



Diane Roy
Vice President, Regulatory Affairs

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

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

FortisBC
16705 Fraser Highway
Surrey, B.C. V4N 0E8
Tel: (604) 576-7349
Cell: (604) 908-2790
Fax: (604) 576-7074
Email: diane.roy@fortisbc.com
www.fortisbc.com

April 6, 2018

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

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Energy Inc. (FEI)

Project No. 1598917

2017 Price Risk Management Plan (PRMP) (the Application) and the 2018 PRMP (the Revised Application)

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

On June 13, 2017, FEI filed the Application referenced above. On January 5, 2018, FEI filed the Revised Application. In accordance with the British Columbia Utilities Commission Order G-22-18 setting out the amended Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to CEC IR No. 1.

If further information is required, please contact Mike Hopkins, Senior Manager, Price Risk & Resource Planning at (604) 592-7842.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachment

cc (email only): Commission Secretary
Registered Parties

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 1

1 **1. Reference: Exhibit B-1-2, page 4 and page 5**

In Order G-168-17, FEI was asked which objectives or a combination thereof should be used to assess the design and/or efficacy of FEI's hedging program:

- Manage price volatility;
- Manage supply security;
- Take a market position in anticipation of future commodity prices changes; or
- Other

FEI's objectives for its price risk management, which includes hedging, include the following:

- Mitigate market price volatility to support rate stability, and
- Capture opportunities to maintain commodity rates at historically low levels.

Managing Supply Security is Not One of FEI's Price Risk Management Objectives

Managing security of supply is primarily an objective of the Annual Contracting Plan (ACP), which outlines FEI's physical resource contracting strategies, as discussed in Section 4.1. Managing supply security helps FEI ensure ratepayers receive cost effective and reliable supply, which subsequently supports some degree of managing price volatility. However, the price management benefits are a secondary benefit of FEI's ACP. It is the ACP, which first determines the physical resources required to meet customers' load requirements. This typically includes contracting for physical resources including supply based on market index prices. Then, based on this market index pricing exposure, the hedging strategy is applied to reduce the impacts of any market price volatility and potentially lock in low forward market prices.

2

3 1.1 Please confirm the hedging program adds no risk to FEI's security of supply.

4

5 **Response:**

6 Confirmed.

7

8

9

10 1.1.1 If not confirmed, please explain why not.

11

12 **Response:**

13 Please refer to the response to CEC IR 1.1.1.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 2

1

2

3

4 1.2 Please identify if FEI has prioritized one of its objectives over the other.

5

6 **Response:**

7 Please refer to the response to BCUC IR 1.1.4.

8

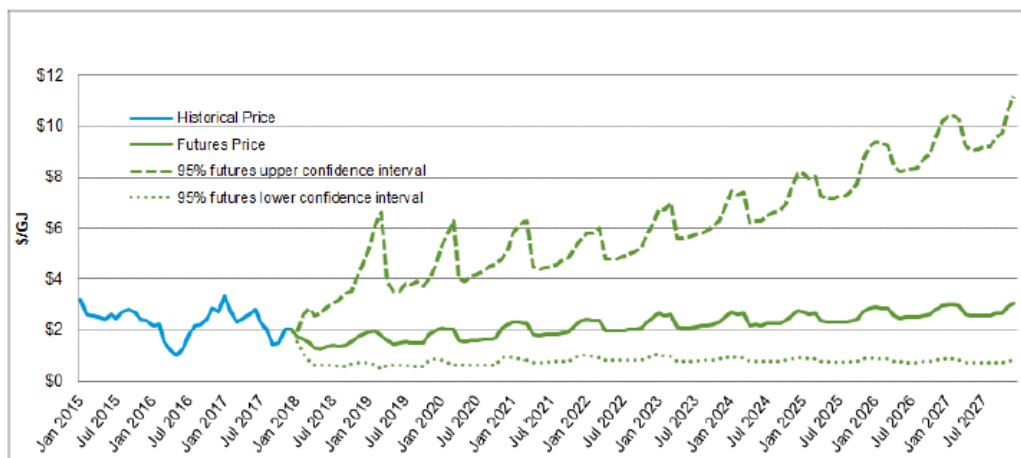
FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 3

2. Reference: Exhibit B-1-2, page 5 and page 11

Taking a Market Position is Not One of FEI's Price Risk Management Objectives

FEI's price risk management objectives and proposed hedging strategy are consistent with a "risk" view rather than a "market" view. By setting predefined hedging price targets based on consideration of gas producer break-even costs, historical prices relative to current price levels and FEI's commodity rate, FEI's hedging strategy is aligned with a risk view rather than a market view. A market view involves speculating on future price movements in attempt to capture gains. FEI does not try to predict the direction or magnitude of future market prices changes or whether the market prices may fall to more favourable levels. The objective of capturing opportunities to provide customers with more affordable rates is about helping maintain low, but not necessarily the lowest, rates for customers relative to where rates have been in the past.

Figure 3-6: AECO/NIT Price Probability Range



2.1.1 Please confirm that FEI would alter its hedging price targets if its market knowledge indicated that the market price would likely decline dramatically in the future?

Response:

FEI would consider altering its hedging price targets if there was market knowledge indicating that the market price would likely decline dramatically in the future. FEI would consider this information as well as several other factors in its determination of its hedging price targets. These include, for example, gas producer break-even costs, price probability ranges, market price forecasts and FEI's current and historical commodity rates as well as recent and current market prices, as discussed in Section 3.1 of the 2018 PRMP. Setting hedging price targets based purely on where FEI thinks market prices might go in the future would be speculation and more aligned with a "market view" rather than a "risk view".

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 4

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29

2.1.1.1 If not confirmed, please explain why not.

Response:

Please refer to the response to CEC IR 1.2.1.1.

2.1.2 If yes, please confirm that the hedging strategy includes a general expectation of future market prices and where FEI considers the current market price to be relative to both the past and the future.

Response:

FEI does not have an expectation of future market prices. Rather FEI has assessed the risks of adverse changes to market prices based upon consideration of forward market price probability ranges as well as gas producer break-even costs and FEI's recent commodity rates and this assessment is that there is a greater risk of price increases than price decreases. FEI is proposing to hedge against this risk.

2.1.3 If not, please explain why not.

Response:

Please refer to the response to CEC IR 1.2.1.2.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 5

1 **3. Reference: Exhibit B-1-2, page 8 and page 9**

3.1.3 Wide AECO/NIT Discount May Tighten

FEI purchases the majority of its gas supply based on AECO/NIT index pricing. The discount between Henry Hub, the North American benchmark hub, and AECO/NIT prices (i.e. the AECO/NIT basis) has continued to widen in the forward market prices in the past year. However, easing of pipeline constraints in the next five years to move excess supply from the WCSB could tighten the basis and increase AECO/NIT prices.

Forward AECO/NIT market prices have fallen recently as less natural gas supply from the WCSB is required for eastern U.S. and Canadian markets in the future due to the growth in gas supply and pipeline connections from the Marcellus and Utica shale regions. In addition, WCSB supply has increased at the same time.

AECO/NIT market prices are near their lowest levels in decades due to a combination of natural gas from the WCSB being pushed back from the east, increasing Alberta supply due to lower break-even costs, and Alberta pipeline constraints. The pipeline constraints within the WCSB to access downstream markets will continue to influence the discount between Henry Hub and AECO/NIT prices for the near future. The AECO/NIT basis will continue to be seasonally pressured during summer pipeline maintenance season causing lower prices, relative to Henry Hub, in those months.

However, pipeline developments over the next five years could significantly alleviate price pressure and start to tighten the AECO/NIT basis, as shown in the figure below.

2

3 3.1 Does the Forward AECO/NIT market price reflect the prospective easing of
4 pipeline constraints?

5

6 **Response:**

7 FEI believes that the forward AECO/NIT market price reflects the potential easing of pipeline
8 constraints. This is reflected in Figure 3-4 of the 2018 PRMP with the AECO/NIT and Station 2
9 forward market prices moving up relative to Henry Hub prices from 2017 to 2024. However,
10 some of these potential pipeline projects that may alleviate the constraints are still proposals at
11 this time and have yet to be finalized with committed start dates and contract volumes. Once
12 there is more certainty regarding the volume and timing of these pipeline projects, forward
13 market prices may increase from current levels. If these projects are delayed or do not proceed,
14 then forward market prices may decrease from current levels. Furthermore, the current low
15 market price environment reflects market prices at AECO/NIT that may not be sustainable for
16 some gas producers, especially those without liquids-rich or oil production. This is because
17 many gas producers that do not receive the additional benefits from market oil prices as well as
18 gas prices may incur gas production costs above current gas market prices. The market
19 anticipates that some gas producers may need to cut back on their gas supply which will help
20 increase market gas prices. Therefore, further tightening of the forward AECO/NIT basis, i.e.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 6

1 increasing AECO/NIT gas prices, may occur when/if these projects actually proceed and supply
2 adjusts.

3

4

5

6 3.1.1 Please explain why or why not.

7

8 **Response:**

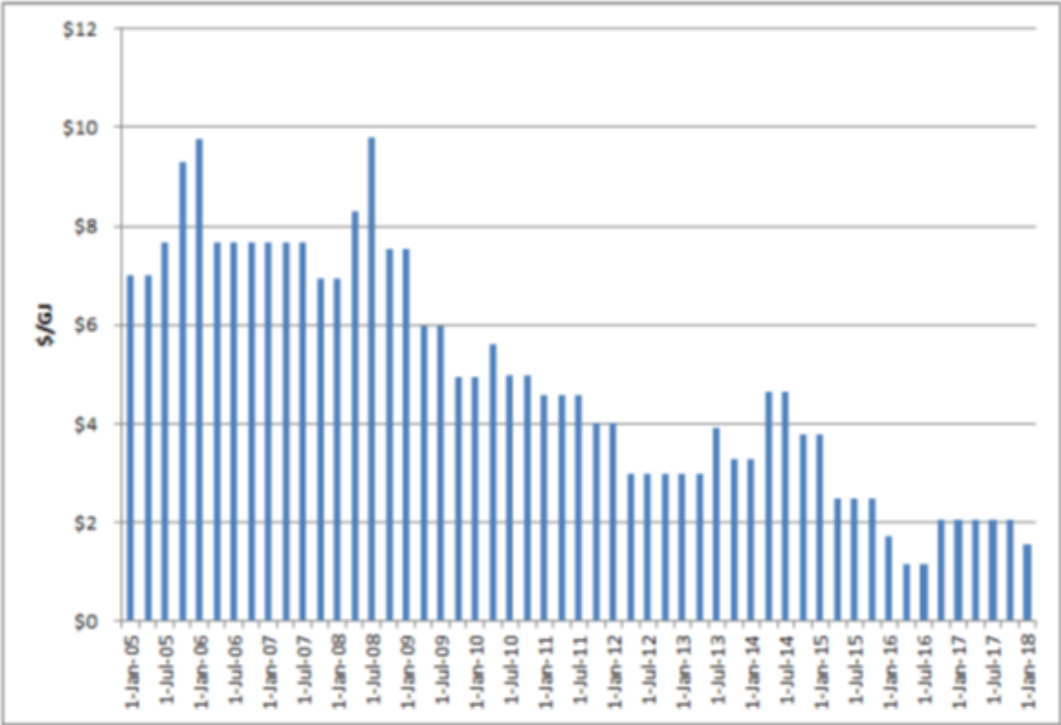
9 Please refer to the response to CEC IR 1.3.1.

10

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 7

1 **4. Reference: Exhibit B-1-2 page 12**

Figure 3-7: FEI Historical Commodity Rate



2

3 4.1 Please provide Figure 3-7 monthly and overlay this with the FEI customer cost of

4 gas.

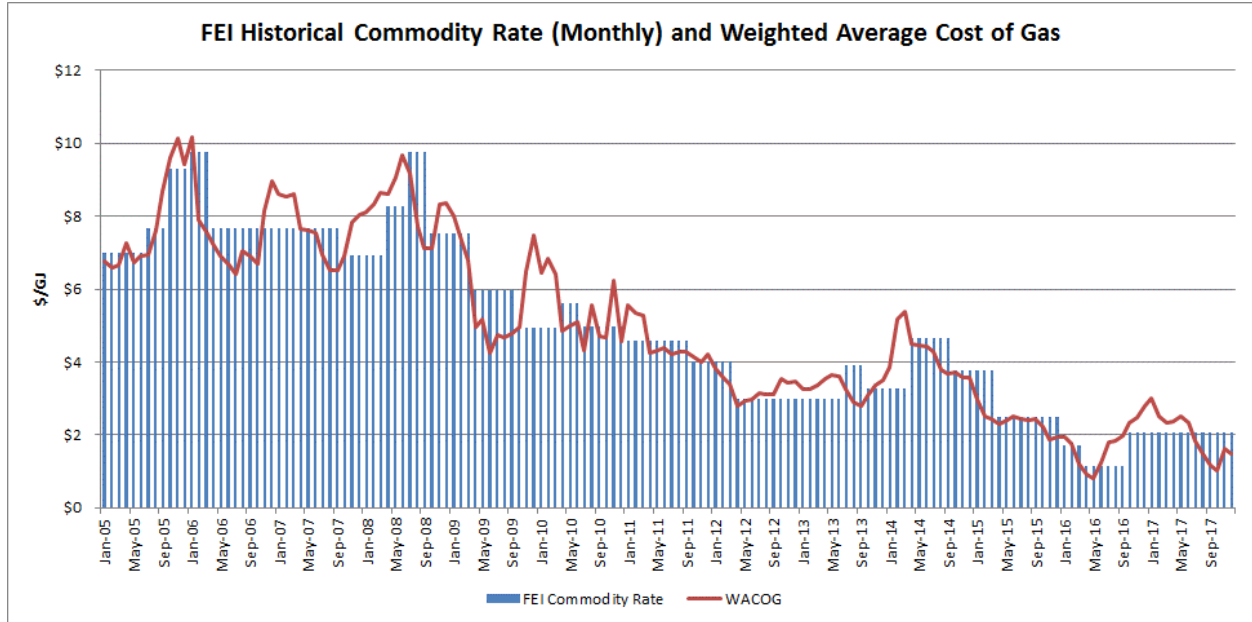
5

6 **Response:**

7 The following shows Figure 3-7 updated to present the monthly commodity rate and an overlay

8 with the actual weighted average cost of gas in FEI's commodity portfolio.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 8



1

2

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 9

1 **5. Reference: Exhibit B-1-2, page 12 and 13**

FEI is sensitive to the impacts increases in commodity rates can have on customers' bills and that increases of more than 10 percent, as has occurred in recent years, may be difficult for some customers. In the shale gas era in recent years, the impact of market price volatility has caused commodity rate increases that have amounted to more than 10 percent bill increases for customers. This has occurred twice during the shale gas era, including July 2013, when the cost of gas for residential customers increased from the previous quarter by \$0.94 per GJ or 31 percent to increase the average annual bill by 10 percent and also in April 2014 when the cost of gas increased from the previous quarter by \$1.37 per GJ or 42 percent to increase the average annual bill by 14 percent. As of January 1, 2018, the cost of gas for residential

customers is \$1.549 per GJ. At this level, a commodity rate increase of only \$0.82 per GJ or 53 percent would cause the annual average bill to increase by 10 percent. Implementing the proposed hedging strategy with hedging price targets aligned with the commodity rate would help mitigate significant bill increases in the future.

