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September 28, 2016

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

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Inc. (FBC)

Project No. 3698887

Multi-Year Performance Based Ratemaking Plan for 2014 through 2019 approved by British Columbia Utilities Commission (Commission) Order G-139-14 – Annual Review for 2017 Rates (the Application)

Response to the Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1

On August 8, 2016, FBC filed the Application referenced above. In accordance with Commission Order G-123-16 setting out the Regulatory Timetable for the review of the Application, FBC respectfully submits the attached response to CEC IR No. 1.

If further information is required, please contact Joyce Martin at 250-368-0319.

Sincerely,

FORTISBC INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

1. Reference: Exhibit B-2, Page 5

> Gas Billing Error Corrections
>
> In 2015, six billing analyst roles that were vacant in FEI's Burnaby office were filled by FBC in its Trail office, providing a new opportunity for the six CSRs no longer required as a result of the changes described above. These employees have been in customer service for many years handling customer service calls and billing work related to electric bills. In the ten years since the Trail contact centre opened, there have been very few development opportunities available there and the integration of this work provided a development opportunity for employees in Trail. In 2016, the Trail employees that are performing the gas billing work have been able to find efficiencies in the work and maintain service levels that were in place prior to the transition.
>
> In total, the integration of activities is forecast to produce annual savings for FBC in the amount of $0.317 million.

1.1 Did the new positions in Trail also result in increases or decreases to the staff compensation, or were the positions primarily lateral development opportunities?

Response:

The role of Billing Analyst is at a higher salary group in the Collective Agreement than the role of Customer Service Representative. Placement within the salary range is dependent on the successful incumbent's current wage and salary group. In this case, the successful incumbents to the Billing Analyst roles received a wage increase. While the role of Billing Leader is also at a higher salary group than the Customer Service Representatives, the filling of that role did not result in a wage increase as the successful incumbent was already earning a higher wage rate than that associated with the role.

1.2 Are the forecast savings expected to be sustained through the PBR process? Please explain.

Response:

Yes, these savings are expected to be sustained through the PBR term. Efficiencies in the work were identified that resulted in a permanent reduction in work volumes.

2. Reference: Exhibit B-2, Page 5

> ***2. Training and Development***
> The Training and Development Initiative was implemented in 2015 and introduced a company-wide process that improves the ability of the Company to plan and track required training activities, ensuring skills requirements for employee training are addressed efficiently and effectively. All departments are now able to evaluate more effectively the training requirements specific to their group. Further work is being undertaken in 2016 to refine training and competency requirements for individual roles. There are no O&M savings anticipated.

2.1 Please confirm that although no O&M savings are anticipated from this initiative at the present time, it can be expected to provide long term efficiencies in the company training programs.

Response:

The Company does not expect any O&M savings at any point as a result of this initiative. This initiative provides departments with tools to more effectively evaluate training and competency requirements for individuals in their groups. One of the possible outcomes of this evaluation is an increased requirement for competencies and subsequent training identified through regulatory, business or technological change. Over the long term, this initiative allows the Company to address these types of changes more efficiently.

3. Reference: Exhibit B-2, Page 6

> **1.4.3 Overview of Capital Expenditures**
>
> FBC is projecting that capital expenditures will be above the formula in 2016. Projected 2016 capital expenditures excluding items forecast outside of the PBR capital formula are $3.142 million higher than the formula amount. This is primarily attributable to a forced relocation of transmission and distribution infrastructure due to the widening of Highway 97 near Kelowna by the Ministry of Transportation and Infrastructure. FBC anticipates that it will continue to be challenged to meet its capital formula for the remainder of the term of the PBR Plan.

3.1 How much of the $3.142 million above formula is attributable to the highway widening?

Response:

As noted in the response to BCUC IR 1.5.1, the 2016 Projected expenditures on the Highway 97 Widening project are $2.967 million. While it is not possible to state definitively which expenditures are above formula, the expenditure on this project is one of the major capital cost pressures causing FBC to project that capital expenditures will be above the formula in 2016.

3.2 What were the total costs to FBC associated with the highway widening?

Response:

Please refer to the response to BCUC IR 1.5.1.

3.3 Does the province provide any compensation for costs associated with the highway widening?

Response:

Please refer to the response to BCUC IR 1.5.1.

3.3.1 If so, how much does FBC expect to receive from the province, and when will these monies be received?

Response:

Please refer to the response to BCUC IR 1.5.1..

3.4 Does FBC project capital expenditures to exceed the deadband threshold? Please explain.

Response:

Based on the current 2016 Projection, the Company is expecting to be above the PBR capital formula, but is not expecting to exceed the capital dead band threshold.

4. Reference: Exhibit B-2, Pages 14 and 15

> This section describes FBC's forecast of gross system energy load. Gross system energy load is a mix of residential, commercial, wholesale, industrial, street lighting and irrigation loads and system losses. The gross load forecast includes the impacts of forecast energy savings which include Demand Side Management (DSM) savings, and the impacts of the Residential Conservation Rate (RCR), the Customer Information Portal (CIP)[4], the Advanced Metering Infrastructure (AMI) program and future rate changes. These savings are further explained in Section 3.3 – Demand Side Management and Other Savings.

Table 3-1: Forecast 2017 DSM and Other Savings (GWh)

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(10)	12	(2)	(10)	(1)	(11)
2	Commercial	(15)				(1)	(16)
3	Wholesale	(2)				(1)	(3)
4	Industrial	(4)					(4)
5	Lighting	(1)					(1)
6	Irrigation						
7	Net	(32)	12	(2)	(10)	(3)	(35)
8	Losses	(3)	(6)				(9)
9	Gross Load	(34)	6	(2)	(10)	(3)	(43)

4.1 Please explain the difference between the 'RCR' savings and the Residential 'Rate-Driven' savings.

Response:

The Residential Conservation Rate (RCR) savings are savings arising from the introduction of FBC's two-tiered Residential Conservation Rate, and reflects the reduced energy consumption of residential customers compared to the previous flat rate. This differs from Rate-Driven savings which are savings that account for the price elasticity of customers in response to general rate increases.

4.2 Please explain the positive value in the AMI residential column.

Response:

AMI has a positive value in the residential column due to a forecast increase in billable load. This increase in billable load is due to the reduction of electricity theft and recovered sales

attributable to FBC's AMI-enabled Revenue Protection program, and is consistent with the model provided as part of the AMI CPCN application.

4.3 Why are there no savings attributable to Commercial or other rate classes as a result of AMI?

Response:

No savings were attributed to Commercial or other rate classes due to AMI since the increased load was based on reduced electricity theft. FBC has found almost no electricity theft in non-residential rate classes.

4.4 Is the Customer Information Portal (CIP) dependent upon the AMI technology, such that CIP savings might also be attributable to the AMI program?

Response:

CIP savings are based partly on making more granular AMI consumption information available to customers.

However, CIP savings are also derived from making existing consumption data more accessible to customers through the enhanced, mobile-friendly secure portal that is available to customers.

4.5 Why are there no CIP savings for the non-residential rate classes?

Response:

FBC does not have good studies or data available from which to estimate CIP savings from non-residential rate classes.

4.6 Please provide similar table for the previous 5 years.

Response:

The requested tables are provided below.

2016S DSM and Other Savings

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(3)	4		(4)	(1)	(4)
2	Commercial	(5)				(1)	(6)
3	Wholesale	(1)				(1)	(2)
4	Industrial	(1)					(1)
5	Lighting	(1)					(1)
6	Irrigation						
7	Net	(11)	4		(4)	(3)	(14)
8	Losses	(1)	(3)				(4)
9	Gross Load	(12)	1		(4)	(3)	(18)

2015 DSM and Other Savings

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(6)	4		(4)	(2)	(8)
2	Commercial	(6)				(1)	(7)
3	Wholesale					(1)	(1)
4	Industrial	(1)				(1)	(2)
5	Lighting						-
6	Irrigation						
7	Net	(12)	4		(4)	(5)	(17)
8	Losses	(1)	(2)				(3)
9	Gross Load	(13)	2		(4)	(5)	(20)

2014 DSM and Other Savings

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(8)	3		(14)	(2)	(22)
2	Commercial	(5)				(1)	(6)
3	Wholesale					(1)	(1)
4	Industrial	(1)				(1)	(2)
5	Lighting						-
6	Irrigation						
7	Net	(14)	3		(14)	(5)	(30)
8	Losses	(1)	(2)		-	-	(3)
9	Gross Load	(15)	1		(14)	(5)	(33)

2013 DSM and Other Savings

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(15)	2		(14)		(27)
2	Commercial	(10)					(10)
3	Wholesale						-
4	Industrial	(3)					(3)
5	Lighting						-
6	Irrigation						
7	Net	(28)	2	-	(14)	-	(40)
8	Losses	(2)	(3)	-	-	-	(5)
9	Gross Load	(30)	(1)	-	(14)	-	(45)

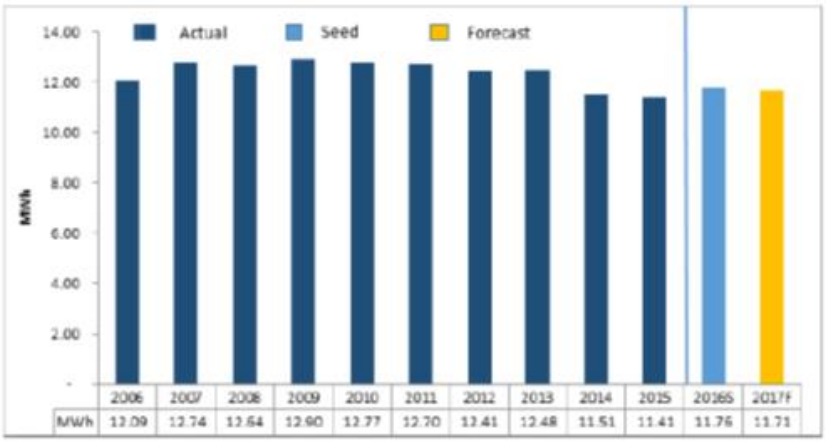
2012 DSM and Other Savings

Line No.	Description	DSM	AMI	CIP	RCR	Rate-Driven	Total
1	Residential	(12)			(8)		(20)
2	Commercial	(17)					(17)
3	Wholesale						-
4	Industrial	(1)					(1)
5	Lighting						-
6	Irrigation						
7	Net	(30)	-	-	(8)	-	(38)
8	Losses	(2)	-	-	-	-	(2)
9	Gross Load	(32)	-	-	(8)	-	(40)

5. Reference: Exhibit B-2, Page 27 and Appendix A-2, Page 10 (Customer Count Variance) and Page 11 (Load Variance)

the most recent 3 years' normalized historical UPCs (2013, 2014, 2015), and the 2017 before-savings UPC is assumed to remain constant at the 2016S level. The before-savings UPC forecast is then multiplied by the forecast average customer count to derive the before-savings load forecast. Incremental savings (that is, savings incremental to those embedded in the historical data to 2015) are then deducted from the before-savings load forecast to determine the after-savings load forecast. The 2016S after-savings UPC forecast is then computed by dividing the 2016S after-savings load forecast by the average customer count. As shown in Figure 3-2 below, the residential after savings UPC is forecast to decrease by 0.05 MWh during 2017.

