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July 10, 2018

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

Dear Mr. Wruck:

Re: FortisBC Inc. (FBC)
Project No. 1598939
2017 Cost of Service Analysis and Rate Design Application (the Application)
Response to the British Columbia Utilities Commission (BCUC or the Commission) Information Request (IR) No. 2

On December 22, 2017, FBC filed the Application referenced above. In accordance with Commission Order G-101-18 establishing the Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to BCUC IR No. 2.

If further information is required, please contact Corey Sinclair at (250) 469-8038.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties



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A. CONTEXT AND CONSIDERATION

111.0 Reference: RATE DESIGN PRINCIPLES

Exhibit B-8, BCUC IR 3.1, 3.3, 3.5, 4.2

Customer understanding and acceptance and conservation

FortisBC Inc. (FBC) states the following in response to British Columbia Utilities Commission (BCUC) Information Request (IR) 3.1:

Ease of understanding and customer acceptance are also critical to a successful residential rate structure implementation. The recent customer research surveys conducted by BC Hydro and FEI indicate that ease of understanding and customer acceptance are ranked most highly by residential customers. FEI's survey also indicates that customers consider the flat rate structure to be easiest to understand. Similarly, FBC considered customer feedback received in workshops and letters of comment.

FBC further states in response to BCUC IR 3.5 that it has not conducted a residential customer survey and "relies on the results of similar customer research studies conducted by independent consultants on behalf of BC Hydro and FEI."

111.1 Please explain if the research studies conducted on behalf of FortisBC Energy Inc. (FEI) included customers within FBC's service territory.

Response:

Yes. Sentsis' survey included FBC's service territory. Sentsis survey results were classified and tabulated in four areas: (i) Lower Mainland/Fraser Valley (ii) Vancouver Island/ Sunshine Coast (iii) Northern Interior (North of Kamloops) (iv) Southern Interior (Kootenay/ Okanagan/Thompson).

FBC's service territory is located in the Southern Interior. While some participants in that area are not served by FBC (Vernon, Kamloops etc.) it is likely that they would have similar views to participants living in the FBC service territory and therefore Southern Interior would be a good proxy for FBC's service territory. In addition, a comparison of the responses to questions regarding the priority of ease of understanding of rates and the fact that flat rates are easier to comprehend in all four areas indicates that the customer opinion on these issues is similar throughout the four areas.

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111.1.1 If no, please explain FBC's basis for relying on the results of these studies.

Response:

Please refer to the response to BCUC IR 2.111.1.

111.2 Please discuss whether FBC considers its residential customer base in terms of demographics, weather patterns, etc. to be similar to BC Hydro's residential customer base and whether differences in the utility customer bases may impact customer responses related to ranking of rate design considerations and opinions on a tiered versus flat rate.

Response:

As mentioned in the response to BCUC IR 2.111.1, the similarity of responses regarding the importance of the ease of understanding of rates as well as the flat rates advantage in this regard in all four areas of FEI's survey indicate that the customers' opinion on these two issues could be used as a proxy for FBC's service territory. FBC therefore believes that the survey results from both FEI and BC Hydro, along with the comments received from FBC's customers during the workshops or through the letters of comment can be used as valuable input to inform the Commission's judgement regarding FBC's customers' preferences.

FBC notes that the Commission in many instances has given consideration to data from other jurisdictions (even jurisdictions outside Canada) to inform its decisions.

111.2.1 Please provide a similar response regarding FEI's customer base compared to FBC.

Response:

Please refer to the responses to BCUC IRs 2.111.1 and 2.111.2.

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1

2 111.3 Please explain if BC Hydro's survey, similar to FEI's survey, indicated that
3 customers consider the flat rate structure to be easiest to understand.

4

5 **Response:**

6 To the best of FBC's knowledge, consideration of a flat rate was not provided as an option in BC
7 Hydro's survey. The options provided were the two-tiered rate (status quo), and two variations
8 of three-tiered rates. The respondents preferred the two-tiered rate over the more complicated
9 three-tiered rate options.

10

11

12

13 111.4 Does FBC consider there to be value in conducting its own residential customer
14 survey regarding customers' ranking of rate design objectives? Please explain
15 why or why not.

16

17 **Response:**

18 As explained in the responses to BCUC IRs 2.111.1 and 2.111.2, FBC believes that the survey
19 results conducted by FEI and BC Hydro can provide valuable input to inform the Commission's
20 decision in this proceeding as they are good proxies for customers' preferences in FBC's
21 service territory and help to avoid additional costs of a separate survey. Nevertheless, a survey
22 specifically designed for FBC's customers and conducted within the exact boundaries of its
23 service territory would provide a higher level of certainty regarding FBC customers' preferences
24 and could be tailor-made to address any issues specific to FBC's service territory and therefore
25 of some value to the stakeholders.

26

27

28

29 111.4.1 As part of the above response, please discuss whether the results of a
30 customer research survey compared to the feedback received from
31 workshops and letters of comment would likely provide information that
32 is more representative of FBC's overall residential customer base.

33

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1 **Response:**

2 Although the feedback received from workshops and letters of comment provide valuable
3 information regarding the positions of certain groups of more active customers and stakeholders
4 and can provide valuable input to inform Commission's understanding of rate design issues,
5 they do not provide a complete representative view of FBC's overall residential customer base.
6 Unlike surveys, such as the survey of FEI's residential customers in the Southern Interior, which
7 are based on sound statistical sampling methods, the comments received from these
8 stakeholders cannot be considered statistically significant and are not based on any statistical
9 methodology and therefore cannot be regarded to be fully representative of FBC's overall
10 residential customers.
11

12

13

14 In response to BCUC IR 3.3, FBC states the following:

15 Stability of rates for customers: Compared to flat rates, other rate
16 structures such as inclining block rates may provide less stability.
17 Depending on the design of the inclining block rate, the impact of volume
18 variances on revenue and rates can be more significant than variances
19 under flat rates.

20 111.5 Please specifically relate the above statement regarding stability of rates for
21 customers to FBC's experience under the Residential Conservation Rate (RCR).
22 Does FBC consider that the RCR has resulted in less stable rates? Please
23 quantify this response where possible.
24

25 **Response:**

26 The response to BCUC IR 1.3.3 relates to the relative stability of flat rates compared to a block
27 rate structure. With flat rates, revenue will vary proportionally with changes in consumption –
28 each kWh will be billed at the same rate for a specific rate class. With a block rate structure, the
29 impact of a load variance in one block is higher than in the other. This has the potential to lead
30 to a greater variation in billing as a result of changes in consumption. For instance, under an
31 inclining block rate structure, the impact of a 1 kWh increase in consumption will vary because
32 the rate in the second block is higher. Therefore, a block rate structure could increase rate
33 instability. This is true for all utilities including FBC.

34 When FBC discusses rate stability in the context of the referenced response (i.e., BCUC IR
35 1.3.3), it intends the meaning to be "bill stability", which, due to seasonal fluctuations in load will
36 naturally lead to a greater variation between bills throughout the year as compared to flat rates.

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2
3
4 In response to BCUC IR 4.2, FBC states the following:

5 There is no general rule that transitioning to a flat rate structure will lead
6 to a loss of conservation...The reason for this result is that consumption
7 in the lower priced tiers faces higher prices and consumption in the higher
8 priced tiers faces lower prices. When summed up, these countervailing
9 effects tend to cancel each other out.

10 111.6 Based on FBC's understanding of its residential customers and the conservation
11 data gathered since the RCR was implemented, please discuss FBC's
12 expectations regarding increased, decreased, or neutral conservation impacts
13 as a result of transitioning to the proposed flat rate.

14
15 **Response:**

16 The Company consulted with EES to provide the following response.

17 In past studies of elasticity, the measured price response was greatest for those customers
18 using block 2 power. Those were the customers facing an increase in price while at the same
19 time having larger than average use which would provide greater room for conservation. The
20 elasticity response was higher in the 2nd year than in the first year, indicating that conservation
21 related to efficiency improvements and reducing electric heating were being implemented rather
22 than just the behavioral changes that may have been seen in the first year. Once efficiency
23 improvements are made and/or heating sources are changed, it is unlikely that they will be
24 removed. For that reason, it is not expected that there will be a large increase in consumption
25 for those customers currently with significant block 2 usage.

26 For customers using only block 1 electricity, the elasticity was low, and not statistically
27 significant. This may be due to the fact that customers are less likely to respond to a decrease
28 in prices by switching to less efficient appliances or heating systems. However, as those same
29 customers will now see an increase in prices, they may have more of a response by conserving
30 some energy.

31 In addition, as the proposed changes are being phased in, the price change each year will be
32 low, making a significant impact on usage less likely. This differs from the implementation of the
33 RCR rate initially when customers with high use saw a large rate impact on implementation
34 (although there were further increases in the block rate differential in successive years after
35 introduction).

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1 The introduction of optional TOU rates has the potential to add some overall conservation
2 benefits depending on participation. TOU rates incent customers to reduce on-peak use and it
3 is expected that while some of this reduction will be shifted to other time periods, other portions
4 will be eliminated. The TOU rates may also lead to different types of efficiency measures that
5 may not have been as cost-effective under the RCR rates

6 When all of these factors are considered, FBC expects that the conservation impacts will be
7 neutral from the perspective of pricing alone. FBC does expect to see additional conservation
8 from its ongoing conservation programs.

9

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112.0 Reference: RATE DESIGN PRINCIPLES

Exhibit B-8, BCUC IR 3.4, 5.1; Exhibit B-1, Appendix J; Exhibit B-12, Attachment to British Columbia Sustainable Energy Association and Sierra Club BC (BCSEA-SCBC) IR 15.1

Government policy

FBC provides the following response to BCUC IR 5.1 regarding whether it has been collecting the end-use information described in the BC Minister of Energy and Mines' April 10, 2017 letter:

FBC does not routinely collect such data on individual customers and as such has not had the means to compile additional information since the letter was issued. The Company does conduct periodic Residential End-Use Survey (REUS) which collect detailed end-use and demographic information on a statistical basis and it is through this survey that FBC would collect the type of information referred to in the Minister's letter.

In response to BCUC IR 3.4, FBC states that its most recent Residential End-Use Survey (REUS) was performed in 2012.

112.1 Please provide the following information regarding the REUS:

- How often does FBC conduct its REUS?
- When does FBC next expect to undertake and complete a REUS?
- What was the total time and cost to complete the 2012 REUS (if the totals include FEI-related costs, please provide the total time and cost and the time and costs attributable to FBC only)?
- Does the information provided in FBC's most recently completed REUS address all of the topic areas outlined in the Minister's letter? If no, please explain which topic areas are not addressed in the REUS and why.

Response:

FortisBC undertakes its REUS at approximately three to four year intervals. In the past decade a REUS was undertaken in 2009 (FBC only), and subsequently with FEI, in 2012 and 2017 (not finalized). FortisBC anticipates its next REUS in 2020.

The 2012 joint REUS cost \$330,000, which includes \$72,000 charged to FBC. The approximate timeline to undertake and complete it was 30 months.

The Company understands the last bullet to be referencing the information gathering aspects of the Minister's letter that directs FBC to, "Ensure that the information you collect on your customers' end-use includes robust data on customers without access to natural gas, low

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1 income customers, high-use customers, and customers who use electricity for space and water
2 heating.”

3 The 2017 FBC REUS received 2,628 survey responses, a 58 percent increase over the 2012
4 REUS. While the size of the available sample has increased, the number and type of questions
5 asked in the 2017 REUS remain the same as in 2012 to better track longitude changes. The
6 increased number of responses is beneficial, because it improves statistical reliability. However,
7 the 2017 REUS faces the same challenge as the 2012 version: namely, gaps in the dataset limit
8 the ability to identify households matching the low-income definitions used by government. For
9 example, about 30 per cent of respondents refuse to identify income level, and it is anticipated
10 that an even higher proportion of low-income participants fail to identify income level in their
11 responses.

12 The existing REUS collects information on domestic space and water heater and examines
13 consumption information.

14 To address future low-income household/customer related questions, FBC will use Census of
15 Canada data to fill gaps in the 2017 REUS dataset. While the survey questionnaire is
16 unchanged from 2012, the contribution of census data and a higher response rate establish a
17 more comprehensive and robust platform from which to conduct analyses.

18 The 2017 REUS does not collect information on the availability of natural gas service since
19 implementation for the study was underway when the Minister’s letter was received. FBC will
20 consider this aspect for the next REUS currently planned for 2020.

21

22

23

24 112.2 Please discuss whether there are other options available to FBC which would
25 enable it to obtain the information in the Minister’s letter more routinely than
26 through a REUS. For each option identified, please explain the amount of
27 resources/costs which would be required and how the amount of
28 resources/costs would compare to the REUS.

29

30 **Response:**

31 Many of the variables referenced in the Minister’s letter change slowly over time. More frequent
32 measurement (e.g., every six months to a year) to obtain the information that is gathered
33 through REUS studies, everything else held constant, will not improve the robustness of
34 analysis or its results. Furthermore, FBC would need to keep large sample sizes in place if it
35 chose to increase the frequency of the REUS using a short form survey so that small changes
36 don’t get lost in the margins of error (statistical noise).

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FBC has budgeted \$70 thousand for its next planned REUS in 2020. Supplemental studies, even using a short-form survey format, would likely incur similar costs. Even though the survey might be shorter, it would still require the same work for activities like the sample frame development, and manual keypunching for mailed responses. Postage costs shared by FEI and FBC would need to be covered entirely by FBC. The regular availability of suitable research vendors may pose another hurdle as this area of expertise is highly specialized.

In the future, FBC may be able to supplement its existing REUS research with insight gathered from the possible implementation of a Customer Engagement Tool (CET). A CET is designed to deliver individualized energy analytics information to customers using their preferred online and offline channels. FBC plans to investigate the viability of using this type of platform to recruit participants for longitudinal energy use studies. However, it is too early to establish the costs for such an endeavour, or characterize the analytical value such an approach may deliver.

FBC filed the April 10, 2017 Minister's letter to FBC and BC Hydro as Appendix J of the Application. The Minister's letter encourages FBC and BC Hydro to take the following actions, among other things:

- Consider additional measures to improve the understanding of the impact of specific factors to their customers, including through examples of bill impacts of stepped rates for typical examples of different types of customers
- Collect and provide information to utility customers about the potential impact of appliance and housing type on their bills, in addition to information currently provided on conservation opportunities
- Extend existing programs to offer energy assessments
- Leverage and enhance existing programs to mitigate energy consumption for customers without access to natural gas and low income customers, including those with high bills

112.3 Please provide an update on the measures, if any, which are being undertaken by FBC to address the actions that were encouraged in the Minister's letter.

Response:

FBC has maintained an online calculator since the implementation of the RCR that provides examples of bill impacts of stepped rates for typical examples of different types of customers and for specific customer consumption that can be used by customers to compare annual bills

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1 under the stepped and flat rates. With the proposal to phase-out the RCR, the calculator has
2 been updated to provide the impact associated with this potential change.¹

3 Powerlines, FBC's quarterly customer newsletter, regularly contains information about the
4 energy conservation programs, programs for low-income customers, and maintenance tips to
5 run mechanical equipment at peak efficiency. Additionally, FBC has developed a mobile app, in
6 which customers can see past energy consumption and access energy saving tips and rebate
7 information. FBC also provides online tools to help customers make decisions about their home
8 energy use and appliances. The energy comparison tool allows customers to calculate home
9 energy costs for water heating and space heating and cooling, and then compare the cost
10 difference between natural gas, oil, propane and electricity. The appliance cost tool identifies
11 the approximate annual energy cost for a variety of home appliances, lighting, water heating
12 and space heating and/or air conditioning systems including natural gas and electricity.

13 FBC administers the \$150 Energy Coach Home Evaluation rebate² to customers renovating
14 their home, on behalf of the Home Renovation Rebate (HRR) partnership with the BC Ministry
15 of Energy, Mines and Petroleum Resources, FEI and BC Hydro. In addition, HRR program
16 enhancements are currently in the planning stage to be launched later in 2018.

17 FBC's New Home Program was revised in early 2018 to align with the BC Energy Step Code.
18 Within this program FBC offers up to \$500 towards energy advisor support to assist local
19 governments and builders to transition to the energy performance path outlined in the voluntary
20 BC Energy Step Code.

21 In 2017, FBC partnered with municipalities in the South Okanagan (Princeton and outlying
22 areas) and Central Kootenays (Kaslo, Crawford Bay and Riondel) without access to natural gas
23 to promote the Energy Conservation Assistance and Home Renovation Programs. During this
24 outreach initiative members of the community, regardless of qualifying income, were
25 encouraged to access whole-home energy assessments at no charge. Through various
26 promotion channels, including municipal outlets, radio, newspaper, posters and local community
27 groups, customers received information about available energy conservation programs and
28 directions how to apply. Community outreach to promote FBC's programs is ongoing in 2018.

29 Low Income programs are being promoted through one-on-one outreach to housing providers,
30 bill inserts, digital marketing, partnerships with social service providers and other
31 channels. Current developments in the Energy Conservation Assistance program include
32 enhanced draft-proofing and the exploration of insulation applications specifically for
33 manufactured homes. The program continues to seek opportunities to deepen the energy
34 savings opportunities for low income customers.

¹ The online calculators can be found at the following link:
<https://www.fortisbc.com/About/RegulatoryAffairs/ElecUtility/ElectricityRateDesign/Pages/Start-calculating.aspx>.

² <https://bcenergycoach.ca/incentives/150-hrr-energy-coach-home-evaluation-rebate/>.

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113.0 Reference: CONTEXT AND CONSIDERATIONS

**Exhibit B-1, pp. 29–33 and 45; Exhibit B-8, BCUC IR 8.4, 8.7, 9.1;
Exhibit B-13, CEC IR 8.1, 8.2**

Fixed Cost Recovery

On page 45 of the Application, FBC states that:

The system energy change from 2009 to 2017 reflects an average annual increase of 0.7 percent per year. The number of customers, however, has increased by an average of 2.3 percent per year. The difference in the customer growth and energy sales growth is due in part to a change in the mix of customer types and the average use per customer. Wholesale sales also changed significantly (they decreased) due to the FBC purchase of the City of Kelowna electric utility

Further, in response to CEC IR 8.1 FBC states that:

Generally, FBC does expect customer growth to exceed energy growth in the future. The majority of new customers added to the system on an annual basis are residential. These customers have relatively small energy loads, therefore increasing the customer count but not proportionally increasing the load.

In response to CEC IR 8.2, FBC provides the following table of forecast customer growth rates and energy sales, net of losses:

	Customers	Energy Sales
2018	0.6%	0.8%
2019	1.0%	0.4%
2020	1.1%	1.0%
2021	1.1%	0.6%
2022	1.1%	0.7%

113.1 Please expand the table provided in response to CEC IR 8.2 to include five years of historical (i.e. 2013-2017) actual customer growth rates and energy sales, net of losses.

Response:

The table requested is shown below. Please note that the customer increase of 12.6 percent in 2013 is due to the acquisition of the City of Kelowna (CoK). The total energy sales did not change due to the CoK acquisition since the CoK was previously a wholesale customer. After

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the acquisition of the CoK, the CoK wholesale load was distributed into different classes which changed the load by customer class but not the overall energy sales.

Table 1: Normalized Actual and Forecast Customer and Energy Growth (%)

	Customers	Energy Sales
2013	12.6%	2.3%
2014	1.8%	-1.8%
2015	1.0%	0.3%
2016	1.3%	1.0%
2017	1.7%	0.7%
2018	0.6%	0.8%
2019	1.0%	0.4%
2020	1.1%	1.0%
2021	1.1%	0.6%
2022	1.1%	0.7%

113.1.1 Please explain if the historical and forecast (if applicable) customer growth exceeding energy sales in the table above is largely due to the majority of the new customers being added to the system on an annual basis being residential, as opposed to other factors. Other factors include the emerging trends identified on page 29 of the Application.

Response:

Confirmed, customer growth is exceeding energy sales because the majority of the new customers added to the system are residential.

113.2 Please explain if FBC considered increasing the customer charge and demand rate to a class-specific percentage of COSA-derived values depending on the specific circumstances of each class, rather than applying a standard percentage of 55 percent (for the customer charge) and 65 percent (for the demand rate) to all rate classes. If not considered, please explain why.

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1 **Response:**

2 FBC did not consider increasing the customer charge and demand rate to a class-specific
3 percentage of COSA-derived values depending on the specific circumstances of each class.
4 The selection of the proposed percentages was based on the current recovery rates of each
5 class and results in a narrower distribution of these rates. FBC would be amenable to other
6 values, provided they were consistent across classes, but there may not be a foundation for
7 selecting them and they would need to be considered in terms of their impact on annual bills at
8 varying consumptions, and whether other changes (such as a change to the five year phase in)
9 would also need to be considered.

10

11

12

13

14 In response to BCUC IR 8.7, FBC states that, “[a]t the current time, it is the residential
15 class that has the highest adoption rates of technologies that may pose an issue for
16 fixed cost recovery.”

17 113.3 Please provide a table with the five year historical and five year forecast
18 customer count, total energy sales and average use per customer for the
19 residential class.

20

21 **Response:**

22 The requested table is provided below.

23 **Table 1: Normalized Actual and After-Savings Forecast Residential Customer Count, Energy**
24 **Sales (GWh) and Use Per Customer (UPC) (MWh)**

	Customers	Energy Sales (GWh)	UPC (MWh)
2014	113,431	1,297	11.51
2015	114,166	1,298	11.41
2016	115,772	1,296	11.27
2017	117,748	1,320	11.31
2018	118,934	1,337	11.30
2019	120,405	1,349	11.27
2020	121,890	1,361	11.24
2021	123,380	1,372	11.19
2022	124,879	1,383	11.14
2023	126,350	1,392	11.08

25

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4 In its response to BCUC IR 4.4, FBC states

5 Recovery of fixed costs (whether customer-related or demand-related)
6 through fixed charges (such as basic charges or demand charges) aligns
7 with several of the Bonbright principles such as, revenue stability and fair
8 apportionment of costs among customers, but may be construed as
9 running contrary to energy conservation and efficiency policies by leaving
10 less of a price signal in the energy-based charges.

11 With respect to the emerging trends identified on page 29 of the Application, FBC states
12 that it "...is monitoring the situation, and no assertion is being made that there is an
13 imminent or significant impact on the current rate design."

