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March 8, 2016

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

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: Project No. 3698864
FortisBC Energy Inc. (FEI)
2015 Price Risk Management Application (the Application)
Response to the Commercial Energy Consumers Association of British
Columbia (CEC) Information Request (IR) No. 1 – Scope B

On December 23, 2015, FEI filed the Application referenced above. In accordance with Exhibit A-8 setting out the Amended Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to CEC Scope B 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

Attachments

cc: Commission Secretary
Registered Parties

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 1

1 **1. Reference: Exhibit B-1, Page 1**

The second workshop focused on the objectives of FEI's price risk management. FEI believes that the workshop process has helped to re-affirm its price risk management objectives which include the following:

- Mitigate market price volatility to support rate stability; and
- Capture opportunities to provide customers with more affordable rates.

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1.1 Please confirm that the use of deferral accounts can mitigate the effects of price volatility to support rate stability.

Response:

The use of deferral accounts can contribute to, but not totally mitigate, the effects of short-term price volatility while the deferral accounts are maintained within a reasonable range. A medium-term hedging strategy can help further mitigate market price volatility over the short and medium term. The figure provided in the response to CEC Scope A IR 1.1.5 and on page 13 of the Application provides an example of how medium-term hedging can provide more significant volatility mitigation than deferral accounts. This is because hedging will impact underlying market prices for terms up to three years out while deferral accounts merely help smooth out gas costs, typically over the next twelve months, rather than impacting the market prices themselves.

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1.1.1 If not confirmed, please explain why not.

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Response:

Please refer to the response to CEC Scope B IR 1.1.1.

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1.1.2 If confirmed, is there any reason why price risk management is needed as well as deferral accounts? Please explain.

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FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 2

1 **Response:**

2 Please refer to the response to CEC Scope B IR 1.1.1.

3
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5
6 1.2 Please confirm that FEI already undertakes price risk mitigation activities in its
7 physical management of gas.

8
9 **Response:**

10 Confirmed. FEI enables several price risk mitigation activities for its physical supply. These
11 include diversifying gas pricing by purchasing supply from different market hubs and by using a
12 combination of daily and monthly indexed basis. FEI also uses storage resources which take
13 advantage of any summer-winter price differential. However, FEI has supported a
14 comprehensive approach as different tools have different strengths, as discussed in the
15 response to BCUC Scope A IRs 1.1.1 and 1.1.2.

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19 1.2.1 If confirmed, please explain how the proposed hedging strategies differ
20 from FEI's current activities.

21
22 **Response:**

23 Please refer to the response to BCUC Scope A IRs 1.1.1 and 1.1.2.

24
25

26
27 1.3 Does FEI stand to benefit from the price risk management activities it is planning
28 to undertake?

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30 **Response:**

31 FEI's customers stand to benefit from the price risk management strategies it is proposing; FEI's
32 shareholder does not benefit.

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FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 3

1
2 1.3.1 If yes, please explain and identify under what circumstances the
3 company will benefit.
4

5 **Response:**

6 Please refer to the response to CEC Scope B IR 1.1.3.

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10 1.3.2 If yes, does FEI have any corporate goals with respect to price risk
11 management? Please explain.
12

13 **Response:**

14 Please refer to the response to CEC Scope B IR 1.1.3.

15

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 4

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

2 For the final workshop the main focus of the discussion circled back to the price risk
3 management objectives and proposed rate setting and medium-term hedging strategies to help
4 meet the objectives. In order to help provide the context for the potential hedging strategy price
5 targets, a gas market update was provided. Longer-term tools and strategies were also
6 discussed including an overview of other jurisdictions that use hedging.

7 2.1 Please provide FEI's views as to what may be considered 'short term', 'medium
8 term' and 'long term' in this context.

9 **Response:**

10 In this context, FEI would view short term as 1-2 years, medium term 3-5 years, and long term
11 beyond 5 years.

12 2.2 Please provide a brief explanation as to why the 'medium term' is appropriate for
13 the hedging opportunities vis a vis 'short term' or 'long term.'

14 **Response:**

15 FEI has proposed a medium term hedging strategy because market price movements and price
16 volatility are more significant in the short and medium term. Also, it is more difficult to transact
17 hedges with counterparties beyond the medium term due to liquidity and counterparty credit
18 considerations.

19 FEI has some other price risk management tools and mechanisms which help mitigate short
20 term market price volatility, such as the use of natural gas storage and rate setting and deferral
21 account mechanisms.

22 FEI has also considered hedging opportunities for the long term as discussed in Section 4 of the
23 Application. These include fixed price purchases up to ten years. FEI has not proposed these
24 in the Application as they require further assessment; FEI will bring forward any related requests
25 in the future, if warranted.

26

27

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 5

1 **3. Reference: Exhibit B-1, Page 3**

1. Implementation of a medium-term fixed-price hedging strategy, which includes the following components:
- a) Execute hedges when forward AECO/NIT market prices are at or below [REDACTED] for up to [REDACTED] of the FEI commodity supply portfolio;
 - b) Execute hedges when forward AECO/NIT market prices are at or below [REDACTED] for up to [REDACTED] of the FEI commodity supply portfolio;
 - c) Maximum hedging for any term is 50% of the FEI commodity supply portfolio;
 - d) Hedges can include fixed price financial swaps or physical fixed price purchases;
 - e) Price targets apply to each winter or summer term or one-year term within the three-year horizon of April 2016 to March 2019, and
 - f) No hedging is executed if the price targets in (a) or (b) above are not reached.

2

3 3.1 Does FEI purchase from any other storage and exchange points?

4

5 **Response:**

6 The resources defined within FEI's Annual Contracting Plan are grouped into two portfolios -
7 Commodity and Midstream. The Commodity portfolio includes FEI's baseload supply, which is
8 required for the full gas year. FEI currently purchases 75% of the commodity from Station 2 in
9 Northern BC and 25% from the AECO/NIT market in Alberta.

10 The Midstream portfolio consists of purchasing seasonal supply and storage resources which
11 are required during the winter period (November-March). Seasonal supply currently consists of
12 purchasing from Station 2 and AECO/NIT and Kingsgate. Storage resources currently include
13 Aitken Creek in Northern BC which is based on Station 2 prices, and Niska in Alberta which is
14 based on AECO/NIT's price hub. FEI also contracts for shorter duration market area storage
15 resources in the Pacific Northwest, which includes the Jackson Prairie Storage facility in
16 Washington and the Mist Storage facility in Oregon.

17

18

19

20 3.1.1 If yes, please identify.

21

22 **Response:**

23 Please refer to the response to CEC Scope B IR 1.3.1.



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) <u>Scope B</u> Information Request (IR) No. 1	Page 6

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3.1.2 If yes, please provide an estimate of the proportion of gas that is purchased through the AECO/NIT hub.

Response:

Please refer to the response to CEC Scope B IR 1.3.1.

3.1.3 If yes, please explain if the other storage and exchange points have different prices than that in AECO/NIT.

Response:

Yes, the CCRA supply portfolio includes Station 2 supply which is based on Station 2 daily prices and AECO/NIT monthly prices. FEI also contracts for Aitken Creek storage and injects Station 2 supply into Aitken Creek during the summer. It is important to note that Station 2 monthly priced supply is purchased based off a premium or a discount to the AECO/NIT monthly index for the reasons provided in the response to CEC Scope B IR 1.3.1.4. Generally Station 2 prices have some relation to AECO/NIT; however market conditions can cause some differences.