Figure 3-2: Normalized After-Savings Residential UPC (MWh)



6.1 CUSTOMER COUNT VARIANCE

Customer Count	2010	2011	2012	2013	2014	2015
Variance (%)						
Residential	-0.4%	-0.9%	-2.1%	-4.4%	0.2%	-0.6%
Commercial	-2.2%	-1.6%	-0.2%	-0.4%	4.3%	3.0%
Wholesale	0.0%	0.0%	0.0%	-16.7%	0.0%	0.0%
Industrial	2.9%	2.8%	7.7%	7.7%	2.0%	2.0%
Lighting	-3.2%	-1.8%	-5.2%	-11.5%	-7.5%	-1.9%
Irrigation	2.6%	1.0%	1.5%	2.0%	1.1%	-0.7%
Total	-0.6%	-1.0%	-1.9%	-4.0%	0.5%	-0.2%

6.2 LOAD VARIANCE, NORMALIZED ACTUAL TO FORECAST

Energy (GWh)	2010	2011	2012	2013	2014	2015
Gross	(140)	(25)	(61)	(43)	(83)	(55)
Variance (%)						
Residential	-0.5%	-1.0%	-2.9%	-0.2%	-8.2%	-7.6%
Commercial	-3.4%	-2.1%	-2.3%	-1.4%	6.1%	5.3%
Wholesale	-2.2%	-3.4%	-3.0%	-3.4%	-2.5%	-2.2%
Industrial	-24.5%	13.9%	14.1%	12.4%	-2.2%	2.3%
Lighting	-3.6%	10.4%	-3.5%	-1.5%	18.2%	12.7%
Irrigation	-23.8%	-10.8%	-14.9%	-8.7%	-4.9%	12.1%
Net	-3.7%	-0.7%	-1.4%	-0.3%	-2.4%	-1.6%
Gross	-4.2%	-0.7%	-2.4%	-1.2%	-2.4%	-1.5%

5.1 Are the recent Residential Load variances of 7.6% and 8.2% primarily attributable to the variances in the UPC? Please explain why or why not.

Response:

The residential load is forecast by multiplying the UPC by the average annual customer count. The customer counts in 2014 and 2015 were close to forecast so the variances in load in 2014 and 2015 of 7.6% and 8.2% are primarily attributed to variances in the UPC.

However FBC cannot definitively explain any change in residential UPC in a given year as it is a result of many factors that may be both compounding and offsetting. For example, additional conservation due to RCR might have reduced the load but this may have been offset by an increase in the number of appliances used in a home.

FBC believes the current approach of calculating the three year average of historical UPCs as a proxy for the future before-savings UPC is appropriate at this time. By averaging the most recent data, annual fluctuations can be minimized and smoothed out. A smoothing technique such as averaging is a common and well established practice to minimize year-over-year fluctuations.

5.2 Please provide FBC's views on what factors contributed to the significant decline in Residential UPC in 2014 and 2015 from that in 2013 and earlier; is this related to the integration of the City of Kelowna?

Response:

The integration of the City of Kelowna in March 2013 did contribute to the reduction in residential UPC, as explained in the response to BCUC IR 1.9.3.1. 2014 is the first full year in

which former customers of the City of Kelowna are fully reflected in FBC's load data by customer class.

However, FBC cannot definitively explain the 2014 and 2015 decreases in residential UPC as explained in the response to CEC IR 1.5.1.

5.3 Does FBC expect factors affecting load variance to continue being an influence into 2017? Please explain why or why not.

Response:

FBC expects that its load will continue to be influenced by many factors that may have affected load variances in the past, including customer behavior, economic activity, government policies, new technology, etc..

5.3.1 If yes, does the inclusion of the 2013 figure in the average calculation of the UPC for the 2016 seed year likely result in an overestimation of UPC for the 2016 seed year and 2017 forecast? Please explain why or why not.

Response:

FBC cannot definitively explain the increase of approximately 0.6 percent in residential UPC from 12.41 MWh in 2012 to 12.48 MWh in 2013. Any change in residential UPC in a given year is a result of many factors that may be both compounding and offsetting.

For any given year, input data will exhibit some degree of variability. FBC believes the current approach of calculating the three year moving average of historical UPCs as a proxy for the future before-savings UPC is appropriate. By averaging the most recent data, annual fluctuations can be minimized and smoothed out. A smoothing technique such as averaging is a common and well established practice to minimize year over year fluctuations. Additionally FBC does not believe it is appropriate or possible to speculate on which recent years may or may not be significant. As a result FBC does not believe there is any reason to conclude that the inclusion of the 2013 UPC will result in an overestimate of the 2016 Seed and 2017 Forecast.

5.3.2 If yes, please provide FBC's views as to whether or not it might be appropriate to exclude the 2013 year from the average UPC calculation.

Response:

Please refer to the response CEC IR 1.5.3.1.

5.4 Please provide the calculation for the UPC for the 2016 seed year and 2017 forecast using only 2014 and 2015 figures.

Response:

FBC tested the 2013, 2014 and 2015 normalized after savings residential UPC values for the presence of outliers and none were found. As a result, FBC does not believe that it is appropriate to exclude any historical data points (such as 2013 as requested in the question) from the forecast method. Nevertheless, FBC has provided a response to the question below.

The After-Savings UPC values calculated using only data from 2014 and 2015 would be 11.42 MWh in 2016S and 11.37 MWh in 2017F, compared to 11.76 MWh for 2016S and 11.71 MWh for 2017F as found in Figure 3-2 of the Application.

The calculations for these 2016S and 2017F After-Savings UPCs are shown below.

2016S and 2017F Before-Savings UPC = (2015 UPC + 2014 UPC)/2
= (11.51 MWh +11.41 MWh)/2 = 11.46 MWh

2016S Before-Savings Load = Before-Savings UPC * Average customer count (2015 and 2016)
= 11.46 MWh * 114,623 = 1,313,580 MWh

2016S After-Savings Load = 2016 Before-Savings Load - 2016 DSM and Other Savings
= 1,313,580 MWh - 4,221 MWh = 1,309,359 MWh

2016S after-Savings UPC = 2016S After-Savings Load /Average customer count (2015 and 2016)
= 1,309,359 MWh/114,623 = 11.42 MWh

2017F Before-Savings Load = Before-Savings UPC * Average customer count (2016 and 2017)
= 11.46 MWh * 115,555 = 1,324,260 MWh

2017F After-Savings Load = 2017 Before-Savings Load - 2017 DSM and Other Savings
= 1,324,260 MWh – 10,620 MWh = 1,313,640 MWh

2017F After-Savings UPC = 2017F After-Savings Load /Average customer count (2016 and 2017)
= 1,313,640 MWh/115,555 = 11.37 MWh

5.5 Please confirm that the slight decline in UPC from the 2016S (11.76) to the 2017F (11.71) is likely a random variance and if not, please explain.

Response:

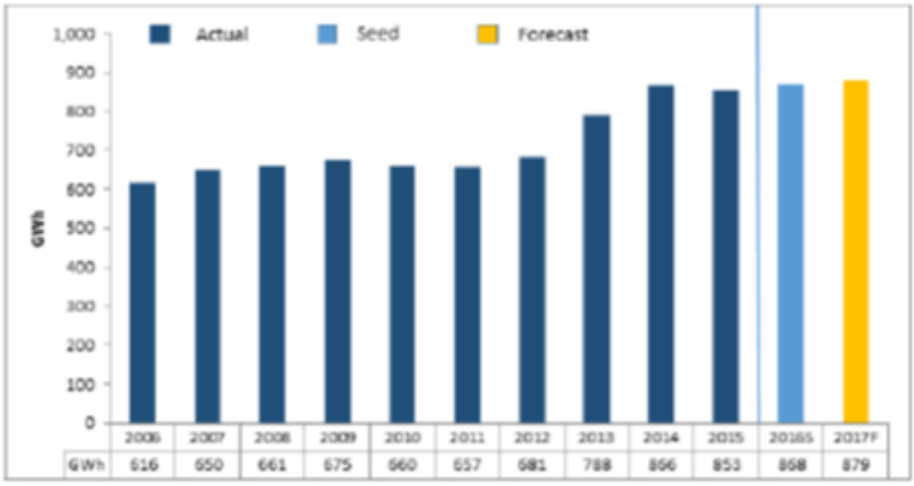
The decline in the after-savings UPC from 2016S to 2017F is due to increased DSM and other savings in 2017. Consistent with past practice, the before-savings forecast is assumed to be unchanged in 2017, compared to 2016. The table below shows the before and after-savings UPC values and the effect of DSM and Other savings on the UPC.

Before and After-Savings UPC (MWh)

	Before Savings UPC	DSM and Other Savings	After-Savings UPC
2016S	11.80	(0.04)	11.76
2017F	11.80	(0.09)	11.71

6. Reference: Exhibit B-2, Page 19 and Appendix A-2, Page 8, Page 10 (Customer Count Variance) and Page 11 (Load Variance)

Figure 3-4: After-Savings Commercial Energy (GWh)



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016S	2017F
GWh	616	650	661	675	660	657	681	788	866	853	868	879

4. NORMALIZED AFTER-SAVINGS USE PER CUSTOMER (UPC)

MWh/Customer	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016S	2017F
Residential	12.09	12.74	12.64	12.90	12.77	12.70	12.41	12.48	11.61	11.41	11.76	11.71

6.1 CUSTOMER COUNT VARIANCE

Customer Count	2010	2011	2012	2013	2014	2015
Variance (%)						
Residential	-0.4%	-0.9%	-2.1%	-4.4%	0.2%	-0.6%
Commercial	-2.2%	-1.6%	-0.2%	-0.4%	4.3%	3.0%
Wholesale	0.0%	0.0%	0.0%	-16.7%	0.0%	0.0%
Industrial	2.9%	2.8%	7.7%	7.7%	2.0%	2.0%
Lighting	-3.2%	-1.8%	-5.2%	-11.5%	-7.5%	-1.9%
Irrigation	2.6%	1.0%	1.5%	2.0%	1.1%	-0.7%
Total	-0.6%	-1.0%	-1.9%	-4.0%	0.5%	-0.2%

6.2 LOAD VARIANCE, NORMALIZED ACTUAL TO FORECAST

Energy (GWh)	2010	2011	2012	2013	2014	2015
Variance (%)						
Residential	-0.5%	-1.0%	-2.9%	-0.2%	-8.2%	-7.6%
Commercial	-3.4%	-2.1%	-2.3%	-1.4%	6.1%	5.3%
Wholesale	-2.2%	-3.4%	-3.0%	-3.4%	-2.5%	-2.2%
Industrial	-24.5%	13.9%	14.1%	12.4%	-2.2%	2.3%
Lighting	-3.6%	10.4%	-3.5%	-1.5%	18.2%	12.7%
Irrigation	-23.8%	-10.8%	-14.9%	-8.7%	-4.9%	12.1%
Net	-3.7%	-0.7%	-1.4%	-0.3%	-2.4%	-1.6%
Gross	-4.2%	-0.7%	-2.4%	-1.2%	-2.4%	-1.5%

6.1 To what does FBC attribute the Commercial customer count variance of 4.3% and 3.0% in 2014 and 2015 respectively?

Response:

FBC is not able to pinpoint the specific causes of customer count changes up or down from year to year. Economic activity, population growth and employment rates are likely factors acting to increase the commercial customer count. However, the wide range of commercial sectors represented by customers in the commercial class could be influenced in many different ways and by a broad range of factors.

6.1.1 Would FBC expect these factors to continue to exist in 2016 seed and 2017 forecast? Please explain why or why not.

Response:

Please refer to the response to CEC IR 1.6.1.

6.1.1.1 If yes, would it be reasonable for FBC to adjust its forecast to reflect these factors? Please explain why or why not.

Response:

Please refer to the response to CEC IR 1.6.1.

6.1.1.2 If yes, please provide FBC's view of what an appropriate adjustment might be to the customer count figure.

Response:

Please refer to the response to CEC IR 1.6.1.

6.2 Does FBC calculate a Normalized After Savings UPC for the Commercial class?

Response:

FBC does not forecast commercial UPC directly. FBC forecasts residential UPC and customer count directly in order to calculate residential load (UPC times customer count), but does not forecast commercial load in the same way. As stated in Appendix A-3, FBC determines the commercial load and the commercial customer count directly, using a regression of historical load on GDP. Although not used for forecasting load, commercial UPC can be calculated as a result of the forecasts as commercial load divided by commercial customer count.