2
3 5.1 Please clarify whether or not the 2 instances of bill increases over 10% above
4 involved commodity price changes from the prior quarter or FEI cost of gas to
5 customers changes from the prior quarter.

6
7 **Response:**

8 The mechanism used in the quarterly commodity rate reviews includes the determination of the
9 rate impact of the projected CCRA balance at the end of the current period plus the rate impact
10 of the forecast over / under recovery of FEI's gas costs for the next 12 months compared to the
11 gas cost recoveries at the existing rate.

12 The table below shows that in the 2 instances referenced the main driver triggering the large
13 rate increase was the forward market pricing for the 12-month prospective periods. The
14 projected CCRA balances at the end of each current period were relatively small, amounting to
15 only 9 percent and 10 percent of the increase, respectively.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 10

July 1, 2013 Cost of Gas (Commodity Cost Recovery Charge) Increase	Forecast Period	Approved Rate	Component
2013 Q2 Gas Cost Report (\$/GJ)	July 2013 to June 2014	Component	Percentage
Forecast Commodity Costs with 12-month forward prices	\$ 3.829		
Projected CCRA Deferral Deficit @ June 30, 2013	0.084		
Approved Commodity Cost Recovery Charge effective July 1, 2013	\$ 3.913		
Previous Commodity Cost Recovery Charge in effect since April 1, 2012	2.977		
Approved July 1, 2013 rate increase	\$ 0.936		100%
Rate increase component - Deferral		\$ 0.084	9%
Rate increase component - Commodity Cost		\$ 0.852	91%
April 1, 2014 Cost of Gas (Commodity Cost Recovery Charge) Increase	Forecast Period	Approved Rate	Component
2014 Q1 Gas Cost Report (\$/GJ) ¹	April 2014 to March 2015	Component	Percentage
Forecast Commodity Costs with 12-month forward prices	\$ 4.506		
Projected CCRA Deferral Deficit @ March 31, 2014	0.135		
Approved Commodity Cost Recovery Charge effective April 1, 2014	\$ 4.640		
Previous Commodity Cost Recovery Charge in effect since October 1, 2013	3.272		
Approved April 1, 2014 rate increase	\$ 1.368		100%
Rate increase component - Deferral		\$ 0.135	10%
Rate increase component - Commodity Cost		\$ 1.234	90%

¹ FEI proposed using a 24-month timeframe in setting the April 2014 rate; the Commission denied that request. The approved rate was based on the 12-month forecast period .

5.2 Please provide the customer bill rates by month for the last 10 years.

Response:

Please refer to Attachment 5.2 for a functional Excel spreadsheet.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 11

1 **6. Reference: Exhibit B-1-2 page 13**

The survey indicates that customers generally, at this time, have less concern over natural gas bills than other household expenditures such as gasoline, groceries, electricity, and auto insurance⁶. However, the results indicate that customers appear fairly sensitive to increases to their gas bill. The majority of customers surveyed indicated that they would definitely or probably make some changes to their household behavior to offset bill increases of 25 percent or more⁷. Customers also indicated they would prefer that FEI make smaller, more frequent adjustments to the commodity rate, rather than less frequent but possibly larger adjustments⁸.

The responses in the survey point to a willingness by many customers to pay a small premium for bill stability. The survey indicates that 62 percent would be willing to pay a small premium for bill stability while 31 percent indicated they would not be willing to pay a premium and 7 percent were uncertain⁹. The survey results show that, on average, residential customers would be willing to pay up to 3.6 percent each month and small commercial customers would be willing to pay up to 4.6 percent each month for greater stability in their natural gas bill¹⁰. This translates into an average of about 19 to 24 percent premium on the commodity rate component of the bill¹¹.

⁶ Appendix A page 23 – Concern About Price Increases

⁷ Appendix A page 30 – Impact of Natural Gas Bill Increases on Behavior

⁸ Appendix A page 33 – Cost of Gas Rate Adjustment Preferences

⁹ Appendix A page 28 - 62% of All Residents includes 19% that "Like it" and 43% that state "It's ok"

¹⁰ Appendix A page 27 – Residential customers willing to pay 3.6% and Commercial customers willing to pay 4.6% a month

¹¹ 3.6% to 4.6% of total bill per GJ (\$8.241/GJ) equals \$0.30/GJ to \$0.38/GJ, which, when divided by commodity rate component per GJ (\$1.549/GJ), is about 19% to 24%.

2

3 6.1 How did FEI define 'bill stability' to its customers in the above survey?

4

5 **Response:**

6 The concept of bill stability was conveyed to survey respondents through the preamble to
7 question 12 which discusses how natural gas bills can go up and/or down several times a year
8 even if customer usage stays the same.

9

10

11

12 6.2 Please confirm or otherwise explain that FEI is referencing customer sensitivity to
13 an increase of 25% or more to their total gas bill in the above clipping.

14

15 **Response:**

16 Confirmed.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 12

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

6.3 Please confirm that the commodity accounts for about 18.7963% of the total natural gas bill. Please distinguish between residential and commercial customers if there is a difference.

Response:

FEI cannot confirm this exact percentage to be correct as bill components are dependent on the rate schedule (and applicable charges) and the monthly/annual consumption used for the calculation of the monthly/annual bill. Please refer to the response to BCUC IR 1.11.1, which outlines the current FEI cost of gas charge per gigajoule for a Rate Schedule 1 Residential customer. This shows that, based on a monthly consumption of 6.4 GJ, the cost of gas charge accounts for approximately 15 percent of the applicable total monthly bill. The current FEI cost of gas charge for a Rate Schedule 2 Small Commercial customer based on a monthly consumption of 28.3 gigajoules accounts for approximately 17 percent of the applicable total monthly bill.

6.4 Please confirm or otherwise explain that footnote 11 indicates that FEI backwards calculated the acceptable increase in commodity rates assuming that customers were willing to pay a premium on their 'total bill', and not just a premium on the cost of gas.

Response:

Confirmed.

6.5 Please confirm or otherwise explain that customer surveys of willingness to pay always exceeds by a large margin the customer choice to pay for the service.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 13

1 **Response:**

2 It is difficult to make a generalized statement that, “customer surveys of willingness to pay
3 always exceeds by a large margin the customer choice to pay for the service”. There are,
4 however, factors which may lead to a disparity between a higher stated willingness to pay and
5 lower actual results. These include a lack of consumer awareness of the product, inertia and a
6 tendency of respondents to want to support a “good” cause. It can also depend upon the
7 wording of the question. For example, there is some evidence that different responses are
8 achieved when the question is changed from “how much would **you** be willing to pay” to “how
9 much would **others** be willing to pay”. In the survey Sentis purposely used neutral language by
10 asking, “How much do you think it is reasonable to pay”.

11

12

13

14 6.6 Please provide all research FEI has done comparing customer expressed
15 willingness to pay on a survey versus customer’s actual choice to make the
16 payment.

17

18 **Response:**

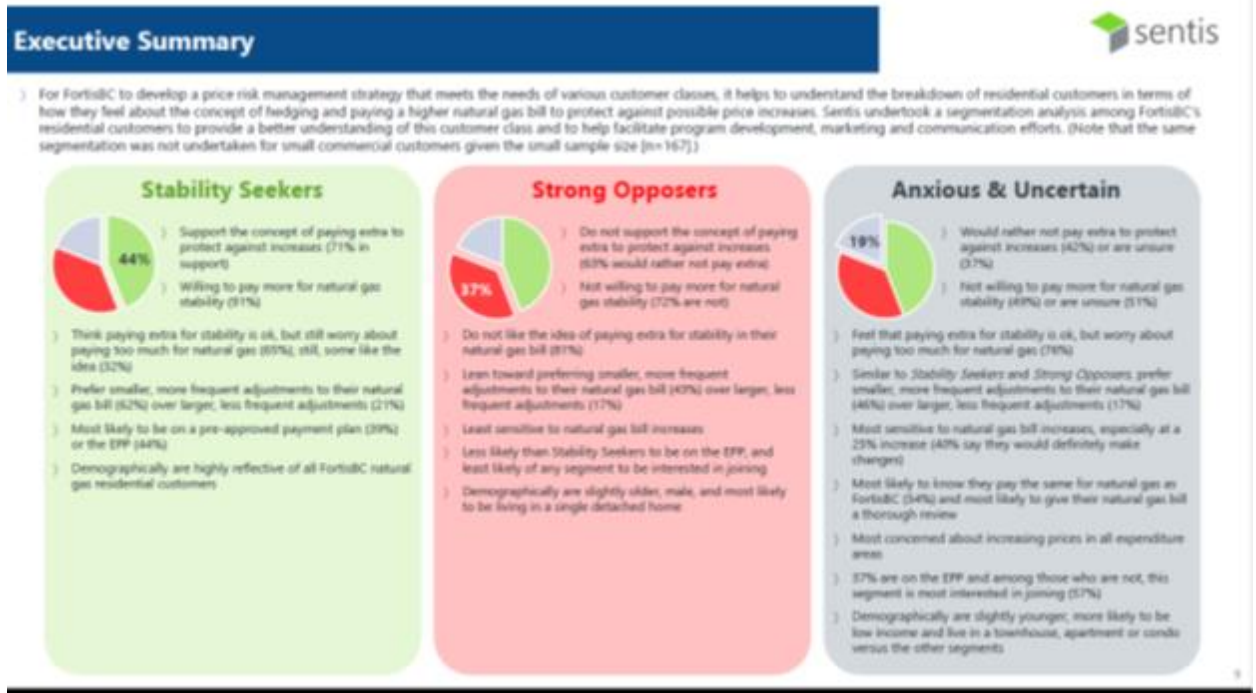
19 FEI has undertaken three surveys looking at customers’ willingness to purchase Renewable
20 Natural Gas (RNG). The first was conducted in 2009 prior to the design and implementation of
21 the RNG program and therefore survey participants were asked about willingness to pay for
22 RNG without the knowledge of exactly how the program would be structured. The second
23 survey was conducted in 2012 approximately 18 months after the launch of the RNG program.
24 Both surveys indicated that in a perfect market, customers being both aware of and having
25 understanding of the program that potentially 16 percent of customers would be willing to pay.

26 The most recent research project (2017 RNG Insight Report) looked at customers’ willingness
27 and intent to purchase RNG, and compares it with the actual participation rate in the RNG
28 program. The 2017 RNG Insight Report found that approximately 2.3 percent of residential
29 customers were willing to purchase RNG and indicated a likelihood to do so. That compares to
30 an actual participation rate at that time of 0.7 percent. The average participation rate for similar
31 programs undertaken by other utilities is between one and two percent. The survey also found
32 that only one-in-three survey participants had any type of familiarity with the RNG program and
33 this is likely a factor in the difference between the stated intent to participate and the actual
34 participation rate.

35

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 14

7. Reference: Exhibit B-1-2, Appendix A page 9



7.1 How did FEI initially segregate respondents into their respective groups of Stability Seekers, Strong Opponents and Anxious & Uncertain.

Response:

In marketing research, cluster analysis is the task of grouping a set of individuals in such a way that individuals in the same group (called a cluster) are more similar (in some sense or another) to each other than to those in other groups (clusters). The variables used as input into the cluster analysis could be motivational, attitudinal or behavioural – or some combination of the three. In this survey the clusters were based on three attitudinal survey questions (11, 12 and 13), reproduced here.

A **k-means cluster method** was used in this study to produce the segments. k-means is a type of cluster segmentation in which “k” represents the desired number of clusters to be produced using an algorithm that assigns cases (or people) based on the distance between the case and the mean for each cluster.

Q11. Some products fluctuate in price because they are traded on the open market, which means no one knows for sure if the price will go up or down. When it comes to paying for a product that has a fluctuating price, which most closely matches your point-of-view?

RANDOMIZE TWO OPTIONS

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 15

1 1. I would rather pay a bit extra each month to protect against possible, larger monthly
2 increases in the future

3 2. I would rather **not** pay a bit extra each month and not be protected against possible, larger
4 monthly increases in the future

5 98. Don't know

6 **Q12.** Paying extra to ensure stable bills/payments applies to natural gas. Since it is possible for
7 natural gas prices to fluctuate , this could mean your natural gas bill could go up and/or down
8 several times a year even if your usage remains the same.

9 Knowing this, how much more do you think is reasonable to pay each month to **provide greater**
10 **stability in your natural gas bill?** Type in the percentage increase below

11 Paying _____% more each month on my natural gas bill is reasonable **RANGE IS 1-**
12 **100%**

13 ☐ Zero/ Do not want to pay more for greater stability

14 ☐ Don't know

15 **Q13.** Generally, what do you think of the idea of paying extra now to ensure a more stable
16 nature gas bill? Select only one.

