



**Diane Roy**  
Vice President, Regulatory Affairs

**Gas Regulatory Affairs Correspondence**  
Email: [gas.regulatory.affairs@fortisbc.com](mailto:gas.regulatory.affairs@fortisbc.com)

**Electric Regulatory Affairs Correspondence**  
Email: [electricity.regulatory.affairs@fortisbc.com](mailto: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](mailto:diane.roy@fortisbc.com)  
[www.fortisbc.com](http://www.fortisbc.com)

January 5, 2018

British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
Vancouver, BC  
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary and Manager, Regulatory Support

Dear Mr. Wruck:

**Re: FortisBC Energy Inc. (FEI)**  
**2018 Price Risk Management Plan**

---

On November 23, 2017, the British Columbia Utilities Commission (the Commission) issued Order G-168-17 directing FEI to file a revised Application and/or addenda to the 2017 Price Risk Management Plan. FEI has chosen to file a revised Application.

FEI files the attached 2018 Price Risk Management Plan (2018 PRMP) for approval by the Commission. As set out in the 2018 PRMP, FEI is requesting approval to extend the horizon and adjust the hedging price targets of FEI's existing medium-term fixed-price hedging strategy and to initiate a five-year term hedging strategy based on pre-defined market price targets.

### **Confidentiality Request**

Pursuant to Section 18 of the Commission's Rules of Practice and Procedure, FEI requests that commercially sensitive information related to FEI's hedging strategy, including prices at which FEI plans to execute hedges, be treated confidentially. The commercially sensitive information should be protected and not publicly disclosed in order to preserve and not impair FEI's ability to negotiate and obtain favorable commercial terms for any future natural gas hedging. The sensitive details of FEI's hedging strategy have been redacted from the public version of the 2018 PRMP.



FEI will file a confidential, unredacted, version of the 2018 PRMP with the Commission. In accordance with section 24 of the Commission's Rules of Practice and Procedure, FEI will provide the confidential version of the 2018 PRMP to interveners in this proceeding whose request to access the confidential information is accepted by the Commission, and who sign the Declaration and Undertaking form and abide by any other additional conditions or safeguards the Commission considers appropriate.

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

Sincerely,

**FORTISBC ENERGY INC.**

Diane Roy

Attachments

cc (email only): Registered Intervenors





**FORTISBC ENERGY INC.**

## **2018 Price Risk Management Plan**

**REDACTED**

**January 5, 2018**



## Table of Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 Overview .....	1
1.2 Approvals Sought.....	2
1.3 Response to Commission Questions Pursuant to Order G-168-17 .....	2
1.4 Proposed Regulatory Process.....	3
1.5 Organization of Application .....	3
<b>2. PRICE RISK MANAGEMENT OBJECTIVES.....</b>	<b>4</b>
<b>3. SUPPORT FOR OBJECTIVES .....</b>	<b>6</b>
3.1 Market Price Environment.....	6
3.1.1 Low Price Environment .....	6
3.1.2 Producer Break-Even Costs.....	7
3.1.3 Wide AECCO/NIT Discount May Tighten.....	8
3.1.4 Market Price Forecast.....	10
3.2 FEI Commodity Rate.....	12
3.3 Customer Survey .....	13
<b>4. PRICE RISK MANAGEMENT TOOLS .....</b>	<b>15</b>
4.1 Physical Resources and Strategies .....	15
4.1.1 Storage Resources .....	15
4.1.2 Supply Contracting Strategies.....	16
4.2 Rate Setting Mechanisms .....	17
4.2.1 Quarterly Rate Setting and Deferral Account.....	18
4.2.2 Optional 24-Month Amortization Period.....	20
4.2.3 0.95/1.05 Cost-Recovery Ratio Deadband.....	21
4.2.4 \$0.50 per GJ Minimum Rate Change Threshold .....	21
4.2.5 Capping Quarterly Rate Changes at \$1.00 per GJ.....	21
4.2.6 +/- \$60 million Limit on CCRA Balance .....	22
4.2.7 Increase in Limit on CCRA Balance Not Justified.....	22
4.3 Hedging Tools.....	26
4.3.1 Fixed Price Swaps .....	27
4.3.2 Potential Hedging Alternatives .....	29
4.4 Optional Customer Bill and Rate Tools.....	30
4.4.1 Customer Choice Program.....	30
4.4.2 Customer Moving from Sales to Transportation Service.....	31



4.4.3	<i>Equal Payment Plan</i> .....	32
<b>4.5</b>	<b>Potential Long Term Alternatives</b> .....	<b>32</b>
4.5.1	<i>Long Term Hedging</i> .....	32
4.5.2	<i>Investment in Natural Gas Reserves</i> .....	33
4.5.3	<i>Volumetric Production Payment</i> .....	34
<b>4.6</b>	<b>Summary of Price Risk Management Tools and Strategies</b> .....	<b>34</b>
<b>5.</b>	<b>HEDGING PROPOSALS</b> .....	<b>36</b>
5.1	Medium-Term Hedging Program Refinements .....	36
5.2	Hedging Terms Up To Five Years.....	38
<b>6.</b>	<b>STAKEHOLDER CONSULTATION</b> .....	<b>40</b>
<b>7.</b>	<b>FUTURE REPORTING</b> .....	<b>42</b>

## List of Appendices

- Appendix A** Customer Survey Summary Report
- Appendix B** Available Price Risk Management Tools
- Appendix C** Background Information - **REDACTED**
- Appendix D** Draft Order for Longer Term Hedging Request



## List of Figures and Tables

Figure 3-1: Historical AECO/NIT Market Prices .....	6
Figure 3-2: WCSB Gas Producer Break-Even Costs .....	7
Figure 3-3: WCSB Pipeline Developments .....	9
Figure 3-4: Settled and Forward Monthly Prices as of December 14, 2017 .....	10
Figure 3-5: Wood Mackenzie AECO/NIT Price Forecast.....	11
Figure 3-6: AECO/NIT Price Probability Range .....	11
Figure 3-7: FEI Historical Commodity Rate .....	12
Figure 4-1: Market Prices vs FEI Commodity Rate (Without Hedging) .....	20
Figure 4-2: Simulation of Market Prices for Extreme Price Spike Scenario .....	23
Figure 4-3: Rate Impacts from Extreme Price Spike Scenario .....	24
Figure 4-4: CCRA Deferral Account Balance (After Tax) .....	25
Figure 4-5: Hedging Strategy vs. Base Case Rate Simulation .....	28
Table 1-1: Foundational Questions from Order G-168-17 .....	3
Table 4-1: Gas Marketers' Residential Fixed Rates (per GJ) under Customer Choice Program .....	31
.....	38



## 1. INTRODUCTION

### 1.1 OVERVIEW

In this 2018 Price Risk Management Plan (2018 PRMP or Application), FortisBC Energy Inc. (FEI) seeks approval to extend and modify its approved medium-term hedging strategy. The hedging strategy is the best tool available to FEI to lock in historically low market gas prices for the benefit of FEI's customers. Natural gas market prices have fallen near to their lowest levels in twenty years. There is no certainty that these low market prices will continue indefinitely into the future. FEI's proposed medium term hedging strategy is designed to take advantage of the volatility in the current market, by locking in market prices at the low swings in the market when the opportunity arises. The hedging strategy will increase rate stability and provide FEI with an opportunity to maintain commodity rates at historically low levels for customers over the medium term.

FEI's price risk management objectives are (1) to mitigate market price volatility to support commodity rate stability and (2) capture opportunities to maintain commodity rates at historically low levels for customers. These objectives are supported by the current natural gas market price environment as well as recent customer research.

FEI's hedging strategies for approval in the 2018 PRMP are consistent with customer research and discussions with stakeholders representing FEI's customer groups. The customer survey conducted by Sentis Research (Sentis) in March 2017 indicates that customers would prefer smaller, less frequent rate changes and that the majority of customers surveyed would be willing to pay a small premium to ensure a more stable natural gas bill. Consistent with customer preferences, FEI's hedging strategy will result in more stable rates as FEI will lock in historically low prices for the medium term. While there is little downside risk to FEI's hedging strategies, the customer research shows that customers are willing to pay a potential premium for rate stability.

FEI's hedging strategy is designed to take advantage of opportunities presented by the current natural gas market. Market natural gas prices have recently fallen to near their lowest levels in the last twenty years. Market prices are near the level of many gas producers' break-even production costs, indicating that there is little room for further downward movement. There is no certainty that these low market prices will continue indefinitely, and analysis shows a much greater potential for higher prices in the future. While the shale gas era has brought about significant increases in natural gas supply across North America during the past decade, imbalances in gas supply and increasing demand still occur, causing volatility in market prices. This volatility presents opportunities for FEI to lock in prices, at low swings in the market, for the medium term benefit of FEI's customers. FEI uses a portfolio of tools and strategies to manage price risk on behalf of customers. These include physical gas supply contracting strategies, rate setting mechanisms, fixed price hedging and optional rate and bill options for customers. Each of these tools and strategies provides a particular benefit or set of benefits to FEI's customers, and each has limitations. The use of quarterly price setting and deferral accounts, for instance, increases rate stability but does not change the underlying cost of natural gas paid for by



customers. Within FEI's portfolio of tools and strategies, hedging is the only tool that enables FEI to lock in low forward market prices. Hedging is therefore an essential tool to add to FEI's portfolio to take advantage of the current opportunities in the market for natural gas.

Based on the benefits to FEI's customers, FEI submits that the Commission should approve FEI's proposed hedging strategies.

## 1.2 APPROVALS SOUGHT

As described in detail in Section 5 of the Application, FEI seeks approval of the following:

- Extending the current medium-term hedging horizon out to October 2021. The medium-term hedging strategy includes locking in up to half the commodity supply portfolio with fixed price hedges, only if pre-defined price targets are reached. This would improve the likelihood of FEI maintaining its commodity rate at low levels and reduce commodity rate volatility.
- Adjusting the current winter and summer term hedging price targets to account for seasonality in market prices as well as the one-year term hedging price targets.
- Implementing hedging with terms up to five years, to help reduce volatility and capture low prices for a longer period.

These hedging strategies, if approved, will enable FEI to take advantage of favourable market price conditions and capture price opportunities for customers when they arise.

A Draft Order is included as Appendix D of the Application.

## 1.3 RESPONSE TO COMMISSION QUESTIONS PURSUANT TO ORDER G-168-17

The 2018 PRMP addresses the Commission's questions arising from its review of the scope of the 2017 Price Risk Management Plan (2017 PRMP). In Order G-168-17, dated November 23, 2017, the Commission directed FEI to revise or file addenda to the 2017 PRMP to address the Commission's questions set out in the Reasons for Decision to Order G-133-17 dated August 25, 2017 (2017 PRMP Scoping Decision). The following table identifies where in this Application FEI has addressed each question.



Table 1-1: Foundational Questions from Order G-168-17

The Commission's Foundational Questions	Reference Section
1. Which objective, or combination thereof, should be used to assess the design and/or subsequent efficacy of FEI's hedging program?	Section 2 and 3
2. What are the most appropriate strategies/mechanisms in support of the objective(s) identified in question 1 above?	Section 4
3. What are the potential costs/benefits of each strategy/mechanism under various future scenarios, and which parties ultimately bear the risk and/or reap the benefits (e.g. ratepayers, shareholders, other parties)?	Section 4 and Appendix B

## 1.4 PROPOSED REGULATORY PROCESS

FEI believes that this Application can be addressed in a written review process with one round of information requests (IRs). Commission Order G-168-17 has set the initial review process with one round of IRs, with additional review process to be then determined by the Commission Panel. FEI suggests that written arguments by FEI and interveners follow.

## 1.5 ORGANIZATION OF APPLICATION

The remainder of this Application is organized as follows:

- Section 2 describes FEI's price risk management objectives.
- Section 3 provides the supporting rationale for these objectives, including the market price environment and customer research.
- Section 4 discusses the various tools and strategies FEI could use to meet the objectives.
- Section 5 proposes the details of the hedging strategy to help meet the objectives discussed in Section 2.
- Section 6 discusses stakeholder interest in the medium-term hedging strategy.
- Section 7 summarizes FEI's plans for future reporting relating to assessing the effectiveness of the hedging program (if approved).



## 2. PRICE RISK MANAGEMENT OBJECTIVES

### Objectives of FEI's Hedging Program

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.

A discussion of each objective is provided below, followed by supporting rationale for the objectives in Section 3.

#### Objective 1: Mitigate Market Price Volatility to Support Rate Stability

Mitigating market price volatility through hedging can reduce the frequency and magnitude of commodity rate changes for customers. This supports rate stability, which refers to reducing both the frequency and magnitude of rate changes.

The objective to mitigate market price volatility is applicable in both high and the current low gas price environment as there can be market price volatility in either. As discussed in Section 3.1 while the shale gas era has brought about significant increases in natural gas supply across North America during the past decade, imbalances in gas supply and increasing demand still occur, causing volatility in market prices. New outlets for gas supply, such as liquefied natural gas (LNG) exports from the US, have led to higher demand for natural gas. Higher gas prices and increased volatility could return to the market in the future.

During the 2011 review of FEI's price risk management objectives and strategy, the Commission and stakeholders agreed that moderating the volatility of natural gas prices is a reasonable goal for FEI.<sup>1</sup> Consistent with this, recent customer research (discussed in Section 3.3) indicates that this is of value to FEI's customers.

#### Objective 2: Capture Market Opportunities to Maintain Low Commodity Rates

FEI's hedging strategy also aims to preserve low commodity rates, at historically low levels, if there is an opportunity to do so.

---

<sup>1</sup> Commission Order G-120-11, Appendix A, page 22.



This objective reflects an opportunistic strategy based on the current price environment, and FEI does not know how long the opportunity may last. As discussed in Section 3.1, market natural gas prices have recently fallen to near their lowest levels in the last twenty years and to the level of many gas producers' break-even production costs. As a result, FEI's commodity rate effective January 1, 2018 is near its lowest level ever (see Section 3.2). There is no certainty that these low market prices will continue indefinitely into the future. FEI's proposed opportunistic hedging strategy positions FEI to capture low market prices and improve the likelihood of maintaining low commodity rates for customers for a longer period. Ultimately, this will benefit FEI's gas customers through continued low natural gas bills in the future.

#### **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.

#### **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.



### 3. SUPPORT FOR OBJECTIVES

This section provides the supporting rationale for the price risk management objectives. An overview of the market price environment is provided first, followed by a discussion of FEI's recent customer research.

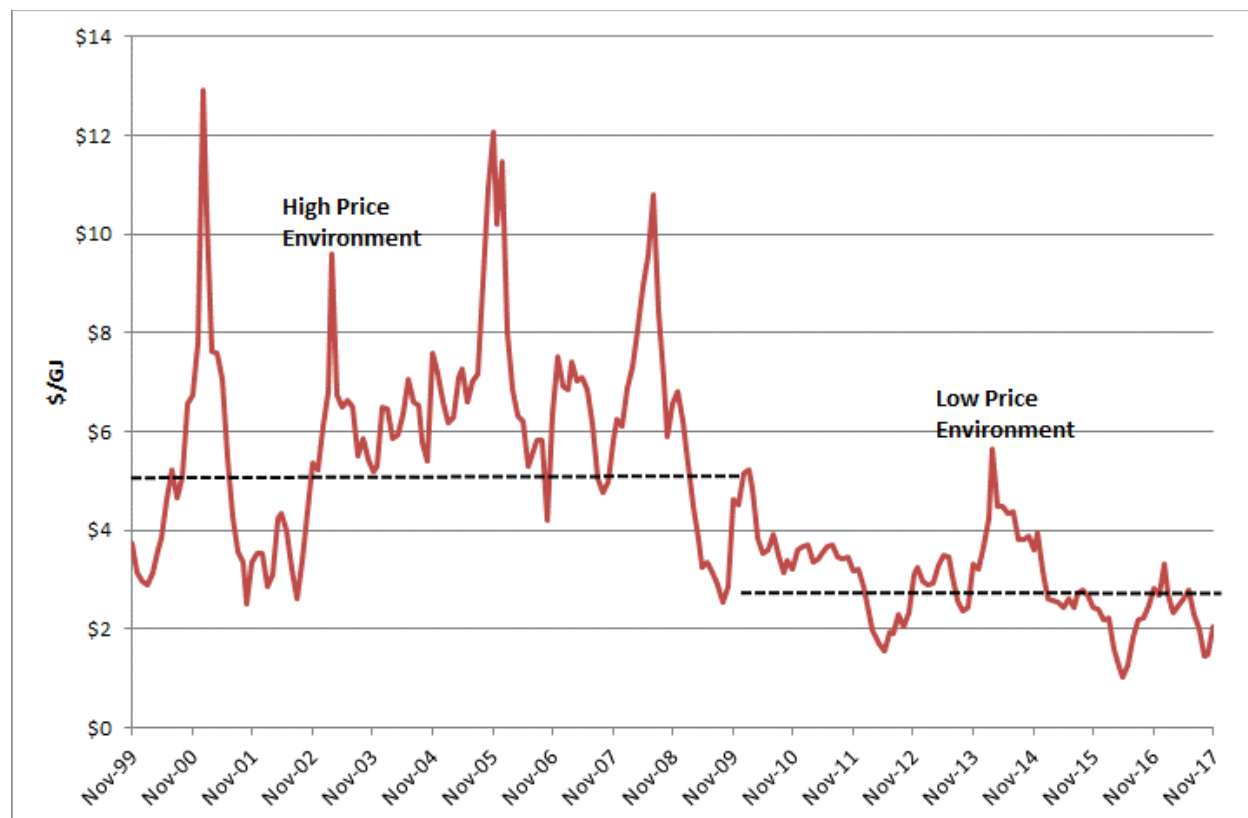
#### 3.1 MARKET PRICE ENVIRONMENT

##### 3.1.1 Low Price Environment

The present natural gas price market presents an opportunity for FEI to lock in historically low gas prices for the benefit of customers. The natural gas market price environment continues to remain low but with the potential for price volatility. A low priced environment is one where market prices fall to near historical lows and natural gas producer break-even cost levels, so that it has for more potential upside price movement than downside.

For the AECO/NIT market, a low priced environment is where market prices are near or below about \$2.00 per GJ, with occasional price spikes above \$3.00 per GJ. Figure 3-1 below shows historical AECO/NIT market prices, showing the difference between the current low market price environment and the higher market price environment before the shale gas era began in 2009. As shown in Figure 3-1, prices continue to be volatile, although at a lower level than the pre-shale gas era.

Figure 3-1: Historical AECO/NIT Market Prices





Prior to the shale gas era, market prices averaged close to \$6.00 per GJ and price volatility was high with market prices spiking above \$8.00 per GJ several times over the ten-year period. During the shale gas era beginning in 2008, market prices have typically traded between \$2.00 per GJ and \$4.00 per GJ, averaging about \$3.00 per GJ. Price volatility has continued with price spikes up to above \$5.00 per GJ on two occasions and price dips below \$2.00 per GJ on three occasions.

### 3.1.2 Producer Break-Even Costs

An analysis of producer break-even costs shows that there is little downside potential in market prices, as some producers will cease production in response to lower prices, which will reduce supply and eventually increase prices.

Gas producers in North America continue to lower costs and improve drilling techniques such that they have reduced their break-even costs over time. The following figure shows a recent update of the break-even costs for some major gas producers in the Western Canadian Sedimentary Basin (WCSB).<sup>2</sup>

**Figure 3-2: WCSB Gas Producer Break-Even Costs**

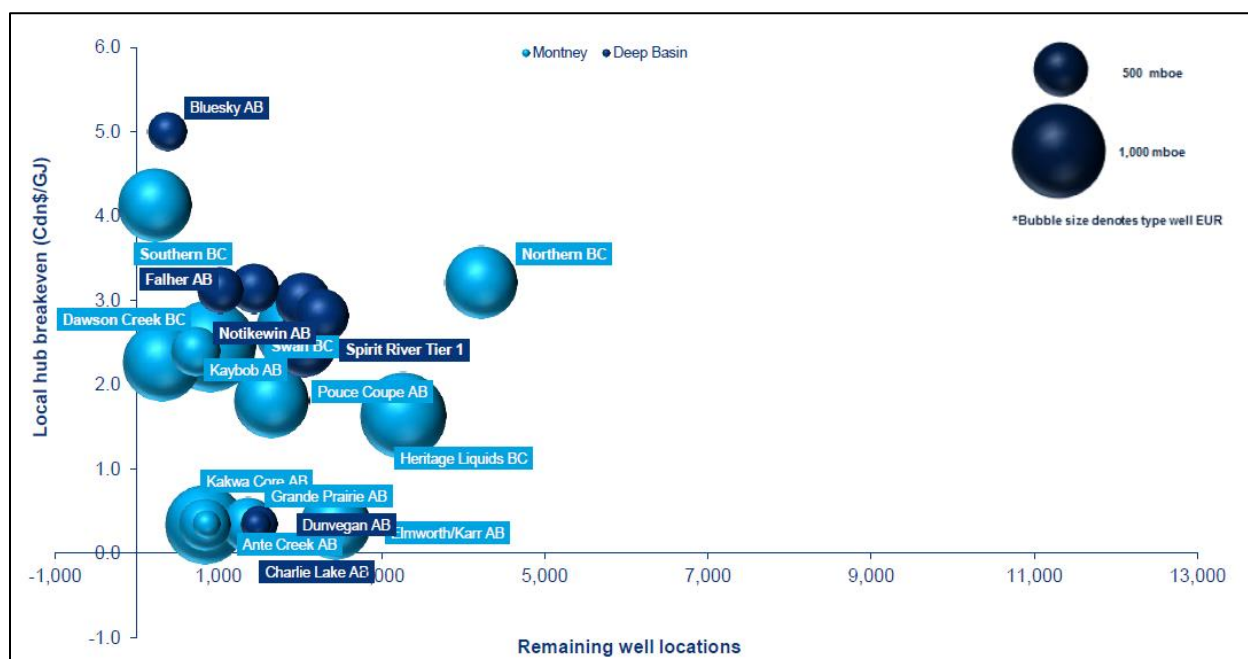


Figure 3-2 indicates that many major Canadian gas producers require market prices in the range of about \$1 per GJ to \$3 per GJ to break-even and earn a reasonable rate of return (Figure 3-2 assumes a 10 percent rate of return). Some producers require higher prices than this, up to about \$5 per GJ while others can make a profit with market prices below \$1 per GJ. In these lower cost plays, producers benefit from the liquids as well as the gas sales produced. Based on the information in Figure 3-2, the average break-even market price for WCSB gas

<sup>2</sup> Source: Wood Mackenzie November 2017. Montney refers to Northeast British Columbia, Deep Basin refers to Northwest Alberta gas production. EUR = Estimated Ultimate Recovery; mboe = Million Barrels of Oil Equivalents.



producers is in the order of about \$2 per GJ. FEI has used this average break-even market price as one of the considerations in developing its hedging price targets. If market prices remain below this level for an extended period, it is assumed that some, while not all, gas producers would cut back on production until market prices increase.

FEI recognizes that some gas producers have hedges in place that protect a percentage of their production from low market prices. However, at the current time, these hedge percentages are low and most producers are still exposed for the majority of their portfolio to downward market price movements. On average, as of November 2017, WCSB producers have hedged 13 percent of their total production in 2018 near the \$3 per GJ level. Due to the low prices in forward curves through 2020, it is expected that producers have hedged even less for 2019 and 2020.<sup>3</sup> This means that most producers will typically adjust production output in response to low market prices.

### 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.

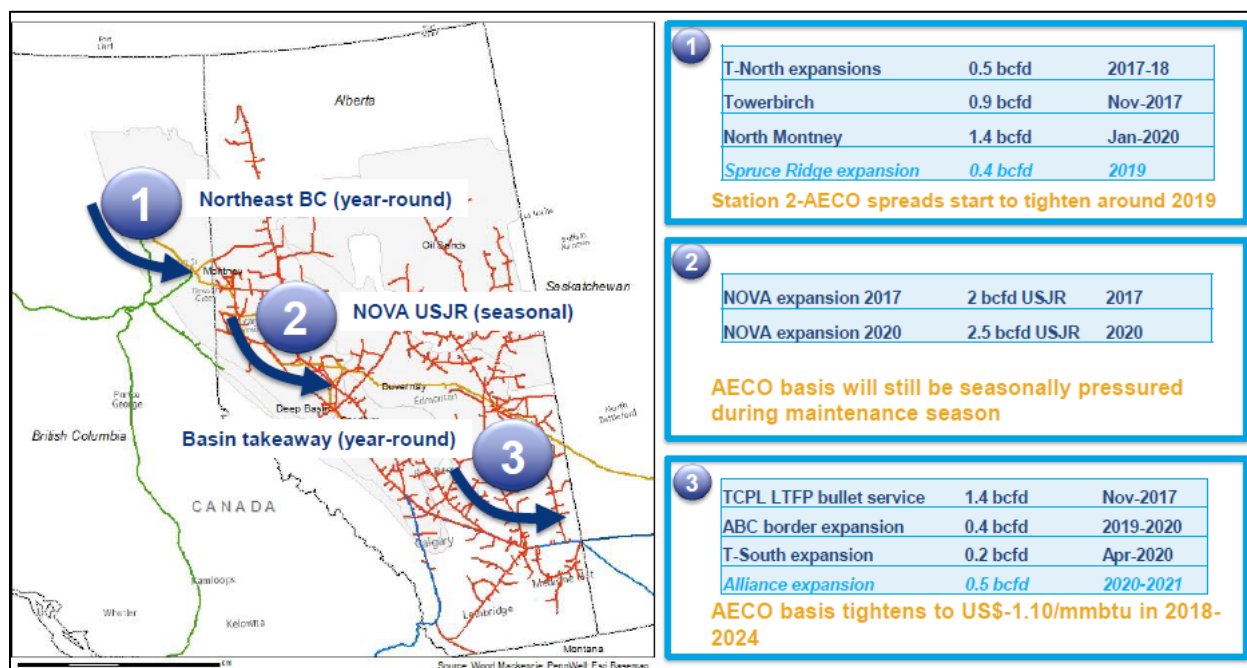
However, pipeline developments over the next five years could significantly alleviate price pressure and start to tighten the AECO/NIT basis, as shown in the figure below.

---

<sup>3</sup> Source: Peters & Co. Limited Energy Update (Nov 2017).



**Figure 3-3: WCSB Pipeline Developments<sup>4</sup>**



The figure above shows the expected pipeline developments in Northeast BC, which provide more interconnection between BC and Alberta, which could also begin to tighten Station 2-AECO/NIT spreads around 2019. FEI's supply purchased at Station 2 is priced at a discount to AECO/NIT. WCSB takeaway expansion capacity could tighten the AECO/NIT discount to Henry Hub over the next six years, although the seasonal maintenance and expansion of NOVA Upstream James River (USJR) will continue to pressure the AECO/NIT basis in the near term.

