British Columbia Utilities Commission

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February 12, 2016

FEI 2015 PRICE RISK MANAGEMENT
EXHIBIT A-5

Ms. Diane Roy
Director
Regulatory Strategy and Business Analysis
FortisBC Energy Inc.
16705 Fraser Highway
Surrey, BC V3S 2X7

Dear Ms. Roy:

Re: FortisBC Energy Inc.
2015 Price Risk Management Application

Further to British Columbia Utilities Commission Order G-10-16, which established a Regulatory Timetable with respect to the above noted Application, enclosed please find the Scope B Commission Information Request No. 1.

In accordance with the Regulatory Timetable, please file your responses electronically with the Commission on or before Thursday, March 3, 2016.

Yours truly,

Original signed by:

Erica Hamilton

CM/dg
Enclosure
cc: Registered Interveners

A Filing by FortisBC Energy Inc.
For Approval of the 2015 Price Risk Management Application

1.0 Reference: INTRODUCTION
FortisBC Energy Inc. 2015 Price Risk Management Application (Application)
Exhibit B-1, p. 1, Appendix A, pp. 10, 17
Exhibit A2-2, FEI 2014 Price Risk Management Review Report, p. 9
Commission Order G-120-11, Appendix A, pp. 10-11, 20, 22
Price risk management objectives

On page 1 of the Application, FEI states:

> FEI believes that the workshop process has helped 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.

On pages 10 and 11 of the Commission's Reasons for Decision attached as Appendix A to Order G-120-11 (2011 Decision) in regard to the FortisBC Energy Inc./FortisBC Energy (Vancouver Island) Inc. (FEU) 2011-2014 Price Risk Management Plan (2011-2014 PRMP), the Commission noted that FEU stated that the primary objectives of the 2011-2014 PRMP could be described as:

(i) improve the likelihood that natural gas will continue to be competitive with other energy sources;

(ii) moderation of gas price volatility and its effect on customer rates; and

(iii) reduction of risk due to regional price disconnects.

On page 20 of the 2011 Decision the Commission found that the need for an objective related to the competitiveness of natural gas with other energy sources had not been established and on page 22 stated that moderating volatility is a reasonable goal for FEU to pursue.

On page 9 of the 2014 Price Risk Management Review Report (2014 PRM Review Report) FEI states "[t]he primary objectives of FEI's price risk management are to mitigate market price volatility to support rate stability and capture opportunities to provide customers with more affordable and **more competitive** rates than in the past." [emphasis added] FEI further states "FEI believes maintaining competitiveness with other sources of energy is an important objective of price risk management."

In section 2.4.2 on page 10 of the Price Risk Management Workshop Summary Report (PRM Workshop Summary Report) FEI initially describes the objectives discussed with participants in Workshop #2 as worded in the 2014 PRM Review Report and then on page 17 in section 2.4.5 of the PRM Workshop Summary Report, where FEI notes that the objectives were revisited with workshop participants in Workshop #4, FEI notes it adjusted the second objective by dropping the reference to "more competitive rates" in view of the Commission's decision in Order G-120-11.

1.1 Please confirm that the objective in this Application of "capturing opportunities to provide customers with more affordable rates" is a new objective not examined by the Commission in its review of the 2011-2014 PRMP.

1.1.1 If not confirmed, please provide applicable reference to the examination of this objective in the 2011-2014 PRMP proceeding.

1.1.2 Is "capturing opportunities to provide customers with more affordable rates" effectively still an objective concerned with ensuring the competitiveness of natural gas with other energy sources? Please explain.

1.2 The objectives of FEI's price risk management plan were the subject of a significant amount of discussion at the workshops. In FEI's view did FEI and stakeholders reach consensus on all the objectives as described in the Application? Please elaborate.