17 1. I like it, keeping **IF RES:** my / **IF BUS:** our natural gas bill stable should be a top priority for
18 FortisBC

19 2. It's ok, but I worry that **IF RES:** I / **IF BUS:** we will end up paying too much for natural gas

20 3. I don't like it, FortisBC should just buy the natural gas needed at the market rate and let it
21 fluctuate

22 97. No opinion/ doesn't matter to me.

23

24

25

26 7.2 Could FEI develop an option whereby Strong Opposers could opt out and
27 Stability Seekers could opt in? Please explain why or why not.

28

29 **Response:**

30 In the past, FEI has explored the option of providing a hedged commodity rate for only those
31 customers that want greater rate stability. As discussed in Section 7.2 of the FEI 2014 Price

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 16

Risk Management Review Report submitted to the Commission on October 20, 2014, FEI's customer research indicates that customers generally prefer fewer rate options and have a low understanding of their natural gas bill, which would make alternative offerings challenging for FEI. Furthermore, there could be significant requirements and costs relating to customer education, administration and systems. Therefore, FEI recommends price risk management on a portfolio basis for its commodity rate customers rather than tailoring specific price risk management strategies to optional commodity rate offerings.

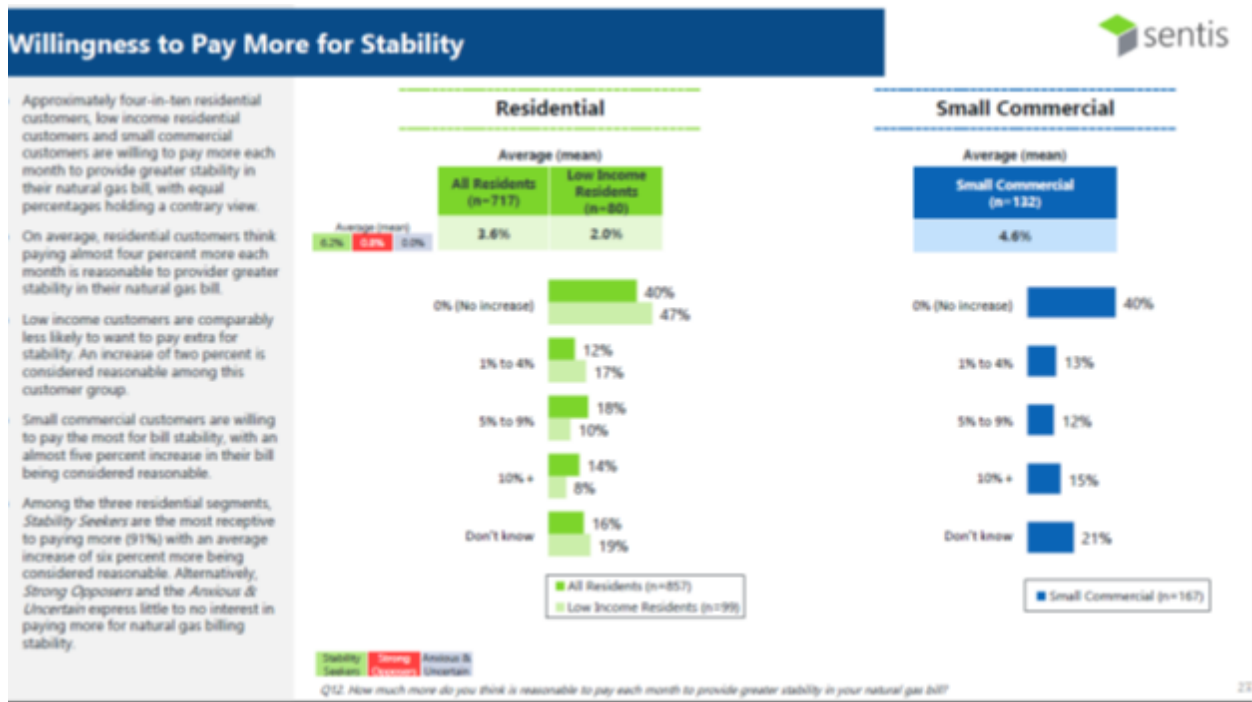
7.2.1 If yes, please provide an overview of how such a program could be managed.

Response:

Please refer to the response to CEC IR 1.7.2.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 17

1 **8. Reference: Exhibit B-1-2 Appendix A page 27**



2

3 8.1 Please provide the full dataset for the Appendix A results or indicate where in the

4 application it may be found.

5

6 **Response:**

7 Please refer to Attachment 8.1 for functional spreadsheets with the requested information.

8

9

10

11 8.2 Please provide (or indicate where in the application) the dataset, calculations

12 and the sources of information used in making the statement that 'On average

13 residential customers think paying almost four percent more each month is

14 reasonable to provide greater stability in their natural gas bill'.

15

16 **Response:**

17 The statement "On average residential customers think paying almost four percent more each

18 month is reasonable to provide greater stability in their natural gas bill" is based on the results

19 from question 12.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 18

Q12. *Paying extra to ensure stable bills/payments applies to natural gas. Since it is possible for natural gas prices to fluctuate, this could mean your natural gas bill could go up and/or down several times a year even if your usage remains the same.*

*Knowing this, how much more do you think is reasonable to pay each month to **provide greater stability in your natural gas bill**? Type in the percentage increase below*

*Paying _____% more each month on my natural gas bill is reasonable **RANGE IS 1-100%***

☐ *Zero/ Do not want to pay more for greater stability*

☐ *Don't know*

A mean score was derived from the participant responses. The mean score was calculated as follows:

- Only included those respondents who provided a response (i.e. those responding 'don't know' **were not included** in the calculation).
- Those responding with 'Zero/do not want to pay more for greater stability' **were included** in the mean calculation.

The table below details the sample or base sizes for the calculation.

Respondent Group	# responding to Q12	# responding 'Don't Know' to Q12	# included in mean calculation
All residents	857	140	717
Low income residents	99	19	80
Small commercial customers	167	35	132

The formula used to calculate the mean score for each respondent group is as follows:

Mean Score = (Sum of all responses to Q12 among those giving a valid response [i.e. excluding Don't Know]) ÷ (Total number of respondents answering Q12 excluding those responding with Don't Know)

A simplified example is below:

Imagine 5 respondents answered question 12 and their responses were as follows:

Respondent 1:3

Respondent 2:Don't Know

Respondent 3:2

Respondent 4:0

Respondent 5:2

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 19

1 *The calculation would be as follows: $(3+2+0+2) \div 4 = 1.75$*

2 Please refer to Attachment 8.1 for the dataset results for this question.

3

4

5

6 8.3 Please rationalize the All Residents N of 717 with the All Residents N of 857 both
7 of which are shown on the page.

8

9 **Response:**

10 857 is the total number of residential customers who answered the question, whereas the mean
11 score is based on the 717 who provided a price payment range. Those who answered “Don’t
12 Know” were excluded.

13

14

15

16 8.4 Please rationalize the Low Income Residents N of 80 with the Low Income
17 Residents of 99 both of which are shown on the page.

18

19 **Response:**

20 99 is the total number of low-income residential customers who answered the question,
21 whereas the mean score is based on the 80 who provided a price payment range. Those who
22 answered “Don’t Know” were excluded.

23

24

25

26 8.5 Please rationalize the Small Commercial N of 167 with the Small Commercial N
27 of 132 both of which are shown on the page.

28

29 **Response:**

30 167 is the total number of commercial customers who answered the question, whereas the
31 mean score is based on the 132 who provided a price payment range. Those who answered
32 “Don’t Know” were excluded.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 20

1

2

3

4 8.6 Did FEI survey large commercial customers? Please explain why or why not.

5

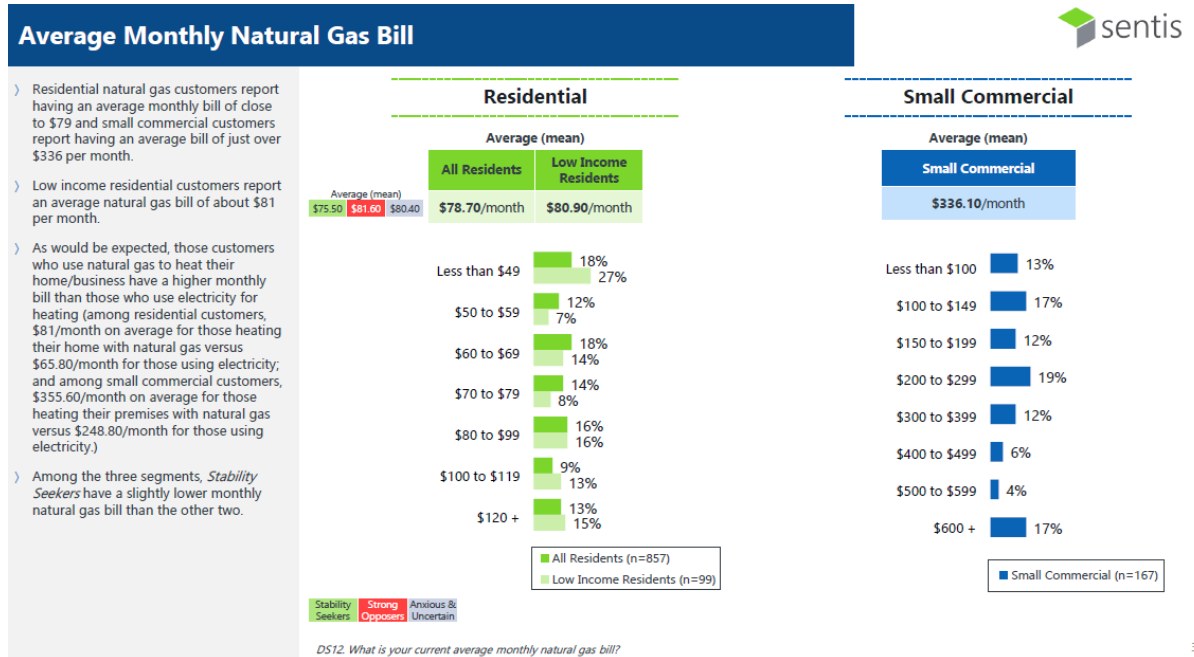
6 **Response:**

7 Rate Schedule 3 customers (large commercial) were included in the sample frame. Large
8 commercial customers in Rate Schedule 23 were excluded from the survey as they are
9 transportation customers only (i.e. these customers purchase their commodity supply from a
10 marketer or shipper agent rather than FEI).

11

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 21

1 9. **Reference: Exhibit B-1-2 Appendix A page 35 and Appendix A Survey page 4**



Survey Page 4

QDS12. What is your current average monthly natural gas bill? *Please enter in a round dollar amount (no cents).*

If you don't know what your average bill is, please provide your best estimate. IF RES: For your reference, the average monthly natural gas bill is between \$55 and \$80 for a household with 4 people in a 2,200 square foot home. IF BUS: For your reference, the average monthly natural gas bill is between \$165 and \$240 for an organization of your size.

\$_____ / month **RANGE IS 11-999 (9999 FOR BUSINESSES)**

2

3 9.1 Please confirm that a customer responding to QDS12 on page 4 of the Survey in
4 Appendix A (and shown on page 35 of Appendix A) were reporting their total
5 monthly natural gas bill, and not just the commodity/Cost of Gas portion.

6

7 **Response:**

8 Confirmed.

9

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 22

1 **10. Reference: Exhibit B-1-2, Appendix A, survey page 6**

Awareness Of Natural Gas Pricing

Your natural gas bill is made up of several different components.

One component of the bill is the Cost of Gas, which is the price FortisBC pays for natural gas on the open market. These charges are passed on to customers without a mark-up. All customers, unless they have signed a contract with a natural gas marketer, pay the same rate for the Cost of Gas.

**In the rest of the survey we will be talking about the Cost of Gas part of the bill.
SHOW EXPLANATION ABOVE AND QUESTIONS 5 & 6 ON THE SAME SCREEN**

2

- 3 10.1 Please confirm that the statement ‘In the rest of the survey we will be talking
4 about the Cost of Gas part of the bill’ is the primary statement in the survey that
5 distinguishes that the remainder of the survey is evaluating the response to a rise
6 in Cost of Gas rather a rise in the total natural gas bill.

7

8 **Response:**

9 The purpose of the statement, “in the rest of the survey we will be talking about the Cost of Gas
10 part of the bill’ is to prime participants that the following questions will focus on the potential
11 impact of changes of gas prices, but within the context of their overall bill.

12

13

14

- 15 10.2 Please confirm that this statement occurs prior to the survey questions regarding
16 tolerance for natural gas bill fluctuations (7,8,9) and the questions on preferences
17 for managing natural gas fluctuations (11,12,13,14).

18

19 **Response:**

20 Confirmed.

21

22

23

- 24 10.3 Please confirm that the customer was at no time provided with information
25 regarding the proportion that the natural gas commodity accounts for in their total
26 natural gas bill.

27

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 23

1 **Response:**

2 Confirmed.

3

4

5 10.3.1 If not confirmed, please identify in what part of the survey the customer
6 was provided with, and/or identified accurate awareness as to the
7 relative size and value of the commodity portion of their natural gas bill.

8

9 **Response:**

10 The customer was not provided with information about the relative size and value of the
11 commodity portion of their natural gas bill. The intent of the survey was to gauge customers'
12 tolerance of natural gas bill fluctuations caused by an increase in the cost of the commodity.
13 Providing a price per GJ or estimating what percentage of the bill was due to the commodity
14 cost was likely to cause confusion for respondents and to distract them from considering the
15 increase on their total bill.

16

17

18

19 10.4 Please confirm that FEI did not provide customers who were surveyed with data
20 on FEI's cost of gas charged to the customer and any proposed hedging impact
21 on the customer's cost of gas and total bill over time.