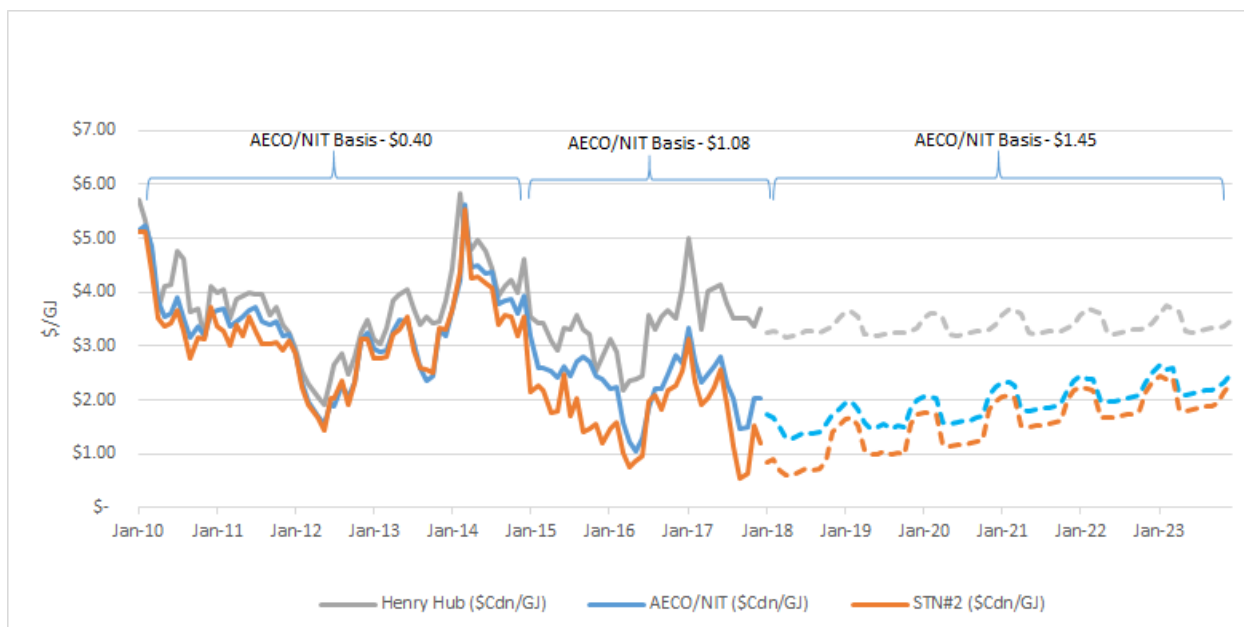
The result is that the AECO/NIT basis could tighten in the future with the increase in outlets for WCSB gas supply to markets. However, currently the AECO/NIT basis continues to remain wide, providing low and favourable market prices for gas buyers such as FEI.

The following figure shows the historical settled and forward monthly prices for AECO/NIT, Station 2 and Henry Hub out to 2023 as of December 14, 2017. The basis between AECO/NIT and Henry Hub has increased over the last few years and now averages about \$1.45 per GJ in the forward prices, but is expected to tighten to Henry Hub towards 2020. Station 2 prices trade at a further discount of about \$0.37 per GJ to the AECO/NIT forward prices.

<sup>4</sup> Source: Wood Mackenzie : North American Gas Outlook (November 2017)



**Figure 3-4: Settled and Forward Monthly Prices as of December 14, 2017**



### 3.1.4 Market Price Forecast

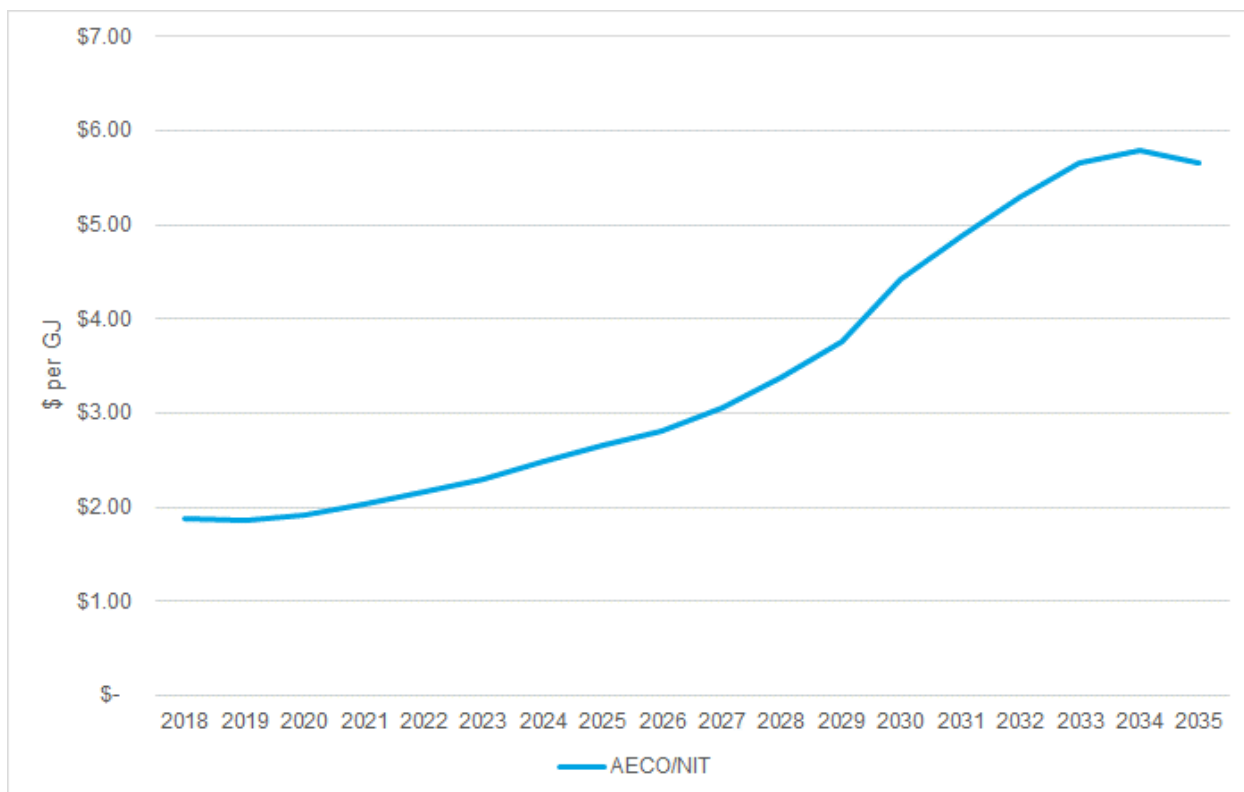
In addition to looking at gas producer break-even costs and forward market prices, FEI has also reviewed market price forecasts to provide some comparison to forward prices and an indication of potential future market prices. This comparison shows that downside price movements are limited, given gas producer break-even costs discussed in Section 3.1.2, and that there is greater potential for upside price moves.

The latest Wood Mackenzie price forecast for AECO/NIT has prices remaining just below \$2 per GJ for 2018 to 2020. The forecasted prices remain flat in the medium-term due to continued pipeline constraints for AECO/NIT gas. After 2020, gas prices are forecasted to rise again as increased demand absorbs excess supply and more outlets for AECO/NIT gas as noted in Section 3.1.3. Additional demand for North American gas is expected to be driven by increased power generation and industrial demand (as Alberta begins to phase out coal plants and replace them with natural gas and renewables), but more significantly with LNG exports and U.S. exports to Mexico. The following figure shows the long-term price forecast in nominal dollars for AECO/NIT.



1

**Figure 3-5: Wood Mackenzie AECO/NIT Price Forecast<sup>5</sup>**

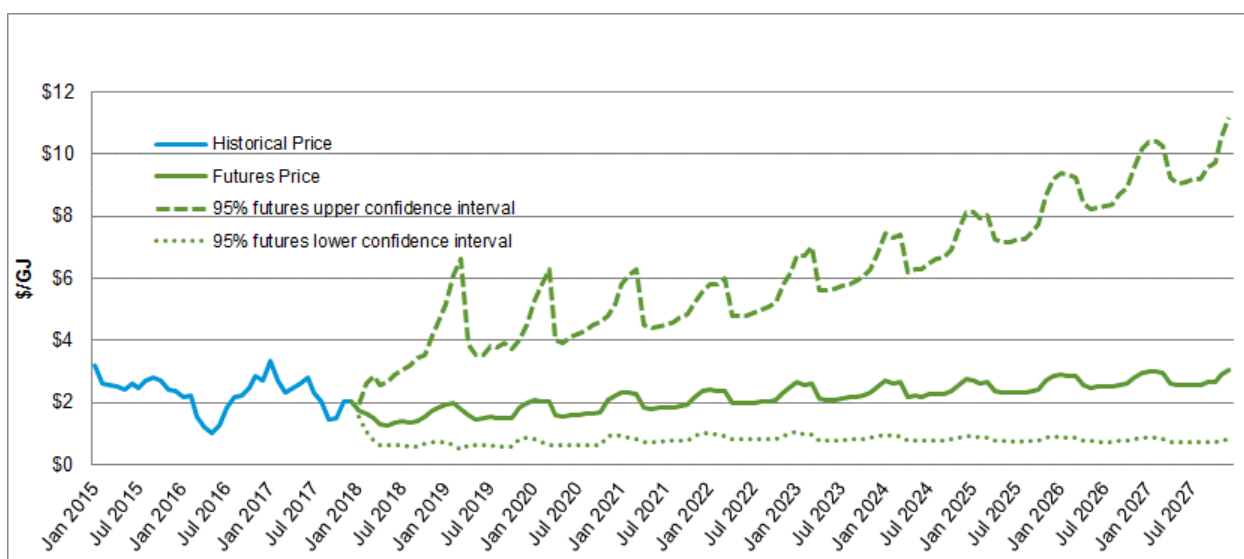


2

3 The following figure shows the AECO/NIT forward market price probability range as of  
4 December 18, 2017 for ten years out. It shows that downside price movements are limited,  
5 given gas producer break-even costs discussed in Section 3.1.2, with greater potential upside  
6 price moves.

7

**Figure 3-6: AECO/NIT Price Probability Range**



8

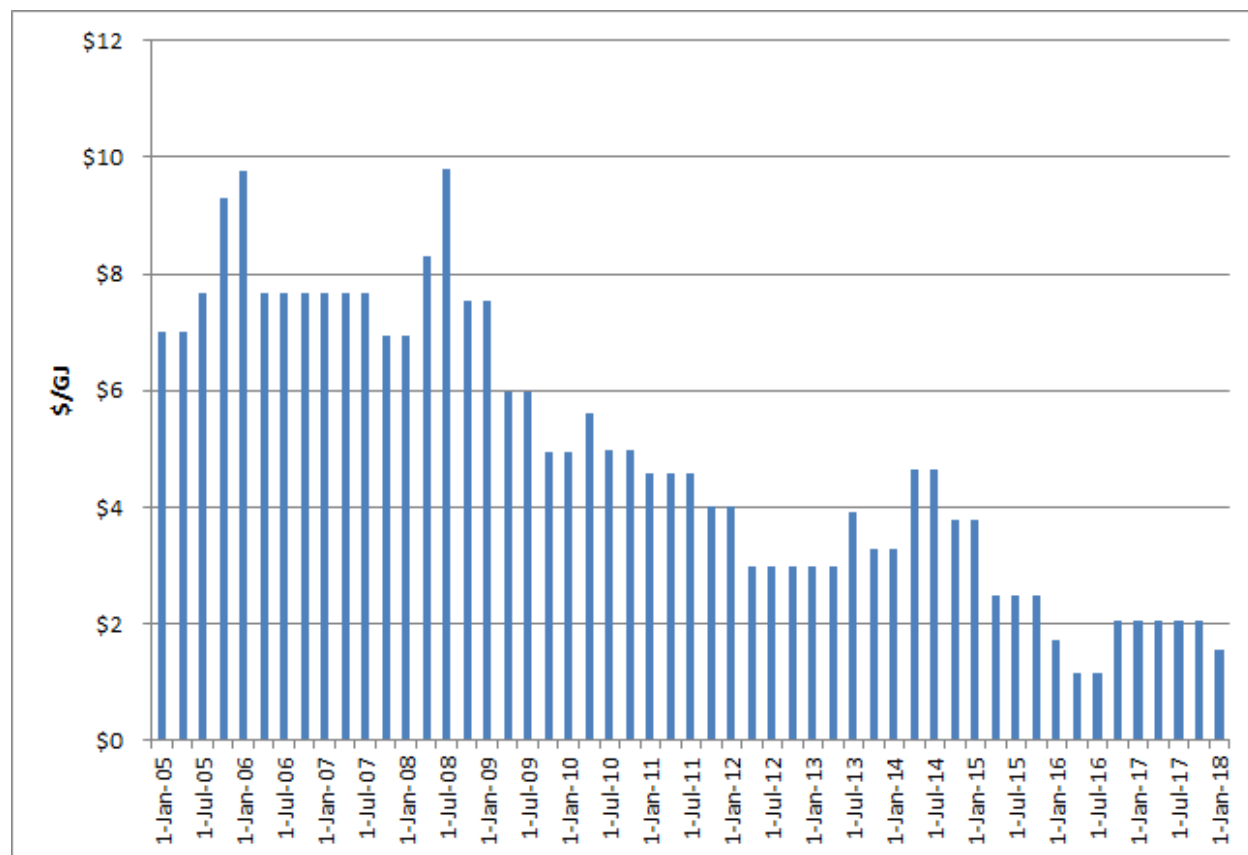
<sup>5</sup> Source: Wood Mackenzie – AECO/NIT Price Forecast (November 2017)



## 3.2 FEI COMMODITY RATE

The FEI commodity rate, to a large degree, reflects trends in market gas prices. The FEI commodity rate is near its lowest levels in the past two decades, as shown in the following figure. One of FEI's objectives is to maintain low commodity rates for customers going forward.

Figure 3-7: FEI Historical Commodity Rate



FEI recommends preserving these low rates for customers by setting hedging targets aligned with its low commodity rate as of January 1, 2018.

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.

### 3.3 CUSTOMER SURVEY

During March 2017, FEI enlisted the services of Sentis Research (Sentis) to conduct a customer survey. The objectives of the survey were to help determine the importance of customers' gas bills in relation to other household bills, customers' tolerances for bill changes in the current low price environment and what, if any, premium customers are willing to pay for more bill stability. The results would help FEI determine if its current price risk management tools, including hedging, to meet the objectives are sufficient based on customers' tolerances and preferences, or if more tools are required now or in the future. A summary report of the survey results is provided in Appendix A.

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 insurance<sup>6</sup>. 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 more<sup>7</sup>. Customers also indicated they would prefer that FEI make smaller, more frequent adjustments to the commodity rate, rather than less frequent but possibly larger adjustments<sup>8</sup>.

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 uncertain<sup>9</sup>. 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 bill<sup>10</sup>. This translates into an average of about 19 to 24 percent premium on the commodity rate component of the bill<sup>11</sup>.

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

<sup>6</sup> Appendix A page 23 – Concern About Price Increases

<sup>7</sup> Appendix A page 30 – Impact of Natural Gas Bill Increases on Behavior

<sup>8</sup> Appendix A page 33 – Cost of Gas Rate Adjustment Preferences

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

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

<sup>11</sup> 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%.



- 1 from the hedging program would likely be lower than the average customer premium tolerances  
2 as indicated in the survey.
- 3 The survey results support FEI's view that, at this time, an opportunistic hedging strategy is  
4 required to meet the interests of customers. If the market price environment were to change,  
5 such as if market prices were significantly higher and more volatile, FEI would consider more  
6 customer research to help determine if customers' concerns or tolerances for gas rates or bills  
7 has changed, and consider other price risk management tools or strategies.



## **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.

### **4.1 PHYSICAL RESOURCES AND STRATEGIES**

In this section, FEI describes the physical resources and strategies that are currently being used by FEI. While physical resources and strategies help meet FEI's price risk management objectives to a degree, this is not their primary function.

FEI's physical strategies and resources are included in FEI's ACP. The ACP is submitted to the Commission for acceptance on an annual basis and has the following objectives:

1. To contract for resources, which ensure an appropriate balance of cost minimization, security, diversity and reliability of gas supply in order to meet the core customer design peak day and annual requirements.
2. To develop a portfolio mix, which incorporates flexibility in the contracting of resources, based on short term and long term planning, and evolving market dynamics.

The ACP includes a portfolio of physical supply, transportation and storage resources to meet customers' load requirements. The portfolio provides supply hub and market price diversity to reduce the risks of supply disruption or the impacts of price spikes at a particular market hub. It also includes the use of storage resources, which provide resource flexibility and effective load management as well as summer-priced supply for the higher winter demand. Longer-term resources include multi-year storage and transportation contracts and supply arrangements. The costs for ACP resources are flowed through to FEI's sales customers and so these customers benefit from these resource tools and strategies.

#### **4.1.1 Storage Resources**

Natural gas storage is an effective tool for mitigating short-term market price risk. When evaluating storage it is important to consider its value, limitations and availability.



Storage provides both operational and financial value. Storage, with associated transportation service, enables FEI to meet normal and peak winter demand and generally enables the use of lower priced summer gas for winter demand. In this way, storage provides a “natural hedge” which is most effective in a volatile price regime. Operational benefits can include flexibility for imbalance management (i.e. to meet third party pipeline daily or monthly volumetric balancing requirements), supply curtailment or disruption mitigation, and balancing intra-day load variability. The main financial benefit includes seasonal price protection (i.e. capturing the price differential between winter and the previous summer), which serves to protect customers from any adverse price movements in the winter period.

Storage has some limitations. The winter price protection is generally limited to a single winter period due to the necessity to cycle most or all of the storage volumes on an annual basis to meet load requirements. As such, it does not provide the longer-term (i.e. greater than single winter season) price protection that is provided by financial hedging or longer-term, fixed-price purchases. Additionally, while storage enables capturing summer prices for winter demand, it does not provide summer period price protection in the event that hurricane disruptions or above normal summer temperatures and gas demand raise summer prices. Therefore, it does not significantly contribute to meeting FEI’s primary price risk management objectives.

The potential cost or benefit of using this tool is dependent on the difference in value between summer prices and the following winter prices. For example, the higher the difference in summer and winter prices the greater the value. If a cold winter occurs which increases gas prices well above the previous summer injection prices, then FEI’s customers will have a higher benefit than in the absence of using storage. However, if a warm winter leads to lower prices, which could be lower than summer injection prices, then there is a cost, which is flowed through to customers.

In summary, the primary value of storage is operational flexibility and the short-term financial benefit is secondary.

#### 4.1.2 Supply Contracting Strategies

FEI uses a number of supply contracting strategies to manage supply security, increase portfolio diversity and help mitigate market price volatility. The following is a summary of the supply contracting strategies currently used by FEI.

FEI currently purchases commodity supply at Station 2 and AECO/NIT rather than at a single hub. This helps mitigate market price volatility and possible supply disruptions by sourcing gas from different market supply hubs as defined within the ACP. However, this tool is limited in meeting FEI’s primary price risk management objectives as market prices for these hubs generally move in the same direction, whether prices go up or down, and there are limited hub sources in the region from which FEI can obtain supply.

FEI also contracts for firm transportation capacity on third party pipelines, such as Enbridge’s Westcoast T-South pipeline system and TransCanada’s Nova Gas Transmission Limited (NGTL) and FoothillsBC, to meet the forecast load requirements of FEI’s core customers. This



provides FEI direct access to the supply basins in BC and Alberta, instead of the alternative of purchasing a delivered product at Sumas or Kingsgate. Over the past few years, this strategy has proven to be beneficial to FEI's customers, as the cost of the commodity supply at the Station 2 and AECO/NIT supply hubs plus the associated transportation has been lower than purchasing supply at the Sumas and/or Kingsgate hubs. While this strategy reduces the price risk associated with these downstream market hubs, it does not mitigate the price risk with AECO/NIT or Station 2 market hubs and so does not significantly contribute to meeting FEI's primary price risk management objectives as the AECO/NIT market price is not locked in.

The commodity supply that FEI purchases is typically contracted before each winter and summer season begins, with counterparties to lock in the forward market price differential between AECO/NIT and Station 2. This tool mitigates the volatility in the price between AECO/NIT and Station 2 hubs. However, FEI has also contracted for commodity supply purchases outside the gas year if the Station 2 monthly discount to AECO/NIT is above the target level, as laid out in the ACP. This allows FEI to layer in its supply purchases, reducing the buying exposure at Station 2 during a given contract year. It does not, however, mitigate AECO/NIT market price volatility. Customers benefit if FEI locks in the price difference and then the actual market price difference between the hubs narrows. However, this does not significantly contribute to meeting FEI's primary price risk management objectives as the AECO/NIT market price is not locked in.

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.

## 4.2 RATE SETTING MECHANISMS

In this section, FEI describes the rate setting mechanisms that are currently being used by FEI as part of its price risk management portfolio, including:

- Quarterly rate setting and use of the Commodity Cost Reconciliation Account (CCRA) deferral account;
- Optional 24-month amortization period;



- 0.95/1.05 cost-recovery ratio deadband as indicator of need for commodity range change;
- Minimum rate change threshold of \$0.50 per GJ;
- Cap of +/- \$1.00 per GJ on rate changes for no more than 2 consecutive quarters when the rate changes subject to the cap have been in the same direction, and
- +/- \$60 million limit on CCRA balances.

FEI uses these rate setting mechanisms to review and potentially set the commodity rate on a quarterly basis, provide some rate stability and manage CCRA balances.

While rate setting mechanisms provide some smoothing of the commodity rate relative to market gas prices, rate setting mechanisms do not mitigate market prices. Therefore, they are not as effective as hedging to meet the objectives. FEI's core customers (i.e. those customers who purchase their gas commodity from FEI) bear the cost of higher gas prices and reap the benefits of lower gas prices in their commodity rates. In the current low market price environment (as discussed in Section 3.1), the market risk is not symmetrical, because there is more upside than downside potential for future market prices. Hedging enables FEI to lock in low forward market prices in the current low market price environment, and reduce commodity rate volatility, thereby helping to provide customers with low and more stable commodity rates.

#### 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.

#### Twelve Month Amortization Period

FEI typically recovers from, or refunds to, customers any projected accumulated balance in the CCRA over a 12 month amortization period. Twelve months is a reasonable amortization period for the variance between the approved recovery rate (based on the forecast cost of gas) and the actual cost of gas incurred captured in the deferral account. Shorter amortization periods would tend to increase the magnitude of the change in rates. While longer amortization periods would tend to decrease the magnitude of rate changes, this benefit is outweighed by the following:



- Longer amortization periods may impair FEI's ability to manage the balance in the CCRA within a reasonable level. Deviations falling materially outside of this range can pose challenges for FEI in terms of the timing of refunding or recovering significant dollar amounts from customers and could impact FEI's balance sheet and potentially its credit rating and borrowing capacity;
- Longer amortization periods may alter the competitive position of the utility's offerings relative to those of smaller gas marketers; and,
- In a declining market price environment, longer amortization could lead to FEI holding more customer money for a longer period of time, rather than refunding it back to customers in rates.

Customers would generally prefer rate changes to be smaller, rather than larger, and fewer, rather than more, as indicated by recent customer research discussed in Section 3.3. FEI's current rate setting mechanism and deferral account amortization is aligned with customers' preferences.

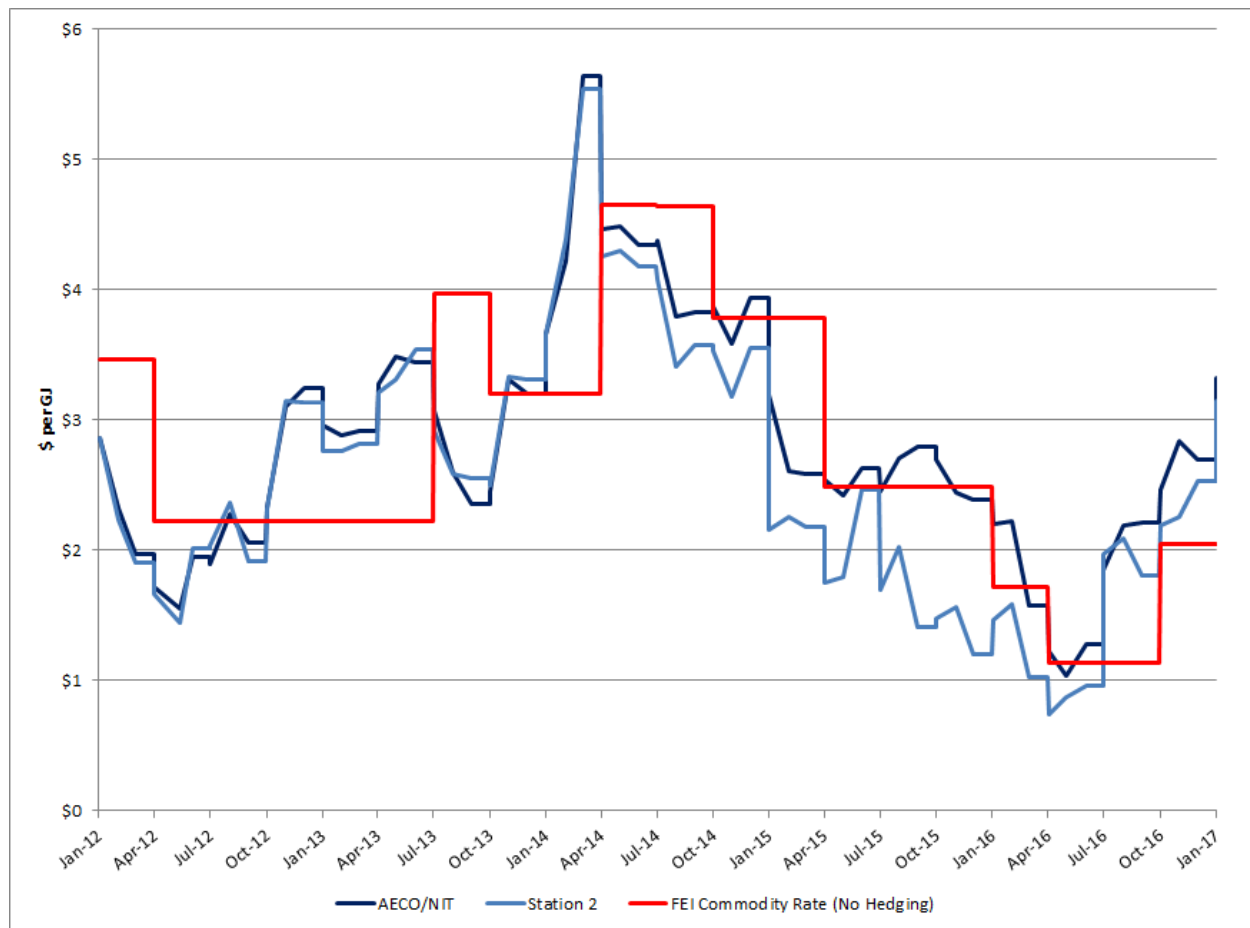
#### **Limited Price Risk Management**

The use of the CCRA and the quarterly rate setting mechanism provide some degree of price risk management during periods of relatively stable market prices. However, they are not as effective during periods of high market price volatility or sustained market price increases. During these price environments, deferral balances can become larger and rate changes will tend to be larger per unit.

Figure 4-1 below shows historical AECO/NIT and Station 2 monthly prices compared to FEI's commodity rate (excluding any hedging) for the past six years. The figure shows that some commodity rate stability is provided, but there is a delay in recovery or refund of costs from or to customers during high volatility periods.



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



As shown above, FEI commodity rate generally follow the overall increases and decreases of the market prices, on a quarterly rather than monthly basis. As such, there is also a lag between market price movements and the movement of the FEI commodity rate. This shows that the quarterly rate setting mechanism and deferral account provide only a limited degree of price risk management during periods of high market price volatility or sustained market price increases. As discussed in Section 4.3, hedging is more effective than these tools in this regard.

