

1) For 2013 and 2014 have used the Storage and Transportation Charge approved for the Lower Mainland.

	2015				
	Jan. 1st	Apr. 1st	July 1st	Aug. 1st	Oct. 1st
Rate Schedule 2					
Basic Charge $ / Day	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161
Delivery Charge $ / GJ	$ 3.411	$ 3.411	$ 3.411	$ 3.442	$ 3.442
Storage &Transportation Charge $ / GJ	$ 1.397	$ 1.397	$ 1.397	$ 1.397	$ 1.397
Cost of Gas Charge $ / GJ	$ 3.781	$ 2.486	$ 2.486	$ 2.486	$ 2.486
Rate Schedule 3					
Basic Charge $ / Day	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538
Delivery Charge $ / GJ	$ 2.854	$ 2.854	$ 2.854	$ 2.877	$ 2.877
Storage &Transportation Charge $ / GJ	$ 1.167	$ 1.167	$ 1.167	$ 1.167	$ 1.167
Cost of Gas Charge $ / GJ	$ 3.781	$ 2.486	$ 2.486	$ 2.486	$ 2.486
Economic Crossover (GJ)	1,642	1,642	1,642	1,625	1,625

	2016			
	Jan. 1st	Apr. 1st	July 1st	Oct. 1st
Rate Schedule 2				
Basic Charge $ / Day	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161
Delivery Charge $ / GJ	$ 3.523	$ 3.523	$ 3.523	$ 3.523
Storage &Transportation Charge $ / GJ	$ 1.133	$ 1.133	$ 1.133	$ 1.133
Cost of Gas Charge $ / GJ	$ 1.719	$ 1.141	$ 1.141	$ 2.050
Rate Schedule 3				
Basic Charge $ / Day	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538
Delivery Charge $ / GJ	$ 2.939	$ 2.939	$ 2.939	$ 2.939
Storage &Transportation Charge $ / GJ	$ 0.940	$ 0.940	$ 0.940	$ 0.940
Cost of Gas Charge $ / GJ	$ 1.719	$ 1.141	$ 1.141	$ 2.050
Economic Crossover (GJ)	1,663	1,663	1,663	1,663

	2017			
	Jan. 1st	Apr. 1st	July 1st	Oct. 1st
Rate Schedule 2				
Basic Charge $ / Day	$ 0.8161	$ 0.8161	$ 0.8161	$ 0.8161
Delivery Charge $ / GJ	$ 3.523	$ 3.523	$ 3.523	$ 3.523
Storage &Transportation Charge $ / GJ	$ 1.020	$ 1.020	$ 1.020	$ 1.020
Cost of Gas Charge $ / GJ	$ 2.050	$ 2.050	$ 2.050	$ 2.050
Rate Schedule 3				
Basic Charge $ / Day	$ 4.3538	$ 4.3538	$ 4.3538	$ 4.3538
Delivery Charge $ / GJ	$ 2.939	$ 2.939	$ 2.939	$ 2.939
Storage &Transportation Charge $ / GJ	$ 0.851	$ 0.851	$ 0.851	$ 0.851
Cost of Gas Charge $ / GJ	$ 2.050	$ 2.050	$ 2.050	$ 2.050
Economic Crossover (GJ)	1,716	1,716	1,716	1,716

68.1.1 Based on the information provided above, please comment on whether the frequency of realigning the economic crossover point every 5 years is supported by the fluctuation in the crossover point experienced in the past 5 years.

Response:

The results from the past five years provided in response to BCUC-FEI IR 2.68.1 show that the maximum crossover volume was 1,886 GJ (2014) and the minimum crossover volume was 1,625 GJ (2015), which is a difference of 261 GJ or approximately 50 percent of the recommended 500 GJ trigger threshold. This result supports the view that a 5-year interval between assessments of the economic crossover point, and how much it has deviated from the RS 2 – RS 3 consumption threshold, is reasonable because the change in the economic crossover difference is well within the 500 GJ level over the past five years.

FEI notes that, since the Cost of Gas Charge (commodity) is the same for RS 2 and RS 3 and the Basic Charge has not varied over the time frame shown, the change in the economic crossover over the five years is dependent only on the relative changes in the Delivery Charge and the Storage and Transportation Charge.

68.2 Please comment on whether the trigger threshold to realign the economic crossover point of +/- 500 GJ accounts for the magnitude of the bill difference between consuming 2000 GJ under RS 2 and RS 3. If not, why not?

Response:

Implicitly, the trigger threshold to realign the economic crossover would account for the magnitude of the bill difference at +/- 500 GJ.

The following example shows that using the proposed rates, leaving the Basic Charge unchanged, the difference in the energy related charges between RS 2 and RS 3 would need to decrease by fourteen cents per GJ to reach the trigger threshold at 2,500 GJ. The reduction in the difference in the energy related costs of fourteen cents equates to a $350 annual variance ($0.14 x 2,500 GJ). The $350 bill variance represents an approximate 2 percent difference on an RS 2 or RS 3 customer's annual bill at 2,500 GJ of consumption.

	Proposed Rates at 2,000 GJ Crossover
Rate Schedule 2	
Basic Charge $ / Day	$0.9485
Delivery Charge $ / GJ	$3.664
Cost of Gas $ / GJ	$3.967
Total Energy Related Charges	$7.631
Rate Schedule 3	
Basic Charge $ / Day	$4.7895
Delivery Charge $ / GJ	$3.189
Cost of Gas $ / GJ	$3.741
Total Energy Related Charges	$6.930
Annual Difference in Basic Charge ($4.7895 - $0.9485) x 365.25 days =	$1,402.93
At Proposed Rates Difference in Energy Related Charges ($7.631 - $6.930) =	$0.701
At 2,500 GJ Economic Crossover Variance in energy Related Charge ($1,402.93 / 2,500 GJ) =	$0.561
Change in Energy Related Variance $ / GJ	$0.140
Annual Value of Energy Related Change at 2,500 GJ	$350

1

2

69.0 Reference: RATE DESIGN FOR COMMERCIAL CUSTOMERS

Exhibit A2-10, Section 3.3.2.2, p. 15; Exhibit B-5, BCUC IR 22.1, p. 96

Economic crossover point misalignment

In response to BCUC IR 22.1, FEI states that:

> General increases from revenue requirements were applied to the Basic Charge and Delivery Charge in equal percentage until 2010. Since 2010, the recovery of increased revenue requirements has been flowed through only on the Delivery Charge… The result is that, other components such as gas costs being equal, the economic crossover will decrease gradually.

On page 15 under section 3.3.2.2 of Exhibit A2-10, Elenchus explains the advantages and disadvantages of increasing both the fixed and variable charges by the same proportion as the approved revenue requirement increase.

69.1 Please comment on whether an equal increase to both the Basic Charge and Delivery Charge to recover increased revenue requirements would better maintain the alignment or minimize the gradual misalignment of the economic crossover point overtime versus having a constant Basic Charge and only increasing the Delivery Charge on an annual basis.

Response:

Based on the analysis FEI has undertaken below, FEI concludes that an equal percentage increase does not better maintain the alignment of the economic crossover point.

As discussed in the response to BCUC-FEI IR 2.68.1.1, for the years 2013 through 2017 when only the Delivery Charge is adjusted for revenue requirement changes, the difference between the minimum and maximum economic crossover (inclusive of differences in the commodity and midstream rates) was 261 GJ. As shown in Table 1 below, for the same years 2013 through 2017, if the approved percentage change is applied to both the Basic Charge and the Delivery Charge, the difference between the minimum and the maximum economic crossover is 420 GJ. Although the economic crossover is greater than 2,000 GJ, the change over the five year period is only 420 GJ from the minimum economic crossover to the maximum economic crossover which is also less than the 500 GJ threshold. The results suggest that applying revenue requirement increases to both the Basic and Delivery Charges actually increases the misalignment of the economic crossover point, rather than minimizing the gradual misalignment of the economic crossover point as posed in the question.

Table 1: RS 2 & RS 3 Basic Charge, Delivery Charge From Applying Equal % Revenue Requirement Increases Plus Approved Storage & Transportation Charges and Derived Annual Economic Crossover Volume (GJ)

Year	2013	2014	2015	2016	2017
Rate Schedule 2					
Basic Charge $ / Day	$0.9240	$0.9412	$0.9479	$0.9649	$0.9649
Delivery Charge $ / GJ	$2.807	$2.859	$2.879	$2.931	$2.931
Storage & Transportation Charge $ / GJ[1)]	$1.265	$1.392	$1.397	$1.133	$1.020
Rate Schedule 3					
Basic Charge $ / Day	$4.9297	$5.0214	$5.0571	$5.1476	$5.1476
Delivery Charge $ / GJ	$2.419	$2.464	$2.481	$2.525	$2.525
Storage & Transportation Charge $ / GJ[1)]	$0.999	$1.184	$1.167	$0.940	$0.851
Economic Crossover (GJ)	2,237	2,471	2,390	2,550	2,657
Difference in Minimum & Maximum Crossover (2,657 GJ – 2,237 GJ) =				420	

Note: 2013 and 2014 Storage & Transportation Charges are for the FEI (pre-amalgamation).

In Table 2, FEI has applied the year's revenue requirement (excluding cost of gas) percentage changes from 2010 on to both the Basic Charge and Delivery Charge for RS 2 and RS 3). These rates are used in the calculation of the economic crossover in Table 1 above.

Table 2: RS 2 & RS 3 Basic & Delivery Charges Calculated on Equal % Increase for the Years 2010 – 2017

Year	Rates Applied On	% Increase	Rate Schedule 2		Rate Schedule 3	
			Basic Charge $ / Day	Delivery Charge $ / GJ	Basic Charge $ / Day	Delivery Charge $ / GJ
2009			$0.8161	$2.479	$4.3538	$2.136
2010	2009 Rates	0%	$0.8161	$2.479	$4.3538	$2.136
2011	2009 Rates	2.32%	$0.8350	$2.537	$4.4548	$2.186
2012	2011 Rates	4.42%	$0.8719	$2.649	$4.6517	$2.283
2013	2011 Rates	10.66%	$0.9240	$2.807	$4.9297	$2.419
2014	2013 Rates	1.86%	$0.9412	$2.859	$5.0214	$2.464
2015	2014 Rates	0.71%	$0.9479	$2.879	$5.0571	$2.481
2016	2015 Rates	1.79%	$0.9649	$2.931	$5.1476	$2.525
2017	2016 Rates	0%	$0.9649	$2.931	$5.1476	$2.525

D. CHAPTER 9 – RATE DESIGN FOR INDUSTRIAL CUSTOMERS

70.0 Reference: RATE DESIGN FOR INDUSTRIAL CUSTOMERS

Exhibit B-5, BCUC IR 30.2, pp. 147-148; BCUC IR 31.3.1, p. 156

Economic crossover point between RS 3/23 and RS 5/25

In response to BCUC IR 30.2, FEI listed one benefit and five disadvantages of using a minimum load factor eligibility criterion for RS 5 and RS 25 in a manner similar to Union Gas, Enbridge Gas or Gazifere. FEI also stated:

> FEI considers that the preferable option is to design the rate so that it is "self-policing", and allows customers to choose the service they would like or need on a prospective basis based on the customer's economics and business needs. Rates should be designed so that customers can choose the appropriate service they need based on how the billing determinants, Daily Demand and Annual Demand, are derived, coupled with the price(s) for the Demand Charge and Delivery Charge. If the proper price signals are in place, as proposed, then customers without a sufficient load factor and / or annual load will not choose to take service under RS 5 or RS 25.

70.1 Please explain, in FEI's view, some possible reasons why Union Gas, Enbridge Gas and Gazifere, would utilize a minimum load factor eligibility criterion given the several disadvantages and only one benefit listed by FEI, as opposed to using FEI's preferred option whereby the rate is designed to be "self-policing" as described in the above preamble.

Response:

FEI does not know the reasons those utilities opted to offer specific rates with a minimum load factor, but notes that those rate options have been in place for at least 10 years. Possibly, at the time of adoption of the minimum load factor, it was used as a means to segment customers between those with process load and those that have mainly a weather-dependent heating load.

In response to BCUC IR 31.3.1, FEI stated:

> After the Commission's Decision on this Application, FEI proposes to review the account history of all RS 3/23 and 5/25 customers to see if there are customers who should consider migrating from General Firm Service to Large Commercial Service or if there are Large Commercial Service customers who may be better off being served under General Firm

Service. The discussions with customers will need to consider the customers' expected future consumption as well as their historical demand profile.

70.2 Please explain if FEI plans to review the account history of all RS 3/23 and RS 5/25 customers and host discussions with each customer regarding their appropriate rate class on an annual basis going forward.

Response:

FEI continually reviews the account histories of its customers across all of the commercial/industrial rate schedules to identify customers that may need to be reclassified into a different rate schedule or may benefit from a potential rate schedule change. The nature of the analysis may take into account a number of variables such as interruptible or firm service, bundled service or delivery service only. The frequency of the analysis and nature of the communication varies depending on the rate schedule and the outcome of the analysis. FEI proposed to undertake this specific review in case the economic crossover point changes as a direct result of the rate design decision as this could impact a larger number of customers. If the analysis shows that customers are impacted and there may be better rate alternatives, FEI would inform the customer of their options. For the majority of customer in these rates schedules, no change in their rate schedule or type of service is warranted, so having annual meetings with each customer, of which there are thousands, would be impractical and largely unnecessary.

70.2.1 If not, please explain how often FEI intends to host these discussions.

Response:

Please refer to the response to BCUC-FEI IR 2.70.2.

71.0 Reference: RATE DESIGN FOR INDUSTRIAL CUSTOMERS

Exhibit B-1, Section 9.8.1.4, p. 9-39; Section 9.8.5.4, p. 9-48; Exhibit B-7, BC Hydro IR 1.1, p. 1; Exhibit B-5, BCUC IR 33.2, pp. 167–168; BCUC IR 34.3, pp. 170–172

Large industrial contract customers

On page 9-39 of Exhibit B-1, FEI states:

> There are two Large Industrial Contract Customers located on Vancouver Island and the Sunshine coast. These customers are the VIGJV and BC Hydro IG. The VIGJV provides for the natural gas needs of five pulp mills and has a service contract for firm contract demand of 13,000 GJ per day which expires on December 31, 2017. FEI anticipates as an interim measure to extend the existing VIGJV contract until the Commission approved Rate Design becomes effective for RS 22. BC Hydro IG has a firm service contract for 40,000-50,000 GJ per day which expires in April 2022.

On page 9-48 of Exhibit B-1, FEI states:

> … FEI will create a firm rate for RS 22, VIGJV and BC Hydro IG based on a cost allocation from the COSA model. Under this option, Tariff Supplement G-21 for Creative Energy would be terminated and the VIGJV could choose to become a RS 22 customer after its contract expires. The contract for BC Hydro IG would be included as a Tariff Supplement and, after the contract expires, BC Hydro could choose to become a RS 22 customer.

In response to BC Hydro IR 1.1, FEI confirmed that BC Hydro's existing Transportation Service Agreement (TSA) contains a renewal provision that allows BC Hydro to extend the existing TSA up to 2042. FEI further explained that:

> The current renewal provision in the BC Hydro Transportation Service Agreement effective January 1, 2008 allows for a maximum term of 35 years. If BC Hydro chooses to extend the agreement beyond April 2022, the rates applicable to the extension need to be approved by the Commission. After the initial term ends in April of 2022, BC Hydro could also elect to become an RS 22 or RS 50 customer for service to its Island Generation facility.

71.1 Please explain if the TSA with the Vancouver Island Gas Joint Venture (VIGJV) contains a renewal provision in a similar manner to that included BC Hydro's existing TSA.

Response:

In 2004, the Renewal Period of the TSA with the Vancouver Island Gas Joint Venture (VIGJV) was extended to December 31, 2012. The agreement also provided that the TSA could be extended for a further five year term to December 31, 2017. The VIGJV chose to exercise that TSA extension provision. The current TSA agreement does not currently include a renewal or extension provision beyond December 31, 2017.

71.1.1 Please state the year up to which the TSA with VIGJV may be extended under a renewal provision, if any.

Response:

Please refer to the response to BCUC-FEI IR 2.71.1.

In response to BCUC IR 34.3, FEI provided a table to discuss the similarities and differences between (a) the average RS 22 customer, (b) Creative Energy, (c) VIGJV and (d) BC Hydro IG. In the response, FEI showed RS 22 and Creative Energy annual demand including both interruptible and firm projected consumption, but included only the current firm contract demand for BC Hydro IG and VIGJV.

71.2 Please update the table in rows (i) and (iii) to include interruptible demand for VIGJV and BC Hydro IG and update the discussion on similarities and differences for each of the two rows.

Response:

FEI has updated the table in rows (i) and (iii) based upon 2016 Actuals for the VIGJV of 7,488 TJ which includes the interruptible demand. FEI discovered a miscalculation in the previous IR response and has also updated BC Hydro IG volumes accordingly. The original response to BCUC IR 1.34.3 used 40 TJ/day in calculating BC Hydro IG's annual throughput when it should have been based on 45 TJ/day of Firm Contract Demand.

	Particulars	RS 22[1]	Creative Energy	VIGJV	BCH IG
i)	# of Customers	26	1	1	1
	Forecast Annual Throughput (TJ)				
	2016	11,441 TJ	1,748 TJ	7,488 TJ	16,425 TJ
	2017	11,323 TJ	1,748 TJ	7,488 TJ	16,425 TJ
	2018	11,359 TJ	1,748 TJ	7,488 TJ	16,425 TJ
	2019	11,385 TJ	1,748 TJ	7,488 TJ	16,425 TJ
	2020	11,381 TJ	1,748 TJ	7,488 TJ	16,425 TJ
	The forecast demand for all customers in the group is currently expected to be stable over time. It should be noted for comparison purposes that the VIGJV is listed as one customer, but is made up of five separate sites with an average consumption per site of 1498 TJ (7488 TJ/ 5 sites). The VIGJV forecast is based upon their current firm contract demand of 13 TJ/day and 2,743 TJ of Interruptible demand. BC Hydro IG is based on the current firm contract demand of 45 TJ/day; however, BC Hydro IG is a dispatchable facility and the facility only runs on certain days and therefore is not expected to have any interruptible consumption, and its 2016 actual usage (323 TJ) is very small compared to the firm contracted capacity (16,425 TJ). The forecast for RS 22 and Creative Energy includes both interruptible and firm projected consumption.				
ii)	Before Rate Design Proposals				
	R:C Ratio	1425.5%		N / A	N / A
	M:C Ratio	1864.4%		N / A	N / A
	The R:C & M:C ratio for the VIGJV and BC Hydro IG are not applicable, but what is important is that VIGJV and BC Hydro IG are paying FEI for capacity on a take-or-pay basis. The interruptible RS 22 customers are not allocated transmission and distribution costs on a peak day as they are deemed to be interrupted; therefore the M:C and R:C ratios are irrelevant.				
iii)	2016 Forecast Throughput (TJ)				
	Firm	Nil	732 TJ	4,745 TJ	16,425 TJ
	Interruptible	11,441 TJ	1,016 TJ	2,743 TJ	Nil
	Firm DTQ	Nil	2 TJ	13 TJ	45 TJ
	All these customers have an interruptible component to their agreement and need to be able to handle interruption of some capacity.				
iv)	Customers' Attributes				
	CP Load Factor[2]	N / A	100%	97.1%	3.8%
	NCP Load Factor (2016 Billed Actual)	66.4%	35.8%	48.8%	2.4%
	Other Attributes				
v)	Location on FEI's System & Special Circumstances	Lower Mainland Transmission & Distribution System	Lower Mainland Transmission & Distribution System	Vancouver Island Transmission System	Vancouver Island Transmission System
	Although the RS 22 customers are all served off the Lower Mainland Distribution system, some of them are very close to the Transmission system and would generally all be served off larger distribution pipe. The VIGJV and BC Hydro are served from the Vancouver Island Transmission system which is off of the FEI Lower Mainland transmission system.				