3.1.4 If yes, please explain why FEI selected AECO/NIT for establishing the price points for executing its hedging strategies.

Response:

FEI has selected AECO/NIT for establishing the price points for executing its hedging strategies for two main reasons. First, the AECO/NIT market it is a highly liquid trading market with multiple buyers and sellers, making it easy to transact hedges. Second, the Station 2 monthly index is very illiquid and so FEI, and many other buyers and sellers, purchase Station 2 physical supply based on a premium or discount to the AECO/NIT monthly index.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 7

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3.2 Please provide further explanation as to how a 'fixed price financial swap' would work with an example.

Response:

Please refer to the response to BCUC Scope B IR 1.10.1.

3.3 Please explain how a physical fixed price purchase would operate and if FEI would store the gas.

Response:

In a physical fixed price purchase transaction, FEI would pay a counterparty, such as a gas producer or marketer, a fixed price and the producer or marketer would provide FEI with physical gas supply. Please also refer to the response to BCUC Scope B IR 1.10.1. FEI may end up storing the gas if the physical purchase is transacted for a summer period and depending upon storage refill requirements.

3.4 Please provide further explanation as to how and why a price target is applied to a particular term.

Response:

FEI has not applied the hedging price targets to a particular term. FEI has applied the same hedging price targets to all terms, which include summer, winter or one-year, within the three year hedging horizon.

3.5 Please explain what constitutes a 'winter term' and what constitutes a 'summer term'.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 8

1

2 **Response:**

3 A winter term includes a period from November to March and a summer term includes a period
4 from April to October.

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8 3.6 Does the 1 year term have a fixed starting and ending point such as April and
9 March, or can this be any one year period between April 2016 and March 2019?
10 Please explain.

11

12 **Response:**

13 The one-year term could be twelve months starting April (i.e. a summer term followed by a
14 winter term) or November (i.e. a winter term followed by a summer term) but must be within the
15 April 2016 to March 2019 horizon.

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19 3.7 Will the proposed strategies result in automatic hedging if the market targets are
20 reached, or will FEI conduct active management of the hedging activities?
21 Please explain.

22

23 **Response:**

24 The proposed strategies will result in FEI immediately implementing the hedging if the market
25 price targets are reached subject to any limitations, such as counterparty availability, as
26 discussed in the response to BCUC Scope B IR 1.12.2 and BCUC Scope B Confidential IR
27 1.1.4.

28

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 10

1 4.2.1 If a high price environment provides greater risk from market volatility, is
2 the benefit of the low price environment primarily that of capturing the
3 market opportunities to provide customers with more affordable rates.
4

5 **Response:**

6 As discussed in response to CEC Scope B IR 1.4.2, there is risk of market price volatility in both
7 high and low price environments. However, it is the low price environment that enables FEI to
8 capture low market price opportunities to provide customers with more affordable rates.
9

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13 4.3 If the current conditions were to change for some reason during the hedging
14 period, would FEI interrupt its strategy?
15

16 **Response:**

17 If the current market conditions were to change significantly, FEI would consider interrupting its
18 strategy. As discussed in Section 2 of the Application, FEI recognizes that the rate setting
19 enhancement and medium-term hedging strategies are appropriate in the current market price
20 environment but may not be applicable if market conditions change significantly in the future.
21 Significant changes could include increases in market gas prices back up to pre-shale gas
22 levels of \$6-\$7/GJ or even more market price volatility than the market experienced during
23 winter 2013/14. FEI has proposed that the strategies be reviewed through an update report on
24 an annual basis to discuss how the strategies have worked so far and if any refinements need
25 to be made.

26
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28
29 4.3.1 If yes, please discuss the conditions under which FEI would decide to
30 alter its hedging strategy?
31

32 **Response:**

33 Please refer to the response to CEC Scope B IR 1.4.3.
34
35



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 11

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2 4.3.2 If yes, would it be acceptable to FEI for the Commission to place limits
3 on the conditions under which FEI is to operate its hedging strategy?
4 Please explain why or why not.

5
6 **Response:**

7 FEI does not believe it would be necessary for the Commission to place limits on the conditions
8 under which FEI is to operate its hedging strategy. FEI has already defined the limitations and
9 parameters of the hedging strategy in the requests of the Application, which include maximum
10 hedging volume limits and predefined hedging targets. As discussed in the response to CEC
11 Scope B IR 1.4.3, FEI suggests that the strategies be reviewed on an annual basis to discuss
12 how the strategies have worked so far and if any refinements need to be made.

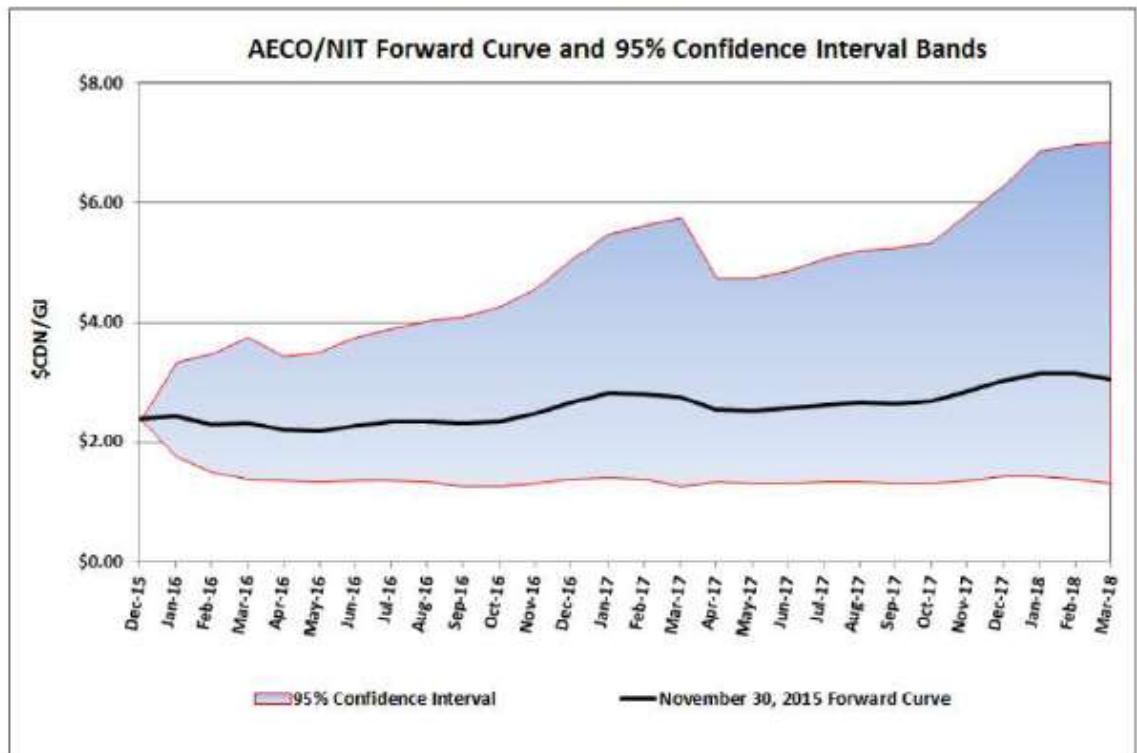
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FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 12

1 **5. Reference: Exhibit B-1, Page 6**

As the figure above shows, while the AECO/NIT historical market prices have settled below \$2.00/GJ several times in the past, they have not remained there for a sustained period of time. This includes periods in recent years where the natural gas market has been oversupplied with shale gas. The same can be said about forward market prices during the past ten years. Only during mid-2012 did forward AECO/NIT prices for terms within the upcoming year fall below \$2.00/GJ. The following figure shows the potential range for AECO/NIT market prices for the next five years. It shows that the downside for market prices is relatively limited compared to the upside price potential.