22

23 **Response:**

24 Confirmed. As discussed in the response to CEC IR 1.10.3.1, providing the data on the
25 commodity cost was likely to confuse the respondents. The intent of the survey was to
26 determine customers' tolerance for bill instability and their willingness to pay extra to maintain
27 bill stability. FEI also does not know what the hedging program's impacts on the cost of gas will
28 be, so FEI could not have provided this information in the survey.

29

30

31

32 10.4.1 If not confirmed, please identify in what part of the survey the customer
33 was provided with this information.

34

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 24

1 **Response:**

2 Please refer to the response in CEC IR 1.10.4.

3

4

5

6 10.4.1.1 Please identify is customers demonstrated understanding of
7 this information.

8

9 **Response:**

10 Please refer to the response in CEC IR 1.10.1 and 1.10.3.

11

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 25

1 **11. Reference: Exhibit B-1-2 Appendix A Survey page 6 and page 6 and page 7**

Tolerance Re: Natural Gas Bill Fluctuations

Because FortisBC buys natural gas on the open market it is subject to price fluctuations.

Imagine that for next year your average **monthly** natural gas bill was going to increase from **[AMOUNT FROM QDS12]** to **[AMOUNT FROM QDS12 x1.25]** due to an increase in the cost of natural gas and **not** because of any increase in usage on the part of your **IF RES:** household/ **IF BUS:** organization.

Q7. How likely would you be to change your **IF RES:** household's/ **IF BUS:** organization's behaviour (such as turning down the thermostat, cutting back spending in other areas, trying to use your natural gas appliances/equipment less often, etc.) to help offset this increase in your bill?

- 5. Definitely would make some changes
- 4. Probably
- 3. Might or might not
- 2. Probably not
- 1. Definitely would not make any changes
- 98. Don't know/ not sure

6

ASK Q8 IF Q7=1, 2, 3, OR 4. OTHERWISE GO TO Q10

Q8. And what if for the next year your average monthly bill went from **[AMOUNT FROM QDS12]** to **[AMOUNT FROM QDS12 x1.5]**? Would you...

- 5. Definitely would make some changes
- 4. Probably
- 3. Might or might not
- 2. Probably not
- 1. Definitely would not make any changes
- 98. Don't know/ not sure

ASK Q9 IF Q8=1, 2, 3, OR 4. OTHERWISE GO TO Q10

Q9. And finally, what if for the next year your average monthly bill went from **[AMOUNT FROM QDS12]** to **[AMOUNT FROM QDS12 x 2]**? Would you...

- 5. Definitely would make some changes
- 4. Probably
- 3. Might or might not
- 2. Probably not
- 1. Definitely would not make any changes
- 98. Don't know/ not sure

2

3 **11.1 Please confirm that the statement**

4 "Imagine that for the next year your average monthly natural gas bill was going to
5 increase from **[AMOUNT FROM QDS12]** to **[AMOUNT FROM QDS2 x 1.25]** due

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 26

to an increase in the cost of natural gas and not because of any increase in the usage on the part of your IF RES: household/ IF BUS: organization” implies that the total customer bill would rise by 25%, 50% or 100% as a result of an increase in the Cost of Gas.

Response:

The series of questions about tolerance of natural gas bill fluctuations (questions 7, 8 and 9) are based on bill increases of 25 percent, 50 percent and 100 percent respectively due exclusively to increases in the cost of natural gas. Therefore, the actual percentage increase in the cost of gas would be greater than the percentages stated above as other charges such as delivery, storage and transport, and taxes would remain unchanged on the overall bill.

11.2 Please confirm that a discussion of increases in the total monthly gas bill is inconsistent with the prior statement that the remainder of the survey would be ‘talking about the Cost of Gas part of the bill’.

Response:

The discussion of increases in the total monthly bill is not inconsistent with the prior statement that the remainder of the survey would be “talking about the Cost of Gas part of the bill”. The preamble to question 7 is explicit that the bill increase is purely due to an increase in the cost of natural gas rather than increased consumption.

11.3 Please confirm that to the extent customers provide their total natural gas bill in response to question QDS12, and not just the commodity portion, customers could be imagining increases of 25%, 50% and 100% to their total bill when responding to Q7, Q8 and Q9.

Response:

Confirmed.

Respondents were presented with increases of 25 percent, 50 percent and 100 percent on their total bill. The increase intervals of 25 percent and 50 percent were chosen to represent commodity prices experienced in the period 2008 to 2018 and the 100 percent level represented

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 27

an outlier price increase. Using the upper (\$80 per month) and the lower (\$55 per month) ranges of bill amounts described in the preamble to question QSD12, the 25 percent and 50 percent increase levels translate into commodity prices ranging between \$4.60 and \$7.65 per GJ while the 100 percent increase translates into prices per GJ of between \$11.80 and \$13.45.

11.3.1 If not confirmed, please explain why not.

Response:

Please refer to the response to CEC IR 1.11.3.

11.4 Please calculate the percentage increase that would be required in the Cost of Gas at present for a customer to experience an increase of 25%, 50% and 100% in their total natural gas bill. Please provide for both residential and commercial customers.

Response:

Please refer to the table below which outlines the required per gigajoule and percentage increases in the Cost of Gas per GJ for FEI Rate Schedules 1 (residential), 2 (small commercial) and 3 (large commercial) to result in corresponding monthly burner-tip impacts of 25 percent, 50 percent and 100 percent.

Monthly Burner-tip Impact ¹	FEI Cost of Gas per GJ ²	Rate Schedule 1			Rate Schedule 2			Rate Schedule 3		
		\$/GJ Increase	% Increase	Calculated Cost of Gas per GJ	\$/GJ Increase	% Increase	Calculated Cost of Gas per GJ	\$/GJ Increase	% Increase	Calculated Cost of Gas per GJ
25%		\$2.491	161%	\$4.040	\$1.746	113%	\$3.295	\$1.391	90%	\$2.940
50%	\$1.549	\$4.983	322%	\$6.532	\$3.493	226%	\$5.042	\$2.782	180%	\$4.331
100%		\$9.967	643%	\$11.516	\$6.986	451%	\$8.535	\$5.564	359%	\$7.113

¹ Average monthly bills are inclusive of applicable taxes.

² Current BCUC approved FEI Cost of Gas rate per GJ of **\$1.549** per GJ effective January 1, 2018 applicable to Rate Schedules 1 to 7.
Slight differences may exist due to rounding.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 28

1 11.4.1 Please discuss the likelihood of an increase occurring in the price of the
2 natural gas commodity over the next five years that would cause an
3 increase of 25%, 50% and 100% in the total natural gas bill.

4
5 **Response:**

6 As shown in the table in response to CEC IR 1.11.4, market prices at AECO/NIT would have to
7 be in the range of \$3-\$4 per GJ for a 25 percent increase, or \$4.50 - \$6.50 per GJ for a 50
8 percent increase, or \$7 - \$11.50 for a 100 percent increase in the total natural gas bill.

9 Figure 3-6 in the 2018 PRMP shows AECO/NIT price probability range of \$1 per GJ average
10 lows and \$4 per GJ average highs for the next five years. There is a greater likelihood of
11 market prices increasing during the next five years, with the most likely increase being a high of
12 25 percent in the total natural gas bill. Further increases in the natural gas bill beyond 25
13 percent have a higher probability of occurring after 5 years. Please also refer to the response to
14 BCUC IR 1.22.1.

15
16

17

18 11.5 Please confirm or otherwise explain that FEI has no reason to expect that market
19 prices will increase to a level which could increase total bills by up to 25%, 50%
20 or 100% in the next 5 years.

21
22 **Response:**

23 Please refer to the response to CEC IR 1.11.4.1.

24
25

26

27 11.6 Please confirm that FEI's survey questions regarding tolerance for rate
28 fluctuations did not address the possibility of bill reductions.

29
30 **Response:**

31 Confirmed.

32 There were two primary reasons why respondents were not asked about bill reductions. First, it
33 was considered less likely that respondents would be concerned about declines in their bills.
34 Second, due to current low commodity prices, commodity costs represent less than one quarter

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 29

1 of the overall bill, therefore at the time of the survey anything greater than a 25 percent decline
2 would be impossible.

3
4
5
6 11.6.1 If confirmed, please explain why not.
7

8 **Response:**

9 It was decided that asking customers' tolerance for bill decreases was unlikely to provide much
10 insight. The survey results support that view with two-thirds of both residential and commercial
11 customers perceiving that commodity prices have increased over the past decade and greater
12 than one-half indicated concerns about future increases; results showed residential (54 percent)
13 and commercial (63 percent) customers being concerned about future increases.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 30

12. Reference: Exhibit B-1-2, Appendix A survey page 8

ASK ALL

Q11. Some products fluctuate in price because they are traded on the open market, which means no one knows for sure if the price will go up or down. When it comes to paying for a product that has a fluctuating price, which most closely matches your point-of-view? **RANDOMIZE TWO OPTIONS**

1. I would rather pay a bit extra each month to protect against possible, larger monthly increases in the future
2. I would rather **not** pay a bit extra each month and not be protected against possible, larger monthly increases in the future
98. Don't know

Q12. Paying extra to ensure stable bills/payments applies to natural gas. Since it is possible for natural gas prices to fluctuate, this could mean your natural gas bill could go up and/or down several times a year even if your usage remains the same.

Knowing this, how much more do you think is reasonable to pay each month to **provide greater stability in your natural gas bill**? *Type in the percentage increase below*

Paying _____% **more** each month on my natural gas bill is reasonable **RANGE IS 1-100%**

- ☐ Zero/ Do not want to pay more for greater stability
- ☐ Don't know

Q13. Generally, what do you think of the idea of paying extra now to ensure a more stable nature gas bill? *Select only one.*

1. I like it, keeping **IF RES:** my / **IF BUS:** our natural gas bill stable should be a top priority for FortisBC
2. It's ok, but I worry that **IF RES:** I / **IF BUS:** we will end up paying too much for natural gas
3. I don't like it, FortisBC should just buy the natural gas needed at the market rate and let it fluctuate
97. No opinion/ doesn't matter to me.

Q14. Which of the following best matches your opinion? *Select only one.* **RANDOMIZE TWO OPTIONS**

1. I prefer that FortisBC make **smaller, more frequent adjustments** to the Cost of Gas rate
2. I prefer that FortisBC make **less frequent adjustments** to the Cost of Gas rate **even if the change in the rate maybe larger each time**
97. Neither
98. Don't know

2

- 3 12.1 In question Q12 FEI requests information regarding the percentage increase
- 4 customers would find reasonable to ensure a more stable natural gas bill. Please
- 5 confirm that FEI has interpreted this response as referring to an increase in the

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 31

total natural gas bill, and not just an increase in the commodity portion of the natural gas bill.

Response:

Confirmed.

12.1.1 If not confirmed, please explain why not and rationalize FEI's statement on page 13 of the application and footnote 11.

Response:

Please refer to the response to CEC IR 1.12.1.

12.2 Please explain where FEI distinguished that the survey was at that point referring to a percentage increase in the total natural gas bill and not to a percentage increase in the Cost of Gas which was declared as the subject matter for the remainder of the survey on page 6 of the survey.

Response:

The respondent is made aware that the percentage increase is based on the overall amount of their bill both through the wording of the preamble to Question 12 ("this could mean **your natural gas bill** could go up and/or down...") and by the wording of Question 12 ("how much do you think is reasonable to pay each month to provide greater stability in **your natural gas bill?**").

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 32

1 **13. Reference: Exhibit B-1-2, page 13 and 14**

FEI has considered whether this cost premium is consistent with the potential cost of FEI's current opportunistic hedging strategy. By hedging near the low end of market prices in the current price environment, FEI does not expect hedges to be significantly out-of-the-money for an extended period and believes there is also the likelihood of hedging gains rather than costs over time. Therefore, FEI expects that, over time, any potential premium in gas costs arising

from the hedging program would likely be lower than the average customer premium tolerances as indicated in the survey.

The survey results support FEI's view that, at this time, an opportunistic hedging strategy is required to meet the interests of customers. If the market price environment were to change, such as if market prices were significantly higher and more volatile, FEI would consider more customer research to help determine if customers' concerns or tolerances for gas rates or bills has changed, and consider other price risk management tools or strategies.

2

3 13.1 Please quantify the potential cost premium of FEI's current opportunistic hedging
4 strategy and show how it is calculated.

5

6 **Response:**

7 As stated in the response to BCUC IR 1.21.1, FEI's opportunistic hedging strategy does not
8 have any cost premium. However, the potential hedging cost (and gain) of FEI's current
9 opportunistic hedging strategy is dependent on hedged prices compared to the corresponding
10 market prices. FEI does not expect significant hedging costs while hedging in a low market price
11 environment, as market prices are near break-even costs for many gas producers and have a
12 higher probability to increase in the future.

13 The potential hedging cost, or gain, is determined by calculating the difference between hedged
14 prices and market prices multiplied by the hedged volume for a particular period of time. Please
15 refer to the response to BCUC IR 1.22.1 for the calculation of potential hedging cost and gain of
16 FEI's hedging strategy.

17

18

19

20 13.2 Please elaborate on how much lower the cost premiums are likely to be than the
21 average customer premium tolerances.

22

23 **Response:**

24 Please refer to the response to BCUC IR 1.19.4.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 33

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

13.3 Please elaborate on the term ‘out-of-the-money’ and why it is important that FEI does not expect hedges to be out-of-the-money for an extended period.

Response:

The term “out-of-the-money” refers to the market price falling lower than the hedge price, thus the value of the hedge is negative or at a loss, resulting in a hedging cost. By hedging near the low end of market prices in the current price environment, FEI does not expect hedges to be significantly out-of-the-money for an extended period and believes there is also the likelihood of hedging gains over time. This is important as FEI considers that the price risk management objectives and implementation of the hedging strategy should be achieved in a cost effective manner for customers as discussed in Section 4.3.1 of the 2018 PRMP.