6.2.1 If so, please provide.

Response:

Commercial After-Savings UPC is provided below. As explained in Appendix A3 at page 3, the commercial class is not statistically sensitive to weather, therefore the UPC is actual and not normalized.

After-Savings Commercial Use Per Customer

MWh/Customer	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Commercial	60.73	57.54	53.21	53.61	51.92	51.24	52.23	58.74	61.78	58.16	57.99	57.80

6.2.2 If no, why not?

Response:

Please refer to the response to CEC IR 1.6.2.

6.3 To what does FBC attribute the Commercial load variances of 6.1% and 5.3% in 2014 and 2105 respectively? Please explain and provide quantification where possible.

Response:

FBC is not able to pinpoint the causes of commercial load variances from forecast from year to year. Economic conditions, population growth and employment rate are among the factors acting to increase the commercial load. However, the range of commercial sectors that comprise the mix of customers in the commercial load class could be influenced in different ways by a broad range of factors.

6.4 Does FBC expect these factors to continue in 2016 and 2017, such that the current forecast may be too low? Please explain.

Response:

Please refer to the response to CEC IR 1.6.3.

6.5 If so, would it be reasonable for FBC to adjust its forecast to reflect these factors? Please explain why or why not.

Response:

Please refer to the response to CEC IR 1.6.3.

6.5.1 If yes, please provide FBC's view of what an appropriate adjustment might be to the load forecast.

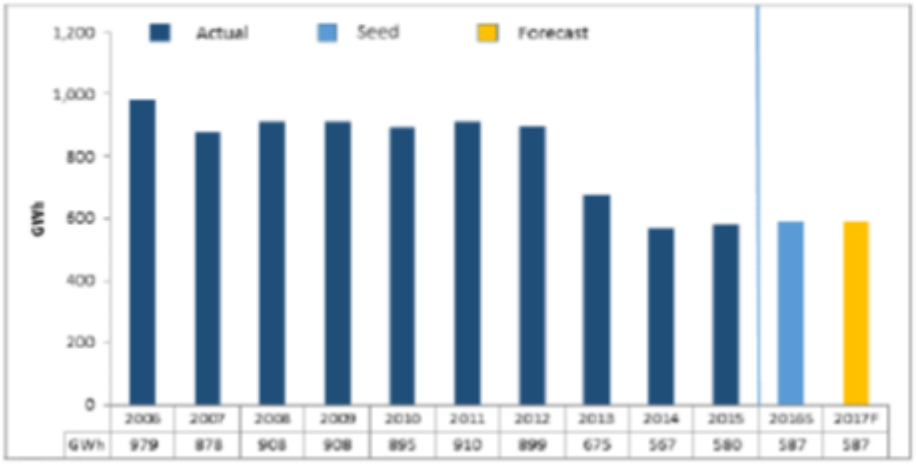
Response:

Please refer to the response to CEC IR 1.6.3.

7. Reference: Exhibit B-2, Page 20; Appendix A-3, Page 4 and Appendix A-2, Page 11 (Load Variance)

Consistent with past practice the wholesale class is forecast using survey information from each of the individual wholesale customers. FBC believes that the individual wholesale customers are best able to forecast their future load growth. All of the wholesale customers responded with their forecast growth projections. As shown in Figure 3-5 below, after-savings wholesale energy is forecast to remain constant in 2017.

Figure 3-5: Normalized After-Savings Wholesale Energy (GWh)



1.2.3 Wholesale

The Company forecasts its wholesale load using the growth rates from load surveys from all wholesale customers. The response rate was 100 percent. FBC then summed the wholesale customers' forecasts to calculate the before-savings wholesale load forecast. This approach recognizes that in the near to medium term, the wholesale customers themselves are best able to forecast their load growth based on their knowledge of their customer mix, load behaviors, development projects with associated energy requirements, etc.

6.2 *LOAD VARIANCE, NORMALIZED ACTUAL TO FORECAST*

Energy (GWh)	2010	2011	2012	2013	2014	2015
Variance (%)						
Residential	-0.5%	-1.0%	-2.9%	-0.2%	-8.2%	-7.6%
Commercial	-3.4%	-2.1%	-2.3%	-1.4%	6.1%	5.3%
Wholesale	-2.2%	-3.4%	-3.0%	-3.4%	-2.5%	-2.2%
Industrial	-24.5%	13.9%	14.1%	12.4%	-2.2%	2.3%
Lighting	-3.6%	10.4%	-3.5%	-1.5%	18.2%	12.7%
Irrigation	-23.8%	-10.8%	-14.9%	-8.7%	-4.9%	12.1%
Net	-3.7%	-0.7%	-1.4%	-0.3%	-2.4%	-1.6%
Gross	-4.2%	-0.7%	-2.4%	-1.2%	-2.4%	-1.5%

7.1 The Wholesale Load forecast has been consistently high by between 2.2% and 3.4% for the last six years. Does FBC believe it would be reasonable to adjust

the Wholesale Load Forecast by 3% to account for this tendency? Please explain why or why not.

Response:

FBC does not believe it would be reasonable to adjust the wholesale load by 3%. FBC relies on survey information from each individual wholesale customer for the wholesale forecast. FBC believes the wholesale customers are best able to forecast their load based on their knowledge of their customer mix, load behaviors, development projects with associated energy requirements, etc.

8. Reference: Exhibit B-2, Page 20 and Appendix A-2, Pages 7 and 11

3.5.4 Industrial

Consistent with past practice, the industrial forecast is determined through a combination of customer load surveys and, when not available, escalation of the most recent annual loads by the corresponding provincial GDP growth rates for individual industries.

FBC sends all industrial customers a load survey that requests the customer's anticipated use for the next 5 years. A survey methodology is utilized because FBC believes that individual industrial customers have the best understanding of what their future energy usage will be. This year FBC received a response from 88 percent (44 of 50) of the surveys sent out. The responding customers also represent approximately 88 percent of the total industrial load.

As shown in Figure 3-6 below, after-savings industrial energy is forecast to increase by 14 GWh in 2017.

3.1 CUSTOMERS

Customer Count	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016S	2017F
Residential	89,181	93,647	95,502	96,565	97,883	98,795	99,228	111,862	113,431	114,166	115,080	116,031
Commercial	10,285	11,010	11,216	11,308	11,419	11,525	11,811	13,662	14,363	14,976	15,157	15,813
Wholesale	8	7	7	7	7	7	7	6	6	6	6	6
Industrial	37	38	36	33	35	36	39	47	49	50	50	50
Lighting	1,905	1,992	1,910	1,874	1,830	1,803	1,739	1,644	1,620	1,590	1,590	1,590
Irrigation	997	1,030	1,048	1,066	1,075	1,092	1,091	1,097	1,103	1,095	1,095	1,095
Total Direct	102,413	107,724	109,719	110,853	112,249	113,258	113,915	128,318	130,572	131,883	132,988	134,585

6.2 LOAD VARIANCE, NORMALIZED ACTUAL TO FORECAST

Energy (GWh)	2010	2011	2012	2013	2014	2015
Gross	(240)	(25)	(61)	(45)	(65)	(55)
Variance (%)						
Residential	-0.5%	-1.0%	-2.9%	-0.2%	-8.2%	-7.6%
Commercial	-3.4%	-2.1%	-2.3%	-1.4%	6.1%	5.3%
Wholesale	-2.2%	-3.4%	-3.0%	-3.4%	-2.5%	-2.2%
Industrial	-24.5%	13.9%	14.1%	12.4%	-2.2%	2.3%
Lighting	-3.6%	10.4%	-3.5%	-1.5%	18.2%	12.7%
Irrigation	-23.8%	-10.8%	-14.9%	-8.7%	-4.9%	12.1%
Net	-3.7%	-0.7%	-1.4%	-0.3%	-2.4%	-1.6%
Gross	-4.2%	-0.7%	-2.4%	-1.2%	-2.4%	-1.5%

Note: The 2013 forecast included the CoK as wholesale customer since at the time of the 2012-2013 Revenue Requirements the application for the acquisition of the CoK was not yet filed.

8.1 What has been FBC's response rate for the last 5 years from its surveys?

Response:

FBC's industrial survey response rate for the revenue requirement applications from 2011 to 2016 are shown below. Included in the table is the percentage of FBC customers who responded and their approximate portion of the industrial load. 2012 and 2013 were filed as one application so the response rate represents both of those years. An e-mail based survey was implemented for the 2014 load forecast, which improved the customer response rate.

Industrial Survey Response Rate

	2011	2012/2013	2014	2015	2016
Response Rate (%)	61%	39%	72%	85%	86%
Percentage of Load (%)	79%	34%	79%	91%	91%

8.2 The Industrial Load Variances were significant between 2010 and 2014, and much lower in 2014 and 2015. Did FBC make changes to its forecasting procedures during this time or was the reduction in variance primarily a result of the stability in customer count?

Response:

FBC has not changed its forecasting method. However, beginning with the 2014 forecast FBC began conducting its industrial load survey by way of e-mail. This increased the number of returned industrial surveys as shown in the table in response to CEC IR 1.8.2 above. FBC believes this higher response rate contributed to the decreased industrial load variance.

8.2.1 If FBC made changes to the its forecasting methods, please explain the changes that FBC undertook to reduce the variance in its industrial load forecasting.

Response:

Please refer to the response to CEC IR 1.8.2.

8.2.2 Does FBC undertake any efforts to maximize its survey response rate? Please explain.

Response:

Yes, FBC undertakes efforts to try to maximize the survey response rate. If a customer does not respond to the survey, FBC sends a reminder e-mail to the customer on a weekly basis. If the

customer still does not respond, FBC will call the contact person on the survey and try to get them to respond. As noted in the response to CEC IR 1.8.2, FBC implemented an e-mail based survey for its 2014 forecast that increased the survey response rate.

9. Reference: Exhibit B-2, Page 23

> ***3.5.7.1 Advanced Metering Infrastructure (AMI) Impact on Losses***
>
> FBC's implementation of AMI (approved by Order C-7-13) is expected to positively impact losses (unaccounted-for energy) by deterring theft of power, mainly for indoor marijuana grow sites. In Order G-107-15 in FBC's Annual Review for 2015 Rates, FBC was directed to include in its next and subsequent Annual Review materials the impact of AMI on losses through theft deterrence, including:
>
> > (i) a comparison of the projected GWh reduction for the test year and proceeding years to the estimated GWh theft reduction assumed in the AMI decision for those years; and (ii) a description of FBC's operational activities and costs incurred in reducing electricity theft (for example, related to FBC's Revenue Protection Program) and the regulatory treatment of these costs.[8]
>
> The following information on GWh theft reduction, costs and activities reducing electricity theft and regulatory treatment is provided in response to this directive.
>
> The projected GWh theft reduction for the test year and subsequent years is unchanged from the estimated GWh theft reduction assumed in the AMI decision, which includes the impact of the Commission's determination to limit the number of assumed marijuana grow cycles to three per year, reducing the assumed annual energy losses downward to 113,000 kWh annually per theft site.
>
> Current forecast loss reductions remain unchanged from those provided as part of the AMI CPCN application. Table 3-4 below provides details of the normalized losses for 2012 – 2015,
>
> [8] Order G-107-15, page 15.

9.1 Are there other ways in which the AMI program will reduce system losses other than through theft reduction? If so, please explain and provide quantification if possible.

Response:

In FBC's AMI CPCN Application, FBC identified two possible future loss reduction benefits supported by the implementation of AMI: distribution loss reduction, and conservation voltage reduction (CVR) through smart grid volt/var optimization (VVO).