Figure 2: Potential Range for AECO/NIT Prices



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4 5.1 Please provide the source of the above graph.

5

6 **Response:**

7 Please refer to the response to BCUC Scope B IR 1.9.2.



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 13

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5.2 Please provide any updates to the above graph that may be available at this time.

Response:

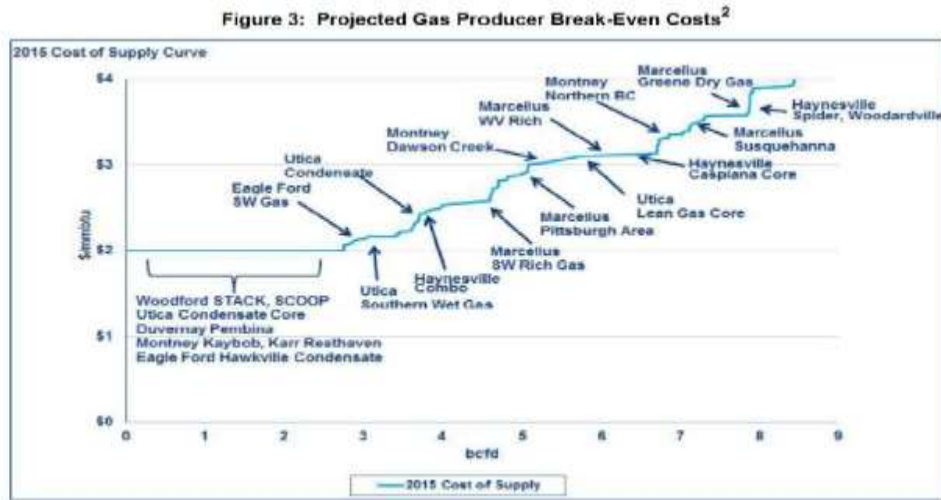
Please refer to the response to BCUC Scope B IR 1.9.2.

5.3 Please confirm that the November 30, 2015 Forward Curve could be considered as the 'best information' available with respect to the expected market prices as presented on this graph.

Response:

Please refer to the response to BCUC Scope B IR 1.9.2.

1 6. Reference: Exhibit B-1, Page 8



The figure above indicates that, at current market price levels of near \$2.00/MMBtu for Henry Hub, some of these production areas are not recovering their costs and so producers have begun to cut back on their production. For example, the Montney Dawson Creek and Montney Northern BC show break-even costs of above \$3.00/MMBtu and helps explain why there has been a drop in northern BC gas production with the fall in market prices in 2015.

2

3 6.1 What is the typical price relationship between Henry Hub and AECO/NIT?

4

5 **Response:**

6 Henry Hub is the benchmark natural gas hub for North America. It is located in Louisiana.
 7 Other market hub prices, like AECO/NIT, the benchmark for the Alberta gas market, are
 8 typically priced relative to this Henry Hub benchmark price. The difference in the prices is called
 9 the basis. For example, the monthly AECO/NIT price for April 2016 has recently traded at about
 10 \$0.70 US per MMBtu below the Henry Hub price. This pricing discount, or premium, varies over
 11 time and is determined by supply and demand factors in the various regions across North
 12 America. For example, with the growth in gas production in the Marcellus play in the
 13 northeastern US, the US has imported less gas from Alberta. This has resulted in more supply
 14 than demand for Alberta gas and so the basis between Henry Hub and AECO/NIT has widened
 15 (i.e. the discount has grown). In 2011, the AECO/NIT basis was closer to about \$0.40 US per
 16 MMBtu.

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FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 15

1
2 6.2 Please provide a discussion of how the Henry Hub price relates to the AECO/NIT
3 price in terms of the underlying influences on their prices.
4

5 **Response:**

6 Please refer to the response to CEC Scope B IR 1.6.1.
7
8

9
10 6.3 Please define on the supply curve where production was in 2013 and where it is
11 in 2015 to demonstrate the degree of production cut back.
12

13 **Response:**

14 FEI clarifies that the referenced comment should have said that there had been a drop in
15 production levels in some areas of northern BC, particularly the Fort Nelson and Pine River
16 plants. However, total gas production in northern BC actually increased in 2015, which is
17 discussed in greater detail in the response to CEC Scope B IR 1.6.4.
18
19

20
21 6.4 Would producers be expected to cut production altogether if/when the price falls
22 below their cost of production, or would they continue to produce at some level?
23 Please explain.
24

25 **Response:**

26 Each producer in Northern BC has their own strategy to work through the declining natural gas
27 pricing environment. A majority of producers in northern BC have adjusted their capital
28 expenditures in response to the depressed gas prices, but the BC market has actually seen an
29 increase in production levels in 2015 and 2016. This can be contributed to several factors.
30 Producers may have hedged when prices were higher and some may keep producing to
31 generate cash flow rather than receive no cash flow if they shut down. Producers have also
32 become more resilient, by reducing their drilling rigs and moving away from high cost areas to
33 concentrate drilling on the lower cost 'sweet spot' of areas. This is evident in northern BC, as
34 much of the drilling has moved into the lower cost Montney and Duvernay gas areas. Moreover,
35 technological advancements have also allowed producers to become more efficient in extracting
36 gas during this low pricing environment, which has helped reduce their operational costs.
37 Producers have also continued to increase their production despite the low natural gas prices

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 16

1 for LNG related activities. Much of the increase in production in Northern BC has come from
2 producers building up well inventories for LNG projects.

3
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6 6.4.1 If no, is this because their incremental, variable costs of production are
7 still being recovered even though their investment may not be? Please
8 explain.

9

10 **Response:**

11 Please refer to CEC Scope B IR response 1.6.4.

12

13

14

15 6.4.1.1 If yes, please provide the producers' variable, incremental
16 costs of supply, if available.

17

18 **Response:**

19 Producer's variable and incremental costs of supply are not available to FEI. Please also refer
20 to the response to CEC Scope B IR 1.6.4.

21

22

23

24 6.5 Please provide further information as to the original production levels and the
25 drop that was experienced in northern BC gas production with the fall in market
26 prices in 2015.

27

28 **Response:**

29 Please refer to the response to CEC Scope B IRs 1.6.3 and 1.6.4.

30

31

32

33 6.6 Please confirm or otherwise explain that some of the BC gas production has
34 been undertaken in the expectation of an LNG plant being established in BC.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 17

1

2 **Response:**

3 Confirmed. There have been several examples throughout the past few years where production
4 levels in BC have increased because of LNG related activities. Progress has brought a number
5 of wells online to build up their inventories for the upcoming Pacific Northwest LNG project. A
6 more recent example has been Woodside Petroleum bringing Liard wells online this winter to
7 prove up well results for their Kitimat LNG project.

8

9

10

11 6.7 Please confirm or otherwise explain that it is generally understood that the
12 current plans for an LNG plants in BC are being deferred.