On page 17 of the PRM Workshop Summary Report FEI describes how, in Workshop#4, FEI provided the following as "more detailed metrics for the objectives":

- Reduce the magnitude and/or frequency of rate changes
- Limit the impact of significant price spikes (e.g. above $4/GJ)
- Capture low pricing opportunities (e.g. below $2.50/GJ)
- Maintain some rate variability to provide price signals to customers
- Transparent and predefined strategies and implementation
- Any strategy costs should be minimal
- Continue to manage deferral account balances (e.g. within +/- $50 million band).

1.3 Please confirm, or otherwise explain, that some of the metrics presented are in conflict with each other.

1.4 Did FEI and stakeholders at the workshop reach consensus in regard to FEI's list of metrics as described in the Application? Please elaborate.

2.0 Reference: INTRODUCTION
Exhibit B-1, Section 3.1.1, p 5
Exhibit A2-2, 2014 Price Risk Management Review Report, p. 9
Washington Utilities and Transportation Commission (WTUC) Docket UG-132019 inquiry into local distribution companies' hedging practices, July 2015 paper prepared for the WUTC by Michael Gettings, Senior Partner of RiskCentrix, LLC titled "Natural Gas Utility Hedging Practices and Regulatory Oversight: An Inquiry into Local Natural Gas Distribution Companies' Hedging Practices and Regulatory Oversight", Appendix C, p. 6 http://www.utc.wa.gov/docs/Pages/DocketLookup.aspx
"Risk View "versus "Market View"

The Washington Utilities and Transportation Commission (WUTC) has an ongoing inquiry into natural gas local distribution companies' hedging practices and the regulation of those hedging practices. In the white paper dated July 2015, prepared for the WUTC by Michael Gettings, Senior Partner of RiskCentrix, LLC. Mr. Gettings provides the following comments on page 6 in Appendix C on the topic of taking a "risk view" instead of a "market view":

> The distinction between risk view and market view is important. Hedges are placed at futures-market prices which reflect all participants' money-backed consensus as to the future price of natural gas. For the purpose of making hedge decisions, it is meaningless to hold a view that the spot physical price of gas is likely to rise (or fall) because of fundamental factors. One cannot hedge next year's gas at today's spot price, and the

> futures price right now could be dramatically different than the prevailing fundamentals might indicate. A hedge manager who buys on a market view is effectively acting on something far more speculative. If stated properly it would be this: "While all market participants have equal access to data regarding consumption, production, storage and other factors, and they have reached a consensus on next year's futures price, I know better."
>
> A risk view is very different. It holds that we do not know the direction or magnitude of futures price changes, but we do know the current futures price (market consensus) and we can observe the uncertainty of that consensus as daily futures-price fluctuations. If we decide on our tolerances for upside costs and downside hedge losses, we can compare the observed risk to our tolerances and take hedge actions accordingly.

On page 5 of the Application in section 3.1.1, FEI states, "While there is uncertainty in terms of how low market prices will settle, market information suggests that further sustained downside price movements are limited." FEI then describes in some detail in section 3.1.1 market information regarding historical price movements and recent forward natural gas prices, gas producer break-even costs and coal-to-gas fuel switching price levels.

2.1 Does FEI agree that FEI's stated objective of "capturing opportunities to provide customers with more affordable rates" and the proposed execution of hedges based on reaching a price threshold established on the basis that the market is not likely to fall further is taking a market view rather than a risk view? Please discuss.

On page 9 of the 2014 PRM Review Report, in reference to FEI's stated objectives, FEI states:

> An underlying goal is to meet these objectives in a cost effective manner. It should be recognized that this does not necessarily mean avoiding hedging costs or out-of-market outcomes. The goal of price risk management is not to achieve the lowest possible market price or "beat the market"; rather it should be thought of like insurance, which comes with a cost. However, the benefits of price risk management should justify the costs.

2.2 Does FEI agree that FEI's description of the goal of price risk management as being more like insurance than "beating the market" is a risk view. Please discuss.

2.3 Does FEI agree, as stated by Mr. Gettings in the WUTC white paper, that one must first develop a measure of volatility and determine the tolerance for risk before one can measure the benefits of a particular price risk management strategy against the costs? Please discuss.