## 4.2.2 Optional 24-Month Amortization Period

FEI may use a 24-month timeframe for amortizing the CCRA deferral account balance, instead of 12 months, when at the time of the quarterly review the forward looking 12-month gas costs are significantly different than the following 12-month gas costs (i.e. at least \$0.75 per GJ difference). The options of using a 24 month amortization period supports the reduction of rate volatility over a 24-month period, provided deferral account balances are still managed within a reasonable range.

A 24-month amortization period would not be used in a stable price environment, as there would not be a large difference in forward prices from year 1 to year 2. In addition, in a rising or falling



price environment, it would not be used as the next 12 months and the following 12 months would likely be moving in the same direction. However, a 24-month amortization period could be used in a volatile price environment where a significant market event (e.g. cold winter) has caused a large increase or decrease in forward market prices for the next 1 to 12 months, but has not yet impacted prices for the following 13 to 24 months. If the market event is significant enough, it can impact gas prices further out in time. For example, a polar vortex winter can reduce gas storage levels such that there is increased demand to refill storage during the following summer and increase concerns in the marketplace about having enough storage in place for the following winter.

As with the other rate setting mechanisms, the use of a 24 month amortization period does not affect market prices and their impact on gas costs, so customers will ultimately pay what FEI pays for market supply.

#### 4.2.3 0.95/1.05 Cost-Recovery Ratio Deadband

Subject to the minimum rate change threshold and cap on quarterly rate changes discussed below, FEI applies for a change in the commodity rate change if the ratio of the forecast 12-month gas cost recoveries at the existing rate compared to the sum of the forecast gas costs for the 12-month prospective period plus the projected CCRA deferral account balance at the end of the current quarter is outside a +/- 5 percent deadband. If this ratio is outside the +/- 5 percent deadband, forward market prices, in conjunction with the deferral account balance, are signaling a need to change the commodity rate. Changing the commodity rate in these circumstances helps support rate stability, price transparency, managing deferral account balances and efficiency of process. However, this mechanism taken on its own, can indicate the need for minor or potentially unnecessary changes in rates in a low market environment. This is because 5 percent of a low gas price does not amount to a significant threshold (e.g. 5 percent of \$2 per GJ is only \$0.10 per GJ). For this reason, FEI has a minimum rate change threshold, as discussed below.

#### 4.2.4 \$0.50 per GJ Minimum Rate Change Threshold

FEI's minimum rate change threshold of \$0.50 per GJ prevents the +/- 5 percent deadband from becoming too narrow during periods when price of natural gas remains low, thereby avoiding minor and possibly frequent commodity rate changes in low price environments. This provides some rate smoothing, but means that any rate changes are going to be at least \$0.50 per GJ and does not mitigate significant market price spike where rate changes of more than \$0.50 per GJ are warranted.

#### 4.2.5 Capping Quarterly Rate Changes at \$1.00 per GJ

FEI caps quarterly rate changes at \$1.00 per GJ. The cap of +/- \$1.00 per GJ is used for no more than two consecutive quarters when the rate changes subject to the cap have been in the same direction. This cap reduces rate volatility during periods of short-term market price volatility.



The cap on quarterly rate changes can work well in a market with significant short-term price increases and decreases, as it can reduce significant swings in the commodity rate during periods of short-term market price volatility. However, in periods of more sustained market price increases, the cap on quarterly rate changes may not work as well, since the rate increases under the cap may not keep up with increasing market prices. This could lead to under-recovery of gas costs through customer rates and inflate deferral account limits to unacceptable levels. Therefore, the cap is not applied after two consecutive quarters. Typically, this mechanism is not used in a stable price environment, but it does help mitigate temporary price spikes. The cap only temporarily dampens the impact of a sustained market price decrease or increase, which is ultimately flowed through to customers in rates.

#### 4.2.6 +/- \$60 million Limit on CCRA Balance

FEI currently manages the CCRA deferral account balance within a range of +/- \$60 million. The +/- \$60 million limit mitigates challenges for FEI in terms of the timing of refunding or recovering significant dollar amounts from customers and impacts to FEI's balance sheet and potentially its credit rating and borrowing capacity. Previous Moody's ratings reports for FEI have stated that the deferral balances have a near term impact on cash flows, as these balances are not collected until future periods. Should these balances increase to a material level, this near term cash flow impact would be amplified, which could weigh negatively on FEI's credit rating, although it is not known what that materiality level would be. The +/- \$60 million range has worked well, providing a balance of helping to mitigate short-term market price volatility, with refunding surpluses or collecting deficit amounts from customers in a timely manner.

#### 4.2.7 Increase in Limit on CCRA Balance Not Justified

In its decision on the 2015 PRMP, the Panel directed FEI to include an evaluation of the option of increasing the acceptable CCRA deferral account balance limit to +/- \$200 million to manage CCRA during periods of extreme volatility if FEI wished to extend the hedging program. FEI's analysis, which follows, indicates that an increase in the limit does not provide any additional value beyond FEI's current rate setting mechanisms and may introduce new risks:

- Increasing the +/- \$60 million limit would have little benefit. FEI's simulation of a period of extreme price volatility, as discussed below, shows that increasing the limit of the CCRA balance has little benefit due to the mitigation already provided by existing rate setting mechanisms. Through the simulation, FEI found that in a period of extreme price volatility the \$1.00 per GJ rate change cap and quarterly rate setting mechanisms would limit commodity rate increases and decreases, as well as the magnitude of CCRA balances, such that it is not required to increase the limit on balances in the CCRA.
- Increasing the limit would negatively impact FEI's credit facilities, including increasing financing costs.



The following sections discuss FEI's simulation used to determine the impact of increasing the deferral account during periods of extreme volatility in mitigating rate volatility for customers and its results.

#### **4.2.7.1 Simulation of the Extreme Price Spike Scenario**

For the purpose of the simulation, FEI modelled the market price spike from 2000-2001 (Extreme Price Spike). The Extreme Price Spike was caused by the California energy crisis and resulted in a high deficit in the Gas Cost Recovery Account (GCRA) of about \$180 million (before tax) by the end of 2000. Incidentally, it is this event that led FEI to move from annual to quarterly commodity rate setting in order to improve managing deferral account balances.

FEI included the Extreme Price Spike into a model with more recent market prices so that FEI could simulate how its current rate setting mechanisms (which were not in place in 2000-2001) would manage the impact on gas costs and the balance in the CCRA. The AECO/NIT market prices from the Extreme Price Spike period of August 2000 to September 2001 were used in place of the actual November 2013 to December 2014 market prices to simulate the price spike. Figure 4-2 below shows the historical market prices with the Extreme Price Spike scenario (represented by the blue line) overlaid in 2013 and 2014.

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

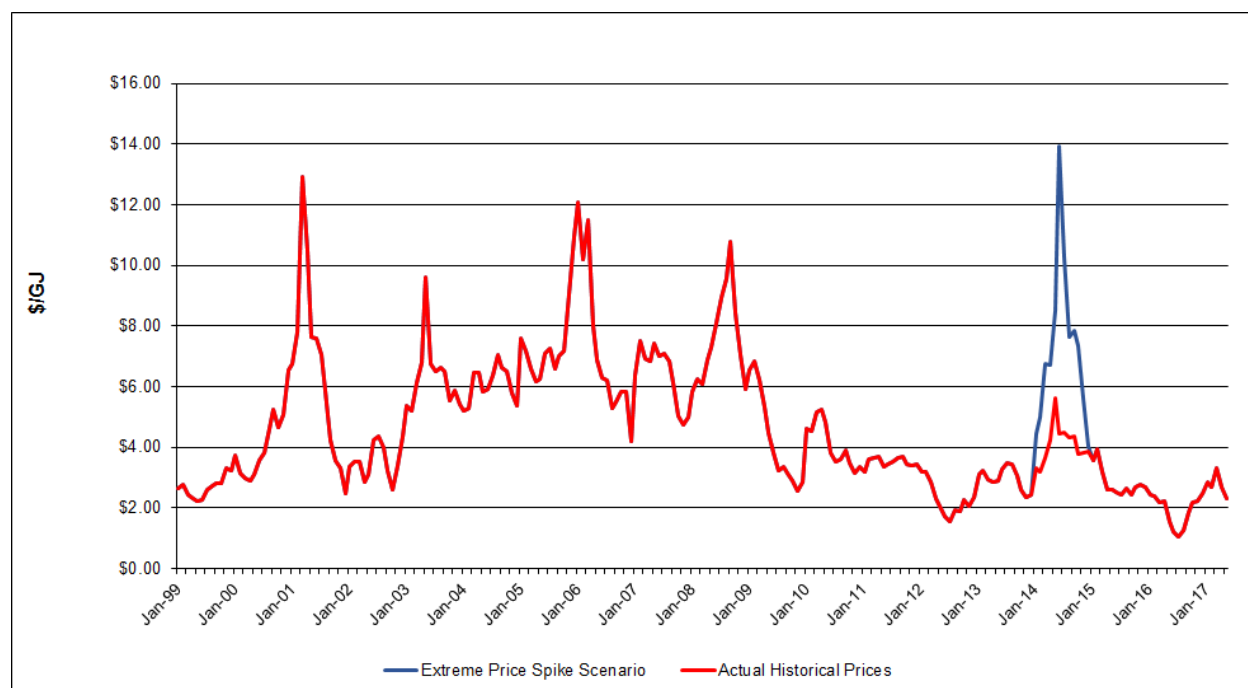
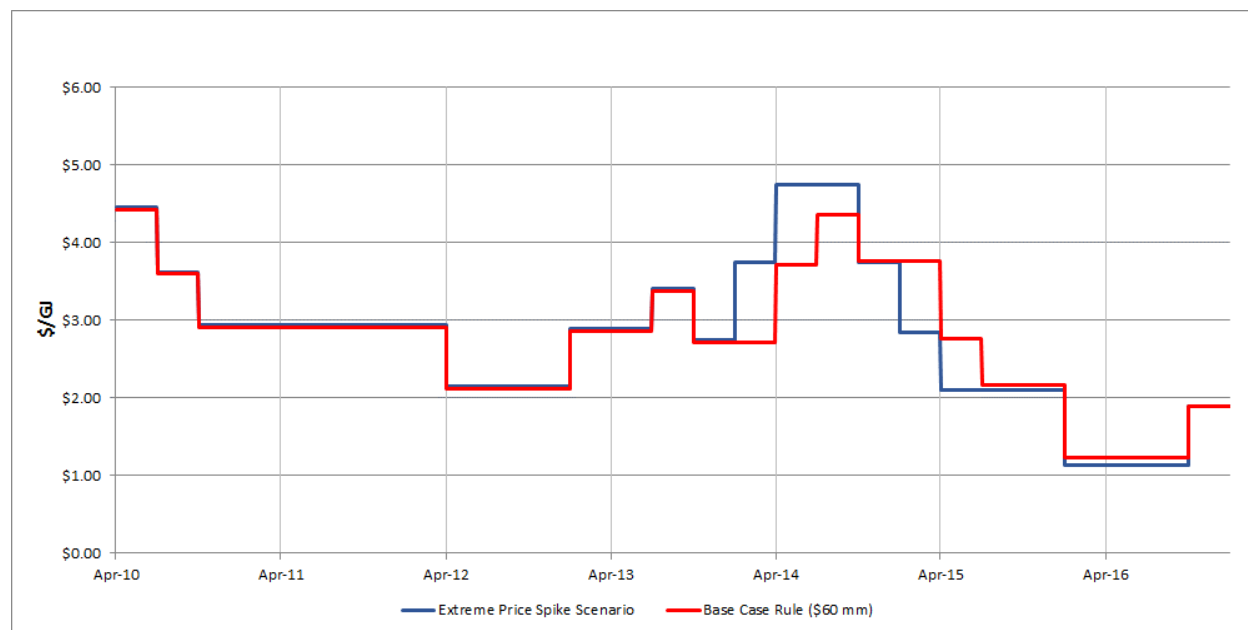


Figure 4-3 below shows the impacts on the commodity rate of the Extreme Price Spike scenario using the current rate setting mechanisms, including quarterly rate reviews, the rate change trigger of 5 percent and +/- \$0.50 per GJ and the \$1 per GJ rate change cap. For this scenario, the deferral account balance was not limited in any way so the deferral balance could be observed under the Extreme Price Spike condition. The base case (represented by the red line)



1 shows the rate impacts based on the simulation of actual historical and forward prices since  
2 2010. The blue line represents the impacts to the rate based on the inclusion of the Extreme  
3 Price Spike modeled into 2013-2014.

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



5  
6 Figure 4-3 above shows that rates were marginally higher than the base case during the  
7 Extreme Price Spike scenario and for a longer duration, two quarters instead of one quarter.  
8 The reason that the rate increases were not more significant is because the \$1.00 per GJ rate  
9 change cap was used for two consecutive quarters and, by the third quarter, the market prices  
10 were coming down and rate decreases were then implemented.

11 Figure 4-4 below shows the balances in the CCRA for the base case and the Extreme Price  
12 Spike scenario.



**Figure 4-4: CCRA Deferral Account Balance (After Tax)**

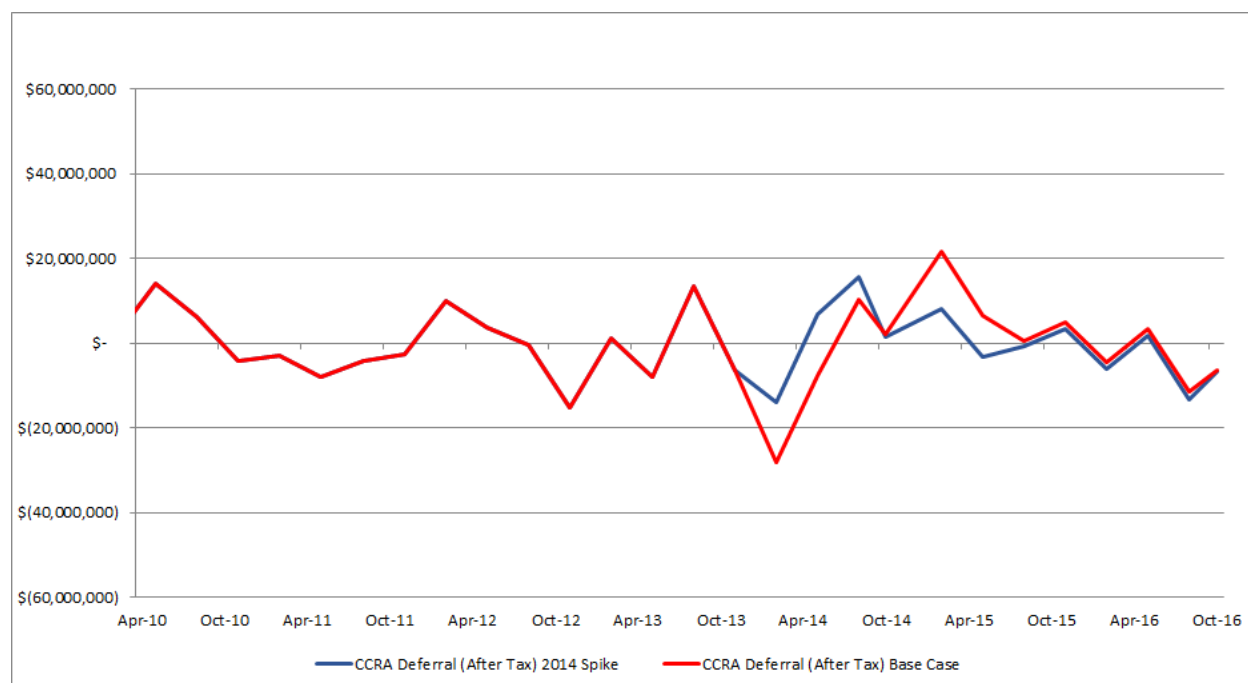


Figure 4-4 above shows that, with no other modifications to the existing rate setting mechanisms, the balance in the CCRA in the Extreme Price Spike scenario was similar to the Base Case due to rates being marginally higher and for a longer duration during the Extreme Price Spike period. Therefore, the +/- \$60 million limit on the balance in the CCRA would not have been a limiting factor under the Extreme Price Spike scenario. As the +/- \$60 million limit was not a limiting factor, increasing the limit on the CCRA balance would not have provided any benefit in the Extreme Price Spike scenario.

#### **4.2.7.2 Impacts on Credit Facilities**

Another consideration when assessing the increase to the CCRA limit is the impact to FEI's credit facilities. Larger deferral accounts require FEI to arrange for increased credit facilities ahead of time in order to have appropriate borrowing capacity on hand should it be needed to manage the larger deferral account balances. Credit facilities can be difficult to arrange when credit market disruptions occur, such as during the financial crisis of 2008. Therefore, credit facilities need to be put in place before any market events occur, and then maintained on an ongoing basis. This would require more monitoring of credit facilities by FEI as well as increased financing costs to accommodate the higher levels of credit. FEI does not recommend increasing credit facilities and financing costs to accommodate a higher CCRA deferral limit above the current level.

#### **4.2.7.3 Deferral Account Limit Recommendation**

For the reasons presented in the previous sections, FEI does not propose any increase to the +/- \$60 million limit on balances in the CCRA. The simulation of the Extreme Price Spike shows



that the current CCRA deferral account balance limit would likely not be exceeded in periods of high market price volatility given the current rate setting mechanisms in place. Although higher balances in the CCRA may occur if a market price spike event began when the CCRA balance is already at the maximum of the reasonable range, this probability is reduced if deferral account balances are managed such that they do not build to significant levels. The combination of quarterly rate setting, a trigger of +/- \$0.50 per GJ and the \$1.00 per GJ rate cap for up to two quarters in a row works to manage market events like the Extreme Price Spike scenario, within current the CCRA deferral balance range. In addition, the \$1.00 per GJ rate change cap helps temper larger rates changes due to sudden extreme price spikes that may have otherwise led to rate shock for customers. Given that an increase in the limit on the CCRA would have little, if any, benefit, the impacts on FEI's credit facilities due an increase in the limit, including increases in financing costs, are not justified.

### 4.3 HEDGING TOOLS

There are a number of financial hedging tools FEI can use to meet the price risk management objectives. These include locking in market prices through fixed price swaps or capping market prices with call options or collars. While each of these is effective at mitigating market price volatility in different market price environments to some degree, fixed price swaps are most effective, as will be discussed in the following sections.

Hedging instruments involve locking in or capping market gas prices, and directly impact gas costs that customers will ultimately pay through commodity rates. While some of these transactions can be done physically (where the buyer pays a fixed price or capped price for physical delivery by the seller), FEI has traditionally done them financially. In a financial transaction, the buyer swaps the index market price for a fixed or capped price with a counterparty, often a bank, and there is no physical exchange of gas supply. In a separate transaction, FEI purchases physical supply from another counterparty, usually a gas producer, at the market index price. With financial hedges, hedging gains or costs relative to market prices are recorded, reflecting the difference between the hedge prices and the market prices. It is FEI's commodity rate customers who receive the benefits and incur the costs related to any hedging, as reflected in the commodity rate. There are no additional costs incurred by ratepayers from hedging activity.

In the current low market price environment, the potential hedging gains and costs are not symmetrical, as there is greater upside market price potential than there is downside market price potential going forward (as discussed in Section 3.1.4). Therefore, customers are more likely to benefit from hedging in the current low market price environment.

Hedging can be used as a tool to stabilize market prices and protect customers from market price volatility. Hedging acts like insurance against adverse price movements. Hedging strategies can be tailored to different market price environments so that they protect customers and provide some rate stability in a cost effective manner. Hedging also provides the opportunity to help preserve relatively low commodity rates for customers by capturing opportunities when they arise.



The following sections first describe the financial hedging tools that are currently being used by FEI in accordance with its approved 2015 PRMP (fixed price swaps) and then other potential hedging tools for managing price risk not currently used by FEI.

#### 4.3.1 Fixed Price Swaps

Fixed price swaps are an effective way of locking in market prices to reduce the impacts of market price volatility on gas costs and rates. They can be transacted relatively quickly and so are effective in capturing favourable market price opportunities as they occur. Fixed price swaps can be used to capture market price opportunities if, for example, predefined price targets are reached, helping preserve favourable commodity rates and reducing price volatility for customers. Therefore, a fixed price hedging strategy is most effective when hedges are implemented before market volatility occurs and while forward market prices are low. Hedging has no significant benefit during stable market price environments.

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.

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.

The quarterly rate setting mechanism, including 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 (as discussed in Section 4.2). A medium-term hedging strategy can help further mitigate market price volatility over the short and medium term. This is because hedging will impact underlying market prices for terms up to five years out while deferral accounts merely help smooth out gas costs, typically over the next twelve months, rather than impacting the market prices themselves.

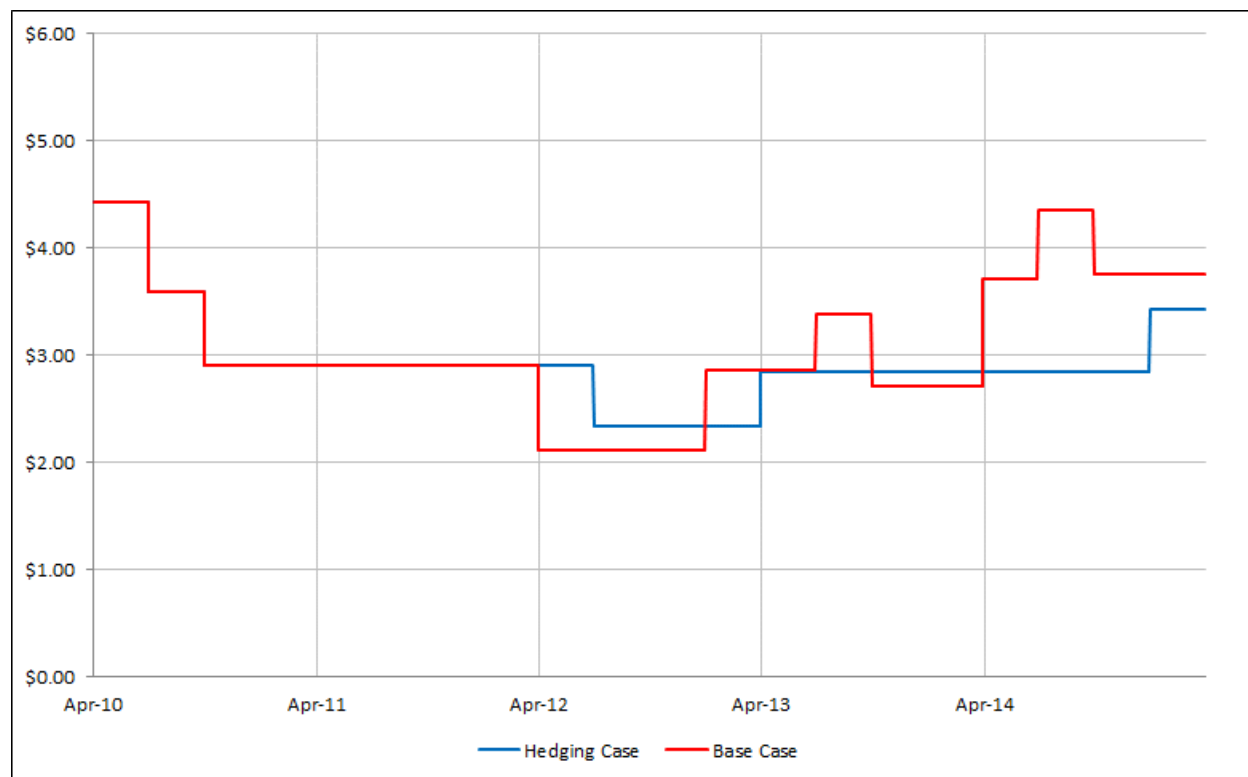
During the FEI price risk management stakeholder workshops in 2015, FEI explored the impacts of medium-term hedging strategies on commodity rates through the simulations performed by Aether Advisors, LLC (Aether). The simulations were performed for a historical five year “test period” from April 2010 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 per GJ was used for summer periods and \$3.75 per GJ for winter periods. The volume hedge limit was 50 percent of the commodity supply portfolio. Note that during this period, forward market prices had not fallen to the levels of the proposed hedging targets in this 2018 PRMP; therefore, higher price targets appropriate for the test period were used.

The simulated hedging strategy resulted in fewer commodity rate changes, kept the commodity rate in a narrower band and 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. This is because market prices temporarily fell below the hedge price levels after the hedging for that period was transacted. The hedging strategy combined with the rate setting mechanism and deferral account mitigated rate volatility to a much greater degree than the rate setting mechanism and deferral account alone, as shown in Figure 4-5.

**Figure 4-5: Hedging Strategy vs. Base Case Rate Simulation**



FEI recognizes that any hedging strategy will work well with perfect hindsight market knowledge. Price risk management strategies are not being proposed to “beat the market”, but rather capture opportunities to lock in prices that are favourable relative to historical market price levels and reduce rate volatility.



### 4.3.2 Potential Hedging Alternatives

This section describes other financial tools and strategies that FEI does not currently employ but would consider using in a higher market price environment with volatility.

#### 4.3.2.1 Call Options

One way of reducing rate volatility and protecting customers from rising prices while mitigating potential hedging costs would be to use call options instead of fixed price swaps. These instruments could be used in higher market price environments, where there is the potential for prices to move significantly lower or higher in the future. FEI considers a higher market price environment to be one where market AECO/NIT gas prices are consistently near or above \$4 per GJ and with volatility such that prices fluctuate between +/- \$2 per GJ of this level. With these instruments, a premium is paid by the buyer to receive a capped price. The capped price would provide price protection if market prices moved higher. If market prices remained below the capped price, then the option would provide downside price participation. Because these instruments provide downside market price participation, they would not typically be used in relatively low market price environments where the price downside is limited. Call options are available for the AECO/NIT market but not available for the Station 2 or Sumas markets because of the lower levels of liquidity in those markets.

#### 4.3.2.2 Costless Collars

Another hedging alternative to mitigating market price volatility is the use of costless collars. Costless collars are hedging instruments involving the use of a cap and a floor price. The costless collar ensures that the purchaser of the instrument will not pay more than the capped price if market prices move above this level. It also ensures that the purchaser will pay the floor price if market prices move below this level.

The main advantage of this instrument is that the purchaser can limit market price exposure to a predefined range. Therefore, costless collars make sense to use in a market price environments where there is potential for significant upside and downside market price movement. They make less sense to use in a low market price environment when there is limited price downside; in this case, using fixed price instruments makes more sense.

Costless collars can result in lower potential hedging costs than fixed price swaps if market prices move lower. While there is no explicit premium with costless collars, as there is with call options, the premium is implicit in the limited downside price potential. The higher the capped ceiling price requested by the purchaser, the lower the possible floor price. Costless collars, like call options, are available for the AECO/NIT market but not available for the Station 2 or Sumas markets because of the lower levels of liquidity in those markets.



Similar to using fixed price swaps to capture market price opportunities, the use of call options or costless collars is not expected to mitigate longer term and persistent periods of market price volatility. However, they would help with stability in commodity rates for FEI in the medium term.