14 113.4 Given that there is no imminent or significant impact on the current rate design
15 from the emerging trends identified on page 29 of the Application, please clarify
16 the reasons for making the rate design proposals regarding fixed charges at this
17 time.
18

19 **Response:**

20 FBC is proposing to improve the equity of recovery of fixed costs between rate classes because
21 even at the current time, there is an inconsistent level of recovery and in general, an under-
22 recovery of fixed charges in the fixed portions of the rates. The emerging trends that are
23 discussed in the Application may serve to make this situation worse but in the view of FBC the
24 fact that they are not having a significant immediate impact is not a reason to ignore them in the
25 current rate design.
26

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114.0 Reference: CONTEXT AND CONSIDERATIONS

Exhibit B-8, BCUC IR 7.1

Bill impact

In its response to BCUC IR 7.1, FBC states that it "...has considered two guidelines related to bill impact when evaluating residential rate proposals."

114.1 Please identify and discuss any guidelines which FBC uses to consider bill impact in making rate design proposals for customer classes other than residential.

Response:

FBC considers bill impact in general for all rate classes, and has included the analysis for each class as part of the Application. In examining the results, a subjective assessment needs to be made as to whether or not the results seem reasonable; however, there are no additional specific guidelines similar to the rate shock evaluation used to compare the results, and no specific result that would indicate definitively that the impacts are unacceptable.

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B. COST OF SERVICE AND RATE REBALANCING

115.0 Reference: ALLOCATION

Exhibit B-8, BCUC IR 21.1, 30.5

2 Coincident Peak allocator

In response to BCUC IR 21.1, FBC states that there is continued growth in summer peaks, with twice the rate of growth compared to winter peaks, and that the 2 Coincident Peak (CP) allocator is moving closer to the 1 CP allocator compared to 2009.

115.1 Please discuss whether, if the growth in summer peaks continues, FBC would anticipate utilizing a 1 CP allocator (or another allocator such as 4 CP or 12 CP) instead of the current 2 CP allocator for allocating demand-related costs in future COSAs.

Response:

The Company consulted with EES to provide the following response.

If the growth in the summer peaks continues to grow to the point where it matches or slightly exceeds the winter peak, there would be no need to use a different allocator. If both the summer peaks and shoulder peaks grow relative to the winter peak, the 12 CP allocator may become appropriate in the future. The summer peaks would have to surpass the winter peaks by a significant amount before it would be appropriate to change to an allocator based only on the summer peak.

115.1.1 As part of the above response, please discuss the factors which FBC would consider in the future when determining if a 2 CP allocator is still appropriate.

Response:

The Company consulted with EES to provide the following response.

As with the selection in the past, FBC would look at the overall shape of the system, how close the summer peaks are to winter peaks, whether the load shape has changed since the last COSA, the results of the FERC and OEB tests, whether any other factors related to planning for system facilities have changed and whether any precedents in BC or other jurisdictions have changed enough to warrant a change for FBC.

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In response to BCUC IR 30.5, FBC provides the following tables showing the adjusted Revenue to Cost (R/C) ratios by class using the 2 CP, 1 CP, 4 CP and 12 CP demand allocators for production and transmission:

	2 CP	1CP	4CP	12 CP
Residential	98.4%	97.7%	97.9%	99.6%
Small Commercial 20	102.2%	102.5%	102.6%	101.3%
Commercial 21/22	104.7%	106.5%	104.8%	101.1%
Large Commercial Primary 30/32	104.0%	106.9%	106.3%	100.0%
Large Commercial Transmission 31	107.0%	112.6%	108.9%	105.9%
Lighting	92.2%	90.3%	89.4%	90.9%
	2 CP	1CP	4CP	12 CP
Irrigation	97.2%	110.6%	110.4%	96.6%
Wholesale Primary 40	96.7%	96.9%	97.4%	98.0%
Wholesale Transmission 41	103.9%	89.6%	95.2%	108.9%
Total	100.0%	100.0%	100.0%	100.0%

115.2 Based on the results in the above tables, please discuss which allocator(s) other than the 2 CP allocator produce(s) the most reasonable results. In particular, please discuss the merits of utilizing a 12 CP allocator compared to the 2 CP allocator.

Response:

The Company consulted with EES to provide the following response.

The 2 CP best reflects the cost causation of the system and for that reason provides the most reasonable results, in our opinion. Moving away from the 2 CP allocator would result in some classes seeing higher or lower allocated costs. Because the 12 CP provides results that do not create as large of a difference from the 2 CP results, the 12 CP approach would be the next most reasonable. The 1 CP and 4 CP do not consider the summer peak loads to be of any importance and therefore do not reflect the nature of the FBC system and the planning for facilities to meet peak loads.

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116.0 Reference: DISTRIBUTION COSTS

Exhibit B-8, BCUC IR 24.1; Exhibit B-1: Table 5-7, p. 49; Appendix A, Table 4, p. 14

Jurisdictional review of distribution classifications

FBC provides the following distribution rate base classifications in Table 5-7 on page 49 of the Application:

Description	Classified to:		Note:
Production	20% Demand 80% Energy		On the basis of the demand / energy split for equivalent BC Hydro 3808 Purchases
Transmission	100% Demand		
Distribution	Substations	100% Demand	Per Minimum System Study with Peak Load Carrying Capability (PLCC) Adjustment
	Poles, Towers & Fixtures	19% Demand 81% Customer	
	Conductors & Devices	35% Demand 65% Customer	
	Line Transformers	31% Demand 69% Customer	
	Services, Meters and related	100% Customer	
	Street Lights and Signals	Direct Assignment ⁴⁰	

In Table 4 on page 14 of the COSA Study (Appendix A), EES provides a jurisdictional comparison of the treatment of distribution system costs.

116.1 For each of the utilities identified in Table 4 of the jurisdictional review in the 2017 COSA study, please provide the classification percentages for distribution costs in the same format as Table 5-7 in the Application.

Response:

The Company consulted with EES to provide the following response.

The following provides the information requested for those utilities where the data was collected in the jurisdictional review.

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	BC Hydro	ATCO Electric Alberta	Fortis Alberta	Manitoba Hydro
Substations	100% Demand	100% Demand	Skips step where costs are split between demand and customer and allocates directly by class	100% Demand
Poles, Towers & Fixtures	50% Demand 50% Customer	30% Demand 70% Customer		60% Demand 40% Customer
Conductors & Devices	50% Demand 50% Customer	30% Demand 70% Customer		60% Demand 40% Customer
Line Transformers	50% Demand 50% Customer	40% Demand 60% Customer		100% Demand
Services, Meters	100% Customer	100% Customer	100% Customer	100% Customer
Street Lights & Signals	Direct Assignment	NA	NA	NA
	Hydro Quebec	Nova Scotia Power	Newfoundland Power	New Brunswick Power
Substations	100% Demand	NA	100% Demand	100% Demand
Poles, Towers & Fixtures	79% Demand 21% Customer	65% Demand 35% Customer	64% Demand 36% Customer	50% Demand 50% Customer
Conductors & Devices	79% Demand 21% Customer	60% Demand 40% Customer	64% Demand 36% Customer	50% Demand 50% Customer
Line Transformers	100% Customer	NA	73% Demand 27% Customer	75% Demand 25% Customer
Services, Meters	100% Customer	NA	100% Customer	100% Customer
Street Lights & Signals	NA	NA	NA	Direct Assignment

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17.0 Reference: DISTRIBUTION COSTS

Exhibit B-1, Appendix A, pp. 26-27

Classification of distribution costs

On pages 26 and 27 of the 2017 COSA Report (Appendix A), EES summarizes the classification of distribution accounts based on the 2017 COSA study and compares these classifications to the 2009 COSA, and provides a brief explanation for the difference in some cases.

117.1 Please provide the comparison of classification percentages for distribution accounts between 2017 and 2009 in tabular form. For each distribution account, please explain in detail the cause of the difference in classification percentage between 2017 and 2009.

Response:

The Company consulted with EES to provide the following response.

The following table provides the requested comparison and explanation of the changes in the results.

	2009 COSA	2017 COSA	Explanation of Difference
Substations	100% Demand	100% Demand	No Change
Poles, Towers & Fixtures	19% Demand 81% Customer	4% Demand 96% Customer	Changed due to a larger number of expensive poles for 2017.
Conductors & Devices	35% Demand 65% Customer	42% Demand 58% Customer	Changed due to a reduction in the cost per km for some conductors. This meant that the total cost of all conductors increased less than the cost of the minimum size conductor.
Line Transformers	31% Demand 69% Customer	27% Demand 73% Customer	Changed due to the addition of transformers over 750 KVA for 2017.
Services, Meters	100% Customer	100% Customer	No Change
Street Lights & Signals	Direct Assignment	Direct Assignment	No Change

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118.0 Reference: DISTRIBUTION COSTS

**Exhibit B-8, BCUC IR 26.1, 26.2, 26.2.1; Exhibit B-1, Table 5-7, p. 49;
BC Hydro 2015 Rate Design Application (RDA), pp. 3-28, 3-29,
Appendix C-2A**

Minimum system approach

In response to BCUC IR 26.1, FBC confirms that only two out of the eight utilities surveyed for the COSA Study use a minimum system approach.

In response to BCUC IR 26.2, FBC states: “BC Hydro’s consultant recommended 100 percent demand for primary, zero-intercept method for transformers, and minimum system for secondary; however, it appears the final method was based on stakeholder input and agreement in a negotiated settlement process.”

On pages 3-28 and 3-29 of the British Columbia Hydro and Power Authority (BC Hydro) 2015 Rate Design Application (RDA), it states the following:

Generally, there are three approaches to classifying distribution costs: (1) minimum system; (2) zero-intercept; and (3) use of professional judgment to separate demand-related and customer-related distribution costs...

...The COS Consultants recommended approach (3) on the basis that: the minimum system/zero-intercept methods are labour intensive but produce inaccurate results; and most utilities surveyed (and their regulators) use professional judgment to separate demand-related and customer-related distribution costs rather than relying on minimum system or zero-intercept analyses.

118.1 Please reconcile the statement by EES in the COSA Study regarding BC Hydro to the recommendations provided by BC Hydro in its RDA.

Response:

The Company consulted with EES to provide the following response.

The response to BCUC IR 1.26.2 was based on a review of the report titled “Electric Distribution Study Cost of Service Study” performed by Reimer Consulting Group, found in Appendix C-2A of the BC Hydro Application. Their recommendations are found on page 162 of that Appendix. The recommendations discussed in the Application include those made by the Leidos firm in its “Cost of Service Methodology Review”, also found in Appendix C-2A. It is unclear how BC Hydro treated the difference in the recommendations from its two consultants.

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1
2 In Appendix C-2A of the BC Hydro RDA, BC Hydro provides the Cost of Service
3 Methodology Review prepared by Leidos. On page 63 of Appendix C-2A, it states the
4 following:

5 Generally, the use of the minimum system studies and zero intercept
6 studies in COS studies is declining and sub-functionalized distribution
7 costs are being classified as either 100 percent demand-related or 100
8 percent customer-related. This is in part due to the difficulties with
9 collecting the data necessary to accurately complete these studies, as
10 well as the complexity of the studies themselves. An approach that has
11 been gaining acceptance in the U.S. is to clearly separate, for
12 classification purposes, certain identifiable plant in service that (1)
13 provides service only to individual customers, or customer-related plant in
14 service, from (2) plant in service that is part of the interconnected
15 distribution network, or demand-related plant in service. Typically, the
16 customer-related plant in service includes services and meters and the
17 demand-related plant in service includes substations, lines, and
18 transformers.

19 118.2 Please confirm, or explain otherwise, that the statement in the above preamble
20 that the use of minimum system studies and zero intercept studies in COS
21 studies is generally declining is an accurate representation based on EES'
22 jurisdictional review.

23
24 **Response:**

25 The Company consulted with EES to provide the following response.

26 EES has increasingly seen the use of more detailed studies that look at the actual use of the
27 distribution system by various customer classes, rather than completing the classification and
28 allocation steps required by a minimum system study. This approach requires more detailed
29 data than required by a minimum system study and provides a greater level of complexity.
30 Typically, the analysis is completed for a sample of the system rather than for the entire system.

31 EES agrees that there can be differences of opinion as to whether the theory associated with
32 the use of a minimum system is correct. In our experience, however, any shift away from
33 minimum system is towards the aforementioned more complex methods rather than to a more
34 simple approach, such as 100 percent demand. This shift is related to an attempt to provide
35 more accurate allocations made possible with greater data availability arising from new
36 technologies.

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EES does not agree that minimum system studies are too complex or that it is too difficult to obtain the necessary data, except in the case of small utilities. The data required to perform the minimum system study for FBC was readily available.

EES has seen the use of 100 percent demand (or other splits based purely on judgement) in cases where there is a negotiated settlement or where there is a strong residential customer advocacy.

Please also refer to FBC's responses to BCUC IRs 2.118.4 through 2.118.7 which all lead to the conclusion that FBC should not change its approach from the minimum system method to the 100 percent demand method.

118.3 Please explain whether the approach described in the above preamble which is characterized as "gaining acceptance in the US" would be a feasible approach for the classification of FBC's distribution costs.

Response:

The Company consulted with EES to provide the following response.

The method described appears to first create a direct assignment of some costs and then use the basic 100 percent demand approach for the remaining assets, where all distribution other than meters/services are classified as demand-related. This would be a feasible approach for FBC, although it has not been recommended by EES, as it is a shift from past precedent, does not reflect the theory adopted for FBC's sister gas utility or in FBC's past electric COSA studies, and would lead to large shifts in costs between classes.

118.3.1 If yes, please re-calculate the rate base classification splits using this approach and provide the results in a table similar to Table 5-7.

Response:

The Company consulted with EES to provide the following response.

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1 The following table provides the classification percentages for the alternate approach, as
2 detailed in Table 5-7 of the Application:

Description	Classification
Certain Identifiable Assets	Direct Assignment
Substations	100% Demand
Poles, Towers & Fixtures	100% Demand
Conductors & Devices	100% Demand
Line Transformers	100% Demand
Service & Meters	100% Customer

3
4

5

6 118.3.2 Please explain and quantify, based on the revised classifications, the
7 impacts on each customer class.

8

9 **Response:**

10 The Company consulted with EES to provide the following response.

11 Quantifying the impacts of this approach would require a detailed analysis of all of FBC's assets
12 to determine whether any facilities should be directly assigned and would be both time-
13 consuming and expensive.

14 This said, it is expected that the results would land somewhere between the results as proposed
15 and the results of a 100 percent demand approach.

16
17

18
19 In response to BCUC IR 26.2.1, FBC states: "A 100 percent demand approach is
20 advantageous for residential and other small customers. It does not reflect the fact that
21 one large customer would likely require far fewer distribution facilities than a combined
22 group of 100 customers with the same peak load. It is a simpler approach with fewer
23 data requirements."

24 FBC further states in response to BCUC IR 26.2.1: "A fixed or negotiated split between
25 customer and demand components may balance the interests of various stakeholders
26 and reflect some recognition that both customers and peak demand are factors in the
27 distribution facilities. It is not data intensive and is highly uncertain."

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1 Table 5-7 on page 49 of the Application provides the Rate Base Classification results.

2 118.4 Please re-calculate the rate base classification splits using the 100 percent
3 demand approach and provide the results in a table similar to Table 5-7.

4
5 **Response:**

6 The Company consulted with EES to provide the following response.

7 The following table provides the classification percentages for the 100 percent demand
8 approach, as requested:

Description	Classification
Substations	100% Demand
Poles, Towers & Fixtures	100% Demand
Conductors & Devices	100% Demand
Line Transformers	100% Demand
Service & Meters	100% Customer

9

10

11

12 118.4.1 Please explain and quantify, based on the revised classifications, the
13 impacts on each customer class.

14

15 **Response:**

16 The Company consulted with EES to provide the following response.

17 The following table provides a comparison of the R/C ratios by class under the FBC proposal
18 and using a 100 percent demand approach:

Customer Class	As Filed	100% Demand
Residential	98.4%	107.0%
Small Commercial RS 20	102.2%	103.7%
Commercial RS 21/22	104.7%	92.0%
Large Comm Primary RS30/32	104.0%	92.3%
Large Comm Transmission RS 31	107.0%	106.7%
Lighting	92.2%	102.5%
Irrigation	97.2%	92.3%
Wholesale Primary RS 40	96.7%	85.9%
Wholesale Transmission RS 41	103.9%	103.8%

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1

2 Use of the 100 percent demand approach shifts costs away from small distribution users
3 (Residential and Small Commercial) and moves them towards large distribution users
4 (Commercial, Large Commercial – Primary, and Wholesale served at primary).

5

6

7

8 118.5 Please compare the cost and time requirements of completing the current
9 minimum system study to the cost and time requirements anticipated from
10 utilizing a judgement-based approach to classifying distribution costs.

11

12 **Response:**

13 The Company consulted with EES to provide the following response.

14 The cost of completing the minimum system study is roughly 4 weeks of FBC internal labour at
15 a cost of \$12 thousand to FBC. A judgement-based approach would require research on other
16 jurisdictions and obtaining internal agreement, resulting in 1 week of labour at a cost of \$3
17 thousand. In either case, review and input in the COSA model would require the same amount
18 of time and expense from EES Consulting.

19 The FBC labour costs represent only a difference in the amount of effort required; however,
20 these activities would be performed as part of regular duties, and would not be passed on to
21 customers on an incremental basis. There is not a cost saving in adopting a judgement based
22 approach.

23

24

25

26 118.6 Please discuss whether FBC has considered using a judgement-based
27 approach to classifying distribution costs as opposed to a minimum system
28 study. If no, please explain why not.

29

30 **Response:**

31 The Company consulted with EES to provide the following response.

32 FBC and EES looked at the approaches used by others when considering all of its COSA
33 methods. However, EES has not suggested, and FBC agrees, that there is any compelling

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1 reason to change its approved minimum system methodology, as there have been no material
2 changes in circumstances, no conclusive trends in the industry, and no lack of data that would
3 warrant such a change.
4

5
6
7 In response to BCUC IR 26.2.1, FBC states the following:

8 FBC's minimum system approach, with the PLCC adjustment, reflects the
9 theoretical advantages of the minimum system and zero-intercept
10 approaches. It does allocate more costs to residential and other small
11 customers than the 100 demand approach, but less than if the PLCC
12 adjustment had not been included. It does contain some uncertainty, but
13 less than that for the fixed or negotiated splits used by many others.

14 118.7 Please describe in detail the assumptions required and the data limitations
15 encountered when performing the minimum system study and PLCC adjustment
16 and how these issues may lead to uncertainty of results.
17

18 **Response:**

19 The Company consulted with EES to provide the following response.

20 FBC did not face any data limitations related to performing the minimum system study or PLCC
21 adjustment. There were assumptions required as to what constitutes a minimum size for the
22 various distribution accounts. The selection of a minimum size can have significant impacts on
23 the results of the study. For FBC, the minimum size was selected on the basis of the current
24 standards in place for FBC and was not based on an arbitrary assumption.
25

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119.0 Reference: 2017 COSA REPORT

Exhibit B-8, BCUC IR 24.1, 27.1, 27.2.1

Demand-side management split

In response to BCUC IR 27.1, FBC states the following regarding the Demand-side management (DSM) split for functionalization and classification:

The split was based on information used for conservation planning at the time of the approved 2009 COSA...

The current planning for conservation uses a different approach with a flat avoided cost for generation that is not split between demand and energy and a separate T&D amount of \$79.85 per kW-year to reflect the deferred capital expenditures (DCE). The new approach does not lend itself to providing a split in the different components.

Because the 2009 method was approved and the most recent conservation planning did not provide comparable data that could be used for splitting costs, FBC chose to keep the split the same as in 2009.

119.1 In consideration of FBC's change in approach for planning for conservation, please explain how FBC intends to split DSM costs in future COSAs.

Response:

The Company consulted with EES to provide the following response.

FBC has not yet made a determination as to how it will split DSM costs in future COSAs. Making that determination would include consideration of the regulatory precedents in B.C. and other jurisdictions, the planning for DSM costs at the time, the role of DSM in meeting future loads, any new circumstances facing the utility with respect to DSM, the cost level for DSM and the planning associated with meeting loads for the system as a whole.

119.1.1 If FBC intends to rely on the split used in the 2009 COSA Report on a go-forward basis (i.e. for future COSAs), please explain why such an approach would be appropriate.

Response:

The Company consulted with EES to provide the following response.

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1 FBC has not yet determined whether or not it will use the DSM cost split from the 2009 COSA
2 Report in future COSAs. The appropriateness of the approach selected can only be considered
3 at that time.
4

5
6
7 In response to BCUC IR 24.1, FBC provides a table comparing different utilities'
8 treatment of DSM. Included in the table is BC Hydro, which is shown as treating DSM as
9 90 percent Generation, 5 percent Transmission and 5 percent Distribution, compared to
10 FBC's treatment of DSM as 72 percent Production Energy, 17 percent Production
11 Demand, and 12 percent Transmission and Distribution.

12 119.2 Please compare and contrast FBC's approach to functionalizing and classifying
13 DSM with BC Hydro's approach. As part of this response, please explain the key
14 differences and the likely rationale for these differences.
15

16 **Response:**

17 The Company consulted with EES to provide the following response.

18 EES considers the approach used by both FBC and BC Hydro to be consistent, as both reflect
19 the costs associated with the resources that DSM is designed to avoid. The difference between
20 the FBC and BC Hydro approach is primarily related to the amount assigned for T&D, with FBC
21 using a higher portion for T&D. While the BC Hydro split does not specifically show the
22 breakout between the energy and demand components of generation, that split would naturally
23 flow through the COSA based on the classified generation costs. There are likely to be
24 differences between the two utilities due to the amount of marginal or avoided costs expected
25 for generation relative to T&D and the split between demand and energy for power supply costs
26 based on the specific resources of each utility.