3.0 Reference: CUSTOMER RESEARCH
Exhibit A2-3, Price Risk Management Workshop Summary Report, p. 11
Exhibit A2-2, 2014 Price Risk Management Review Report, pp. 55, 59, 61
Customer tolerances for annual bill changes

On page 55 in section 7 of the 2014 PRM Review Report FEI states that in order to assess customers' tolerances for rate and bill fluctuations and possible preferences for alternative rate offerings and structure, FEI conducted quantitative research and qualitative research with focus groups in 2012.

On page 59 of the 2014 PRM Review Report, FEI describes the customer research conducted in 2012 and also summarizes the research done in 2005. FEI describes how it concluded in the 2005 research that, on average, participants in the Residential Customer Price Volatility Preferences Study can tolerate annual natural gas billing changes of $169 (or 16 percent of average annual billing of $1033).

3.1 Please describe any further efforts FEI have made to quantify the customer tolerance for rate change since the 2005 research.

3.2 Based on the research done in 2012, does FEI consider the $169 tolerance to still be a reasonable measure of the tolerance for most residential customers?

3.2.1 If not, please provide an updated measure of the rate change tolerance for most residential customers in the current low price market.

3.3 Please convert the $169 to a per gigajoule amount using the average annual consumption for a residential customer on the FEI system (combined for all service areas). Please state any assumptions.

3.4 Which does FEI consider the most accurate measure of residential customers' tolerance for change: the absolute dollar value of the change in the total annual bill, the percent change in the total annual bill, the percentage change in the total per gigajoule rate or the absolute value of the change in the total per gigajoule rate? Please discuss.

In section 7.1 of the 2014 PRM Review Report, FEI describes the research conducted in 2012 to determine customer preferences regarding four alternative rate offerings. On page 61 of this Report FEI recommends more comprehensive price risk management on a portfolio basis, specifically implementation of a medium term hedging program to mitigate market price volatility and enable FEI to capture favourable market price opportunities if they arise. FEI states it "believes that conducting further customer research regarding customers' tolerable annual bill increases would determine more definitive hedging parameters, such as amounts to hedge and instruments, depending upon market price conditions and volatility."

On page 11 of the PRM Workshop Summary Report, FEI notes it was suggested by one of the workshop participants that "conducting a survey to find out customers' bill change tolerance levels would help in determining rate setting objectives and mechanism enhancements." In response FEI states it believes that customer research is important in determining customers' preferences but does not think more customer research would be valuable at this time given the participation of the customer group representatives in the workshops and the difficulty of exploring the same level of detail with customers directly.

3.5 Has FEI explored or considered alternative means of measuring customers' tolerances for either annual bill increases or rate changes? For instance could either the correlation of either the level of call centre activity or the number of customers electing to move to the Equal Payment Plan with the magnitude of the rate changes be used as an indirect measure? Please elaborate.

4.0 Reference: PRICE RISK MANAGEMENT WORKSHOP SUMMARY REPORT
Exhibit A2-3, FEI Price Risk Management Workshop Summary Report, Appendix A, pp. 26–27; Appendix C, p. 43
FEI residential rates

In FEI's PRM Workshop Summary Report, Appendix A, page 26, FEI shows that the focus of the 2014

PRM Review Report is on the commodity component of customer bills. On page 27, FEI further shows a breakdown of the components of historical residential rates from April 1, 2004 to July 1, 2014.

Using data from the April 2010 to March 2015 test period, Aether Advisors performed modeling simulations on how commodity rates is impacted by a 25 percent, 50 percent, and 75 percent hedge ratio using fixed price swaps. The modeling result is presented in FEI's PRM Workshop Summary Report, Appendix C, on page 43.

4.1 Please extend the graph provided on page 27 in Appendix A of FEI's PRM Workshop Summary Report to include a breakdown of the components of residential rates up to February 1, 2016, and quantify each component in terms of $/GJ and % of the total rate.