13

14 **Response:**

15 Based on publicly available information, it is FEI's understanding that current plans for several
16 LNG plants in BC have been delayed for a number of reasons which include the slower than
17 expected pace of environmental approvals, First Nation negotiations and current market
18 conditions.

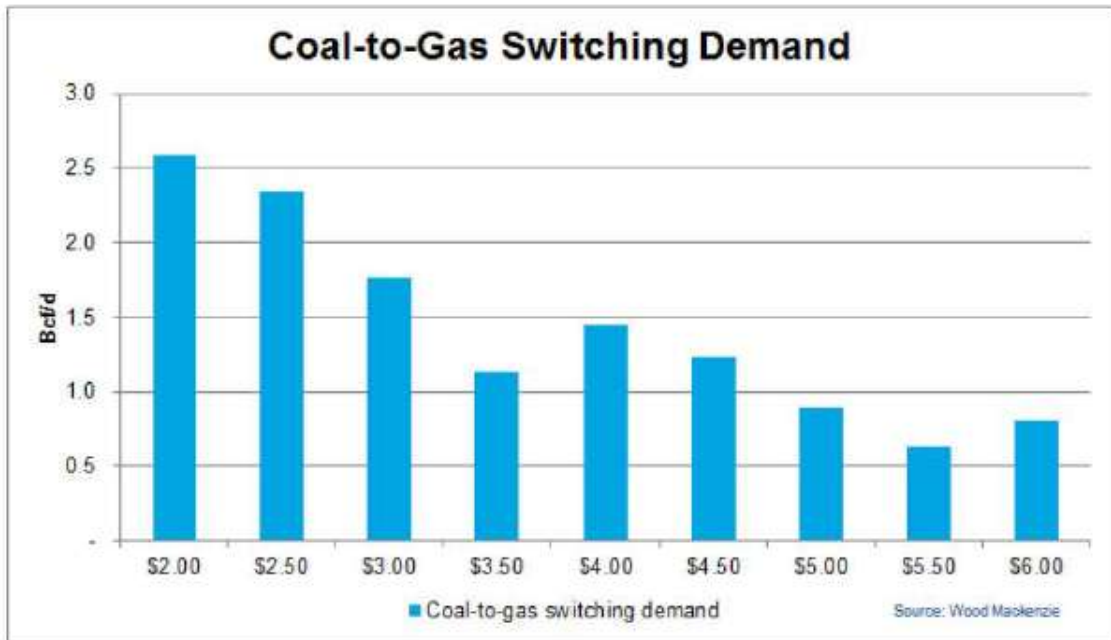
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FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 18

1 **7. Reference: Exhibit B-1, Pages 8 and 9**

Fuel switching by power producers that can switch between natural gas and coal-fired generation enables them to use the lowest cost fuel source for producing electricity. This switching increases the demand for gas or coal when the price of one falls below the other and helps set a soft floor for market prices. The following table provides a forecast of how much gas demand increases at different levels of gas prices relative to coal prices. For example, when natural gas prices fall to \$2.00 US/MMBtu, the expected incremental demand for gas from coal-to-gas switching is just above 2.5 Bcf/d. This extra demand provides a boost for gas prices and helps keep them from falling any further.

Figure 4: Coal-to-Gas Fuel Switching Levels³



2

3 7.1 What are the assumptions with respect to the price of coal in the above Coal to
 4 Gas switching Demand Figure 4?

5

6 **Response:**

7 The figure represents aggregated changes in U.S. natural gas power demand due to coal-to-
 8 gas and gas-to-coal switching. It is derived from Wood Mackenzie's power market demand
 9 elasticity model to test the sensitivity of gas prices with a set of fixed coal prices. The
 10 assumption of the coal prices in the model are based on various regions across the U.S. and
 11 range from about \$1.00 US/MMBtu to about \$3.00 US/MMBtu. So, to use an example from the



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 19

- 1 figure, when natural gas prices fall from \$2.50 US/MMBtu to \$2.00 US/MMbtu gas, the U.S. gas
- 2 power demand is expected to increase by 2.6 Bcf/d.
- 3

1 **8. Reference: Exhibit B-1, Page 10**

2 **3.1.2 Market Price Volatility**

Price volatility continues in the natural gas marketplace despite the abundance of shale gas. This is because supply and demand balances can change quickly in response to various market factors. For example, as recently as winter 2013/14, market gas prices spiked due to the winter polar vortex, with regional Station 2 and AECO/NIT daily spot prices climbing to near \$20/GJ and Sumas reaching \$28/GJ.

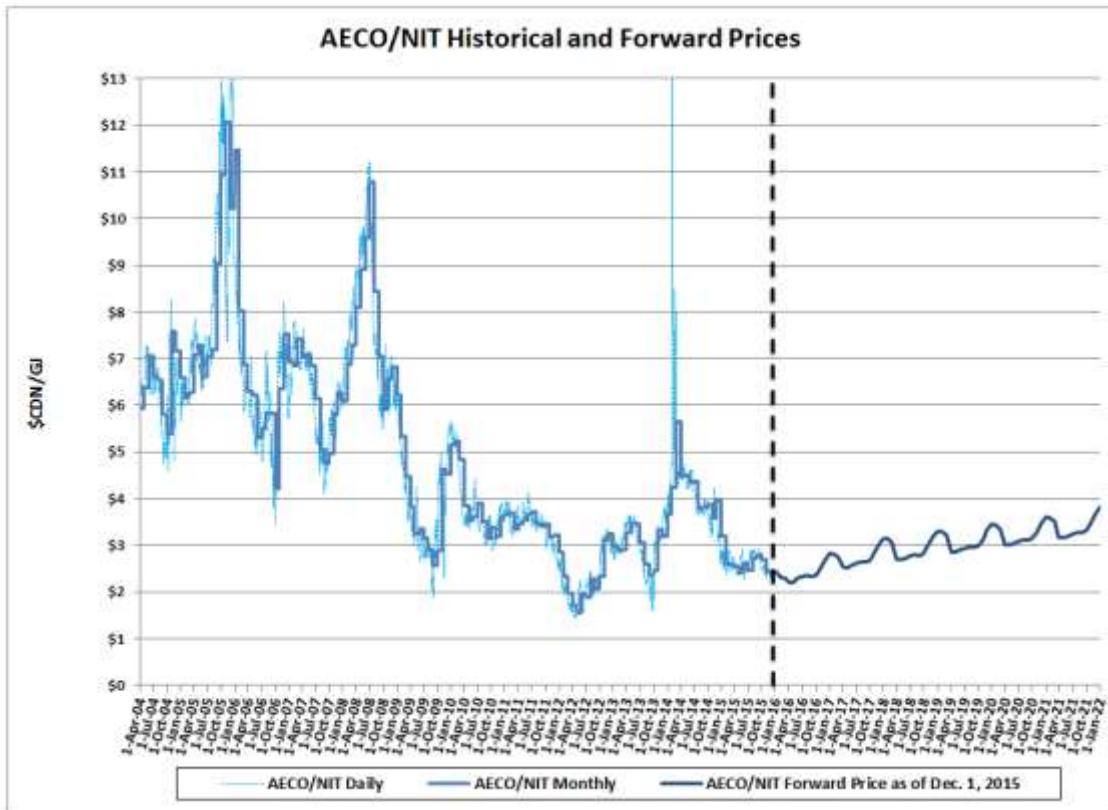
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3 8.1 Please explain how the abundance of shale gas moderates the impact of various
 4 market factors.