27

1 **C. RESIDENTIAL RATES**

2 **120.0 Reference: RESIDENTIAL RATES**

3 **Exhibit B-8, BCUC IR 35.2.1, 44.1.3.1**

4 **Bill impacts**

5 In response to BCUC IR 35.2.1, FBC provides the following table:

Table 2-1 from 2014 RCR Report				2017 RDA	
	Bill Impact	# Records	Percent of Total	# Records	Percent of Total
Bill Increase	Above 20%	396	0.4%		
	15% - 20%	1,894	2.0%	1,898	2.1%
	10% - 15%	5,681	6.0%	40,794	45.5%
	5% - 10%	9,816	10.3%	14,233	15.9%
	0% - 5%	12,072	12.7%	11,536	12.9%
Bill Decrease	0% - 5%	13,645	14.4%	9,020	10.1%
	5% - 10%	20,423	21.5%	7,231	8.1%
	10% - 15%	31,002	32.7%	3,684	4.1%
	15% - 20%			1,105	1.2%
	Above 20%			160	0.2%
		94,929	100%	89,661	100%

6

7 120.1 Please confirm, or explain otherwise, that this table indicates that as a result of
8 moving to the proposed flat rate, 76.4 percent of customers will experience a bill
9 increase.

10

11 **Response:**

12 Confirmed.

13

14

15

16 120.2 Please revise the above table (i.e. the 2017 RDA portion of the table) to include
17 the impact of the proposed customer charge increase.

18

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Response:

The 2017 RDA portion of the table, with the current flat rate, including both the current Customer Charge and Energy rate is shown below. The bill impacts shown below would result if the rate was implemented in a single move rather than over the course of the proposed transition period.

Customer Charge = \$18.70 per month

Energy Rate = \$0.11749 per kWh.

2017 RDA			
	Bill Impact	# Records	Percent of Total
Bill Increase	Above 20%	0	0.0%
	15% - 20%	35,564	39.7%
	10% - 15%	13,402	14.9%
	5% - 10%	9,855	11.0%
	0% - 5%	9,204	10.3%
Bill Decrease	0% - 5%	8,461	9.4%
	5% - 10%	7,149	8.0%
	10% - 15%	4,204	4.7%
	15% - 20%	1,470	1.6%
	Above 20%	352	0.4%
		89,661	100%

120.2.1 For both the 2017 RDA scenario provided in the above table where the customer charge remains at \$16.05/month and the additional requested scenario where the customer charge is increased as proposed in the Application, please also provide the Bill Impacts in Dollars.

Response:

The requested information is contained in the tables below.

2017 RDA (\$18.70 Customer Charge)				
	Bill Impact	# Records	Percent of Total	Average Bill Impact
Bill Increase	Above 20%			
	15% - 20%	35,564	39.7%	\$ 108.79
	10% - 15%	13,402	14.9%	\$ 133.68
	5% - 10%	9,855	11.0%	\$ 98.40
	0% - 5%	9,204	10.3%	\$ 39.40
Bill Decrease	0% - 5%	8,461	9.4%	-\$ 53.10
	5% - 10%	7,149	8.0%	-\$ 201.32
	10% - 15%	4,204	4.7%	-\$ 464.21
	15% - 20%	1,470	1.6%	-\$ 1,091.94
	Above 20%	352	0.4%	-\$ 3,635.82
		89,661	100%	

2017 RDA (\$16.05 Customer Charge)				
	Bill Impact	# Records	Percent of Total	Average Bill Impact
Bill Increase	Above 20%			
	15% - 20%	1,898	2.1%	\$ 152.47
	10% - 15%	40,794	45.5%	\$ 105.82
	5% - 10%	14,233	15.9%	\$ 81.87
	0% - 5%	11,536	12.9%	\$ 34.84
Bill Decrease	0% - 5%	9,020	10.1%	-\$ 53.89
	5% - 10%	7,231	8.1%	-\$ 210.09
	10% - 15%	3,684	4.1%	-\$ 504.90
	15% - 20%	1,105	1.2%	-\$ 1,373.31
	Above 20%	160	0.2%	-\$ 4,612.28
		89,661	100%	

In response to BCUC IR 44.1.3.1, FBC states:

It cannot be concluded from Table 6-8 that 20 percent of customers will experience bill decreases as a result of a change to the rate modelled for the table.

The table indicates that there are 20 percent of customers in total in the consumption ranges above 15,000 kWh, and that on average, the customers in these ranges have bill decreases in the amounts shown.

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1 This is not the same as saying that all customers within a given range will
2 experience bill decreases, and in fact, some customers in those ranges
3 will have bill increases and some customers in the lower ranges will have
4 decreases. When customers are considered without segmenting by
5 consumption, for the rate shown, as stated at line 10 of page 70, over 70
6 percent of customers would experience higher bills.

7 120.3 Please confirm, or explain otherwise, that the table provided in response to
8 BCUC IR 35.2.1 and the additional information requested in BCUC IRs 118.2
9 and 118.2.1 provide the information necessary to determine the percentage of
10 customers which will experience bill decreases and increases as a result of the
11 proposed change from the RCR to the flat rate.

12
13 **Response:**

14 It seems likely that the references to BCUC IRs 2.118.2 and 2.118.2.1 are in error but this does
15 not impact the response. FBC assumes that it is the 2.120.2 series that is being referenced.

16 Generally speaking, where customers are segmented on the basis of Bill Impact, such as with
17 the tables provided in the response to BCUC IR 2.120.2.1, the percentage of customers which
18 will experience bill decreases and increases as a result of a proposed rate change can be
19 gleaned directly from the table.

20 Where customers have been segmented on the basis of consumption level, such as Table 6-8
21 from the Application, this metric cannot be gleaned from the table since within each
22 consumption strata there may be customers with either an annual bill increase or decrease due
23 to their particular load profile.

24
25
26
27 120.3.1 If not confirmed, please provide a table which shows the percentage of
28 customers which will experience annual bill increases and the
29 percentage of customers which will experience annual bill decreases as
30 a result of moving to the proposed flat rate (assuming no change to the
31 customer charge). Please also show the ranges of bill impacts in
32 percentage and in dollars.

33
34 **Response:**

35 Please refer to the response to BCUC IR 2.120.3.

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120.3.2 If not confirmed, please provide a table which shows the percentage of customers which will experience annual bill increases and the percentage of customers which will experience annual bill decreases as a result of moving to the proposed flat rate (assuming an increase to the customer charge as proposed in the Application). Please also show the ranges of bill impacts in percentage and in dollars.

5

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11 **Response:**

12 Please refer to the response to BCUC IR 2.120.3.

13

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121.0 Reference: RESIDENTIAL RATES

Exhibit B-8, BCUC IR 38.12

Changes to the existing Residential Conservation Rate

In response to BCUC IR 38.12, FBC outlined the impact of adjusting the RCR to align with the principles and rate characteristics approved by Order G-3-12 with an increase to the customer charge as proposed in the Application.

121.1 Based on the hypothetical scenario outlined in response to BCUC IR 38.12, please explain how FBC would propose to apply annual general rate increases.

Response:

The hypothetical scenario outlined in response to BCUC IR 1.38.12 is predicated on a return to the principles and rate characteristics approved by Order G-3-12 including that no more than 5 percent of customers would experience rate impacts greater than 10 percent as a result of the implementation, and the maintaining of a Tier 1 to Tier 2 rate differential as initially approved of 44 percent.

This can only be accomplished from year to year by applying any subsequent rate increases to each rate component at the same percentage.

As a practical matter, were the Commission to direct a “rebasing” of the RCR according to the Order G-3-12 principles, FBC would have a concern over the level of the Tier 2 rate relative to the LRMC of new electricity supply and would likely consider and propose some method of applying rate increases only to the Customer Charge and Tier 1 Rate.

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D. COMMERCIAL SERVICE AND IRRIGATION RATES

122.0 Reference: COMMERCIAL SERVICE AND IRRIGATION RATES

Exhibit B-1, pp. 75-76; Exhibit B-8, BCUC IR 8.7, 49

RS 20 - Small Commercial Rate and RS 21 - Commercial Rate

In response to BCUC IR 49.4, FBC states that at "... the same time as making the proposal to shift the cost recovery within the rate components, FBC views that the changes are consistent with the other principles."

122.1 Does FBC consider that the proposal to increase the customer charge and decrease the energy rate for RS 20 is consistent with rate design principle three: price signals that encourage efficient use and discourage inefficient use? Please discuss.

Response:

Yes. In the view of FBC, rate design principle three is not simply about lowering energy use or incenting conservation without regard to other considerations. It also speaks to the consumer-rationing objective regarding the consideration of the attributes of a sound rate design under which Bonbright noted that "...rates are designed to discourage the wasteful use of public utility service while promoting all use that is economically justified...".³ In other words, the objective should not be to reduce consumption at all costs, but to provide the correct price signal to customers based on the underlying cost of service.

In response to BCUC IR 8.7, FBC states that, "[a]t the current time, it is the residential class that has the highest adoption rates of technologies that may pose an issue for fixed cost recovery."

122.2 Considering the statement in the preamble provided in response to BCUC IR 8.7, please clarify why the proposal to increase the customer charge for RS 20 and RS 21 are being made at this time.

Response:

Please refer to the response to BCUC IR 2.113.4.

³ James C. Bonbright, *Principles of Public Utility Rates*, 2nd Edition (Public Utility Reports, Inc., 1961) March 1988, page 385

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123.0 Reference: COMMERCIAL SERVICE AND IRRIGATION RATES

Exhibit B-1, p. 16; Exhibit B-8, BCUC IR 1.2; Exhibit B-11, BCOAPO IR 50.1

Commercial (RS 21) Rate – Transformation Discount

In response to BCUC IR 1.2, FBC states that

All of the changes described on pages 11 through 13 of the Application that relate to the components of rates applicable to the delivery of power to retail and wholesale customers of FBC are designed to be revenue neutral.

The exception to this general statement are the changes to the COSA-based transformation discounts available to RS 21, RS 30 and RS 40 (proposed) that may result in less or more revenue as compared to current rates for the same amount of power delivered.

In response to BCOAPO IR 50.1, FBC confirms that the proposed rates set out in Table 6-15 are revenue neutral inclusive of the proposed change in the transformation discount.

123.1 Please reconcile the statement in response to BCOAPO IR 50.1 and the statement in response to BCUC IR 1.2 regarding the revenue neutrality of the RS 21 transformation discount.

Response:

The changes described on pages 11 through 13 of the Application include a description of the transformation discounts, while Table 6-15 in the Application, to which BCOAPO IR 1.50.1 is specifically referring, does not include any mention of the transformation discounts. Both responses are accurate.

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124.0 Reference: IRRIGATION RATES

Exhibit B-1, Section 6.2.6, p. 85; Exhibit B-8 BCUC IR 55; Exhibit B-16, IRG IR 2.0

Request from Keremeos Irrigation District

On page 85 of the Application, FBC states that “FBC proposes to further investigate the implementation of an off season TOU Irrigation and Drainage rate and to report back to the Commission.”

124.1 Please provide the estimated time that it would take FBC to complete further investigation regarding an off season TOU Irrigation and Drainage rate and report back to the BCUC.

Response:

FBC has not proposed to implement the changes requested by KID as part of this Application and is not intending to begin the investigation concurrently with the regulatory process that is evaluating the 2017 COSA and RDA. FBC will begin to examine the KID proposals once a Decision is received. This will allow FBC to have certainty on the COSA which will provide a basis for determining the potential impact on other customers. FBC estimates that it will take approximately 60 days to review the load information and incorporate it into a review of the COSA impact. FBC has also indicated a 6 to 8 week period would be used to review the results with Irrigation customers. All things being considered, FBC estimates that it could report to the BCUC within 120 days of a Decision in the current process.

124.2 Please generally outline the potential engagement (including timing of such engagement) FBC may conduct with its irrigation customers for an off season TOU irrigation and drainage rate.

Response:

FBC expects that it would provide notification of any potential change in Irrigation rates to all Irrigation customers and allow time for feedback to be received. The Company would also seek to meet with umbrella groups such as the KID to discuss the results. This engagement would commence after the Company has investigated the issue as described in the response to BCUC IR 2.124.1 and would likely take six to eight weeks to complete.

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E. TRANSMISSION SERVICES

125.0 Reference: TRANSMISSION SERVICES

Exhibit B-8, BCUC IR 1.2; Exhibit B-1, Section 7.3, pp. 96–97

Approvals sought

FBC states the following in response to BCUC IR 1.2:

Also, the Transmission Service Rates, including the ancillary services, are generally lower than current rates. However, whether or not revenues are higher or lower than with current rates will depend on the Commission's determination regarding the interpretation of the Point-to-Point rate language as described in Section 7.2 of the Application.

125.1 Please clarify the statement in the above preamble. In particular, please explain why the impact of the proposed changes to the Transmission Services rates proposed in Section 7.3 of the Application on revenues is dependent on the BCUC's determinations regarding the interpretation of the Point-to-Point (PTP) rate language in Section 7.2 of the Application.

Response:

If the Commission accepts FBC's recommended changes for Rate Schedule 101 and 102, as discussed in Section 7.2 of the Application, FBC will receive revenue under these rates from FBC's existing transmission customers, which is currently not the case. This would result in incremental revenue that will flow through to all of FBC's customers. However, for all the other transmission related rate schedules, the rates are all generally lower, which will reduce overall revenue. Therefore, if the Commission approves all of FBC's recommended changes to the transmission tariff, overall revenue will increase, given FBC's current transmission customer base. An example of this is provided in the response to ICG IR 1.11.3. However, if the Commission approves the proposed rate changes, but does not approve the recommended change regarding the interpretation of PTP rate language in Section 7.2 of the Application, overall revenue will go down.

On pages 96 and 97 of the Application, FBC states the following:

FBC is seeking two primary revisions to the Transmission Service Rates. The first revision is a simplification and update to the pricing attached to the service. The updated prices are derived from the 2017 COSA utilizing the Transmission Revenue requirement...

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1 ...The Transmission Services rates have not been adjusted on any basis
2 other than as the result of a Revenue requirement related increase since
3 they were first put in place. As part of the current Application, a review of
4 the assumptions and cost-based foundation of the rates was conducted.

5 125.2 Please clarify if the proposed changes to the Transmission rates in Section 7.3
6 of the Application are expected to recover the costs attributable to each
7 Transmission service.
8

9 **Response:**

10 The Company consulted with EES to provide the following response.

11 Yes, the proposed charges are intended to recover the costs associated with each
12 Transmission service.
13

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126.0 Reference: TRANSMISSION SERVICES

Exhibit B-15, Industrial Customers Group (ICG) IR 11.13, Tables 1, 2, 3; Exhibit B-1, Section 7.3.1, Table 7-5, p. 97

RS 101 Customer Charge

On page 97 of the Application, FBC states that it is proposing to eliminate the Customer Charge because “it is not a feature of typical Open Access Transmission tariff (OATT) rates...”

FBC further states on page 97 of the Application that the Minimum Price remains at \$0.002/kW/hour.

In response to ICG IR 11.13, FBC provides three tables comparing the annual, monthly and weekly costs of rate schedules 101 through 109 under the current and proposed rates. Included in these tables is a row titled “RS 101 – Customer” which shows an annual cost of \$38,220 and a monthly/weekly cost of \$3,185.

126.1 Please clarify what the RS 101 – Customer charge is related to given that FBC states it has eliminated the Customer Charge as part of its proposed changes. Please provide the supporting calculations for the annual and monthly/weekly costs of \$38,220 and \$3,185, respectively.

Response:

The Company consulted with EES to provide the following response.

The response to ICG IR 1.11.13 has been corrected in the Errata filed concurrently with these IR responses. The proposed rates for RS 101 do not include a customer charge.

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127.0 Reference: TRANSMISSION SERVICES

Exhibit B-8, BCUC IR 69.2, 69.3.1

RS 104 – Reactive Supply and Voltage Control

In response to BCUC IR 69.2, FBC states the following:

The COSA does not provide sufficient detail to determine costs for Reactive Supply and Voltage Control. This service is dependent upon very specific components within production plants and those costs are not broken out in the COSA. Further, as stated above, since FBC does not receive a specific MVAR entitlement, it is not possible to determine the costs associated with that product.

In response to BCUC IR 69.3.1, FBC states the following:

FBC was not able to determine the method used by BC Hydro to derive its Reactive Supply and Voltage Control rate...since FBC does not track where this service is being provided from and there is no defined MVAR entitlement under the CPA, it simply is not possible to know to what extent FBC resources are being used as it is managed by BC Hydro on a provincial basis. Therefore, even if FBC had the BC Hydro methodology, it would almost certainly not be applicable to FBC.

On page 99 of the Application, FBC states: “The charge for Reactive Supply and Voltage Control is based on the BC Hydro rate. FBC believes it is appropriate to use a provincially calculated number since there is no calculated entitlement MVAR availability under the Canal Plant Agreement with BC Hydro.”

127.1 Please further explain why FBC’s proposed approach to setting the Reactive Supply and Voltage Control charge is appropriate in consideration of FBC’s statements that it is not able to determine the method used by BC Hydro to derive its rate and that services are dependent on very specific components within production plants.

Response:

FBC believes this method is appropriate as FBC’s resources that are used to provide Reactive Supply and Voltage Control, namely its owned hydro electric generation, are dispatched by BC Hydro, and FBC does not receive a calculated MVAR availability under the Canal Plant Agreement with BC Hydro as it does with the generation output. As discussed in the preamble, the COSA does not provide sufficient detail to determine costs for Reactive Supply and Voltage Control. This service is dependent upon very specific components within production plants and those costs are not broken out in the COSA, but are costs that are incurred by FBC and need to be recovered. As BC Hydro’s provision of the service is from similar resources, including FBC’s

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1 owned generation, and the BC Hydro rate has been approved by the BCUC, FBC recommends
2 that the BC Hydro rate be adopted for FBC.

3
4
5
6 127.2 Did FBC consider any other alternatives for determining the appropriate rate for
7 RS 104? Please discuss.

8
9 **Response:**

10 FBC considered determining an appropriate rate for RS 104 based on the costs of its own
11 equipment, but there was insufficient existing information to do so. FBC then looked at the BC
12 Hydro rate. For the reasons discussed in BCUC IR 2.127.1, FBC believes that the BCH rate for
13 RS 104 is a reasonable estimate of FBC's costs to provide that service, and therefore FBC did
14 not look at additional alternatives.

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128.0 Reference: TRANSMISSION SERVICES

Exhibit B-8, BCUC IR 71.1, 71.2

RS 106 – Energy Imbalance Service

In response to BCUC IR 71.1, FBC states: “The proposed changes to RS 106 will be similar to what FBC would pay to BC Hydro for imbalances under the Imbalance Agreement.”

128.1 Please explain why it is important for FBC’s RS 106 rate to be similar to what FBC would pay to BC Hydro for imbalances under the Imbalance Agreement. As part of this response, please clarify whether there are any linkages between energy imbalances that an FBC Transmission Customer incurs on FBC’s system and energy imbalances that FBC incurs vis-à-vis BC Hydro.

Response:

If an FBC Transmission Customer incurs an imbalance on the FBC system, then that imbalance becomes an FBC system obligation. Depending on the magnitude of the imbalance, it is entirely possible that the FBC system will itself now be in imbalance and FBC will incur imbalance charges from BC Hydro. Making the FBC RS 106 rate similar to what FBC would pay to BC Hydro ensures that any imbalance charges FBC may pay are appropriately flowed through to the Transmission Customer.

In response to BCUC IR 71.2, FBC compares BC Hydro’s and FBC’s proposed rates for Energy Imbalance in the following table:

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	FortisBC		BC Hydro	
	All Amounts		Less than 20 MWh over the Imbalance Period ²⁴	Greater than 20 MWh over the Imbalance Period
Positive Imbalance	Amount of the imbalance service times the lower of; a) Tranche 1 Energy Price as per BCH Rate Schedule 3808 or b) Hourly Powerdex Mid-C price less 10% administrative fee applied to all charges if hourly Powerdex Mid-C price was positive or plus 10% administrative fee applied to all charges if Powerdex Mid-C price was negative		Hourly imbalances less than 4 MW, the imbalance quantity times BCH's Energy Imbalance Price ²⁵ or For hourly imbalances greater than 4 MW, the imbalance quantity times BCH's hourly buy price ²⁶	The imbalance quantity times BCH's hourly Buy Price
Negative Imbalance	Less than or equal to 4 MW	Greater than 4 MW	Less than 20 MWh over the Imbalance Period	Greater than 20 MWh over the Imbalance Period
	The amount of imbalance service; times (1 + loss compensation per RS109) times Hourly Powerdex Mid-C price, unless it is negative or else a zero value will be used plus BPA's wheeling rate from BC/US border to Mid-C ²⁷ plus 10% administrative fee applied to all charges	The amount of imbalance service; times (1 + loss compensation per RS109) times the greater of; a) \$50/MWh or b) 150% Hourly Powerdex Mid-C price, unless it is negative or else a zero value will be used plus BPA's wheeling rate from BC/US border to Mid-C plus 10% administrative fee applied to all charges	Hourly imbalances less than 4 MW, the imbalance quantity times BCH's Energy Imbalance Price or For hourly imbalances greater than 4 MW, the imbalance quantity times BCH's hourly sell price ²⁸	The imbalance quantity times BCH's hourly sell price

128.2 Please explain FBC's rationale for crediting the lower of either the Tranche 1 Energy Price set out in BC Hydro Rate Schedule 3808 or the hourly Powerdex Mid-Columbia (Mid-C) index price for Transmission Customers during positive energy imbalances.

Response:

The rates for positive imbalances under RS106 were selected to represent the cost of FBC's alternative sources of energy. If FBC receives energy as a result of providing a positive imbalance service under RS 106, it reduces the amount of energy that FBC is required to purchase from alternative sources through normal operations.

128.3 Please explain how FBC arrived at the price of energy for hourly negative energy Imbalance Service greater than 4 MW, including the greater of \$50/MWh and 150 percent of the hourly Powerdex price.

Response:

The \$50/MWh and 150 percent of the hourly Powerdex price is consistent with the imbalance charges that FBC may be required to pay under its Imbalance Agreement with BC Hydro, as

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1 approved under BCUC Order G-60-14, and represent a proxy for FBC's cost to provide this
2 service.
3

4
5
6 FBC states that a primary difference between the two rates is that BC Hydro has
7 "imbalance periods" for both positive and negative imbalances; whereas FBC only has
8 "imbalance periods" for negative imbalances.