Distribution loss reduction involves a specific project for technical loss reduction where a cost/benefit analysis demonstrates a clear benefit to customers. CVR with smart grid VVO involves the use of field devices (capacitor banks, voltage regulation transformers, feeder/transformer/customer meters) to optimize energy conservation and reduce demand on the distribution system using real-time information.

FBC is presently unable to estimate the potential distribution loss reductions that might be realized through explicit loss reduction project(s) as the Company is still working towards using the AMI system to accurately quantify system losses at a level that is sufficiently granular to determine whether a specific distribution loss project would be cost effective.

With respect to power grid voltage optimization, an FBC study was performed by PCS UtiliData to determine the costs and benefits of CVR, including CVR with VVO. This study was included as part of the AMI CPCN Application (Appendix C-3). The study found that FBC could potentially conserve approximately 50,000 MWhs per year by implementing a Smart Grid VVO system on the entire distribution network. Any such implementation of CVR would be the subject of a future application to the Commission.

10. Reference: Exhibit B-2, Pages 23 and 24

Current forecast loss reductions remain unchanged from those provided as part of the AMI CPCN application. Table 3-4 below provides details of the normalized losses for 2012 – 2015,

as well as the forecast losses (both with and without the AMI impact) for 2016 – 2019. The 2015 AMI impact to losses related to theft detection and deterrence is 2.4 GWh, which is consistent with the original forecast. The 2015 loss figures are embedded in the 2016 – 2019 loss figures noted in Table 3-4.

Table 3-4: System Losses Before and After AMI, 2012 – 2019

		Before AMI			After AMI		
Line No.	Year	Actuals and Before-Savings Gross Load (GWh)	% of Gross Load	Normalized Actual and Forecast Losses (GWh)	Incremental AMI Impact (GWh)	% of Gross Load	Losses (GWh)
1	2012 Actual	3,421.7	7.92%	271.1			
2	2013 Actual	3,500.0	7.95%	278.1			
3	2014 Actual	3,436.0	7.86%	270.1			
4	2015 Actual	3,445.8	7.91%	272.4			
5	2016 Seed	3,498.2	7.99%	279.5	(2.7)	7.91%	276.8
6	2017 Forecast	3,520.1	7.99%	281.2	(6.7)	7.80%	274.5
7	2018 Forecast	3,530.6	7.98%	291.9	(9.7)	7.71%	272.2
8	2019 Forecast	3,544.8	7.98%	283.0	(12.1)	7.64%	270.9

10.1 Please explain and provide the calculations/evidence for the 'Incremental AMI' impact.

Response:

Please refer to the response to BCSEA IR 1.5.5 for a discussion of the calculations/evidence for the 'Incremental AMI' impact. The cumulative nature of the 'incremental AMI impact' is discussed in the response to BCOAPO IR 1.7.1.

10.2 Please confirm that the Normalized Actual losses for 2015 of 272.4 include the AMI Impact of 2.4GWh, such that otherwise the losses would have been 274.8 or 7.97% of gross load.

Response:

Yes, the 2.4 GWh of losses attributed to AMI in 2015 is included in the total losses of 272.4 GWh.

10.2.1 If not confirmed, please explain why not and provide the appropriate calculation of the losses before and after AMI.

Response:

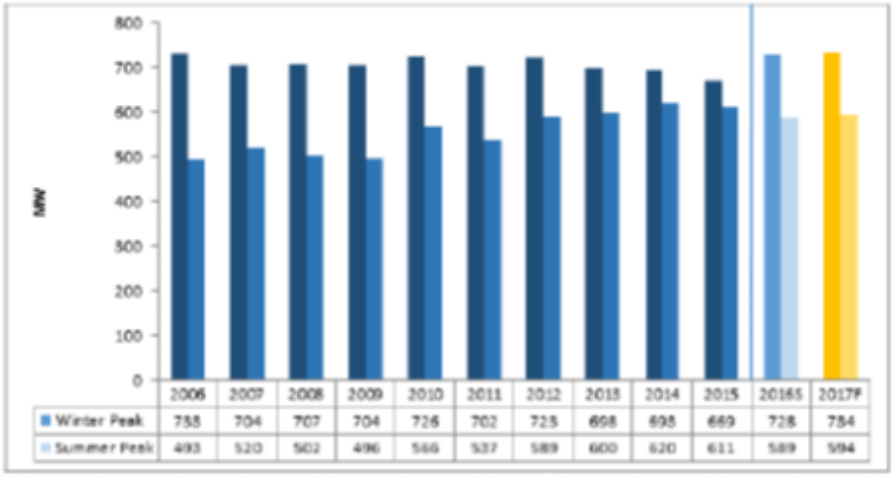
Please refer to the response to CEC IR 1.10.2.

11. Reference: Exhibit B-2, Page 25

3.5.8 Peak Demand

The peak demand forecast is produced by taking the ten year average of historical peak data. The historical peak data is escalated by the gross load growth rate before it is averaged to account for the growth of demand on the FBC system. Normalized after-savings winter and summer peaks for 2006-2017 are shown below.

Figure 3-10: After-Savings Winter and Summer Peaks (MW)



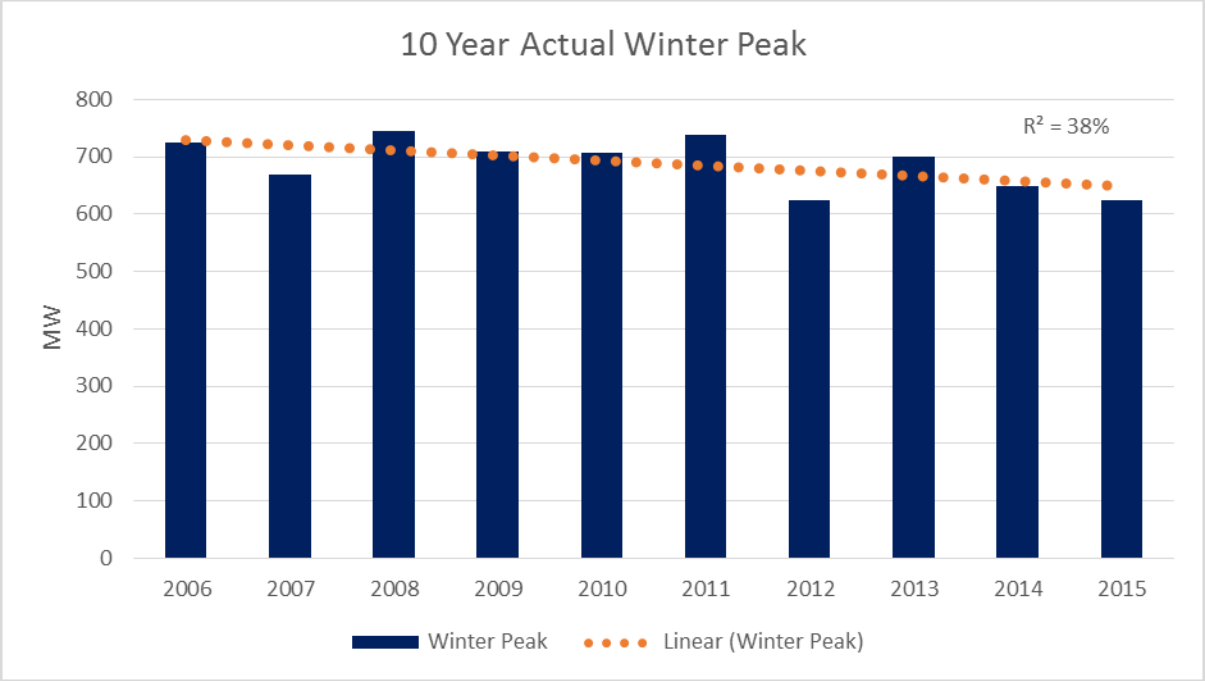
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016S	2017F
Winter Peak	733	704	707	704	726	702	725	698	695	669	728	734
Summer Peak	493	520	502	496	566	537	589	600	620	611	589	594

11.1 Please provide FBC's views on the appropriateness of using a weighted average for its peak demand forecast, such that more recent years have a greater weighting than earlier years in order to reflect recent trends related to peak usage.

Response:

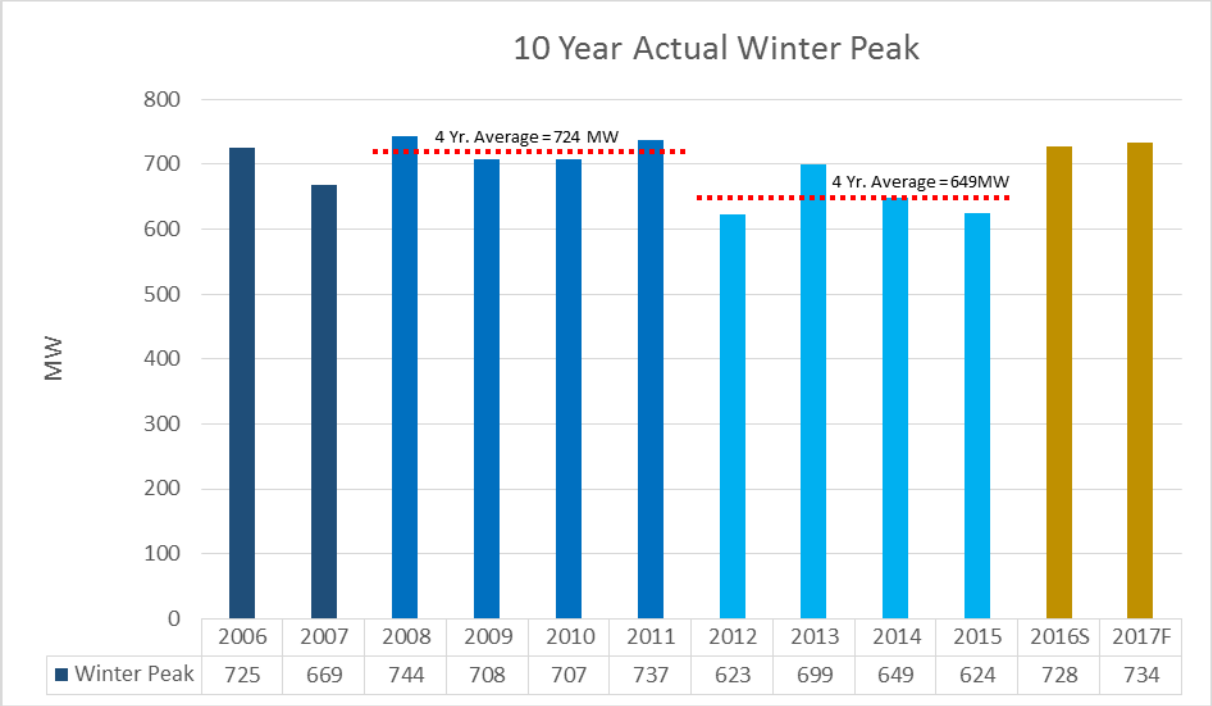
Since there is no statistically significant trend in the 10 year actual peak values, it is prudent to base the peak forecast on a simple 10 year average to avoid placing too much reliance on the continuation of recent weather patterns.

FBC notes that Figure 3-10 in the Application shows normalized peak values, whereas the forecast method uses actual winter peak values. A chart showing the 10-year actual winter peak and the R squared value for the trend over 10 years follows.



The plot above demonstrates that a statistically significant trend does not exist (R^2 = 38%). As a result, a trending method would not be appropriate and an averaging method should be used. This is consistent with the current practice.

A weighted average method would put more weight on recent weather patterns; however, there is no significant trend as noted above and FBC cannot predict if recent patterns are likely to continue. The following chart shows the same actual winter peak data above, but shown in groups of two and four years to demonstrate why a weighted average would not be an appropriate technique in this instance.