5

6 **Response:**

7 The abundance of shale gas has resulted in a structural shift in the natural gas marketplace. As
 8 discussed in Section 3.1.1 of the Application, the shale gas boom has resulted in an over-
 9 supplied market place where demand has not been able to absorb all the supply. This has
 10 resulted in a moderation of the market price environment since 2009 compared to the pre-shale
 11 gas period, as shown in Figure 1 of Section 3.1.1. While market prices averaged about \$7/GJ
 12 from 2004 to 2009, after 2009 gas prices have averaged about \$3/GJ.



13

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 21

1 However, as discussed in Section 3.1.2 of the Application, market price volatility has continued
2 despite this abundance of shale gas.

3
4

5

6 8.2 Please review all the market factors that would likely cause volatility in the
7 marketplace.

8

9 **Response:**

10 There are many market factors that cause price volatility in the gas marketplace as discussed in
11 Sections 4.2.1 and 4.2.4 of the FEI 2014 Price Risk Management Review Report (Exhibit A2-2).
12 These include the following main fundamental and technical factors:

- 13 • Weather impacts on demand (e.g. polar vortex increasing winter heating demand)
- 14 • Weather impacts on supply (e.g. production well freeze-offs or hurricane impacts)
- 15 • Constrained regional infrastructure that limits ability to move gas supply to markets
16 during high demand periods
- 17 • Natural gas storage levels (i.e. storage levels have a strong inverse correlation with gas
18 prices)
- 19 • Fuel switching demand in response to differences in fuel price levels (e.g. coal-to-gas
20 fuel switching by power generators)
- 21 • Technical trading (e.g. increased market buying if price support levels are not breached)

22 These are factors that have caused market price volatility in the past and will continue to cause
23 market price volatility in the future.

24
25

26

27 8.3 Please confirm that the same market factors that have caused volatility in the
28 past are likely to be present in the future.

29

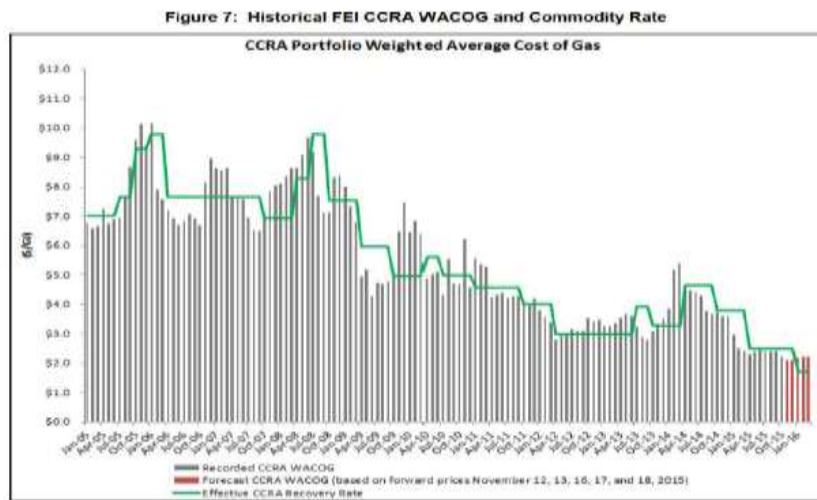
30 **Response:**

31 Please refer to the response to CEC Scope B IR 1.8.2.

32

1 **9. Reference: Exhibit B-1, Page 12**

This market price volatility has had an impact on FEI's gas costs and commodity rates during the last few years. The following figure shows FEI's historical CCRA WACOG and commodity recovery rates. Note that during the winter 2013/14 market price spikes, FEI's commodity rate rose from \$3.27/GJ to \$4.64/GJ by April 2014, an increase of \$1.37/GJ. This is because FEI's WACOG increased as market prices went up and also because FEI's commodity deferral account balance was in a significant deficit position and needed to be recovered from customers. FEI's commodity rate effective January 1, 2016 is \$1.719/GJ and is below the current WACOG due to the deferral account surplus that has built up towards the end of 2015.



2

3 9.1 Please confirm that in highly unfavourable weather conditions such as during the
 4 Polar Vortex, customers may experience both natural gas price hikes and the
 5 likely requirement to consume more than their typical gas consumption.

6

7 **Response:**

8 Confirmed.

9

10

11

12 9.2 Please provide an estimate of the average residential bill impact that was
 13 experienced by customers during the market price spikes.

14

1 **Response:**

2 Please refer to the tables below which show the average residential bill impacts experienced by
 3 customers during the market price spikes. As outlined in the response to CEC Scope A IR
 4 1.3.1, residential customers experienced bill impacts equal to or greater than 10% in relation to
 5 increases in the FEI Commodity Cost Recovery Charge per GJ that occurred effective: October
 6 1, 2005, April 1, 2008, July 1, 2008, July 1, 2013 and April 1, 2014.

<i>FEI Mainland Rate Schedule 1</i>				
Average Annual Use Rate (Gigajoules)		90		
	Jul 1, 2005	Oct 1, 2005	Percentage Change	Dollar Change
Fixed Daily Basic Charge	\$10.70	\$10.70	0%	\$0.00
Delivery Charge per Gigajoule	\$2.822	\$2.822	0%	\$0.000
Storage and Transport per Gigajoule	\$0.655	\$0.655	0%	\$0.000
Cost of Gas per Gigajoule	\$7.658	\$9.292	21%	\$1.634
Average Annual Bill	\$1,131	\$1,278	13%	\$147
All components of rates include applicable rate riders.				

7

<i>FEI Mainland Rate Schedule 1</i>				
Average Annual Use Rate (Gigajoules)		90		
	Jan 1, 2008	Apr 1, 2008 ¹	Percentage Change	Dollar Change
Fixed Daily Basic Charge	\$11.13	\$11.13	0%	\$0.00
Delivery Charge per Gigajoule	\$2.748	\$2.748	0%	\$0.000
Storage and Transport per Gigajoule	\$1.327	\$1.327	0%	\$0.000
Cost of Gas per Gigajoule	\$6.926	\$8.287	20%	\$1.361
Average Annual Bill	\$1,124	\$1,246	11%	\$122
¹ April 1 Delivery and Storage and Transport charges held constant to show impact of Cost of Gas rate change. All components of rates include applicable rate riders.				

8

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) <u>Scope B</u> Information Request (IR) No. 1	Page 24

FEI Mainland Rate Schedule 1				
Average Annual Use Rate (Gigajoules)		90		
	Apr 1, 2008	Jul 1, 2008	Percentage Change	Dollar Change
Fixed Daily Basic Charge	\$11.13	\$11.13	0%	\$0.00
Delivery Charge per Gigajoule	\$2.728	\$2.728	0%	\$0.000
Storage and Transport per Gigajoule	\$1.326	\$1.326	0%	\$0.000
Cost of Gas per Gigajoule	\$8.287	\$9.780	18%	\$1.493
Average Annual Bill	\$1,244	\$1,379	11%	\$134
All components of rates include applicable rate riders.				