#### 4.4 OPTIONAL CUSTOMER BILL AND RATE TOOLS

The following sections describe the optional products currently available to gas customers to help manage their rate or bill volatility. This includes the fixed rate offerings currently provided by gas marketers to residential and commercial customers under the Customer Choice Program. Larger customers can elect to purchase their commodity supply from FEI or use FEI for transportation service only and purchase their supply from a gas marketer. The Equal Payment Plan is also discussed. While these optional tools provide customers with some degree of rate and bill stability, they do not meet the objective of capturing opportunities to provide customers with more affordable rates in a low market price environment for a longer duration as would be done through hedging.

##### 4.4.1 Customer Choice Program

FEI residential and small commercial customers (rate classes 1, 2 and 3) can currently enter into fixed rate commodity supply offerings from marketers for terms up to five years with natural gas marketers under the Customer Choice program. This provides customers with rate stability for up to five years and customers can benefit if market prices and the alternative FEI commodity rate increase above their fixed rate with the marketer. In addition, marketers can benefit if their cost to provide supply is lower than the rates they are providing customers. Marketers may also include a profit margin in their rate offerings. However, while customers may benefit from more rate stability, they do not financially benefit if market prices fall below their fixed rate during the period they are locked in with a marketer offering, and customers may not achieve the objective of capturing low rates. While customers enrolled in the Customer Choice program may benefit or gain relative to FEI's commodity rate offering depending on future gas price movements and subsequent impact on FEI's commodity rates, FEI expects that the gas marketers will typically benefit regardless of market price movements.

Currently only 3.5 percent of customers are enrolled in the Customer Choice Program, while most customers receive supply from FEI.

The following table shows recent gas marketer rates available to customers using the Customer Choice Program:



Table 4-1: Gas Marketers' Residential Fixed Rates (per GJ) under Customer Choice Program<sup>12</sup>

Supplier name	↓	1 yr. term	2 yr. term	3 yr. term	4 yr. term	5 yr. term
Access Gas Services Inc. 877-519-0862		\$3.89				
Access Gas Services Inc. 877-519-0862		\$4.14				
Access Gas Services Inc. 877-519-0862			\$4.89	\$4.89	\$4.89	\$4.89
Access Gas Services Inc. 877-519-0862		\$5.14	\$5.89	\$5.89	\$5.89	\$5.89
Direct Energy 855-227-9458				\$3.99		\$3.99
Just Energy 866-587-8674				\$3.80	\$3.80	\$3.80
Just Energy 866-587-8674				\$4.55	\$4.55	\$4.55
Just Energy 866-587-8674				\$5.00	\$5.00	\$5.00
Planet Energy 866-360-8569				\$4.99		\$4.69
Summitt Energy BC LP 877-222-9520					\$5.39	\$5.39
Summitt Energy BC LP 877-222-9520					\$6.39	\$6.39
Summitt Energy BC LP 877-222-9520						\$5.39
Summitt Energy BC LP 877-222-9520						\$6.39

#### 4.4.2 Customer Moving from Sales to Transportation Service

Larger volume customers (e.g. rate schedule 22, 23, 25 and 27 customers) can elect to receive their commodity supply from a shipper agent, and use FEI transportation service to have their supply delivered over FEI's distribution system. Customers can determine the degree of commodity rate volatility reduction they want through their arrangement with the shipper agent. This option is only available to certain rate classes and is not available to low-volume residential and commercial customers. These large volume customers can elect to have their gas supply provided by FEI or a shipper agent on an annual basis, as long as they provide sufficient notice.

Customers can benefit from greater rate stability but do not otherwise benefit if market prices fall below their fixed rate. If FEI's commodity rate was higher than a shipper agent's commodity rate due to the inclusion of a large deferral account deficit, customers could opt to switch from FEI commodity supply to transportation service and receive supply at a potentially lower cost from a shipper agent, while switching back to FEI commodity supply once there is a smaller deferral account balance or surplus. This could enable switching customers to avoid their share of

<sup>12</sup> <https://www.fortisbc.com/NaturalGas/Homes/CustomerChoice/PriceComparison/Pages/default.aspx>



costs, which would be borne by FEI's remaining customers and is another reason for supporting managing the CCRA deferral account within a reasonable range.

#### 4.4.3 Equal Payment Plan

The Equal Payment Plan is an option for customers wanting to smooth out their monthly bill payments. An average of customers' prior year's consumption and FEI's current commodity rates are used to determine a customer's instalment payments for the next twelve months' bills. The instalment amount is reviewed every three months and can be adjusted up or down to reflect significant changes in the weather, usage and rates. This is to prevent large adjustments for EPP customers at the end of the twelve month term. Currently, about one third of customers are signed up for the EPP.

While the EPP acts to smooth customers' bills by averaging consumption, it does not affect underlying gas prices like other price risk management tools, such as hedging. Ultimately, customers using the EPP will pay the same amounts through commodity rates as they would without the EPP (assuming constant gas consumption). Therefore, while customers may have improved bill predictability, there is no financial risk or benefit for customers using EPP versus not using EPP (assuming equal gas consumption). Furthermore, under the EPP, the equal twelve month payment instalments are reviewed every three months and adjusted if necessary to reflect changes in weather, gas usage or gas rates. This is done to avoid significant billing adjustments at year end caused by large changes in weather related consumption or quarterly rates. As a result, during periods of extremely volatile market prices and subsequent quarterly rate changes, EPP customers may be subject to quarterly, rather than annual, bill changes. As such, the EPP is not a substitute for other forms of price risk management, such as hedging, but rather should be included as part of a portfolio approach in reducing rate and bill volatility for customers.

### 4.5 *POTENTIAL LONG TERM ALTERNATIVES*

There are potential alternatives that are not currently employed by FEI, which would help meet the objectives for price risk management over a longer period (i.e. beyond five years). The current low priced natural gas environment is one where there is potential for more upside price movement than downside in the future.

The following sections discuss potential alternatives to manage long term price risk.

#### 4.5.1 Long Term Hedging

The commodity gas purchases within the ACP are currently generally based on index pricing at the AECO/NIT market hub, which is subject to the price volatility of the natural gas market. An alternative for mitigating this market price volatility over the longer term is using long term (i.e. over five years) fixed price purchases or swaps, where the purchase price is locked in at a point in time and does not change for the contract term.



As these types of supply arrangements are not commonplace in the market, there is uncertainty regarding how many suppliers may be willing to transact with FEI. Locking in long-term market prices could also be done financially with fixed price swaps.

This type of supply arrangement helps manage the risk of higher prices or persistent price volatility that could occur in the future. FEI's gas customers could benefit from the increased stability in commodity rates over the longer term, particularly if market prices rise over time. Therefore, this type of arrangement is effective in meeting the primary price risk management objectives over a longer period. However, long term fixed purchases can result in higher than market costs if market prices move lower after locking in the fixed price. The current environment of low gas market prices near producer break-even costs provides an opportunity to capture low forward market prices that may not last indefinitely.

As will be discussed in Section 5.2, FEI has requested approval to implement hedges up to five years in term, provided specific hedging price targets are reached. However, FEI is not pursuing hedges with terms of greater than five years at this time.

#### 4.5.2 Investment in Natural Gas Reserves

Another alternative for managing even longer term market price increases or volatility is investment in natural gas reserves. In this type of arrangement, the buyer would invest in gas producing reserves by entering into a joint venture with a gas producer for a term up to thirty years. The buyer would share in the cost of developing and producing the gas and earn the right to a portion of the production. Therefore, this type of arrangement would enable FEI to access gas supply on a cost basis rather than a market-price basis, sharing in the costs of production with a producer.

Under this type of joint venture transaction, the potential benefits to FEI's customers would include obtaining gas supply on a cost basis, reduced exposure to market price volatility, physical supply diversity and long term security of supply. The benefits for the producer include access to third party capital, without diluting the company's equity or taking on more debt, which may be important during periods of low market gas prices to maintain production operations. FEI's customers would benefit in terms of greater commodity rate stability since the costs related to this arrangement would be recovered from FEI's gas customers through commodity rates. This would be valuable during periods of market price volatility or increasing market prices over time.

In terms of rate setting and the accounting treatment of reserves, FEI would expect that any capital investment would be included in rate base upon which the utility would earn a rate of return, benefitting FEI's shareholders. Capital, operating and drilling costs would be included in FEI's gas costs and recovered like the costs for other sources of commodity supply.

Managing the risk associated with reserves would be of paramount importance to FEI in a reserves arrangement. While it may seem that the risk associated with drilling, completing, and operating wells would differ from typical regulated utility assets, there may be ways to mitigate these risks through contractual arrangements and effective due diligence. One important



feature of any deal would be the ability to transfer risks to producers that are appropriate for a producer to manage, such as drilling risks and most operating risk. However, this transfer of risks may not be acceptable to the producer or increase the capital investment required by the producer. Because of this, FEI is not planning to explore this option further at this time.

### 4.5.3 Volumetric Production Payment

Another tool for managing longer term price risk is a volumetric production payment (VPP). In this arrangement, the buyer pays an upfront lump sum payment to a gas producer in exchange for specific volumes delivered over the term of the agreement (up to twenty years). The buyer also receives a limited royalty interest in the production volumes, which is returned to the seller once the volumes have been delivered. This helps to reduce the risk to the buyer of the producer going bankrupt. As with investment in reserves, gas producers will use these types of arrangements to help finance production.

VPP arrangements provide gas cost certainty for a portion of the commodity supply portfolio and provide long term security of supply. Customers would benefit if market prices increase above the VPP contract price or are volatile. As with investing in reserves, the capital investment would be included in FEI's rate base and earn a rate of return for shareholders.

A VPP arrangement may be more aligned with FEI's field of expertise given that these types of arrangements are typically non-operating contracts so that the producer takes on the operating and drilling risks associated with the production. FEI is planning to explore this option further with producer counterparties to determine if there is interest among producers and if it meets the price risk management objectives over the long term.

## 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.

Physical resources, such as the use of natural gas storage and market price hub and supply diversity, help mitigate short-term market price volatility and ensure security and diversity of supply. FEI's quarterly rate setting mechanism and deferral account balances help to provide some smoothing effect to rates and ensure timely recovery or refund of costs from or to customers. On an optional basis, the natural gas marketers' fixed rate offerings provided under the Customer Choice program enable customers who want more commodity rate certainty to



1 lock in their rates for terms up to five years. Similarly, larger volume transportation customers  
2 can obtain fixed price purchases through their shipper agent. In addition, those customers  
3 preferring more stability in their monthly gas bills can sign up for the Equal Payment Plan (EPP).

4 For customers receiving commodity supply from FEI, these price risk management tools provide  
5 some shorter-term rate or bill volatility reduction. However, hedging provides more effective  
6 price risk management for the medium and longer term. This is because hedging, unlike the  
7 other tools, locks in forward market prices, affecting underlying market prices and their impacts  
8 on FEI's gas costs, which ultimately flow through to customers in commodity rates. The use of  
9 deferral accounts, while effective in reducing some short-term rate volatility, merely shift gas  
10 costs to other periods where they will ultimately need to be recovered or refunded from  
11 customers through rate changes (as shown in Figure 4-1). By targeting low market prices near  
12 gas producer break-even costs, FEI reduces the risk of customers not benefitting if market  
13 prices fall while allowing customers to benefit from improved rate stability and continuing to  
14 receive historically low commodity rates.

15 While the opportunistic hedging strategy is appropriate in the current low market price  
16 environment, other price risk management tools should be considered if market price conditions  
17 were to change. These could include call options and costless collars (included in the potential  
18 financial tools section of the alternatives in Appendix B). If market prices were to move higher  
19 than current levels and market price volatility increase, call options or costless collars can  
20 provide a balance of mitigating some market price volatility at a low cost.

21



## 5. HEDGING PROPOSALS

FEI is requesting Commission approval of refinements to FEI's existing medium-term hedging program, including extending the current hedging horizon and adjusting the hedging price targets, and approval of a 5-year term hedging program. Each of these requests is described below.

### 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



1 of [REDACTED] is the simple average of the winter term price target of [REDACTED] and the  
2 summer term price target of [REDACTED].

3 All the hedging price targets above are [REDACTED] than those proposed in the 2017  
4 PRMP.

5 The hedging requests listed in a) to c) above are based on the hedging implementation plan for  
6 year 1. FEI requests approval for the following portfolio percentage limits with regard to the  
7 hedging implementation plan within the three-year hedging horizon.

8 e) Execute hedges according to the following implementation limits:

9 [REDACTED]  
10 [REDACTED]  
11 [REDACTED]

12  
13 f) Execute hedges according to the following weekly hedging implementation limits:

14 [REDACTED]  
15 [REDACTED]  
16 [REDACTED]

17  
18 This implementation plan allows the hedges to be implemented over a period rather than all at  
19 once to balance capturing the low prices with reducing the risk of potential hedging costs.

20 Prior to November 2018, year 1 includes November 2018 to October 2019, year 2 includes  
21 November 2019 to October 2020 and year 3 includes November 2020 to October 2021. In April  
22 2019, once any hedging opportunity for April to October 2019 has ended, year 1 becomes  
23 November 2019 to October 2020 and year 2 becomes November 2020 to October 2021. In  
24 April 2020, year 1 becomes November 2020 to October 2021. This approach ensures that the  
25 implementation plan is rolled over each year during the hedging horizon.

26 [REDACTED]  
27 [REDACTED]



1

2

3

4

5

6

7

8

## 9 **5.2 HEDGING TERMS UP TO FIVE YEARS**

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

15 a) Execute hedges when forward AECO/NIT market prices are at or below [REDACTED]  
16 [REDACTED] for up to 25 percent of the FEI commodity supply portfolio for terms up to five  
17 years within the hedging horizon of November 2018 to October 2024;

18 b) Total hedging for any term in combination with the medium-term hedging program is  
19 50 percent; and

20

21

22 Hedges can include fixed price financial swaps or physical fixed price purchases at AECO/NIT  
23 or Station 2. No hedging is executed if the hedging price target listed above is not reached.

24 The hedging price target for the longer term hedges is the same as those for the one-year terms  
25 under the medium-term hedging strategy at [REDACTED] for up to 25 percent of the portfolio.  
26 This is because the longer term hedges would not be individual summer or winter terms but  
27 rather terms of greater than one year. This hedging price target is [REDACTED] than that  
28 proposed in the 2017 PRMP.

29 The hedging term may be less than five years if, for example, hedging to 50 percent has already  
30 been completed for some near terms per the medium-term hedging program. If FEI has already



1 hedged 50 percent of the Winter 2018/19 term, it would not then implement another 25 percent  
2 for that same term under the longer term hedging strategy, if the hedging price targets were  
3 reached, such that the total hedging for Winter 2018/19 was 75 percent. FEI could instead  
4 implement the longer term hedge starting after the Winter 2018/19 term, with a term beginning  
5 with April 2019.

6 The average AECO/NIT 5-year forward market price for November 2018 to October 2023 as of  
7 December 14, 2017 is 1.92 per GJ.

8 FEI has included a hedging horizon ending October 2024 in order to allow for the potential  
9 situation where the effective start date of the five-year hedge may be after November 2018. It  
10 also takes into consideration the required time to implement hedges after a Commission  
11 decision on this Application.

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

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



## 6. STAKEHOLDER CONSULTATION

During 2015, FEI explored stakeholder interest in medium-term hedging strategies in a workshop process. In the workshops, FEI asked the stakeholders if they agreed with the principle of capturing low market prices with hedging and then if they agreed with the proposed hedging price targets and hedging percentages. Some stakeholders, in particular those representing low-income customers, believed that FEI should capture low market price opportunities, if they occurred, with medium-term hedging, such as fixed price swaps or purchases, for a portion of the portfolio.

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 percent maximum proposed for a single hedging price target to balance potential hedging costs with rate stability.

The British Columbia Public Interest Advocacy Centre representing the British Columbia Old Age Pensioners' Organization, Active Support Against Poverty, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre *et al.* (BCOAPO) also agreed that FEI should be capturing opportunities, as long as the price target is set low enough so customers don't miss out if commodity prices drop further. Given this feedback, FEI proposed two hedging price targets with a maximum percentage hedging limit of 50 percent of the commodity supply portfolio. Therefore, the remaining 50 percent of the portfolio, or more if less than 50 percent of the portfolio ends up being hedged, would be subject to market price movements.

While there was stated support from some stakeholders in the 2015 workshops for capturing market price opportunities, there was no stated support from stakeholders for the strategy of limiting market price increases or price spikes with low-cost call options. FEI believes that this defensive hedging strategy with call options can provide low-cost price spike insurance for customers, especially if market conditions change such that market prices were higher and price volatility continued. FEI will continue to monitor market conditions and the potential effectiveness of these instruments and may propose these in the future.

The results of the recent customer research are consistent with the objective of this medium-term hedging strategy of providing more rate stability. Apart from the feedback provided during the 2015 workshops, FEI's customer research conducted in 2012 revealed the following:

- Most customers prefer some rate stability to help with household budgeting and limit surprises;
- Most customers don't want to be locked into a fixed rate, and
- Customers are willing to accept smaller rate decreases if rate increases are limited.



FEI also hosted a price risk management workshop on February 24, 2017 for Commission staff and stakeholders that were involved in FEI's 2015 price risk management workshops. In this workshop, FEI provided background information regarding the 2015 PRM Application and Panel decision, hedging and rate setting enhancement implementation and a gas market update. FEI also sought feedback regarding increasing the CCRA deferral account balance limit and question themes for the customer survey. FEI discussed recommendations, which included extending the hedging horizon out to October 2020 and consideration of adjusting the hedging targets to reflect the seasonal summer and winter pricing. FEI also discussed the currently low forward market prices out ten years and how this opportunity to capture low market prices could be limited. None of the stakeholders in the workshop expressed any concerns with FEI's proposals relating to extending the hedging horizon out or adjusting the hedging price targets. One stakeholder commented that not having seasonal hedging targets may result in FEI hedging summer terms but not winter terms, leaving FEI exposed to potential market price spikes in the winter periods. FEI is requesting approval for hedging price targets that reflect seasonal price differences within this application.

In this workshop, FEI discussed increasing the commodity deferral account balance limit to up to +/- \$200 million during periods of market price volatility. Commission staff suggested that FEI simulate a worst case scenario, such as the extreme market price events of 2000-2001 or 2005 when price and rate volatility was at its highest, and how FEI would mitigate this risk. FEI has included the results of this analysis in Section 4.2.7.

One stakeholder from the Ministry of Social Development representing low income customer groups who was not able to attend the workshop provided feedback after the workshop and made the following comments:

- Low income and poverty-level customers have low/zero rate change tolerance and fluctuations in rates can result in financial choices between basic needs like rent and food; and
- Low income customers are looking for stability with regards to rates and bills but would not be prepared to pay a premium.

FEI intends to continue with its price risk management workshops involving Commission staff and stakeholders in 2018. This will help keep interested parties up to date on the gas market price environment and FEI's price risk management tools and strategies and enable them to ask questions and provide feedback to FEI. FEI can then incorporate any feedback into its recommendations in the future.



## **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 1<sup>st</sup> 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.



**Appendix A**

---

**CUSTOMER SURVEY SUMMARY REPORT**





# FortisBC Customer Volatility Tolerances & Preferences

**Prepared for:**

Walter Wright, Senior Research & Evaluation Analyst

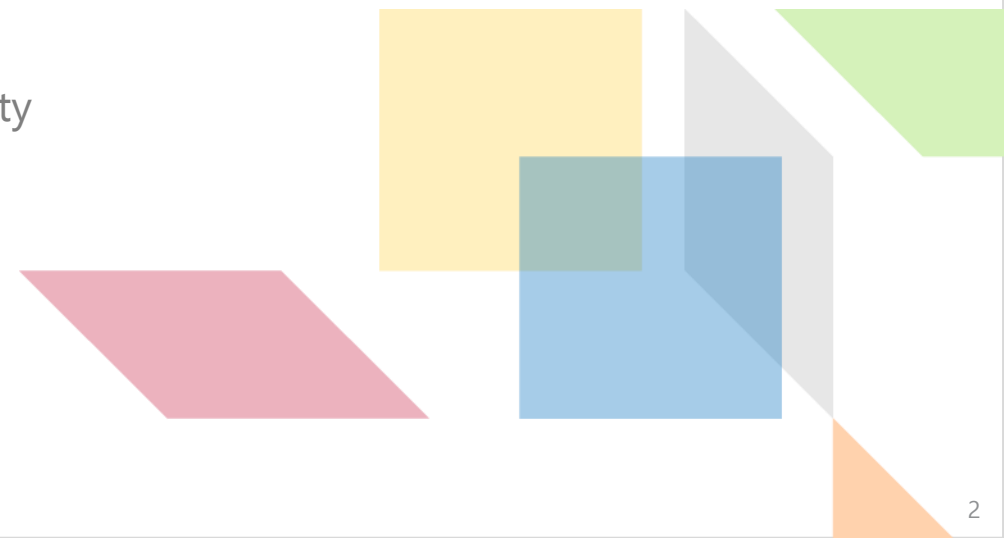
**June 2, 2017**





# Contents

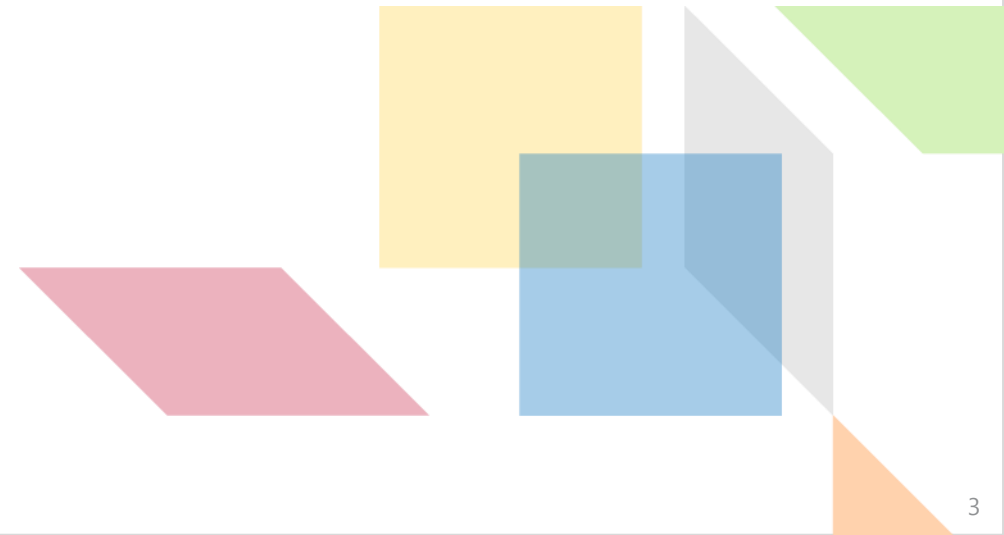
- 03** Background, Objectives & Methodology
- 08** Executive Summary
- 12** Detailed Findings
  - 12** Residential Customer Segments
  - 16** Knowledge of Natural Gas Pricing & Charges
  - 22** General Concern about Natural Gas & Other Prices
  - 25** Views on Hedging & Willingness to Pay More for Stability
  - 29** Natural Gas Price Tolerances
  - 34** Billing Behaviour & Practices
- 43** Respondent Profiles
- 46** Appendix





A small 3D cube icon with green and grey faces, identical to the one in the header.

# Background, Objectives & Methodology





- › The price of natural gas has fluctuated significantly over the past two decades. Going forward, the expectation is that demand for natural gas will increase and the supply growth will slow, resulting in higher natural gas prices and volatility in the future. In 2015, FortisBC Energy Inc. (FortisBC) submitted the Price Risk Management Plan (PRMP) to the BC Utilities Commission (BCUC) which was largely based on customer research FortisBC conducted with Sentis Research in 2012. The objectives of the PMRP include:
  - › Mitigating market price volatility to support rate stability
  - › Capturing opportunities to provide customers with more affordable rates
- › To achieve these objectives, FortisBC proposed three strategies after completing the research:
  - › Implement a medium-term fixed-price hedging strategy
  - › Have a commodity rate change cap of \$1/GJ, applicable to both rate increases and decreases, provided the deferral account balance is maintained within a reasonable range
  - › Consider having a 24-month rather than a 12-month price outlook to determine the commodity rate
- › FortisBC recognizes that if market conditions change significantly in the future, the proposed strategies may no longer be applicable. Hence, the organization needs to review on an annual basis how the strategies have worked so far and identify any refinements that may be needed.
- › FortisBC commissioned Sentis Research to design and conduct a research study with its residential and small commercial customers to aid the organization with the following business objectives:
  - › To ensure that FortisBC's price risk management strategy meets the needs of various customer classes
  - › To measure customer attitudes in an environment of rising prices and to understand what degree of natural gas bill/rate fluctuation is acceptable
  - › To determine the willingness of customers to pay directly or indirectly for greater bill/rate stability
- › This report contains the detailed findings from this research study, and where possible and relevant, references findings from the 2012 PRMP research study.



- › For this study, a total of 857 online surveys were conducted with FortisBC residential customers and 167 with FortisBC small commercial customers.
- › Residential customers were sourced from an online panel provider. Targeted oversampling was conducted to ensure an adequate base size of low income households. A total of 99 residential customers fall into the low income category.
- › Small commercial customers were screened and recruited by telephone from lists of BC businesses and then invited via email to the online survey. To encourage participation, an email reminder was sent part-way through the data collection period and a tiered prize draw was offered as an incentive.
- › A total of 370 small commercial customers were recruited by phone to result in the 167 completed surveys (a 45% final response rate).
- › To be eligible for this survey, respondents had to meet the following criteria:
  - › 18 years of age or older
  - › Have no one in their immediate family or household (including the respondent) employed by / or if a small commercial customer not be a: utility company, natural gas company or gas marketer, electrical company, market research company, newspaper/radio/TV network or utility regulatory body
  - › FortisBC natural gas customer
  - › Jointly or solely responsible for making payment decisions for their natural gas bill
  - › Small commercial customers only: have a total monthly natural gas bill that is typically under \$2,000

- › Data collection for this study took place from April 5-30, 2017.
- › At the data analysis stage, weighting was applied to the residential sample to ensure that the incoming sample was representative of the province by age, gender, and region and that low income residential customers were accurately represented in the final sample of 857.