4.1.1 For each of the months covered in the graph produced in response to question 4.1 above, please provide a graph and a data table in a functional excel spreadsheet to show (in terms of the percentage of total rate and the dollar amount) how much of the total residential bill is impacted for a residential customer consuming 90 GJ/year if, hypothetically, FEI performed fixed price hedging on 25 percent of its supply portfolio throughout this period.

5.0 Reference: REQUEST FOR COMMISSION APPROVAL
Exhibit B-1, pp. 3, 15
Fixed-price hedging strategy

On page 3 of the Application, FEI states that "Price targets apply to each winter or summer term or one-year term within the three-year horizon of April 2016 to March 2019."

Table 1 on page 15 of the Application shows the 5-month (November to March) and 7-month (April to October) seasonal forward AECO/NIT market prices as of December 1, 2015.

5.1 Please update Table 1 in the application with forward AECO/NIT market prices as of February 1, 2016.

5.2 Please provide the monthly and yearly forward AECO/NIT market prices for November 2016 to October 2019 as of February 1, 2016.

5.3 Please confirm, or otherwise explain, that the price target is the same for winter and summer term.

6.0 Reference: INTRODUCTION
Exhibit B-1, p. 2
Requests only applicable for current market conditions

On page 2 of the Application, FEI states:

> FEI had expected that a likely outcome of the workshop process would have been some support for a price risk management framework that included strategies which were responsive in different market price environments. ……… However, this outcome did not occur as there was no support for such a framework. As a result, FEI is putting forward a limited number of requests for approval to the Commission at this time.

6.1 Please confirm, or otherwise explain, that the actions and strategies set out in the Application are not meant to apply in all market conditions, only the current market conditions.

6.1.1 If confirmed, please define “current market conditions”.

6.1.2 Does the FEI’s request for approval of the proposed medium-term fixed-price hedging strategy expire at the end of March 2019?

6.2 Please describe the actions and/or regulatory review and approval processes that FEI intends to undertake, if and when market conditions move outside FEI’s definition of current market conditions over the three-year hedging horizon set out in the Application. Would FEI seek approval to alter the threshold market prices or maximum portfolio percentages?

6.2.1 To the extent FEI wishes to extend the period and/or, please describe the timing and regulatory review and approval process anticipated by FEI.

7.0 Reference: REASONS FOR THE REQUEST
Exhibit B-1, p. 5
Low market gas price environment

On page 5 of the Application, FEI states that “This low price environment provides FEI with the opportunity to help meet the price risk management objectives of mitigating market price volatility to support rate stability and capturing opportunities to provide customers with more affordable rates.”

7.1 Please explain whether it is FEI’s view that the gas market is currently in a “low price environment”.

7.2 Please explain, in FEI’s view, whether it is possible for prices to continue lower in a “low price environment”.

7.3 If FEI enters into a fixed price transaction, would FEI then be capturing a gain or loss when the transaction is ultimately settled? Please elaborate.

8.0 Reference: REASONS FOR THE REQUEST
Exhibit B-1, p. 6
FEI Common Equity Component and Return on Equity for 2016 proceeding, Exhibit B-1, Appendix C, p. 26
Historical and forward AECO/NIT prices

On page 6 of the Application, FEI presents Figure 1 showing the historical AECO/NIT daily and monthly prices from April 1, 2004 to December 1, 2015, and the monthly forward prices as of December 1, 2015 for January 1, 2016 to January 1, 2022.

In the FEI Common Equity Component and Return on Equity for 2016 proceeding, Exhibit B-1, Appendix C, page 26, Figure C-14 shows the changes in AECO/NIT forward price curves over time.

8.1 Please provide a graph, as well as a data table in a functional excel spreadsheet, showing i) the AECO/NIT forward price curve as of September 1, 2010 for the November 1, 2010 to Oct 31, 2013 period; ii) the AECO/NIT forward price curve as of September 1, 2011 for the November 1, 2011 to Oct 31, 2014 period; iii) the AECO/NIT forward price curve as of September 1, 2012 for the November 1, 2012 to Oct 31, 2015 period, and iv) the actual AECO/NIT monthly index prices for the September 1, 2010 to Oct 31, 2015 period.