1

FEI Mainland Rate Schedule 1				
Average Annual Use Rate (Gigajoules)		90		
	Jan 1, 2013	Jul 1, 2013 ¹	Percentage Change	Dollar Change
Fixed Daily Basic Charge	\$0.3890	\$0.3890	0%	\$0.00
Delivery Charge per Gigajoule	\$3.691	\$3.691	0%	\$0.000
Storage and Transport per Gigajoule	\$1.192	\$1.192	0%	\$0.000
Cost of Gas per Gigajoule	\$2.977	\$3.913	31%	\$0.936
Average Annual Bill	\$849	\$934	10%	\$84
¹ July 1 Delivery charge held constant to show impact of Cost of Gas rate change.				
All components of rates include applicable rate riders.				

2

FEI Mainland Rate Schedule 1				
Average Annual Use Rate (Gigajoules)		90		
	Jan 1, 2014	Apr 1, 2014	Percentage Change	Dollar Change
Fixed Daily Basic Charge	\$0.3890	\$0.3890	0%	\$0.00
Delivery Charge per Gigajoule	\$3.621	\$3.621	0%	\$0.000
Storage and Transport per Gigajoule	\$1.303	\$1.303	0%	\$0.000
Cost of Gas per Gigajoule	\$3.272	\$4.640	42%	\$1.368
Average Annual Bill	\$880	\$1,003	14%	\$123
All components of rates include applicable rate riders.				

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9.3 Please confirm that the total annual customer billing, even with a price spike, could be considered low relative to historical billings.

Response:

FEI confirms that recent average annual customer bill levels, even with the price spike in 2014, are lower than historical averages. Attachment 9.3 contains the fully functioning spreadsheet which shows that the current average residential bill for the last three years is \$875 but has averaged \$1,063 over the previous eight years. During the price spike in 2014, the average residential customer bill was slightly lower than this average at \$1,003.

9.3.1 If not confirmed, please explain why not.

Response:

Please refer to the response to CEC Scope B IR 1.9.3.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 26

1 **10. Reference: Exhibit B-1, Page 12**

During the stakeholder workshops, FEI explored the impacts of medium-term hedging strategies on commodity rates through the simulations performed by Aether. The simulations were performed for a historical five year "test period" from April 2010 to March 2015. The simulations showed that a fixed-price hedging strategy could reduce the impact of market price volatility when compared to the current base case strategy without the use of hedging. In this simulation, a target price of \$3.25/GJ was used for summer periods and \$3.75/GJ for winter periods. The volume hedge limit was 50% of the commodity supply portfolio. The hedging strategy resulted in fewer commodity rate changes, kept the commodity rate in a narrower band and also avoided the significant increase in the base case commodity rate due to the winter 2013/14 market price spike event. It is also worth noting that during 2012 the hedging strategy did not result in the lowest rate when compared to the base case.

2

3 10.1 Please provide further details as to why the 2012 hedging strategy did not result
4 in the 'lowest rate' when compared to the base case and provide quantification of
5 the difference.

6

7 **Response:**

8 In this simulation provided in Figure 8 on page 13 of the Application, the hedging case did not
9 result in the lowest rate when compared to the base case in 2012 because the hedging strategy
10 locked in forward market prices which ended up being higher than the actual settled index
11 prices for 2012. So, for the last half of 2012, the base case commodity rate was \$2.12/GJ while
12 the hedging case commodity rate was \$2.34/GJ. Overall, however, for the entire test period of
13 April 2010 to March 2015, the hedging case resulted in savings rather than additional costs with
14 the commodity rate averaging \$2.96/GJ while the base case commodity rate averaged
15 \$3.08/GJ.

16

17

18

19 10.2 Could the judicious use of deferral accounts have resulted in the same benefit of
20 fewer commodity rate changes and avoiding the significant rate increase from the
21 hedging strategy and lower rates? Please explain why or why not.

22

23 **Response:**

24 In the simulation scenarios, the current rate setting guidelines were used and deferral accounts
25 were managed within the appropriate range. Changes to use deferral account balances outside
26 of this range were not modelled nor does FEI believe it would be appropriate to do so. Please
27 also refer to the responses to BCUC Scope A IRs 1.3.3 and 1.4.7.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 27

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10.3 Is rate stability the key benefit of keeping 'the commodity rate in a narrower band'?

Response:

Rate stability is a key benefit of keeping the commodity rate in a narrower band.

10.3.1 If no, please explain what the key benefit to the customer would be.

Response:

Please refer to the response to CEC Scope B IR 1.10.3.

10.3.2 Please provide FEI's view of the appropriate cost trade-off for each % degree to which a price band could be narrowed.

Response:

FEI has not determined a value for the appropriate cost trade-off for each % degree to which a price band could be narrowed. Please refer to the response to CEC Scope A IR 1.4.5.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 28

1 **11. Reference: Exhibit B-1, Page 14**

2 The representative for the Commercial Energy Consumers Association of British Columbia (CEC) stated that it supported capturing opportunities and agreed that these opportunities come along periodically and FEI has the knowledge and expertise to capture them. The CEC representative suggested the volume hedged should be below the 50% maximum proposed for a single hedging price target to balance potential hedging costs with rate stability.

3 11.1 Please provide the volumes that FEI considered and explain why they were
4 rejected in favour of staying below the 50% maximum.

5
6 **Response:**

7 Please refer to the response to BCUC Scope B Confidential IR 1.1.3.

8
9
10
11 11.2 Please provide the pros and cons of targeting below 50% for the volumes to be
12 hedged.

13
14 **Response:**

15 Please refer to the response to BCUC Scope B Confidential IR 1.1.3.

16
17
18
19 11.3 How will FEI set a target for hedging based on circumstances? Please explain.

20
21 **Response:**

22 As discussed in the Application, FEI has set its hedging price targets based on consideration of
23 how low market prices have been in the past, where market prices are currently, gas producer
24 break-even costs and other market-based factors such as coal-to-gas switching price levels.

25

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 29

1 **12. Reference: Exhibit B-1, Page 15**

As discussed in Section 3.1.1, it appears the potential for market prices to fall significantly for a sustained period of time is limited. However, market prices could fall further. As shown in Figure 2 in Section 3.1.1, current market expectations indicate that the prices could move between about \$1.50/GJ and over \$6.00/GJ at different times over the next few years. If the downside risk for market prices is about \$1.50/GJ as shown in Figure 2 and the proposed hedging strategy is executed at the first price target for [REDACTED] of the supply portfolio (i.e. [REDACTED]), then the impact of the potential hedging cost on the commodity rate would be limited to about [REDACTED] (or about [REDACTED] million per year). If [REDACTED] of the hedging is executed at the second hedging price target, then the potential hedging cost is about [REDACTED] (or about [REDACTED] million per year).

2

3 12.1 Is the 'cost on the commodity rate' essentially the difference between the cost
4 that would have occurred in the absence of the hedge, versus that which was
5 contracted for?
6

7 **Response:**

8 Yes.

9

10

11

12 12.2 If not, please explain.

13

14 **Response:**

15 Please refer to the response to CEC Scope B IR 1.12.1.

16

17

18

19 12.3 If yes, does the hedge price effectively represent a rate that FEI anticipates
20 would be a 'good deal' for the customers, but could have been a 'better deal' if
21 the market falls below the hedge price?
22

22

23 **Response:**

24 The hedge price effectively represents a price that FEI anticipates would be a 'good deal' for the
25 customers. If FEI had not entered into the fixed price transaction and market prices
26 subsequently fell, then customers would receive a 'better deal'. Alternatively, if FEI had entered
27 into the fixed price transaction and market prices subsequently increased, then customers



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 30

1 would receive a 'better deal'. It is important to remember, however, that the objectives of the
2 price risk management are not only to capture opportunities for customers but also to mitigate
3 the impacts of market price volatility on rates. FEI's hedging strategy and price targets are
4 based on these two objectives and not just one of them.