13.4 Please define ‘extended period’.

Response:

FEI defines “extended period” as a period of more than 12 months.

13.5 Please provide a full discussion of each of the ‘other’ price risk management tools or strategies that FEI is currently using for its customers or reference those discussed in the application to which FEI is referring.

Response:

The other price risk management tools to which FEI is referring include costless collars or call options. As discussed on page 7 of Appendix B of the 2018 PRMP, these instruments would enable FEI to cap market prices in exchange for a floor price or paying a premium to the hedging counterparty. As discussed in Section 6 of the 2018 PRMP, there was no stated support from stakeholders in the workshops for the strategy of limiting market price increases or

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 34

1 price spikes with low-cost call options. Nevertheless, FEI believes that a defensive hedging
2 strategy with call options could provide low-cost price spike insurance for customers, especially
3 if market conditions change such that market prices were higher and price volatility continued.

4 Another price risk management strategy to which FEI is referring includes the use of VaR. As
5 discussed in Section 8 of the FEI 2014 Price Risk Management Review report, Aether suggests
6 FEI consider the VaR methodology to help measure potential price risk in the FEI gas portfolio.
7 This approach uses historical or forward implied market price volatility to provide a range of
8 potential portfolio outcomes. This strategy could be part of a monitor and respond approach to
9 hedging, in order to balance customers' risk tolerances with out-of-market outcomes.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 35

1 **14. Reference: Exhibit B-1-2, page 17**

FEI uses a mix of monthly and daily commodity supply purchases to mitigate the volatility of the daily market prices, since monthly prices are set and fixed at the beginning of each month but daily prices can fluctuate throughout the month as they settle daily. FEI currently purchases 60 percent of the commodity supply at monthly index price and the remaining 40 percent at the daily index price. In a rising price environment, purchasing monthly index priced supply benefits customers compared to daily priced supply, since daily prices will continue to be higher than the monthly index price. In a declining price environment, the opposite is true - purchasing daily priced index supply as prices fall during the month would benefit customers from not being locked in with the monthly priced index. In a stable price environment, there is no material difference in monthly and daily index prices. However, purchasing a mix of monthly and daily commodity supply does not significantly mitigate monthly market price volatility as pricing is still based on index prices which fluctuate in response to changes in the supply and demand for natural gas in the marketplace.

2

3 14.1 Why does FEI use the ratio of 60% for monthly index and 40% at daily index
4 instead of some other ratio? Please provide a brief explanation.

5

6 **Response:**

7 When determining how much supply to contract for at monthly and daily indexed prices, FEI
8 takes into consideration a number of factors, such as pricing volatility, customer migration
9 between FEI's variable rate offering and Gas Marketers, and excess commodity resale.
10 Monthly priced supply and daily indexed supply have different strengths in light of these factors:

- 11 • Monthly priced supply helps to cost-effectively reduce price volatility and exposure to
12 daily price spikes.
- 13 • Monthly priced supply also provides FEI with flexibility to implement hedges, as the
14 percentage to which the commodity portfolio is at a monthly index price would determine
15 the maximum percentage of the commodity portfolio that can be hedged.
- 16 • Daily priced supply assists mitigation and negates any pricing exposure when excess
17 volumes are resold in the marketplace.
- 18 • Daily priced supply also effectively manages monthly variances between actual and
19 forecast customer enrolments between FEI and Gas Marketers under the Customer
20 Choice Program.

21 Market price conditions are also a consideration. For example, during periods of declining
22 market prices, the daily market prices will average lower than the monthly market prices. During
23 periods of rising market prices, the monthly market price will average lower than the daily
24 market prices.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 36

1 Overall, over a long period of time, such as ten years, the daily and monthly market prices will
2 be, on average, similar. At this time, FEI believes the current 60 percent monthly index and 40
3 percent daily index is still the appropriate mix for the commodity portfolio. A higher mix of
4 monthly price supply, such as 70 percent, could result in adverse effects when FEI needs to
5 resell excess volumes on a daily priced basis.

6
7
8
9 14.2 Would a ratio of 70% monthly and 30% daily provide FEI with more or less
10 volatility in FEI's gas costs? Please explain.
11

12 **Response:**

13 Please refer to the response to CEC IR 1.14.1.
14

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 37

1 **15. Reference: Exhibit B-1-2, page 18**

4.2.1 Quarterly Rate Setting and Deferral Account

Each quarter FEI reviews the actual incurred and forward market prices, and the actual and projected deferral account balances to determine if a commodity rate change is warranted. The CCRA captures the difference between what is recovered from customers through rates and what FEI actually pays for its commodity gas supply in the market. Quarterly rate setting allows FEI to manage the size of the balance in the CCRA, while providing customers with some rate stability and price transparency through a relatively simple and efficient process. The mechanism attempts to balance managing the frequency and the size of rate changes with rate stability. More frequent rate changes tend to reduce the magnitude of rate changes when they occur. Less frequent rate changes can lead to more stable rates for a longer period, but may lead to a greater magnitude in rate changes in a volatile market price environment. Less frequent rate changes could also increase deferral account balances to unreasonable levels.

2

3 15.1 Please discuss what would occur for pricing volatility if FEI changed prices every
4 2 months instead of every quarter.

5

6 **Response:**

7 FEI does not automatically change the commodity rate quarterly; FEI reviews the commodity
8 rate quarterly and requests a change in the recovery rate when the forecast over / under
9 recovery of costs (including the deferral account balance) falls outside of the Commission-
10 approved thresholds.

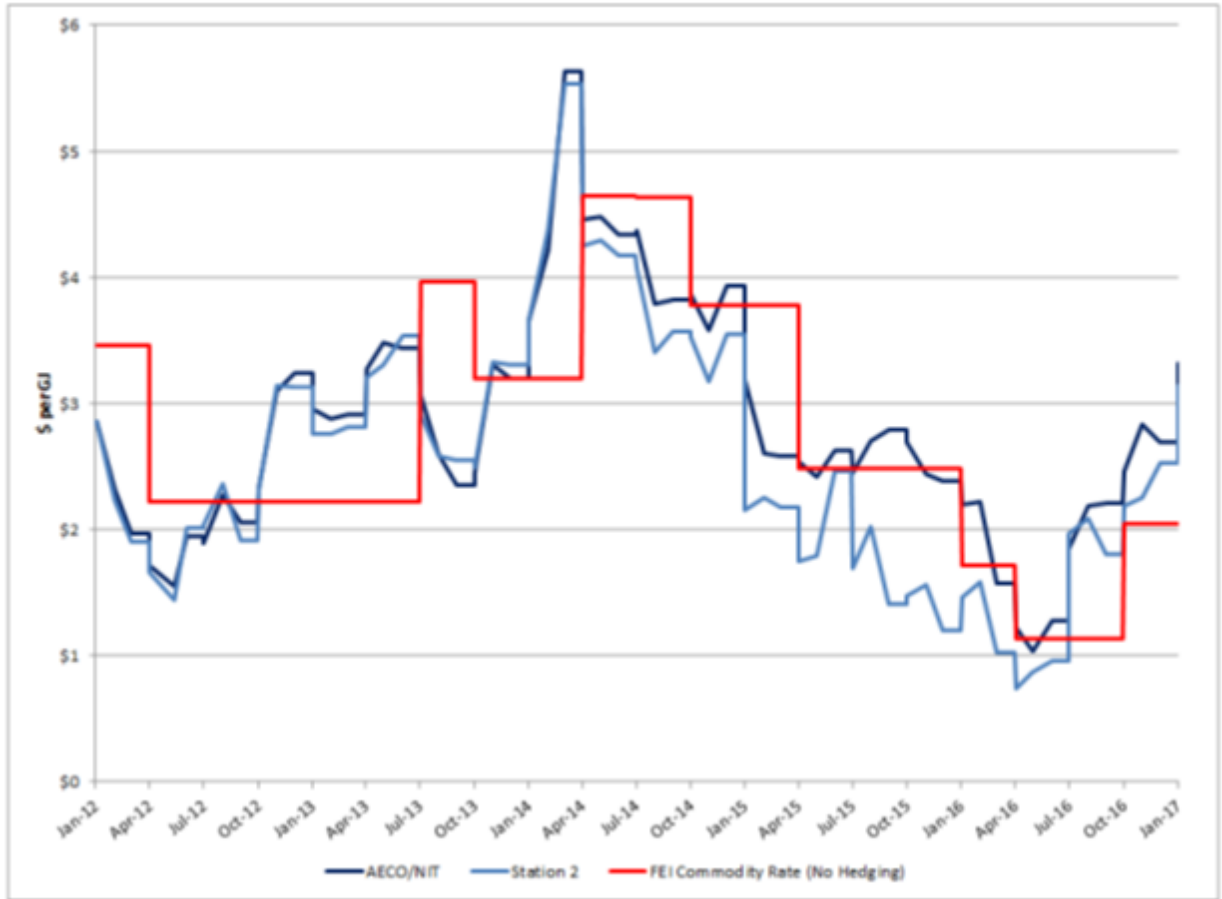
11 A review of the commodity rate every two months instead of every quarter (three months) may
12 result in more frequent commodity rate changes. More frequent rate changes, all else equal,
13 may reduce the magnitude of commodity rate changes when they occur. However FEI believes
14 the trigger mechanisms would remain the same - the 12-month prospective period would be the
15 same length and subject to similar market pricing, and the CCRA deferral account is only
16 exposed to one additional month of over / under recovery before the next review of the
17 commodity rate under the existing quarterly review cycle compared to a review every two
18 months.

19 FEI would need to review the efficiency of performing commodity rate setting every two months
20 as there would be more costs involved and an analysis would be required for possible process
21 issues related to the need for more frequent communications with customers and to the
22 Commission for review and approval of the more frequent filings. FEI believes more frequent
23 customer commodity rate changes could add to customer confusion and administrative burden.
24 FEI further believes the current quarterly commodity rate review and rate setting mechanism
25 provides an appropriate balance of managing the size of the CCRA deferral balance with
26 managing the frequency and magnitude of rate changes.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 38

1 **16. Reference: Exhibit B-1-2, page 20**

Figure 4-1: Market Prices vs FEI Commodity Rate (Without Hedging)



2

3 16.1 Please overlay the customer bill rate on Figure 4-1.

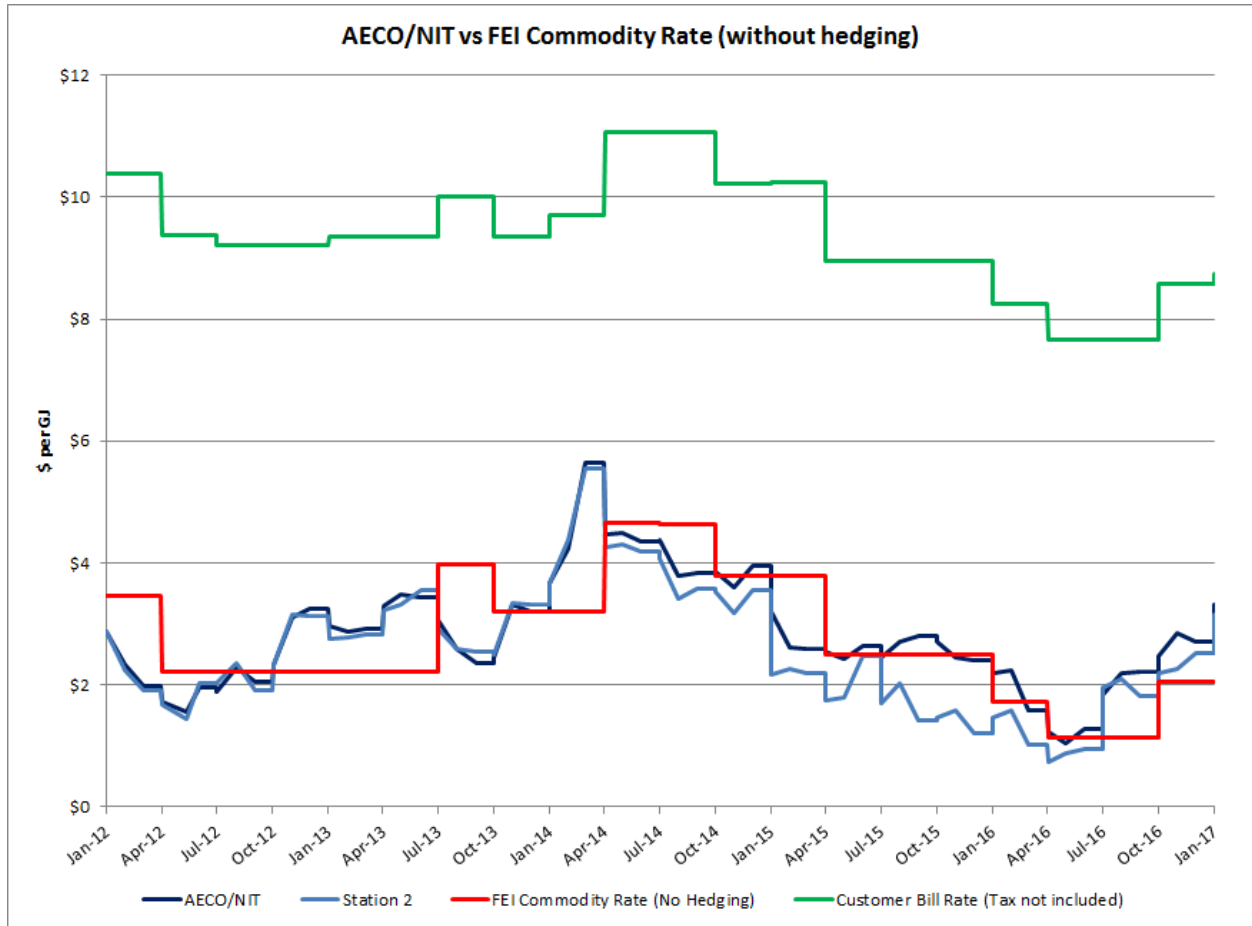
4

5 **Response:**

6 The following shows Figure 4-1 with an additional line representing the per GJ total of all the
7 components relating to the customer bill (i.e. customer bill rate), excluding carbon or other
8 taxes.