8.1.1 Assume, FEI implemented a three upcoming gas year hedging strategy for 25 percent of its commodity supply portfolio by locking-in the three upcoming gas years at the AECO/NIT forward price curve as of September 1, 2010 and with a transaction dated of September 1, 2010.

For this scenario please compare the forward prices and actual monthly index prices and calculate the gain or loss ($ and $/GJ) by locking-in at the forward price rather than purchasing at the monthly index. Please state any assumptions including transaction costs.

8.1.1.1 Please repeat the calculation performed above for two additional scenarios: September 1, 2011 and September 1, 2012. Assume that the scenarios are independent of each other and no other hedges were transacted.

9.0 Reference: REASONS FOR THE REQUEST
Exhibit B-1, p. 7
Risk and price volatility

Figure 2 on page 7 of the Application shows the AECO/NIT forward curve and 95% confidence internal bands.

9.1 Please replicate Figure 2 for the AECO/NIT forward curve and 95 percent confidence interval bands as of October 1, 2005 (after Hurricane Katrina).

9.2 For Figure 2 as presented in the Application, as well as the figure produced in response to question 8.1 above, please provide:

i. The numeric values of the AECO/NIT forward curve price and 95% confidence interval in a table and in a functional excel spreadsheet;

ii. The methodology and data source to calculate the 95% confidence interval; if the 95% confidence interval is calculated by third-party, please provide a detailed reference;

iii. The key assumptions including future price volatility assumed in calculating the 95% confidence interval;

9.3 How is the future price volatility for natural gas calculated? Is there is a natural gas volatility index provide the index for the last 10 years. If the information is from a third party, please provide a detailed reference.

10.0 Reference: FIXED PRICE SWAP
Exhibit A2-2, 2014 Price Risk Management Review Report, Appendix G, p. 50
Exhibit B-1, p. 3
Financial hedging execution

In 2014 PRM Review Report, Appendix G, Aether Advisor LLC states on page 50 that "With respect to credit terms, they differ depending upon whether the utility is transaction bilateral contracts directly with counterparties or clearing swaps through a clearing firm."

On page 3 of the Application, FEI states that "Hedges can include fixed price financial swaps or physical fixed price purchases."

10.1 Please provide a description and explain the mechanism of FEI's proposed fixed price financial swaps.

10.2 Please elaborate on which financial instrument FEI proposes to use to perform its fixed price financial swaps, and discuss why it is the selected instrument.

10.2.1 Please provide an example of the transaction cost of hedging using the selected financial instrument. If the response is confidential, please file confidentially.

11.0 Reference: REQUEST FOR COMMISSION APPROVAL
Exhibit A2-3, Price Risk Management Workshop Summary Report, Appendix C
Slide 71, Meeting Notes, pp. 3–4
Mechanics of fixed price financial swaps

In Appendix C to the PRM Workshop Summary Report that is the material presented at Workshop #3 of the stakeholder consultation workshops, slide 71 provides background information from Aether Advisors describing the mechanics of a fixed price financial swap.

11.1 Please confirm, or otherwise explain, that each financial fixed price swap is matched with a physical supply contract for the same quantity of gas priced at an index price.

11.1.1 Please confirm, or otherwise explain, that for fixed price financial swaps for the time periods proposed by FEI in its medium-term hedging strategy (i.e. full winter term, full summer term or one-year term) the index price in the matching physical supply contract will be a monthly index.

11.1.2 Please confirm, or otherwise explain, that the underlying monthly index will be the AECO/NIT monthly index.

In Appendix C to the PRM Workshop Summary Report, on pages 3 and 4 of the Meeting Notes for Workshop # 3, FEI notes the current contracting strategy for physical contracts in the commodity portfolio is 60 percent monthly index and 40 percent daily index and states that increasing the monthly index portion to the 75 percent level used in the hypothetical scenarios modelled by Aether Advisors is not feasible.