The average peak for the years 2008-2011 was 724 MW. This is significantly higher than the average peak from the most recent four years, which was 649 MW. A weighted average method that placed more emphasis on recent years could potentially underestimate the peak.

Note that the 10 year average is further escalated by the gross load growth to account for the growth in demand on the FBC system, resulting in the forecast values, shown in Figure 3-10.

11.2 Please confirm that the Kelowna data is included for all years either as wholesale or other rate class demand.

Response:

Confirmed. The peak demand shown is FBC's system peak and was not impacted by the Company's acquisition of the City of Kelowna's electric utility customers and load.

11.3 Please explain the increasing summer peak demand and the decrease in winter peak demand.

Response:

Peak demand is influenced by many factors including customer behavior, new technologies, economic conditions, etc. Therefore, FBC is unable to pinpoint the exact source of the decrease/increase in peak demand year over year. However, FBC believes that air-conditioning load is likely increasing in the summer, while lighting and space heating load is likely decreasing in the winter.

12. Reference: Exhibit B-2, Page 27

4.1 *INTRODUCTION AND OVERVIEW*

This section includes a review of the 2016 Projected and 2017 Forecast power purchase expense (PPE), wheeling expense and water fees.

As shown in Table 4-1 below, the 2017 Forecast power supply cost of $153.930 million represents an increase of 3.3 percent or $4.968 million over the 2016 Approved cost of $148.962 million. The increase in the 2017 Forecast PPE is due to increased gross load as well as increases to the Brilliant, Waneta Expansion, and BC Hydro contract rates. The increase in 2017 Forecast wheeling expense is due to increases in the wheeling nominations and wheeling rates. The 2017 Forecast water fees are consistent with 2016 Approved. Any variances to forecast in these items are recorded in the Flow-through deferral account and returned to or recovered from customers in the subsequent year.

Table 4-1: Power Supply Cost ($ millions)

Line No.	Description	Approved 2016	Projected 2016	Forecast 2017
1	Power Purchase Expense	$ 133.907	$ 128.439	$ 138.674
2	Wheeling Expense	4.764	4.779	4.928
3	Water Fees	10.291	10.187	10.328
4	Total Power Supply Cost	$ 148.962	$ 143.406	$ 153.930
5				
6	Gross Load (GWh)	3,540	3,426	3,559

12.1 Please provide the total increase that is related to the increase in gross load, as compared to the increases in the contract rates.

Response:

The Power Purchase Expense increase from Approved 2016 to Forecast 2017 of $4.8 million is a result of a $0.9 million increase due to a higher gross load, and a $3.8 million increase due to the higher Brilliant, Waneta Expansion and BC Hydro contract rates. The remaining $0.1 million increase is due to various other small variances.

The increase in Wheeling Expense of $0.2 million is a result of a $0.1 million increase due to higher wheeling nominations, and a $0.1 million increase due to the higher wheeling rates.

There was a $0.2 million increase in water fees due to higher water rental fees offset by a $0.2 million reduction due to volume, based on the FBC owned generation in the previous year.

13. Reference: Exhibit B-2, Page 28

> **4.3 PORTFOLIO OPTIMIZATION**
>
> The primary objectives of FBC's power supply portfolio planning are to ensure that the Company has sufficient firm resources to meet expected load requirements, to ensure the availability of cost effective reliable power for FBC's customers, to prudently manage exposure to the cost and availability of market power supplies, and to optimize the value of any surplus resources that are not needed to meet load requirements.
>
> The Company currently has long-term, firm resources from which it can supply all of its 2017 forecast annual energy and capacity requirements. The nature of FBC's contracted resources, in particular the BC Hydro PPA, provide the Company some flexibility to participate in the market when conditions are favourable, to mitigate the cost of holding those firm resources. Furthermore, although FBC's load requirements are forecast to grow over time, the amount of capacity provided under the WAX CAPA is greater than FBC's current capacity requirements in most months, and FBC sells the surplus capacity to mitigate power purchase expense. FBC has contracted to release a 50 MW block of capacity purchased under the WAX CAPA to BC Hydro under the Residual Capacity Agreement (RCA), which was approved by the Commission in Order G-161-14. The remaining surplus WAX CAPA will be sold to Powerex Corp. (Powerex) on a day-ahead basis, if and when it is not required to meet FBC load requirements, under the terms of the Capacity and Energy Purchase and Sale Agreement (CEPSA) with Powerex dated February 17, 2015, and accepted by the Commission in Order E-10-15.

13.1 Please confirm that the sale of surplus capacity is not included in the PBR ratemaking, but is accounted for separately.

Response:

FBC assumes the reference to "PBR ratemaking" is to costs determined by formula under the PBR Plan. FBC confirms that the sale of surplus capacity is forecast on an annual basis and included in the forecast of Power Purchase Expense, which is outside of the PBR formula for either O&M or capital.

13.1.1 If not confirmed, please explain how the surplus capacity sales are accounted for under PBR ratemaking and whether or not the shareholder receives a benefit from these sales.

Response:

Please refer to the response to CEC IR 1.13.1. The shareholder does not receive any benefit from surplus capacity sales because Power Purchase Expense is trued up to actuals by way of the Flow-through deferral account.

14. Reference: Exhibit B-2, Pages 29 and 30

As shown in Table 4-2 below, FBC's 2016 gross load (after taking into account demand side management and other customer savings) and PPE are projected to be below the 2016 Approved values by 114 GWh and $5.467 million, respectively. The reduction in power purchase expense in 2016 is primarily due to decreased load from forecast, driven primarily by a warmer than forecast winter and additional market purchases used to displace BC Hydro PPA energy and capacity purchases at a lower total cost.

Table 4-2: 2016 Power Purchase Expense ($ millions)

Line No.	Description	Approved 2016	Projected 2016	Difference
1	Brilliant	$ 38.785	$ 38.775	$ (0.010)
2	BC Hydro PPA	47.545	38.256	(9.289)
3	Waneta Expansion	37.358	37.490	0.132
4	Independent Power Producers	0.195	0.186	(0.009)
5	Market and Contracted Purchases	10.023	13.014	2.991
6	CPA Balancing Pool	-	0.839	0.839
7	Special and Accounting Adjustments	-	(0.121)	(0.121)
8	Total	$ 133.907	$ 128.439	$ (5.467)
9				
10	Gross Load (GWh)	3,540	3,426	(114)

14.1 Please provide an approximation of the reductions due to the warmer than normal weather and those related to the additional market purchases.

Response:

As shown in Table 4-2 on page 30 of the Application, FBC's 2016 gross load and power purchase expense are projected to be below the 2016 Approved values by 114 GWh and $5.467 million, respectively. Reduced gross load accounts for approximately a $5.4 million decrease in power purchase expense, which takes into account all weather and customer impacts. The incremental market savings resulted in a decrease to power purchase expense of $1.3 million. This is in addition to the savings embedded in the 2016 Approved power purchase expense, which included firm market contracts in place, and a $1.0 million reduction to BC Hydro PPA expense to account for potential real-time market opportunities. Partially offsetting these reductions are additional costs of $0.8 million due to reduced generator availability, $0.3 million due to changes to the foreign exchange rate on US dollar market contracts, and $0.1 million in other adjustments.

As part of an Evidentiary Update to be filed on or before October 5, 2016, FBC will include an updated projection of 2016 power purchase expense. This will include a further $1.0 million decrease to account for savings from additional market purchases that are not included in the 2016 Projection shown in Table 4-2 above.

15. Reference: Exhibit B-2, Page 31

> The $10.476 million increase from 2016 Projected to 2017 Forecast in BC Hydro PPA expense is due to a greater volume of power forecast to be purchased under the PPA in the 2017 Forecast compared to the 2016 Projected, as well as due to a forecast BC Hydro rate increase of 3.5 percent on April 1, 2017.[11] The BC Hydro rate increase of 3.5 percent as of April 1, 2017, increases the 2017 Forecast expense by $1.690 million, while higher purchased volume increases 2017 Forecast expense by $9.202 million. The volume of PPA purchases included in the 2017 Forecast is 176 GWh higher than the volume included in the 2016 Projected and 36 GWh lower than 2016 Approved. For the 2017 Forecast, and consistent with the 2016 Approved, FBC has included a $1.000 million reduction to the forecast BC Hydro expense to account for potential real-time opportunities to displace PPA purchases with lower cost market purchases using the flexibility provided for under the BC Hydro PPA. The flexibility under the BC Hydro PPA has created savings of $0.515 million in the 2016 Projected PPE. The Company is required to create additional savings of $0.485 million in 2016 in order to meet the $1.0 million planned savings, which it anticipates doing by the end of the 2016. Any variance in actual savings compared to the $1.000 million planned savings included in the 2016 Approved and 2017 Forecast are recorded in the Flow-through deferral account and returned to or recovered from customers in the subsequent year.

15.1 Could FBC potentially increase its savings beyond $1.0 million in 2017?

Response:

Yes, based on an updated forecast since the filing of the Application, FBC now expects that savings may exceed $1.0 million in 2017. Actual savings will be higher or lower, primarily depending on prevailing market conditions.

As part of the Evidentiary Update to be filed on or before October 5, 2016, FBC will include an updated forecast of 2017 power purchase expense. This will include market activities recently undertaken in 2016 which result in a further reduction of approximately $0.8 million to forecast 2017 PPE. Additionally, FBC will increase the 2017 reduction to the forecast BC Hydro PPA expense from $1.0 million to $2.0 million, to take into account the potential for additional real-time market opportunities.

Any variance in the amount of market savings achieved in PPE are recorded in the Flow-through deferral account and returned to or recovered from customers in the subsequent year.

15.1.1 If so, what activities could FBC undertake to increase its planned savings beyond $1.0 million in 2017?

Response:

FBC is actively pursuing all available opportunities to increase market savings in each year. Please refer to the response to CEC IR 1.15.1.

15.1.2 If so, please provide an estimate of the maximum savings FBC might be able to achieve.

Response:

Please refer to the response to CEC IR 1.15.1.

15.2 If an increase to the savings is possible, would FBC be averse to including these in its 2017 forecast? Please explain why or why not.

Response:

Please refer to the response to CEC IR 1.15.1.

16. Reference: Exhibit B-2, Page 38

> **6.3.2 Insurance Premiums**
>
> The component of insurance expense tracked outside of the PBR formula relates to insurance premium expense allocated to FBC by Fortis Inc.
>
> The 2017 insurance premiums are forecast at $1.327 million, a decrease of $0.020 million or 1.5 percent from what was approved for 2016. The 2017 Forecast is calculated by taking the known annual insurance premium of $1.162 which is applicable to the first six months of 2017 and escalating that amount by five percent for the remaining six months[13]. The five percent escalation is based on a combination of historical increases in premiums, increases in the value of assets year over year and the expectations of Fortis Inc.'s insurance broker on future premiums.
>
> [13] $1.162 million/2 = $0.581 million x 1.05 = $0.611 million. $0.581 million + $0.611 million + $0.135 million annual firefighting premium = $1.327 million.

16.1 What is the $0.135 million annual firefighting premium?

Response:

The $0.135 million annual firefighting premium relates to an agreement for fire response provided in British Columbia by the Province. The agreement is between FBC and Her Majesty the Queen in Right of the Province of British Columbia, as represented by the Minister of Forests, Lands and Natural Resource Operations. The term of the current agreement is for three years from April 1, 2016 to March 31, 2019. This agreement was initiated in 2004 in response to the enactment of the Wildfire Act, S.B.C., c.31 and the Wildfire Regulation, B.C. Reg. 38/2005. FBC has included this cost within the insurance premiums since the initiation of the agreement.