9 128.4 Please explain why FBC does not propose to include the same 4 MW threshold
10 for positive imbalances.
11

12 **Response:**

13 For positive imbalances, FBC typically has significant system flexibility to provide the service. In
14 addition, under abnormal system conditions, such as when the region is spilling water, market
15 prices will be very low, or even negative. Since the proposed rates for positive imbalance
16 capture such negative pricing such that the customer would be charged for positive imbalances
17 rather than receiving a credit, FBC believes having a single rate for all positive imbalances
18 offers an appropriate level of protection to other customers.
19
20
21

22 128.5 If FBC were to propose separate rates for volumes above or below 4 MW for
23 positive imbalances, please explain how these rates would be designed/priced
24 (i.e. would the rates be the same as the negative imbalance rates?)
25

26 **Response:**

27 If FBC were to propose separate rates for volumes above or below 4 MW for positive
28 imbalances, FBC believes that the proposed rates for volumes above 4 MW would track FBC
29 monthly market purchase costs as opposed to just using the hourly index price. However, while
30 this would more accurately reflect the true FBC avoided cost of market based power for the
31 month in which the positive imbalance was realized, it would require additional resources to
32 monitor and bill and would not likely be worth the extra administration. The rate for volumes
33 below 4 MW would remain as per the Application.

34 The rate above 4 MW would not be the same as the negative imbalance rates, as the costs to
35 provide the services are different, as discussed in response to BCUC IRs 2.128.3 and 2.128.4.

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FBC further states in response to BCUC IR 71.2 that “BC Hydro also factors in BPA wheeling charges under all scenarios, whereas FBC excludes them from positive imbalance credits.”

128.6 Please explain why FBC excludes BPA wheeling charges from positive imbalance credits. As part of this response, please explain the differences between negative and positive imbalances which would support the proposed different treatment of BPA wheeling charges.

Response:

The requirements of providing positive and negative imbalance service are different. The provision of negative imbalance service increases the Company's load and therefore the Company requires increased resources to meet that load. The provision of positive imbalance service does not change the Company's load but directly increases the resources available to the Company to meet existing load.

Increasing resources from the market to provide negative imbalance service requires paying the BPA transmission charges and therefore it is added to the cost of negative imbalance. On the other hand, when local resources are increased through positive imbalance, no BPA wheeling is required and so no adjustment is needed.

FBC further states in response to BCUC IR 71.2 that it “charges a 10 percent administrative fee on all imbalance charges, whereas BC Hydro does not.”

128.7 Please explain why it is necessary for FBC to charge a 10 percent administrative fee on the imbalance charges. As part of this response, please provide the cost basis for the 10 percent administrative fee, including all supporting calculations and assumptions.

Response:

The 10 percent administrative fee on the imbalance charges is appropriate so that FBC can recover its costs to provide this service. In absence of the 10 percent administration fee, FBC would only be recovering the costs of the energy, and not a portion of the operations and maintenance expense required to administer the tariff. This 10 percent fee does not have

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supporting calculations, as it was chosen because it is similar to the administrative premium charged in RS37 recently approved by the Commission in Section 3.5.4 of the Decision accompanying Order G-67-14, and is also similar to the existing imbalance provisions that likewise include a 10 percent premium.

128.8 Please confirm, or explain otherwise, that FBC's proposed RS 106 rate is consistent with the standard practices under OATT.

Response:

Yes, the proposed RS 106 is generally consistent with the FERC Pro Forma Open Access Transmission Tariff that can be found at the following link:

<https://www.ferc.gov/industries/electric/indus-act/oatt-reform/order-890-B/pro-forma-open-access.pdf>.

128.8.1 If not, please highlight the differences between FBC's proposed rate and the OATT standard and explain the rationale for these differences.

Response:

Please refer to the response to BCUC IR 2.128.8.

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129.0 Reference: TRANSMISSION SERVICES

Exhibit B-8, BCUC IR 73.1

RS 109 – Loss Compensation

FBC states the following in response to BCUC IR 73.1:

Where the Application notes at page 104 that the loss percentages as used in the 2017 COSA are “as provided by FBC Engineering Services”, it was intended to convey that the loss percentages developed for the COSA were developed through discussions with FBC Engineering Services and confirmed to be within an acceptable range. FBC has not conducted a loss study for the purposes of this COSA that would provide actual losses for the various parts of the system, but is of the view that the loss percentages developed for the COSA are reasonable estimates.

129.1 Please explain what was considered to be an “acceptable range” for loss percentages and how this range was determined to be reasonable.

Response:

The referenced excerpt from BCUC IR 1.73.1 means that the loss percentages proposed for use in the COSA were reviewed by FBC Engineering and were considered to be consistent with what would be expected for the various parts of the FBC system given the knowledge possessed by engineering staff. This was simply a case of applying judgment based on professional experience.

129.2 Please further elaborate on how the estimates for loss percentages were determined to be reasonable (i.e. on what basis was reasonableness assessed).

Response:

Please refer to the response to BCUC IR 2.129.1.

129.3 Please further explain how the transmission losses of 2.86 percent were determined.

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1
2 **Response:**
3 FBC modeled a number a number of load and generation scenarios in order to estimate the
4 average system losses that would result. The loss values ranged from 2.74 percent to 2.97
5 percent. For the COSA, an average of the values (2.86 percent) was incorporated into the
6 model.

7

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130.0 Reference: TRANSMISSION SERVICES

Exhibit B-15, ICG IR 12.2

Transmission customer discounts

In response to ICG IR 12.2, FBC states the following:

The discounting of transmission services is available in a consistent manner to all customers only in a situation where all of the following conditions exist:

- The customer can demonstrate that an alternative transmission path with another Transmission Provider is available at a lower cost;
- The lack of a discount would result in curtailment of transmission use for economic reasons; and
- The increased usage will not add to system costs over the term requested.

If all of these conditions are met then the discount would be negotiated with the intent of maximizing the revenue generated. Considered in the calculation would be factors such as the likely price on the alternate path, and the load carrying capability of both paths over time.

130.1 Based on FBC's conditions and electrical system and existing interconnects to BC Hydro's electrical system, please discuss the likelihood that Transmission Customers would be able to qualify for the discount. As part of this response, please explain whether any of FBC's current Transmission Customers would qualify for the discount.

Response:

Given the current conditions at FBC, it is unlikely that current or future customers would qualify for a discount. This condition was understood at the time the tariff was originally proposed and approved. The Commission noted at page 18 of the G-28-99 Decision, "*WKP indicated that all three conditions would need to be met before a discount would be offered and that this would likely mean that discounts would not occur*". In light of this, the final determination on this matter included the following.

The same reasoning holds with respect to the Commission's analysis of WKP's short-term discounting proposal. Although the Utility's proposal would result in discounts in only limited cases, the Commission does not believe that a more generous discount policy would act to increase the use of the system.

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1 Accordingly, a more generous discount policy would act only to decrease the
2 amount of revenue recovered through Point-to-Point rates and increase the
3 amount of revenue which would need to be recovered from Network and Native
4 Load Customers.

5

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1 **F. OPTIONAL TIME OF USE RATES**

2 **131.0 Reference: OPTIONAL TIME OF USE RATES**

3 **Exhibit B-8, BCUC IR 91.2**

4 **Context and considerations**

5 In response to BCUC IR 91.2 FBC states that “[g]enerally, TOU rates are provided to
6 encourage reduced consumption in on-peak periods in order to reduce utility costs and
7 to better reflect cost causation within each class.”

8 131.1 Does FBC consider the proposed optional TOU rates to be conservation rates?
9 Please discuss why or why not.

10

11 **Response:**

12 Yes. Although the TOU rate is aimed at *shifting* the time of consumption rather than simply
13 *reducing* the overall level of consumption, FBC considers that it fits into a category that is
14 generally termed “conservation rates”.

15 In the 2007 Energy Plan, future energy efficiency and conservation initiatives were to include,
16 “Exploring new rate structures to identify opportunities to use rates as a mechanism to motivate
17 customers either to use less electricity or use less at specific times.” (Emphasis added).

18

19

20

21 On page 109 of the Application FBC provides the number of customers on each of
22 the optional TOU rates currently offered by FBC. Further, on page 108 FBC states that
23 the “rate for residential customers has been closed to new participants since 2012”.

24 131.2 Does FBC expect that the proposed redesign of the optional TOU rates will have
25 an impact on the number of customers enrolled in each of the TOU rates
26 currently offered by FBC? Please discuss why or why not.

27

28 **Response:**

29 FBC provided the following in response to BCUC IR 1.94.1:

30 FBC considers that participation rates are unknown at this time, and that both
31 these rates and the resulting power purchase savings cannot be reasonably
32 estimated prior to implementation.

33 This is the reason that the three-year evaluation period was proposed. FBC did
34 not intend to imply through the use of the word “expected” in the referenced

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1 passage that it has made assumptions about these factors. The intent was to
2 identify what could be expected going forward, based on experience during the
3 evaluation period.

4 The Company has no additional information that would allow it to estimate either the
5 participation rates for residential customers or the changes in participations rates for other
6 classes.

7

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132.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108-116; Exhibit B-8, BCUC IR 76.4.1, 78.1.1

Current Time of Use rates

In its response to BCUC IR 76.4.1, FBC states with respect to the existing Time of Use (TOU) rates that “the anticipated market reforms aimed at spurring retail options for customers with the potential for market-based pricing were never fully realized in BC. As such, **the pricing signals did not end up being reflective of costs that could be influenced by customer participation in the TOU rate regime.**” [*Emphasis added*]

132.1 Please elaborate on how the pricing signals of the current TOU rates did not end up being reflective of costs that could be influenced by customer participation.

Response:

The table below is a reproduction of Table 8.3 from the current Application.

Rate Class	Winter		Summer		Shoulder	
	On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	Off-Peak
Residential	\$0.19710	\$0.06383	\$0.19710	\$0.06383	\$0.19710	\$0.06383
Commercial Service - Secondary	\$0.15122	\$0.04900	\$0.15122	\$0.04900	\$0.15122	\$0.04900
Commercial Service - Primary	\$0.21839	\$0.05470	\$0.21015	\$0.04542	\$0.06015	\$0.03778
Large Commercial Primary	\$0.22675	\$0.04623	\$0.21769	\$0.03598	\$0.05222	\$0.02754
Large Commercial Transmission	\$0.17574	\$0.04978	\$0.23439	\$0.03874	\$0.05623	\$0.02964
Wholesale Primary	\$0.24426	\$0.04979	\$0.23452	\$0.03876	\$0.05626	\$0.02961

The large differentials between the on-peak and off-peak rates are reflective of the rates that were originally approved in 1998. The large variation in rates were set at the time in anticipation of market reforms that would lead to market based pricing, including a reflection of price variation during the day and seasons. Since these market reforms did not transpire, the current rates do not reflect costs to which FBC is exposed and offering these rates to customers has no relation to cost savings that may be garnered through their adoption.

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133.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Appendix G, Rate Schedules 2A, 22A, 23A, 32, 33, 42, 43, 61; Exhibit B-8, BCUC IR 76.10

Electric tariff

133.1 Please explain if FBC customers that take service under the AMI radio-off option or customers that do not have an AMI meter can sign up for optional TOU rates. If yes, please explain if there are any concerns or incremental costs associated with this. If not, please explain if there is any specific wording regarding this restriction in the Electric Tariff.

Response:

Yes, FBC customers taking service under the Radio-off AMI Option or customers with non-communicating AMI meters can take service under the proposed optional TOU rates. The AMI meters will record the consumption information and that information is downloaded from the meter when they are manually read. At the current time, FBC has only about 15 residential customers with meters that are not capable of the data collection required for TOU rates. There are no additional costs related to TOU above the existing costs of manually reading a meter on site (that for Radio-off AMI Meter customers are already captured in the per-read fee).

In its response to BCUC IR 76.10, FBC provides an example of the eligibility criteria for the TOU customers from RS 22A, which states "... is applicable to customers with satisfactory, as determined by the Company, load factors."

133.2 Please elaborate on what is meant by "satisfactory, as determined by the Company, load factors." If this criterion is different for the various TOU customer classes, please indicate the specific load factors for each customer class.

Response:

This topic has been explored in a number of rate related process in recent years, including the 2009 COSA and RDA.

In that process, in response to Zellstoff Celgar IR 1.16.1, the Company noted that

The proposed restriction (see TOU Tariffs, Applicable, lines 5 - 7) for customers with low load factors provides sufficient flexibility to meet the needs of participating customers while protecting the interests of non-participating customers. In determining what constitutes an acceptable load factor the

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1 Company will assess each situation individually to determine whether allowing a
2 customer to take or remain on TOU service adversely affects the remaining
3 customers in the class, and whether a poor load factor contributes to the impact.

4 In a follow-up IR asked by the Commission (BCUC IR 2.44.1), FBC provided additional
5 information as follows.

6 ...the load factor restriction was intended to prevent under-recovery of costs.
7 Therefore, an acceptable load factor would be one that results in a revenue to
8 cost ratio within the range of reasonableness. The Company cannot determine a
9 universally applicable numerical load factor threshold that would indicate an
10 acceptable revenue to cost ratio.

11

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134.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108–116; Exhibit B-8, BCUC IR 56.7, 79.1.4

Benefits

On page 110 of the Application, FBC states that that the objective of the optional TOU rates is to “incent customers to shift the time of consumption in a manner that would allow FBC to reduce costs or general incremental revenue such that a rate benefit will accrue to all customers.”

134.1 Please explain how the proposed optional TOU rates may generate incremental revenue to the benefit of ratepayers and discuss the amount of any incremental revenue that is expected.

Response:

The Company consulted with EES to provide the following response.

The generation of incremental revenue could potentially occur in on-peak periods when prices are higher. While the pricing of on-peak power is based on costs for peak-related power supply, it is averaged over the entire on-peak period. There could be circumstances where the added on-peak revenue might more than offset the added power costs during that on-peak period, leading to incremental revenues that could be shared among ratepayers. FBC has not forecast participation rates in the TOU program and does not therefore have an estimate of incremental revenue.

In its response to BCUC IR 79.1.4, FBC states that

The TOU break-down of these cost components is derived from FBC’s existing power supply resources. The analysis reflects the fact that in the short term FBC does not have the need for new resources and has sufficient capacity to meet load growth for several years. Any consumption variances would relate to energy and could be met with increases or decreases in the purchases from RS 3808 and the market.

134.2 With respect to power supply resources, please explain what FBC considers to be the short-term and long-term planning horizons.

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1 **Response:**

2 Generally, the short-term period is that considered in FBC's Annual Electric Contracting Plan,
3 which typically highlights the subsequent contract year, and also looks at the next five years.
4 FBC considers the long-term as the 20-year planning horizon of the Long Term Electric
5 Resource Plan (LTERP). However, these are guidelines for the use of those terms and do not
6 constitute Company policy.

7

8

9

10 134.2.1 Does FBC expect that there will be any capacity constraints and/or a
11 need for new resources to meet load growth over the long-term
12 planning horizon? Please discuss and provide supporting data and
13 timeframes.

14

15 **Response:**

16 From a system power supply perspective, in the 2016 LTERP, FBC identified only slight
17 capacity gaps in some summer months in the last years of the planning horizon assuming
18 anticipated capacity savings associated with 'DSM High' are realized and the PPA is renewed⁴.
19 The need for a resource was identified starting in the year 2032 within FBC's preferred portfolio
20 A4 to provide generation capacity, flexibility, and predominantly maintain the Loss of Load
21 Expectation (LOLE) reliability target of 1 day in 10 years⁵. How this need will be met will be
22 addressed in the next LTERP.

23

24

25

26 In response to BCOAPO IR 56.7, FBC states that

27 Shifting usage from the on-peak and mid-peak hours may result in some
28 short-term capacity savings under the BC Hydro PPA and/or Waneta
29 Expansion. However, the real savings potential for a TOU rate would be
30 as follows: if sufficient consumption were to be shifted away from the
31 peak with certainty, it may, over the long-term, result in a reduction in
32 power purchase expenses and at some point, result in deferred
33 investment into new generation requirements that would otherwise be

⁴ FBC 2016 LTERP, Section 8.1.2.2 Capacity Load-Resource Balance after DSM. Ex B-1, filed November 30, 2016.

⁵ FBC 2016 LTERP, Section 9.3.6 Preferred Portfolio. Ex B-1, filed November 30, 2016.

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required to meet growing peak demand. At the current time, however, FBC is not anticipating the addition of new generation resources over the planning horizon.

134.3 Please provide an estimate of the amount of usage that would need to be shifted from the on-peak and mid-peak hours to result in short-term capacity savings under the BC Hydro PPA and/or Waneta Expansion. Please provide the corresponding dollar value savings.

Response:

The Company consulted with EES to provide the following response.

Any amount shifted away from the on-peak periods has the potential to allow the resale of Waneta Expansion capacity or avoid the demand charges under the BC Hydro PPA. Every kWh shifted away could have a value if FBC could resell capacity. The dollar value savings cannot be provided as they are highly dependent on the circumstances related to market prices and loads and the time of the surplus.

134.3.1 Please provide an estimate of the number of residential customers with mean consumption that would need to sign up for optional TOU rates and shift consumption in accordance with the elasticity factors on page 114 of the Application in order to achieve short-term capacity savings under the BC Hydro PPA and/or Waneta Expansion.

Response:

Please refer to the response to BCUC IR 2.134.3.

134.4 Please clarify how much consumption shifted away from the peak with certainty would be considered “sufficient” in order to result in real savings potential for the optional TOU rate and explain why.

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1 **Response:**

2 The Company consulted with EES to provide the following response.

3 FBC has not made any determinations as to what amount of consumption would be sufficient.
4 To some extent, the amount would be dependent upon the opportunities to resell surplus
5 capacity at the time in question. The Company will be in a better position to assess the
6 sufficiency of savings after the three year evaluation period.

7
8
9

10 134.4.1 Please clarify over what time period sufficient consumption would need
11 to be shifted away from the peak in order to result in real savings
12 potential for the optional TOU rate and explain why.

13
14

14 **Response:**

15 The Company consulted with EES to provide the following response.

16 The time period would depend on when FBC needs additional capacity resources and whether
17 there are opportunities to resell surplus capacity on a long-term basis. Savings could occur
18 immediately under short-term market sales of surplus capacity, but they would be much lower
19 than the potential revenue under a long-term sale.

20
21
22

23 134.4.2 What amount of costs related to power purchase expense savings and
24 deferred investment in new generation resulting from the optional TOU
25 rate would FBC consider to be “real savings potential”? Please discuss.

26
27

27 **Response:**

28 The Company consulted with EES to provide the following response.

29 “Real savings potential” does not refer to an amount. In this context, “real” should be read as
30 “most likely”. One of the reasons for proposing optional TOU rates is to gain a better
31 understanding of the level of participation and reduced on-peak load that could be expected.

32
33

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1

2 134.5 Please clarify the benefit in the short-term of the proposed optional TOU rates
3 for FBC and its customers. Specifically, please explain if there are any financial
4 benefits for ratepayers or the Company related to purchases from RS 3808 and
5 the market and quantify, if possible.

6

7 **Response:**

8 The Company consulted with EES to provide the following response.

9 A short-term benefit could occur where power cost savings would surpass the lost revenue
10 associated with a reduction in on-peak load. Any net savings would be passed on to all
11 customers in subsequent revenue requirements filings. It is impossible to quantify such benefits
12 at this time as FBC does not have a good estimate of participation rates. FBC has proposed
13 optional TOU rates to gain a better understanding of customer response and participation in the
14 rates.

15

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135.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108–116; Exhibit B-8, BCUC IR 76.5.2,
79.1.6, 90.2 and 90.3; Exhibit B-8-1

Costs to implement

In its response to BCUC 90.2, FBC states that it:

... anticipates that much of the work can be completed during the normal course of business activities and would be recovered through the normal revenue requirement determination. If significant additional resources are required (for example, the engagement of consultants or additional infrastructure). FBC is actively working to complete a preliminary estimate of the costs, both internal and external, with the goal of being able to provide it to the Commission within 30 days. Once such costs are incurred, FBC would advise the Commission and address the recovery of such costs at that time. [*Emphasis added*]

In response to BCUC IR 90.3.3, FBC states that it “expects that the primary method by which customers will obtain TOU information will be through the web portal, which will be available at no charge for a customer to use.”

135.1 Please clarify if the underlined sentence from the response to BCUC IR 90.2 above is complete.

Response:

The response was inadvertently truncated. The full sentence should read:

If significant additional resources are required (for example, the engagement of consultants or infrastructure), FBC would advise the Commission and request a determination pertaining to the recovery of such costs.

In response to BCUC IR 90.3 FBC states that it “...intends to provide customers with the ability to connect in-home displays they purchase (at a cost of \$100-\$400 per customer) and to provide web-based access to TOU period consumption information. The information provided through these services will help customers on TOU rates clearly understand their consumption.”

135.2 Please provide details of the specific information that will be provided to customers through both the in-home displays and web-based access and if

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1 there are any pros and cons associated with each option. For example, would
2 the displays show the per KWh pricing at any given point in time, or would it
3 show only whether the current rate is on-peak, mid-peak or off-peak?
4

5 **Response:**

6 In-home displays provide real-time usage information to customers. Pricing and peak period
7 information will not be pushed from FBC to the in-home display. Some in-home displays allow
8 customers to program this information. Other devices may provide visual cues to the customer
9 based on usage thresholds that have been programmed by the customer.

10 FBC's web-based customer portal provides customers with daily and hourly usage information
11 within 24 hours of the consumption occurring. This information is visible in a graphical format or
12 can be downloaded in .csv or .txt format which allows the customer to gain a better
13 understanding of their energy habits in order to make adjustments as desired by the customer.

14
15
16
17 135.3 Will the in-home displays at a cost of \$100-400 per customer be available to
18 customers in all optional TOU rate classes, not just residential? If the different
19 optional TOU rate classes have different technology required to understand both
20 the TOU period and TOU rate applicable to consumption, please provide details
21 of the technology for each rate class and the associated cost for both FBC and
22 the individual customer.

23
24 **Response:**

25 FBC AMI meters all include Zigbee radios, so a customer in any class could use an in-home
26 display which they have purchased from a third party vendor with the following restrictions in
27 mind:

- 28 • The distance between the meter and the in-home display is limited to approximately 50-
29 250 feet depending on the physical obstructions. This may be a more restrictive
30 limitation for non-residential customers.
- 31 • As with residential customers, the in-home displays may be more difficult to configure for
32 non-flat rate schedules.
- 33 • In-home displays capable of displaying demand readings, commonly found in many non-
34 residential rate schedules, may be difficult to source.