- › The margins of error (MOE) at the 95% level of confidence for the various sample sizes found within this study are as follows:

Customer Group	Sample Size	MOE
Residential	857	±3%
Low Income	99	±10%
Small Commercial	167	±8%

- › When comparing results between different customer groups the following required maximum differences are needed at the 95% level of confidence in order for that difference to be considered statistically significant:

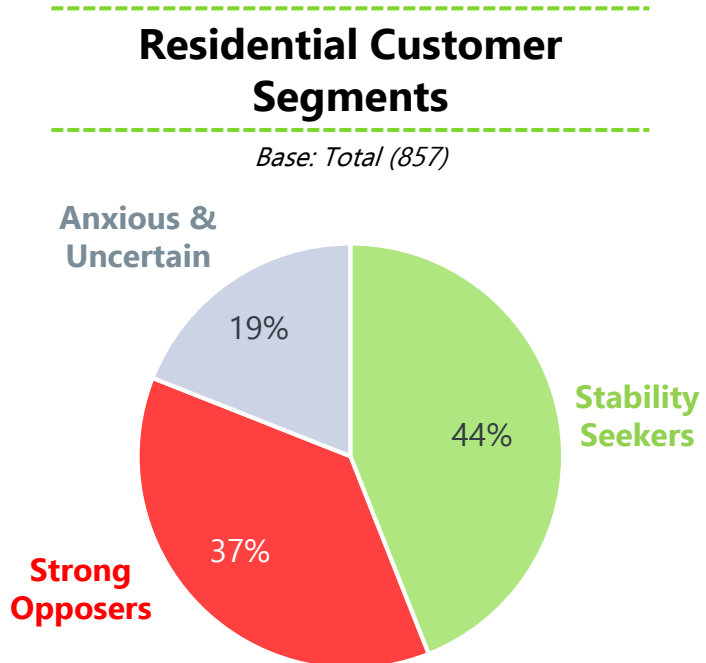
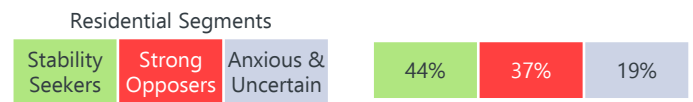
Comparing	Sample Sizes	MOE
All Residential vs Low Income	857 vs 99	±11%
All Residential vs Small Commercial	857 vs 167	±9%

- › Copies of the small commercial telephone screener, email invite/reminder, and online questionnaire can be found in the Appendix of this report.
- › As noted previously, 2012 results have been footnoted on applicable slides.



- › Throughout this report, results of each question are shown for all residential customers, low income residential customers and small commercial customers. Where relevant, other sub-group analysis may be shown.
- › A key component of the analysis for this study is understanding the views and preferences of residents as a function of their position on the concept of 'hedging' (Q11), their general perceptions regarding the concept of paying extra to ensure a more stable natural gas bill (Q13) and how much more, if any, they are willing to pay each month for natural gas bill stability (Q12).
- › Note that the same segmentation was not undertaken for small commercial customers given the small sample size [n=167].
- › A k-means cluster method was used to assign residential customers to a cluster (segment) based on their distance to the cluster center (the smaller the distance, the more similar they are to the group) using questions 11, 12 and 13.
- › The segmentation will help FortisBC understand the residential natural gas market, how to develop services/programs for it, and how to communicate with customers.
- › The three segments which emerged from the cluster analysis are as follows (see chart to the right for sizes):
  - › Stability Seekers (n=367)
  - › Strong Opposers (n=332)
  - › Anxious & Uncertain (n=158)
- › A description of the segments can be found starting on slide 13.

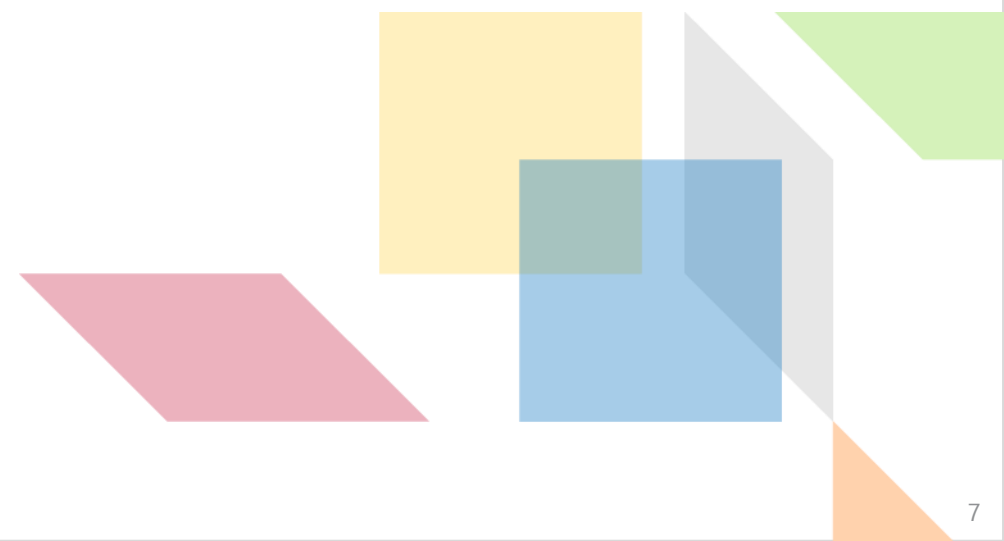
- › When comparing results between *Stability Seekers* (n=367) and *Strong Opposers* (n=332), a difference of  $\pm 8$  percentage points is needed to be considered statistically significant at the 95% level of confidence. When comparing either of these segments to the *Anxious & Uncertain*, a difference of  $\pm 10$  percentage points is needed.
- › Throughout this report, residential customer results are shown in total and by the three segments. Examples of how these are presented in the report are shown below.





The logo for 'sentis' features a stylized 3D cube icon composed of green and grey faces.

# Executive Summary





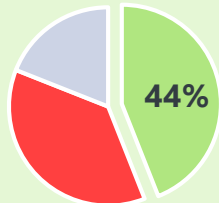
## Overview

- › **In general, residential and small commercial customers place high value on stability.** Among both residential and small commercial customers, three-in-ten indicated that they did not support the idea of paying extra now to ensure a more stable natural gas bill. While it is understandable that a relatively small percentage of customers “like the idea” of paying extra (19% of residential customers, 17% of small commercial customers), the plurality of customers are “okay” with paying extra (43% of residential customers, 46% of small commercial customers), albeit with some concerns about paying too much.
- › **There is also a preference for FortisBC to make smaller more frequent adjustments to ensure stability.** Over one-half of residential customers (52%) and small commercial customers (56%) prefer this over making larger, less frequent adjustments. Our segmentation analysis illustrates that even among the nearly four-in-ten (37%) residential customers classified as *Strong Opposers* – who are not supportive of the concept of hedging and do not want to pay extra for bill stability (see the following slide for a full description of the customer segments) – a significant minority (43%) still favour smaller, more frequent adjustments over larger, less frequent adjustments.
- › **While customers value stability, they are divided on whether or not they should pay extra for it.** The over four-in-ten (44%) residential customers who classify as *Stability Seekers* are very amenable to paying extra for stability in their natural gas bill (91% are willing to pay more, with the average reasonable increase being 6%). In contrast, among *Strong Opposers*, only one-in-eight (12%) are willing to pay extra for stability in their natural gas bill, and the average reasonable increase is one percent (see slide 27 for more details.)
- › These two groups do not differ in their understanding of their natural gas bill charges and calculations. However, they do differ in their perceptions of how natural gas prices have changed over the last 10 years. *Strong Opposers* are less likely to perceive that prices have increased compared to *Stability Seekers*, which helps to explain why they don’t think they should pay extra.
- › **Low income residential customers are generally similar to other residential customers; however they do differ in the following ways:**
  - › They are less knowledgeable than other residential customers when it comes natural gas billing. Specifically, they are not as aware that they pay the same for natural gas as FortisBC, they have a lower understanding of the Cost of Gas charge, and they are less clear about how their natural gas bill is calculated.
  - › They are more concerned about the price of various products and services (including natural gas) increasing over the next few years.
  - › They have a lower tolerance for bill increases – that is, they are more likely to definitely make changes to their behaviour to offset natural gas bill increases.
  - › They feel it is reasonable to pay two percent more on average each month to provide greater stability in their natural gas bill while among all residential customers the average is closer to four percent more each month.
  - › They are less likely to be on FortisBC’s pre-approved payment plan.
  - › They are more likely to be renters and less likely to be living in a single detached home. They are also more likely to be part of a one person household. Low income customers over-index in the Southern Interior.



› For FortisBC to develop a price risk management strategy that meets the needs of various customer classes, it helps to understand the breakdown of residential customers in terms of how they feel about the concept of hedging and paying a higher natural gas bill to protect against possible price increases. Sentis undertook a segmentation analysis among FortisBC's residential customers to provide a better understanding of this customer class and to help facilitate program development, marketing and communication efforts. (Note that the same segmentation was not undertaken for small commercial customers given the small sample size [n=167].)

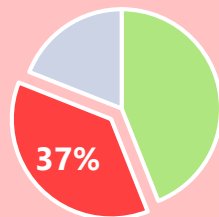
## Stability Seekers



- › Support the concept of paying extra to protect against increases (71% in support)
- › Willing to pay more for natural gas stability (91%)

- › Think paying extra for stability is ok, but still worry about paying too much for natural gas (65%); still, some like the idea (32%)
- › Prefer smaller, more frequent adjustments to their natural gas bill (62%) over larger, less frequent adjustments (21%)
- › Most likely to be on a pre-approved payment plan (39%) or the EPP (44%)
- › Demographically are highly reflective of all FortisBC natural gas residential customers

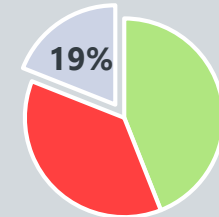
## Strong Opposers



- › Do not support the concept of paying extra to protect against increases (63% would rather not pay extra)
- › Not willing to pay more for natural gas stability (72% are not)

- › Do not like the idea of paying extra for stability in their natural gas bill (81%)
- › Lean toward preferring smaller, more frequent adjustments to their natural gas bill (43%) over larger, less frequent adjustments (17%)
- › Least sensitive to natural gas bill increases
- › Less likely than Stability Seekers to be on the EPP, and least likely of any segment to be interested in joining
- › Demographically are slightly older, male, and most likely to be living in a single detached home

## Anxious & Uncertain



- › Would rather not pay extra to protect against increases (42%) or are unsure (37%)
- › Not willing to pay more for natural gas stability (49%) or are unsure (51%)

- › Feel that paying extra for stability is ok, but worry about paying too much for natural gas (76%)
- › Similar to *Stability Seekers* and *Strong Opposers*, prefer smaller, more frequent adjustments to their natural gas bill (46%) over larger, less frequent adjustments (17%)
- › Most sensitive to natural gas bill increases, especially at a 25% increase (40% say they would definitely make changes)
- › Most likely to know they pay the same for natural gas as FortisBC (54%) and most likely to give their natural gas bill a thorough review
- › Most concerned about increasing prices in all expenditure areas
- › 37% are on the EPP and among those who are not, this segment is most interested in joining (57%)
- › Demographically are slightly younger, more likely to be low income and live in a townhouse, apartment or condo versus the other segments

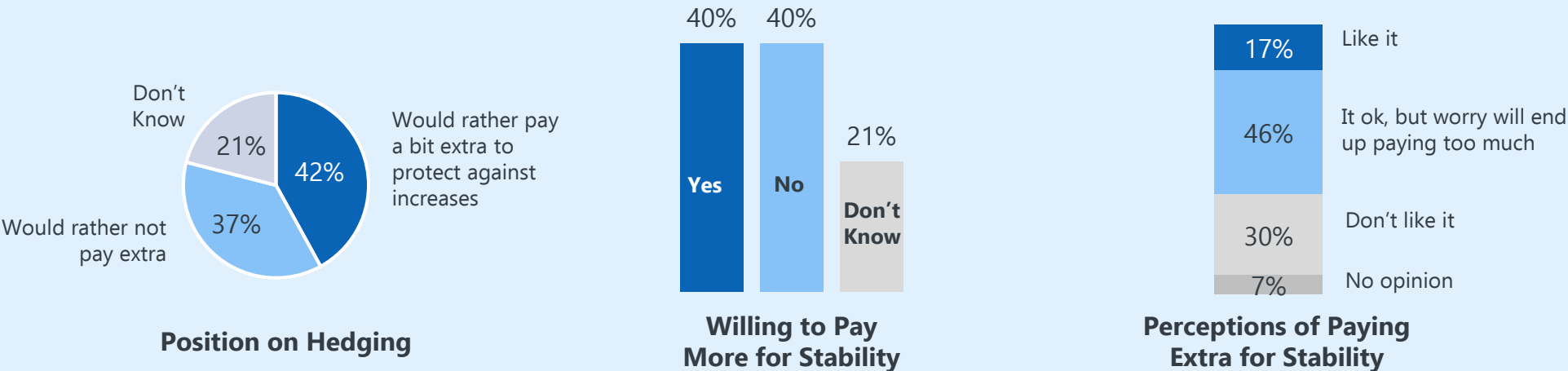


# Executive Summary



Small commercial customers generally resemble residential customers when it comes to how they feel about the concept of hedging and paying a higher natural gas bill to protect against possible price increases.

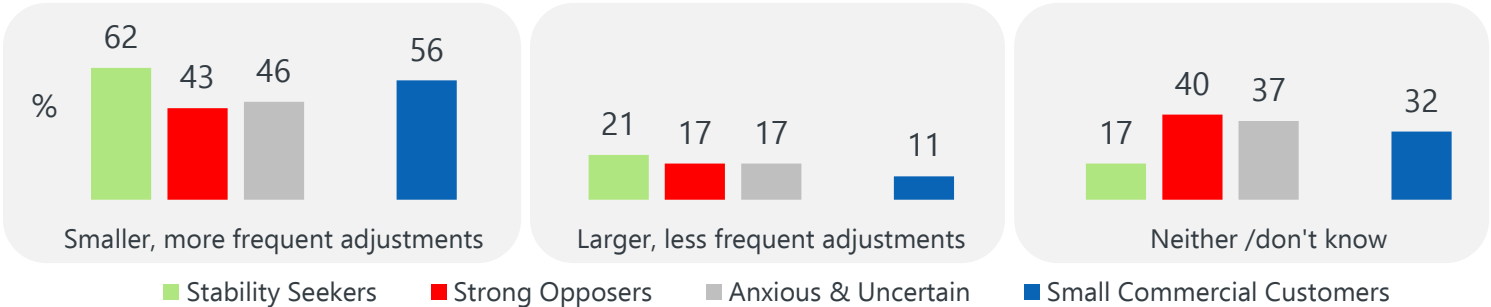
## Small Commercial Customers



When it comes to what residential and small commercial customers think is reasonable to pay extra each month to provider greater stability, small commercial customers are willing to pay the most, an average of 4.6% more compared with an average of 3.6% more among residential customers. Low income residential customers have an even lower threshold, only willing to pay an extra two percent per month to ensure a stable natural gas bill.

Despite the segment they fall into (for residential customers) or the customer class, the preference among residential and small commercial customers tends to be that FortisBC make smaller, more frequent adjustments to the Cost of Gas rate to help ensure stability, even if customers pay a bit more, rather than making larger, less frequent adjustments that may end up costing customers too much. While some customers may not support the concept of hedging, don't like the idea of paying extra for stability and/or are not willing to pay more for stability, no fewer than four-in-ten (43%) among any customer group supports smaller, more frequent adjustments over larger, less frequent ones.

## Preferences for Adjustments to Cost of Gas Rate

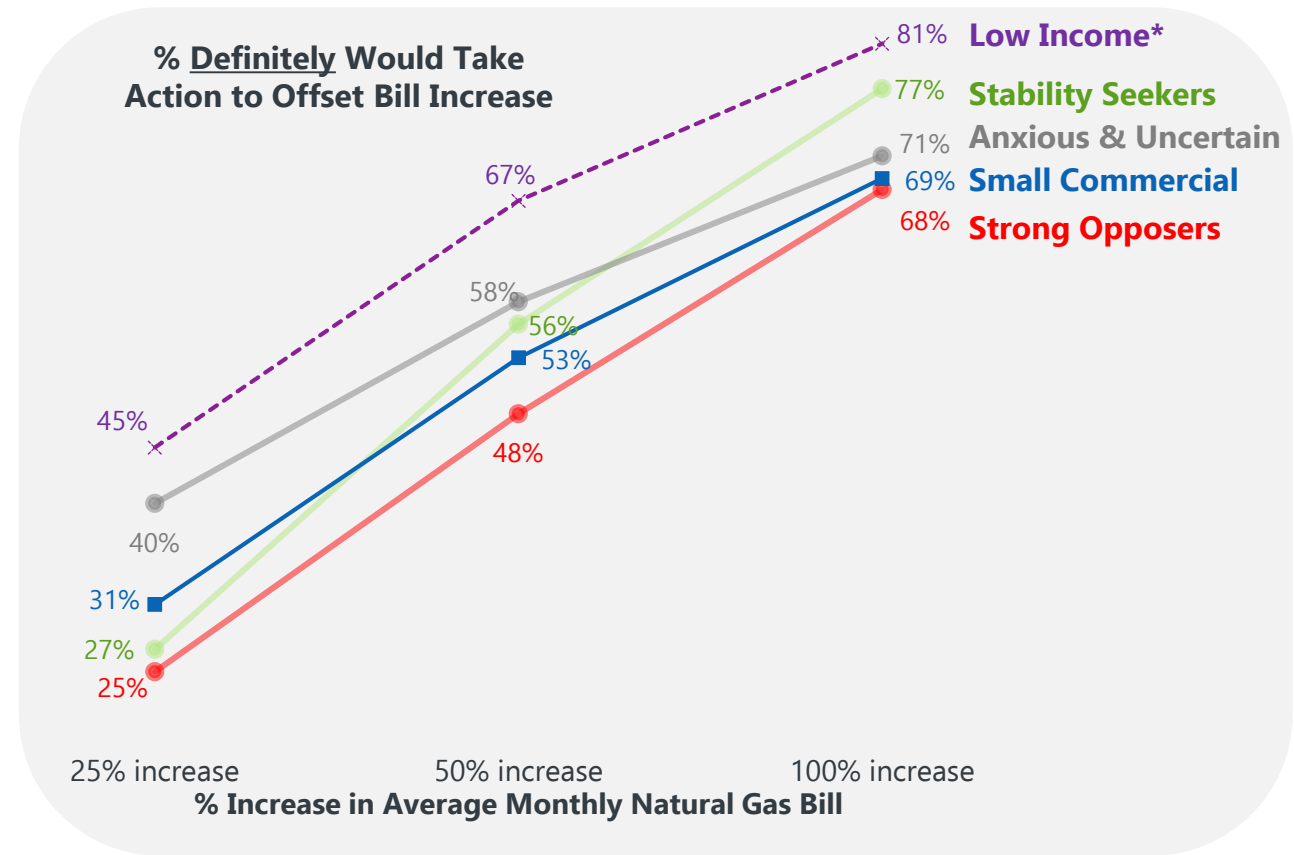




# Executive Summary



- > Residential and small commercial customers are relatively sensitive to price increases in their FortisBC natural gas bill. Low income residential customers have the greatest price sensitivity at every increase level, but are particularly sensitive at a 50% increase. The *Anxious and Uncertain* are particularly sensitive at a 25% bill increase – four-in-ten (40%) say they would definitely start making changes, which is very similar to low income residential customers. If their bills were to double, *Stability Seekers* are the most likely to say they definitely would take action (77% say they would). The likelihood of customers changing their behaviour to offset bill increases is significantly higher (especially at a 25% increase) among the one-half (51%) of residential customers and more than four-in-ten (44%) of small commercial customers who have taken actions or done things differently in the past to reduce their natural gas bill.
- > In order to offset possible natural gas bill increases, residential and small commercial customers would most likely turn down the thermostat/heat. Residential customers in particular would also dress warmer/use portable space heaters/use blankets. Other actions they would likely take include better draft proofing/insulating and trying to use natural gas appliances or equipment less often. Among small commercial customers, taking measures to better draft proof or insulate, actively looking to replace natural gas with other fuel/energy alternatives, and trying to use natural gas appliances/equipment less are the next actions they would most likely take.



## Top Actions Customers Would Take to Offset Natural Gas Bill Increases

All Residents	Low Income Residents	Small Commercial
<ul style="list-style-type: none"><li>Turn down the thermostat/heat - <b>70%</b></li><li>Dress warmer/use portable space heaters/use blankets - <b>58%</b></li><li>Take measures to better draft proof/insulate - <b>44%</b></li><li>Try to use natural gas appliances/equipment less or less often - <b>40%</b></li></ul>	<ul style="list-style-type: none"><li>Turn down the thermostat/heat - <b>73%</b></li><li>Dress warmer/use portable space heaters/use blankets - <b>66%</b></li><li>Try to use natural gas appliances/equipment less or less often - <b>44%</b></li><li>Take measures to better draft proof/insulate - <b>42%</b></li></ul>	<ul style="list-style-type: none"><li>Turn down the thermostat/heat - <b>56%</b></li><li>Take measures to better draft proof/insulate - <b>43%</b></li><li>Actively look to replace natural gas with other fuel/energy alternatives - <b>38%</b></li><li>Actively look to replace existing natural gas heating appliances/equipment with more efficient appliances - <b>36%</b></li><li>Try to use natural gas appliances/equipment less or less often - <b>34%</b></li></ul>

\*Not an exclusive category.





# Residential Customer Segments

Detailed Findings





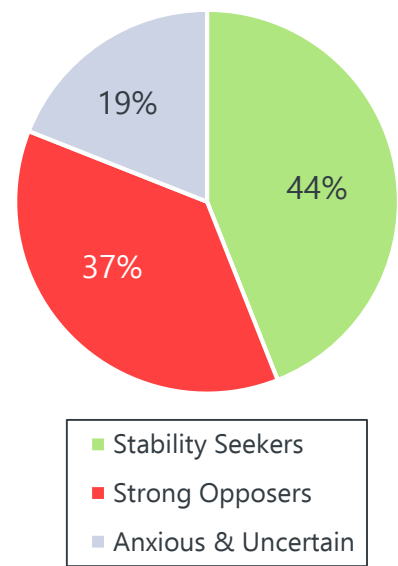
# Residential Customer Segments



- › A key component of the analysis for this study is understanding customer views on hedging and perceptions regarding paying more each month to ensure a stable natural gas bill.
- › Three distinct segments have been identified that will help FortisBC understand the residential natural gas market, how to best develop services/programs for it, and how best to communicate to these customers.
- › **Stability Seekers** (44% of the residential customer base). *Stability Seekers* are the largest group of customers. They support the general concept of paying a bit extra each month to protect against increases, and nine-in-ten (91%) say they are willing to pay more each month to ensure a stable natural gas bill.
- › Regarding their perceptions of paying extra for a stable natural gas bill, the majority (65%) think it is okay, but worry they might end up paying too much for natural gas, while one-third (32%) like the idea as they feel a stable gas bill should be a top priority for FortisBC.
- › *Stability Seekers* have no strong distinguishing profile characteristics; they most closely resemble the total residential customer base.

## Residential Customer Segments

Base: Total (857)



	Stability Seekers	Strong Opposers	Anxious & Uncertain
Base	(367)	(332)	(158)

### Views on Hedging

Would rather pay a bit extra to protect against increases	71%	10%	21%
Would rather not pay a bit extra/not be protected against increases	16%	63%	42%
Don't know	13%	27%	37%

### Willingness to Pay More for NG Bill Stability

Willing to pay something (1% or more)	91%	12%	-
Not willing to pay (0%)	9%	72%	49%
Don't know	-	16%	51%

### Perceptions of Paying Extra for Stability

Like it	32%	-	24%
It's ok, but worried will end up paying too much for Natural Gas	65%	-	76%
Don't like it	3%	81%	-
No opinion/doesn't matter	-	19%	-

Q11. When it comes to paying for a product that has a fluctuating price, which most closely matches your point-of-view? / Q12. How much more do you think is reasonable to pay each month to provide greater stability in your natural gas bill? / Q13. Generally, what do you think of the idea of paying extra now to ensure a more stable natural gas bill?

13



- › **Strong Opposers** (37% of the residential customer base). This segment is quite clear when it comes to their views on hedging and paying extra for natural gas bill stability.
- › Two-thirds (63%) of *Strong Opposers* do not support the general idea of paying extra for something to protect against increases and seven-in-ten (72%) say they are not willing to pay extra for natural gas stability. In fact, eight-in-ten (81%) do not like the idea of paying extra now to ensure a more stable gas bill with the remaining two-in-ten (19%) being unsure about the idea.
- › Relatively speaking, *Strong Opposers* are the oldest of the three segments, more likely to be male (63%) and to be living in a single detached home. While a majority (56%) incorrectly think the price of natural gas over the past 10 years has increased, compared to the other two segments, they are more apt to think prices have decreased or stabilized, which could be why they are less supportive (or worried about) natural gas bill stability.
- › **Anxious & Uncertain** (19% of the residential customer base). Like their name indicates, this segment is the most worried about the natural gas prices, but is not always certain what actions to take to mitigate those worries. They generally tend to be undecided or have conflicting views on paying extra for stability in natural gas bills.

## Residential Customer Segments | Profiles

	Stability Seekers	Strong Opposers	Anxious & Uncertain
Base	(367)	(332)	(158)
Age			
18 – 34	29%	22%	35%
35 – 54	39%	40%	33%
55+	32%	37%	32%
Gender			
Male	56%	63%	54%
Female	44%	37%	46%
Low Income			
	6%	9%	11%
Housing Type			
Single detached home	69%	75%	55%
Townhouse, duplex or triplex	21%	16%	24%
Apartment/condo	9%	6%	15%
Natural Gas Prices In Past 10 Years			
Increased	73%	56%	72%
Stayed the same	11%	16%	11%
Decreased	10%	15%	8%
Don't Know	6%	13%	9%

Q11. When it comes to paying for a product that has a fluctuating price, which most closely matches your point-of-view? / Q12. How much more do you think is reasonable to pay each month to provide greater stability in your natural gas bill? / Q13. Generally, what do you think of the idea of paying extra now to ensure a more stable natural gas bill?



## Residential Customer Segments (continued)

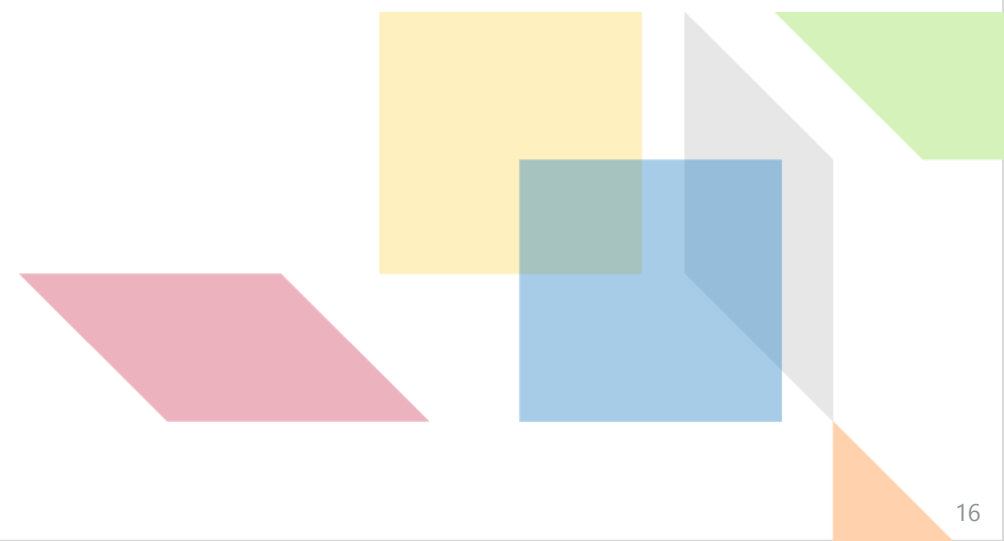
- › With regard to the general concept of hedging, four-in-ten (42%) of the *Anxious & Uncertain* segment would rather not pay extra to protect against increases, while a similar proportion (37%) are unsure how they feel. When it comes to their willingness to pay more for natural gas bill stability, sentiment is equally split with one-half either not willing to pay any extra for stability (49%) or unsure (51%).
- › However, this segment's conflicting views emerge when it comes to the idea of paying extra now for a more stable natural gas bill in the future. Three-quarters of this segment (76%) think the idea is okay, but worry they will end up paying too much for natural gas. The remaining one-quarter say they like the idea of paying extra now for natural gas bill stability and feel stable gas prices should be a high priority for FortisBC.
- › The *Anxious & Uncertain* are the youngest of the three segments and are the most likely to fall into the low income category (11% do). They are the most likely to be living in a townhouse, duplex or apartment/condo and, like *Stability Seekers*, seven-in-ten (72%) mistakenly think natural gas prices have increased in the past 10 years.