5
6

7

8 12.4 What, if any, additional costs are incurred by ratepayers with the proposed
9 hedging strategy?

10

11 **Response:**

12 Other than the potential hedging gains or costs described in Section 3.1.5 of the Application,
13 there are no additional costs incurred by ratepayers with the proposed hedging strategy.

14

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 31

1 **13. Reference: Exhibit B-1, Appendix A, Page 10**

FEI presented the objectives of price risk management as discussed within the Review Report. These included mitigating market price volatility to support rate stability and capturing opportunities to provide customers with more affordable and competitive rates. The objectives should be met in a cost effective manner. This provided a starting point for further discussions regarding objectives with the stakeholders.

Group 1 had mixed opinions amongst the various gas marketers but some believed that some rate stability for customers is important. Some marketers would generally support a medium-term hedging program as long as it is transparent and mechanical with predefined strategies and targets. One gas marketer suggested that a lot of their customers want variable rates so if FEI uses hedging, marketers should be allowed to offer variable pricing products as well.

2

3 13.1 Is FEI aware of a customer segment that is likely to want variable rates?

4

5 **Response:**

6 Yes. As the preamble to this question suggests, during the workshops one natural gas
7 marketer stated that a lot of their customers wanted variable rates.

8

9

10

11 13.1.1 If yes, please discuss and provide FEI's expectation as to the size and
12 composition of such a customer group.

13

14 **Response:**

15 FEI does not know the size and composition of such a customer group. The gas marketer who
16 made this comment did not provide details in terms of the size and composition.

17

18

19

20 13.1.2 Would FEI be opposed to allowing marketers to offer variable products
21 as well? Please explain why or why not.

22

23 **Response:**

24 Yes, FEI would be opposed to allowing marketers to offer variable products as well. Variable
25 pricing products provided by marketers are not consistent with the principles of the Essential
26 Services Model (ESM) or the Customer Choice program. The Commission has been consistent



FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 32

1 in supporting this view and has upheld the principles of the ESM through its decision regarding
2 the seventh Customer Choice Annual General Meeting on September 25, 2015.

3 Outside of the ESM and Customer Choice program, certain customer rate classes (e.g. rate
4 schedule 23, 25, 27 and 22) are eligible for participation in the Transportation Services model
5 which allows the customers to buy any product offering they want, including variable pricing
6 options, from the marketplace.

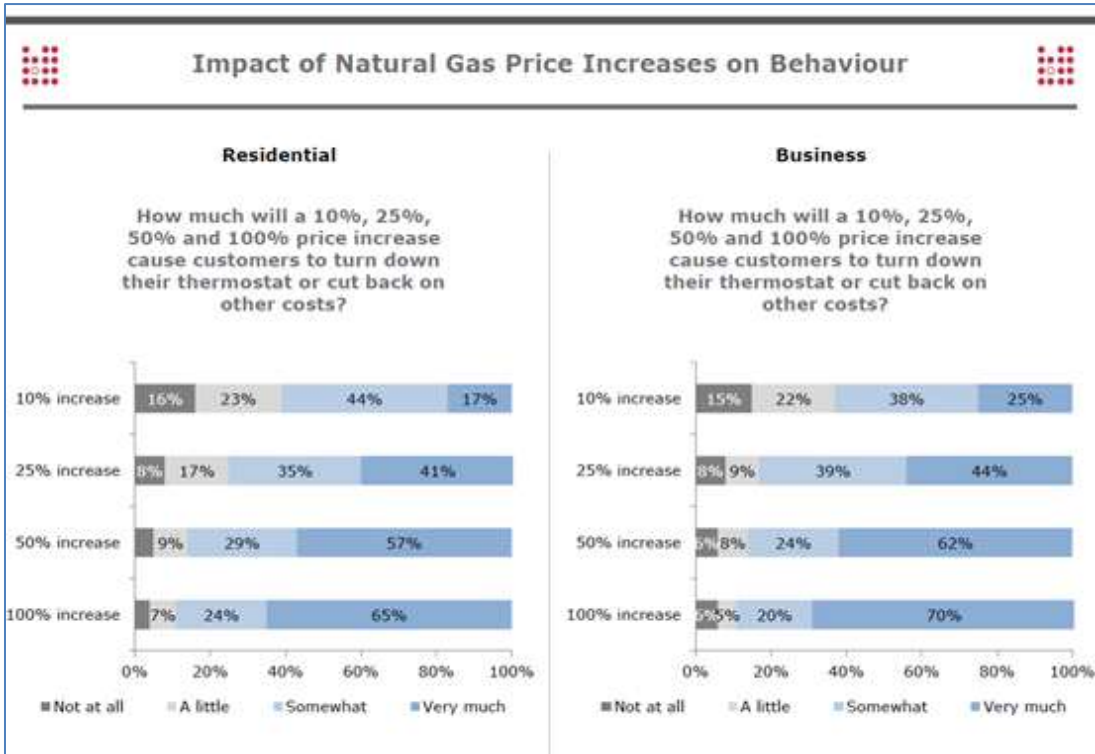
7
8

9
10 13.2 Would FEI expect that residential customers could have a different tolerance for
11 bill risk related to commodity prices than commercial customers? Please explain
12 and provide quantification where available.

13
14

Response:

15 FEI would expect that residential customers could have a different tolerance for bill risk related
16 to commodity prices than commercial customers. The customer research done in 2012 shows
17 how various percentage increases in gas rates would influence consumer consumption
18 behavior. The following figure from page 18 of the 2012 Customer Survey Results in Appendix
19 C of the FEI 2014 Price Risk Management Review Report (Exhibit A2-2) shows the various
20 percentage increases in gas rates that would influence residential and commercial consumption
21 behavior.



1

2 The figure indicates that Business customers are overall slightly more sensitive than residential

3 customers as indicated by the higher combined 'somewhat' and 'very much' category results for

4 Business customers for the 10%, 25% and 100% rate increase categories.

5

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 34

1 **14. Reference: Exhibit B-1, Appendix 1, Page 11**

2 It was suggested by one stakeholder that conducting a survey to find out customers' bill change
3 tolerance levels would help in determining rate setting objectives and mechanism
4 enhancements. FEI noted that it has conducted surveys and focus groups in 2012 and
5 previously in 2005 which provided some insights into customers' preferences for rate stability
6 and bill change tolerances. FEI believes that customer research is important in determining
7 customers' preferences but does not think more customer research would be valuable at this
8 time. The workshop stakeholders provided representation from various customer groups and so
9 indirectly indicate customers' preferences. Furthermore, it would not be useful or productive to
10 explore the same level of detail that was discussed in the workshops with customers directly
11 given customers' general level of understanding of how rates are set. If current market
12 conditions change significantly, FEI could do more customer research at that time.

13 14.1 Please provide a summary of FEI's views as to the bill change tolerances in both
14 % and \$ values for residential customers, if available.

15 **Response:**

16 Please refer to the response to BCUC Scope B IR 1.3.2.

17 14.2 Please provide a summary of FEI's views as to the bill change tolerances in %
18 for commercial customers, if available.