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135.4 Please account for the range of \$300 for the in-home display costs.

Response:

There are a variety of in-home displays available for public purchase; prices vary depending on the features and product design a customer may wish to have, as well as on the vendor the customer chooses to source the product from.

135.4.1 What is the range in costs for in-home displays in other jurisdictions that have implemented TOU rates? Please provide a comparison table, if possible.

Response:

Monitors are a product that are widely available, so prices are market-based and not confined to pricing that is determined by jurisdiction.

135.4.2 Please discuss if FBC has any vendors lined up for the supply of customer in-home displays and when the products will be available to customers. If not, please discuss the timeline to secure vendors for the products.

Response:

FBC has tested products from a BC-based company, Rainforest Automation, but has not arranged for any particular vendor to supply in-home display products for customers to purchase. In-home displays are available from several market sources for customers to choose based on their individual needs.

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135.4.3 Please discuss whether FBC has investigated lower cost range of in-home displays currently on the market. If so, please discuss the results.

Response:

The least expensive in-home display FBC has tested is the Rainforest EMU-2, which is sold through BC Hydro’s website for \$85 plus taxes. The product works well and provides basic real-time consumption information, but has a limited ability to accommodate complex rate structures such as the proposed TOU rates. As noted in the referenced response, FBC intends to provide customers with the ability to connect in-home displays they purchase, not to be the purveyor of the devices. Customers will have the ability to select devices according to the features that they desire from those that are available on the market. FBC will advise as to the compatibility requirements for the units that are supported.

135.5 Has FBC considered a mobile application capability which may allow more interactive customer pricing signals? (e.g. customer notifications of the TOU pricing throughout the day)

Response:

FBC is currently investigating the addition of notifications to its mobile app, which could potentially include interactive pricing signals.

135.6 Has FBC considered providing customers with in-home displays or any other technology identified in the preceding IR response at no charge to the individual customer? Please discuss why or why not.

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Response:

FBC has provided in-home displays at no cost to approximately 200 members of two First Nations communities as part of an evaluation program. FBC is also considering deploying in-home displays to encourage participation in a heat-pump evaluation program. FBC has not considered providing all customers in-home displays at no cost to them. Before examining this prospect further, FBC would need to consider where such an offering might fit into the services that it provides, along with the appropriateness of such a step and its regulatory basis beyond the limited types of circumstances described above.

FBC provides its preliminary estimate of the costs to implement the proposed TOU rates in Exhibit B-8-1 and states:

The preliminary estimate of the costs to implement the proposed TOU Rates related to the AMI and billing systems totals approximately \$166 thousand, which is based on a combination of internal resources and minimal outsourcing, with implementation taking approximately nine months. FBC expects that 50 percent of this work would be completed by internal resources and related costs would not therefore fall to the account of ratepayers.

In addition, the work required to make TOU related information available to customers on the FBC web portal, (as discussed in the response to BCUC IR 1.90.3.1) could be done concurrently with the general TOU related work, but would add \$25 to \$50 thousand to the cost, split evenly between internal and external resources.

Further, FBC states that the estimate of \$166,000 has a range of +/-50 percent.

135.7 Please confirm or explain otherwise that the underlined statement from Exhibit B-8-1 in the preamble means that the costs related to the work completed by internal resources will be included in FBC's existing revenue requirements and no incremental costs associated with the work completed by internal resources will be recovered from ratepayers.

Response:

Confirmed.

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135.8 Please provide a breakdown of the total cost estimate provided in Exhibit B-8-1 (i.e. \$166,000 plus \$25 to \$50 thousand for work related to the web portal) by cost category.

Response:

The costs to implement the proposed TOU rates consist of the following:

Task	Cost (\$000s)
External resources – AMI rate modelling	\$64
Internal resources – billing system changes	\$22
Internal resources – AMI system changes	\$43
Internal resources – workforce management, data warehouse, reporting changes	\$8
Internal resources – quality assurance and implementation	\$29
TOTAL	\$166

The costs to implement changes to the FBC web portal to accommodate TOU rates consist of the following:

Task	Cost (\$000s)
External resources – code changes to web portal	\$12 - \$25
Internal resources – changes to web services	\$7 - \$14
Internal resources – quality assurance and implementation	\$6 - \$11
TOTAL	\$25 - \$50

In its response to BCUC IR 76.5.2, FBC outlines the actions it will take to provide information to customers regarding the optional TOU rates.

Further, in response to BCUC IR 79.1.6 FBC states that it

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1 ...plans to develop a TOU implementation and customer communication
2 strategy to increase customer awareness and understanding. This
3 strategy may range from low cost action items such as the increased
4 presence of TOU rate options highlighted on the www.fortisbc.com
5 website and increased promotion by FBC customer service
6 representatives, to more costly measures such as community information
7 sessions and individual billing analysis.

8 135.9 Please explain if the total cost estimate provided in Exhibit B-8-1 (i.e. \$166,000
9 plus \$25 to \$50 thousand for work related to the web portal) includes the costs
10 associated with a customer communication strategy. If not, please provide an
11 estimate of these costs.

12
13 **Response:**

14 The cost estimate provided did not include any costs associated with a customer
15 communication strategy specifically for TOU. If TOU rates are approved, communication will be
16 part of the overall customer communication plan currently in place for all rate related matters
17 and will not add additional costs over and above those that are already planned for.

18

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136.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108-116; Exhibit B-8, BCUC IR 76.1, 76.5.2, 76.6, 79.1.6

Time of Use rates reporting

In its response to BCUC IR 79.1.6, FBC states that it:

... is proposing to track and review the results of the optional TOU program (Including customers' awareness of the rates) and after a period of three years, to provide a recommendation to the Commission regarding the continuation of the rates.

In response to BCUC IR 76.1, FBC states that "actual customer behaviour will not be known without experience. Also, the power supply impacts that the resulting shifts in load may provide also need to be assessed with operational experience."

In response to BCUC IR 76.5.2, FBC states that "[w]ith the implementation of AMI, the Company can provide a bill analysis utilizing hourly data to assess potential TOU bill impacts for customers."

136.1 With the AMI project complete, could FBC have sufficient information to provide an annual evaluation of TOU customer uptake and load profiles, and determine if the TOU structure and price levels offer the correct signal to encourage FBC's goal for load shifting and the effect this has on baseload, variable and capacity costs? Please discuss.

Response:

What is required for the described analysis and required conclusion is hourly load data for customers for the periods both prior to and after enrollment in the TOU rate. While the 'prior to' data is available now, the 'after' data is not yet available. A summary can be completed on an annual basis that will provide the type of information suggested, however, and as stated in the Application, FBC is suggesting that three years of data will be required to provide enough data to draw conclusions.

The existence of the AMI infrastructure is a key component of this analysis.

136.2 Please provide details of the specific results that FBC proposes to track with respect to optional TOU rates for each customer class.

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Response:

The hourly load data provided by the AMI system will allow FBC to report on such metrics as:

- The number of customers enrolled in TOU;
- The total consumption for customers before and after enrollment on the TOU rate;
- Any shift in the distribution of consumption across the TOU rate periods for participating customers;
- The turnover and retention rates for the TOU program;
- Bill impacts;
- An assessment of the impact on FBC power purchases due specifically to the items listed above.

For many of these parameters, FBC will be able to report on how such variables as geographic location and consumption level impact the results, and a comparative analysis to customers in general.

136.2.1 Please explain the pros and cons of reporting on these items to the BCUC on an annual basis, rather than only after three years.

Response:

FBC does not believe that there are material pros and cons to reporting on an annual basis versus the 3 year duration suggested in the Application. FBC can report on an annual basis, but believes that a longer period should be allowed prior to making any decisions about the effectiveness of the program and whether it should continue.

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136.3 Does FBC have load profile and consumption data for the existing TOU customers in each class, so that any changes in load profile and consumption patterns over time can be reported? Please discuss.

Response:

Yes. Since the existing TOU customers also have AMI meters, the hourly data is being collected on the same basis as for other customers.

136.4 Will FBC be able to access the current load profile and consumption data for new customers in each class at the time of signing up for optional TOU rates, so that any changes in load profile and consumption patterns after signing up for the optional TOU rates can be reported over time? Otherwise, does FBC plan to evaluate the results on a whole class basis? Please discuss.

Response:

FBC will be able to access current and historical consumption data for customers in each class. This would allow reporting on changes in consumption patterns over time.

136.4.1 Can FBC use AMI to provide sufficient information, such as historical consumption patterns, to prospective TOU customers to allow them to make an informed decision to opt for TOU rates? Please discuss.

Response:

FBC can use AMI to provide sufficient information, such as historical consumption patterns, to prospective TOU customers to allow them to make an informed decision to opt for TOU rates.

Customers currently not on TOU rates can log into FortisBC's web portal and download their usage information in order to make an informed decision using their consumption history and patterns.

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2 136.5 Please provide a list of the key success factors and objectives related to the
3 proposed optional TOU rates.

4

5 **Response:**

6 The key success factor for the proposed optional TOU rates is general rate mitigation resulting
7 from lower overall utility costs. The Company realizes that some customers may also see lower
8 annual bills as compared to the default rate. However, without any accompanying utility cost
9 benefit (including power purchases), this only leads to a transfer of revenue responsibility
10 between customers.

11 As part of the evaluation provided to the Commission at the end of the three year evaluation
12 period, FBC will report on customer experience and satisfaction with the rate to the extent that it
13 is able, and will also provide information on the impact on load and costs that have resulted
14 from the implementation.

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18 136.5.1 For each key success factor and objective identified, please provide a
19 related key performance measure that would allow FBC to evaluate the
20 success of the optional TOU rates.

21

22 **Response:**

23 As discussed in the response to BCUC IR 2.136.5, FBC will need to make an assessment of
24 whether or not the results that were forecast in the design of the TOU rates have come to pass
25 and the extent to which any cost savings have been driven by the participation in the TOU rates.

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29 In response to BCUC IR 76.6, FBC states that “[a]dditionally, any analysis of
30 consumption patterns would be complicated by rate changes, appliance changes and
31 numerous other customer changes over the duration.”

32 136.6 During the three-year evaluation period, how will FBC attribute changes in
33 consumption levels to the TOU rate structure and resulting changes in customer
34 behaviour and/or efficiency changes to appliances, or any other reason? Please
35 discuss.

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2 **Response:**
3 As with the evaluation of the conservation impact of the RCR as reported to the Commission in
4 the Company's RCR Reports, a regression analysis will be required in order to isolate the
5 impact of the TOU rates on the outcomes within the limits that such an analysis provides. Such
6 an analysis can only be discussed in general terms at this time since the rate is not in effect and
7 planning for the evaluation has not commenced.

8

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137.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108–116; Exhibit B-8, BCUC 79.1.3, 87.2.1, 87.3, 88.2; Exhibit B-12, BCSEA IR 34.3; Exhibit B-11, BCOAPO IR 59.2; BCUC Inquiry into the Regulation of Electric Vehicle (EV) Charging Service, BCUC IR 24.3

Revenue neutrality

In its response to BCUC IR 87.3, FBC states that “For clarity, for each rate class, the proposed TOU rates are designed to be revenue neutral with the existing TOU rates, assuming in both cases that all customers are enrolled in the program.”

On page 113 of the Application, FBC states that the “proposed off-peak rate would be set so that the total forecast revenues collected are revenue neutral with the proposed non-TOU rates and the revenue requirement for each class.”

137.1 Please provide an illustrative example representing the proposed revenue neutral design of the TOU rate proposal.

Response:

The Company consulted with EES to provide the following response.

The following provides the numbers used for the residential class to illustrate the revenue neutrality of the proposed rates. The first three columns show the calculations for total class revenue under the 1st year of the phase-in rates. The last three columns show the calculations under the optional TOU rates assuming all residential customers use this rate.

The total kWh for the TOU rate is lower due to the impacts of elasticity that were included in the calculations. For the TOU revenues, the reduced costs associated with power purchases that could be avoided due to the lower kWh usage are used to offset the revenues, as shown under Equivalent Revenues. Power purchase cost reductions are assumed to occur at the BC Hydro RS 3808 energy rate. In other words, FBC would need to collect less revenues from the class because its costs would be less under TOU rates.

After the power cost savings are accounted for, the revenues from the two different rates are within 0.06% of one another. They are not exactly the same dollar amount because the energy rates are set to carry out to four decimal places only, making the revenue slightly different under the two cases.

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	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	115,595	\$16.58	\$22,998,781	115,595	\$18.70	\$25,939,518
Block 1 kWh	882,419,312	\$0.1039	\$91,718,663			
Block 2 kWh	470,613,063	\$0.1492	\$70,191,938			
On-Peak kWh				184,193,636	\$0.2244	\$41,324,641
Mid-Peak kWh				385,974,626	\$0.1187	\$45,812,856
Off-Peak kWh				767,073,246	\$0.0928	\$71,184,397
Total kWh	1,353,032,375			1,337,241,508		
Total Revenues			\$184,909,383			\$184,261,412
Reduced Power Cost						\$767,910
Equivalent Revenues						\$185,029,322
Percent Difference						0.06%

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137.1.1 Please clarify which year was used for the revenue requirement and rates in determining the revenue neutrality of the TOU proposal.

Response:

The Company consulted with EES to provide the following response.

The revenue neutrality for each class was calculated using both 2017 forecast revenues under current revenues and revenues based on the proposed rates and the 2017 forecast sales. In the case of the residential class, the rates in all 5 years of the phase-in were used.

137.2 Should the underlined statement in the preamble read “proposed non-TOU rates” for each class, rather than “the existing TOU rates”? If not, please clarify.

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1

2 **Response:**

3 The Company consulted with EES to provide the following response.

4 Yes, the underlined statement in the preamble should read “non-TOU” rates.

5

6

7

8 137.2.1 Please confirm the “proposed non-TOU rate” (i.e. Year 5 flat rate,
9 current RCR or other) for the residential class specifically that was used
10 to determine revenue neutrality for the proposed residential TOU rates.

11

12 **Response:**

13 Please refer to the response to BCUC IR 2.37.1.1.

14

15

16

17 137.2.1.1 In the event that the Year 5 flat rate was used to determine
18 revenue neutrality for the proposed TOU rate for the
19 residential class, please provide revised proposed TOU
20 rates using the current RCR to determine revenue neutrality.

21

22 **Response:**

23 Please refer to the response to BCUC IR 2.137.1.1.

24

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27 Further, in response to BCUC IR 79.1.3, FBC states that

28 ...the proposed TOU rates are set so that the total forecast revenues
29 collected are revenue neutral with the proposed non-TOU rates and the
30 revenue requirement for each class under the assumption that the entire
31 class is participating. Partial participation may lead to an over-collection
32 or under-collection as compared to the default rate.

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1 In response to BCUC IR 87.2.1, FBC states that

2 To the extent that there may be a concern that only those customers that
3 may benefit from the TOU rate would choose to enroll, thereby leading to
4 a revenue deficiency, the Company notes that this issue could arise
5 under any phase-out schedule (or no phase-out) so this alone would not
6 prevent the concurrent implementation of TOU rates.

7 Further, in response to BCUC IR 88.2, FBC states that “It is expected in some cases that
8 customers that inherently have a greater level of off-peak use would switch to TOU rates
9 and not actually change consumption.”

10 137.3 How would partial participation in TOU affect (i) the proposed TOU periods and
11 (ii) TOU pricing? Please discuss.
12

13 **Response:**

14 The Company consulted with EES to provide the following response.

15 Because FBC does not have a count of the number of customers that will opt for the TOU rate,
16 nor the usage of those customers, the rates were designed to be revenue neutral for each class
17 as a whole. Partial participation could lead to higher or lower revenues for any given class as a
18 whole. This would not impact the TOU periods used as those were derived based on total
19 system load shapes and costs. There may need to be an adjustment to TOU rates in the future
20 if FBC determines those customers are not covering their fair share of costs.

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24 137.4 How would partial participation in TOU affect the reduction in on-peak
25 consumption? Is the relationship between TOU participation and on-peak
26 consumption linear? Please discuss.
27

28 **Response:**

29 The Company consulted with EES to provide the following response.

30 FBC is proposing that the TOU rates be optional and that they be re-examined at the end of
31 three years because it does not have the data to determine participation rates and customer
32 usage levels in response to the rates. Even with partial participation in the TOU rate, it is
33 expected that most customers will reduce their on-peak consumption in response to the rate. At
34 this point FBC does not know if the relationship would be linear.

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4 In response to BCSEA IR 34.3 FBC states that, "...it was estimated that roughly 19
5 percent of customers would be better off financially with TOU rates with no changes in
6 their consumption patterns. Based on the sample, if all of the customers with potential
7 savings opted into the TOU rate, and assuming no other residential customers opted into
8 the TOU rate, the lost revenues would be \$9.4 million out of \$185 million in total. In
9 terms of rate impact, this would result in an added cost of \$0.001 per kWh for customers
10 in the residential class (or \$0.003/kWh if applied to all customer classes)."

11 137.5 Does FBC have consumption data for each rate class to indicate the number of
12 customers that would experience a bill benefit, no bill change and a bill increase
13 under the proposed optional TOU rates as compared to the proposed standard
14 rates?
15

16 **Response:**

17 The Company consulted with EES to provide the following response.

18 FBC has sufficient data for each customer in the industrial and wholesale classes to provide the
19 bill impacts under TOU rates. For the remaining classes, FBC has hourly data but does not
20 have sufficient computing power to provide TOU bill comparisons. For those classes, it is
21 possible to calculate bill impacts for the sample of customers used elsewhere in the
22 development of rates as a way to estimate the impacts for each class as a whole.
23
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26 137.5.1 If the answer to the preceding IR is yes, please provide, by rate class,
27 the number of customers that would experience a bill benefit, no bill
28 change and a bill increase under the proposed optional TOU rates as
29 compared to the proposed standard rates. For the residential class,
30 please provide the analysis as compared to both the current RCR and
31 the Year 5 flat rate.
32

33 **Response:**

34 The Company consulted with EES to provide the following response.

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The following table provides the results of bill comparisons of proposed default rates to the proposed TOU rates. For the industrial and wholesale classes the results are based on all customers in the class. For the remaining classes, the results are estimated based on a sample of customers in the class, scaled up to reflect the levels for the entire class. In the case of the residential class, the results are shown in comparison to the current rate, as those results are consistent with the response to BCSEA IR 1.34.3. Both the year 1 RCR rate and the year 5 flat rate are also provided for the residential class to show how the impacts will change over time.

For many classes the potential reduction in revenues, if customers do not change their consumption as a result of the rate, is less than 1 percent of the total revenues for the class.

	Estimated Number of Customers with Bill Decrease	Estimated Number of Customers with Bill Increase	Estimated Percent of Customers with Bill Decrease	Estimated Percent Revenue Reduction ⁶	Estimated Revenue Deficiency
Residential (vs current rates)	21,963	93,632	19%	5.07%	\$9,379,657
Residential (vs Year 1 proposal)	14,757	100,838	13%	3.81%	\$7,054,205
Residential (vs Year 5 proposal)	7,474	108,121	6%	0.39%	\$729,433
Small Commercial	4,070	9,886	29%	0.45%	\$153,228
Commercial	455	1,106	29%	2.40%	\$1,271,678
Large Commercial Primary	6	40	13%	0.52%	\$106,166
Large Commercial Transmission	0	3	0%	0.00%	\$0
Irrigation	264	831	24%	0.10%	\$3,409
Wholesale	0	5	0%	0.00%	\$0

For the residential class, those customers facing the higher Tier 2 rate are the most likely to be able to reduce bills with no change in consumption. As the RCR rates are phased out, the potential revenue deficiency decreases substantially.

With respect to the commercial class (RS 21) there is a larger potential for reduced revenues under TOU rates than for other non-residential classes; however, this is primarily for customers that have low load factors and is not as much related to the TOU shape of the customer. Reduced revenues come from the avoidance of the RS 21 demand charge. Because FBC has provisions to make certain customers ineligible for the TOU rate based on load factors, FBC will be able to avoid the decrease in revenues if it becomes an issue.

⁶ The estimated revenue reduction columns are based only on the customers with a bill decrease.

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137.5.2 If the answer to the preceding IR is no, please provide an estimate, by rate class, of the number of customers that would experience a bill benefit, no bill change and a bill increase under the proposed optional TOU rates as compared to the proposed standard rates. For the residential class, please provide the analysis as compared to both the current RCR and the Year 5 flat rate.

Response:

Please refer to the response to BCUC IR 2.137.5.1.

137.5.3 In the event that only those customers that would benefit from the proposed TOU rates choose to opt-in to the TOU service, please provide the approximate annual revenue deficiency by rate class.

Response:

Please refer to the response to BCUC IR 2.137.5.1.

137.5.3.1 Given that this analysis requested in the preceding IR was provided in response to BCSEA IR 34.3 for the residential class, please indicate if the information provided in response to the BCSEA IR compares the optional TOU rates to the current RCR or the Year 5 Flat Rate and provide a revised response under both the current RCR and the Year 5 Flat Rate.

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1 **Response:**

2 Please refer to the response to BCUC IR 2.137.5.1 for a revised response to account for the
3 current RCR, the year 1 proposed rate and the year 5 flat rate. As noted in that response, the
4 information provided in the response to BCSEA IR 34.3 was based on a comparison to current
5 RCR rates.

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9 137.5.4 In the event that only those customers currently enrolled in FBC's TOU
10 rate programs stay on the TOU rates and no additional customers
11 enroll, please provide the approximate annual revenue deficiency by
12 rate class. For the residential class, please provide the analysis as
13 compared to both the current RCR and the year 5 flat rate.

14

15 **Response:**

16 The Company consulted with EES to provide the following response.

17 FBC has not collected the hourly information specific to customers currently served under TOU
18 rates needed to complete this request. Current TOU customers already see a TOU price signal
19 and there are very few customers taking service under current TOU rates. Given that the
20 current TOU rates contain different time periods and pricing than the proposed TOU rates, the
21 actual impact will depend on the customers' load profiles and could result in either a revenue
22 increase or decrease. In either case FBC expects that the change in revenue would be minor.

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26 137.6 In the BCUC's Inquiry into the Regulation of EV Charging Service, FBC states in
27 response to BCUC IR 24.3 that "TOU rates provide a simple incentive for EV
28 owners to shift charging to off peak times." Assuming that all EV owners charge
29 their electric vehicles during off peak times, please discuss the impact this would
30 have on FBC's proposal for revenue neutrality in the residential rate design.
31 Please list all assumptions.