	Particulars	RS 22[1]	Creative Energy	VIGJV	BCH IG
vi)	Incremental Cost to Serve	Customer Stations, Measurement & Billing, Customer Relations, WINS & Gas Supply	Customer Station, Measurement & Billing, Customer Relations, WINS & Gas Supply	Customer Stations, Measurement & Billing, Customer Relations, WINS & Gas Supply	Customer Station, Measurement & Billing, Customer Relations, WINS & Gas Supply
	As all these customers are already on the system, the only incremental costs related to serve these customers is the ongoing O&M, taxes and depreciation.				

Notes:

[1] Includes only the RS 22 Non-Bypass customers, but also excludes Creative Energy which is a RS 22 Non-Bypass customer, as it is shown separately.

[2] CP Load Factor is calculated based on Firm Load consumption, i.e., it excludes interruptible volume. The NCP Load Factor includes all volumes, i.e., both firm and interruptible volume. The reason for excluding the interruptible volume from the CP Load Factor is that the Company's obligation for delivery is the firm DTQ less any peak shaving arrangement FEI has with the customer.

71.3 Please complete the attached Microsoft Excel spreadsheets (1) and (2) to show the breakdown by rate schedule and contract customer of (i) annual volumes, (ii) the allocations for the delivery cost of service based on existing and proposed rates and (iii) the total revenue.

Response:

Please refer to the electronic file in Attachment 71.3 for the requested breakdown by Rate Schedule and Contract Customer of annual volumes, allocated cost of the delivery cost of service, existing revenues (excluding commodity and midstream cost of gas recovery) and proposed revenues (excluding commodity and midstream cost of gas).

The annual volumes are forecast 2016 test year quantities, except for BC Hydro IG; the 2016 forecast was for 14,945 TJs. As explained in Section 6 for Known and Measurable Changes related to the cancelation of the BC Hydro Burrard Thermal agreement, the firm contract demand for BC Hydro IG is now 45 TJs per day. The 45 TJ per day of firm demand equates to annual demand of 16,425 TJ (45 TJ x 365 days).

71.3.1 For the industrial and contract customers, please explain the reason for any significant differences in the allocation of costs between the initial COSA (based on existing rates) and the Final COSA (based on FEI's proposals in the Application). If an explanation was provided in the Application please provide reference to that explanation.

Response:

In the initial COSA at existing rates (worksheet: 2, Approved 2016 Test Yr), the revenue for the contract customers BC Hydro IG and VIGJV were allocated to all other customers as an offset to the other customers' cost of service. As such, no cost allocation was made to these two industrial contract customers. All revenues for RS 22 were included in the calculation of the R:C ratio for RS 22 Non-Bypass customers on Schedule 1 of the COSA, although RS 22 Non-Bypass rates are not cost-based as described in Section 6.5.2.

In the final COSA supporting proposed rates, the VIGJV, BCH IG and RS 22 customers were grouped together and allocated costs based on the number of customers and firm demand of that group. To calculate the R:C ratios of this group, FEI used their firm revenue. The interruptible revenue of this group was allocated to all other customers as an offset to other customers' cost of service. The Interruptible revenue of this group was used as an offset to the cost of service because interruptible service does not receive any allocation of demand-related costs, and including it in the R:C calculation would obscure the ratio results for firm service versus a combined firm / interruptible result. The allocated costs of this group were used to derive their proposed rates.

In Exhibit B-1, Section 6, Pages 6-8/9, FEI explains the COSA treatment for the contract industrial customers. In Exhibit B-1, Section 9.8.5.2, Pages 9-46/47, FEI describes for the Large Industrial rate design for the proposed RS 22 (which would include the contract customers) that the firm rate would be based on the final COSA that included a cost allocation for firm customers.

71.4 Please complete the attached Microsoft Excel spreadsheet (3) to show the 2016 actual annual throughput for each rate schedule and contract customer.

Response:

Please refer to Attachment 71.4 for the completed Excel spreadsheet.

71.4.1 Please explain the reason for any significant differences between the actual 2016 figures and the forecast figures provided by FEI in response to BCUC IR 33.1 in Exhibit B-5.

Response:

The most significant difference would be that BC Hydro IG is run as a dispatchable facility that is rarely operated. As such, the actual usage (323 TJ) is very small compared to the firm contracted capacity (16,425 TJ). In addition, there was no VIGJV IT forecast for 2016 (2,743 TJ actual). For RS 22A and RS 22B, the firm capacity was not used every day and there was some slightly higher interruptible usage. RS 22 interruptible usage was also slightly higher than forecast.

In response to BCUC IR 33.2, FEI provided a table to show that the forecast of volume for RS 22, 22A, 22B, VIGJV and BC Hydro IG as a percentage of the total 2016 forecast throughput is 22.7 percent.

71.5 Please confirm that this table represents figures for FEI's 2016 forecast throughput as requested in BCUC IR 33.2.

Response:

Confirmed.

The following table confirms that the volumes provided in the response to BCUC-FEI IR 1.33.2 tie to the volumes in the compliance filing dated December 11, 2015, Section 11, Schedule 18, Volume and Revenue for the Year Ending December 31, 2016. The subtotal for RS 22 in the compliance filing is the same as the subtotal for RS 22, RS 22A and RS 22B provided in the response in BCUC-FEI IR 1.33.2.

	Volume (TJ)
Compliance Filing	
Rate Schedule 22 – Firm Service	9,878.9
Rate Schedule 22 – Interruptible Service	17,616.4
Subtotal	**27,495.3**
BC Hydro (ICP	14,945.0
VIGJV	4,758.0
Total	**47,198.3**

	Volume (TJ)
BCUC IR 1.33.2	
Rate Schedule 22	13,164.9
Rate Schedule 22A	9,048.5
Rate Schedule 22B	5,281.9
Subtotal	**27,495.3**
BC Hydro IG	14,945.0
VIGJV	4,758.0
Total	**47,198.3**

71.5.1 If not confirmed, please provide a version of the table which represents FEI's 2016 forecast throughput represented by large volume transportation customers, including RS 22, RS 22A, RS 22B, VIGJV and BC Hydro IG.

Response:

Please refer to the response to BCUC-FEI IR 2.71.5.

FORT NELSON SERVICE AREA

E. CHAPTER 13 – APPROVALS SOUGHT FOR FORT NELSON

72.0 Reference: APPROVALS SOUGHT

Exhibit B-1-1, Section 13.1, p. 13-2

Renaming of rates

On page 13-2 of Exhibit B-1-1, FEI requests "[a]pproval to rename Fort Nelson's existing Rates to the following to align with FEI's Rate Schedule naming convention" and then lists the rate schedules to be renamed.

72.1 Please confirm, or otherwise explain, that in addition to renaming the rate schedules, FEI is requesting to replace the content of each of the rate schedules listed with content largely similar to the equivalent rate schedules for FEI.

Response:

Confirmed. As shown on page 13-4 of the Approvals Sought section[6] and in Appendix 13-6 to the Application (Exhibit B-1-1), the content of the rate schedules will be replaced with content largely similar to or the same as the equivalent FEI rate schedule. This particular approval sought is reflected in item 26 of the Draft Order in Appendix 1-2.

72.2 If the Commission approves FEI's requests as outlined in Section 13.1 of Exhibit B-1-1, please confirm that the key difference between FEI's rate schedules and Fort Nelson's rate schedules will be the rates charged.

Response:

Confirmed.

[6] 10. **The Fort Nelson Gas Tariff**: Approval of the housekeeping and other amendments to the Fort Nelson Gas Tariff as set out in Appendix 13-6. The proposed amendments to the Fort Nelson Gas Tariff include the following: Approval of the amendments to the terms and conditions for Rate Schedules 1, 2, 3, 5, 6 (until these changes are approved these have been Rates 1, 2.1, 2.2, 3.1, and 2.3) and Rate Schedule 25.

72.2.1 If not confirmed, please explain the nature of each key difference between FEI's rate schedules and the rate schedules proposed for Fort Nelson.

Response:

Please refer to the response to BCUC-FEI IR 2.72.2.

73.0 Reference: APPROVALS SOUGHT

Exhibit B-1-1, Section 13.1, p. 13-2

Unbundling of Rates

On page 13-2 of Exhibit B-1-1, FEI requests "[a]pproval to unbundle Fort Nelson's residential and commercial rates to provide transparency into the different components of customer bills and provide Fort Nelson customers the option to access services that require unbundled rates …"

73.1 Please provide examples of actual bills for the month of January using (i) the current bundled rate structure and rates, and (ii) the proposed unbundled rate structure and rates for each of the following:

i. Fort Nelson residential customer with average consumption;

ii. Fort Nelson small commercial customer with average consumption; and

iii. Fort Nelson large commercial customer with average consumption.

Response:

Please refer to Attachment 73.1 for sample bills for residential and commercial customers for Fort Nelson under the current bundled rate structure and rates. For the purposes of providing a sample for Fort Nelson's proposed unbundled rate structure and rates, FEI has also included in Attachment 73.1 FEI Mainland's sample bills as these bills will be similar to the ones proposed for Fort Nelson. Today for Fort Nelson, gas costs and delivery costs are bundled together under Gas Charges, whereas for FEI Mainland gas costs and delivery costs are separated. Also, for FEI Mainland the volume is the same in the different lines for the volumetric charges. In Fort Nelson the volume beside the Carbon tax is 2 GJ different than the volume beside the Charge for gas used. The 2 GJ difference is because the Basic Charge per day includes the first 2 GJ consumed in the month.

The samples provided in Attachment 73.1 show the format of the bills, but the rates on the FEI Mainland bills do not reflect what Fort Nelson customers would see under FEI's proposals in this Application. To provide an answer to the part of the question regarding the rate differences, the following table lists the charges in the Fort Nelson Tariff that are included in the customer's bill for Residential, Small Commercial and Large Commercial at current rates and that would be included under proposed rates.

Particulars	Residential	Small Commercial	Large Commercial
Current Rates			
Basic Charge (incl. 1st 2 GJ - $ / Day	$0.5868	$1.4113	$1.4113

Particulars	Residential	Small Commercial	Large Commercial
1st Block in any month	Next 28 GJ $5.704 / GJ	Next 298 GJ $6.130 / GJ	Next 298 GJ $6.130 / GJ
2nd Block in any month	Excess of 30 GJ $5.608 / GJ	Excess of 300 GJ $6.003 / GJ	Excess of 300 GJ $6.003 / GJ
Carbon Tax	Current $1.4898 / GJ	Current $1.4898 / GJ	Current $1.4898 / GJ
Clean Energy Levy	Current 0.4% of Gas Cost Charges	Current 0.4% of Gas Cost Charges	Current 0.4% of Gas Cost Charges
GST	5% on Gas Cost Charges & Carbon Tax	5% on Gas Cost Charges & Carbon Tax	5% on Gas Cost Charges & Carbon Tax
PST	Not Applicable	7% on Gas Cost Charges & Carbon Tax	7% on Gas Cost Charges & Carbon Tax
Proposed Rates			
Basic Charge $ / Day	$0.3003	$1.2008	$3.1581
Delivery Charge $ / GJ	$3.512	$3.989	$3.631
RSAM Rider $ / GJ	Current Rate $0.268	Current Rate $0.268	Current Rate $0.268
Delivery Charge / GJ on customer bill	$3.780	$4.257	$3.899
Commodity Charges			
Storage and Transport $ / GJ	Table 13-11, Line 13 $0.019	Table 13-11, Line 13 $0.020	Table 13-11, Line 13 $0.017
Cost of Gas $ / GJ	Table 13-11, Line 9 $1.275	Table 13-11, Line 9 $1.275	Table 13-11, Line 9 $1.275
Other Charges			
Carbon Tax $ / GJ	Current $1.4898 / GJ	Current $1.4898 / GJ	Current $1.4898 / GJ
Clean Energy Levy	Current 0.4% of Delivery & Commodity Charges	Current 0.4% of Delivery & Commodity Charges	Current 0.4% of Delivery & Commodity Charges
GST	5% on Delivery, Commodity Charges & Carbon Tax	5% on Delivery, Commodity Charges & Carbon Tax	5% on Delivery, Commodity Charges & Carbon Tax
PST	Not Applicable	7% on Delivery, Commodity Charges & Carbon Tax	7% on Delivery, Commodity Charges & Carbon Tax

Gas cost charges are for illustrative purposes as those rates will be determined later in conjunction with the quarterly gas cost review, and the RSAM rate will reflect the rate approved at that time.

74.0 Reference: APPROVALS SOUGHT

Exhibit B-1-1, Section 13.5.2, p. 13-22

Billing system changes cost

On page 13-22 of Exhibit B-1-1, FEI requests:

> The unbundling of Fort Nelson rates will require changes to the billing system. FEI has estimated that the one-time pre-tax cost to make these changes is approximately $70 thousand. This one-time cost is for billing system changes, bill reconfiguration and testing. As Fort Nelson's rates have already been approved for 2017 and 2018, FEI is requesting approval for a deferral account to record the cost of changes to the billing system for Fort Nelson that will be required to unbundle Fort Nelson's rates. The actual costs will be recorded in the account on net-of-tax basis consistent with normal practice and amortized over five years beginning in 2019. The five-year amortization period is appropriate given the long-term benefit of unbundling rates, and will spread out the rate impact of these costs on Fort Nelson customers.

74.1 Please provide, in table form, the rate impact to Fort Nelson customers of amortizing the one-time pre-tax cost for billing system changes over (i) one year; (ii) three years; and (iii) five years. Please include explanations and calculations where appropriate.

Response:

FEI provides the following response to BCUC-FEI IRs 2.74.1 and 2.74.1.1.

Table 2 below shows the cost of service and average rate impact from amortizing the costs of the billing system changes over a one year period (2019), over a three year period (2019 – 2021) or over a five year period (2019 – 2023). The average rate impacts for the three options is:

i. One year amortization - $0.132 per GJ, 2.3% on 2018 approved revenue;
ii. Three year amortization - $0.047 per GJ, 0.8% on 2018 approved revenue; and
iii. Five year amortization - $0.029 per GJ, 0.5% on 2018 approved revenue.

FEI recommends using the five year amortization period for the following reasons.

1. A one year amortization results in an unstable rate with a $0.132 per GJ increase (a 2.3 percent increase over 2018 approved revenues) in 2019 with reversal of the rate increase in 2020; although the one year amortization has the lowest cumulative cost of service impact.

2. If the Commission intends to review the rates and/or rate design approximately every five years then the five year amortization more closely matches the period of time between rate design reviews.

3. The three year amortization results in the median range in terms of the cumulative cost of service and average rate impact per GJ or percentage increase; i.e. it is neither the highest nor the lowest.

4. The five year amortization has the lowest rate impact per GJ and percentage increase on 2018 approved revenue and best supports the rate stability principle.

Table 1 below shows that the pre-tax cost of $70 thousand would be $51.8 thousand on an after tax basis using the current tax rate of 26 percent. FEI is also assuming a half year of financing the deferral at its weighted average after tax cost of capital at 5.68 percent. The total after tax cost of the billing system changes is $53.3 thousand.

Table 1 – Deferred Billing System Changes After-Tax Cost

Line No.	Particulars		$000's 2018
1	Rate Base Deferred Charge		
2	Billing System Change Pre-Tax Cost	$	70.0
3	Current Tax Rate		26%
4	After Tax Cost	$	51.8
5	Mid-Year Cost	$	25.9
	Weighted Average Cost of Captital		
6	After Tax		5.68%
7	Financing Cost		1.5
8	Total After Tax Cost	$	53.3

Table 2 – Cost of Service, and Average Rate Impact From 1 Year Amortization, 3 Year Amortization or 5 Year Amortization

		$000's								
		1 Year Amortization	3 Year Amortization			5 Year Amortization				
Line No.	Particulars	2019	2019	2020	2021	2019	2020	2021	2022	2023
1	Deferred Charge - Opening	$ 53.3	$ 53.3	$ 35.5	$ 17.8	$ 53.3	$ 42.6	$ 32.0	$ 21.3	$ 10.7
2	Addition									
3	Amortization	(53.3)	(17.8)	(17.8)	(17.8)	(10.7)	(10.7)	(10.7)	(10.7)	(10.7)
4	Deferred Charge - Closing	$ -	$ 35.5	$ 17.8	$ -	$ 42.6	$ 32.0	$ 21.3	$ 10.7	$ -
5	Rate Base - Mid-Year	$ 26.6	$ 44.4	$ 26.6	$ 8.9	$ 47.9	$ 37.3	$ 26.6	$ 16.0	$ 5.3
6	Return on Rate Base	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%	6.49%
7	Return on Debt	3.12%	3.12%	3.12%	3.12%	3.12%	3.12%	3.12%	3.12%	3.12%
8	Cost of Service									
9	Amortization Expense	$ 53.3	$ 17.8	$ 17.8	$ 17.8	$ 10.7	$ 10.7	$ 10.7	$ 10.7	$ 10.7
10	Income Tax Expense	19.0	6.8	6.6	6.3	4.3	4.2	4.1	3.9	3.8
11	Earned Return	1.7	2.9	1.7	0.6	3.1	2.4	1.7	1.0	0.3
12	Total Cost of Service	$ 74.0	$ 27.4	$ 26.0	$ 24.7	$ 18.1	$ 17.3	$ 16.4	$ 15.6	$ 14.8
13	Annual Sales / T-Service TJ	559.8	559.8	559.8	559.8	559.8	559.8	559.8	559.8	559.8
14	**Average Rate Impact $ / GJ**	**$ 0.132**	**$ 0.049**	**$ 0.047**	**$ 0.044**	**$ 0.032**	**$ 0.031**	**$ 0.029**	**$ 0.028**	**$ 0.026**
15	2018 Approved Revised Revenue	$ 3,162	$ 3,162	$ 3,162	$ 3,162	$ 3,162	$ 3,162	$ 3,162	$ 3,162	$ 3,162
16	**% Increase on 2018 Revenue**	**2.3%**	**0.9%**	**0.8%**	**0.8%**	**0.6%**	**0.5%**	**0.5%**	**0.5%**	**0.5%**

The assumptions and underlying values are from the Fort Nelson's Compliance filing of November 23, 2016.