9 The rates are based on the FEI Mainland Rate Schedule 1 residential effective rates per GJ
10 based on an average annual consumption of 90 GJ.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 39



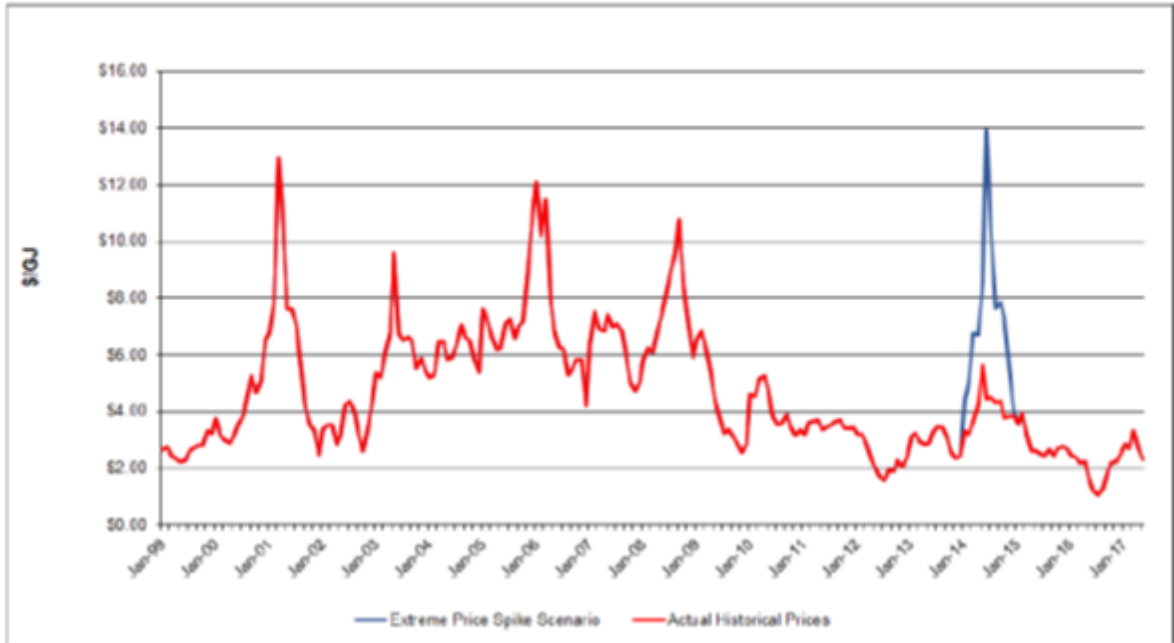
1

2

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 40

17. **Reference: Exhibit B-1-2, page 23**

Figure 4-2: Simulation of Market Prices for Extreme Price Spike Scenario



17.1 Please confirm that Figure 4-2 uses daily market prices.

Response:

Not confirmed. Figure 4-2 uses AECO/NIT monthly market prices not daily market prices.

17.1.1 If not confirmed, please specify the market prices used.

Response:

Please refer to the response to CEC IR 1.17.1.

17.2 Please provide the same data using 60% monthly and 40% daily pricing.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 41

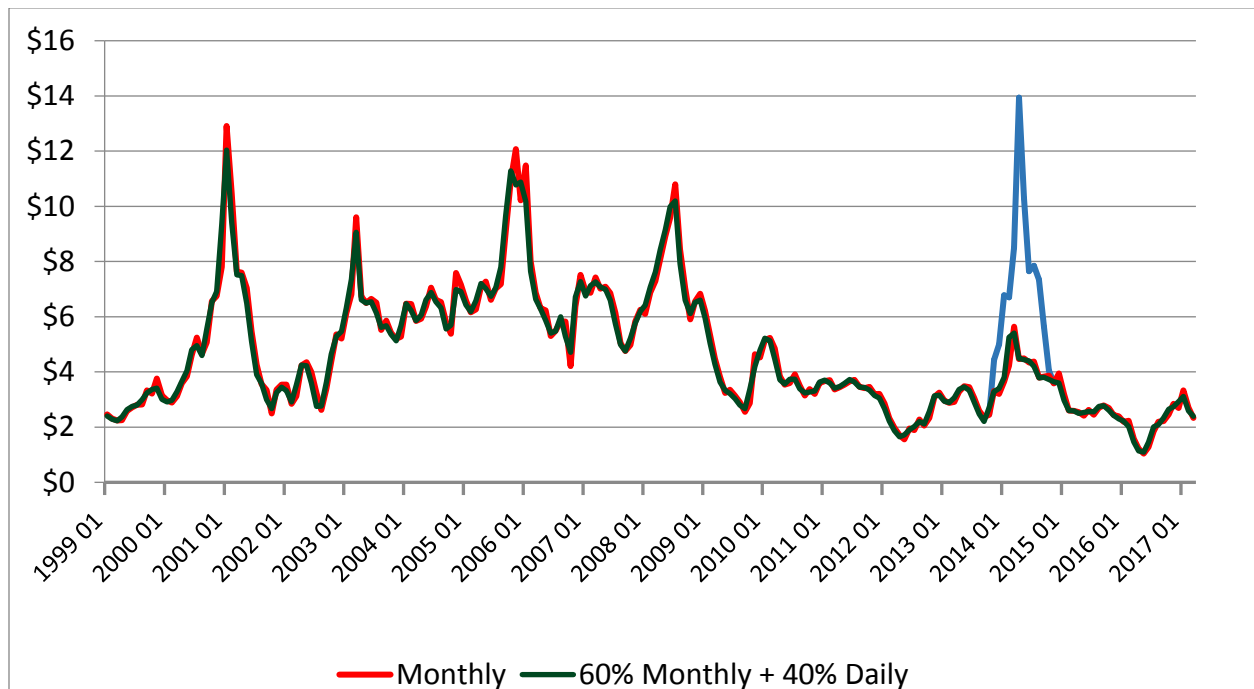
1

2 **Response:**

3 The following figure includes the pricing data with 100 percent monthly pricing (in red) and a
4 blend of 40 percent daily and 60 percent monthly pricing in dark green.

5 The 40 percent daily pricing in the figure is based on an average of the daily prices for each
6 month shown. As the figure shows, there is little difference between the 100 percent monthly
7 pricing series and the 60 percent monthly and 40 percent daily pricing, averaged for the month.

8 There is no corresponding 60 percent monthly and 40 percent daily pricing blend for the
9 simulated spike in 2014 (the blue line). This would require developing new simulated daily
10 information not based directly on historical information and therefore not provide any relevant
11 information.



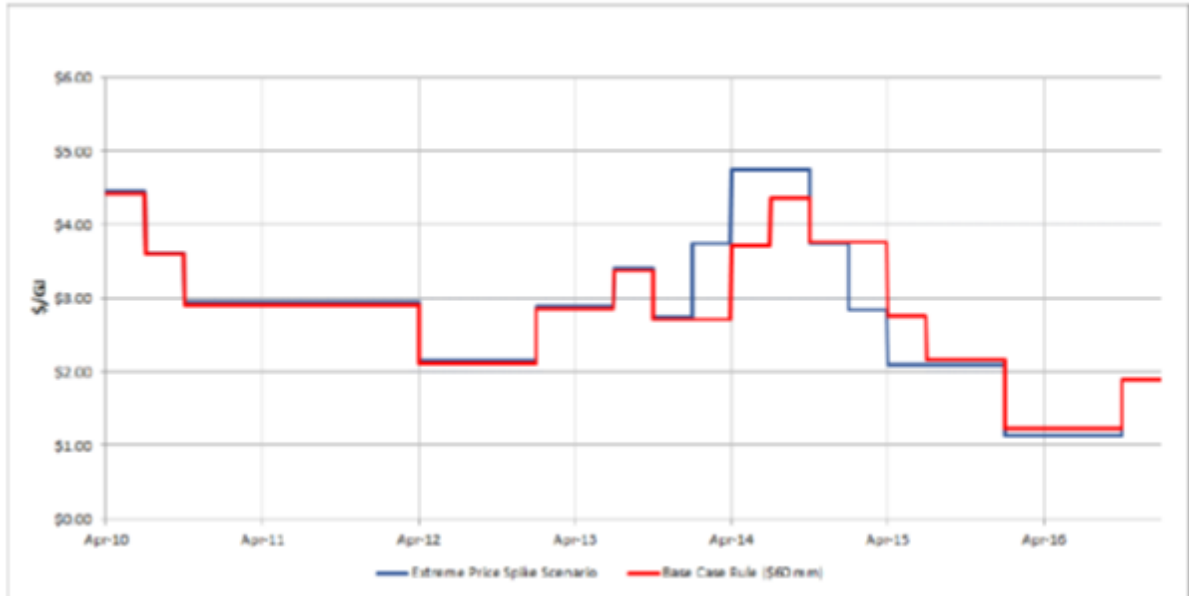
12

13

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 42

1 **18. Reference: Exhibit B-1-2 page 24**

Figure 4-3: Rate Impacts from Extreme Price Spike Scenario



2

3 18.1 Please provide Figure 4-3 using 60% monthly and 40% daily pricing or confirm
4 that 60% monthly and 40% daily pricing has been used.

5

6 **Response:**

7 Confirmed. The pricing in Figure 4-3 is using 60 percent monthly and 40 percent daily pricing.

8

9

10

11 18.2 Please provide the actual bill rates for each year.

12

13 **Response:**

14 Please refer to the response to CEC IR 1.5.2.

15

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 43

1 **19. Reference: Exhibit B-1-2, page Exhibit B-1-2, page 27**

By having a medium term hedging strategy in place, FEI is able to take advantage of favourable market price conditions and capture price opportunities for customers when they arise.

This strategy is not about trying to 'beat the market' by capturing forward prices at levels below those where market prices ultimately settle; it is about locking in favourable market prices to help preserve low commodity rates for customers.

2

3 19.1 Please confirm, otherwise explain that FEI is not willing to be measured for the
4 success of its hedging strategy by comparing its hedged prices against the
5 market prices.

6

7 **Response:**

8 Confirmed, as the measurement standard proposed does not reflect the objectives of FEI's
9 proposals. FEI's objectives are to mitigate market price volatility to support rate stability and
10 capture opportunities to maintain commodity rates at historically low levels. FEI believes
11 success in the hedging program will be based on supporting rate stability by reducing market
12 price volatility and capturing low, but not necessarily the lowest, market prices for customers.
13 Price risk management strategies are not being proposed to "beat the market", but rather
14 capture opportunities to lock in prices that are favourable relative to historical market price
15 levels, and reduce rate volatility. FEI plans to continue to monitor the market price environment
16 and the effectiveness of its price risk management. FEI intends to submit to the Commission an
17 Annual Report by May 1st each year, which discusses the effectiveness of the hedging program,
18 if approved, in meeting the objectives. Please refer to Section 7 of the 2018 PRMP for specific
19 items that will be included the Annual Report.

20

21

22

23 19.2 How can FEI be measured for success on its hedging program if it is not to be
24 measured against the market? Please provide quantification of any measures
25 that FEI deems appropriate.

26

27 **Response:**

28 Please refer to the response to CEC IR 1.19.1.

29

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 44

1 **20. Reference: Exhibit B-1-2, page 27**

FEI considers that price risk management objectives should be achieved in a cost effective manner. In the current market price environment, characterized by a healthier gas supply outlook, forward market prices are at lower levels and closer to gas production costs for many gas plays (see Section 3.1.2). As such, the likelihood and amount of potential hedging costs is significantly reduced when compared to previous years. However, with any hedging strategy or program, there is always the potential for hedging costs (as well as gains). The key to a successful program is its ability to meet the objectives without incurring significant hedging costs for a period. Therefore, FEI recommends implementing fixed price swaps only in relatively low market price environments in the interests of preserving relatively low commodity rates for customers. Other hedging instruments, such as call options or costless collars, which provide downside price participation, could be used in higher priced environments.

2

3 20.1 Please provide the hedging costs for the last 20 years.

4

5 **Response:**

6 Please refer to the response to BCOAPO IR 1.5.1.

7

8

9

10 20.2 Please confirm or otherwise explain that FEI is referring to a five year forward
11 price.

12

13 **Response:**

14 FEI is referring to the current low market price environment and the forward market prices for
15 the duration of the proposed hedging program.

16

17

18

19 20.3 What does FEI consider to be 'significant hedging costs'? Please explain and
20 provide quantification.

21

22 **Response:**

23 FEI would consider hedging costs to be significant if they amounted to more than 10 percent of
24 the value of the commodity portfolio on an annual basis. For example, if the total value of the

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 45

1 commodity portfolio were about \$270 million, based on 370 TJ per day of commodity supply for
2 365 days of the year at an average costs of \$2 per GJ, then hedging costs in excess of 10
3 percent, or \$27 million, would be significant.

4

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 46

21. Reference: Exhibit B-1-2, page 15 and Appendix B

4. PRICE RISK MANAGEMENT TOOLS

In this section, FEI provides an assessment of the tools used by or available to FEI to manage price risk on behalf of customers. The various tools are based on a consideration of what is available to FEI in the marketplace, the market price environment and customer research. They include physical gas contracting tools, the use of deferral accounts, rate-setting mechanisms, and hedging instruments. They also include the Equal Payment Plan and Customer Choice program, which offer ways for customers to help smooth out their monthly bills or enter into fixed rate contracts with natural gas marketers. Each of these tools has potential benefits and limitations. As shown by the analysis in this section, hedging is the most effective tool for mitigating market gas price volatility and capturing low market prices for customers.

The following subsections provide an assessment of each price risk management tool. A table summarizing the benefits and limitations of each alternative price risk management tool is included in Appendix B.