11.2 Please confirm, or otherwise explain, that the percentage of the portfolio that can be hedged with fixed price financial swaps is effectively limited to the percentage of the portfolio that is physically contracted on monthly index pricing.

11.3 Please describe the factors that determine the maximum percentage of the commodity portfolio that should be purchased under monthly index price physical contracts.

11.3.1 Please describe the extent to which consideration of these factors limits the amount of hedging that can be done under each of the two alternatives: fixed price financial swaps and physical fixed price purchases.

12.0 Reference: REQUEST FOR COMMISSION APPROVAL
Exhibit B-1, p. 3
Physical fixed price purchases

12.1 In the case of a physical fixed price purchase, please confirm, or otherwise explain, that the total contract price negotiated with the counterparty, including any market factors the counterparty may include would be equal to or less than the applicable forward AECO/NIT market price threshold.

12.2 Please describe the factors that may limit FEI's ability to enter into physical fixed price purchases for the winter term, summer term and full year term within the three-year horizon of April 2016 to March 2019.

12.2.1 Has FEI contracted for physical fixed price purchases for a winter term, summer term or full-year term in the past five years? If not, why not?

12.3 In past annual contracting plans has FEI's contracting strategy included plans to purchase some portion of the commodity portfolio under physical fixed price contacts for either full winter, full summer, or full contract year periods as part of its price risk management strategy?

12.3.1 If not, why not?

12.3.2 If so, was FEI successful in executing these physical fixed price purchases? Please elaborate.

12.3.3 Does FEI consider that Commission approval/acceptance of a strategy to contract for physical fixed price contracts can be obtaining through the Commission review of the FEI annual contracting plan? Please explain.

13.0 Reference: REQUEST FOR COMMISSION APPROVAL
Exhibit B-1, p. 3
Fixed price financial swaps versus physical fixed price purchases

On page 3 of the Application, FEI describes the components of the medium-term fixed-price hedging strategy for which it is seeking Commission approval. One component is that hedges can include either fixed price financial swaps or physical fixed price purchases.

13.1 Please describe how FEI intends to determine which of the two alternative types of hedges is appropriate and the allocation between the two approaches. Is one preferred over the other? Please elaborate.

13.2 Please populate the table below to compare the benefits, risks and costs of the two alternatives.

	Factors limiting use	**Benefits**	**Risks**	**Incremental transaction cost over forward AECO/NIT price**	**Potential for gains or losses**
Fixed price financial swap					
Physical fixed price purchase					

14.0 Reference: FIXED PRICE SWAP
Fixed vs variable financial strategy

In the financial market, home owners can obtain a loan from a financial institution to obtain a mortgage. Loan options include a fixed rate 5 year mortgage or a floating variable rate 5 year mortgage. Depending on home owner preference including cash flow situation, and personal risk tolerances a mortgagee could choose between a fixed rate or a variable rate.

14.1 Would FEI agree that the term structure of interest rates (yield curve) is generally upward sloping? If not, please elaborate.

14.2 In the last 5 years, comparing those who entered into fixed rate mortgages vs variable rate mortgages, which financial strategy realized was cheaper? Please elaborate.

14.3 Is the homeowner choice to lock-in an interest rate or take a floating interest rate analogous to FEI locking in a future natural gas price or buying at daily/monthly index prices? Please elaborate on the similarities and/or differences.

15.0 Reference: PRICE RISK MANAGEMENT IN OTHER JURISDICTIONS
Exhibit A2-2, 2014 Price Risk Management Review Report, section 6.1.2, pp. 51–53
Hedging by other Canadian gas utilities

On page 51 of the 2014 PRM Review Report, FEI states that "Hedging by the major Canadian gas utilities is not as accepted by regulators as it is in the U.S. All of the major Canadian utilities use natural gas storage as part of their price risk management given the peaky nature of winter demand in Canada." FEI further elaborates on the price risk management strategy by other Canadian gas utilities on page 51 to 53 of FEI's 2014 Price Risk Management Review report.

15.1 Please provide an update on current price risk management practices by other Canadian gas utilities, including the use of any hedging strategies.