- Annual Volumes from Schedule 24, Line 9, Column 3; 559.8 TJ.
- 2018 Approved Revised Revenue from Schedule 28, Line 9, Column 8; $3,162,000.
- Corporate tax rate from Schedule 38, Line 9, Column 3; 26 percent.
- Capital Structure and Average Embedded Cost of Capital from Schedule 42, Lines 1 – 3, Columns 4 -5.

74.1.1 Please explain the advantages and disadvantages of amortizing the one-time pre-tax cost for billing system changes over one year, three years and five years.

Response:

Please refer to the response to BCUC-FEI IR 2.74.1.

75.0 Reference: APPROVALS SOUGHT

Exhibit B-1, Section 12.2.2, p. 12-7; Section 12.3, Table 12-3, p. 12-8; Exhibit B-1-1, Section 13.2.2, p. 13-8; Exhibit B-1-1-1, Section 13.1, p. 13-3

Fort Nelson Rate Schedule 6

On page 12-6 of Exhibit B-1, FEI explains that to "set the R:C ratio for [FEI] RS 6/RS 6P within the range of reasonableness, FEI is proposing a reduction of $61.7 thousand in the revenue required from RS 6/RS 6P by decreasing the Delivery Charge by $1.318/GJ." Table 12-3 of Exhibit B-1 shows that after FEI's rebalancing proposals the R:C ratio for Rate Schedule 6/6P is 110.0%.

On page 13-8 of Exhibit B-1-1, FEI states: "Although not a separate legal entity, Fort Nelson has its own rate base and revenue requirements for the purposes of determining rates."

On page 13-3 of Exhibit B-1-1-1, FEI requests approval for Fort Nelson Rate Schedule 6 (formerly Rate 2.3) to "To set the Basic Charge per Day and Delivery Charge equal to FEI's approved January 1, 2018 RS 6 rates, as a result of unbundling the rate structure."

75.1 Please explain if FEI's RS 6/6P Basic Charge per Day and Delivery Charge are set based on their cost of service. If not, please explain the basis on which FEI's RS 6/6P Basic Charge per Day and Delivery Charge are set.

Response:

FEI's RS 6/6P rates are based on their cost of service. FEI has proposed to hold the Basic Charge constant and reduce the Delivery Charge to account for the proposed rebalancing adjustment.

75.2 Please provide a table comparing the annual bill using currently approved rates for (i) an FEI RS 6 customer with average annual consumption; and (ii) a Fort Nelson RS 2.3 customer with annual consumption identical to the FEI RS 6 customer in (i).

Response:

Fort Nelson does not currently have any customers taking service under Rate 2.3. For this response FEI has used the current approved rates for FEI Mainland and Fort Nelson excluding riders.

Line No.	Particulars	FEI (Mainland) RS 6 current approved rates at October 1, 2017	Fort Nelson Rate 2.3 current approved rates at January 1, 2017	Reference
1	Basic Charge	$ 2.0041		$/Day
2	Minimum Charge		$ 43.080	$/Month and includes the first 2 GJ, includes Commodity and Storage and Transport costs
3	Delivery Charge	$ 4.452		Per GJ
4	Block 1		$ 6.867	Per GJ - Next 298 GJ in a month, includes Commodity and Storage and Transport costs
5	Block 2		$ 6.745	Per GJ - Excess of 300 GJ in a month, includes Commodity and Storage and Transport costs
6	Commodity Cost Recovery Charge	$ 2.050		Per GJ
7	Storage and Transport Charge	$ 0.314		Per GJ
8				
9	Annual Bill FEI	$ 22,089		Line 1 x 365 + (Sum of Lines 3 through 7) x Line 12
10	Annual Bill Fort Nelson		$ 21,674	Line 2 x 12 + 298 x Line 4 + (Line 12 - 300) x Line 5
11				
12	Average Customer Annual Use	3,133	3,133	GJ

75.3 Please provide a table comparing the annual bill using the rates proposed in the Application for (i) a FEI RS 6 customer with average annual consumption; and (ii) a Fort Nelson RS 6 (formerly Rate 2.3) customer with annual consumption identical to the FEI RS 6 customer in (i).

Response:

For this response FEI has used the proposed rates in the Application for the Basic and Delivery charge. For the Commodity Cost Recovery Charge and Storage and Transport Charge, FEI has used those embedded in the relevant test year of the application.

Line No.	Particulars	FEI RS 6 Proposed	Fort Nelson RS 6 Proposed	Reference
1	Basic Charge	$ 2.0041	$ 2.0041	$/Day
2	Delivery Charge	$ 4.873	$ 4.873	Per GJ
3				
4	Delivery Portion of Annual Bill	$ 15,293	$ 15,293	Line 1 x 12 + Line 2 x Line 11
5				
6	Commodity Cost Recovery Charge	$ 2.486	$ 1.278	Per GJ
7	Storage and Transport Charge	$ 0.417	$ 0.019	Per GJ
8				
9	Annual Bill	$ 24,389	$ 19,357	Line 4 + (Line 6 + Line 7) x Line 11
10				
11	Average Customer Annual Use	3,133	3,133	GJ

75.4 Please explain thoroughly, with supporting calculations, why FEI requests to set Fort Nelson Rate Schedule 6 Basic Charge per Day and Delivery Charge equal to FEI's approved January 1, 2018 RS 6 rates.

Response:

While drafting the application, FEI's intention was to request implementation of the approvals for rates on January 1, 2018. It was only decided late in 2016 that a June 1, 2018[7] implementation date would be more reasonable given the expected process and also for customer messaging.

The wording in the approvals sought for Fort Nelson RS 6[8] was selected so that when FEI's approvals for RS 6 were implemented on January 1, 2018, Fort Nelson RS 6 would be set to be equal to those rates. It was an oversight that the wording was not changed to reference June 1, 2018 as it should have.

The approvals sought for Fort Nelson RS 6 (formerly Rate 2.3) should more appropriately read "To set the Basic Charge per Day and Delivery Charge equal to FEI's approved June 1, 2018 RS 6 rates, as a result of unbundling the rate structure."

FEI notes that if the date of implementation of FEI's rates changes from June 1, 2018 to another date, the approvals sought for Fort Nelson would need to be adjusted accordingly.

[7] Section 2, Page 2-3, Line 5.
[8] Section 13, Page 13-3, Line 24.

75.5 Please explain how FEI could determine a Basic Charge per Day and Delivery Charge that is unique to Fort Nelson Rate Schedule 6 (formerly Rate 2.3) customers and takes into consideration their cost of service. Please include calculations where necessary.

Response:

FEI cannot determine unique rates with consideration to the cost of service for Fort Nelson since there are currently no RS 6 (i.e. Rate 2.3) customers, and none in the recent past, taking service in Fort Nelson and it would be difficult to determine the volume that a new customer would require. FEI expects that RS 6 customers in Fort Nelson would have similar characteristics to RS 6 customers in FEI so the cost allocation methods would also be similar.

F. CHAPTER 13 – RESIDENTIAL RATE DESIGN FOR FORT NELSON

76.0 Reference: RESIDENTIAL RATE DESIGN FOR FORT NELSON

Exhibit A2-10, Section 6.3, pp. 28–29; Exhibit B-1-1, Section 13.5.4.3, p. 13-30; Section 13.5.4.4, p. 13-32

Fort Nelson customer acceptance

As outlined on page 13-30 of Exhibit B-1-1, FEI "is proposing to unbundle the rates and adopt a flat rate structure for Fort Nelson customers."

On page 13-32 of Exhibit B-1-1, FEI discusses the bill impacts of its proposed changes for Fort Nelson residential customers. FEI states:

> Due to the 2 GJ monthly threshold for the minimum daily charge calculations and the declining block rate structure of Fort Nelson's existing rates, the bill impact on individual customers due to the transition to unbundled flat rates will depend on if a customer's monthly consumption is equal or less than the first 2 GJ included in minimum daily charge or exceeds the declining block rate at 30 GJ.

On page 29 of Exhibit A2-10, Elenchus states:

> Any change in a utility's rate structure results in some degree of customer confusion until customers understand and accept the new rate structure. The utility will have to make an extra effort in communicating the change and reasoning behind the change to customers. FEI may also want to equip its staff to respond to complaints with information on ways that customers can reduce their consumption and bills most effectively.

76.1 Please explain how FEI would prepare to address customer confusion, understanding and acceptance of the proposed unbundled flat rates and the potential impact to some customers in the Fort Nelson Service Area.

Response:

If the proposals by FEI are approved for the Fort Nelson Service Area, FEI proposes to support customer understanding and acceptance through a communication plan leading up to the implementation date in order to help customers become familiar with the changes they will see on their bills. The plan would include strategies used for similar communication campaigns in the past, such as for Vancouver Island and Whistler bill changes arising from amalgamation of the three utilities. Some of the communications activities would include mass customer communication through bill messages and bill inserts, local face-to-face meetings, and digital communications. Part of any implementation process would also include training and education

materials for customer service representatives so they can help customers understand the changes to their bills.

76.2 Please explain, and quantify, any incremental costs that would arise from FEI addressing customer confusion, understanding and acceptance of the implementation of unbundled flat rates for Fort Nelson customers.

Response:

FEI does not expect any significant incremental costs arising from addressing Fort Nelson Service Area customer confusion and believes the existing allocation of O&M to Fort Nelson should cover off the anticipated activities. FEI intends to use existing communication channels and plans to cover the activities identified and discussed in the response to BCUC-FEI IR 1.76.1, which have been successfully used in the past for similar circumstances. Should the Commission determine that other communications activities are required which are not contemplated in the existing communication plans, then incremental costs may result, the amounts for which would depend on the type of activities directed.

77.0 Reference: RESIDENTIAL RATE DESIGN FOR FORT NELSON

Exhibit A2-10, Section 6.3.1, p. 30; Exhibit B-1-1, Section 13.5.4.3, p. 13-31; Section 13.5.4.4, Figure 13-10, p. 13-32

Setting the Basic Charge and Delivery Charge for Fort Nelson residential customers

On page 30 of Exhibit A2-10, Elenchus states:

> Alternatives to develop the Basic charge and volumetric charge when changing rate structure from declining block to flat rate structure are approaches that would result in:
>
> 1. the Basic charge being set equal to the current Minimum bill excluding non-distribution components currently included in the Minimum bill,
> 2. no bill impact for customers consuming the average monthly class consumption,
> 3. setting the Basic charge similar to the Basic charge used by FEI for its Residential customers in other service territories, or
> 4. setting the Basic charge based on the results of the COSA study for Fort Nelson.
>
> The approach that is most consistent with the principle of designing rates so that they correspond to the relevant costs drivers is the fourth option. The rationales supporting the first three options are various pragmatic considerations that may be relevant to the degree of initial customer acceptance that is achieved.

On page 13-31 of Exhibit B-1-1, FEI states:

> The proposed daily Basic Charge and volumetric Delivery Charge set out in the table above are calculated in a way that achieves the lowest maximum dollar amount bill increase for any individual customer. This was done using a linear programming technique in which minimization of the upward increase in annual bills is set as one of the constraints for the calculations.

77.1 Please explain if in the future FEI intends to set the Basic Charge based on COSA study results for Fort Nelson. If so, how soon in the future would FEI request to do this?

Response:

FEI intends to re-examine the Basic Charge for Fort Nelson when the next Fort Nelson COSA is produced in approximately four to six years. FEI may decide to apply for an adjustment to Fort Nelson's Basic Charge at that time, with due consideration given to all relevant rate design principles.

Please also refer to the response to CEC-FEI IR 2.68.1.

77.2 Please explain if the proposed basic charge for FEI's residential customers was determined using the same linear programming technique as the proposed basic charge for Fort Nelson's residential customers so as to minimize the upward increase in annual bills.

Response:

The same linear programming technique was not used for FEI's residential customers. Since FEI's residential customers already have unbundled bills, the adjustments were simpler; the proposed increase to the Basic Charge was offset by a decrease to the delivery charge, such that the total delivery revenues from the residential rate schedule remained unchanged.

77.2.1 If not, please explain why.

Response:

Please refer to the response to BCUC-FEI IR 2.77.2.

On page 13-31, FEI states:

> When unbundling, there are various ways to apportion the costs for recovery from fixed and volumetric charges. For instance, the daily Basic charge can be set to be equal to FEI's Basic charge with the rest of the costs recovered through the volumetric Delivery Charge. Another option

would be to set the ratio of fixed Basic charge and volumetric Delivery Charge in a way to achieve zero bill impact for a pre-defined average monthly consumption amount. However, both these options may result in significant bill impacts for certain customers.

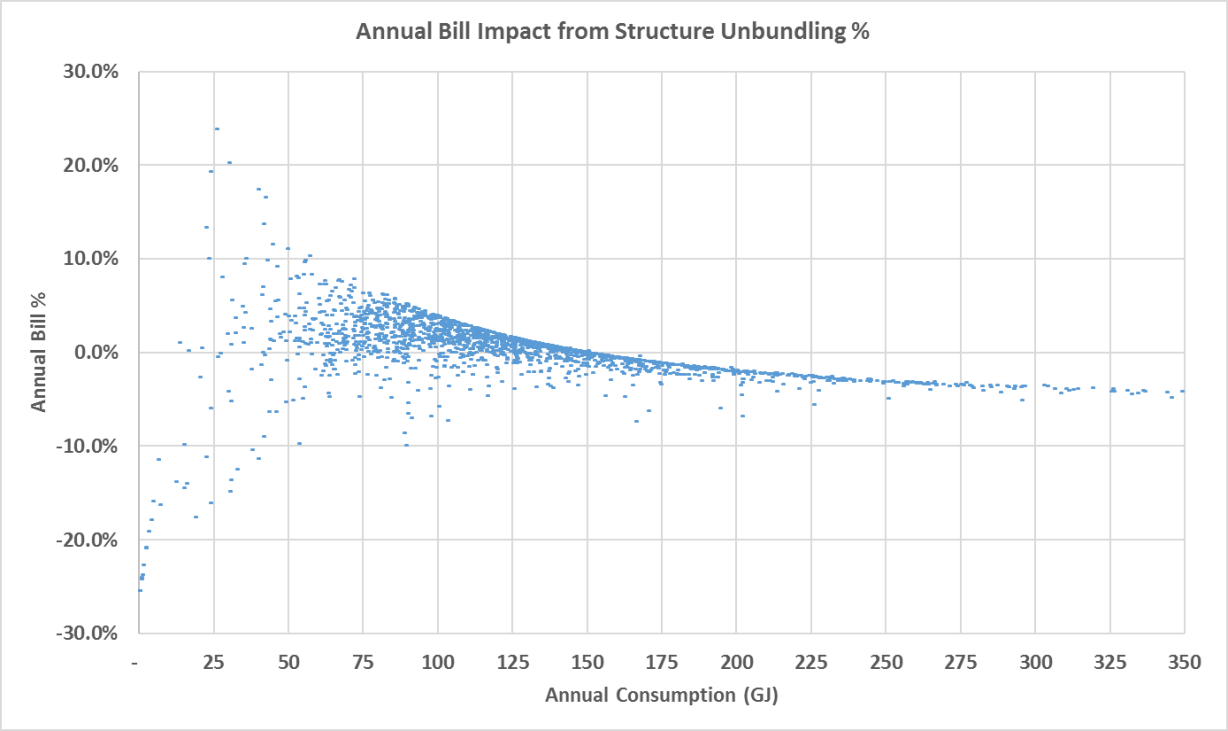
Figure 13-10 on page 13-32 of Exhibit B-1-1 shows the results of the bill impact due to the transition from bundled declining block rates with a minimum daily charge to an unbundled flat rate structure with a daily Basic Charge and a volumetric Delivery Charge calculated in a way that achieves the lowest maximum dollar bill increase.

77.3 Please provide updated versions of Figure 13-10 based on the two options to apportion the costs for recovery from fixed and volumetric charges described in the preamble.

Response:

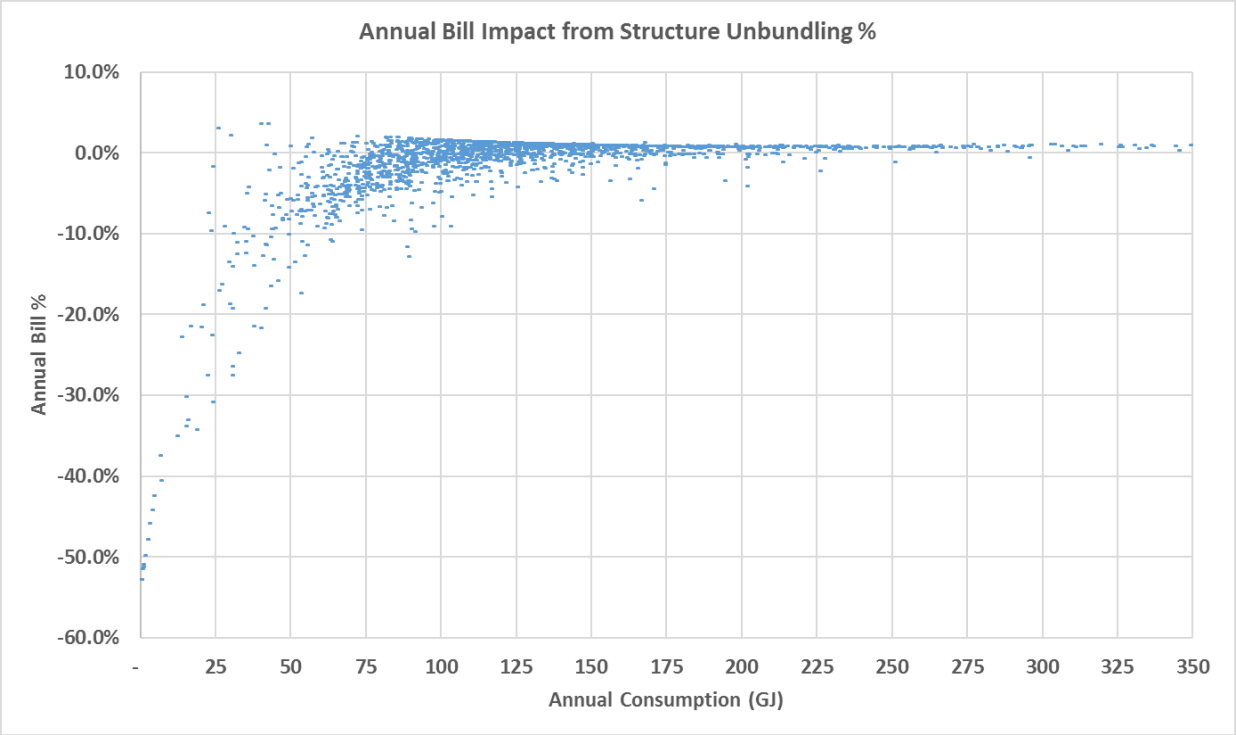
The first figure below reflects a Basic Charge for Fort Nelson's Residential customers set to FEI's proposed rate of $0.4085 per day, and a resulting volumetric Delivery charge of $3.149 per GJ; both rates are before rebalancing. Using this approach, residential customers will experience annual bill changes between -26 percent to +24 percent (-$272 to +$51) with customers in the 25 GJ to 50 GJ annual consumption range experiencing +10 percent to +24 percent annual bill increases.