32

33 **Response:**

34 The Company consulted with EES to provide the following response.

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FBC does not have any specific consumption data for EV owners by TOU periods at the present time. The shift in usage would be accounted for in the elasticity estimates used when setting the TOU rates. There is no expected issue with revenue neutrality as a result of EV charging at this time. If EV charging becomes a larger portion of load, it could lead to a higher level of on-peak savings in the future than anticipated by the elasticity estimates. FBC will look at whether TOU customers are paying their fair share of costs in the future and make any necessary rate adjustments in the future.

137.7 Please provide three separate analyses to demonstrate the residential forecast and actual revenue variance that will result if 25 percent, 50 percent and 75 percent of residential customers take service under the proposed TOU rates, using the following assumptions:

- All customers taking service under the proposed TOU rates have mean consumption prior to opting for TOU rates
- The actual shift in consumption is in accordance with the elasticity factors included on page 114 of the Application.

Please provide the supporting calculations and the explanation for any residential forecast and actual revenue variance or lack of variance, where applicable.

Response:

The Company consulted with EES to provide the following response.

The following provides the requested calculations. In all cases, the revenues would still be revenue neutral with current and proposed rates. Revenues remain neutral because the load profiles and usage impacts would be the same on a proportional basis as used for setting the proposed TOU rates. In all cases, because we do not know the load profiles of the customers that opt for TOU rates versus those that do not, we have assumed the load profiles for both default and TOU customers are the same and equivalent to the average for the entire class. Regardless of what percent is assumed to be on the default rate versus the TOU rate, the results will continue to be revenue neutral, as demonstrated by the following tables.

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25% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	28,899	\$16.58	\$5,749,695	28,899	\$18.70	\$6,484,880
Block 1 kWh	220,604,828	\$0.1039	\$22,929,666			
Block 2 kWh	117,653,266	\$0.1492	\$17,547,985			
On-Peak kWh				46,048,409	\$0.2244	\$10,331,160
Mid-Peak kWh				96,493,656	\$0.1187	\$11,453,214
Off-Peak kWh				191,768,311	\$0.0928	\$17,796,099
Total kWh	338,258,094			334,310,377		
Total Revenues			\$46,227,346			\$46,065,353
Savings from Reduced Power Cost						\$191,977
Equivalent Revenues						\$46,257,330
Percent Difference						0.06%

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50% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	57,798	\$16.58	\$11,499,391	57,798	\$18.70	\$12,969,759
Block 1 kWh	441,209,656	\$0.1039	\$45,859,332			
Block 2 kWh	235,306,532	\$0.1492	\$35,095,969			
On-Peak kWh				92,096,818	\$0.2244	\$20,662,320
Mid-Peak kWh				192,987,313	\$0.1187	\$22,906,428
Off-Peak kWh				383,536,623	\$0.0928	\$35,592,199
Total kWh	676,516,188			668,620,754		
Total Revenues			\$92,454,691			\$92,130,706
Savings from Reduced Power Cost						\$383,955
Equivalent Revenues						\$92,514,661
Percent Difference						0.06%

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75% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	86,696	\$16.58	\$17,249,086	86,696	\$18.70	\$19,454,639
Block 1 kWh	661,814,484	\$0.1039	\$68,788,997			
Block 2 kWh	352,959,797	\$0.1492	\$52,643,954			
On-Peak kWh				138,145,227	\$0.2244	\$30,993,481
Mid-Peak kWh				289,480,969	\$0.1187	\$34,359,642
Off-Peak kWh				575,304,934	\$0.0928	\$53,388,298
Total kWh	1,014,774,281			1,002,931,131		
Total Revenues			\$138,682,037			\$138,196,059
Savings from Reduced Power Cost						\$575,932
Equivalent Revenues						\$138,771,991
Percent Difference						0.06%

137.8 Please provide three separate analyses to demonstrate the residential forecast and actual revenue variance that will result if 25 percent, 50 percent and 75 percent of residential customers take service under the proposed TOU rates, using the following assumptions:

- All customers taking service under the proposed TOU rates have mean consumption prior to opting for TOU rates
- The actual shift in consumption varies by +/- 10 percent as compared to the elasticity factor on page 114 in the Application

Please provide the supporting calculations and the explanation for any residential forecast and actual revenue variance or lack of variance, where applicable.

Response:

The Company consulted with EES to provide the following response.

The following three tables show the calculations when changes in kWh resulting from the TOU rates are 10 percent more than expected in each separate TOU period. The three requested

- 1 participation rates are shown. In each case, the net revenues would be reduced but by an
- 2 amount less than \$300 thousand or two tenths of a percent.

25% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	28,899	\$16.58	\$5,749,695	28,899	\$18.70	\$6,484,880
Block 1 kWh	220,604,828	\$0.1039	\$22,929,666			
Block 2 kWh	117,653,266	\$0.1492	\$17,547,985			
On-Peak kWh				45,308,772	\$0.2244	\$10,165,219
Mid-Peak kWh				96,502,666	\$0.1187	\$11,454,283
Off-Peak kWh				192,070,341	\$0.0928	\$17,824,128
Total kWh	338,258,094			333,881,779		
Total Revenues			\$46,227,346			\$45,928,510
Savings from Reduced Power Cost						\$212,820
Equivalent Revenues						\$46,141,330
Change in Revenues						-\$86,016
Percent Change in Total Residential Revenues						-0.05%

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50% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	57,798	\$16.58	\$11,499,391	57,798	\$18.70	\$12,969,759
Block 1 kWh	441,209,656	\$0.1039	\$45,859,332			
Block 2 kWh	235,306,532	\$0.1492	\$35,095,969			
On-Peak kWh				90,617,544	\$0.2244	\$20,330,439
Mid-Peak kWh				193,005,333	\$0.1187	\$22,908,567
Off-Peak kWh				384,140,682	\$0.0928	\$35,648,255
Total kWh	676,516,188			667,763,559		
Total Revenues			\$92,454,691			\$91,857,020
Savings from Reduced Power Cost						\$425,640
Equivalent Revenues						\$92,282,660

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50% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Change in Revenues						-\$172,031
Percent Change in Total Residential Revenues						-0.09%

1

75% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	86,696	\$16.58	\$17,249,086	86,696	\$18.70	\$19,454,639
Block 1 kWh	661,814,484	\$0.1039	\$68,788,997			
Block 2 kWh	352,959,797	\$0.1492	\$52,643,954			
On-Peak kWh				135,926,316	\$0.2244	\$30,495,658
Mid-Peak kWh				289,507,999	\$0.1187	\$34,362,850
Off-Peak kWh				576,211,023	\$0.0928	\$53,472,383
Total kWh	1,014,774,281			1,001,645,338		
Total Revenues			\$138,682,037			\$137,785,530
Savings from Reduced Power Cost						\$638,460
Equivalent Revenues						\$138,423,991
Change in Revenues						-\$258,047
Percent Change in Total Residential Revenues						-0.14%

2

3 The following three tables show the calculations when changes in kWh resulting from the TOU
4 rates are 10 percent less than expected in each separate TOU period. The three requested
5 participation rates are shown. In each case, the net revenues would be increased by an amount
6 less than \$500 thousand or three tenths of a percent.

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25% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	28,899	\$16.58	\$5,749,695	28,899	\$18.70	\$6,484,880
Block 1 kWh	220,604,828	\$0.1039	\$22,929,666			
Block 2 kWh	117,653,266	\$0.1492	\$17,547,985			
25% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
On-Peak kWh				46,788,046	\$0.2244	\$10,497,101
Mid-Peak kWh				96,484,646	\$0.1187	\$11,452,145
Off-Peak kWh				191,466,282	\$0.0928	\$17,768,071
Total kWh	338,258,094			334,738,974		
Total Revenues			\$46,227,346			\$46,202,196
Savings from Reduced Power Cost						\$171,135
Equivalent Revenues						\$46,373,331
Change in Revenues						\$145,985
Percent Change in Total Residential Revenues						0.08%

1

50% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	57,798	\$16.58	\$11,499,391	57,798	\$18.70	\$12,969,759
Block 1 kWh	441,209,656	\$0.1039	\$45,859,332			
Block 2 kWh	235,306,532	\$0.1492	\$35,095,969			
On-Peak kWh				93,576,092	\$0.2244	\$20,994,202
Mid-Peak kWh				192,969,293	\$0.1187	\$22,904,289
Off-Peak kWh				382,932,564	\$0.0928	\$35,536,142
Total kWh	676,516,188			669,477,949		
Total Revenues			\$92,454,691			\$92,404,392
Savings from Reduced Power Cost						\$342,270
Equivalent Revenues						\$92,746,662
Change in Revenues						\$291,970

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50% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Percent Change in Total Residential Revenues						0.16%

1

75% Participation	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	86,696	\$16.58	\$17,249,086	86,696	\$18.70	\$19,454,639
Block 1 kWh	661,814,484	\$0.1039	\$68,788,997			
Block 2 kWh	352,959,797	\$0.1492	\$52,643,954			
On-Peak kWh				140,364,138	\$0.2244	\$31,491,303
Mid-Peak kWh				289,453,939	\$0.1187	\$34,356,434
Off-Peak kWh				574,398,846	\$0.0928	\$53,304,213
Total kWh	1,014,774,281			1,004,216,923		
Total Revenues			\$138,682,037			\$138,606,588
Savings from Reduced Power Cost						\$513,404
Equivalent Revenues						\$139,119,992
Change in Revenues						\$437,955
Percent Change in Total Residential Revenues						0.24%

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7

In response to BCUC IR 79.1.4, FBC states that "Partial participation may lead to an over-collection or under-collection as compared to the default rate."

8

9

10

11

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Response:

13

The Company consulted with EES to provide the following response.

137.9 Please provide details of the circumstances under which partial participation will lead to an over-collection of revenue as compared to the default rate and provide an illustrative example.

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1 In the case where customers shift usage by an amount less than expected, there is the potential
2 for over-collection of revenues, regardless of the participation rate. This is illustrated in the
3 response to BCUC IR 2.137.8. Over collection dollars are not expected to be significant.

4
5
6
7 137.10 Please provide details of the circumstances under which partial participation will
8 lead to an under-collection of revenue as compared to the default rate and
9 provide an illustrative example.

10
11 **Response:**

12 The Company consulted with EES to provide the following response.

13 In the case where customers have a larger shift in usage than expected there is the potential for
14 under-collection of revenues, regardless of the participation rate. This is illustrated in the
15 response to BCUC IR 2 137.8. Under-collection dollars are not expected to be significant.

16
17
18
19 137.11 Please explain how the number of actual participants in the optional TOU rate
20 program will impact revenue neutrality, given that the rates were set to be
21 revenue neutral with all customers on the TOU rate versus all customers on the
22 standard rate. Please provide an illustrative example to support the response.

23
24 **Response:**

25 The Company consulted with EES to provide the following response.

26 The participation rate level by itself will not impact whether or not rates will be revenue neutral,
27 as illustrated in the response to BCUC IR 2.137.1. In designing rates to be revenue neutral it
28 was assumed that each customer would have the average load profile and so the revenues
29 would be the same in that case regardless of which rate they are on. Revenues will remain
30 neutral until specific assumptions are made about the difference in the load profile for those
31 customers that choose TOU rates versus those that do not. The responses to BCUC IR 2.137.8
32 and BCUC IR 2.137.5.1 provide further details about changes in revenue when different
33 assumptions are made about customers that opt for TOU rates.

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2
3
4 In response to BCOAPO IR 59.2, FBC states that “[i]t is expected that customers with
5 more than average off-peak consumption will be more likely to opt for TOU rates.”

6 137.12 Please discuss if the expectation that customers with more than average off-
7 peak consumption will be more likely to opt for TOU rates has been built into the
8 proposed rate design and revenue neutrality assumptions for the optional TOU
9 rates. If not, please explain why not.

10
11 **Response:**

12 The Company consulted with EES to provide the following response.

13 The revenue neutrality of rates depends on the assumptions regarding usage and response
14 rates that were used to develop the rates. FBC does not have sufficient data as to the
15 participation rate for customers with and without more than average off-peak use and could not
16 quantify those impacts when developing the TOU rates. The impacts on revenue neutrality will
17 depend both upon the starting load shape of the participating customers and their usage
18 response to the TOU rates. FBC has proposed a three-year period for the proposed TOU rates
19 to allow the utility to gather the necessary data on usage and participation so that it can refine
20 the TOU rate levels in the future, if necessary.

21

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138.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108–116; Exhibit B-8, BCUC IR 75.2, 76.4.2, 76.5, 79.1.3

Revenue requirement recovery

In its response to BCUC IR 75.2, FBC states that

As the adoption of TOU rates grows over time, the TOU loads and revenues will be included in the load and revenue forecasts which are usually updated annually, so the effects of TOU adoption will be reflected in the revenue deficiencies or surpluses in the annual revenue requirements process. Revenue variances from forecast are currently captured in the flow through deferral account and recovered from or refunded to customers in subsequent periods.

138.1 Please clarify if FBC plans to update the load and revenue forecasts on an annual basis for the forecast TOU loads and revenues, regardless of the number of customers that adopt TOU rates.

Response:

Once the relevant TOU data is reliably broken out, FBC anticipates that it will forecast TOU loads and revenue annually as part of the reporting on and monitoring of these rate schedules.

138.2 With respect to the method of refund / recovery for revenue variances from forecast related to optional TOU rates, please clarify the following and explain the rationale for the approach:

- Does FBC propose to recover/refund optional TOU revenue variances to all customers or only optional TOU customers, or through all customers within the rate class?
- Does FBC propose to recover/refund optional TOU revenue variances related to specific customer classes from all customer classes or only from customers in the specific customer class?

Response:

FBC does not propose to recover or refund revenue variances for the optional TOU rates, or any other rates, either from customers in the specific rate class or customer class. Variances

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from TOU rates will be treated identically to variances from all other rate classes. FBC has no class-specific mechanisms for the true-up of actual revenue to forecast revenue.

Changes to TOU rates resulting from such true-ups would also not be consistent with rate design principles. Customer rates are designed to equate revenue with cost, within a range of reasonableness, and are adjusted when the revenue/cost (R/C) ratios fall outside of the established range of reasonableness. Annual revenue forecasts for rate-setting purposes are based on forecast billing determinants and variances from forecast revenue do not themselves signify a change in the R/C ratio.

For example, increases or decreases in TOU participation from forecast will cause revenue variances but may have no impact on the R/C ratio. Variances in total consumption, as in the consumption in each of the TOU blocks, can be significantly affected by weather, which may impact the R/C ratio depending on the incremental costs or savings of purchased power to serve the incremental load, compared to the incremental revenue. FBC also recovers or refunds variances in power purchase expense through general rates and not from or to specific rate classes or customer classes. To flow through the TOU revenue variances without considering the associated cost variances would be inappropriate, since it would dissociate the TOU rates from costs and would result in an inappropriate price signal to existing and potential TOU customers. Nor does FBC consider that adjusting the TOU rates annually by recalculating the R/C ratio to include the prior year's variances is appropriate or necessary given that FBC has proposed a three year time frame for the evaluation of TOU rates, as explained on page 8 of the Application.

138.2.1 Would FBC consider any alternatives to the flow through deferral account to refunding/recovering revenue variances related to optional TOU rates to customers? Specifically, please discuss if FBC would consider refunding /recovering revenue variances to optional TOU customers only and/or to the specific customer class that the variance is attributable to. Please discuss why or why not.

Response:

Please refer to the response to BCUC IR 2.138.2.

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1
2 The table provided in response to BCUC IR 76.5 shows an increase of 23 RS2A
3 customers in January 2012 compared to January 2011.

4 138.3 Does FBC consider that that the increase in RS 2A customers in January 2012
5 can likely be attributed to the introduction of the RCR in 2012? Please discuss.
6

7 **Response:**

8 FBC does not know the reason for the bump in participation shown in January 2012; however, it
9 seems unlikely that the RCR was a contributing factor since the RCR Decision was not issued
10 until mid-January 2012 and the rate was not implemented until July 2012

11
12
13
14 138.4 In the event that the proposal in the current Application to flatten the residential
15 rate over a period of five years approved, please provide an estimate of the
16 impact, if any, FBC expects this will have on the number of new customers that
17 will sign up for the optional residential TOU rate.
18

19 **Response:**

20 As discussed in the response to BCUC IR 2.131.2, FBC does not believe that it can estimate
21 either the participation rates for residential customers or the changes in participations rates for
22 that or other classes.
23

139.0 Reference: OPTIONAL TIME OF USE RATES

Exhibit B-1, Section 8, pp. 108–116; Exhibit B-8, BCUC IR 76.4.2, 82.2, 82.2.1, 82.2, 90.3.4

Bill impact

In its response to BCUC IR 82.2, FBC provides a comparison of the annual bill under the current RCR rate, the FBC residential rate proposal and the proposed TOU rate for the “average customer”.

Further FBC states in response to BCUC IR 82.2.1 that “...In comparing bills under the TOU rates to the flat rate, the analysis demonstrates that TOU rates, with no change in customer consumption, will produce annual bills approximately \$30-\$40 above the flat rate bills at the same annual consumption. In order to achieve bill savings under the TOU rates, these customers would need to take measures to shift load.”

139.1 Please provide an updated bill estimate, based on the elasticity assumptions of -0.16 for block 2 (on-peak proxy) and -0.07 elasticity for mid-peak and off-peak periods provided in BCUC 88.1 and BCUC 88.1.1 and the annual average load shapes provided in BCUC 80.1, showing an average customers potential savings under TOU.

Response:

The Company consulted with EES to provide the following response.

The following table shows the bill calculations for a single customer with average use and the assumed elasticity factors. The difference in the consumption-based energy billing is \$31 (savings under TOU), and the total difference in the annual bill would be a savings of \$5.61.

	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	1	\$16.58	\$199	1	\$18.70	\$224
Block 1 kWh	7,634	\$0.1039	\$793			
Block 2 kWh	4,071	\$0.1492	\$607			
On-Peak kWh				1,593	\$0.2244	\$357
Mid-Peak kWh				3,339	\$0.1187	\$396
Off-Peak kWh				6,636	\$0.0928	\$616
Total kWh	11,705			11,568		
Total Revenues			\$1,600			\$1,594

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	Proposed Year 1 Phase-in Rate			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Annual Bill Reduction						-\$5.61
Percent Difference						-0.35%

139.2 Please provide an estimate of the amount of load that would need to be shifted in order for customers to realize a financial benefit from the optional TOU rates, assuming the \$30-40 bill difference and the cost of an in-home display (\$100-\$300).

Response:

The Company consulted with EES to provide the following response.

The following table illustrates one example that would yield a net annual savings of \$200 for a customer opting for TOU rates, enough to cover the average cost of an in-home display. Note that customers do not necessarily need an in-home display to benefit from a TOU rate, and that a longer payback than one year for an in-home display would be expected.

Based on elasticity assumptions, TOU rates lead to both a reduction in on-peak use and a shift of on-peak use to off-peak periods. In the example illustrated below, the customer would have an average load shape to start. They would need to reduce their on-peak and mid-peak energy use by 15 percent and shift another 24 percent of on-peak and mid-peak use to the off-peak period. This would yield an annual bill savings of \$201, or a 12.2 percent reduction.

	TOU Bill Before Load Shifts			TOU Bill After Load Shifts		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	1	\$18.70	\$224	1	\$18.70	\$224
Block 1 kWh						
Block 2 kWh						
On-Peak kWh	1,849	\$0.2244	\$415	1,128	\$0.2244	\$253
Mid-Peak kWh	3,336	\$0.1187	\$396	2,035	\$0.1187	\$242
Off-Peak kWh	6,519	\$0.0928	\$605	7,764	\$0.0928	\$720

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	TOU Bill Before Load Shifts			TOU Bill After Load Shifts		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Total kWh	11,705			10,927		
Total Revenues			\$1,640			\$1,440
Annual Bill Reduction						-\$201
Percent Difference						-12.2%

In response to BCUC IR 90.3.4, FBC states “Customers will have to make the choice to shift their consumption, which may require behavioural changes or investment in new equipment.”

139.3 Please clarify and discuss if the reference to “investment in new equipment” in response to BCUC IR 90.3.4 refers to the investment of an in-home display or the investment in new appliances with programmable functions etc. or both.

Response:

The phrase, “investment in new equipment” was intended to cover any and all expenditures that may be made by a customer to better take advantage of TOU rates. This includes any equipment that would help to monitor load as well as new appliances that could be set to utilize time periods with lower rates.

139.3.1 What type of new equipment is available for customers that would impact their load shifting capabilities under TOU rates? Please discuss and provide estimates of the load shifting capabilities associated with the new equipment.

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1 **Response:**

2 The table below contains a number of appliances that can be purchased with integral delay
3 timers (or in the case of a spa or water heater could have a timer added), and their average
4 annual kWh usage.⁷

5 These appliances could have either all or some portion of consumption shifted from on-peak to
6 off or mid-peak periods.

Appliance Type (Electric)	Average Annual kWh Usage
Energy-efficient Hot Water Tank (family of 4)	4,502
Electric Self-cleaning Electric Range	754
Dishwasher (using Dry Cycle)	270
Top Loading Clothes Washer	881
Clothes Dryer	910
Spa (with foam cover)	7,800

7

8 In addition, through the use of individual timers, any small appliance or entertainment device
9 can be turned on and off according to the TOU schedule.

10

11

12

13 139.4 Please provide a revised table in the same format as provided in response to
14 BCUC IR 82.2 assuming that the customers are able to shift consumption in
15 accordance with the elasticity factors on page 114 of the Application.

16

17 **Response:**

18 In approaching this question, FBC is required to determine the kWh that the mean and median
19 customer examples used in the original IR would shift from the on-peak period. For simplicity it
20 has been assumed that the customers shift consumption from the on-peak period to the off-
21 peak period in response to the price differential between the on-peak rate and the average rate
22 the customer is exposed to for the rest of his or her consumption. The starting point for the

⁷ Information is drawn from data listed at the following website. More detail on the assumptions contained in the figures is available there.
https://www.bchydro.com/content/dam/hydro/medialib/internet/documents/Power_Smart_FACT_sheet_s/FACTS_Energy_Efficient_Appliances.pdf

1 division of consumption between the pricing periods is as used in the original response, the
2 overall breakdown between pricing periods for the entire residential class.