APPENDIX B AVAILABLE PRICE RISK MANAGEMENT TOOLS



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
Alternatives currently used or available to FEI and its customers			
<i>Physical Gas Contracting Tools</i>			
Contracting with multiple counterparties	FEI purchases supply from multiple producers or marketers.	No impact on mitigating market price or rate volatility or capturing low forward market prices if purchasing at market index prices.	Only helps to manage counterparty credit or supply risk.
Receipt Point allocation	FEI purchases commodity supply at Station 2 and AECO/NIT (and in the past, Huntingdon/Sumas) rather than a single hub.	Mitigates any market price disconnections that may occur at particular price hubs due to regional pipeline constraints or other market conditions.	Does not mitigate overall market price volatility as all market prices generally move together. Does not capture low forward market prices.
Transportation Pipeline Capacity	FEI contracts firm pipeline transportation capacity in BC and Alberta to meet the forecasted load requirements of its core customers.	Reduces FEI's exposure to demand centre hubs such as Sumas and Kingsgate. Does not impact AECO/NIT or Station 2 price volatility or capture low forward market prices.	Costs associated with holding transportation pipeline capacity may not always be cheaper than the alternative of purchasing at a demand centre hub.
Allocation between monthly and daily index priced gas	FEI currently purchases commodity supply at a mix of 60% monthly and 40% daily index prices.	Daily market price volatility is reduced by having monthly priced supply in the portfolio.	Does not mitigate monthly market price volatility or capture low forward market prices.

21.1 In a separate column for all of Appendix B, please identify which Price Risk Management tools FEI has employed in the past and any that FEI proposes to introduce as new.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 47

1 **Response:**

2 Appendix B has separated the price risk management tools to show “Alternatives currently used
3 or available to FEI and its customers”, which are tools that are currently employed or can be
4 employed if needed, and “Potential Tools”, which are tools that could be introduced as new or
5 reintroduced before FEI were to use them. Within the “Alternatives currently used or available
6 to FEI and its customers” under the physical gas contracting tools, FEI is currently not
7 employing the fixed price purchases tool. FEI has used financial fixed price swaps for hedging
8 instead.

9

10

11

12 21.2 Please identify whether each of the Price Risk Management tools that FEI has
13 utilized in the past have been successfully employed.

14

15 **Response:**

16 FEI has used a portfolio of price risk management tools to help manage price risk in different
17 market conditions. The tools that FEI has utilized and successfully employed in the past include
18 physical gas contracting strategies, the use of rate setting mechanisms and deferral accounts,
19 and hedging programs.

20 FEI's gas supply contracting practices have ensured reliable and cost-effective supply for
21 customers over time and during extreme winter peak weather events. FEI's supply hub,
22 pipeline and storage contracting diversity have ensured reliable delivery of supply to customers
23 even during periods of gas supply plant outages or regional pipeline constraints.

24 FEI's commodity rate setting mechanisms, such as the quarterly rate setting, 0.95/1.05 cost
25 recovery ratio deadband and \$0.50 per GJ minimum rate change threshold, and use of deferral
26 accounts have successfully provided a balance of rate stability, price transparency, managing
27 deferral account balances, and efficiency of process.

28 FEI's previous hedging programs have helped contribute to providing more stable commodity
29 rates for customers. However, at times, this has come at a higher than expected cost, as
30 indicated by the hedging gains and costs provided in the response to BCOAPO 1.5.1. Starting
31 with the 2015 PRMP and continuing in the 2018 PRMP, FEI has moved away from this
32 programmatic hedging approach and towards a more market-responsive, opportunistic hedging
33 program with significantly lower hedging price targets. This will reduce the likelihood of
34 significant hedging costs going forward and help mitigate rate volatility for customers.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 48

- 1 As Figure 3-7 of the 2018 PRMP shows, FEI is, through its effective price risk management,
- 2 providing gas customers with relatively low and stable commodity rates.

3

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 49

1 **22. Reference: Exhibit B-1-2, page 34**

2 **4.6 SUMMARY OF PRICE RISK MANAGEMENT TOOLS AND STRATEGIES**

Each tool and mechanism described in Sections 4.1 to 4.5 is appropriate in playing a role in supporting the price risk management objectives during various market conditions and helping ratepayers benefit from improved rate stability. All of the strategies, tools and mechanisms are effective to some degree in reducing volatility, while hedging is most effective during volatile price regimes and during significant price increases. Hedging is also an effective tool that enables FEI to capture low market prices to meet the objective of maintaining historically low rates. For the strategies currently utilised, it is FEI's customers and the gas marketers and shipper agents under the Customer Choice Program and Transportation Service, not FEI's shareholders, who reap the benefits and incur the costs of various price risk management tools and strategies.

2

3 22.1 Please confirm that the hedging program components that FEI proposes to utilize
4 will also confer benefits or costs on FEI's customers and gas marketers and not
5 on FEI's shareholders.

6

7 **Response:**

8 The hedging program components that FEI proposes to utilize will benefit FEI's customers.

9 FEI's proposed hedging program does not affect gas marketers or FEI's shareholder.

10

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 50

1 **23. Reference: Exhibit B-1-2 page 36**

5.1 MEDIUM-TERM HEDGING PROGRAM REFINEMENTS

FEI is requesting Commission approval for refinements to the existing medium-term opportunistic hedging program for customers who receive commodity supply from FEI. These changes include lowering the hedging price targets from the 2017 PRMP, having different winter and summer price targets, and extending the hedging horizon. FEI's previous requests for approval under the 2017 PRMP are provided in Appendix C. For simplicity, FEI has defined the hedging terms as including whole winter, summer or one-year terms and not included hedging for individual months. FEI is seeking approval of the following under its medium-term hedging program:

- a) For summer terms, execute hedges when forward AECO/NIT market prices are:
 - i. at or below [REDACTED] for up to 25 percent of the FEI commodity supply portfolio;
 - ii. at or below [REDACTED] for up to 50 percent of the FEI commodity supply portfolio;
- b) For winter terms, execute hedges when forward AECO/NIT market prices are:
 - i. at or below [REDACTED] for up to 25 percent of the FEI commodity supply portfolio;
 - ii. at or below [REDACTED] for up to 50 percent of the FEI commodity supply portfolio;
- c) For one-year terms, execute hedges when forward AECO/NIT market prices are:
 - i. at or below [REDACTED] for up to 25 percent of the FEI commodity supply portfolio;
 - ii. at or below [REDACTED] for up to 50 percent of the FEI commodity supply portfolio;
- d) The price targets listed above apply to each winter or summer term or one-year term within the three-year horizon of November 2018 to October 2021.

The maximum hedging for any term is limited to 50 percent of the FEI commodity supply portfolio. Hedges can include fixed price financial swaps or physical fixed price purchases. No hedges would be executed if the hedge price targets listed above were not reached.

The one-year term hedging price targets have been adjusted to the average of the winter and summer term hedging price targets. For example, the first one-year term hedging price target

2
3
4
5
6

- 23.1 Please show the differences in gas costs FEI would have charged its customers over the last 5 years between the existing hedging criteria and those proposed above in quarterly price for gas, back tested over the last 5 years.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 51

1 **Response:**

2 Portions of this response indicating FEI's hedging price targets are redacted in the public
3 version of these IR responses, pursuant to Section 18 of the Commission's Rules of Practice
4 and Procedure regarding confidential documents, established by Order G-1-16. A confidential
5 version will be provided to the Commission and parties who have executed and filed a
6 Confidentiality Declaration and Undertaking form.

7 The following tables show the gas costs on a per GJ basis FEI would have charged its
8 customers and the differences in gas costs over the last 5 years between using the 2015 PRMP
9 hedging price targets and the 2018 PRMP hedging price targets. The 2015 PRMP and the 2018
10 PRMP were put through a rate simulation model using each of the PRMPs' hedging criteria. The
11 hedging price targets used were [REDACTED] per GJ and [REDACTED] per GJ for the 2015 and 2018
12 PRMPs, respectively. FEI does not have the capability at this time to include different summer
13 and winter price hedging targets in the model and so has used an average summer and winter
14 hedge price target price. The rate simulation model used actual market forward and settle prices
15 for AECO/NIT during the time period from January 2012 to November 2017 and FEI is
16 assuming that both plans would have been approved so that they were in effect from January
17 2012 and would continue to be rolling 3-year hedging terms. The rate simulation model includes
18 the \$1 per GJ rate change cap, which was not used before 2015, and excludes any previous
19 hedges implemented prior to 2014 which is why rates produced from the model may differ from
20 FEI's actual commodity rates.

21 In the simulation, the first hedges executed for both PRMPs were implemented in February
22 2016, as market prices did not fall to or below the hedging price targets until that time. Both
23 plans hedged the summer 2016 term, as market prices fell to [REDACTED] per GJ, and the 2015
24 PRMP hedge price targets allowed for an additional hedge to be implemented for summer 2017
25 term, with prices dropping to [REDACTED] per GJ. The 2015 PRMP added additional hedging, for the
26 summer terms of 2017, 2018, 2019 and 2020, in the months of February, May and August 2017,
27 as market prices fell below the hedge price target of [REDACTED] per GJ for the summer terms. No
28 further hedging was implemented for the 2018 PRMP hedge price targets as market prices did
29 not fall to or below [REDACTED] per GJ during the time period of this model simulation. The model
30 calculates mark-to-market on unsettled hedges and calculates the gain or loss on the settled
31 hedges into the cost of gas for the next rate reset. Due to the mark-to-market on the hedges
32 executed under the 2015 PRMP, the cost of gas would be \$0.02 per GJ lower compared to
33 2018 PRMP starting in January 2017 to October 2017.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 52

1 Table 1: Simulated Gas Costs (\$ per GJ) using 2015 PRMP and 2018 PRMP Hedging Criteria

<i>Date</i>	<i>Base Case Commodity Rate (\$ per GJ)</i>	<i>2015 PRMP Hedging (\$ per GJ)</i>	<i>2018 PRMP Hedging (\$ per GJ)</i>
1-Jan-12	\$2.91	\$2.91	\$2.91
1-Apr-12	\$2.91	\$2.91	\$2.91
1-Jul-12	\$2.12	\$2.12	\$2.12
1-Oct-12	\$2.12	\$2.12	\$2.12
1-Jan-13	\$2.12	\$2.12	\$2.12
1-Apr-13	\$2.86	\$2.86	\$2.86
1-Jul-13	\$2.86	\$2.86	\$2.86
1-Oct-13	\$3.38	\$3.38	\$3.38
1-Jan-14	\$2.71	\$2.71	\$2.71
1-Apr-14	\$2.71	\$2.71	\$2.71
1-Jul-14	\$3.71	\$3.71	\$3.71
1-Oct-14	\$4.35	\$4.35	\$4.35
1-Jan-15	\$3.76	\$3.76	\$3.76
1-Apr-15	\$3.76	\$3.76	\$3.76
1-Jul-15	\$2.76	\$2.76	\$2.76
1-Oct-15	\$2.17	\$2.17	\$2.17
1-Jan-16	\$2.17	\$2.17	\$2.17
1-Apr-16	\$1.23	\$1.23	\$1.23
1-Jul-16	\$1.23	\$1.23	\$1.23
1-Oct-16	\$1.23	\$1.23	\$1.23
1-Jan-17	\$1.88	\$1.80	\$1.82
1-Apr-17	\$1.88	\$1.80	\$1.82
1-Jul-17	\$1.88	\$1.80	\$1.82
1-Oct-17	\$1.88	\$1.80	\$1.82

2

3

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 53

1 **24. Reference: Exhibit B-1-2, page 38 and 39**

5.2 HEDGING TERMS UP TO FIVE YEARS

FEI is also requesting approval for a hedging strategy that includes hedges with terms of up to five years. Like the medium-term hedging program currently in place, this hedging plan is also an opportunistic strategy to capture low market prices and improve the likelihood of maintaining low commodity rate for customers for a longer period. FEI is seeking approval of the following under its longer term hedging program:

- a) Execute hedges when forward AECO/NIT market prices are at or below [REDACTED] for up to 25 percent of the FEI commodity supply portfolio for terms up to five years within the hedging horizon of November 2018 to October 2024;
- b) Total hedging for any term in combination with the medium-term hedging program is 50 percent; and

[REDACTED]

This hedging strategy is an extension of the current medium-term hedging strategy with the objective of capturing low market price opportunities for customers. As discussed in Section 3, forward AECO/NIT market prices have decreased significantly in recent years, not only for the short and medium term, but also for the longer term. However, opportunities to capture low market prices may not last indefinitely. This hedging strategy is also more favourable than other longer term price risk management options that could be available to FEI, as discussed in Section 4.5.

FEI believes that consideration of implementing hedges of terms more than five years, and up to ten years in length, is appropriate in the current market price environment. This would help achieve the objectives for a longer period. However, FEI recognizes that its current opportunistic hedging strategy for up to three years out is newly approved, and that the Commission and/or stakeholders may not, at this time, be supportive of extending hedging to include terms of up to ten years. While FEI believes that the ten-year longer term hedging request would help to meet the 2018 PRMP objectives and has provided reasons for the request in Section 3 and Section 4.5.1, FEI is recommending a maximum five-year hedge term at this time.

2

3 24.1 For how many, and which years, has FEI conducted hedging?

4

5 **Response:**

6 FEI has conducted hedging for every year from 1995 to 2012 (with the last hedges expiring in
7 2014) and restarted hedging again in 2017; therefore, FEI conducted hedging programs for 17
8 years. FEI's hedging activity was paused for two years (2015 and 2016) as FEI undertook a
9 review of its hedging strategies and customer research and discussed price risk management
10 with stakeholders in workshops before filing its 2015 PRMP. Market prices did not fall to the
11 hedging targets in this PRMP until 2017.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 54

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32

24.2 Please provide an overview of FEI's historical hedging practices and their results.

Response:

Please refer to the response to BCOAPO IR 1.5.1.

24.3 Please provide FEI's views as to which strategies have been most effective over the period and explain why. Please provide quantification to support the statements.