Figure 13-10 (adjusted): Annual Bill % Change at Various Annual Consumption Levels for Fort Nelson Residential



For the second figure, FEI selected 132 GJ as the pre-defined consumption level for which to set rates that will result in a zero annual bill impact. FEI chose 132 GJ as this is the average annual consumption for Rate 1. It is important to note that because of the existing block rates in Fort Nelson, two customers with the same volume will not experience the same annual bill unless they consume the same volume every month. Consequently, setting rates so that all customers consuming 132 GJ per year have a zero annual bill impact is not possible. However, FEI selected one customer consuming 132 GJ per year and attempted to set a Basic Charge and delivery charge so that this customer would have a zero annual bill impact. The resulting Basic Charge equaled $0.2583 per day and the Delivery Charge $3.567 per GJ. Both of these charges are similar to those proposed by FEI and presented in Table 13-15 of the Application. The resulting annual bill impacts would also be similar to those from FEI's proposal in the Application.

Figure 13-10 (adjusted): Annual Bill % Change at Various Annual Consumption Levels for Fort Nelson Residential



77.3.1 For the second option, please state clearly the level of pre-defined average monthly consumption amount chosen to achieve zero bill impact.

Response:

Please refer to the response to BCUC-FEI IR 2.77.3.

77.3.1.1 Please explain if the consumption amount provided in response to the previous question was determined exclusively by historical Fort Nelson residential data.

Response:

Confirmed.

G. CHAPTER 13 – COMMERCIAL RATE DESIGN FOR FORT NELSON

78.0 Reference: COMMERCIAL RATE DESIGN FOR FORT NELSON

Exhibit B-1-1, Section 13.1, p. 13-3

Approval sought

FEI states, on page 13-3 of Exhibit B-1-1 that it seeks:

> Approval to change the annual volume threshold between small and large commercial customers from 6,000 GJ to 2,000 GJ and to set the Basic, Delivery, Commodity, and Storage and Transport Charges for commercial customers to align with the 2,000 GJ threshold for FEI customers…

FEI then proposes the Basic Charge and Delivery Charge for RS 2 (formerly Rate 2.1) and RS 3 (formerly Rate 2.2), respectively.

78.1 Please confirm, or otherwise explain, that the Commodity Charge and Storage and Transport Charges are set through quarterly Gas Cost Reports, and that FEI is not seeking approval to set these charges through this Application.

Response:

FEI confirms that the Commodity Charge and Storage and Transport Charges are set through the Commission's review of FEI's quarterly Gas Cost Reports. FEI is seeking approval of the unbundling of Fort Nelson's rates, and FEI anticipates approval of the Commodity Charges and Storage and Transport Charges from the relevant quarterly gas cost review when the unbundled rates become effective.

79.0 Reference: COMMERCIAL RATE DESIGN FOR FORT NELSON

Exhibit B-1-1, Section 13.1, p. 13-3; Section 13.4.2.3, p. 13-19; Exhibit B-5, BCUC IR 50.1, pp. 222–223

Economic crossover point

On page 13-3 of Exhibit B-1-1, FEI states that it seeks approval "To set a Storage and Transport Charge based on classifying midstream costs as demand-related and allocating those costs to all sales customers based on their load factor adjusted volume, as discussed in section 13.4.2."

In response to BCUC IR 50.1, FEI presented the economic crossover volume between Rate 2.1 and Rate 2.2 at the proposed rates. FEI states that the Cost of Gas used to calculate the economic crossover volume is based on the gas costs from the compliance filing for the Annual Review for 2016 Rates, which is equal to $1.294 for both RS 2.1 and RS 2.2.

In Table 13-11 on page 13-19 of the Supplemental Filing, FEI shows that under the proposed gas cost allocation method, the total cost of gas is $1.295/GJ for small commercial and $1.292/GJ for large commercial:

Table 13-11: Comparison of the Current and Proposed Gas Cost Allocation[10]

Line No.	Particulars	Total	Residential	Commercial	
				Small	Large
1	**Current Method**				
2	Forecast Volume (GJ)	602,200	268,100	209,700	124,400
3	Total Cost of Gas [1]	$ 779,247	$ 346,922	$ 271,352	$ 160,974
4	$ / GJ (Line 3 / Line 2)	$ 1.294	$ 1.294	$ 1.294	$ 1.294
5					
6	**Proposed Method**				
7	Forecast Volume (GJ)	602,200	268,100	209,700	124,400
8	Total Commodity Cost [2] (Line 23)	$ 767,900	$ 341,870	$ 267,401	$ 158,630
9	Commodity Cost / GJ (Line 8 / Line 7)	$ 1.275	$ 1.275	$ 1.275	$ 1.275
10					
11	Load Factor Adjusted Volume (Line 20)	1,650,768	736,538	607,826	306,404
12	Midstream Cost (Storage & Transport Cost) [3]	$ 11,347	$ 5,063	$ 4,178	$ 2,106
13	Storage & Transport Cost / GJ (Line 12 / Line 7)	$ 0.019	$ 0.019	$ 0.020	$ 0.017
14					
15	Total Cost of Gas per GJ	$ 1.294	$ 1.294	$ 1.295	$ 1.292
16	**Net Change per GJ (Line 4 - Line 15)**	$ -	$ (0.000)	$ (0.001)	$ 0.002

79.1 Please comment on whether the proposed changes to the Basic, Delivery, Commodity, and Storage and Transport Charges for commercial customers to

align with the 2,000 GJ threshold should be calculated based on (i) the Cost of Gas from FEI's proposed gas cost allocation method; or (ii) the Cost of Gas based on the compliance filing for the Annual Review for 2016 Rates where the midstream portion of Cost of Gas is different between RS 2.1 and RS 2.2.

Response:

The proposed changes to the Basic, Delivery, Commodity and Transport charges should initially be based on i) the Cost of Gas from FEI's proposed gas cost allocation method in Table 13-11 (see response to BCUC-FEI IR 2.79.2). As described in response to BCUC-FEI IR 2.97.2.1, a subsequent calculation would be done to take into account the accepted quarterly gas cost review at the time of approval as part of a compliance filing for the Rate Design decision. This may or may not cause a need for an adjustment to the recommended Basic Charge and Delivery Charge for the proposed RS 2 Small Commercial and RS 3 Large Commercial for Fort Nelson.

Further, the Basic Charges and Delivery Charges for Fort Nelson's proposed RS 2 and RS 3 with an economic crossover at 2,000 GJ would best be determined by taking into account the minimization of the maximum customer rate impact, while achieving the targeted revenue from each rate schedule and achieving revenue neutrality at 2,000 GJ. Part of this analysis would also take into consideration the difference in the Storage and Transportation Charges for RS 2 and RS 3 if the Commission were to approve the proposed gas cost allocation methodology changes, which could be done as part of the compliance filing after the Rate Design decision for Fort Nelson. As long as the Commodity Cost of Gas is the same for RS 2 and RS 3, the commodity cost would not affect the economic crossover or the determination of Basic Charges and Delivery Charges.

Based on the current methodology for gas cost allocation for Fort Nelson, gas costs would have no effect on determining the Basic Charges and Delivery Charges proposed because all customer rate classes have the same average gas cost embedded in there rates.

79.2 Please update the table in response to BCUC IR 50.1 using the values for total Cost of Gas under FEI's proposed method as presented in Table 13-11 referenced above.

Response:

The table below updates the table that was provided in the response to BCUC IR 1.50.1 using the cost of gas from Table 13-11, which results in a revised difference of $0.361 in Total Variable Cost per GJ and an Economic Crossover Point of 1,980 GJ. To achieve a 2,000 GJ economic crossover, the difference in the Total Variable Cost would need to be $0.357 ($714.91 / 2,000

GJ), if the Basic Charge is left unchanged. That is a reduction in the difference of the Total Variable Cost of $0.004 ($0.361 - $0.357). For the economic crossover at 2,000 GJ, the variance calculated using the cost of gas from Line 15 of Table 13-11 is $0.357, whereas in the response in Exhibit B-5 (see response to BCUC-FEI IR 1.50.1) the variance was $0.358. This a change of $0.001.

Alternatively, if the difference in the Total Variable Cost is unchanged at $0.361, the difference in the Basic Charge annual revenue would need to be $722 (2,000 GJ x $0.361). This would be an increase in the Basic Charge's annual difference of $7 ($722 - $715).

Economic Crossover Volume for Rate 2.1 and Rate 2.2

Rate Components	Rate 2.1	Rate 2.2	Difference
1. Basic Charge (per day)	$1.2008	$3.1581	
2. Times number of days	365.25	365.25	
3. = Basic Charge Revenue	$438.59	$1,153.50	$714.91
4. Delivery Charge ($/GJ)	$3.989	$3.631	
5. Plus Cost of Gas ($/GJ)	$1.295	$1.292	
6. = Total Variable Cost ($/GJ)	$5.284	$4.923	$0.361
7. Economic Crossover Point (Line 3/Line 6)			**1,980 GJ**

79.2.1 Based on the economic crossover volume calculated above, please comment on whether FEI proposes any changes to the proposed Basic Charge and Delivery Charge for RS 2.1 and RS 2.2. If yes, please indicate what the respective rates should be.

Response:

FEI does not propose to make any changes to the proposed rates at this time as the difference from 2,000 GJ is only 20 GJ to the revised economic crossover and would only result in minor changes to the rates at this time for Small and Large Commercial customers (see response to BCUC-FEI IR 2.79.2). FEI recommends reassessing this after the Commission's review of the Fort Nelson gas cost reports of January 1, 2018 or April 1, 2018 (taking the most current review consistent with the implementation date of the unbundled tariff), which would be part of a compliance filing for the Rate Design Decision.

H. CHAPTER 13 – INDUSTRIAL RATE DESIGN FOR FORT NELSON

80.0 Reference: INDUSTRIAL RATE DESIGN FOR FORT NELSON

Exhibit B-1-1, Section 13.1, p. 13-4; Exhibit B-1-1-1, p. 13-3; Exhibit B-1, Section 9.5.5, pp. 9-16 – 9-20

Fort Nelson Rate Schedule 25 peak day demand estimate

On page 13-3 of Exhibit B-1-1-1 and page 13-4 of Exhibit B-1-1, FEI requests approval of the following for Fort Nelson Rate Schedule 5 (formerly Rate 3.1) and Rate Schedule 25 respectively:

> To set the Daily Demand equal to 1.10 multiplied by the greater of:
>
> i. The customer's highest average daily consumption of any month during the winter period (November 1 to March 31); or
>
> ii. One half of the Customer's highest average daily consumption of any month during the summer period (April 1 to October 31).

On pages 9-16 to 9-20 of Exhibit B-1, FEI provided options and evaluation of methods to estimate peak day demand for FEI RS 5 and RS 25 customers. These options were listed as:

i. Status Quo/Current Formula

ii. Current Formula with Update Multiplier

iii. FEI System Maximum Day Send Out

iv. Average Consumption on 3 or 5 Coldest Days in Region

v. Modified Formula

Pages 9-19 and 9-20 of the Application contain an explanation for the proposed peak day demand estimate method for FEI. FEI explains that:

> Based on the evaluation above, FEI proposes to implement Option 5. Under this option, the multiplier in the Daily Demand formula is adjusted from 1.25 to 1.10 to match the RS 5/RS 25 customers' corresponding demand for the average consumption during the 5 coldest days for their region for the past 5 years compared to their peak monthly average consumption. The 5 year average used to calculate the updated multiplier is shown in the table [Table 9-11] below.

80.1 Please provide an analysis, in a manner similar to that presented on pages 9-16 to 9-20 of Exhibit B-1, which illustrates how the proposed peak day estimate methodology was developed for Fort Nelson RS 5 and RS 25 customers.

Response:

FEI is unable to provide the analysis because there is only one customer in Fort Nelson taking service under RS 25, and the analysis for FEI was related to 774 customers.

The single remaining RS 25 customer in Fort Nelson announced that it has permanently closed plant operations and has informed FEI that it will be only be using gas for space heating for a few years to preserve its assets but will eventually no longer require gas. The customer's other site in Fort Nelson, which was also formerly served under RS 25, also closed permanently in 2008 and has already gone to zero gas consumption as of December 2015 and has subsequently switched to Rate 2.1. Given that the remaining customer is expected to discontinue using gas in the near future, it was not appropriate to develop a peak day estimate methodology for Fort Nelson proposed RS 5 and RS 25 that is based upon a single customer that is currently not operating their business and eventually is going to discontinue being a gas customer. In these circumstances, applying the FEI proposed peak day methodology to Fort Nelson is more in accordance with the intended use of RS 25. FEI believes that it would be inappropriate to develop the RS 25 rate and rate structure based on a strictly heat sensitive customer load profile. FEI wants to maintain the RS 25 option for future customers based upon its intended use, to maintain a rate structure that would support economic development for a process load customer setting up business operations in the Fort Nelson community.

80.2 Please explain the benefits and the disadvantages of using the same methodology and daily demand multiplier for the peak day demand estimate for both FEI and Fort Nelson industrial customers.

Response:

Please refer to the response to BCUC-FEI IR 2.80.1.

80.3 Please explain if the data displayed in Table 9-11 of Exhibit B-1 represents: (i) FEI service areas only and excludes Fort Nelson; or (ii) a combination of FEI and Fort Nelson service areas.

Response:

The results in Table 9-11 represent approximately 774 RS 5 and RS 25 customers within FEI's service area only, i.e. it does not include the Fort Nelson industrial customer. The current one Fort Nelson industrial customer, if included, would not be large enough to affect the results.

80.4 Please provide a table in the same manner as Table 9-11 based exclusively on Fort Nelson's industrial customers.

Response:

The following table is based upon Fort Nelson's single remaining RS 25 customer:

Year	Average Consumption during the 5 Coldest Days/ Peak Month Average
2015	1.08
2014	1.00
2013	1.05
2012	1.24
2011	1.03
5 Yr Avg	**1.08**

80.4.1 Please explain the reason for any significant differences between the figures in Table 9-11 of Exhibit B-1 and the figures presented in response to the previous question.

Response:

FEI does not consider there to be any significant differences between the multiplier results in Table 9-11 of Exhibit B-1 and the results provided in the response to BCUC-FEI IR 2.80.4; however, FEI prefers to use the larger population size of 774 customers from FEI rather than relying on the results of a single Fort Nelson customer that is not currently using natural gas as a typical RS 5/25 customer and has indicated that it will eventually be leaving the system completely.

It is important to remember that this calculation determines a multiplier or ratio between the average daily usage on the 5 coldest days compared to the peak monthly average consumption for a customer. This calculation is not descriptive of a customer's load profile, i.e. load factor, or the nature of the demand being for temperature sensitive space heating or industrial operation process load. From a customer's perspective, their annual usage and resulting load factor will play a large part in determining whether a customer may or may not benefit from receiving service under RS 5 or 25 when comparing their service options.

80.4.2 Please discuss the impact to Fort Nelson's R:C and M:C ratios and rebalancing proposals of using an updated multiplier for the current formula based on Fort Nelson's 5 year average of consumption during the 5 coldest days/peak month average (as was done through Table 9-11 for FEI). Please include in your response updated versions of the following tables with the changes highlighted:

i. Table 13-26 (Exhibit B-1-1-1, p. 13-50);

ii. Table 13-27 (Exhibit B-1-1-1, p. 13-51);

iii. Table 13-29 ((Exhibit B-1-1-1, p. 13-56); and

iv. Table 13-30 (Exhibit B-1-1-1, p. 13-57).

Response:

FEI has produced the requested tables below with the changes highlighted in yellow. Using the same approach as was undertaken for FEI by developing an updated multiplier using the Fort Nelson's 5-year average of consumption during the 5 coldest days/peak month, results in a multiplier of 1.08 instead of 1.10 as was proposed in the Application. Although the change in the multiplier and resulting changes in updated tables are small, for the reasons described in the response to BCUC-FEI IR 2.80.1, FEI does not believe it is appropriate to use the Fort Nelson-specific multiplier for establishing the RS 25 rebalancing amount and other changes noted below in the requested tables.

In the Application, FEI calculated the rates for Fort Nelson RS 25 so that the final revenue was equal to the revenue at existing rates. By changing the billing determinant from the proposed 1.10 to 1.08, Fort Nelson's RS 25 customers will contribute $1.8 thousand less revenue, and for this response FEI has shifted that revenue responsibility to Rate 1. Consequently, as can be seen in the adjusted Table 13-26 below, Rate 1 and RS 25 values have changed from the corresponding table in Exhibit B-1-1-1.

The changes from the revenue shift to Rate 1 from RS 25 flows through to Table 13-27 as adjusted R:C and M:C ratios, Table 13-29 as adjustments to Rate 1 Basic Charge and total annual bill and a change to the total annual bill for the RS 25 customer, and finally to Table 13-30.