3 **Original Consumption Pattern**

	Total kWh	On-Peak kWh	Mid-Peak kWh	Off-Peak kWh
TOU Average Customer (mean)	10,800	1,706	3,078	6,026
TOU Average Customer (median)	8,700	1,375	2,480	4,855

4
5 FBC has assumed a shift in consumption would occur consistent with that used in the response
6 to BCUC 2.139.1.

7 This calculation results in a shift in consumption as shown in the table below.

8 **New Consumption Pattern**

	Total kWh	On-Peak kWh	Mid-Peak kWh	Off-Peak kWh
TOU Average Customer (mean)	10,674	1470	3,081	6,123
TOU Average Customer (median)	8,598	1184	2,482	4,932

9 For comparison purposes, Table 1 shows the current billing with the original consumption under
10 the RCR and Year 5 flat rate. (Same information as in the response to BCUC IR 1.82.2)

11 **Table 1: Current Billing**

	Annual kWh	Bill under Current RCR			Bill under Year 5 Flat Rate		
		Customer Charge	Energy Charge	Total Bill	Customer Charge	Energy Charge	Total Bill
Average Customer (mean)	10,800	\$192.60	\$1203.19	\$1395.79	\$224.40	\$1268.89	\$1493.29
Average Customer (median)	8,700	\$192.60	\$922.36	\$1114.96	\$224.40	\$1022.16	\$1246.56

12
13 Table 2 show the result of the load shifting described in this information request. "TOU Bill with
14 No Load Shifting" contains the original information from BCUC 1 82.2 while, "Bill under
15 Proposed TOU with Shifting" shows the annual bill amounts that would result if load was shifted
16 as described.

1

Table 2: Results of load Shifting

	TOU Bill with No Load Shifting				Bill under Proposed TOU with Shifting		
	Annual kWh	Customer Charge	Energy Charge	Total Bill	Customer Charge	Energy Charge	Total Bill
TOU Average Customer (mean)	10,800	\$224.40	\$1307.41	\$1531.81	\$224.40	\$1263.69	\$1488.09
TOU Average Customer (median)	8,700	\$224.40	\$1053.19	\$1277.59	\$224.40	\$1017.91	\$1242.31

2

3

4

5 139.5 Please identify the amount of load that would need to be shifted from on-peak to
6 mid- or off-peak in order to achieve bill neutrality (i.e. approximately \$30-40 in
7 annual savings) between the proposed flat rate and the optional TOU rate.

8

9 **Response:**

10 Please refer to the response to BCUC IR 2.139.4. It can be seen from the results presented
11 there that that scenario outlined in that question results in virtually a revenue neutral outcome
12 between the proposed flat rate and the proposed TOU rates.

13

14

15

16 139.5.1 Please identify the amount of load that would need to be shifted from
17 on-peak to mid or off peak in order to achieve bill neutrality between
18 existing RCR and the optional TOU rate.

19

20 **Response:**

21 The Company consulted with EES to provide the following response.

22 The following bill calculation shows one example of load shift amounts that would allow for an
23 individual customer to achieve revenue neutrality under TOU rates compared to the existing
24 RCR. In this case the customer would need to shift 12 percent of their load from the on-peak
25 and mid-peak periods to the off peak period.

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	Current RCR			Optional TOU Rate		
	Billing Amount	Proposed Rate	Revenues	Billing Amount	Proposed Rate	Revenues
Customers	1	\$16.05	\$193	1	\$18.70	\$224
Block 1 kWh	7,634	\$0.10117	\$772			
Block 2 kWh	4,071	\$0.15617	\$636			
On-Peak kWh				1,627	\$0.2244	\$365
Mid-Peak kWh				2,936	\$0.1187	\$348
Off-Peak kWh				7,142	\$0.0928	\$663
Total kWh	11,705			11,705		
Total Revenues			\$1,601			\$1,601
Annual Bill Reduction						\$0
Percent Difference						0.0%

139.6 Please provide the same analysis as that provided in response to BCUC IR 82.2 for customers with high annual consumption and low annual consumption.

Response:

FBC has used 25,000 kWh as the annual demarcation point for a high-use customer and 5,000 kWh as the annual demarcation point for a low-use customer. Consistent with the referenced response, FBC has assumed that the amount of Tier 1 consumption is the average amount for all customers with consumption within plus or minus 10 percent of the high-use and low-use values. This amount is 9,520 for the high-use customer and 4,962 for the low-use customer.

Under the same remaining assumptions as used in BCUC IR 1.82.2, the following are the results.

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	Annual kWh	Bill under Current RCR			Bill under Year 5 Flat Rate		
		Customer Charge	Energy Charge	Total Bill	Customer Charge	Energy Charge	Total Bill
Customer (High-Use)	25,000	192.60	3380.65	3573.25	224.40	2937.25	3161.65
Customer (Low-Use)	5,000	192.60	507.94	700.54	224.40	587.45	811.85
	Annual kWh	Bill under Current RCR			Bill under Proposed TOU		
		Customer Charge	Energy Charge	Total Bill	Customer Charge	Energy Charge	Total Bill
TOU Customer (High-Use)	25,000	192.60	3380.65	3573.25	224.40	3026.41	3250.81
TOU Customer (Low-Use)	5,000	192.60	507.94	700.54	224.40	605.28	829.68

139.7 Please provide the same analysis as that provided in response to BCUC IR 82.2 for all other proposed TOU rates as compared to the proposed standard rate.

Response:

In order to provide a response to this question, FBC has developed a “representative” customer for each class utilizing the forecast load data from Schedule 7.1 of the COSA model filed as Exhibit B-2 in this process. The load and customer information contained in the model provides information against which the proposed Default and TOU rates can be applied. Also required is the load breakdown and pricing information for the TOU periods as included in the Application and updated in Errata B-1-4.

A summary of this information is provided below.

Rate Class	On-Peak Use	Mid-Peak Use	Off-Peak Use	Total kWh COSA Schedule 7.1	Total Measured kVA COSA Schedule 7.1	Total Billed kVA COSA Schedule 7.1	Total Customers COSA Schedule 7.1	Mean kWh	Mean Measured kVA	Mean Billed kVA
Small Commercial	16.00%	35.90%	48.10%	304,323,499			13,956	21,806		
Commercial	14.40%	34.10%	51.50%	575,109,408		1,212,392	1,561	368,424		777
Large Commercial - Primary	14.00%	33.50%	52.50%	311,098,688		859,910	46	6,763,015		18,694

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Rate Class	On-Peak Use	Mid-Peak Use	Off-Peak Use	Total kWh COSA Schedule 7.1	Total Measured kVA COSA Schedule 7.1	Total Billed kVA COSA Schedule 7.1	Total Customers COSA Schedule 7.1	Mean kWh	Mean Measured kVA	Mean Billed kVA
Large Commercial - Transmission	14.00%	33.50%	52.50%	95,976,168	213,753	214,181	4	23,994,042	53,438	53,545
Wholesale Primary	12.40%	32.30%	55.40%	505,880,576	1,025,177	1,104,374	5	101,176,115	205,035	220,875
Wholesale Transmission	12.40%	33.80%	53.80%	81,420,354	206,807	263,181	1	81,420,354	206,807	263,181
Irrigation	20.20%	25.80%	54.00%	40,288,397			1,095	36,793		

- 1
- 2 Billing under the proposed default and TOU rates can be determined using the rates shown in
- 3 the following table.

	Proposed Default Rates				Proposed TOU Rates			
Rate Class	Proposed Customer Charge (\$/kWh)	Proposed Energy Charge (\$/kWh)	Proposed Wires Rate (\$/kVA)	Proposed PS Rate (\$/kVA)	Proposed Customer Charge (\$/kWh)	On-Peak Rate (\$/kWh)	Mid-Peak Rate (\$/kWh)	Off-Peak Rate (\$/kWh)
Small Commercial	\$ 23.00	0.10000			\$ 23.00	0.20495	0.09929	0.07340
Commercial	\$ 54.00	0.06875	10.22		\$ 54.00	0.19795	0.09229	0.06640
Large Commercial - Primary	\$ 945.04	0.05571	9.19		\$ 945.04	0.19285	0.08719	0.06130
Large Commercial - Transmission	\$ 3,195.00	0.05367	4.93	3.45	\$ 3,195.00	0.18395	0.07829	0.05240
Wholesale Primary	\$ 4,522.46	0.05388	8.98	4.82	\$ 4,522.46	0.19995	0.09429	0.06840
Wholesale Transmission	\$ 5,978.48	0.04501	6.34	4.77	\$ 5,978.48	0.19185	0.08619	0.06030
Irrigation	\$ 22.09	0.07240			\$ 22.09	0.17869	0.07303	0.04714

- 4
- 5 Annual Billing information for both the default rate and the proposed TOU rate are shown in the
- 6 Table below. As per BCUC 1.82.2, no consumption pattern changes are assumed.

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Rate Class	Annual Bill Under Default Rate (\$)	Annual Bill Under Proposed TOU (\$)
Small Commercial	2,457	2,538
Commercial	33,915	35,343
Large Commercial - Primary	559,903	609,124
Large Commercial - Transmission	1,774,440	1,945,630
Wholesale Primary	8,477,365	9,471,203
Wholesale Transmission	6,391,509	7,022,029
Irrigation	2,929	3,223

Notes: Wholesale customers are assumed to have a single POD. This does not affect the relative bill levels as the Customer Charge is the same in both scenarios.

139.7.1 For each rate class, please identify the amount of load that would need to be shifted from on-peak to mid- or off-peak in order to achieve bill neutrality between the proposed standard rate and the optional TOU rate.

Response:

FBC assumes that load is shifted from the on-peak period to the off-peak periods. In order for the annual bills under the proposed TOU rates to be equal to the annual bills under the default rate, load would need to be shifted as shown in the table below. The percentage shown in the table are expressed as the percentage of total annual load that would be moved from the on-peak to the off-peak periods.

Rate Class	Total Annual Consumption (kWh)	Original On-Peak Consumption (kWh)	Consumption Shifted From On-Peak (kWh)	Percentage of Total Consumption Shifted to Off-Peak
Small Commercial	21,806	3,489	620	3%
Commercial	368,424	53,053	10,858	3%
Large Commercial - Primary	6,763,015	946,822	374,164	6%
Large Commercial - Transmission	23,994,042	3,359,166	1,301,328	5%
Wholesale Primary	101,176,115	12,545,838	7,554,832	7%
Wholesale Transmission	81,420,354	10,096,124	4,793,008	6%
Irrigation	36,793	7,432	2,235	6%

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4 In its response to BCUC IR 76.4.2, FBC states that:

5 ...given the relatively low participation rates over the last 20 years it
6 would appear that customers have a preference for a simple, stable rate
7 structure. In the past decade, the general level of rates has risen, and the
8 introduction of the RCR has raised the overall cost of energy for high
9 consuming customers. This has raised interest in the availability of TOU
10 rates, but it appears more as a bill mitigation opportunity than as a
11 conservation measure.

12 139.8 Please clarify if the underlined statement in the preamble from the response to
13 BCUC IR 76.4.2 refers to high consuming residential customers or residential
14 customers in general.
15

16 **Response:**

17 The statement refers primarily to high-consumption customers that are negatively impacted by
18 the RCR to a greater degree than customers generally.
19
20
21

22 139.9 Please explain how FBC determined that the interest in TOU rates is due to bill
23 mitigation opportunities rather than a conservation measures.
24

25 **Response:**

26 The statement was not a determination of fact, but was based on comments made during public
27 consultation. While FBC does not have a verbatim record of the consultation sessions, the
28 discussion of TOU rates that occurred during consultation was primarily concerned with the
29 availability of an option to reduce bills as compared to the RCR and not with respect to
30 conservation results or environmental concerns.
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1 139.9.1 Did this finding impact the current design of the proposed residential
2 TOU rates? Please discuss.

3
4 **Response:**

5 No, the proposed TOU rate design is based only on the load and cost data that informed the
6 resulting rates.

7
8
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10 139.10 Please explain how high consuming customer will benefit from the proposed
11 optional TOU rates as compared to low consuming customers.

12
13 **Response:**

14 While the ability to shift load from periods of higher to lower pricing is the key driver of bill
15 savings opportunity, and this aspect of customer load may not correlate precisely to level of
16 consumption, it is likely that customers with higher consumption would have more discretionary
17 load and therefore more opportunities to do so. This suggestion is supported by the results
18 shown in the response to BCUC IR 2.139.6.

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140.0 Reference: OPTIONAL TIME OF USE RATES

**Exhibit B-1, p. 114, Exhibit B-11, BCOAPO 56.1, 56.2; Exhibit B-8,
BCUC IR 78.1.1, 80.7, 88.10, 91.3**

Time Of Use pricing

In response to BCUC 88.10, FBC states that “The decrease in the ratios occurred because of changes in the price of power supply costs over time, the addition of a mid-peak TOU period, the fact that transmission costs were all placed in the on-peak TOU periods in the past, and the increasing level of distribution costs on the system relative to power supply and transmission costs.”

In response to BCUC IR 91.3, FBC states that “Early versions of TOU pricing by utilities were typically based on putting all fixed costs (such as demand-related production, transmission and distribution) costs into the on peak period and putting variable costs into the off-peak period. This resulted in very high on peak to off-peak differentials and the ability for customers to avoid the fixed costs of the system.”

In response to BCUC IR 78.1.1, FBC states that “In the 1997 Application the transmission costs were also added to the on-peak periods, while in the current Application they were not.”

140.1 Please confirm, or otherwise explain, that transmission costs are spread evenly over the three TOU off-peak, mid-peak and on-peak time periods.

Response:

The Company consulted with EES to provide the following response.

Confirmed.

In BCOAPO IR 56.1, FBC provides the following table:

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Resource	On-Peak	Mid-Peak
BCH 3808 Purchases	\$12.9 million (demand charges)	\$36.0 million (energy charges)
Waneta Expansion	\$38.3 million (capacity purchase)	
Net Market Purchases		\$6.1 million (energy purchases)
Kootenay River Plants	\$4.9 million (capacity-related portion)	
Total	\$56.1 million	\$42.1 million

In response to BCOAPO 56.2, FBC states that:

The demand charges for BCH 3808 purchases, the charges for the Waneta Expansion project (which is a capacity only resource), and a portion of costs for the Kootenay River Plants classified as demand-related in the COSA, were considered capacity-related costs and used to develop the on-peak cost differential. The energy charges for the BCH 3808 purchase and the net market purchases were considered variable energy charges and were used to develop the mid-peak cost differential. All other power supply costs were considered baseload costs, including the energy-related portion of FBC-owned generation and purchases under the Brilliant Power Purchase Agreement.

140.2 Please provide an update to the table in the preamble to include baseload costs, clearly differentiating costs attributed to the Brilliant Power Purchase Agreement and FBC owned generation.

Response:

The Company consulted with EES to provide the following response.

The following table is an update showing the total power supply costs included in the off-peak period, as well as the on-peak and mid-peak periods.

	On-Peak	Mid-Peak	Off-Peak
BCH 3808 Purchases	\$12.9 million (demand charges)	\$36.0 million (energy charges)	
Waneta Expansion	\$38.3 million (capacity purchases)		
Net Market Purchases		\$6.1 million (energy purchases)	

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	On-Peak	Mid-Peak	Off-Peak
Kootenay River Plants	\$4.9 million (capacity-related)		\$30.8 million (energy-related)
Brilliant Purchases			\$42.6 million
IPP Costs			\$0.2 million
System Control			\$2.4 million
Total	\$56.1 million	\$42.1 million	\$76.0 million

In response to BCUC IR 80.7, FBC states that “The daily peak load is used as the metric to determine TOU periods, as opposed average daily load.”

140.3 Please explain why the daily peak load and not the average daily load is used to determine TOU periods.

Response:

The Company consulted with EES to provide the following response.

The load in each hour was compared to the daily peak load rather than the average daily load. This approach was used so that the periods of peak prices in each day could be set such that they would be most likely to include the actual peak load.

140.4 Considering the off-peak rate is, on average, approximately one-third the on-peak rate, how does FBC ensure that peak period is not shifted towards the off-peak period? Please explain.

Response:

The Company consulted with EES to provide the following response.

The on-peak period is designed to have a broad enough window that shifting load would not simply change the hour of the peak. The difference in load between the on-peak hours and mid-peak hours or off-peak hours is large enough that it is not expected that the peak hours will change to one of those time periods. While some loads can be shifted to off-peak hours, it is

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not practical to shift other loads. For example, it is not likely customers will shift winter lighting loads from the 6 pm on-peak hour to the 3 am hour. Further, the estimated elasticity levels for the RCR rate, and used in designing the TOU rate levels, are not sufficiently high to indicate that a shift in the peak period will occur.

Page 114 of the Application FBC states that an “elasticity factor was applied to the load in each time-period to account for the assumed impacts in usage associated with TOU rates.”

140.5 Please clarify the “load” that the elasticity factors outlined on page 114 of the Application were applied to. Specifically, were the elasticity factors applied to the Energy Amounts in Table 8-8 in determining the cost differential per kWh, or some other load amount?

Response:

The Company consulted with EES to provide the following response.

The elasticity factors were applied to the load in each TOU period for each customer class. This is based on the kWh resulting from the percent breakdowns show in Table 8-9. Table 8-8 shows the energy amounts for the system as a whole.

In response to BCUC IR 88.9 FBC provides Attachment 88.9 with an excel model used to perform the rate calculations in Table 8-9 and 8-10 of the Application.

140.6 Please provide a fully functioning Excel model used to derive the off-peak rate for each TOU rate class. For example, \$0.0928 for the residential TOU rates.

Response:

The Company consulted with EES to provide the following response.

The off-peak rate was derived within the referenced excel model (i.e. Attachment 88.9). It was not a formula, rather it was set at a level such that the total revenues for the class under the TOU rate would be the same as the revenues for the class under current rates. The revenues were not exactly the same because of the limitations associated with having energy rate levels set to 5 decimal places.

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Page 114 of the Application FBC states that “the reduced power supply cost associated with overall reduced consumption was applied as an offset to the revenue when looking at revenue neutrality. The savings was based on the variable energy rate of \$0.04863 per kWh from the BC Hydro RS 3808 PPA.

140.7 Please explain why the market purchases were not included in the reduced power supply costs and the impact that including pricing at both market purchases and the BC Hydro RS 3808 PPA would have on the TOU pricing.

Response:

The Company consulted with EES to provide the following response.

The overall reduction in demand is the result of reduced consumption in peak periods. As such it is BC Hydro PPA energy that is being displaced, not market energy. Including market purchases would inappropriately reduce the power cost savings.

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G. GENERAL TERMS AND CONDITIONS

141.0 Reference: GENERAL TERMS AND CONDITIONS

Exhibit B-1, Chapter 10, p. 126; Exhibit B-8, BCUC IR 97

AMI Radio-off Shortfall Deferral Account

In response to BCUC IR 97.1 FBC states that it "...proposes to increase the per-read fee by \$1.50 to \$19.50 [for all radio-off customers] in order to recover the existing balance in the Radio-off Shortfall deferral account over a period of five years, beginning in 2019." [*Emphasis added*]

In response to BCUC IR 97.3, FBC states that:

In order to recover the balance in the deferral account from residential customers only, FBC would either have to apply a rate rider for the period of recovery, or have to increase the basic charge temporarily. FBC's billing system currently does not have the capability to apply the increased cost to the residential class by way of a rate rider, and would need to incur programming costs to effect this method of recovery. A temporary increase to the basic charge, followed by a reduction later, would be less transparent and potentially confusing to customers and is therefore not recommended. [*Emphasis added*]

141.1 Please identify any issues related to transparency and customer understanding with the proposal to recover the AMI Radio-off Shortfall Deferral Account by increasing the per-read fee, as opposed to some other method.

Response:

Please refer to the response to BCUC IR 2.141.1.1 which considers the transparency of FBC's proposal for recovering the radio-off shortfall, compared to alternative methods of recovery.

141.1.1 Please discuss any other available methods for recovering the balance of the AMI Radio-off Shortfall Deferral Account and the pros and cons of each method.

Response:

FBC considered five potential methods for recovery of the radio-off shortfall.

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FBC's proposal is to recover the shortfall from radio-off participants through a temporary increase in the per-read fee, with an assumed recovery period of five years.

BCUC IR 2.141.2 and 2.141.2.1 requested information on the implementation costs if the shortfall were to be recovered by way of a temporary rate rider applied to residential customers (Alternative 1) or to radio-off participants (Alternative 2).

In response to BCUC IR 1.97.3, FBC also identified the potential options of recovering the shortfall from residential customers by temporarily increasing the residential customer charge (Alternative 3), and finally the recovery of the shortfall from all FBC customers through general rates (Alternative 4).

The factors considered are the following:

- Consistency with the determination in Order C-7-13 that the incremental costs of opting out of the AMI program are borne by the individual choosing to opt out. The proposed mechanism and Alternative 2 are consistent with this principle, although FBC notes that because of the decline in the number of radio-off participants, not all of the customers who contributed to the shortfall since the inception of AMI will contribute to the recovery of the shortfall. Recovering the shortfall from only residential customers (Alternatives 2 and 4) would exclude approximately 200 or 8 percent of non-residential radio-off customers.
- Transparency of cost causation and recovery – The FBC proposal, Alternative 1 and Alternative 2 are transparent with respect to the shortfall recovery. Alternatives in which the shortfall is subsumed in either the customer charge or general rates are not transparent.
- Ease of implementation – FBC's billing system is presently unable to accommodate Alternatives 1 or 2 and would require billing system amendments.
- Bill impacts to the affected customer groups.

The following table presents the impacts of these factors on the alternatives identified. FBC does not consider either Alternative 1 or Alternative 2 to be feasible for an effective date of January 1, 2019 due to the programming requirements and the expected timing of a Commission Decision in this process near year-end 2018. FBC does consider Alternative 3 and Alternative 4 to be potentially suitable options for recovery of the radio-off shortfall. Although these options recover the shortfall in part from non radio-off customers, the per customer bill impacts to non radio-off participants are low (particularly for Alternative 4).