Response:

Please refer to the response to BCOAPO IR 1.5.1.

24.4 Why is FEI recommending a 5 year term if it believes that a 10 year term would be better?

Response:

FEI believes that consideration of implementing hedges of terms more than five years, and up to ten years in length, is appropriate in the current market price environment. This would help achieve the objectives for a longer period. However, FEI recognizes that its current opportunistic hedging strategy for up to three years out is newly approved, and that the Commission and/or stakeholders may not, at this time, be supportive of extending hedging to include terms of up to ten years. While FEI believes that the ten-year, longer term hedging request would help to meet the 2018 PRMP objectives and has provided reasons for the request, FEI is recommending a maximum five-year hedge term at this time.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 55

1 **25. Reference: Exhibit B-1-2, page 42**

7. FUTURE REPORTING

FEI plans to continue to monitor the market price environment and the effectiveness of its price risk management. FEI intends to submit to the Commission an Annual Report by May 1st each year, which discusses the effectiveness of the hedging program, if approved, in meeting the objectives. More specifically, this report would include the following items:

- A financial summary of any gains or costs, which have resulted from hedging activities.
- A description of the impact on rate volatility of any hedging activity as compared to what would have occurred had hedging not been undertaken.
- The commodity rates achieved relative to historical averages.
- An overall assessment of the effectiveness of any hedging activities undertaken and comments on potential improvements or changes.
- A description of the impact on rate volatility related to the implementation of the recent enhancements made to the commodity rate setting mechanism and comments on any issues arising.

A copy of this report would also be provided to all participants of this Application proceeding, redacted if necessary.

FEI recognizes that the medium-term hedging strategies are appropriate in the current gas market price environment, but may not be applicable if market conditions changed significantly in the future. FEI suggested that the strategies be reviewed through this update report on an annual basis to discuss how the strategies have worked so far and if any refinements need to be made. If refinements are recommended, FEI expects it would discuss these with stakeholders and, if supported, bring these forward to the Commission for approval in a subsequent application.

The effectiveness of the hedging program should be determined over several years, rather than over a single winter or summer season or year. This is because market prices for natural gas can be lower in one period and higher in another. Several years are required to determine if greater rate stability and capturing low market prices has been achieved. However, an annual report will help to provide some initial indications of the effectiveness of the hedging program. The first annual report relating to the proposed hedging program within this 2018 PRMP would be submitted to the Commission by May 1, 2019, given that any hedging, if approved, would not likely be implemented until after May 1, 2018.

2

3

4

5

25.1 What reporting did FEI undertake during its past/existing hedging program?
Please identify where the results may be accessed.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 56

1 **Response:**

2 FEI's reporting relating to its past hedging programs prior to 2015 includes monthly and
3 quarterly reporting of hedging transactions. FEI's reporting relating to its existing hedging
4 program includes the annual report, as discussed in Section 7 of the 2018 PRMP, and quarterly
5 reporting of hedging transactions.

6 The previous reporting for hedging prior to 2015 included a monthly mark-to-market (MTM) and
7 potential credit exposure by counterparty, hedging position by hedging term, and a summary of
8 transactions. The quarterly submission included the monthly information as well as a month-to-
9 month breakdown of historical realized hedging costs and gains and MTM hedging costs and
10 gains by financial instrument. The existing reporting for hedging transactions is provided on a
11 quarterly basis and the report includes MTM and potential credit exposure by counterparty,
12 hedging position by hedging term and a summary of transactions. The reports are filed
13 confidentially with the Commission so FEI's ability to obtain favorable commercial terms for
14 future hedging transactions is not impaired.

15 FEI submitted its first annual report to the Commission on April 27, 2017. FEI submitted a
16 confidential version as well as a public redacted version to the Commission. Access to the
17 redacted versions of annual reports can be made through a request to the Commission. The
18 confidential version was also provided to all participants of the 2015 PRMP proceeding and the
19 stakeholders involved in the February 24, 2017 Price Risk Management Workshop conducted
20 by FEI.

21

22

23

24 25.2 Please provide FEI's historical results for its past/current hedging programs
25 including:

- 26 • A financial summary of any gains or costs, which have resulted from hedging
27 activities by year
- 28 • A description of the impact on rate volatility of any hedging activity as
29 compared to what would have occurred had hedging not been undertaken
- 30 • The commodity rates achieved relative to historical averages
- 31 • An overall assessment of the effectiveness of any hedging activities
32 undertaken and comments on potential improvements or changes
- 33 • A description of the impact on rate volatility related to the implementation of
34 recent enhancements made to the commodity rate setting mechanism and
35 comments on any issues arising.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 57

- Please provide quantification for the above.

Response:

For the financial summary of the past hedging activities please refer to the response to BCOAPO 1.5.1.

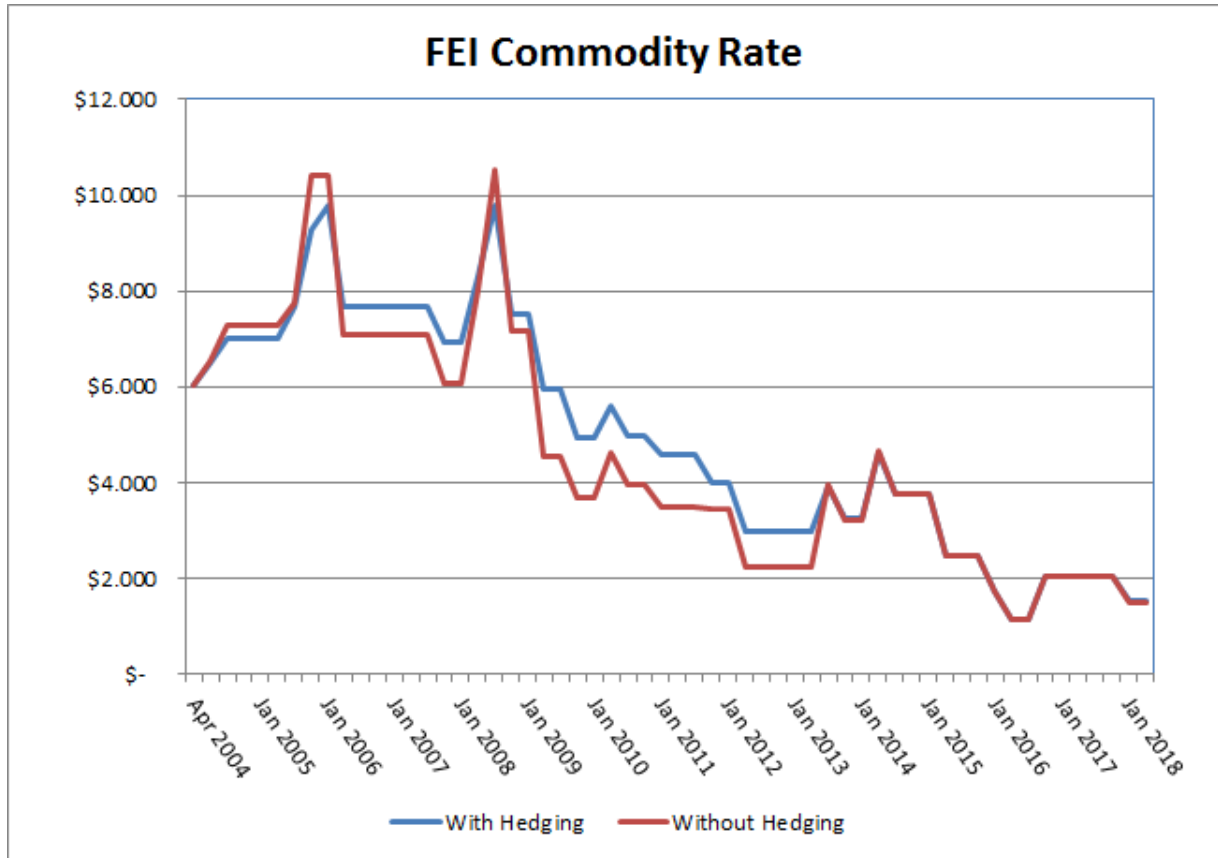
The following figure and table shows FEI's commodity rate with and without hedging from April 2004 to April 2018.

FEI's current hedging program per the approved 2015 PRMP commenced effective April 2017. FEI's commodity rate of \$2.050 per GJ, effective October 1, 2016 through to December 31, 2017, decreased to \$1.549 per GJ effective January 1, 2018 – the data shows that without hedging the January 1, 2018 commodity rate would have been set slightly lower at \$1.485 per GJ. This was partly due to being hedged 12 percent for the summer 2017 term and 16 percent hedged for winter 2017/18 term and not hedging to the full implementation limit of 50 percent. FEI's commodity rates with hedging during 2017 and 2018 so far are well below historical averages, as shown in Figure 3-7 of the 2018 PRMP.

For previous periods, the figure and table show a higher commodity rate with hedging due to market prices falling as the shale gas era began. FEI has since updated the hedging strategy with lower price targets and the addition of a five-year hedging term. With more time and hedging, FEI can better assess impacts of hedging on the commodity rate and expect that it would reduce commodity rate volatility as illustrated in Figure 4-5 in the 2018 PRMP, help maintain low commodity rates and do so at a low cost or gain.

FEI has not yet had the opportunity to implement any of the recent enhancements made to the commodity rate setting mechanism approved within the 2015 PRMP. Therefore, more time is required to make an assessment of these tools and their impact on commodity rate volatility.

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 58



FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 59

Rate 1 - \$/GJ
Hedged No-Hedge

Apr 2004	\$ 6.020	\$ 6.020	
May	\$ 6.518	\$ 6.527	
Jul	\$ 7.005	\$ 7.266	
Oct	\$ 7.005	\$ 7.266	
Jan 2005	\$ 7.005	\$ 7.266	
Apr	\$ 7.005	\$ 7.266	
Jul	\$ 7.658	\$ 7.745	
Oct	\$ 9.292	\$ 10.428	
Jan 2006	\$ 9.774	\$ 10.428	
Apr	\$ 7.662	\$ 7.070	
Jul	\$ 7.662	\$ 7.070	
Oct	\$ 7.662	\$ 7.070	
Jan 2007	\$ 7.662	\$ 7.070	
Apr	\$ 7.662	\$ 7.070	
Jul	\$ 7.662	\$ 7.070	
Oct	\$ 6.926	\$ 6.068	
Jan 2008	\$ 6.926	\$ 6.068	
Apr	\$ 8.287	\$ 8.042	
Jul	\$ 9.780	\$ 10.544	
Oct	\$ 7.536	\$ 7.161	
Jan 2009	\$ 7.536	\$ 7.161	
Apr	\$ 5.962	\$ 4.563	
Jul	\$ 5.962	\$ 4.563	
Oct	\$ 4.953	\$ 3.675	
Jan 2010	\$ 4.953	\$ 3.675	
Apr	\$ 5.609	\$ 4.624	
Jul	\$ 4.976	\$ 3.948	
Oct	\$ 4.976	\$ 3.948	
Jan 2011	\$ 4.568	\$ 3.505	
Apr	\$ 4.568	\$ 3.505	
Jul	\$ 4.568	\$ 3.505	
Oct	\$ 4.005	\$ 3.463	
Jan 2012	\$ 4.005	\$ 3.463	
Apr	\$ 2.977	\$ 2.226	
Jul	\$ 2.977	\$ 2.226	
Oct	\$ 2.977	\$ 2.226	
Jan 2013	\$ 2.977	\$ 2.226	
Apr	\$ 2.977	\$ 2.226	
Jul	\$ 3.913	\$ 3.967	
Oct	\$ 3.272	\$ 3.201	
Jan 2014	\$ 3.272	\$ 3.201	
Apr	\$ 4.640	\$ 4.652	Hedging Program ended in March 2014
Jul	\$ 3.781	\$ 3.781	
Oct	\$ 3.781	\$ 3.781	
Jan 2015	\$ 3.781	\$ 3.781	
Apr	\$ 2.486	\$ 2.486	
Jul	\$ 2.486	\$ 2.486	
Oct	\$ 2.486	\$ 2.486	
Jan 2016	\$ 1.719	\$ 1.719	
Apr	\$ 1.141	\$ 1.141	
Jul	\$ 1.141	\$ 1.141	
Oct	\$ 2.050	\$ 2.050	
Jan 2017	\$ 2.050	\$ 2.050	
Apr	\$ 2.050	\$ 2.050	Hedging Program commencing April 2017
Jul	\$ 2.050	\$ 2.050	
Oct	\$ 2.050	\$ 2.050	
Jan 2018	\$ 1.549	\$ 1.485	
Apr	\$ 1.549	\$ 1.485	

FortisBC Energy Inc. (FEI or the Company) 2017 Price Risk Management Plan (PRMP) and the 2018 PRMP (the Application or the Revised Application)	Submission Date: April 6, 2018
Response to Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1	Page 60

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34

25.3 Is FEI able to determine whether the rates it provided to its customers exceed or are lower than the rates it would have provided had there been no hedging? Please explain.

Response:

Please refer to the response to CEC IR 1.25.2.

25.3.1 If yes, please provide an analysis of whether the rates FEI has provided its customers exceeded or were lower than the rates that would have been provided had there been no hedging.

Response:

Please refer to the response to CEC IR 1.25.2.

25.4 How many years are required to determine whether or not low market prices have been achieved? Please provide an explanation for the number.

Response:

FEI believes that several years are required to determine if low market prices have been achieved. This would provide sufficient time to determine if low market prices are resulting from a short term event, which could impact a summer or winter season and the following consecutive season, or more fundamental supply and demand factors. For example, a warm winter season could result in low market prices for the winter period as well as the following summer period as less storage injections would be required to fill storage for the next winter. This would not be an indication of a period of sustained low market prices. On the other hand, high gas production combined with declining market outlets for supply could result in several years of low market prices until new demand markets and export pipeline capacity is developed.

Attachment 5.2

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)

Attachment 8.1

REFER TO LIVE SPREADSHEET MODELS

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)