Table 13-26 (adjusted): Revenue to Cost and Margin to Cost Ratios before rebalancing

Rate Schedule	Initial COSA		Revenue Shift ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	90.5%	88.0%	2.7	0.2%	91.0%	88.5%
Rate 2.1 *General (Small Commercial) Service*	108.3%	110.7%	(126.0)	0.1%	107.2%	109.4%
Rate 2.2 *General (Large Commercial) Service*	113.2%	118.2%	127.0	0.1%	114.5%	118.4%
Rate Schedule 25 *General Firm Transportation Service*	112.1%	112.1%	(3.6)	-2.5%	109.7%	109.7%

Table 13-27 (adjusted): Revenue to Cost and Margin to Cost Ratios after rebalancing

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	91.0%	88.5%	16.0	1.9%	92.0%	89.8%
Rate 2.1 *General (Small Commercial) Service*	107.2%	109.4%			107.2%	109.4%
Rate 2.2 *General (Large Commercial) Service*	114.5%	118.4%	(16.0)	-3.2%	109.9%	112.6%
Rate Schedule 25 *General Firm Transportation Service*	109.7%	109.7%			109.7%	109.7%

Table 13-29 (adjusted): Fort Nelson Rate Proposal Summary

Rate Component	Rate 1	Rate 2.1	Rate 2.2	Rate 3.1	RS 25
Existing COSA Rates[9]					
Minimum daily Charge incl. 1st 2 GJ/month	$0.5483	$1.4337	$1.4337		
Administration Charge (/month)					$202
Next 28 GJ/month	$4.885				
Excess over 30 GJ/month	$4.782				
Next 298 GJ/ month		$5.336	$5.336		
Excess over 300 GJ/month		$5.210	$5.210		
Delivery Charge First 20 GJ/month				$4.522	$4.522
Delivery Charge Next 260 GJ/month				$4.201	$4.201
Excess over 280 GJ/month				$3.450	$3.450
Minimum Delivery Charge/month				$1,826	$1,826
Total Annual Bill:[10]	**$742**	**$2,433**	**$28,546**	**n/a**[11]	**$148,664**
Proposed Rates					
Basic Charge/Day	$0.3029	$1.2008	$3.1581		
Basic Charge (/Month)				$600.00	$600.00
Administration Charge (/Month)					$39.00
Demand Charge (/GJ/Month)				$28.727	$28.727
Delivery Charge ($/GJ)	$3.512	$3.989	$3.631	$1.000	$1.000
Commodity Cost Recovery Charge ($/GJ)	$1.275	$1.275	$1.275	$1.275	
Storage and Transport Charge ($/GJ)	$0.019	$0.020	$0.017	$0.019	
Total Annual Bill:	**$759**	**$2,457**	**$27,405**	**n/a**[12]	**$146,408**

[9] The COSA rates shown are 2018 approved rates, $1.294 Gas Cost Recovery Charge, and test year adjustments discussed above in Section 13.4.1.3.

[10] Based on an average annual demand per customer of 135 GJ for Rate 1, 382 GJ for Rate 2.1 and 5,332 GJ for Rate 2.2 and 39,500 GJ for RS 25.

[11] There are no customers taking service under Rate 3.1, therefore Total Annual Bill shows as n/a.

[12] Ibid.

Table 13-30 (adjusted): Comparison between FEI and Fort Nelson Delivery Rates

Fort Nelson Rate Design

Postage Stamp Comparison - *Effective Delivery Rate*

	FEI Proposed Rates	Fort Nelson Proposed Rates	Difference	FN/FEI
Rate Schedule 1 (1b)				
Basic Charge/Day	$ 0.4085	$ 0.3029	$ (0.1056)	
Delivery Charge/GJ	$ 4.746	$ 3.512	$ (1.234)	
Annual Usage (GJ)	132.53	132.53		
Effective Rate/GJ	**$ 5.87**	**$ 4.35**	**$ (1.53)**	-26%
Rate Schedule 2 (2.1)				
Basic Charge/Day	$ 0.9485	$ 1.2008	$ 0.2523	
Delivery Charge/GJ	$ 3.664	$ 3.989	$ 0.325	
Annual Usage (GJ)	382.2	382.2		
Effective Rate/GJ	**$ 4.57**	**$ 5.14**	**$ 0.57**	12%
Rate Schedule 3 (2.2)				
Basic Charge/Day	$ 4.7895	$ 3.1581	$ (1.6314)	
Delivery Charge/GJ	$ 3.190	$ 3.631	$ 0.441	
Annual Usage (GJ)	5,332.1	5,332.1		
Effective Rate/GJ	**$ 3.52**	**$ 3.85**	**$ 0.33**	9%
Rate Schedule 25				
Admin Charge/Mth	$ 39	$ 39	$ -	
Basic Charge/Mth	$ 587	$ 600	$ 13	
Demand Charge/GJ/Mth	$ 24.596	$ 28.727	$ 4.131	
Delivery Charge/GJ	$ 0.887	$ 1.000	$ 0.113	
Contract Demand	287.3	287.3		
Annual Usage (GJ)	39,500.0	39,500.0		
Effective Rate/GJ	**$ 3.22**	**$ 3.70**	**$ 0.48**	15%

80.4.3 Please explain if and how rebalancing all of Fort Nelson's rate classes to within a 95% to 105% R:C ratio range of reasonableness would impact your response to the previous question. Please provide updated tables where necessary.

Response:

When balancing within a 95 percent to 105 percent range of reasonableness, revenue responsibility is reduced for Rate 2.1, Rate 2.2 and RS 25 by $24 thousand, $33 thousand, and

1 $6 thousand, respectively, and shifted to Rate 1 totaling $64 thousand. Using a narrower range
2 of reasonableness than proposed by FEI will cause some Rate 1 customers to experience an
3 approximate 21 percent annual bill increase ($48 annual bill increase). Table 13-27 (adjusted)
4 shows the rebalancing required.

5 **Table 13-27 (adjusted): Revenue to Cost and Margin to Cost Ratios after rebalancing**

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	91.0%	88.5%	63.7	4.5%	95.0%	93.7%
Rate 2.1 *General (Small Commercial) Service*	107.2%	109.4%	(24.0)	-2.1%	105.0%	106.6%
Rate 2.2 *General (Large Commercial) Service*	114.5%	118.4%	(33.4)	-8.4%	105.0%	106.3%
Rate Schedule 25 *General Firm Transportation Service*	109.7%	109.7%	(6.3)	-4.3%	105.0%	105.0%

6

1 **Table 13-29 (adjusted): Fort Nelson Rate Proposal Summary**

Rate Component	Rate 1	Rate 2.1	Rate 2.2	Rate 3.1	RS 25
Existing COSA Rates[13]					
Minimum daily Charge incl. 1st 2 GJ/month	$0.5483	$1.4337	$1.4337		
Administration Charge (/month)					$202
Next 28 GJ/month	$4.885				
Excess over 30 GJ/month	$4.782				
Next 298 GJ/ month		$5.336	$5.336		
Excess over 300 GJ/month		$5.210	$5.210		
Delivery Charge First 20 GJ/month				$4.522	$4.522
Delivery Charge Next 260 GJ/month				$4.201	$4.201
Excess over 280 GJ/month				$3.450	$3.450
Minimum Delivery Charge/month				$1,826	$1,826
Total Annual Bill:[14]	**$742**	**$2,433**	**$28,546**	**n/a**[15]	**$148,664**
Proposed Rates					
Basic Charge/Day	$0.3687	$1.2797	$3.3657		
Basic Charge (/Month)				$600.00	$600.00
Administration Charge (/Month)					$39.00
Demand Charge (/GJ/Month)				$26.900	$26.900
Delivery Charge ($/GJ)	$3.512	$3.781	$3.400	$1.000	$1.000
Commodity Cost Recovery Charge ($/GJ)	$1.275	$1.275	$1.275	$1.275	
Storage and Transport Charge ($/GJ)	$0.019	$0.020	$0.017	$0.019	
Total Annual Bill:	**$783**	**$2,406**	**$26,244**	**n/a**[16]	**$140,108**

[13] The COSA rates shown are 2018 approved rates, $1.294 Gas Cost Recovery Charge, and test year adjustments discussed above in Section 13.4.1.3.

[14] Based on an average annual demand per customer of 135 GJ for Rate 1, 382 GJ for Rate 2.1 and 5,332 GJ for Rate 2.2 and 39,500 GJ for RS 25.

[15] There are no customers taking service under Rate 3.1, therefore Total Annual Bill shows as n/a.

[16] Ibid.

1 **Table 13-30 (adjusted): Comparison between FEI and Fort Nelson Delivery Rates**

Fort Nelson Rate Design

Postage Stamp Comparison - *Effective Delivery Rate*

	FEI Proposed Rates	Fort Nelson Proposed Rates	Difference	FN/FEI
Rate Schedule 1 (1b)				
Basic Charge/Day	$ 0.4085	$ 0.3687	$ (0.0398)	
Delivery Charge/GJ	$ 4.746	$ 3.512	$ (1.234)	
Annual Usage (GJ)	132.53	132.53		
Effective Rate/GJ	**$ 5.87**	**$ 4.53**	**$ (1.34)**	-23%
Rate Schedule 2 (2.1)				
Basic Charge/Day	$ 0.9485	$ 1.2797	$ 0.3312	
Delivery Charge/GJ	$ 3.664	$ 3.781	$ 0.117	
Annual Usage (GJ)	382.2	382.2		
Effective Rate/GJ	**$ 4.57**	**$ 5.00**	**$ 0.43**	9%
Rate Schedule 3 (2.2)				
Basic Charge/Day	$ 4.7895	$ 3.3657	$ (1.4238)	
Delivery Charge/GJ	$ 3.190	$ 3.400	$ 0.210	
Annual Usage (GJ)	5,332.1	5,332.1		
Effective Rate/GJ	**$ 3.52**	**$ 3.63**	**$ 0.11**	3%
Rate Schedule 25				
Admin Charge/Mth	$ 39	$ 39	$ -	
Basic Charge/Mth	$ 587	$ 600	$ 13	
Demand Charge/GJ/Mth	$ 24.596	$ 26.900	$ 2.304	
Delivery Charge/GJ	$ 0.887	$ 1.000	$ 0.113	
Contract Demand	287.3	287.3		
Annual Usage (GJ)	39,500.0	39,500.0		
Effective Rate/GJ	**$ 3.22**	**$ 3.54**	**$ 0.32**	10%

2

3

81.0 Reference: INDUSTRIAL RATE DESIGN FOR FORT NELSON

Exhibit B-5, BCUC IRs 45.2.1 and 45.3, pp. 212-214

Impact of RS 25 load factor on rate design proposals

In response to BCUC IR 45.2.1, FEI presented a table that shows that the highest annual load factor for the current RS 25 customer from 2005 through to 2016 is 28%, including years prior to the customer ceasing production. In response to BCUC IR 45.3, FEI produced updated tables to show the impact to the COSA results and the R:C and M:C ratios of using the RS 25 customer's current load factor of 27% instead of the load factor of 40% used in the Application.

81.1 Using the information in FEI's response to BCUC IR 45.3, please show the impact to FEI's proposals of using the RS 25 customer's load factor of 27% and rebalancing all rate schedules to within an R:C ratio range of reasonableness of 90%-110%. Please provide supporting explanations in your response as well as updated versions of:

i. Table 13-27 (Exhibit B-1-1-1, p. 13-51);

ii. Table 13-29 (Exhibit B-1-1-1, p. 13-56); and

iii. Table 13-30 (Exhibit B-1-1-1, p. 13-57).

Response:

FEI has provided the requested tables below, although for the reasons discussed in the response to BCUC-FEI IR 2.80.1 FEI does not believe using a 27 percent load factor is an appropriate basis for developing the rates for RS 25 in Fort Nelson. By using the lower load factor of 27 percent for RS 25, a larger peak day demand is calculated and subsequently more costs are allocated to RS 25. With higher allocated costs, the R:C ratio declines for RS 25. As more costs are allocated to RS 25, less costs are allocated to other rate schedules resulting in a higher rebalancing requirement for Rate 2.2. A shift in revenue required of $20 thousand from Rate 2.2 to Rate 1 is needed to move Rate 2.2 to the upper bound of the range of reasonableness of 110 percent (Table 13-27 below).

For the purposes of responding to this IR, FEI shifted the increase in rebalancing requirement to the Rate 1 Basic Charge. Also, with the change in the rebalancing amount for Rate 2.2, the charges for Rate 2.1 and Rate 2.2 are adjusted to retain the 2,000 GJ economic crossover between Rate 2.1 and 2.2.

Table 13-27 (adjusted): Revenue to Cost and Margin to Cost Ratios after rebalancing

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	91.7%	89.4%	20.0	2.1%	93.0%	91.0%
Rate 2.1 *General (Small Commercial) Service*	108.2%	110.8%			108.2%	110.8%
Rate 2.2 *General (Large Commercial) Service*	115.8%	120.0%	(20.0)	-4.3%	110.0%	112.7%
Rate Schedule 25 *General Firm Transportation Service*	91.5%	91.5%			91.5%	91.5%

Table 13-28 (adjusted): Rate 2.1 and Rate 2.2 Charges after all Rate Design Proposals

	Rate 2.1	Rate 2.2
Daily Basic Charge ($/Day)	1.2475	3.2809
Delivery Charge ($/GJ)	3.944	3.573

Table 13-29 (adjusted): Fort Nelson Rate Proposal Summary

Rate Component	Rate 1	Rate 2.1	Rate 2.2	Rate 3.1	RS 25
Existing COSA Rates[17]					
Minimum daily Charge incl. 1st 2 GJ/month	$0.5483	$1.4337	$1.4337		
Administration Charge (/month)					$202
Next 28 GJ/month	$4.885				
Excess over 30 GJ/month	$4.782				
Next 298 GJ/ month		$5.336	$5.336		
Excess over 300 GJ/month		$5.210	$5.210		
Delivery Charge First 20 GJ/month				$4.522	$4.522
Delivery Charge Next 260 GJ/month				$4.201	$4.201
Excess over 280 GJ/month				$3.450	$3.450
Minimum Delivery Charge/month				$1,826	$1,826
Total Annual Bill:[18]	**$742**	**$2,433**	**$28,546**	**n/a**[19]	**$148,664**
Proposed Rates					
Basic Charge/Day	$0.3059	$1.2475	$3.2809		
Basic Charge (/Month)				$600.00	$600.00
Administration Charge (/Month)					$39.00
Demand Charge (/GJ/Month)				$28.727	$28.727
Delivery Charge ($/GJ)	$3.512	$3.944	$3.573	$1.000	$1.000
Commodity Cost Recovery Charge ($/GJ)	$1.275	$1.275	$1.275	$1.275	
Storage and Transport Charge ($/GJ)	$0.019	$0.020	$0.017	$0.019	
Total Annual Bill:	**$760**	**$2,457**	**$27,138**	**n/a**[20]	**$148,243**

81.2 Using the information in FEI's response to BCUC IR 45.3, please show the impact to FEI's proposals of using the RS 25 customer's load factor of 27% and rebalancing all rate schedules to within an R:C ratio range of reasonableness of 95%-105%. Please provide supporting explanations in your response as well as updated versions of:

[17] The COSA rates shown are 2018 approved rates, $1.294 Gas Cost Recovery Charge, and test year adjustments discussed above in Section 13.4.1.3.

[18] Based on an average annual demand per customer of 135 GJ for Rate 1, 382 GJ for Rate 2.1 and 5,332 GJ for Rate 2.2 and 39,500 GJ for RS 25.

[19] There are no customers taking service under Rate 3.1, therefore Total Annual Bill shows as n/a.

[20] Ibid.

i. Table 13-27 (Exhibit B-1-1-1, p. 13-51);

ii. Table 13-29 (Exhibit B-1-1-1, p. 13-56); and

iii. Table 13-30 (Exhibit B-1-1-1, p. 13-57).

Response:

FEI has provided the requested tables below and rebalancing Rates to within a 95 percent to 105 percent range of reasonableness, although as noted in the previous response FEI does not believe a 27 percent load factor is appropriate to use in the development of rates for RS 25 in Fort Nelson. By using the lower load factor of 27 percent for RS 25, a larger peak day demand is calculated and subsequently more costs are allocated to RS 25. With higher allocated costs, the R:C ratio declines for RS 25. As more costs are allocated to RS 25, less costs are allocated to other rate schedules and with a narrower range of reasonableness greater rebalancing is required for all Rates. RS 25 must be balanced upwards by $6 thousand so that the resulting R:C equals 95 percent, Rate 2.2 must be balanced downward by $37 thousand so that the resulting R:C equals 105 percent, Rate 2.1 must be balanced downward by $35 thousand so that the resulting R:C equals 105 percent. Finally, the aforementioned amounts are shifted to Rate 1 for an upwards adjustment of $67 thousand which results in an R:C of 95.9 percent for Rate 1.

FEI shifted the increase in rebalancing requirement to the Rate 1 Basic Charge as it continues to have the lowest impact to customer's annual bills when compared to 2018 approved rates. Also, with the change in the rebalancing amounts for Rate 2.1 and 2.2, the charges for Rate 2.1 and Rate 2.2 are adjusted to retain the 2,000 GJ economic crossover. Lastly, RS 25 Demand Charge is increased to account for the $6 thousand increase in required revenue.

Table 13-27 (adjusted): Revenue to Cost and Margin to Cost Ratios after rebalancing

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	91.7%	89.4%	66.6	5.4%	95.9%	94.8%
Rate 2.1 *General (Small Commercial) Service*	108.2%	110.8%	(35.0)	-2.2%	105.0%	106.6%
Rate 2.2 *General (Large Commercial) Service*	115.8%	120.0%	(37.4)	-8.6%	105.0%	106.3%
Rate Schedule 25 *General Firm Transportation Service*	91.5%	91.5%	5.8	6.2%	95.0%	95.0%

Table 13-28 (adjusted): Rate 2.1 and Rate 2.2 Charges after all Rate Design Proposals

	Rate 2.1	Rate 2.2
Daily Basic Charge ($/Day)	1.2695	3.3388

Delivery Charge ($/GJ)	3.729	3.351

Table 13-29 (adjusted): Fort Nelson Rate Proposal Summary

Rate Component	Rate 1	Rate 2.1	Rate 2.2	Rate 3.1	RS 25
Existing COSA Rates[21]					
Minimum daily Charge incl. 1st 2 GJ/month	$0.5483	$1.4337	$1.4337		
Administration Charge (/month)					$202
Next 28 GJ/month	$4.885				
Excess over 30 GJ/month	$4.782				
Next 298 GJ/ month		$5.336	$5.336		
Excess over 300 GJ/month		$5.210	$5.210		
Delivery Charge First 20 GJ/month				$4.522	$4.522
Delivery Charge Next 260 GJ/month				$4.201	$4.201
Excess over 280 GJ/month				$3.450	$3.450
Minimum Delivery Charge/month				$1,826	$1,826
Total Annual Bill:[22]	**$742**	**$2,433**	**$28,546**	**n/a**[23]	**$148,664**
Proposed Rates					
Basic Charge/Day	$0.3702	$1.2695	$3.3388		
Basic Charge (/Month)				$617.00	$617.00
Administration Charge (/Month)					$39.00
Demand Charge (/GJ/Month)				$29.902	$29.902
Delivery Charge ($/GJ)	$3.512	$3.729	$3.351	$1.037	$1.037
Commodity Cost Recovery Charge ($/GJ)	$1.275	$1.275	$1.275	$1.275	
Storage and Transport Charge ($/GJ)	$0.019	$0.020	$0.017	$0.019	
Total Annual Bill:	**$784**	**$2,383**	**$25,978**	**n/a**[24]	**$154,042**

[21] The COSA rates shown are 2018 approved rates, $1.294 Gas Cost Recovery Charge, and test year adjustments discussed above in Section 13.4.1.3.