# Knowledge of Natural Gas Pricing & Charges

Detailed Findings

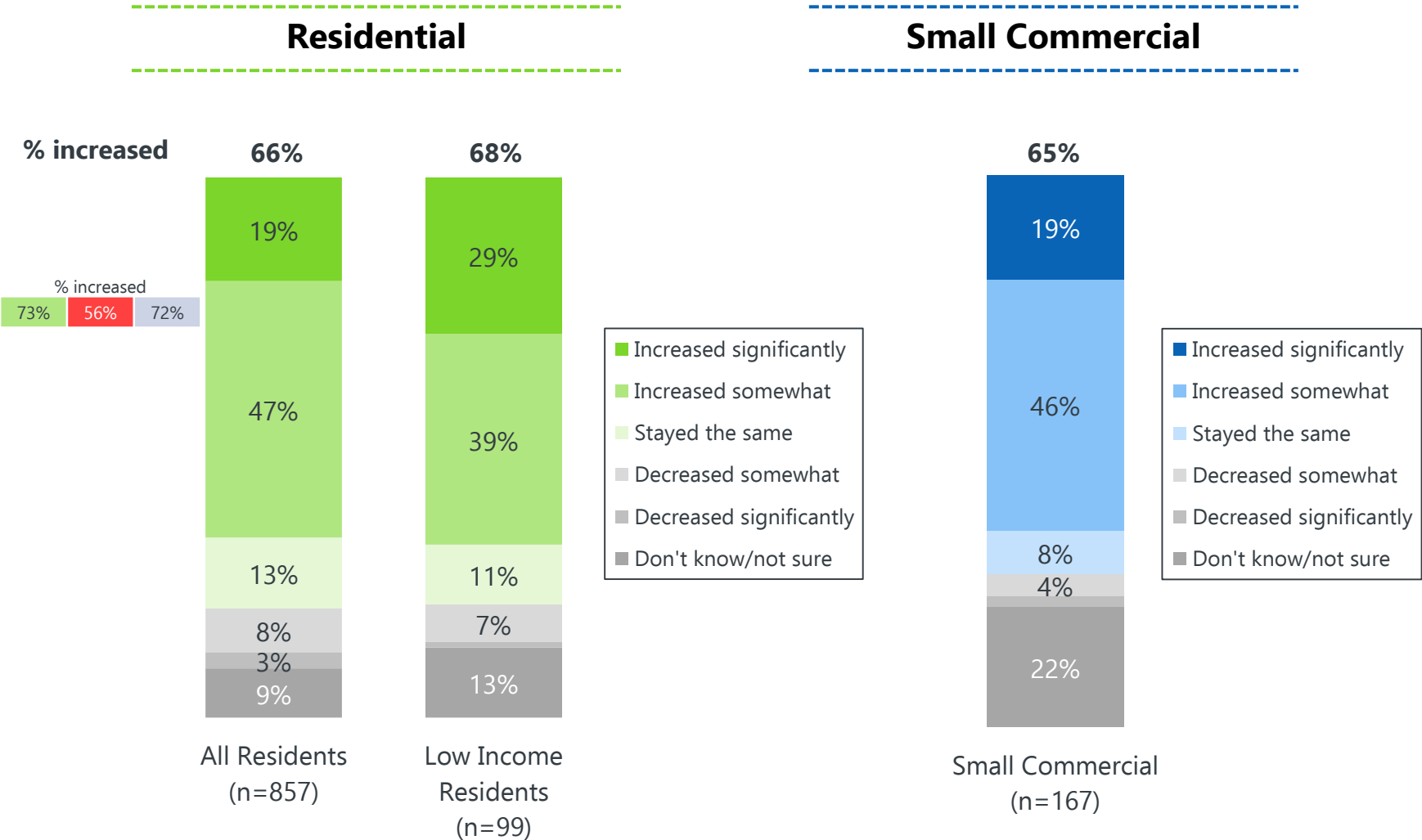




# Perception of Natural Gas Prices



- > Residential and small commercial customers are generally under the impression that natural gas prices have increased over the past 10 years.
- > Low income residential customers are more likely than other customers to think that the prices have increased significantly over the past 10 years.
- > While this misconception is fairly widespread – two-thirds of both customer groups believe the prices have increased – it is the least pronounced among *Strong Opposers*, the segment that is the least receptive to the concept of hedging and paying more for natural gas stability.



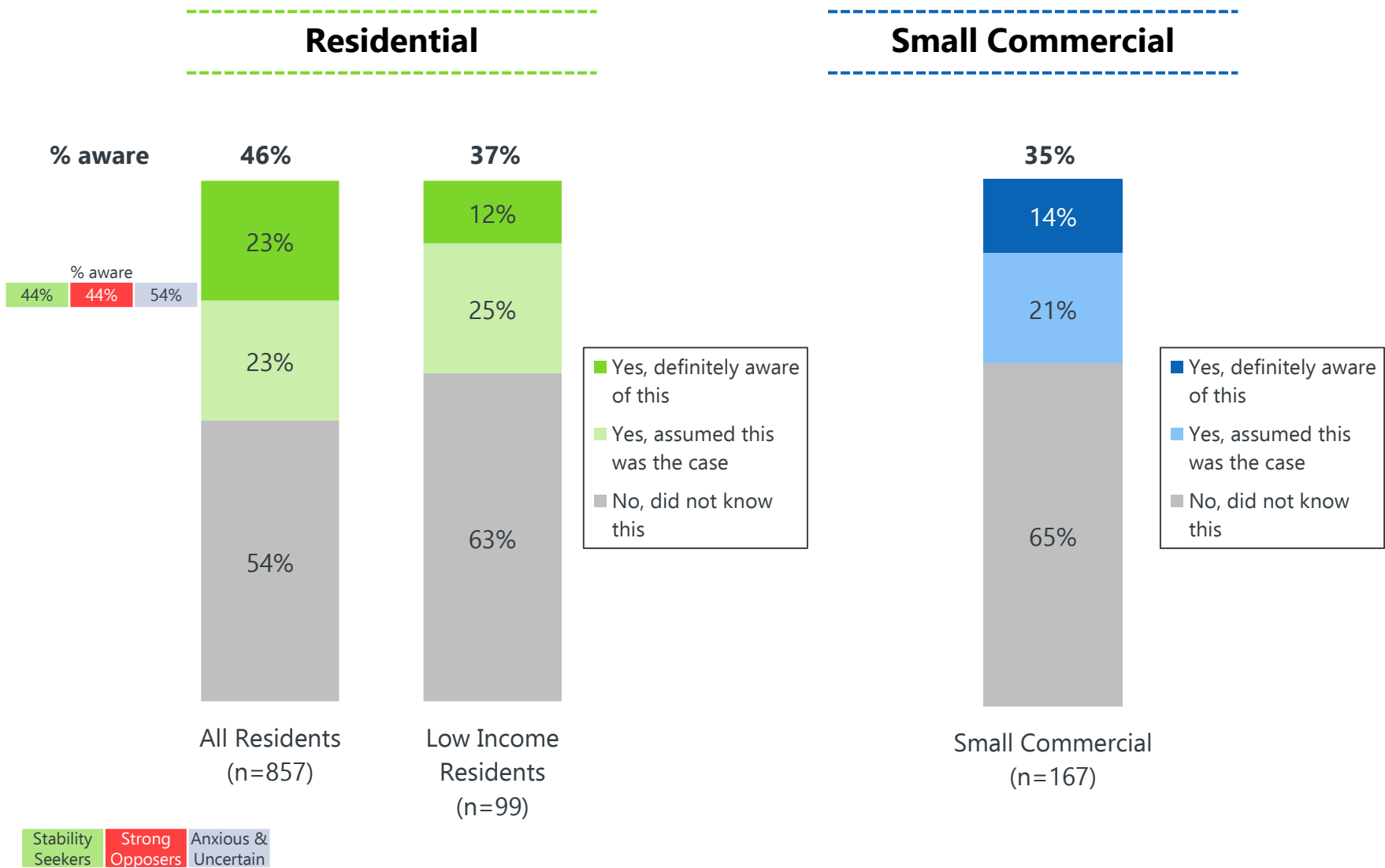
Stability Seekers Strong Opposers Anxious & Uncertain

Q18. Thinking about the past 10 years, to the best of your knowledge, would you say that natural gas prices have...



# Aware of Paying Same Price as FortisBC for Natural Gas

- > Residential and small commercial customers are not widely aware that they pay the same price for natural gas as FortisBC.
- > Low income residential customers and small commercial customers are the least likely to have definite awareness of this fact.
- > The largest discrepancy in knowledge is between men and women – over half (55%) of men are aware that they pay the same price as FortisBC versus only one-third (33%) of women.
- > Among the three segments, it is the *Anxious & Uncertain* who are the most likely to know they pay the same as FortisBC (54% versus 44% among the other two segments).



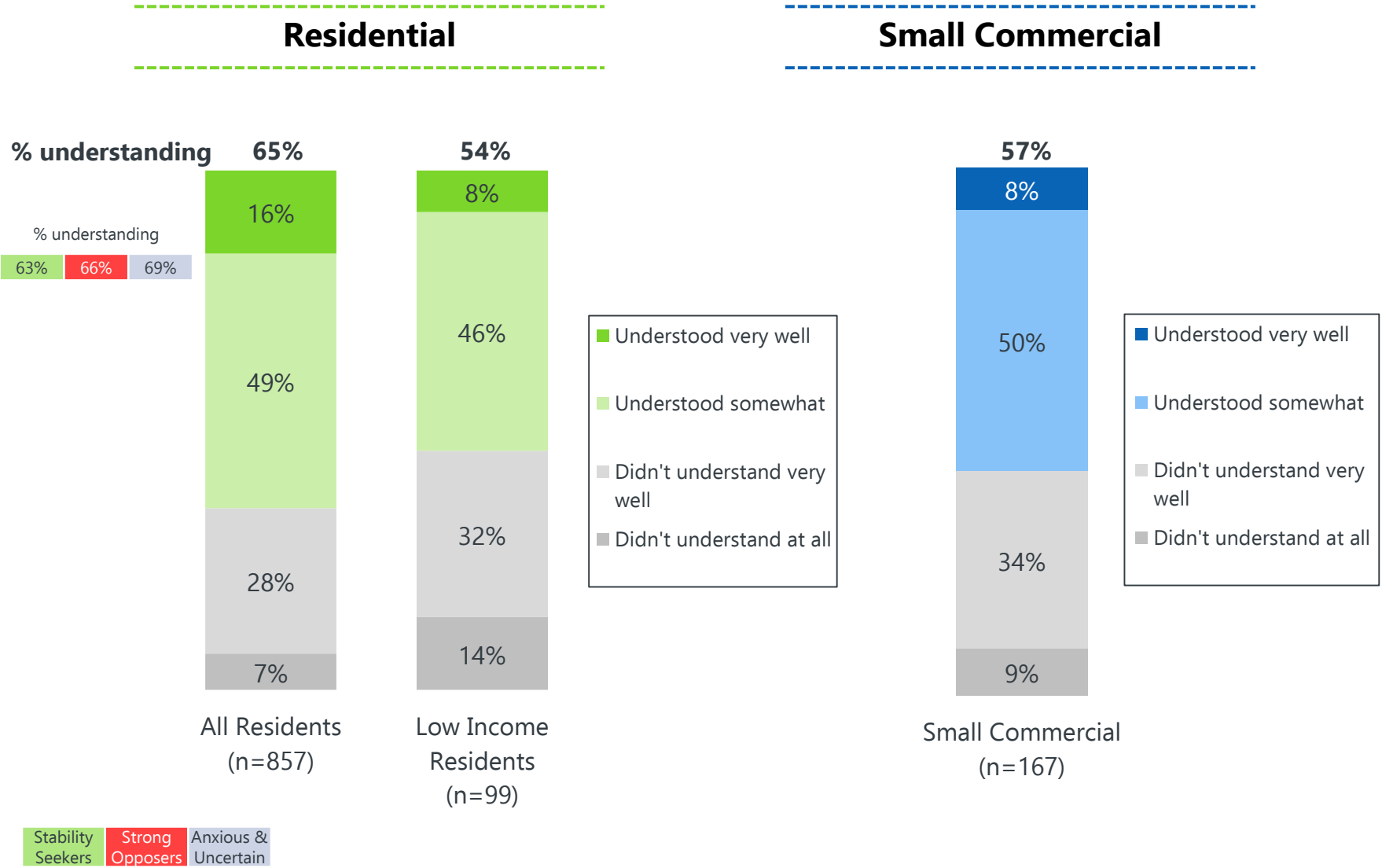
Note: In 2012, the proportions aware that FortisBC makes a profit only on the delivery of gas were as follows: All residents (27%), Low Income Residents (32%), Small Commercial (23%).

Q5. Prior to this survey, were you aware that you pay the same price for your natural gas that FortisBC pays?



# Understanding of Cost of Gas Charge

- While residential and small commercial customers are not widely aware that they are paying the same price for natural gas as FortisBC, they are more likely to report that they understand the Cost of Gas charge on their bill.
- Again, it is small commercial customers, and especially low income residential customers, who have a lower understanding of this charge.
- Also, similar to knowing that they pay the same price for natural gas as FortisBC, men are much more likely than women to say they understand the Cost of Gas charge on their bill (75% versus 51%, respectively).
- When it comes to the three segments, there are no significant differences in their understanding of the Cost of Gas charge on their FortisBC bill.
- Broad comparisons to the 2012 PRMP study indicates that understanding of the Cost of Gas charge may have increased among residential customers while remaining largely unchanged among small commercial customers. (Please note that different scales were used to rate understanding in 2012 and 2017.)



Note: In 2012, the proportions who understand the Cost of Gas charges well (rated 4 or 5 on a 5-point scale) were as follows: All Residents (58%), Low Income Residents (41%), Small Commercial (63%).

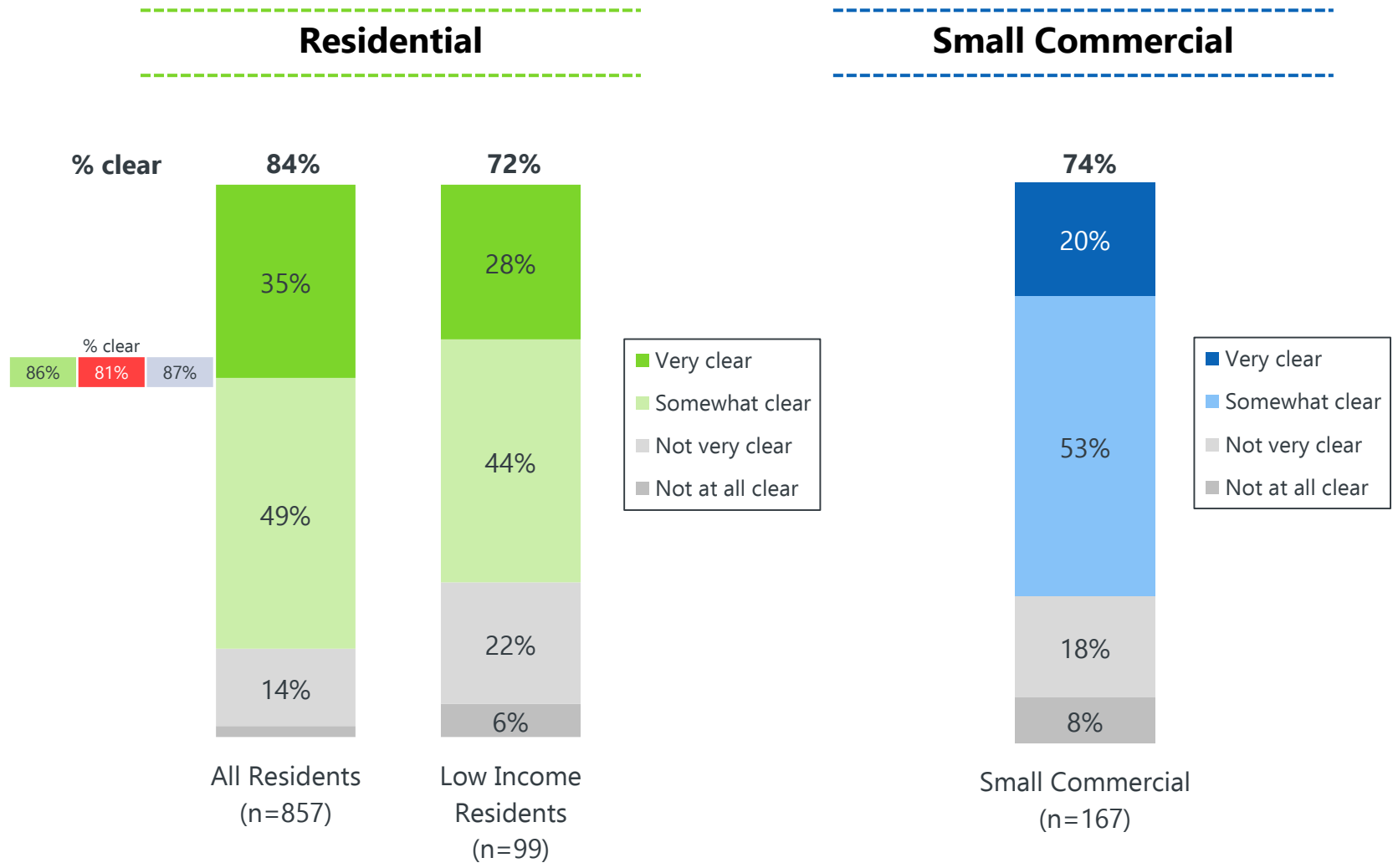
Q6. And prior to this survey, how well did you understand the Cost of Gas charge?



# Clarity of Natural Gas Bill Calculation



- > Where residential and small commercial customers report being more knowledgeable is in how their natural gas bill is calculated. Over eight-in-ten (84%) of residential customers and three-quarters (74%) of small commercial customers say they are very or somewhat clear on how it is calculated.
- > Low income residents are less clear than those with middle to higher household incomes when it comes to their natural gas bill calculations.
- > All three segments profess equal (and high) clarity regarding how their natural gas bill is calculated.



Stability Seekers Strong Opposers Anxious & Uncertain

Q2. And when it comes to how your FortisBC natural gas bill is calculated, would you say you are...



- › There is a strong connection between how clear residential customers are about their natural gas bill calculation and their position on hedging, paying more for stability and preferences around adjusting the Cost of Gas rate.
- › First, residential customers who are not clear about how their natural gas bill is calculated are also generally not aware that they pay the same for natural gas as FortisBC. They also do not have a solid understanding of the Cost of Gas charge and are the most likely to be misinformed about natural gas price changes over the past 10 years.
- › These residential customers who are not clear also express more concern over natural gas costs.
- › Those who are not clear about how their natural gas bill is calculated are more likely than other customers to be *Strong Opposers*, meaning they are not proponents of hedging and do not want to pay more to ensure natural gas bill stability.
- › Finally, this group of customers who are unclear also are the most likely to lack a preference when it comes to having smaller, more frequent versus larger, less frequent adjustments to the Cost of Gas rate.

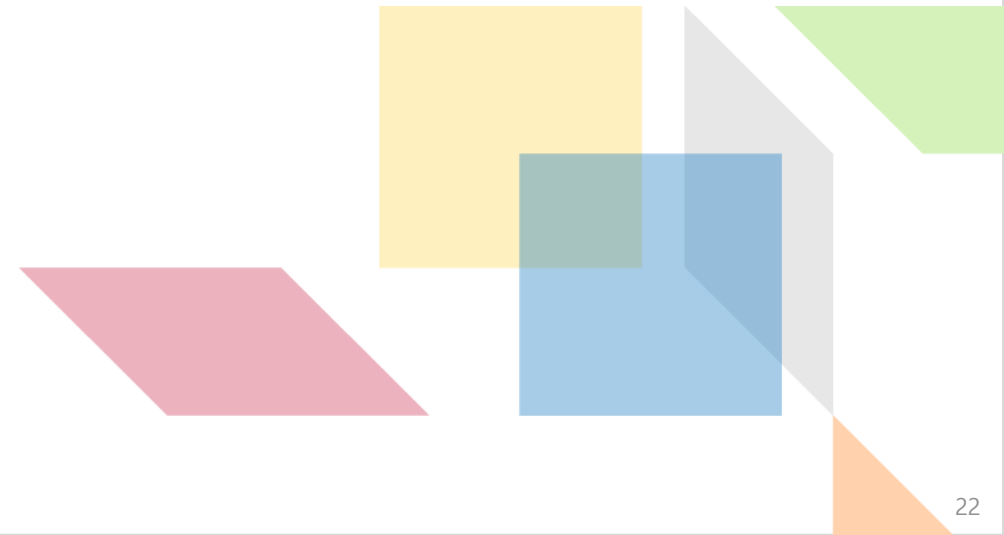
Clarity of Natural Gas Bill Calculation			
	Very Clear	Somewhat Clear	Not Clear
Base	(314)	(415)	(128)
Knowledge Levels			
Definitely aware they pay the same for natural gas as FortisBC	36%	19%	8%
Understand the Cost of Gas charge very well	33%	9%	0%
Natural gas prices over the past 10 years have increased significantly	20%	16%	28%
Views on Hedging, Paying More for Stability (Segments)			
Stability Seekers	46%	44%	40%
Strong Opposers	34%	37%	44%
Anxious & Uncertain	21%	19%	16%
General Concern over Natural Gas Costs			
Extremely concerned	24%	25%	38%
Preferences Around Adjustments to the Cost of Gas Rate			
Prefer smaller, more frequent adjustments	56%	52%	46%
Prefer larger, less frequent adjustments	17%	21%	14%
Neither/Don't Know	27%	27%	41%





# General Concern about Natural Gas & Other Prices

Detailed Findings

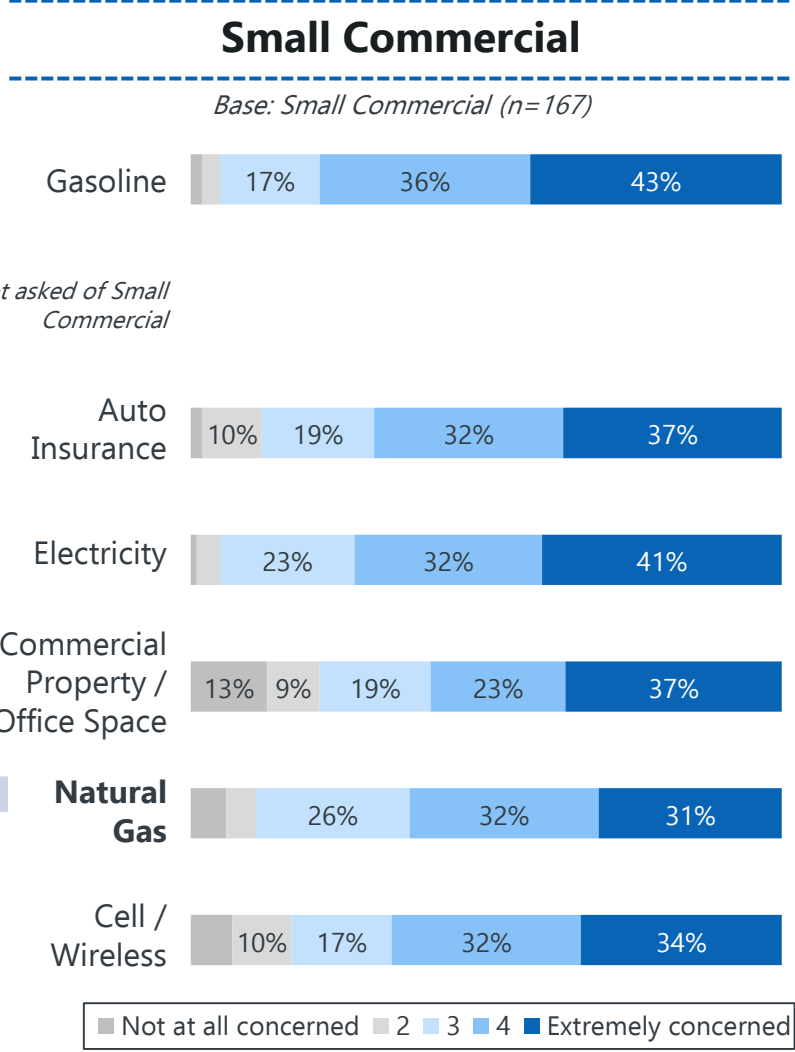
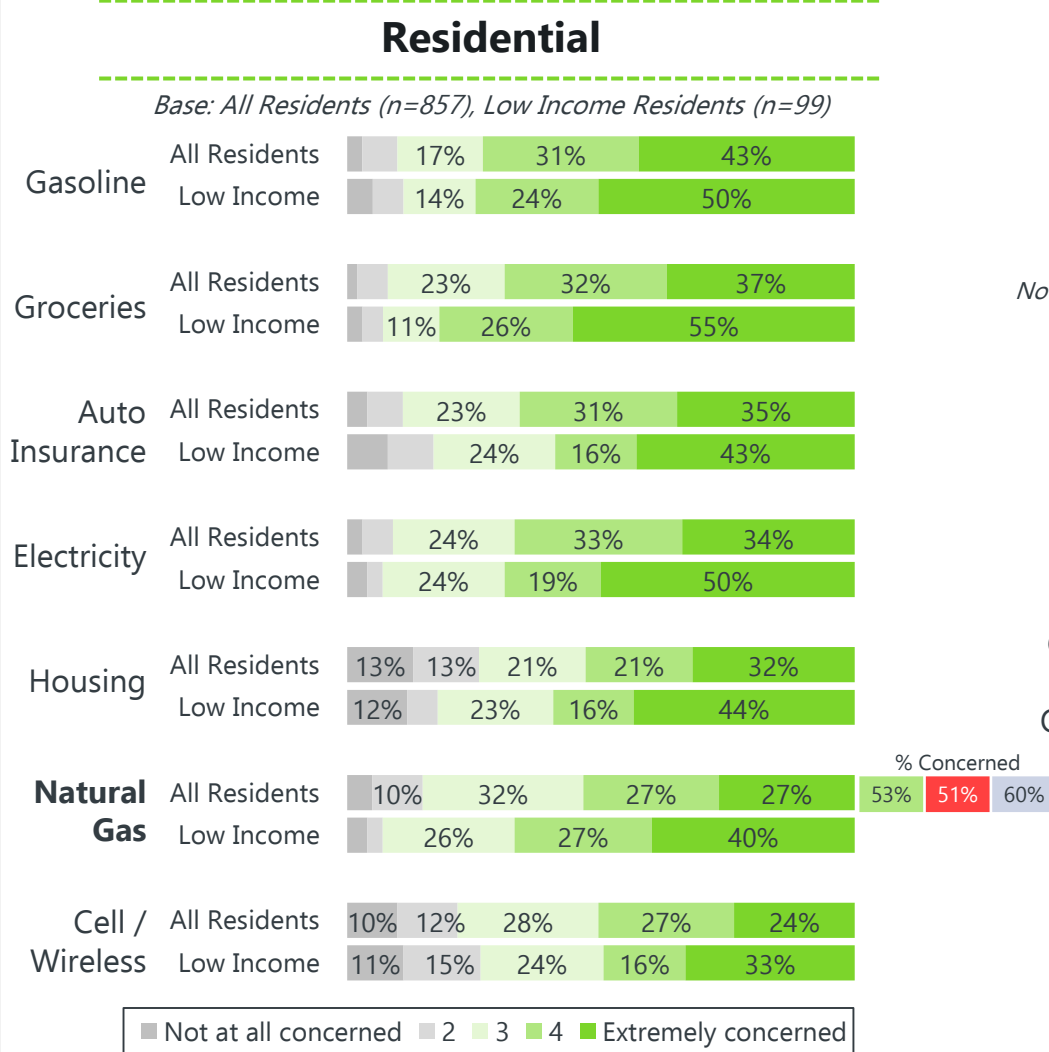




# Concern About Price Increases



- Among residential and small commercial customers, concern over natural gas prices is less pronounced than concerns over the price of gasoline, groceries (residents only), auto insurance and electricity.
- A slight majority (54%) of residential customers express some level of concern over natural gas prices increasing, which is similar to the level of concern that residents have regarding increases in housing.
- Almost two-thirds (63%) of small commercial customers are somewhat or extremely concerned about the price of natural gas increasing, this being on par with the concern they express about increasing commercial property/office space prices.
- Low income customers express greater concern over prices than their non-low income counterparts, especially when it comes to groceries, electricity and natural gas.
- Compared with 2012, the proportion of customers who are extremely concerned about natural gas prices increasing has remained stable.
- Among the three segments it is the *Anxious & Uncertain* who express the most concern over increasing prices, including the price of natural gas.