16.2 What is the % allocation from FEI, and how was the percentage arrived at?

Response:

The percent allocation does not come from FEI, but from FBC's parent company Fortis Inc. Allocations from Fortis Inc. are calculated differently depending on the type of insurance coverage. The two main drivers of insurance premium are Property and Liability insurance. The allocation for Property insurance is based on reported replacement cost of asset values insured. For Liability insurance an allocation model has been developed in consultation with Fortis Inc.'s insurance broker (AON) using a combination of factors including net revenue,

territory, customers, operational risk, product line, retention and claims. Total premiums paid by FBC make up approximately four percent of the premiums paid by Fortis Inc.

17. Reference: Exhibit B-2, Page 38

> **6.3.3 AMI Project**
>
> Incremental O&M costs related to the implementation of the AMI project will be offset by post-implementation savings, resulting in a net decrease to O&M Expense during the PBR period. Because of the high variability of AMI costs and savings during the implementation period, net AMI costs, including the costs of AMI-enabled billing options, are forecast and tracked outside of the PBR formula.
>
> Table 6-5 below compares 2015 through 2017 net AMI savings to the net savings forecast in the AMI CPCN application.

17.1 Please confirm that AMI is accounted for outside the PBR ratemaking.

Response:

FBC assumes the reference to "PBR ratemaking" is to costs determined by formula under the PBR Plan. FBC confirms that AMI is tracked outside of the O&M formula under the PBR Plan, as shown in Table 6-3. These costs are trued up to actuals in the following years' Annual Reviews by way of the Flow-through deferral account.

18. Reference: Exhibit B-2, Page 39

Table 6-5: AMI Costs and Savings ($ millions)

Line No.		2014-2015			2016			2017	
1		Actual	Approved	CPCN[1]	Projected	Approved	CPCN[1]	Forecast	CPCN[1]
2		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
3									
4	AMI Costs	2.122	2.341	2.975	1.481	1.481	1.892	1.992	1.925
5	AMI Savings	(1.239)	(1.289)	(2.493)	(2.816)	(3.281)	(3.976)	(3.118)	(3.970)
6	Net AMI Savings	0.883	1.052	0.482	(1.335)	(1.800)	(2.084)	(1.126)	(2.045)
7									

8 [1] CPCN estimates adjusted to include reclassification of software from capital pursuant to Order G-13-14

1. The CPCN forecast was a comparison of the savings that would be achieved with the AMI project to the costs that would otherwise be incurred to support the continuation of a manual meter reading program. As such, the AMI CPCN savings were based partly on estimates of continuing with manual meter reading. These meter reading cost estimates were materially higher than actual experience in 2013 and 2014 (the last full years of manual meter reading), so savings potential was diminished; and
2. The forecast Remote Connect/Disconnect savings are lower than forecast, in part due to the discontinuation of the $100 meter connection fee for premises that are remotely reconnected following disconnection for vacancy, as accepted by Letter L-1-16.

18.1 By how much were the 2013 and 2014 meter reading costs estimates materially higher than actual?

Response:

Please refer to the response to BCUC IR 1.10.3.

18.2 Why were the meter reading costs estimates for 2013 and 2014 materially higher than actual when the company had ongoing experience with manual meter reading?

Response:

Please refer to the response to BCUC IR 1.10.3.

19. Reference: Exhibit B-2, Page 44 and Page 92

> As discussed in Section 6.3.4 and Section 12.2.2, in Order G-202-15 the Commission determined that FBC's 2016 forecast costs required for the adoption of MRS pursuant to Order R-38-15 met the criteria for an exogenous event under the PBR Plan. In 2017, FBC continues to treat its forecast cost of adopting MRS pursuant to Order R-38-15 as an Exogenous event under the PBR Plan by tracking the incremental O&M and capital expenditures associated with compliance with Order R-38-15 and flowing them through to rates outside of the O&M and capital formulas.
>
> MRS Incremental Capital of $1.350 million (in addition to $0.050 million in O&M Expense as described in section 6.3.4) is required in 2017 to comply with recently adopted MRS. As explained in section 6.3.4, during 2016, FBC began assessing and determining the detailed scope and strategy required to implement additions/changes to meet the effective dates of all the standards defined by Order R-38-15. The work is primarily focused on version 5 of the CIP standards.
>
> As a result of the 2016 effort to date, FBC has estimated a one-time capital expenditure of $1.350 million in 2017. The 2017 work includes adding hardware and software systems to current infrastructure. These expenditures are necessary to meet requirements of the new standards and are related to tasks such as continuous monitoring, change management, vulnerability assessment and cyber security controls. These additions will need to be completed in 2017 in order to manage the timing of compliance activities to minimize costs.
>
> Additional sustaining capital will be required beyond 2017 for ongoing support for the hardware and software additions, including annual upgrades and minor additions that may be required to the infrastructure and systems implemented as a result of version 5 of the CIP standards.

- The forecast O&M costs of $0.445 million in 2016, $0.500 million in 2017, and $0.425 million in 2018 and beyond, and the forecast capital expenditures of $0.445 million in 2017 exceed the materiality threshold of $0.301 million.

19.1 What, if any savings, will be attributable to the adoption of MRS? Please identify, quantify and indicate when these savings might accrue.

Response:

FBC does not anticipate cost savings under the current BC MRS Program and approved standards.

19.2 For how long does FBC anticipate O&M costs to continue beyond 2018?

Response:

MRS compliance is part of the Company's requirements to operate and maintain the electrical grid and the costs are expected to continue into the foreseeable future. The standards will continually evolve and FBC will continue to evaluate any changes and identify impacts through future applications to the Commission.

19.3 Please quantify the expected O&M costs known to FBC beyond 2018 by year.

Response:

Please refer to the response to ICG IR 1.5.1.

20. Reference: Exhibit B-2, Pages 53 and 54

> 3. **Changes in Tax Rates.** Tax rates are based on FBC's average annual change in the tax rate applicable to FBC since 2012. On average:
>
> a) Municipal rates are expected to increase by 1.0 percent;
>
> b) School rates are expected to decrease by 0.6 percent;
>
> c) Rural rates are expected to decrease by 0.7 percent;
>
> d) Tax rates on First Nations are expected to increase 1.5 percent; and
>
> e) Other rates are expected to increase by 3.75 percent.

20.1 What are the "Other Rates" that are expected to increase by 3.75%?

Response:

"Other Rates" are for those taxes other than general municipal taxes levied under Part 7 of the *Community Charter*, school taxes levied under the *School Act* and provincial rural taxes (general) under the *Taxation (Rural Area) Act*. "Other Rates" are set by taxing authorities such as regional districts, hospital districts, transit, BC Assessment and the Municipal Finance Authority. Taxes in the "Other Rates" category are collected either by municipalities for services provided on their behalf (e.g., water, sewer, hospitals, transit, etc.) or by the Surveyor of Taxes for services provided in rural areas (e.g., police, fire, garbage, parks, libraries, hospitals, recreation and community centres, etc.)

20.2 Why are 'Other Rates' expected to exceed the increase level of all the listed items?

Response:

The rate of increase in "Other Rates" is expected to exceed the level of the other listed items based on actual experience with these rates over the past three years. The most significant rate increases have been experienced with regional district and fire protection levies.

21. Reference: Exhibit B-2, Pages 106 and 107

The Company's 2009 to 2015 and 2016 year-to-date AIFR results are provided below.

Table 13-3: Historical All Injury Frequency Rate Results

Description	2009	2010	2011	2012	2013	2014	2015	June 2016 YTD
Annual Results	1.41	1.72	1.48	1.72	2.82	3.21	1.54	0.88
Three year rolling average	2.00	2.00	1.54	1.64	2.01	2.58	2.52	1.88
Benchmark	n/a	n/a	n/a	n/a	n/a	1.64	1.64	1.64
Threshold	n/a	n/a	n/a	n/a	n/a	2.39	2.39	2.39

FBC remains committed to maintaining its focus on safety and is investing in enhancements to its safety program as evidenced by the launch of the Target Zero safety program in 2016. FBC believes that its actions to increase the focus on safety supported by increase funding to its safety program are appropriate in the circumstances and that the year-to-date results are an encouraging sign that the program is working as anticipated.

21.1 Does FBC anticipate that it will reach or surpass the AIFR Benchmark in 2017? Please explain why or why not.

Response:

The All Injury Frequency Rate (AIFR) has been trending positively and the YTD 2016 three year rolling average result is approaching benchmark. FBC is working towards achieving the benchmark of 1.64 in 2017.

Improvements in the AIFR annual results are difficult to predict. The Company will continue to reinforce diligence in all worker safety protocols and look for further opportunities for continual improvement.

21.2 If not, when does FBC anticipate reaching Benchmark for AIFR?

Response:

Please refer to the response to CEC IR 1.21.1.

22. Reference: Exhibit B-2, Pages 107 and 108

> The 2015 result was 76 percent and was within the performance range with the benchmark at 78 percent and the threshold at 72 percent. June 2016 year-to-date performance is 77 percent and also within the performance range.
>
> The Company's 2009 to 2015 annual and 2016 year-to-date results are provided below.
>
> **Table 13-4: Historical First Contact Resolution Levels**

Description	2009	2010	2011	2012	2013	2014	2015	June 2016 YTD
Annual Results	n/a	n/a	n/a	n/a	73%	73%	76%	77%
Benchmark	n/a	n/a	n/a	n/a	n/a	78%	78%	78%
Threshold	n/a	n/a	n/a	n/a	n/a	72%	72%	72%

22.1 Please confirm that the 'Benchmark' represents the Commission's established target to be achieved rather than a higher bound, and that the 'Threshold' represents the lowest level of performance acceptable before the company may be assessed for the prospect of penalties rather than an approved 'Performance Range'.

Response:

FBC believes it is helpful to remain consistent with the wording of the relevant Commission decisions describing the concepts of benchmark and threshold. In the PBR Decision, p. 149, the Commission stated:

> …the Commission Panel determines that the most effective way to manage SQIs is to set a satisfactory performance range. The achievement of performance metrics that fall within this range is acceptable. …Performance benchmarks would continue to be determined which would serve as a target only and failure to reach them would not have consequences.

Thus, the performance benchmarks are a target. The satisfactory performance range between the benchmark and the threshold, as outlined in the Consensus Recommendation approved by the Commission in Order G-14-15, is the range within which performance for the SQI is satisfactory. Further, as stated in the Consensus Recommendation approved by the Commission, performance inferior to a threshold does not necessarily represent a serious degradation of service or warrant adverse financial consequences for FBC, but is a circumstance that warrants examination at an Annual Review to determine whether further action is warranted. Performance inferior to a threshold is a factor that the Commission may consider in determining whether there has been a serious degradation of service and whether adverse financial consequences for FBC are warranted.

22.1.1 If not confirmed, please explain why not.

Response:

Please refer to the response to CEC IR 1.22.1.

22.2 When does FBC anticipate reaching Benchmark results for First Contact Resolution Levels?

Response:

As reported in the response to MoveUP IR 1.8.1, for the eight month period ending August 31, 2016 FBC achieved a year to date result for First Contact Resolution of 78 percent and FBC continues to target the First Contact Resolution benchmark level of 78 percent for the entire year in 2016. As noted in the Application, the achievement of this result is influenced by several factors, including the composition of different call drivers.

23. Reference: Exhibit B-2, Page 112

Telephone Abandon Rate

The Telephone Abandon Rate, an informational indicator, measures the percent of calls abandoned by the customer before speaking to a customer service representative. Abandon rates can be due to waiting times, or due to customers receiving their required information through informational messages in the Company's Interactive Voice Response (IVR) system such that the customer no longer needs to speak to an agent.

The 2015 result was 2.7 percent, consistent with prior years' results except for 2014. The June 2016 year-to-date result is 3.3 percent and is comparable to that achieved in the last few years.