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	FBC Proposal	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Criterion	Temporary increase to per-read fee for the period of recovery	Temporary Rate Rider to Residential Customers	Temporary Rate Rider to Radio-Off Customers	Temporary increase to the Customer Charge for Residential Customers	Recover the Radio-Off Shortfall from all customers through a temporary general rate increase
Consistency with determination in Order C-7-13	Consistent: all costs recovered from radio-off customers	Not consistent: costs are recovered from non radio-off residential customers, and some non-residential radio-off customers are excluded	Consistent: all costs recovered from radio-off customers	Not consistent: costs are recovered from non radio-off residential customers, and some non-residential radio-off customers are excluded	Not consistent: costs are recovered from all non radio-off customers
Transparency of cost recovery related to the shortfall	Transparent: impact of shortfall visible through increase in per-read fee	Transparent: shortfall contained in rate rider	Transparent: shortfall contained in rate rider	Not transparent: shortfall subsumed in the customer charge for residential non-participants	Not transparent: shortfall subsumed in general rate increase for all customers
Ease of Implementation	Highest ease of implementation: no new programming required	Lower ease of implementation: billing system programming required to implement rate rider	Lower ease of implementation: billing system programming required to implement rate rider	Highest ease of implementation: no new programming required	Highest ease of implementation: no new programming required
Cost of Implementation	\$nil	\$40,000 est	\$60,000 est.	\$nil	\$nil
Approximate Temporary Annual Bill Impact to:					
Radio-Off	\$47.00 (1 year) \$16.00 (3 years) \$9.00 (5 years)	\$1.05 (1 year) \$0.35 (3 years) \$0.20 (5 years)	\$47.00 (1 year) \$16.00 (3 years) \$9.00 (5 years)	\$1.05 (1 year) \$0.35 (3 years) \$0.20 (5 years)	(Residential) 0.034% (1 year) 0.011% (3 years) 0.007% (5 years)

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	FBC Proposal	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Criterion	Temporary increase to per-read fee for the period of recovery	Temporary Rate Rider to Residential Customers	Temporary Rate Rider to Radio-Off Customers	Temporary increase to the Customer Charge for Residential Customers	Recover the Radio-Off Shortfall from all customers through a temporary general rate increase
Non-Radio-Off Residential	nil	\$1.05 (1 year) \$0.35 (3 years) \$0.20 (5 years)	nil	\$1.05 (1 year) \$0.35 (3 years) \$0.20 (5 years)	0.034% (1 year) 0.011% (3 years) 0.007% (5 years)
Non-residential	nil	nil	nil	nil	0.034% (1 year) 0.011% (3 years) 0.007% (5 years)

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141.2 Please provide an estimate of the programming and other costs that would be incurred to create a rate ride to recover the balance of the AMI Radio-off Shortfall Deferral Account.

Response:

Please refer to the response to BCUC IR 2.141.1.1.

141.2.1 Would the costs be different to create a rate rider to recover the costs from radio-off customers only as compared to all residential customers? If so please provide a cost estimate for each scenario.

Response:

Please refer to the response to BCUC IR 2.141.1.1.

Directive 1 of Order C-7-13 states that “The incremental cost of opting-out of the AMI program will be borne by the individuals choosing to opt-out.”

141.3 Please discuss if FBC would consider the recovery of the balance of the AMI Radio-off Shortfall Deferral Account from all residential customers to be contrary to directive 1 of Order C-7-13.

Response:

Please refer to the response to BCUC IR 2.141.1.1.

141.4 Please discuss whether FBC considers any cross-subsidization between AMI customers and radio-off customers to be “unduly” discriminatory under the *Utilities Commission Act*.

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Response:

Both current costs and the majority of prior period costs to manually read radio-off meters are paid by the radio-off participants. In the response to BCUC IR 2.141.1.1 FBC identifies the rate impacts of recovering the radio-off shortfall from FBC's customer base through a temporary general rate increase to be between 0.034 percent if recovered in a single year and 0.007 percent if recovered over a five-year period. FBC does not consider that impact to be unduly discriminatory.

In response to BCUC IR 97.1 FBC states the following, among other things:

- on a forward-looking basis the existing per-read fee of \$18.00 is expected to recover costs and that no adjustment to the-per read fee is required (other than that required to recover the existing deferral account balance);
- the Radio-Off Shortfall Deferral Account should continue to be utilized until the termination of the current Performance Based Ratemaking (PBR) Plan on December 31, 2019; and
- FBC proposes to cease recording the net costs and read fees as of December 31, 2019, and to amortize the balance of the deferral account over a five-year period from 2019 to 2023.

141.5 Given that the per-read fee is expected to recover costs on a forward-looking basis, please explain the rationale for the proposal to continue to use the Radio-off Shortfall Deferral Account until the termination of the PBR as of December 31, 2019, as opposed to an earlier or later date.

Response:

FBC does not object in principle to terminating the deferral account earlier than December 31, 2019; however, certain amendments would be required to FBC's revenue requirements model and accounting practices in order to effect the termination. Assuming termination of the deferral account on December 31, 2018 and the recovery of the shortfall as proposed in the Application, the following changes would be required effective January 1, 2019.

The debit balance of the deferred account (\$121 thousand) would be extinguished by charging the shortfall against amortization expense over a period of five years to correspond with the increased per-read fee. Actual per-read fees and manual meter read costs would be recorded

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1 in Other Revenue and in O&M Expense respectively, rather than in the deferral account. On a
2 per-read basis, this would be equivalent to:

3 Other Revenue: credit \$19.50 per read;

4 Amortization Expense: debit \$1.50 per read; and

5 O&M Expense: debit \$18.00 per read for current expense.

6 Net impact: nil (all current and deferred costs are recovered through the per-read fee).

7 For revenue requirements, forecast Other Revenue would increase by the expected fees (credit)
8 for manual reads, (equal to \$19.50 times number of manual reads). Forecast Amortization
9 Expense (debit) would increase by one fifth of the deferral account balance. In accordance with
10 the PBR Plan, any variances between forecast and actual revenue and amortization expense
11 would be captured in the Flow-through deferral account to be recovered or returned to
12 customers in 2020.

13 Forecast O&M expense would increase by the expected cost of the manual meter reads (\$18.00
14 per read times number of manual reads). For consistency with the flow-through treatment of the
15 per-read revenue, the incremental O&M expense would need to be excluded from the O&M
16 formula, variances in which are shared with customers through the Earnings Sharing
17 Mechanism. Variances in Forecast O&M Expense outside of the formula, on the other hand,
18 are captured in the Flow-through deferral account along with variances in Other Revenue.

19 Given the flow-through provisions of the PBR Plan it is necessary to include in revenue
20 requirements a forecast of Other Revenue and O&M Expense; therefore, a mid-year termination
21 of the deferral account and change in accounting for the expense and per-read fees is not
22 feasible. FBC did not propose the changes to take effect on January 1, 2019 because of the
23 uncertain timing of the RDA review process. At the time of responding to IR1 the final
24 regulatory timetable for the RDA process had not, and has still not been, finally determined. In
25 order to include the revisions identified above in a compliance filing for 2019 rates, a decision in
26 both the rates filing and the RDA would be required by approximately November 30, 2018.

27 FBC did not propose a later termination, primarily because it considers there is no longer a need
28 to track the costs and recoveries in the deferral account given the current near matching of
29 costs and revenues. Additionally, the advent of either a next generation PBR Plan or the
30 transition to another form of regulation beginning in 2020 is a logical time also to transition the
31 treatment of the radio-off matter. (As identified in the response to BCUC IR 1.97.1, a
32 termination date of December 31, 2019 could result in a need for minor adjustments to the
33 annual amortization expense to manage any additional variances recorded during 2019,
34 although these are expected to be small.)

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142.0 Reference: GENERAL TERMS AND CONDITIONS

Exhibit B-8, BCUC IR 6.2, 103.1; Exhibit B-1, Appendix G

Security deposit for payment of bills

FBC states in response to BCUC IR 103.1 that it “believes that \$50 represents a reasonable minimum amount given that the Basic Charge itself is \$19.40 per month (\$38.80 per two-month period) and the average monthly bill for an FBC Residential customer for 2017 is approximately \$120 (for FEI gas customers, the average monthly bill approximately \$65).”

142.1 Please confirm, or explain otherwise, that the current Basic Charge is \$16.05 per month, not \$19.40 per month.

Response:

The Residential Basic Charge is \$16.05 per month.

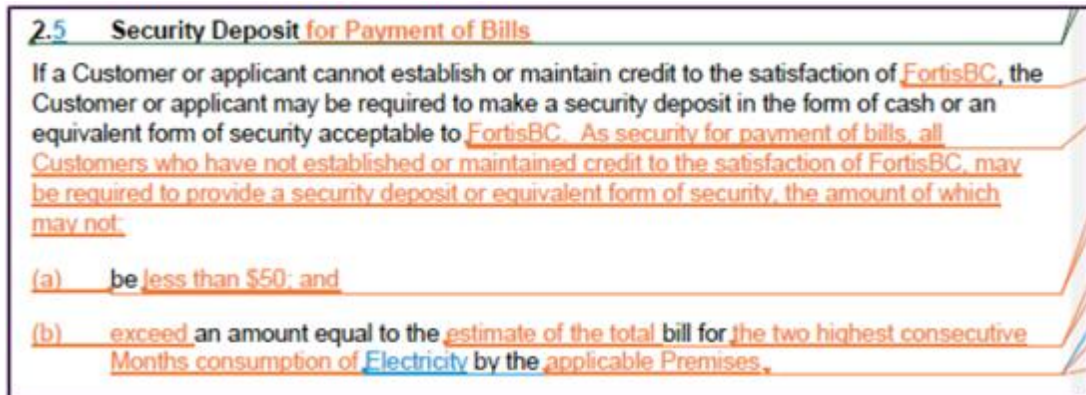
\$19.40 per month is the Basic Charge for Commercial customers. The Commercial Basic Charge was being referenced in the first part of the response to BCUC IR 1.103.1 to demonstrate that the part (a) calculation of \$50 would rarely be applied for Commercial customers, as the part (b) calculation would almost always exceed \$50.

Even in the case of a Residential customer that has a lower Basic Charge than Commercial, it is expected that part (a) would rarely be applied.

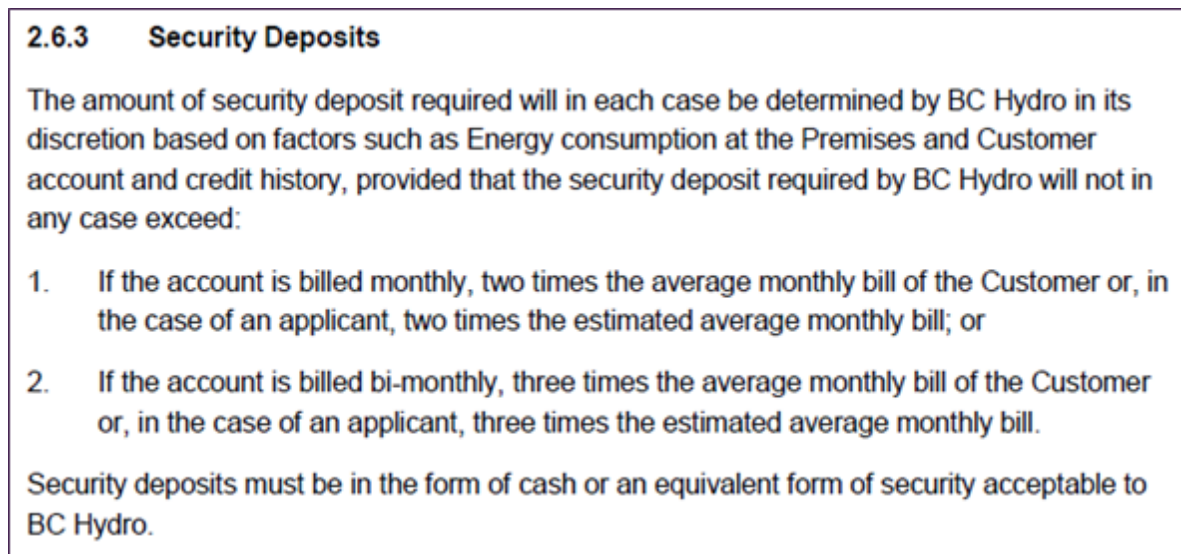
In both cases, for part (a) to be applied, the annual bills for these customers would be \$192.60 for Residential and \$232.80 for Commercial, such that the \$50 amount is an adequate security deposit minimum.

FBC’s proposed revisions to the security deposit terms and conditions are provided in Section 2.5 of the General Terms and Conditions (GT&Cs) in Appendix G as follows:

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BC Hydro's terms and conditions related to security deposits are as follows:



142.2 Please explain why FBC considers it necessary to base the maximum security deposit amount on the two highest consecutive months of consumption as opposed to basing the amount on two months of average consumption (similar to BC Hydro's approach).

Response:

In proposing revisions to the GT&Cs, one of FBC's objectives was to bring commonality, where appropriate, with the analogous sections of the GT&Cs of its affiliated utility, FEI, which utilizes the two highest months in its calculation. Tariff alignment, where practical, avoids customer confusion in the shared service territory where customers are served by both utilities; aligned policies simplify customer interactions with the utilities. In addition, using the two highest months as opposed to two times the average bill better reflects the actual exposure for default faced by FBC and provides the appropriate level of security for other FBC customers.

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1
2 142.2.1 As part of this response, please compare the impact on the
3 maximum security deposit under the two scenarios (i.e. FBC's proposed
4 wording compared to the use of average monthly bill consumption)
5 using an actual residential customer's consumption data.
6

7 **Response:**

8 The tables below demonstrate the impact on the maximum security deposit under the following
9 two scenarios using an actual residential customer's billing data. This customer's data has been
10 selected to represent a typical customer's consumption:

11 Scenario 1: An amount equal to an estimate of the total bill for the two highest consecutive
12 months' consumption (as per the proposed Section 2.5).

13 Scenario 2: An amount based on two months of average consumption as described in BCUC IR
14 2.142.2 (which is similar to BC Hydro's approach).

15 Customer billing profile:

May/June	July/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	Annual cost
\$152.78	\$145.13	\$158.73	\$201.00	\$197.07	\$184.33	\$1,039

16

17 Maximum security deposit using different FBC methodologies

	Dollar Amount (\$)
Annual Cost	1,039
Scenario 1 (Two Highest Months)	201
Scenario 2 (Two Months of Average Consumption)	173

18

19

20

21 In response to BCUC IR 6.2, FBC states that it is "actively pursuing other ways to
22 support low income customers that do not require changes to rate structures or design"
23 and that it "may adjust charges where there is flexibility in the applicable tariff provisions
24 and there is a reasonable basis to do so."

25 142.3 Please discuss whether FBC's proposed changes to the security deposit terms
26 and conditions may result in less flexibility for customers due to the imposition of
27 the minimum deposit amount of \$50.

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1

2 **Response:**

3 The response to BCUC IR 1.6.2 discussed the initiatives already in place to support low income
4 customers without changes to rate structures or design, such as existing energy conservation
5 measures. Flexibility was also discussed in the context of making payment arrangements for
6 accounts that are in arrears, and where there are options within existing tariffs or programs for
7 flexible treatment which may benefit low income customers. These options are further
8 discussed in the response to KSCA IR 2.4.3.i.

9 The proposed change in the security deposit policy, whereby if a security deposit is required,
10 the minimum deposit amount is \$50.00, neither increases nor decreases the flexibility of the
11 policy, since it remains the case that a deposit amount is simply calculated and applied in
12 accordance with a set guideline.

13

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143.0 Reference: CONNECTION CHARGES

Exhibit B-8, BCUC IR 109.2, 109.6, Attachment 109.1

Overhead loadings

In response to BCUC IR 109.2, FBC compares the current and proposed connection charge rates, which includes a change in the overhead loadings percent from the current 15 percent to the proposed 33.4 percent.

In response to BCUC IR 109.6, FBC explains that the proposed overhead loadings are based on 2017 values and are the sum of Capitalized Overhead (19.5 percent) and Direct Overhead (13.9 percent).

FBC further states the following in response to BCUC IR 109.6:

Capitalized overhead is pre-determined by the BCUC as a percentage of operating and maintenance (O&M) costs and is currently 15 percent of approved O&M costs. This value is then applied to FBC's approved formulaic capital budget to determine the Capitalized Overhead rate, meaning the loading rate in capital can fluctuate depending on the approved capital budget.

143.1 Please clarify if the current overhead loadings rate of 15 percent represents only Capitalized Overhead.

Response:

The overhead loadings rate of 15 percent used in the 2009 COSA and reflected in the current standard charges includes both Capitalized Overhead and Direct Overhead. Please refer to the response to BCUC IR 2.143.2.

143.2 Please explain why FBC has changed the calculation of overhead loadings to include both Capitalized Overhead and Direct Overhead.

Response:

There is no change to the method of calculating the overhead loadings from the 2009 COSA, which also included both Capitalized Overhead and Direct Overhead. While the methodology is the same, in that the 2009 COSA also used the approved Capitalized Overhead rate, the rate was higher, at 20 percent of operating and maintenance (O&M) costs, at that time.

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1 The existing standard charges that were originally calculated as part of the 2009 COSA include
2 amounts related to both Capitalized Overhead (7.7 percent, which is the rate of Capitalized
3 Overhead amount as a percentage of capital in the 2009 COSA) and Direct Overhead (7.3
4 percent, which is the rate of Direct Overhead amount as a percentage of capital in the 2009
5 COSA) to add up to the 15 percent overhead loadings contained in the current standard
6 charges.

7 FBC notes that it is only a coincidence that the overhead loadings applied to the existing
8 standard charges from the 2009 COSA equal 15 percent, which his the same percentage as the
9 currently approved 15 percent Capitalized Overhead rate applied to O&M.

10
11
12
13 143.3 Please provide the supporting calculations for the 19.5 percent Capitalized
14 Overhead and the 13.9 percent Direct Overhead.

15
16 **Response:**

17 Please refer to the response to BCUC IR 2.143.6.

18
19
20
21 143.4 Please confirm, or explain otherwise, that the proposed change in the
22 Capitalized Overhead component of Overhead loadings of 19.5 percent does
23 not represent a change to FBC's approved Capitalized Overhead rate of 15
24 percent.

25
26 **Response:**

27 Confirmed, FBC is not proposing a change to the BCUC approved Capitalized Overhead rate of
28 15 percent of approved O&M Expense.

29
30
31
32 143.4.1 If not confirmed, please explain why it is appropriate to request a
33 change to the Capitalized Overhead rate as part of this Application as

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opposed to requesting the change in a revenue requirements application.

Response:

Please refer to the response to BCUC IR 2.143.4.

143.5 With reference to FBC's explanation of the calculation of Capitalized Overhead provided in the above preamble, please clarify FBC's statement that the overhead loading rate can fluctuate (i.e. 19.5 percent) given that the current rate for overhead loadings is exactly 15 percent.

Response:

As stated in the preamble, the 15 percent is the percentage of O&M, not of capital. Depending on the total capital amount that the 15 percent is applied to each year, the percent of capital will vary.

For example, in the hypothetical situation where FBC's approved O&M expense was \$100 in each of 2016 and 2017, the approved Capitalized Overhead amount would be \$15 in each year. If the total capital expenditures for 2016 were \$100 then the capitalized overhead expressed as a percent of capital would be 15 percent. If the total capital expenditures for 2017 were now lower, at \$90, then the capitalized overhead expressed as a percent of capital would be increased to 16.7 percent (\$15/\$90).

143.6 Based on the last five years of approved capital budgets, please provide the annual loading rates. Please provide all supporting calculations.

Response:

Please see the table provided below. Beginning in 2014, FBC applies capitalized overheads to formulaic capital (excluding CPCN projects) in order to reduce the variability in loading rates and to recognize the different requirements of large capital projects. This change in practice contributed to the increase in the rates shown in the table beginning in 2014, compared to 2013.

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1

	2013	2014	2015	2016	2017
Approved Capital - Transmission & Distribution *	\$ 47,826	\$ 24,391	\$ 34,339	\$ 35,842	\$ 36,032
Approved Capital - Other *	\$ 54,144	\$ 15,660	\$ 9,197	\$ 8,177	\$ 8,220
Total Formulaic Capital	\$ 101,970	\$ 40,051	\$ 43,536	\$ 44,019	\$ 44,252
Approved Capitalized Overhead (20% in 2013, 15% thereafter)	\$ 11,255	\$ 9,107	\$ 8,864	\$ 8,547	\$ 8,632
Capitalized OH Rate	11.0%	22.7%	20.4%	19.4%	19.5%
Approved Direct Overhead	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
DOH Rate (applied to T&D only)	10.5%	20.5%	14.6%	13.9%	13.9%

2 * adjusted for Cost of Removal

3

4

5

6

7 In response to BCUC IR 109.2, FBC shows that it is proposing to increase the Material
8 Loadings percentage from 7 percent to 10 percent.

9 143.7 Please explain how the Material Loadings percentage is determined and why it
10 is increasing from 7 percent to 10 percent. As part of this response, please
11 provide the supporting calculations for the current and proposed percentages.
12

13 **Response:**

14 The Material Loading percentage is designed to fully recover the costs incurred to purchase,
15 handle, store and manage materials and supplies on all charged out materials. The material
16 loading rate is calculated by dividing the expected material management costs, as described
17 above, by the expected material movement in the year.

18 The increase from 7 percent to 10 percent is required primarily due to a decrease in material
19 movement.

20 The 7 percent material load rate was derived in 2009 based on an analysis of estimated
21 material management costs compared to estimated inventory turnover as shown below.

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	2009
Materials Management & Warehousing expense	\$ 1,678,000
Inventory Turnover	24,000,000
Derived Material Load Rate (rounded)	7%

- 1
- 2 The proposed 10 percent material loading rate was derived based on an analysis of actual
- 3 material management costs compared to actual inventory turnover for 2016 and 2017, as shown
- 4 below, as well as recognizing the ongoing trend where materials management and warehousing
- 5 costs have remained relatively constant over the years while the inventory turnover has
- 6 decreased and trended between the \$15 million - \$20 million range.

	Projected 2018	Actual 2017	Actual 2016
Materials Management & Warehousing expense	\$ 1,768,947	\$ 1,731,200	\$ 1,528,900
Inventory Turnover	17,563,230	20,340,300	15,732,300
Derived Material Load Rate (rounded)	10%	9%	10%

- 7
- 8