[22] Based on an average annual demand per customer of 135 GJ for Rate 1, 382 GJ for Rate 2.1 and 5,332 GJ for Rate 2.2 and 39,500 GJ for RS 25.

[23] There are no customers taking service under Rate 3.1, therefore Total Annual Bill shows as n/a.

[24] Ibid.

I. CHAPTER 13 – FORT NELSON FINAL COST OF SERVICE RESULTS AND REBALANCING

82.0 Reference: FORT NELSON FINAL COST OF SERVICE RESULTS AND REBALANCING

Exhibit B-11, CEC IR 19.3, pp.45–46

Historical stability of Fort Nelson's revenue to cost ratios

In response to CEC IR 19.3, FEI discussed the historical stability of FEI's revenue to cost ratios for each rate class since the 1993 Rate Design proceeding.

82.1 In the same manner as FEI's response to CEC IR 19.3, please discuss the historical stability of Fort Nelson's revenue to cost ratios for each rate class since the 1993 Rate Design Application, including a table which quantifies Fort Nelson's revenue to cost ratios for each rate class over this period.

Response:

FEI cannot provide the requested discussion as there is an insufficient historical record of Fort Nelson's revenue to cost ratios or margin to cost ratios since 1993, and the Fort Nelson COSA studies have not been tested in a rate design proceeding until the current Application.

FEI's predecessor company Inland Natural Gas Co. Ltd. acquired Fort Nelson Gas Ltd. in the 1980s and from that time until 2012 Fort Nelson never filed a Rate Design application. However, in 2009, FEI Fort Nelson did provide revenue to cost ratios based on a 'high level cost of service review for 2009' in response to an IR from the Commission regarding Fort Nelson's Revenue Requirement Application.

The table below provides the revenue to cost ratios from the 2009 IR response, the 2012 FEFN Legacy Methodology, the 2012 Revised results and this 2016 Rate Design Application (2018 revenue requirement).

	2009 [1)]	2012 Legacy [2)]	2012 Revised[2)]	2018 [3)]
Rate 1	93%	80.8%	84.0%	90.5%
Rate 2.1	103%	116.2%	110.8%	108.3%
Rate 2.2	107%	128.9%	123.4%	113.2%
Rate Schedule 25	106%	126.0%	126.0%	112.1%

Notes:

1) Terasen Gas Inc. Fort Nelson Service Area, 2009 Revenue Requirements Application, Response to BCUC IR No. 1, 9.1, Page 16, filed October 30, 2008.

2) Exhibit B-1, Common Rates, Amalgamation and Rate Design Application, Appendix H-8 FEFN Legacy Methodology COSA, Schedule 1, Line 23. When reviewing the 2012 COSA model for Fort

Nelson FEI noticed that the Distribution Function Demand-Related costs were only allocated to Residential class. When the COSA was modified to also allocate these demand-related costs to the commercial classes the results changed as shown in 2012 Revised.

3) FEI 2016 Rate Design Application, for the Fort Nelson Service Area, Evidentiary Update filed April 7, 2017, Page 13-20.

83.0 Reference: FORT NELSON FINAL COST OF SERVICE RESULTS AND REBALANCING

Exhibit B-1-1-1, Section 13.7.3, Table 13-30, p. 13-57

Comparison between FEI and Fort Nelson Delivery Rates

On page 13-57 of Exhibit B-1-1-1, FEI presents Table 13-30 which provides a comparison between the rates proposed in the Application for FEI and Fort Nelson.

83.1 Please provide a table in the same manner as Table 13-30 which provides a comparison between FEI and Fort Nelson Delivery Rates using current rates before rate design proposals.

Response:

The following Table 1 provides a comparison between FEI's current Delivery Rates and Fort Nelson's derived delivery rate, which is embedded in the bundled rates from which RSAM and cost of gas is deducted, for Rate 1, 2.1 and 2.2. Table 2 below shows the Fort Nelson derived delivery rate from the bundled rates.

Table 1 – Comparison between FEI and Fort Nelson Current (2017) Delivery Rates

Fort Nelson Rate Design

Postage Stamp Comparison - Effective Delivery Rate

	FEI 2017 Current Rates	Fort Nelson 2017 Current Rates	Difference	FN/FEI
Rate Schedule 1, Rate 1b				
Basic Charge/Day [1)]	$ 0.3890	$ 0.4321		
Delivery Charge/GJ	$ 4.370	N / A		
Next 28 GJ	N / A	$ 3.350		
Excess of 30 GJ	N / A	$ 3.254		
Annual Usage (GJ)	132.53	132.53		
Effective Rate/GJ	$ 5.44	$ 3.93	$ (1.51)	-28%
Rate Schedule 2, Rate 2.1				
Basic Charge/Day [1)]	$ 0.8161	$ 1.2566		
Delivery Charge/GJ	$ 3.523	N / A		
Next 298 GJ	N / A	$ 3.776		
Excess of 300 GJ	N / A	$ 3.649		
Annual Usage (GJ)	382.2	382.2		
Effective Rate/GJ	$ 4.30	$ 4.74	$ 0.44	10%
Rate Schedule 3, Rate 2.2				
Basic Charge/Day [1)]	$ 4.3538	$ 1.2566		
Delivery Charge/GJ	$ 2.939	N / A		
Next 298 GJ	N / A	$ 3.776		
Excess of 300 GJ	N / A	$ 3.649		
Annual Usage (GJ)	5,332.1	5,332.1		
Effective Rate/GJ	$ 3.24	$ 3.79	$ 0.55	17%
Rate Schedule 25				
Admin Charge/Mth	$ 78.00	$ 202.00		
Basic Charge/Mth	$ 587.00	N / A		
Demand Charge/GJ/Mth	$ 20.077	N / A		
Delivery Charge/GJ	$ 0.825	N / A		
First 20GJ	N / A	$ 4.186		
Next 260GJ	N / A	$ 3.884		
Excess over 280GJ	N / A	$ 3.179		
Minimum Delivery Charge/Mth	N / A	$ 1,826.00		
Contract Demand	292.7	N / A		
Annual Usage (GJ)	39,500	39,500		
Effective Rate/GJ	$ 2.81	$ 3.48	$ 0.66	24%

Note:

1) For Fort Nelson's RS 1, RS 2.2 and RS 2.2, the Basic Charge per day includes the first 2 GJ consumed per month.

Table 2 – Fort Nelson's Delivery Rate Embedded in its Bundled Rates for Rate 1, 2.1 and 2.2

Rate 1 - Residential					
2017 Rate 1 Bundled Rates		Bundled Rate	Less RSAM	Less Cost of Gas	Delivery Component of Rates
1st	2 per day	$ 0.5868	$ 0.0176	$ 0.1371	$ 0.4321
Next	28 per GJ	$ 5.704	$ 0.268	$ 2.086	$ 3.350
Excess	30 per GJ	$ 5.608	$ 0.268	$ 2.086	$ 3.254

2017 Rate 2.1 - Small Commercial Bundled Rates					
		Bundled Rate	Less RSAM	Less Cost of Gas	Delivery Component of Rates
1st	2 per day	$ 1.4113	$ 0.0176	$ 0.1371	$ 1.2566
Next	298 per GJ	$ 6.130	$ 0.268	$ 2.086	$ 3.776
Excess	300 per GJ	$ 6.003	$ 0.268	$ 2.086	$ 3.649

2017 Rate 2.2 - Large Commercial Bundled Rates					
		Bundled Rate	Less RSAM	Less Cost of Gas	Delivery Component of Rates
1st	2 per day	$ 1.4113	$ 0.0176	$ 0.1371	$ 1.2566
Next	298 per GJ	$ 6.130	$ 0.268	$ 2.086	$ 3.776
Excess	300 per GJ	$ 6.003	$ 0.268	$ 2.086	$ 3.649

83.2 Please provide a table in the same manner as Table 13-30 which provides a comparison between FEI and Fort Nelson Delivery Rates using proposed rates if all rate classes were rebalanced to an R:C Ratio range of reasonableness of 95% to 105%.

Response:

The following table restates Fort Nelson rates using a 95 percent to 105 percent R:C ratio range. Refer also to the response to BCUC-FEI IR 2.84.1. The FEI proposed rates have already been provided in Exhibit B-15, response to BCUC Technical IR 7.2.

Using a range of 95 percent to 105 percent as a guide for rebalancing has very little effect on FEI customers; the RS 1 effective rate increases from $5.87/GJ (from Exhibit B-1-1-1, Evidentiary Update of April 7, 2017, on Table 13-30) to $5.89/GJ. For Fort Nelson residential (Rate 1) the change is larger, increasing the effective rate from $4.34/GJ to $4.53/GJ.

The use of a 95 percent to 105 percent range of reasonableness has no effect on FEI's commercial customers. For Fort Nelson, the effective rate for Rate 2.1 small commercial customers decreases from $5.14/GJ to $5.00/GJ and for Rate 2.2 large commercial customers' decreases from $3.85/GJ to $3.63/GJ.

For FEI's RS 25 customers the decrease in the effective rate is $0.08/GJ, i.e. from $3.26/GJ to $3.18/GJ, whereas for Fort Nelson's Industrial Transport customer the effective rate decreases by $0.21/GJ from $3.75/GJ to $3.54/GJ.

Fort Nelson Rate Design

Postage Stamp Comparison - Effective Delivery Rate

	FEI Proposed Rates [1)]	Fort Nelson Proposed Rates 95-105	Difference	FN/FEI
Rate Schedule 1, Rate 1b				
Basic Charge/Day	$ 0.4085	$ 0.3687	$ (0.0398)	
Delivery Charge/GJ	$ 4.769	$ 3.512	$ (1.257)	
Annual Usage (GJ)	132.53	132.53		
Effective Rate/GJ	$ 5.89	$ 4.53	$ (1.37)	-23%
Rate Schedule 2, Rate 2.1				
Basic Charge/Day	$ 0.9485	$ 1.2312	$ 0.2827	
Delivery Charge/GJ	$ 3.664	$ 3.827	$ 0.163	
Annual Usage (GJ)	382.2	382.2		
Effective Rate/GJ	$ 4.57	$ 5.00	$ 0.43	9%
Rate Schedule 3, Rate 2.2				
Basic Charge/Day	$ 4.7895	$ 3.6936	$ (1.0959)	
Delivery Charge/GJ	$ 3.190	$ 3.377	$ 0.187	
Annual Usage (GJ)	5,332.1	5,332.1		
Effective Rate/GJ	$ 3.52	$ 3.63	$ 0.11	3%
Rate Schedule 25				
Admin Charge/Mth	$ 39.00	$ 39.00	$ -	
Basic Charge/Mth	$ 587.00	$ 563.97	$ (23.03)	
Demand Charge/GJ/Mth	$ 24.380	$ 27.177	$ 2.797	
Delivery Charge/GJ	$ 0.824	$ 0.944	$ 0.120	
Contract Demand	292.7	292.7		
Annual Usage (GJ)	39,500	39,500		
Effective Rate/GJ	$ 3.18	$ 3.54	$ 0.36	11%

Note:

1) Refer to Exhibit B-15, response to BCUC Technical IR 7.2.

84.0 Reference: FORT NELSON FINAL COST OF SERVICE RESULTS AND REBALANCING

Exhibit B-1-1-1, Section 13.7.1.4, pp. 13-50 – 13-51; Exhibit A2-10, Elenchus Rate Design Report, p. 4 and p. 7; FEI 2016 RDA April 5, 2017 Procedural Conference Transcript, p. 306; Exhibit B-5, BCUC IR 3.1.1, p. 11

Rebalancing and mitigation of rate shock for Fort Nelson customers

On page 4 of Exhibit A2-10, Elenchus provided considerations to be relevant to the assessment of whether a mitigation strategy is appropriate to avoid rate shock. One consideration was:

> Mitigation of rate shock for a customer class is normally limited to circumstances in which there are differential rate increases to address COSA results with some classes outside the acceptable range. Rate shock for the customer class(es) facing the largest increases can be mitigated by phasing in the adjustment needed to shift all classes within the acceptable range.

On page 7 of Exhibit A2-10, Elenchus states:

> When a cost allocation study indicates the need to rebalance between classes through differential rate increases, the full impact of the rebalancing may be spread over two or more years. Any class that would experience an unacceptably large rate/bill increase (rate shock) will receive a reduced rate increase in the first year and possible in subsequent years as well. Consequently, to allow the utility to recover its full revenue requirement, the rates for one or more other rate classes will be higher than they would otherwise have been.

At the April 5, 2017 Procedural Conference in this proceeding, FEI stated: “FEI generally uses a 10 percent increase as a general guideline for rate shock, but believes that each circumstance has to be looked at individually.”

In response to BCUC IR 3.1, FEI stated:

> FEI believes the appropriate point of reference for the rate design bill impact guideline is the total customer bill. The percentage changes in individual line items on the bill are of limited value since they do not express the full bill impact experienced by customers from the change. Further, some rate design changes are done in combinations, such as a shifting of cost recovery between the fixed and volumetric charges. In those situations, the impact of changes in individual line items are offset or partly offset by rate design changes affecting other line items. … FEI may

analyze the bill impact for individual rate design proposals, but as a guideline in setting the maximum bill impact, FEI has considered the combined annual impact of rebalancing as well as the individual rate design proposals.

84.1 Assuming an R:C Ratio range of reasonableness for Fort Nelson of 95% to 105%, please explain which, if any, of the rate classes would experience rate shock if FEI performed rebalancing so that no rate class was outside the range of reasonableness. Please provide the supporting calculations with your response and updates to:

i. Table 13-26 (Exhibit B-1-1-1, p. 13-50);

ii. Table 13-27 (Exhibit B-1-1-1, p. 13-51);

iii. Table 13-29 ((Exhibit B-1-1-1, p. 13-56); and

iv. Table 13-30 (Exhibit B-1-1-1, p. 13-57).

Response:

FEI has included the requested tables based on rebalancing Fort Nelson Rates to within a 95 percent to 105 percent range of reasonableness.

Although Rate 1, as a group, shows an annual bill increase of approximately 5.3 percent,[25] individual customers will experience annual bill impacts between -33 percent and +21 percent (-$66 to +$48) when compared to 2018 approved rates. The steeper rate increases are a result of rebalancing all rates to within 95 percent to 105 percent.

Rates 2.1 customers will experience a maximum annual bill increase of 2 percent when compared to 2018 approved rates and Rate 2.2 customers will all experience annual bill decreases of 3.4 percent or more. The one RS 25 customer will see an annual bill decrease of about 3.3 percent.

[25] Table 13-27 (adjusted).

Table 13-26 (adjusted): Revenue to Cost and Margin to Cost Ratios before rebalancing

Rate Schedule	Initial COSA		Revenue Shift ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	90.5%	88.0%	0.8	0.1%	90.9%	88.4%
Rate 2.1 *General (Small Commercial) Service*	108.3%	110.7%	(126.0)	0.1%	107.2%	109.4%
Rate 2.2 *General (Large Commercial) Service*	113.2%	118.2%	127.0	0.1%	114.5%	118.4%
Rate Schedule 25 *General Firm Transportation Service*	112.1%	112.1%	(1.8)	-1.2%	111.0%	111.0%

Table 13-27 (adjusted): Revenue to Cost and Margin to Cost Ratios after rebalancing

Rate Schedule	COSA after Rate Design Proposals		Rebalance Amount ($000)	Approximate Annual Bill Change	COSA after Rate Design Proposals and Rebalancing	
	R:C	M:C			R:C	M:C
Rate 1 *Domestic (Residential) Service*	90.9%	88.4%	65.5	5.3%	95.0%	93.7%
Rate 2.1 *General (Small Commercial) Service*	107.2%	109.4%	(24.0)	-1.3%	105.0%	106.6%
Rate 2.2 *General (Large Commercial) Service*	114.5%	118.4%	(33.4)	-7.6%	105.0%	106.3%
Rate Schedule 25 *General Firm Transportation Service*	111.0%	111.0%	(8.1)	-3.3%	105.0%	105.0%

1 **Table 13-29 (adjusted): Fort Nelson Rate Proposal Summary**

Rate Component	Rate 1	Rate 2.1	Rate 2.2	Rate 3.1	RS 25
Existing COSA Rates[26]					
Minimum daily Charge incl. 1st 2 GJ/month	$0.5483	$1.4337	$1.4337		
Administration Charge (/month)					$202
Next 28 GJ/month	$4.885				
Excess over 30 GJ/month	$4.782				
Next 298 GJ/ month		$5.336	$5.336		
Excess over 300 GJ/month		$5.210	$5.210		
Delivery Charge First 20 GJ/month				$4.522	$4.522
Delivery Charge Next 260 GJ/month				$4.201	$4.201
Excess over 280 GJ/month				$3.450	$3.450
Minimum Delivery Charge/month				$1,826	$1,826
Total Annual Bill:[27]	**$742**	**$2,433**	**$28,546**	**n/a**[28]	**$148,664**
Proposed Rates					
Basic Charge/Day	$0.3687	$1.2312	$3.6936		
Basic Charge (/Month)				$563.97	$563.97
Administration Charge (/Month)					$39.00
Demand Charge (/GJ/Month)				$27.177	$27.177
Delivery Charge ($/GJ)	$3.512	$3.827	$3.377	$0.944	$0.944
Commodity Cost Recovery Charge ($/GJ)	$1.275	$1.275	$1.275	$1.275	
Storage and Transport Charge ($/GJ)	$0.019	$0.020	$0.017	$0.019	
Total Annual Bill:	**$783**	**$2,406**	**$26,244**	**n/a**[29]	**$140,143**

[26] The COSA rates shown are 2018 approved rates, $1.294 Gas Cost Recovery Charge, and test year adjustments discussed above in Section 13.4.1.3.

[27] Based on an average annual demand per customer of 135 GJ for Rate 1, 382 GJ for Rate 2.1 and 5,332 GJ for Rate 2.2 and 39,500 GJ for RS 25.

[28] There are no customers taking service under Rate 3.1, therefore Total Annual Bill shows as n/a.

[29] Ibid.