Note: In 2012, the proportions extremely concerned about the price of Natural Gas increasing were as follows: All Residents (31%), Low Income Residents (41%), Small Commercial (39%).

Q3. [When it comes to your organization], how concerned are you about the price of the following increasing in the next few years?

Stability Seekers Strong Opposers Anxious & Uncertain



# Actions Taken to Reduce Natural Gas Bill



- › One-half (51%) of residential customers and over four-in-ten (44%) small commercial customers have taken action or done something differently in the past to reduce their natural gas bill.
- › Among low income customers, almost six-in-ten (57%) have done something in the past to reduce their natural gas bill.
- › The most common action taken by all customer groups is to turn down the thermostat/heat. No other action is mentioned by more than one-in-ten residential customers or small commercial customers.

		All Residents	Low Income Residents	Small Commercial
		(857)	(99)	(167)
Have taken action		51%	57%	44%
Turn down the thermostat / heat		21%	30%	17%
Reduced electricity consumption		9%	8%	7%
Reduced hot water consumption / installed hot water control		7%	9%	4%
Purchased / installed an energy efficient furnace		6%	4%	4%
Bought an adjustable thermostat (NEST)		5%	2%	5%
Draft-proofed doors/windows		4%	9%	4%
Replaced windows/doors		3%	2%	5%
Added insulation		3%	5%	5%
Dress warmer / use portable space heaters / blankets		2%	5%	1%
Turned off fireplace		2%	4%	-
Purchased / installed a new hot water tank		2%	-	2%
Increased awareness/budgeted/researched		2%	2%	2%
Wash with cold water		2%	3%	-
Purchased / installed other energy-efficient appliances		2%	-	3%
Conducted inspection/regular servicing		2%	3%	2%
Purchased / installed a heat pump		1%	-	1%
Turned off pilot light		1%	2%	1%
Actively looked to replace natural gas with other fuel/energy alternatives		1%	2%	1%
Changed to natural gas/use natural gas appliance		1%	1%	1%
Other		4%	4%	4%
Have not taken action		42%	36%	36%
Can't recall/not sure		7%	7%	20%

Stability Seekers Strong Opposers Anxious & Uncertain

Q4. [Have you / Has your organization] ever taken any actions or done anything differently in the past to reduce your natural gas bill? / Q4b. And what did you do? Please list everything you can think of.





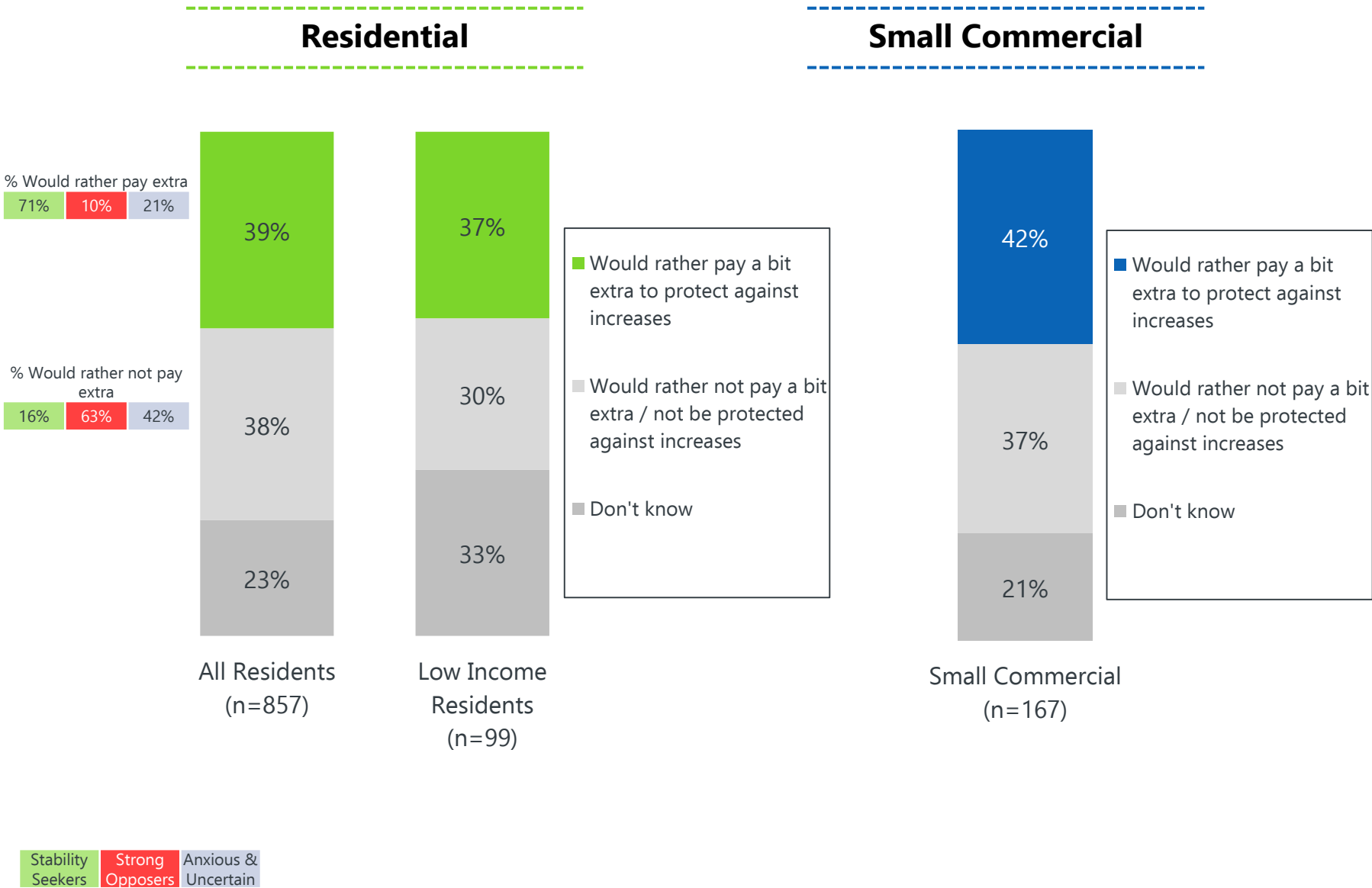
# Views on Hedging & Willingness to Pay More for Stability

Detailed Findings





- There is no consensus among residential and small commercial customers when it comes to their views on paying for a product with a fluctuating price. Almost equal proportions (four-in-ten) say they would rather pay extra each month to protect against any large monthly increases in the future as say they would rather not pay extra each month. The remainder are simply unsure.
- Low income residential customers are no more likely than other residential customers to want to pay to be protected against increases, but they are more uncertain (33% of these customers admit to not having a preference).
- However, when it comes to the customer segments, it is clear that the *Stability Seekers* (as their name suggests) are clearly in favour of paying extra each month to protect against any large increases in price (71%), while almost two-thirds (63%) of *Strong Opposers* support the opposite point of view (not paying extra to protect against price increases).
- Among the two-in-ten residential customers who fall into the *Anxious & Uncertain* segment, approximately four-in-ten either do not want to pay extra for certainty in pricing (42%) or do not have a point-of-view (37%).



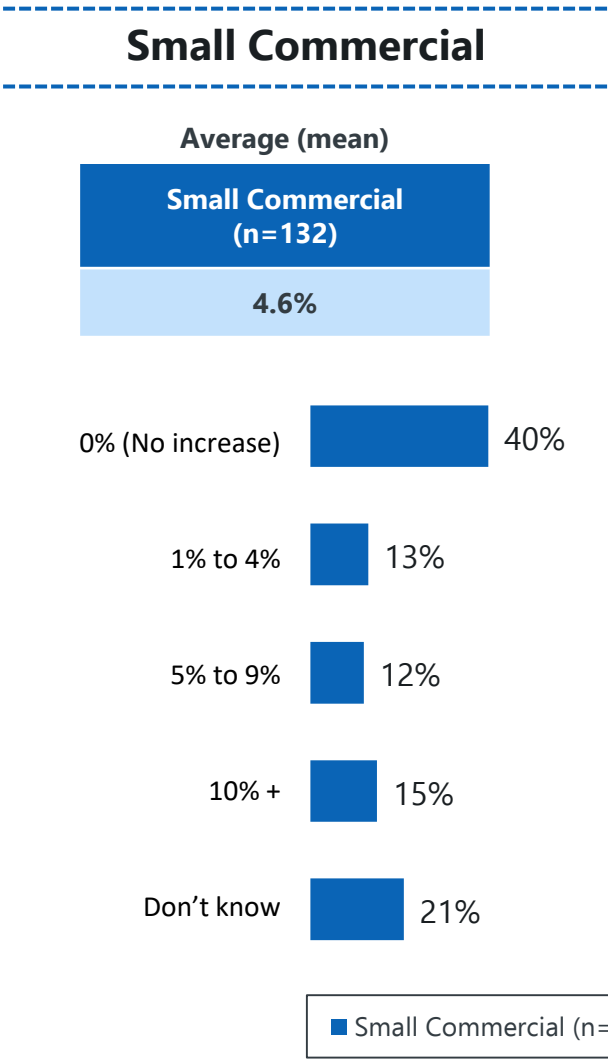
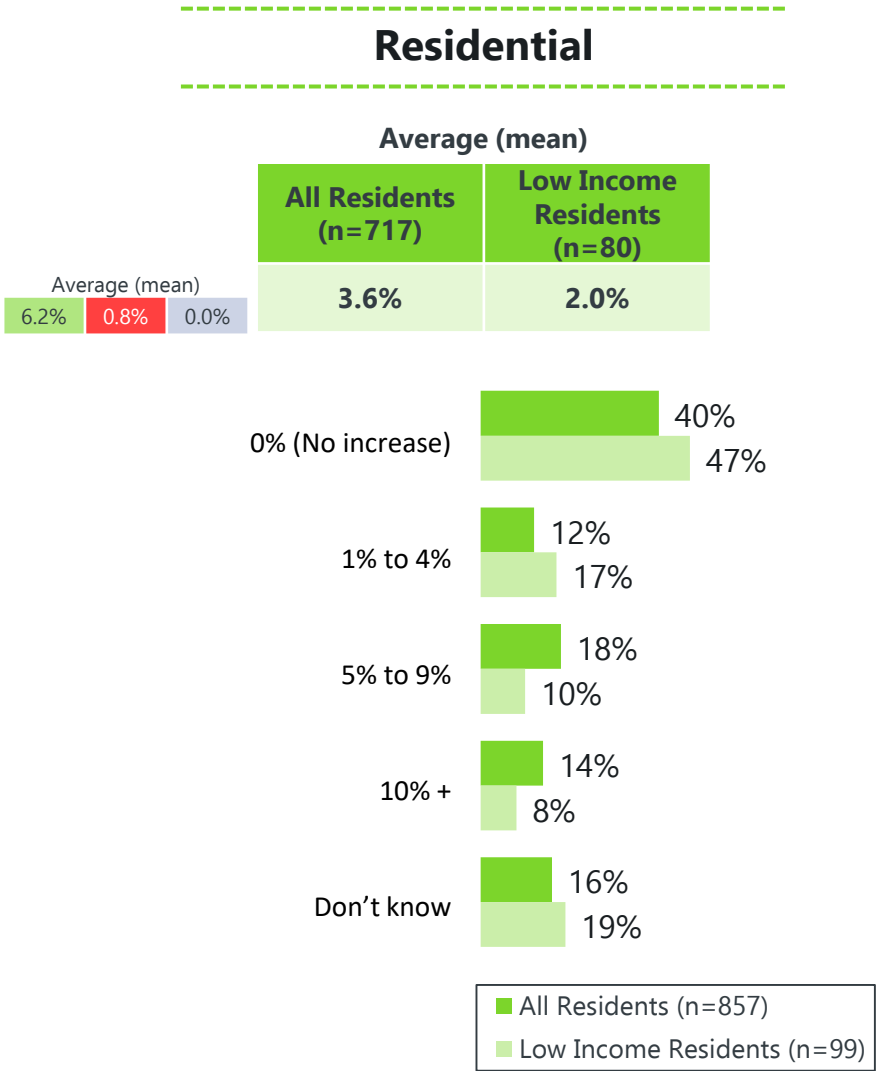
Q11. When it comes to paying for a product that has a fluctuating price, which most closely matches your point-of-view?



# Willingness to Pay More for Stability



- › Approximately four-in-ten residential customers, low income residential customers and small commercial customers are willing to pay more each month to provide greater stability in their natural gas bill, with equal percentages holding a contrary view.
- › On average, residential customers think paying almost four percent more each month is reasonable to provider greater stability in their natural gas bill.
- › Low income customers are comparably less likely to want to pay extra for stability. An increase of two percent is considered reasonable among this customer group.
- › Small commercial customers are willing to pay the most for bill stability, with an almost five percent increase in their bill being considered reasonable.
- › Among the three residential segments, *Stability Seekers* are the most receptive to paying more (91%) with an average increase of six percent more being considered reasonable. Alternatively, *Strong Opposers* and the *Anxious & Uncertain* express little to no interest in paying more for natural gas billing stability.

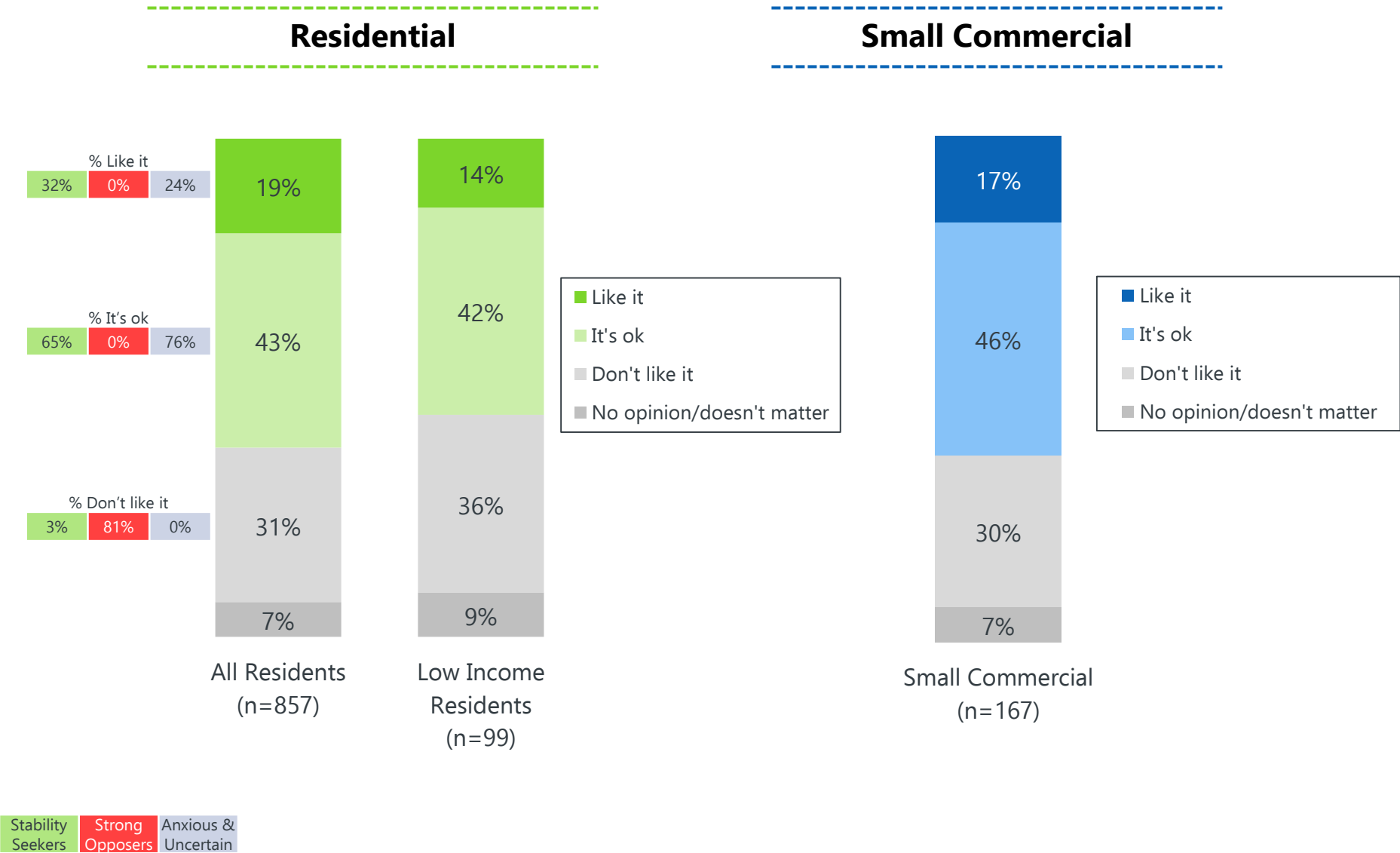


Stability Seekers Strong Opposers Anxious & Uncertain



# Perceptions of Paying Extra for Stability

- › Currently, just under two-in-ten residential customers (19%) and small commercial customers (17%) like the idea of paying extra now to ensure a more stable gas bill because they feel that keeping natural gas prices stable should be a top priority for FortisBC.
- › Another four-in-ten residential customers (43%) and small commercial customers (46%) think the idea is ok, but they worry they will end up paying too much for natural gas.
- › About three-in-ten among both customer classes don't like the idea and want FortisBC to just buy the natural gas needed at the market rate and let it fluctuate.
- › Low income residential customers have similar views; however, they tend to be slightly more opposed to the idea of paying extra for stability.
- › Two-thirds (65%) of *Stability Seekers* and three-quarters (76%) the *Anxious & Uncertain* are of the opinion that paying extra now to ensure a more stable gas bill is an ok idea, but they still worry they will end up paying too much for natural gas.
- › Meanwhile eight-in-ten (81%) of *Strong Opposers* don't like the idea of paying extra now to ensure a more stable natural gas bill.



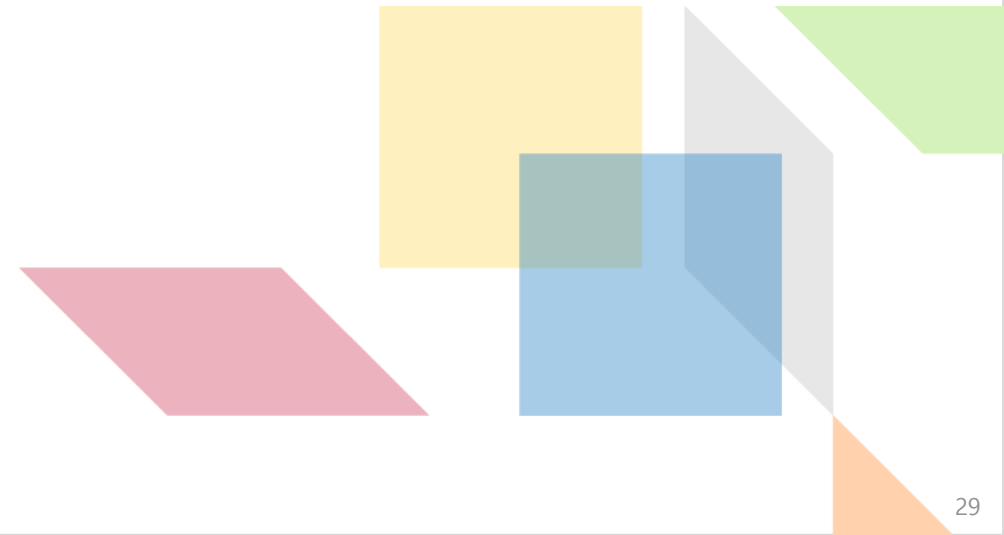
Q13. Generally, what do you think of the idea of paying extra now to ensure a more stable natural gas bill?



A stylized 3D cube icon with green and grey faces, identical to the one in the header.

# Natural Gas Price Tolerances

Detailed Findings

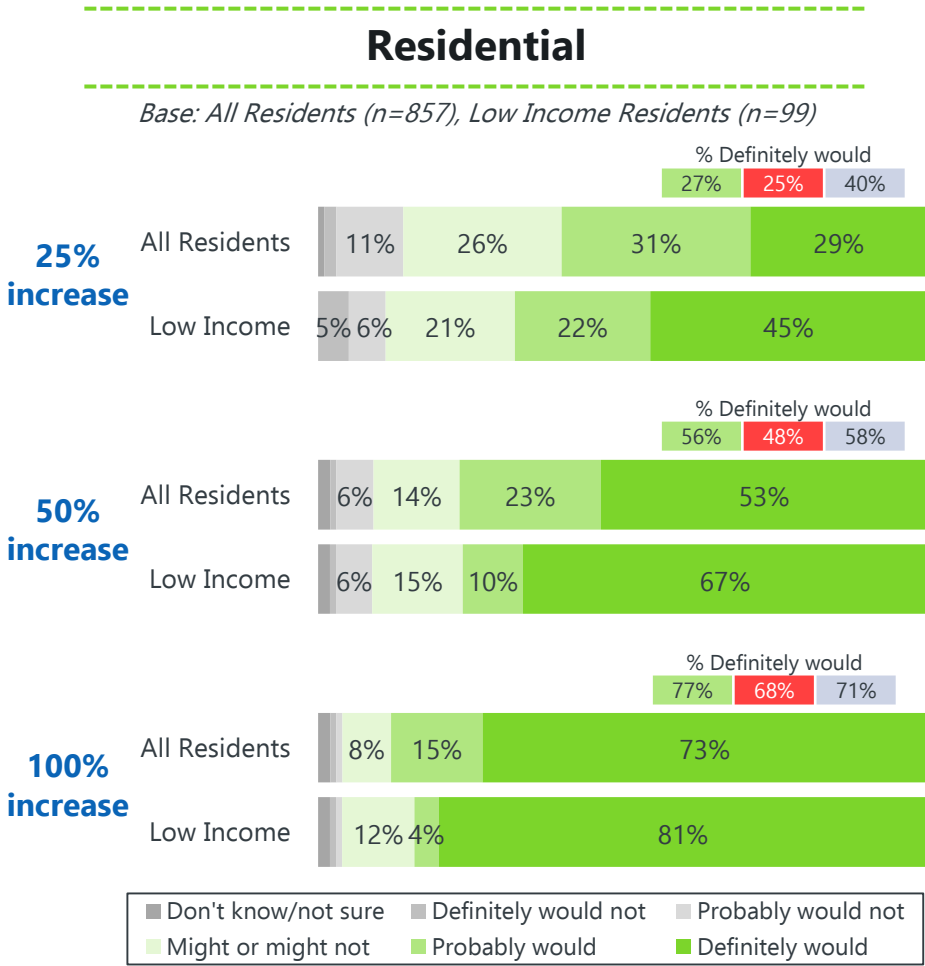




# Impact of Natural Gas Bill Increases on Behaviour

- › Residential and small commercial customers are fairly sensitive to price increases to their FortisBC bill in that considerable proportions (60% and 61%, respectively) say they would definitely or probably make changes to their household's or business' behaviour to offset bill increases of 25% or more.
- › The greater the increase, the larger proportion of customers who say they would 'definitely' make some changes to offset the bill increase.
- › At an increase of 25% to their monthly natural gas bill, equal proportions of customers (29% of residential and 31% of small commercial) feel they would definitely change their behaviour to offset the increase. If their bill increased by 50% then one-half of both customer groups claim they would definitely make changes to offset the increase. At a 100% increase in their bill, about seven-in ten among both customer classes feel they would definitely take action to mitigate the increase in their bill.
- › Low income residential customers are particularly sensitive to any level of natural gas bill increase, but this is particularly evident at a 25% increase. If their natural gas bill increased by 25%, almost one-half (45%) of low income customers say they would change their household's behaviour to offset the increase compared to only three-in-ten (29%) of all residential customers.

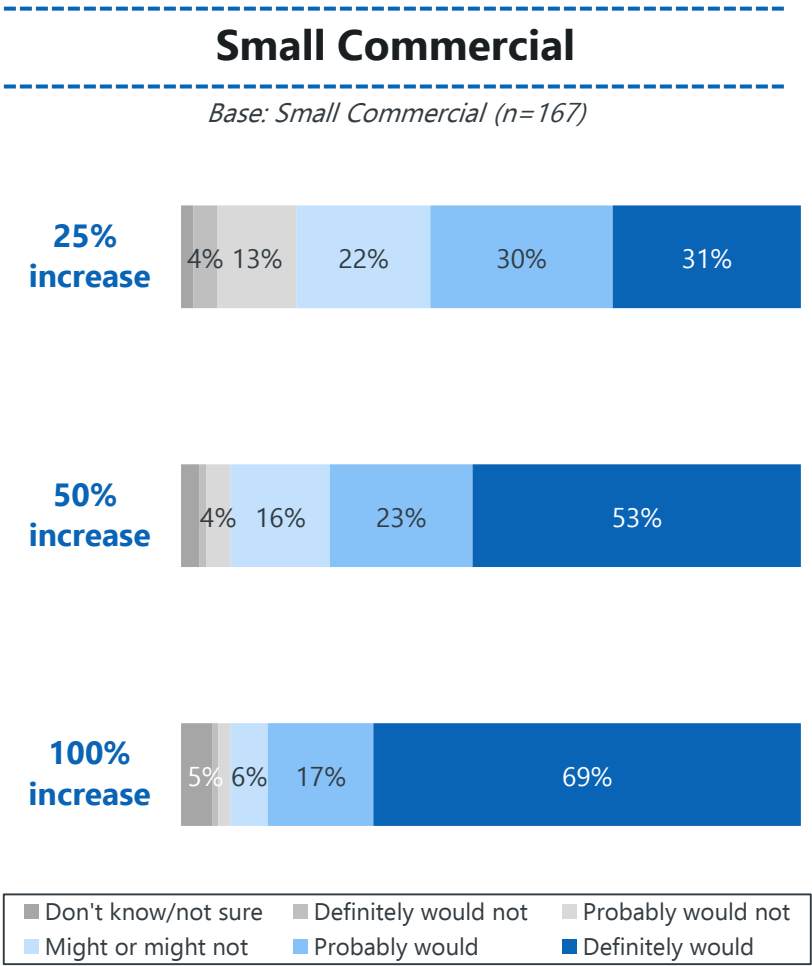
continued on next page...