The Company's 2009 to 2015 annual and 2016 year-to-date results are provided below. As discussed in the 2015 Annual Review, the 2014 result of 12.4 percent was negatively impacted by the first verified meter readings occurring after the IBEW labour disruption ended in December of 2013, the introduction of the Residential Conservation Rate, and the integration of the City of Kelowna customers.

Table 13-10: Historical Telephone Abandon Rates

Description	2009	2010	2011	2012	2013	2014	2015	June 2016 YTD
Annual Results	2.2%	1.9%	1.7%	1.9%	2.0%	12.4%	2.7%	3.3%
Benchmark	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Threshold	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

23.1 To what factors does FBC attribute the increase in the Telephone Abandon Rate for 2015 and 2016 over historical levels (excluding 2014)?

Response:

FBC considers the 2015 result to be within a normal range of 2% to 3% and does not have further insight into the reasons for the increase from prior years. The abandon rate can vary depending on the frequency and nature of large outages often caused by storms. The 2016 result is not a full year result and therefore not comparable to prior years. As of August 2016, FBC customers now have the option of selecting a call back instead of waiting on hold to speak to a CSR. This feature holds their place in line and calls them back when it is their turn. FBC anticipates that this new service will reduce abandoned calls due to waiting times and will provide a better overall customer experience.

23.2 Please provide customer wait times from 2009 to 2016.

Response:

FBC has defined "customer wait times" to be the average speed of answer for all calls. Please refer to the response to BCUC IR 1.19.1.

23.3 Does FBC expect the June YTD performance of 3.3% to be sustained to the end of the year?

Response:

FBC expects the year end performance to be in the range of 2% to 3%, depending on the frequency and size of outages in the remainder of 2016.

23.3.1 If not, please explain why and provide FBC's expected year end performance.

Response:

Please refer to the response to CEC IR 1.23.3.

24. Reference: Exhibit B-2, Pages 44 and 45 and Appendix D, Page 1

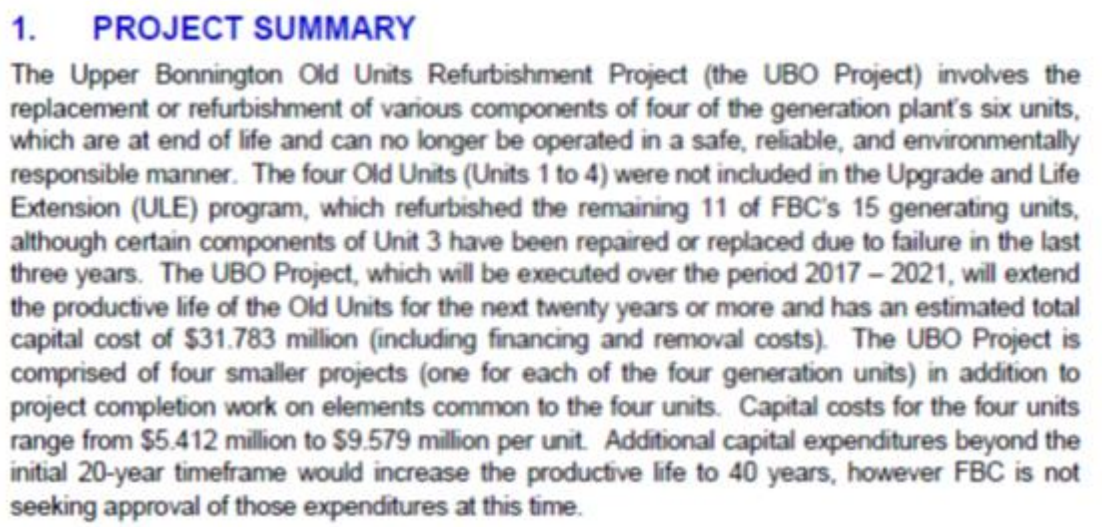
7.3 CPCN AND SPECIAL PROJECTS CAPITAL EXPENDITURES

Also forecast outside of the formula are any capital expenditures related to approved CPCNs.

The Ruckles Substation Rebuild Project and the Upper Bonnington Old Units Refurbishment Project (UBO Project) were also determined by Order G-80-16 to be outside of the formula capital expenditures and eligible for flow-through treatment, subject to approval of the projects in the Annual Review process preceding the commencement of the project. The project descriptions, justification and costs for the Ruckles Substation Rebuild Project and the UBO Project are provided in Appendix C and Appendix D of the Application, respectively. To facilitate the review and approval of these multi-year projects in this annual review, FBC is seeking Commission acceptance of the capital expenditures for the two projects pursuant to section 44.2 of the *Utilities Commission Act*.

Table 3-1: Summary of Options Analysis

Criteria	Option 1 Do Nothing	Option 2 Ruckles Rebuild on Existing Site	Option 3 New Station East of Highway 3
Preliminary Capital Cost Estimate ($2016, incl. Removal)[11]	$ -	$7.595 million	$8.675 million
Preliminary Capital Cost Estimate (As-spent, incl. Removal and AFUDC[12])	$ -	$8.288 million	$9.962 million
PV of Incremental Revenue Requirement (50 years)	$ -	$11.279 million	$12.370 million
Levelized % Increase on Rate (50 years)	0%	0.20%	0.22%
Addresses Station Flooding Hazards	No	Yes, civil modifications	Yes, station relocation
Addresses Arc-Flash Hazards	No	Yes, eliminates	Yes, eliminates
Addresses Obsolete Equipment Issues	No	Yes, replacement	Yes, replacement
Addresses Reliability Issues	No	Yes, additional capacity	Yes, additional capacity
Requires New Lands and Rights of Way	No	No	Yes
Constructability	N/A	More complex, must work around existing energized equipment	Less complex, site will be in a new location without existing energized equipment
Decision	Rejected	Accepted	Rejected



1. PROJECT SUMMARY

The Upper Bonnington Old Units Refurbishment Project (the UBO Project) involves the replacement or refurbishment of various components of four of the generation plant's six units, which are at end of life and can no longer be operated in a safe, reliable, and environmentally responsible manner. The four Old Units (Units 1 to 4) were not included in the Upgrade and Life Extension (ULE) program, which refurbished the remaining 11 of FBC's 15 generating units, although certain components of Unit 3 have been repaired or replaced due to failure in the last three years. The UBO Project, which will be executed over the period 2017 – 2021, will extend the productive life of the Old Units for the next twenty years or more and has an estimated total capital cost of $31.783 million (including financing and removal costs). The UBO Project is comprised of four smaller projects (one for each of the four generation units) in addition to project completion work on elements common to the four units. Capital costs for the four units range from $5.412 million to $9.579 million per unit. Additional capital expenditures beyond the initial 20-year timeframe would increase the productive life to 40 years, however FBC is not seeking approval of those expenditures at this time.

24.1 Please confirm that the expected costs of the Ruckles Substation Rebuild Project, as identified in the PBR Decision, was $5.9 million.

Response:

FBC confirms that the Ruckles Substation Rebuild Project had a preliminary estimate of $5.9 million; however, FBC clarified at that time that the estimate would be subject to further refinement.

In the 2014-2018 Multi-Year PBR Plan, FBC stated the following:

> An options analysis to investigate either rebuilding or relocating the substation is currently being completed and is expected to form the business case for the application for a CPCN, expected to be filed in 2015. Expenditures for [the Ruckles Rebuild Project] have a preliminary estimate of approximately $5.9 million; however the estimated expenditures will be subject to further refinement as part of the development of an application for a CPCN and the associated preparation of an AACE Class 3 estimate for the project.

24.1.1 If not confirmed, please provide the estimated costs at the time of the PBR decision.

Response:

Please refer to the response to CEC IR 1.24.1.

24.1.2 If confirmed, please provide a brief explanation for why the costs of the Ruckles substation rebuild are approximately $2.3 million (or over 33%) higher than originally anticipated.

Response:

The referenced $2.3 million increase from the preliminary estimate of $5.9 million to the current estimate of $8.2 million is due to the increased level of project definition as the project design, planning and construction schedule was refined.

As the level of project definition increased, the cost of certain items became better defined. This includes, but is not limited to, the following:

- The magnitude of the reconfiguration of the transmission and distribution facilities was higher than expected, resulting in increased line construction costs of $0.120 million;
- The civil construction cost estimate increased due to the construction staging plan, which was needed to maintain power supply for FBC customers. This resulted in an increase of $0.150 million;
- The costs of materials have increased due to higher than anticipated quotes from equipment suppliers, as compared to the preliminary estimate ($1.27 million);
- The engineering effort required has increased due to higher than anticipated complexity resulting from maintaining energization throughout construction ($0.180 million); and
- The contingency increased as a result of increasing the contingency percentage from 10% to 15%, given that the risk profile of the project is higher than originally anticipated, and as a result of the estimate to which the contingency percentage is applied being higher ($0.390 million total).

24.2 Please confirm that the expected costs of the Upper Bonnington Units 1, 2, and 4 refurbishment was $21.0 million at the time of the PBR decision, and was estimated at approximately $26 million at the time of the FBC Application for

Approval of Treatment for Major Project Capital Expenditures under the Multi-Year Performance Based Ratemaking Plan for 2014-2019 (March 2016).

Response:

The expected cost of the refurbishment project was $21.0 million at the time of the PBR Decision[1] and $26.8 at the time of the March 2016 Application for Approval of Treatment for Major Project Capital Expenditures under the Multi-Year Performance Based Ratemaking Plan for 2014-2019 (the Major Capital Projects application).

At the time of the PBR Application in 2013, project development was underway. Therefore the project scope was not fully defined and was estimated to an AACE Class 5 degree of accuracy.

In addition, at the time of the PBR Application, FBC had identified that certain mechanical repairs were being made at Unit 3, but that identified body of work did not include the scope of work that is now included in the UBO Old Units Refurbishment Project business case for Unit 3. However, the current scope of work for Unit 3 was contemplated at the time of the Major Capital Projects application. The Major Capital Projects application described how FBC determined that refurbishment of Unit 3 was required, as follows:

> In early 2013, UBO Unit 3 was dewatered for its annual inspection, which revealed damage around the lower turbine area as a result of failed supporting concrete, including a shaft which bent as a result of imbalance and excessive wear. FBC completed the necessary mechanical repairs to Unit 3 in order to return the unit to service. Following the Unit 3 failure it was concluded that annual low cost repairs did not result in improvements to safety and reliability and continued operation of the other units would likely lead to similar failures. In order to assure continued safe and reliable operation of these units, refurbishment is required.

The further increase in cost from the preliminary estimate of $26.8 million in the Major Capital Projects application to the current estimate of $31.8 million is due to the increased level of project definition. The main drivers of the increased cost estimate relate to an expanded scope of work, including:

- The Unit 1 Step-Up Transformer will require replacement;
- The AC/DC station service will require replacement; and
- The current estimate includes a contingency should the as-found condition of the submerged runners be in worse condition than expected.

[1] 2014-2018 Application for Approval of a Multi-Year Performance-Based Ratemaking Plan for 2014 through 2018, Order G-139-14, page 164.

24.2.1 If not confirmed, please provide the estimate at the time of the PBR decision.

Response:

Please refer to the response to CEC IR 1.24.2.

24.2.2 If confirmed, please provide a brief explanation, with quantification where possible, for why the costs of the Upper Bonnington refurbishment project are approximately $10 million (or nearly 50%) higher than originally anticipated and approximately $5 million higher than anticipated in March of 2016.

Response:

Please refer to the response to CEC IR 1.24.2.

25. Reference: Exhibit B-2, Appendix C, Ruckles Substation Pages 3 and 15

There are four primary drivers for the Ruckles Project.