Table 13-30 (adjusted): Comparison between FEI and Fort Nelson Delivery Rates

Fort Nelson Rate Design
Postage Stamp Comparison - *Effective Delivery Rate*

	FEI Proposed Rates	Fort Nelson Proposed Rates	Difference	FN/FEI
Rate Schedule 1 (1b)				
Basic Charge/Day	$ 0.4085	$ 0.3687	$ (0.0398)	
Delivery Charge/GJ	$ 4.746	$ 3.512	$ (1.234)	
Annual Usage (GJ)	132.53	132.53		
Effective Rate/GJ	**$ 5.87**	**$ 4.53**	**$ (1.34)**	-23%
Rate Schedule 2 (2.1)				
Basic Charge/Day	$ 0.9485	$ 1.2312	$ 0.2827	
Delivery Charge/GJ	$ 3.664	$ 3.827	$ 0.163	
Annual Usage (GJ)	382.2	382.2		
Effective Rate/GJ	**$ 4.57**	**$ 5.00**	**$ 0.43**	9%
Rate Schedule 3 (2.2)				
Basic Charge/Day	$ 4.7895	$ 3.6936	$ (1.0959)	
Delivery Charge/GJ	$ 3.190	$ 3.377	$ 0.187	
Annual Usage (GJ)	5,332.1	5,332.1		
Effective Rate/GJ	**$ 3.52**	**$ 3.63**	**$ 0.11**	3%
Rate Schedule 25				
Admin Charge/Mth	$ 39	$ 39	$ -	
Basic Charge/Mth	$ 587.00	$ 563.97	$ (23)	
Demand Charge/GJ/Mth	$ 24.596	$ 27.177	$ 2.581	
Delivery Charge/GJ	$ 0.887	$ 0.944	$ 0.057	
Contract Demand	292.7	292.7		
Annual Usage (GJ)	39,500.0	39,500.0		
Effective Rate/GJ	**$ 3.26**	**$ 3.54**	**$ 0.28**	9%

84.1.1 Given the scenario in the previous question and Elenchus' statements in the preamble above, please explain how FEI could mitigate rate shock experienced by rate classes in response to the previous question. Please include in the analysis consideration for other rate changes that may occur concurrently, for example rate changes as a result of a revenue requirements proceeding.

Response:

In consideration of the results in the response to BCUC-FEI IR 2.84.1 and the comments in the preamble to this IR, FEI has summarized in the following table the residential annual bill increases that have already been approved for 2017 and 2018, as well as the changes proposed in this application, and the total of all changes for 2018 and for the 2017-2018 period in total. These have been shown both using the proposed 90 percent to 110 percent range of reasonableness and using a 95 percent to 105 percent range of reasonableness.

As shown in the table below, the one year 2018 percentage increase using a 95 percent to 105 percent range of reasonableness exceeds the percentage increase that FEI considers to be a general guideline for rate shock. Using the proposed 90 percent to 110 percent range of reasonableness would result in a total annual bill increase below 10 percent.

Percentage Annual Bill Increases for Residential Customers

	Proposed 90-110	Alternative 95-105
Revenue Requirement Increase 2017	5.11%	5.11%
Revenue Requirement Increase 2018	5.10%	5.10%
Rate Design Proposals 2018	0.10%	0.10%
Rate Design Rebalancing 2018	1.90%	5.30%
Total 1 Year 2018 Percentage Increase	7.10%	10.50%
2 Year (2017 + 2018) Cumulative Percentage Increase	12.21%	15.61%

Rate Shock would be avoided by continuing to use a 90 percent to 110 percent range of reasonableness as proposed in the Application. If a 95 percent to 105 percent range of reasonableness is used, the Commission could approve a phased-in approach over a two year period to mitigate rate shock as described in the response to BCUC-FEI IR 2.84.2. For each year of the phase-in period, any revenue increase to the residential class would have to be matched by revenue decreases from the other rate classes.

84.2 Please state the period of time, in years and months, that FEI would require to use a phased-in approach to bring any rate class within an R:C Ratio range of reasonableness of 95% to 105% while avoiding rate shock. Please provide supporting calculations and explanations for your response.

Response:

Rate 1 is the only rate that needs to be considered for a phased-in approach as all other rates experience net decreases. FEI would recommend phasing in the rate changes over two years. FEI would not recommend rate changes applied as percentages but rather revenue shifts in dollar amounts as shown in the table below. FEI would then calculate the change in Rate 1 rates required to increase the revenue required and then calculate the rates for Rate 2.1, Rate 2.2 and RS 25 for their proportionate decreases. The total revenue shift to Rate 1 is $66 thousand. This equates to $34 dollars per customer ($66,000 / 1,961 customers), or, approximately $17 per year (this would be approximately $1.40 per month) more from each Rate 1 customer over two years.

The table below shows FEI's recommendation as to the revenue shifts spread over two years.

$000	RS 1	RS 2	RS 3	RS 25	Total
Year 1	+$33	-$12	-$17	-$4	**$0**
Year 2	+$33	-$12	-$17	-$4	**$0**
Total	**+$66**	**-$24**	**-$34**	**-$8**	**$0**

84.3 Please discuss the advantages and disadvantages of using a phased approach over several years to mitigate rate shock.

Response:

FEI discusses advantages and disadvantages of a phased approach to mitigate rate shock by taking rate design principles into consideration.

A phased approach over several years to mitigate rate shock is one of the approaches to manage customers' annual bill impacts and is therefore consistent with rate design Principle 6 (Rate Stability) as it helps in managing the customer bill impact. This approach also scores well on rate design Principle 4 (Customer Understanding and Acceptance) as customers are more likely to be satisfied and accept an approach that manages their bill impacts over a few years. This approach would be less consistent with rate design Principles 3 (Price signals that encourage efficient use and discourage inefficient use) and 5 (Practical and cost-effective to implement) as a more protracted implementation will delay the full price signal impact and increase administration effort and costs. This approach might result in some customer groups not paying their full share of costs based on cost causation and revenue rebalancing for a few years, which would tend to make it less consistent with rate design Principles 2 (Fair apportionment of cost recovery) and 8 (Avoidance of undue discrimination).

84.4 Please list and explain other approaches used to mitigate rate shock that occurs as a result of rate design and rebalancing.

Response:

FEI is not aware of any other approaches that are used to mitigate rate shock as a result of rate design and rebalancing.

TRANSPORTATION SERVICE REVIEW

J. CHAPTER 10 – TRANSPORTATION SERVICE REVIEW

85.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit B-10, Cascadia 1.9 a; Exhibit B-5, BCUC 1.60.9.1, Revised Table 10.8

FEI increased use of current tariff provisions

In response to Cascadia IR 1.9 a, FEI described how FEI has increased warnings to Shipper Agents since the Commission issued its decision in the FEI Application to Amend the Balancing Charges for Rate Schedules 23, 25, 26 and 27 (Monthly Balancing Charge Decision). FEI stated:

> Since the Monthly Balancing Decision, and in particular over the last winter, FEI has issued approximately 10 warnings per week, both verbally and in writing to Shipper Agents to correct nominating practices. On about five occasions over the last winter, FEI physically amended the nominations of Shipper Agents. These warnings and actions were issued to correct both over-supply and under-supply situations.

85.1 Please provide more details regarding the magnitude of the over-supply and under-supply situations these warnings were issued for, how quickly Shipper Agents rectified the situation(s) and the nature of the reasons provided by the Shipper Agent(s), if any, for the over-supply or under-supply situation.

Response:

The following table provides a magnitude of over and under supply situations. The negative quantity is a draft (under-supply) situation and a positive is a pack (over-supply) situation. The average daily demand, or range of demand in some cases, is provided to show the number of days of inventory the Shipper Agent was holding at that time. The days to rectify is the length of time before the Shipper Agent brought their account back into balance. The reasons for the imbalance as provided by the Shipper Agent are listed; however, in some cases FEI did not specifically request a reason as the primary communication or direction was to rectify the situation within a reasonable timeframe.

No.	Supply Position Pack/(Draft)	Average Daily Demand	Days to Rectify	Month	Reasons
1	(100,000)	20,000	7	Mar	No reason provided, agreed to comply by month end
2	(64,000)	5,200-22,000	7	Dec	No reason provided, agreed to comply by month end

No.	Supply Position Pack/(Draft)	Average Daily Demand	Days to Rectify	Month	Reasons
3	70,000	7,000-17,000	7-10	May	Agreed to comply by month end
4	60,000	300-3,000	60	Jan	Trader was responsible for over-supply, cold weather snap
5	195,000	40,000-45,000	10	Jan	Cold weather, supply restriction
6	48,000	3,300	60	Jan	Cold weather, supply restriction
7	44,000	160-3,000	20	Jun	No reason provided
8	92,000	10,000	20	Mar	Operational oversight

In the cases where cold weather is listed, Shipper Agents reported the excess supply was a result of imbalance return being removed, and in supply restrictions the extra gas was to avoid charges. Generally Shipper Agents are compliant and respond to requests from FEI. In some cases, however, as exemplified by the instances where it took 60 days to rectify, Shipper Agents have required numerous prompts to rectify and balance their group within more reasonable levels.

85.1.1 Please describe the extent to which these warnings were either a) as a response to an increase in the magnitude and number of over-supply and under-supply situations or b) as an increased overall effort on FEI's part to manage balances more tightly than has been FEI's practice in the past.

Response:

In some situations, the warnings were issued as a result of repeat behavior from certain Shipper Agents. In general, since the direction from the Monthly Balancing Gas Decision (Order G-187-14), FEI has been managing balances more tightly and holding Shipper Agents more accountable for their inventory levels on the system.

85.1.2 To what extent were the Shipper Agents in question the same ones which are above the red 10 percent tolerance line in the Revised Table 10.8 in BCUC 1.60.9.1?

Response:

The majority of the Shipper Agents FEI contacted to correct imbalances were above the red 10 percent tolerance band in Table 10-8, in the response to BCUC-FEI IR 1.60.9.1.

86.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit B-5, BCUC 1.55.1.1; Exhibit B-8, BCOAPO 1.10.1.b; Exhibit B-10, Cascadia 1.7.c

Consequences of incenting new balancing behaviour

In response to BCOAPO IR 1.10.1 b, FEI stated:

> If Shipper agents improve their imbalance management in response to the daily balancing and revised balancing tolerances proposed in the Application, FEI expects a reduction in overall variable costs to balance the system. .... FEI has not estimated the extent of the variable costs reduction as this will depend on how Shipper Agents respond to the balancing requirements...

In response to BCUC IR 1.55.1.1, FEI stated:

> In general, daily balanced groups tend to pack while monthly balanced groups tend to draft the system. Although the aggregated inventory levels are typically positive, as indicated in the below figures, the two balancing practices clearly incent different behaviour. FEI would like to remove monthly balancing provisions to incent consistent balancing behaviours across all Shipper Agents.

In response to Cascadia IR 1.7 c regarding the potential impact of the proposed balancing changes, FEI stated: "FEI recognizes that exclusive daily balancing provisions may incent Shipper Agents to over-deliver in order to avoid potential charges."

86.1 Does FEI anticipate that the proposed change to exclusive daily balancing may result in a tendency for the aggregated transportation service inventory levels to be greater positive balances than those currently experienced?

Response:

FEI does not anticipate an excessive over-supply beyond reasonable levels as there would be cost implications to either the Shipper Agent or the customer to pay for the excess supply.

There are tools within the Transportation rate schedules which give FEI the ability to take action to manage over-supply situations should they occur. In the Gas Balancing Section 8.1 (a) of RS 23, the tariff states, for over-deliveries:

> FortisBC Energy reserves the right to limit Gas quantities maintained in the Shipper's inventory account and will from time to time in consultation with the Shipper return excess inventory at no charge to the Shipper; this will not relieve

the Shipper from its obligation to provide accurate nominations pursuant to section 7.2 (Requested Quantity);

Essentially, FEI has the right to remove excess inventories beyond reasonable limits and return this volume at a later date.

As stated in the Application, many Shipper Agents managing exclusive daily balanced groups today, and for the majority of the time maintain their inventory within a two to three day pack tolerance. Shipper Agents will continue to have access to Imbalance Return to manage and draw from their inventory levels. For these reasons and because of the tools available in the tariff, FEI does not expect imbalances to exceed reasonable limits.

86.1.1 If not, why not? If so, please discuss the potential for an overall increase in the positive aggregate transportation service inventory levels to alter the nature and operation of the midstream portfolio required to balance the system such that there is a resulting associated increase in the midstream portfolio costs.

Response:

FEI does not anticipate that inventory levels will rise to levels significant enough to require an associated increase in midstream resources and costs for the reasons stated in response to BCUC IR-FEI 2.86.1.

87.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit E-1, Teck Coal Letter of Comment, pp. 1–2; Exhibit B-13, FEI Response to Teck Coal, p. 2; Exhibit B-5, BCUC 1.56.1

Application of proposed balancing changes to Rate Schedule 22B

In the Teck Coal Limited (Teck Coal) Letter of Comment to the Commission dated June 26, 2017, Teck Coal states:

> FEI does not provide balancing services to RS 22B customers; no FEI midstream resources are used to balance Teck Coal's account. Teck Coal takes delivery at Sparwood. With Teck Coal being the only large industrial load served from the Sparwood tap, the physical setup is different than RS 22 customers: Teck Coal is balancing the tap, not FEI.

In response to Teck Coal's Letter of Comment, FEI states:

> Historically, each individual shipper in the Columbia Region had an Operating Balancing Agreement (OBA) with Foothills BC. The process of managing OBAs with individual shippers proved to be onerous for TransCanada. Approximately 10 years ago, FEI entered into OBAs with Foothills BC to manage FEI's sales and transportation service loads directly with TransCanada.
>
> Today, FEI holds OBAs for each of the seven connection points with Foothills BC. Foothills BC requests that FEI balance its supply and demand at the interconnecting points in the Columbia Region.

In response to BCUC IR 1.56.1, FEI stated:

> All Shipper Agents today have access to [FEI's Web Information and Nomination System (WINS)], which is a self-serve web based application to view individual customer and group demand by day, historical customer consumption, authorized supply from the interconnects, system inventory and imbalances. All Shipper Agents also have the ability to make intraday nomination changes to reflect changes in demand caused by weather or customer behaviour.

87.1 When the management of the OBAs moved from the individual shippers in the Columbia Region to FEI, please describe how these changes were communicated to FEI's Rate Schedule 22B (RS 22B) customers. Please provide copies of any relevant correspondence.

Response:

The changes were communicated via conference call and e-mail. Please refer to Attachment 87.1 for a copy of three emails from February 2010 outlining the change in the OBA management from Foothills BC to FEI showing the communication to Shipper Agents managing RS 22B customers. The first message is from FEI's Midstream Operations Manager requesting a conference call with Foothills BC to discuss the change for FEI (then Terasen) to balance at the tap level. The second email indicates that the Midstream Operations Manager discussed the OBA changes verbally with the Shipper Agents, referencing a few Shipper Agents such as Altagas and Shell Energy. The third email summarizes the changes going forward for both FEI and Foothills BC's obligations regarding OBA management.

87.2 Please describe the extent to which FEI's RS 22B customers, or Shipper Agents acting on their behalf, are currently required to use the FEI WINS system to manage their account inventories.

Response:

All 22B customers are represented by Shipper Agents. Shipper Agents representing customers in the Columbia region use WINS in the same manner that they do for managing customers in the Lower Mainland and Interior regions. Shipper Agents are required to use WINS to insert and change gas supply nominations on behalf of their customers. In WINS, Shipper Agents can view daily historical consumption, and access Inventory reports, detailing daily and aggregated supply and demand imbalances at each Columbia tap location.

87.2.1 Are FEI's RS 22B customers, or Shipper Agents acting on their behalf, currently required to use the FEI WINS system to communicate nominations for their supply requirements to FEI for the interconnection point between FEI and Foothills BC?

Response:

Confirmed.

87.2.2 As the interconnecting pipeline, does TransCanada currently require FEI to provide the Shipper Agent's requested supply requirement for moving gas from the Foothills BC system to the FEI system on a daily basis and then, in turn, does TransCanada communicate authorized supply quantities to FEI on behalf of the FEI RS 22B customers just as Westcoast Energy Inc. (Westcoast) does with FEI for FEI's transportation service customers who source their supply through an FEI/Westcoast interconnect point? If not, why not?

Response:

The exchange of nominated requests and authorized supply quantities is handled slightly differently with the Foothills BC system as compared to the Enbridge (Westcoast) system. At a high level, the primary difference is that an automatic electronic data exchange (or EDI) does not exist between FEI and TransCanada; instead, the systems are updated manually.

For the RFC or Request for Confirmation from FEI to TransCanada, maximum supply quantities are set up in Foothills BC's system at each location for each Shipper Agent. For example, FEI could set up Shipper Agent A to receive gas at Cranbrook, up to a maximum of 10,000 GJ/day. In FEI's WINS system, Shipper Agents are required to input their nominated requests by day and/or by cycle. For each corresponding day and cycle, Foothills BC issues an Operator Report, which provides the authorized supply quantities by Shipper Agent at each Columbia tap location. For example, the Operator Report would list Shipper Agent A with an authorized amount of 8,000 GJ for the timely cycle for October 1.

FEI inputs the authorized quantities manually in WINS by cycle, by day. If the authorized supply is less than the nominated or requested supply as is the case with Shipper Agent A, a cut report is issued to the Shipper Agent notify of the supply reduction.

Although the systems are manually updated, daily measured quantities (demand) and the corresponding authorized supply is available in WINS for each Shipper Agent at each Columbia tap location in order to track imbalances and manage the gas supply requirements of customers. Essentially, nominations and authorized supply information is exchanged and relayed between Shipper Agents representing RS 22B customers and TransCanada, similar to the exchange of information for transportation customers served through the Enbridge system, with the exception that the exchange with TransCanada is manual while with Enbridge it is automated.

87.3 To the extent RS 22B customers' account balances may have been managed differently than other transportation service customers on the FEI system to-date,

please discuss whether it might be appropriate to provide RS 22B customers a longer period than FEI's other transportation service customers to transition to the proposed balancing requirements.

Response:

As indicated in the response to BCUC-FEI IR 2.87.2, Shipper Agents managing customers in the Columbia Region have the ability to monitor and manage imbalances through WINS, just as they can for customers in the Lower Mainland and Interior regions. FEI does not believe there is a need for a delayed implementation to transition to the proposed balancing requirements in the Columbia region. Please also refer to the response to Absolute-FEI IR 2.2.6.

88.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit B-5, BCUC 1.60.6 and 1.60.7

Impact of RNG on daily balancing requirements

In response to BCUC IRs 1.60.6 and 1.60.7 regarding how the supply of renewable natural gas (RNG) under Rate Schedule 11B is accounted for in the Shipper Agent group inventories, FEI stated:

> In addition to FEI, at presents there are three other Shipper Agents representing six transportation customers that are actively purchasing RNG volumes from FEI under RS 11B. ... The RNG supply is captured in WINS and can be viewed into the Shipper Agent's group in which the transportation customer resides. RNG sales quantities are typically transferred into the group once a month in a lump sum. ..... It is not factored into or added to the direct physical supply on the day but, given that the supply inflates the Shipper Agent's inventory, it does impact the determination of balancing charges.