19 **Response:**

20 FEI does not know the bill change tolerances for commercial customers. The information
21 provided in the response to BCUC Scope B IR 1.3.2 relates to residential customers only as the
22 2005 research was based on surveys of residential, and not commercial, customers.

23 Regardless of the exact residential or commercial customer bill tolerance level, FEI believes that
24 the proposed strategies in the Application are reasonable given the discussions and feedback
25 from customer representatives in the workshops regarding the objectives and strategies, as well
26 as the results of previous customer research as discussed in the response to CEC Scope B IR
27 1.13.2.

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 35

1 **15. Reference: Exhibit B-1, Appendix 1, Page 11**

2 The components of medium-term hedging were presented and examples of several financial
3 hedging instruments were provided. FEI described that there are several aspects to a hedging
4 program which could include defensive hedging, to protect against rate increases, and
5 opportunistic hedging which could use options and/or fixed price swaps or purchases to capture
6 favourable price levels. FEI noted that developing a hedging program that is based on
7 customer tolerances would require more customer research and analysis. However, capturing
8 market price opportunities could be done without customer research. For example, the price
9 target could be based on consideration of historical commodity rates, market prices, and gas
10 producer break-even costs.

2

3 15.1 Is FEI's proposed hedging is more opportunistic than defensive? Please explain.

4

5 **Response:**

6 FEI's proposed hedging strategy is more opportunistic than defensive. An opportunistic strategy
7 is designed to capture favourable market price opportunities, if they occur, for customers. It
8 could include the use of fixed price hedges or options. FEI has selected fixed price hedges in
9 its proposed strategy. A defensive strategy is designed to mitigate the impacts of market price
10 spikes or increasing market prices. Such a strategy would likely use call options to cap market
11 price increases.

12 FEI had hoped going into the workshops that it would receive support for a hedging strategy that
13 included both opportunistic and defensive components. However, as there was no support for
14 the defensive component, FEI has proposed a more limited opportunistic strategy in the
15 Application.

16

1 **16. Reference: Exhibit B-1, Appendix A, Page 15**

2.4.4.2 Medium-Term Hedging Strategy Simulations

Aether then presented the medium-term hedging strategies, beginning with three programmatic hedging simulations. These included the following:

- Scenario #1 – Purchasing fixed price swaps
- Scenario #2 – Purchasing \$1 out-of-the-money (OTM) call options
- Scenario #3 – Purchasing \$1 OTM costless collars

These instruments (fixed price swaps and options) were chosen in the modelling because they are very commonly used for hedging purposes in the natural gas market place and also because they have been used by FEI in its previous hedging programs. Aether modelled the instruments and scenarios separately, rather than in combination, so that it would be easier to see the effects of each instrument on the commodity rate.

2

3 16.1 For how many years did FEI conduct hedging programs?

4

5 **Response:**

6 FEI started hedging in 1995 and stopped in 2012 (with the last hedges expiring in 2014);
 7 therefore FEI conducted hedging programs for 17 years.

8

9

10

11 16.2 Please provide an overview of the results of its previous hedging programs.

12

13 **Response:**

14 The following table shows the results of FEI's previous hedging programs in terms of financial
 15 hedging gains or costs.

Year	Hedging Gains (Costs)
1998	(\$11,680,212)
1999	\$8,565,130
2000	\$25,096,270
2001	(\$55,722,987)
2002	(\$123,380,048)
2003	\$17,697,293
2004	\$17,582,359
2005	\$72,460,266

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 37

Year	Hedging Gains (Costs)
2006	(\$90,461,296)
2007	(\$144,817,377)
2008	(\$43,276,082)
2009	(\$183,516,917)
2010	(\$150,461,297)
2011	(\$121,220,207)
2012	(\$118,042,380)
2013	(\$36,350,605)
2014	(\$9,585,161)

1

2 As discussed in Section 4.1 of the FEI 2014 Price Risk Management Review Report, FEI's
3 previous hedging programs were largely programmatic and not responsive to changes in market
4 price conditions. Therefore, with the steady decrease in market prices as a result of the
5 abundance of shale gas in North America since 2008, for example, the hedging program
6 resulted in significant hedging costs.

7 As discussed in the Application, FEI has proposed a limited version of a more dynamic hedging
8 strategy based on consideration of market price conditions. Furthermore, market prices are
9 currently significantly lower than they were in the past and so the risk of significant hedging
10 costs is reduced, as discussed in Sections 3.1.1 and 3.1.5 of the Application.

11

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 38

1 **17. Reference: Exhibit B-1, Appendix A, Page 15**

2 FEI had previously used a largely programmatic hedging approach in its hedging programs as
3 had many other utilities. While this approach worked well during period of rising market prices,
4 it does not work as well, in terms of hedging costs, during periods of significantly falling market
5 prices, as occurred during the shale gas boom from 2009 to the present time. Because of this,
6 many utilities have moved to a more dynamic approach which is more responsive to changing
7 market price conditions.

8 17.1 Please elaborate on the dynamic approach as compared to the programmatic
9 hedging approach.

10 **Response:**

11 A dynamic approach to hedging is more responsive to changing market price conditions as
12 compared to the programmatic approach. A programmatic approach includes layering in
13 hedges periodically over time, without regard for where market price levels and hedge prices
14 are. A dynamic approach includes the use of predefined market price targets such that hedges
15 are only implemented if the price targets are reached. A dynamic approach could also include,
16 for example, call options which provide a market price cap to mitigate the risk of market prices
17 moving higher or market price volatility.

18 17.2 Which approach will FEI be using for the current hedging strategy?

19 **Response:**

20 FEI has proposed a limited version of a dynamic approach using predefined market price
21 targets.

22

FortisBC Energy Inc. (FEI or the Company) 2015 Price Risk Management Application (the Application)	Submission Date: March 8, 2016
Response to Commercial Energy Consumers Association of British Columbia (CEC) Scope B Information Request (IR) No. 1	Page 39

1 **18. Reference: Exhibit B-1, Appendix A, Page 9**

During this workshop, there was some discussion regarding the deferral account amortization period and how the rate setting guidelines provide some discretion in terms of when the 24-month amortization could be used. BCUC staff noted that the Commission received submissions from natural gas marketers who did not support departing from the established rate setting thresholds when FEI last requested flexibility and consideration of the 24-month outlook and the Commission determined that there was not a compelling reason to depart from the standard 12-month outlook. FEI noted that gas marketers serve about 5% of the commodity sales customers and that if other stakeholders are in favour of more flexibility and consideration of the 24-month outlook in the commodity rate setting, in order to provide more stability in commodity rates, then they should provide support for this to the Commission. BCUC staff also noted that more clarification in terms of the criteria to be used when evaluating the 24-month amortization would be helpful for the Commission.

2

3 18.1 Please describe FEI's view of the natural gas marketers' reasons for not
4 supporting a departure from the established rate setting thresholds.

5

6 **Response:**

7 FEI expects that marketers do not support FEI's rate setting proposals because more volatile
8 FEI commodity rates help make the marketers' fixed rate offerings under the Customer Choice
9 program more attractive for customers seeking stability in rates.

10

Attachment 9.3

REFER TO LIVE SPREADSHEET MODEL

Provided in electronic format only

(accessible by opening the Attachments Tab in Adobe)