1. There are employee safety, environmental and customer supply reliability risks as a result of the location of the Ruckles Substation and the high voltage infrastructure and associated protection and control equipment within the flood zone of the Kettle River;
2. There is an employee safety and reliability risk resulting from the arc flash potential associated with the switching equipment that provides the 4kV source of supply to the City of Grand Forks municipal electric utility and the sawmill;
3. The existing substation protection, control and metering equipment is obsolete and presents safety and reliability risks in the event of failures; and
4. FBC customers in the Grand Forks area are exposed to potentially lengthy outages as the Ruckles substation does not meet FBC's planning criteria for backup during contingency operations.

1. Option 1 – Do Nothing. Under this option, no modifications would be made to the substation equipment or site.
2. Option 2 – Full Rebuild on Existing Site. This option would involve raising the existing site above the flood plain and constructing a new transformer foundation with oil containment in a new location within the existing substation site. A new 63/13 kV 40MVA transformer would be installed, along with two 13 kV/4 kV 5 MVA step-down transformers to accommodate 4kV load requirements. New high voltage equipment including circuit breakers, disconnect switches and ancillary equipment would be constructed on raised foundations above anticipated flood levels.
3. Option 3 – New Ruckles Substation on East Side of Highway 3. This option would involve constructing a new substation on the east side of Highway 3 outside of the Kettle River flood plain and preferably near the existing 9 Line and 10 Line transmission lines. A new 63/13 kV 40 MVA transformer would be installed, along with two 13/4 kV 5 MVA step-down transformers to accommodate 4 kV load requirements. This option would also require either a new interconnection between the new station and the existing City of Grand Forks switching station or the relocation of the City of Grand Forks switching station.

25.1 Please confirm that there is urgency with respect to the Ruckles project such that project deferral is not an appropriate option.

Response:

FBC confirms that there is urgency with respect to the Ruckles Substation Rebuild Project. The Project as proposed will mitigate identified safety, environmental, and reliability risks associated with flooding, and safety and reliability risks resulting from the arc flash potential, and obsolete protection, control, and metering equipment. As such, FBC considers it prudent to execute the project as proposed and according to the execution schedule included as Appendix C-3 to the Application. Similar to Option 1 – Do Nothing, deferral would not mitigate the immediate risks to safety, to the environment, and to reliability as identified in Section 3.1 of the business case provided as Appendix C to the Application.

25.1.1 If not confirmed, did FBC consider project deferral as a possible option? Please explain why or why not.

Response:

Please refer to the response to CEC IR 1.25.1.

25.1.2 If not confirmed, please identify for how long FBC could reasonably defer the project.

Response:

Please refer to the response to CEC IR 1.25.1.

25.1.2.1 Please identify the savings that could accrue with project deferral.

Response:

As explained in the response to CEC IR 1.25.1, FBC does not consider deferral to be an acceptable option as it would not mitigate the immediate risks to safety, to the environment, and to reliability. Further, as noted in the response to BCUC IR 1.21.2, the existing Ruckles Substation is nearing or past end-of-life for much of the high voltage equipment, and is past end of life in the case of the obsolete protection, control and metering equipment. As such, rather than accruing savings, deferral of the project could lead to increased costs associated with addressing failures or damage resulting from the unmitigated safety, environmental, and reliability concerns.

25.1.2.2 Please identify the benefits that would be lost if the project were deferred.

Response:

Please refer to the response the CEC IR 1.25.1.

26. Reference: Exhibit B-2, Appendix D, Page 1

> **1. PROJECT SUMMARY**
>
> The Upper Bonnington Old Units Refurbishment Project (the UBO Project) involves the replacement or refurbishment of various components of four of the generation plant's six units, which are at end of life and can no longer be operated in a safe, reliable, and environmentally responsible manner. The four Old Units (Units 1 to 4) were not included in the Upgrade and Life Extension (ULE) program, which refurbished the remaining 11 of FBC's 15 generating units, although certain components of Unit 3 have been repaired or replaced due to failure in the last three years. The UBO Project, which will be executed over the period 2017 – 2021, will extend the productive life of the Old Units for the next twenty years or more and has an estimated total capital cost of $31.783 million (including financing and removal costs). The UBO Project is comprised of four smaller projects (one for each of the four generation units) in addition to project completion work on elements common to the four units. Capital costs for the four units range from $5.412 million to $9.579 million per unit. Additional capital expenditures beyond the initial 20-year timeframe would increase the productive life to 40 years, however FBC is not seeking approval of those expenditures at this time.

26.1 Please provide an approximation of the additional capital expenditures that would extend the initial 20-year time frame to 40 years.

Response:

The additional capital required between the years 2037 and 2057 to extend the productive life of the four units from the initial 20-year time frame to 40 years is estimated to be approximately $24.444 million, as stated in Footnote 11, page 26, Appendix D.

26.2 Please identify when, if ever, FBC would expect to seek approval for those expenditures.

Response:

As described in the response to CEC IR 1.26.1, an estimated 40 year life span can be achieved with additional capital investment in future years. FBC will continue to assess and monitor the condition of the Old Units to determine the amount of capital investment required to prolong the life of the Units to 40 years. Based on the future condition assessment of the components and the consequence of failure of those components, the additional capital expenditures required would be prioritized to maximize the Old Units' life expectancy while minimizing the safety and environmental risks.

The timing and type of application under which FBC would seek approval of these expenditures will be determined prior to commencement and will depend on the circumstances of the project(s) and regulatory framework in place at the time.

26.3 Please confirm that pursuant to Commission Order G-80-16 FBC is directed to include information in its business case that specifically addresses the timing of the four units to be refurbished in terms of need and cost effectiveness.

Response:

Confirmed.

26.3.1 If not confirmed, please explain why not.

Response:

Please refer to the response to CEC IR 1.26.3.

26.4 Please identify where explicitly in the Business Case FBC addresses the need and cost effectiveness of the timing of the four units to be refurbished.

Response:

Commission Order G-80-16 directs FBC to include information in its business case that specifically addresses the timing of the four units to be refurbished in terms of need and cost effectiveness. FBC has provided this information in its business case for the Upper Bonnington Old Units Refurbishment Project in Appendix D of the Application. In particular, please refer to sections 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 4.2 and 5 of the business case, which provide the requested details and are summarized as follows:

- Sections 2.1, 2.2 and 2.3 provide details related to the need for refurbishment and why FBC is prioritizing the project, including assessments demonstrating that the Old Units are at end of life and are no longer able to continue to operate reliably. FBC's

conclusion that the Old Units are at end of life and must undergo refurbishment is supported by the third-party engineering reports included in Appendices D-1, D-2 and D-3 to the business case.

- Sections 3.1, 3.2 and 3.3 identify three options and the technical and financial advantages and disadvantages of each;
- Section 3.4 compares the options and explains why Option 3 – Refurbishment is the most cost-effective option;
- Section 4.2 provides the timing and priority of construction for each unit; and
- Section 5 provides the costs per unit and the timing of the phased completion and inclusion into rate base.

27. Reference: Exhibit B-2, Appendix D, Pages 31 and 32

- An unexpected increase in the delivery times or in the cost of major equipment. The risk of such occurrence is considered to be low given the current economic climate and that FBC received budgetary quotes for major materials.
- Unavailability of labour and materials. The risk of occurrence is considered to be low given the current economic climate. From a labour perspective, there is little risk given the majority of the work will be completed in-house. Any external labour requirements will likely be easily met. With respect to materials, FBC believes that the risk of financial and schedule pressures is low because the likelihood of material lead-times and prices changing significantly is low given the current economic climate. This risk has been partially mitigated by developing preliminary equipment specifications and obtaining quotations from vendors. Any residual risk will be managed through the use of project planning and contractual performance guarantees.
- Environmental risk associated with changing the oil system of the existing mechanical governor system. There is a risk associated with removing and transporting this large volume of oil for disposal. The probability of an oil spill is considered low given that FBC has well developed work procedures for transporting oil. Additionally, the impact of a spill while changing the oil is considered low given that any spill would be contained within the existing plant and recovered using FBC's standard oil spill response procedures.

- As-found submerged turbine components may be in worse condition than expected. FBC considers this risk to be moderate because the condition of many components is difficult to assess prior to disassembly and there is a risk that the condition of these components is worse than anticipated. FBC believes that the likelihood of such an event has been reduced because of the recent inspections done on Units 1 and 3 and the fact that the other two units are of a similar vintage and design.
- There is a risk that the as-found condition of some components, especially the stator core, could be in an inoperable condition on some of the Units. To mitigate the risk, FBC will conduct comprehensive testing and condition assessment prior to returning to service.

27.1 Is FBC able to assign quantification of costs to the above identified risks? If so, please provide an estimate of the costs potentially associated with each risk.

Response:

FBC's cost estimate for the UBO Project was completed to an AACE Class 4 degree of accuracy which has an accuracy range of -15%/-30% to +20%/+50%. A contingency of 15% was added to the cost estimate to account for risks that may materialize during the Project execution.

The following is a summary quantification of the risks identified within the preamble to this IR:

Risk: "An unexpected increase in the delivery times or in the cost of major equipment."

FBC is unable to predict the potential cost associated with this risk because the cost for materials can vary with time and will depend on the major equipment that will be affected. However, one of the biggest variables is the cost of materials used for long delivery items such as the Step-up Transformer. The cost for this item can be impacted by the cost of copper, transformer oil and silicon steel and also market demand. The purchase of the Step-Up Transformer is planned to occur in 2020 when the refurbishment of Unit 1 will take place. A cost increase for both silicon steel and copper as well as a tightening of the transformer market could increase the Step-Up Transformer cost from 15% to 50% which would result in an increase in project costs of approximately $0.1 million to $0.5 million. The contingency provided for the project includes funds to cover up to a 15% increase in Step-Up Transformer costs.

Risk: "Unavailability of labour and materials"

The project plan requires both contractor and internal FBC labour resources to complete the project. As described in the Application, the risk of labour unavailability is considered to be low given the current economic climate, FBC's established contractor relationships and access to internal resources. FBC expects the cost impact of any labour uncertainty will be minimal and within the project contingency of 15%.

As far as the cost of materials, as described in the Application, FBC believes that the risk of financial and schedule pressures is low because the likelihood of material lead-times and prices changing significantly is low given the current economic climate. The risk has been mitigated by developing preliminary equipment specifications, and obtaining quotations from vendors. FBC expects that the cost impact of materials delays in material procurement or increased cost of materials will be minimal and within the project contingency of 15%.

Risk: "Environmental risk associated with changing the oil system of the existing mechanical governor system"

The cost associated with this risk involves mainly the clean-up of an oil spill inside the plant and could range between $0.01 million to $0.04 million depending on the amount and location of the spill. FBC expects that the cost impact associated with this risk will be within the project contingency of 15%.

Risk: "As-found submerged turbine components may be in worse condition than expected."

The Company plans to conduct non-destructive testing (NDT) during the project construction when the units are fully disassembled. Considering the condition of the turbine runners and previous FBC experience with Unit 3 turbine runners, FBC considers the risk of the 9 turbine runners being in worse condition than anticipated as moderate. FBC has mitigated this risk by including the replacement of two of the turbine runners in the cost estimate at a cost of

approximately $1.3 million and the refurbishment of the remaining turbines at a cost of approximately $0.63 million. FBC expects that any cost variances associated with these replacement costs will be within the project contingency of 15%.

Risk: "There is a risk that the as-found condition on some components, especially the stator core, could be in an inoperable conditions on some Units"

As noted in the response to BCUC IR 1.35.2, FBC believes that there is only a low risk that the generator stator core would be in an inoperable condition and as such has not included an amount in the estimate for any generator stator replacement cost. FBC will conduct comprehensive testing of the generator stator of all units in order to make sure that the stator core condition is such that it warrants at least 20 more years of service life after the stator winding replacement. The approximate cost for a generator stator replacement, not including rewinding, is $0.9 million. The costs associated with this risk have not been accounted for within the project contingency of 15%.