88.1 Are RNG sales under Rate Schedule 11B typically a periodic lump sum sale or is it a daily quantity delivered over an agreed time period?

Response:

RNG sales quantities under Rate Schedule 11B typically involve a monthly lump sum transfer. RNG sales quantities could be transferred on a daily basis; however, this approach would require a fair amount of daily manual entry on FEI's part.

88.2 If FEI's sales of RNG to transportation service customers significantly increase over time, does FEI foresee that the practice of lump sum transfers of RNG sales into a Shipper Agent group may impact FEI's ability to effectively use the proposed daily balancing provisions to balance the system?

Response:

No, FEI does not foresee that the practice of lump sum transfers of RNG sales into a Shipper Agent group will impact FEI's ability to effectively use the proposed daily balancing provisions to balance the system. The revisions to daily balancing provisions are designed to incent Shipper Agents to balance their customer load more tightly and therefore rely less on FEI to account for imbalances borne by transportation customers. The proposed balancing provisions deal with

under-deliveries, i.e. when supply is less than demand. RNG sales effectively boost the Shipper Agent's overall inventory, providing additional supply to meet demand on another day. An increase in RNG sales will therefore not affect FEI's ability to effectively use the proposed daily balancing provisions to balance the system.

89.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit B-11, CEC 1.56.1

Estimated balancing revenue credited to sales customers through MCRA

In response to CEC IR 1.56.1 which asked FEI to provide an estimate of the amounts FEI expects to be credited back to the midstream portfolio, FEI provided, for illustration purposes, an estimate of charges of approximately $1.4 million that potentially could have been collected in 2015 under the assumption that all transportation groups were required to balance daily within a 10 percent tolerance.

89.1 Please confirm, or otherwise explain, that all Balancing Charge revenue collected from transportation service customers under the current transportation service tariffs is credited back to the midstream portfolio.

Response:

Confirmed. Under the current transportation service tariffs revenue collected from all sales-related charges, including balancing charges are credited back to the midstream portfolio for sales customers under RS 1 to RS 7.

89.2 Please provide a table showing the Balancing Charge revenue amounts from daily balanced groups and monthly balanced groups, respectively, collected and credited back to the midstream portfolio for each calendar year from 2012 through 2016.

Response:

FEI has prepared the following table of revenue collected from Balancing Charges from 2012 to 2016 and credited back to the midstream portfolio.

For daily balanced groups, the revenue from Daily Balancing gas charge and the Balancing Premium Surcharge (20 percent tolerance) has been included. For monthly balanced groups, revenue for the Monthly Balancing gas charge has also been included.

Year	Daily Balancing Gas	Balancing Premium Surcharge	Monthly Balancing Gas
2012	$140,387	$49,203	$1,065,263
2013	$466,981	$73,793	$1,524,739
2014	$371,014	$76,942	$1,119,630
2015	$165,960	$18,428	$471,592
2016	$136,109	$76,740	$407,601
TOTAL	$1,280,452	$295,107	$4,588,825

1

2

90.0 Reference: TRANSPORTATION SERVICE REVIEW

Exhibit B-5, BCUC 1.60.1, 1.60.9.1 and 1.60.9.2

FEI as Shipper Agent for Rate Schedule 14A customers

In response to BCUC IR 1.60.1, FEI stated:

> Rate Schedule 14A provides a positive benefit to the costs of the core. ... The core market receives any proceeds from the spread between market factor premium and actual costs, which are reported in the annual RS 14A Purchase and Sales Summary to the Commission.

FEI also provides a table in response to BCUC IR 1.60.1 setting out the Balancing Gas quantities incurred by FEI in its role as Shipper Agent for Rate Schedule 14A customers over the period from January 2012 through April 2017.

In the revised Table 10-8 that was provided in response to BCUC IR 1.60.9.1 FEI's monthly balanced LML group is second highest in the ranking of Shipper Agent groups in terms of imbalance levels. In response to BCUC IR 1.60.9.2 regarding FEI's history of balancing in its role as Shipper Agent, FEI states "Since the monthly balancing gas charge proceeding in the second half of 2014, FEI has adjusted its nomination processes for RS 14A and is now more closely managing supply and demand."

90.1 Do FEI personnel who act as a Shipper Agent for Rate Schedule 14A customers rely on the WINS system to manage their Shipper Agent group with the same access and timing afforded other Shipper Agents through WINS or are they able to access the supply and demand data through alternate avenues within FEI? If the latter is the case, please elaborate.

Response:

Yes, FEI personnel acting as a Shipper Agent for Rate Schedule 14A customers rely solely on the WINS system to manage their Shipper Agent group with the same access and timing afforded to other Shipper Agents through WINS.

90.2 Please confirm, or otherwise explain, that the Balancing Charges associated with the Balancing Gas quantities incurred by FEI in its role as Shipper Agent for Rate Schedule 14A customers are included as part of the cost of the Rate Schedule 14A purchases.

Response:

Confirmed.

90.3 Please provide a table showing the following Rate Schedule 14A data for each year for the period from 2012 to 2016:

- Rate Schedule 14A Purchases (GJ)
- Rate Schedule 14A Purchase Costs ($)
- Rate Schedule 14A Sales (GJ)
- Rate Schedule 14A Sales Revenue ($)
- Balancing Gas Incurred by FEI for RS 14A (GJ)
- Balancing Charges Incurred for RS 14A($)
- Net Revenue Credited to Core ($)

Response:

The requested information for RS 14A is provided in the following table:

	2012	2013	2014	2015	2016
RS 14A Purchases (CDN$)	2,670,406	5,589,539	7,263,002	3,753,156	3,909,114
RS 14A Purchases GJ	914,844	1,398,874	1,492,663	1,259,191	1,317,854
Balancing Purchase (CDN$)	196,075	278,524	240,293	18,471	47,293
Balancing Purchase GJ	72,191	76,608	41,817	6,278	16,209
Total Purchases (CDN$)	2,866,481	5,868,063	7,503,295	3,771,627	3,956,407
Total Purchases GJ	987,034	1,475,482	1,534,479	1,265,469	1,334,063
Total Sales (CDN$)	2,925,703	5,956,444	7,595,018	3,847,314	4,036,233
Total Sales GJ	987,034	1,475,482	1,534,479	1,265,469	1,334,063
Net Revenue to Core (CDN$)	59,222	88,381	91,722	75,687	79,826

90.4 Does FEI have any objections if the Commission were to direct FEI to include reporting on FEI's incurred balancing charges as part of the annual compliance report to the Commission on Rate Schedule 14A gas purchases and sales? If so, please elaborate.

Response:

FEI would have no objections to a Commission direction of the nature specified in the question.

Attachment 65.9

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 68.1

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 71.3

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 71.4

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 73.1

Sample bill for Fort Nelson customers

FORTIS BC

Name: ANNIE CUSTOMER
Service address: 12345 ANY STREET
FORT NELSON
Rate class: Residential
Billing date: Jan 3, 2017

NATURAL GAS

Customer Service: 1-888-224-2710
7 am - 8 pm Mon - Fri
fortisbc.com

Account number	Due date	Amount due	Amount paid
555555	Jan 24, 2017	$247.34	

Previous bill	125.36	
Less payment - Thank you	125.36 CR	
Balance from previous bill		0.00
Gas charges		
Basic Charge (32 days at 0.5858 per day)	18.75	
Charge for gas used (29.6 GJ at 5.704 per GJ)	168.84	
		187.59 *
Other charges and taxes		
Carbon tax (31.7 GJ at 1.4898 per GJ)		47.23 *
Clean Energy Levy (0.40% of * amounts)		0.75
GST (5% of * amounts)		11.74
Please pay		**247.34**

Gas usage calculation (Meter RCT673584)

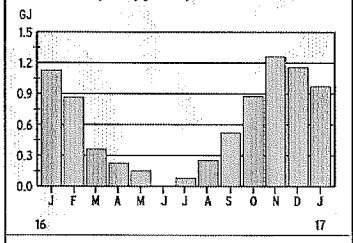
Present reading	+	Previous reading	+	Conversion factor	=	Gas used in gigajoules (GJ)
Jan 3, '17		Dec 2 '16				
1,447 Est		1,142		0.1040581		31.7

Point of delivery: 994022

Comparison to previous year

Billing period	Number of days billed	Average daily temp.	Average daily usage GJ	Total billing period usage GJ
Jan '17	32	-15°C	0.99	31.7
Jan '16	31	-11°C	0.88	27.2

Average daily gas usage over 13 months



2 Gigajoules per month are prorated to a daily rate and included in the basic charge.

HST/GST #R100431592

Recycled paper

NATURAL GAS

Payment return slip - Make cheques payable to FortisBC-Natural Gas

FORTIS BC

Account number	Due date	Amount due	Amount paid
555555	Jan 24, 2017	$247.34	

ANNIE CUSTOMER
12345 ANY STREET
FORT NELSON, BC V0E 2S0

00 000 459535 0 00008900 5

16-224.2 09/2016

⑆39890⑈900⑆

96

Business sample bill Fort Nelson

FORTIS BC

Name: ANY COMPANY
Service address: 12345 ANY STREET
FORT NELSON
Rate class: Large commercial
Billing date: Jan 1, 2017

NATURAL GAS

Customer Service: 1-888-224-2710
7 am - 8 pm Mon - Fri
fortisbc.com

Account number	Due date	Amount due	Amount paid
555555	Jan 22, 2017	$1,772.04	

Previous bill	1,485.62	
Less payment - Thank you	1,485.62 CR	
Balance from previous bill		0.00
Gas charges		
Basic Charge (30 days at 1.4113 per day)	42.34	
Charges for gas used (203.6 GJ at 6.130 per GJ)	1248.07	
		1,290.41 **
Other Charges and taxes		
Carbon tax (205.6 GJ at 1.4898 per GJ)		306.30 *
Clean Energy Levy (0.40% of * amounts)		5.16
PST (7% of * amounts)		90.33
GST (5% of ** amounts)		79.84
Please pay		**1,772.04**

Gas usage calculation (Meter 3516)

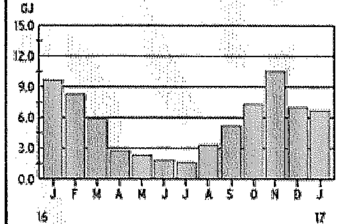
Present reading	+	Previous reading	+	Conversion factor	=	Gas used in gigajoules (GJ)
Jan 1 '17		Dec 2 '16				
67,220 Est		65,250		0.1043563		205.6

Point of Delivery: 944765

Comparison to previous year

Billing period	Number of days billed	Average daily temp.	Average daily usage GJ	Total billing period usage GJ
Jan '17	30	-15°C	6.85	205.6
Jan '16	32	-17°C	10.20	326.4

Average daily gas usage over 13 months



2 Gigajoules per month are prorated to a daily rate and included in the basic charge.

GST #R121743074

Recycled paper

NATURAL GAS

Payment return slip - Make cheques payable to FortisBC-Natural Gas

FORTIS BC

Account number	Due date	Amount due	Amount paid
555555	Jan 22, 2017	$1,772.04	

ANY COMPANY
12345 ANY STREET
FORT NELSON, BC V0C 1R0

16-224.2 09/2016

⑆39890⑈900⑆ 96

Business sample bill Mainland

FORTIS BC

Name: ANY COMPANY
Service address: 12345 ANY STREET
CRANBROOK
Rate class: Large commercial
Billing date: Jan 2, 2017

NATURAL GAS

Customer Service: 1-888-224-2710
7 am - 8 pm Mon - Fri
fortisbc.com

Account number	Due date	Amount due	Amount paid
555555	Jan 23, 2017	$4,589.96	

Previous bill	2,488.42	
Less payment - Thank you	2,488.42 CR	
Balance from previous bill		0.00
Delivery charges		
Basic charge (32 days at 4.3538 per day)	139.32	
Delivery (540.6 GJ at 2.997 per GJ)	1,620.18	
		1,759.50***
Commodity charges		
Storage and transport (540.6 GJ at 0.684 per GJ)	369.77	
Cost of gas (540.6 GJ at 2.050 per GJ)	1,108.23	
		1,477.93***
Other charges and taxes		
Municipal operating fee (3.099% of * amounts)		100.04**
Carbon tax (540.6 GJ at 1.4893 per GJ)		805.39 *
Clean Energy Levy (0.40% of * amounts)		13.34
GST (5% of * amounts)		161.87
GST (5% of * amounts)		45.27
PST (7% of * amounts)		226.62
Please pay		4,589.96

Gas usage calculation (Meter RCT673584)

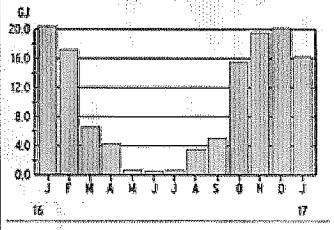
Present reading	-	Previous reading	X	Conversion factor	=	Gas used in gigajoules (GJ)
Jan 2 '17		Dec 1 '16				
270,473		260,077		0.0520023		540.6

Point of delivery: 994022

Comparison to previous year

Billing period	Number of days billed	Average daily temp.	Average daily usage GJ	Total billing period usage GJ
Jan '17	32	5°C	16.89	540.6
Jan '16	28	6°C	17.68	494.9

Average daily gas usage over 13 months



NATURAL GAS

FORTIS BC

Account number	Due date	Amount due	Amount paid
555555	Jan 23, 2017	$4,589.96	

ANY COMPANY
12345 ANY STREET
CRANBROOK, BC

00 000 459535 0 00008900 5

16-283.3.3 12/2016

⑈39890⑈900⑈ 96

Sample bill for Mainland customers

Includes Lower Mainland, North and South Interior (or Inland and Columbia regions)

FORTIS BC

Name: ANNIE CUSTOMER
Service address: 12345 ANY STREET VANCOUVER
Rate class: Residential
Billing date: Jan 1, 2017

NATURAL GAS

Customer Service: 1-888-224-2710
7 am - 8 pm Mon - Fri
fortisbc.com

Account number	Due date	Amount due	Amount paid
555555	Jan 22, 2017	$68.49	

Previous bill	168.82	
Less payment - Thank you	168.82 CR	
Balance from previous bill		0.00
Delivery charges		
Basic charge (30 days at 0.3890 per day)	11.67	
Delivery (6.4 GJ at 4.299 per GJ)	25.51	
		37.18 *
Commodity charges		
Storage and transport (6.4 GJ at 0.811 per GJ)	5.19	
Cost of gas (6.4 GJ at 2.050 per GJ)	13.12	
		18.31 *
Other charges and taxes		
Carbon tax (6.4 GJ at 1.4898 per GJ)		9.53 *
Clean Energy Levy (0.40% of * amounts)		0.22
GST (5% of * amounts)		3.25
Please pay		**68.49**

Gas usage calculation (Meter RCT673584)

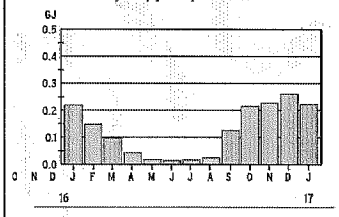
Present reading	-	Previous reading	X	Conversion factor	=	Gas used in gigajoules (GJ)
Jan 1 '17		Dec 2 '16				
2,614		2,562 Est		0.1237279		6.4

Point of delivery: 1010157

Comparison to previous year

Billing period	Number of days billed	Average daily temp.	Average daily usage GJ	Total billing period usage GJ
Jan '17	30	4°C	0.21	6.4
Jan '16	30	3°C	0.24	7.2

Average daily gas usage over 13 months



GST #R100431592

Recycled paper

NATURAL GAS

Payment return slip - Make cheques payable to FortisBC-Natural Gas

FORTIS BC

Account number	Due date	Amount due	Amount paid
555555	Jan 22, 2017	$68.49	

ANNIE CUSTOMER
12345 ANY STREET
VANCOUVER, BC V3E 2R7

00 000 459535 0 00008900 5

16-283.3.3 12/2016

⑈39890 900⑈

96

Attachment 87.1

From: Braun, Christine <Christine.Braun@terasengas.com>
Sent: Tuesday, February 2, 2010 12:14 PM
To: [redacted][TransCanada];[redacted][TransCanada]
Subject: Columbia Taps Imbalances - Conference Call

[redacted]

Just wondering if we can set aside some time for a conference call in the next couple of days to talk about:

1. Changing the taps so that Terasen balances at the Tap level and then Terasen will be responsible for balancing all Industrial Marketers behind the taps (TGI would no longer send TCPL any measurement data)
2. Shell's Sparwood Imbalance - when would you put through the adjustment for the missing measurement data)
3. Shell's Galloway Imbalance – when could you transfer that as per e-mail…

Thanks,

Christine Braun
Midstream Operations Manager
Terasen Gas Inc.
Direct: 604-592-7830
Cell: 604-308-0940
Midstream Hotline: 604-592-7799
Fax: 604-592-7895

www.terasengas.com

From: Braun, Christine <Christine.Braun@terasengas.com>
Sent: Tuesday, February 2, 2010 2:17 PM
To: [redacted][TransCanada];[redacted][TransCanada]
Subject: Columbia Taps

[redacted]

Just to let you know that I just got off the phone with Altagas and they are good with what Terasen is proposing. I had talked to[redacted][Shell Energy] last week and she was fine with where we were heading.

So I will follow up with an e-mail to both you and[redacted]informing you of what the plan is on a go forward basis.

Thanks for all your help and lets hope it all works out.

Sincerely,

Christine Braun
Midstream Operations Manager
Terasen Gas Inc.
Direct: 604-592-7830
Cell: 604-308-0940
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From: Braun, Christine <Christine.Braun@terasengas.com>
Sent: Tuesday, February 2, 2010 2:45 PM
To: [redacted][TransCanada];[redacted][TransCanada]
Cc: DiGiovanni, Mike; Nordby, Ewart; Metza, Mike; Wilson, Colleen; Lane, Bryan; Ross, Clarke; Specogna, Tania
Subject: Columbia Taps Imbalance

[redacted]

Effective February 1, 2010, Terasen will balance with Foothills BC (FHBC) at each of the Tap locations. FHBC will no longer balance any customers that are behind each of the delivery taps which are in Terasens' Columbia service territory.

The imbalances at each of these locations, Cranbrook, Sparwood, Elko, Fernie, Galloway,Yahk will be handled between Terasen Gas and FHBC.

Therefore, Terasen will no longer send any month end actual measurement data to FHBC nor will Terasen send any estimated measurement data during the month. January 2010 will be the last month that FHBC will receive actual measurement data from Terasen for customers that are behind each of these taps.

If you have any questions or concerns please let me know.

Kind Regards,

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