Stability Seekers Strong Opposers Anxious & Uncertain

Note: In 2012, the proportions who said an increase would have 'very much' of an impact (on a 4-point scale) were as follows: 25% increase – All Residents (41%), Low Income Residents (51%), Small Commercial (44%); 50% increase – All Residents (57%), Low Income Residents (62%), Small Commercial (62%); 100% increase – All Residents (65%), Low Income Residents (70%), Small Commercial (70%).

Q7. Imagine that for next year your average monthly natural gas bill was going to increase from [AVERAGE BILL AMOUNT] to [25% INCREASE]. How likely would you be to change your household's behaviour to help offset this increase in your bill? / Q8. And what if for the next year your average monthly bill went from [AVERAGE BILL AMOUNT] to [50% INCREASE]? / Q9. And finally, what if for the next year your average monthly bill went from [AVERAGE BILL AMOUNT] to [100% INCREASE]? 30





## Impact of Natural Gas Bill Increases on Behaviour (continued)

- › At a 25% bill increase, it is the *Anxious & Uncertain* segment that would most likely make changes to offset the increase (40% say they definitely would). However, at a 50% and 100% bill increase, this segment is no more likely to make changes to offset the increase than a typical residential customer.
- › *Stability Seekers* are particularly sensitive to a 100% increase in their bill with three-quarters (77%) saying they would definitely make changes to offset the costs. Meanwhile, *Strong Opposers*, while also sensitive to natural gas bill increases, are the least of the three segments. This segment's lower sensitivity to natural gas bill increases is most evident at a 50% bill increase.



# Changes Likely to Make to Offset Natural Gas Bill Increases



- › Customers who expressed at least some likelihood of changing their behaviour to offset increases in their natural gas bill were presented with a list of changes they could possibly make.
- › From this list, residential and small commercial customers most often selected that they would turn down the thermostat/heat (70% of residential customers and 56% of small commercial customers)
- › Residential customers would also dress warmer/use portable space heaters/use blankets, this being selected most often by low income customers (66% versus 58% among all residential customers).
- › Draft proofing/insulating and trying to use natural gas appliances/equipment less often are measures that two in five residential customers think they also would take to offset bill increases.
- › Among small commercial customers, along with turning down the thermostat, they would also draft proof/insulate (43%), actively look to replace natural gas with another fuel (38%), actively look to replace natural gas appliances/equipment with more efficient ones (36%) or use these appliances/equipment less (34%).

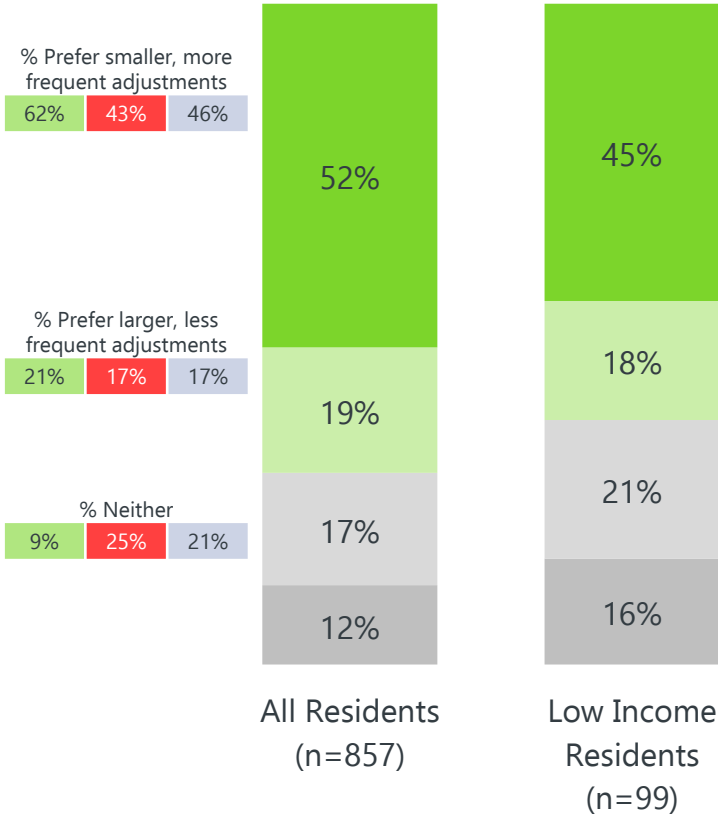
	All Residents	Low Income Residents	Small Commercial
Base: Might/probably/definitely likely to change behaviour due to natural gas bill increase	(827)	(98)	(158)
Turn down the thermostat/heat	70%	73%	56%
Dress warmer/use portable space heaters/use blankets	58%	66%	30%
Take measures to better draft proof/insulate	44%	42%	43%
Try to use natural gas appliances/equipment less or less often	40%	44%	34%
Actively look to replace natural gas with other fuel/energy alternatives	25%	29%	38%
Cut back spending in other areas	25%	27%	19%
Actively look to replace existing natural gas heating appliances/equipment with more efficient appliances	23%	25%	36%
Other	3%	5%	4%
None of the above	1%	1%	1%
Don't know	2%	2%	8%



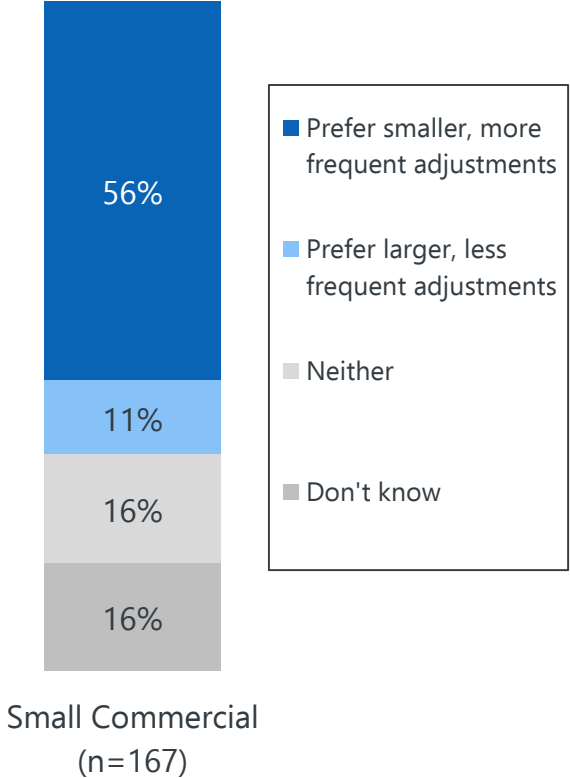
# Cost of Gas Rate Adjustment Preferences

- › Residential and small commercial customers were presented with two options for adjusting the Cost of Gas rate:
  - › FortisBC makes smaller, more frequent adjustments to the Cost of Gas rate to help ensure stability in the gas bill, even it means customers pay more; or
  - › FortisBC makes larger, less frequent adjustments because changing the rate too frequently can end up costing too much more.
- › Among all customer groups and segments, the preference tends to be that FortisBC make smaller, more frequent adjustments to the Cost of Gas rate. This preference is strongest among small commercial customers (56% prefer it) and *Stability Seekers* (62%).

## Residential



## Small Commercial



Stability Seekers Strong Opposers Anxious & Uncertain

Q14. Which of the following best matches your opinion?



A small version of the 3D cube icon, with a green top face and a grey side face.

# Billing Behaviour & Practices

Detailed Findings



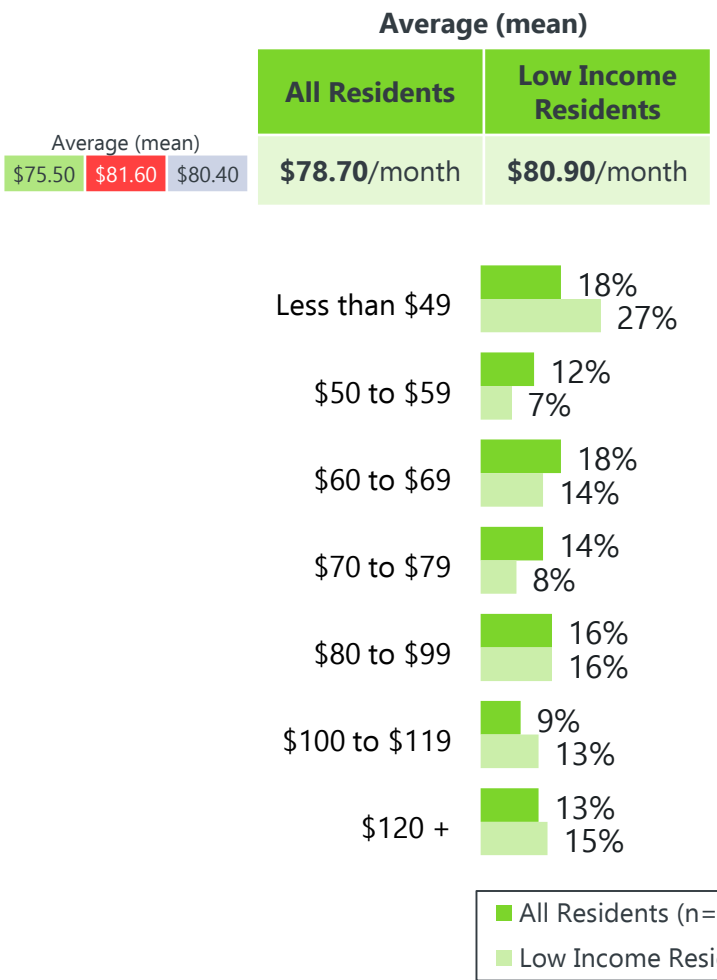


# Average Monthly Natural Gas Bill

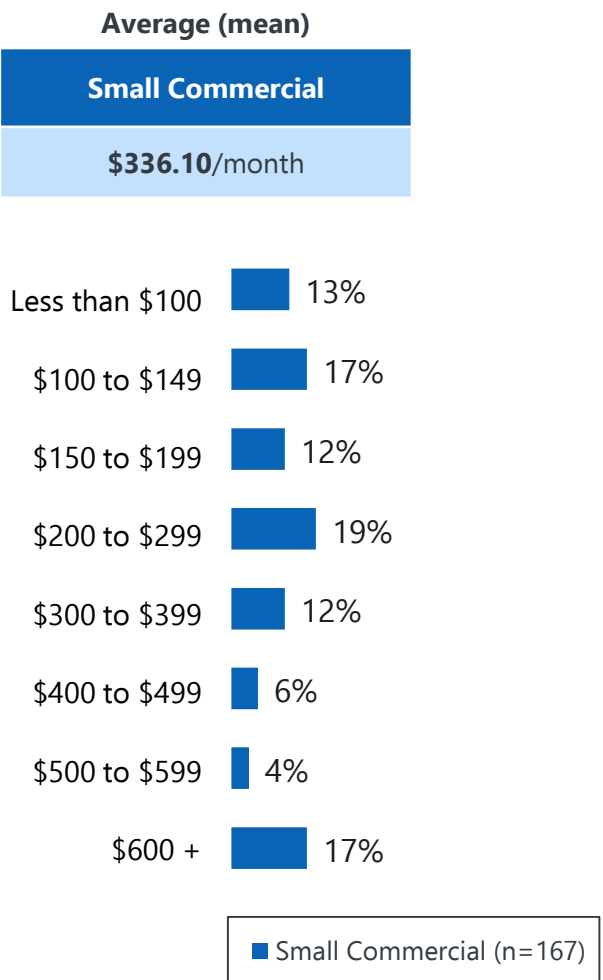


- › Residential natural gas customers report having an average monthly bill of close to \$79 and small commercial customers report having an average bill of just over \$336 per month.
- › Low income residential customers report an average natural gas bill of about \$81 per month.
- › As would be expected, those customers who use natural gas to heat their home/business have a higher monthly bill than those who use electricity for heating (among residential customers, \$81/month on average for those heating their home with natural gas versus \$65.80/month for those using electricity; and among small commercial customers, \$355.60/month on average for those heating their premises with natural gas versus \$248.80/month for those using electricity.)
- › Among the three segments, *Stability Seekers* have a slightly lower monthly natural gas bill than the other two.

## Residential



## Small Commercial





# Review of Natural Gas Bill

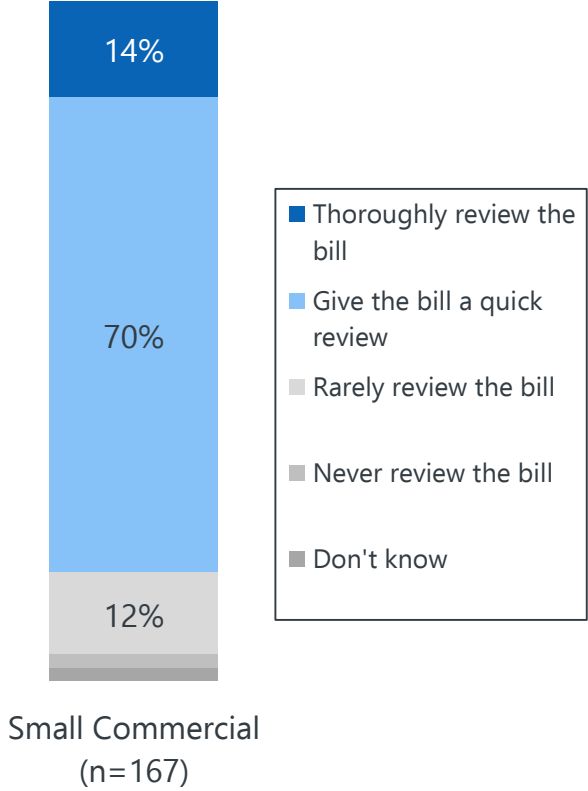


- › Only three-in-ten (28%) residential customers, and one-in-seven (14%) small commercial customers report that they thoroughly review their natural gas bill when they receive it.
- › Most customers, especially small commercial customers, simply give it a quick review to make sure everything look as expected.
- › Residents who fall into the *Anxious & Uncertain* segment are the most likely to give their FortisBC natural gas bill a thorough review (35% say they do) which is consistent with their heightened concern over natural gas prices.

## Residential



## Small Commercial



Stability Seekers Strong Opposers Anxious & Uncertain

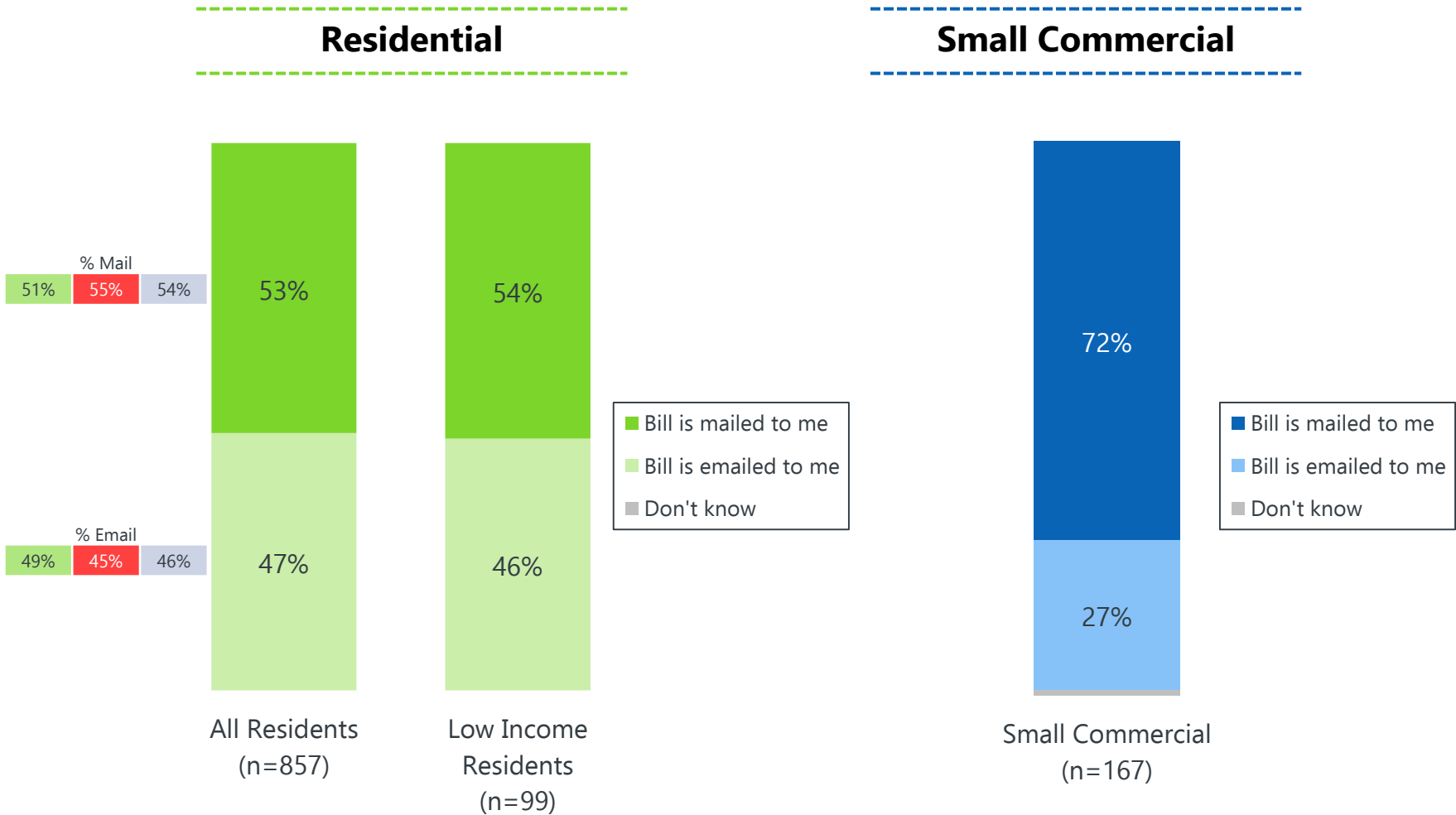
Q1. When you get your FortisBC natural gas bill, would you say you...



# Natural Gas Bill Delivery Format



- › Among FortisBC natural gas residential customers, one-half report that their bill is mailed (53%) to them or receive it via email (47%) . This is generally also the case for low income residential customers.
- › The majority of small commercial customers (72%) are receiving their bill by regular mail.
- › Residential customers living in apartments/condos or townhouses/ duplexes, as well as those living in the Lower Mainland/Fraser Valley or on Vancouver Island/the Coast, are significantly more likely to receive their FortisBC natural gas bill via email when compared to those in singled detached homes and/or living in the Interior.



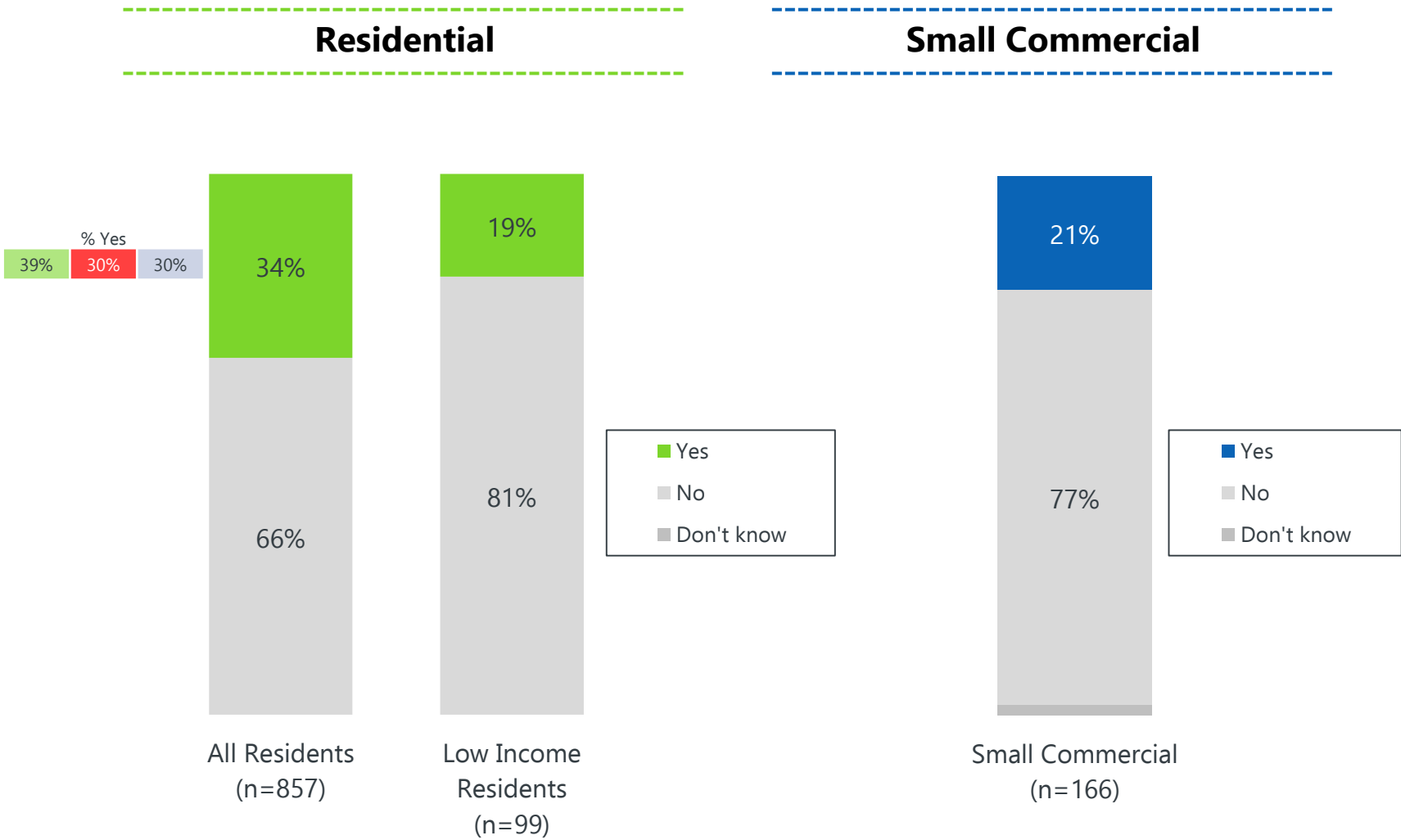
Stability Seekers Strong Opposers Anxious & Uncertain

DS10. How do you receive your FortisBC natural gas bill?



# Participation in Pre-Authorized Payment Plan

- › Participation in FortisBC’s pre-authorized payment plan stands at one-third (34%) among residential customers.
- › Participation is considerably lower among low income customers (19%) and among small commercial customers (21%).
- › Residential customers who own their home are more than twice as likely as renters to be on the pre-authorized payment plan (37% versus 17%, respectively).
- › Among the three segments, it is the *Stability Seekers* who are most likely to be on FortisBC’s pre-authorized payment plan (39%) which aligns with their desire to have more stable bills.

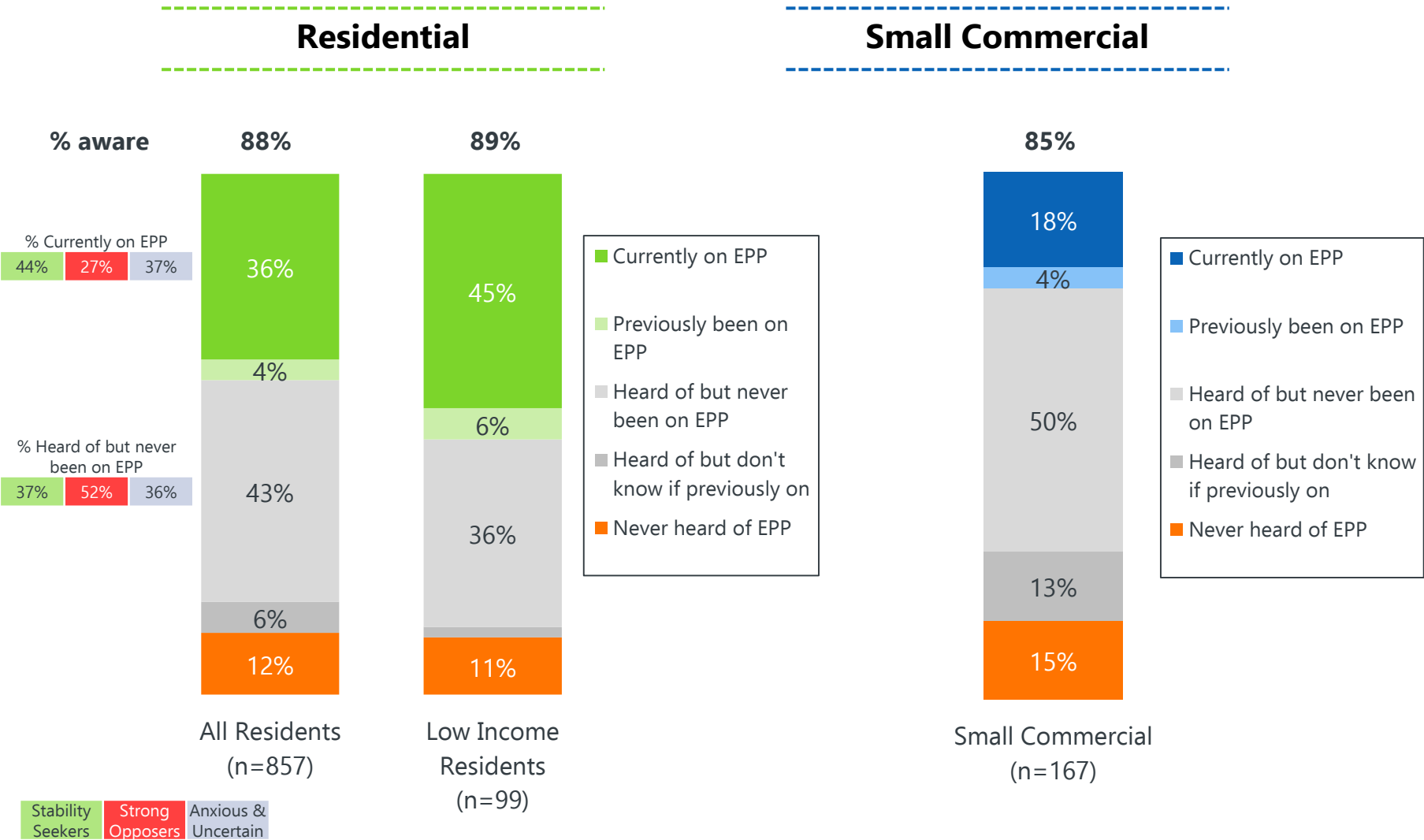


Stability Seekers Strong Opposers Anxious & Uncertain



# Participation in Equal Payment Plan

- While the majority of residential and small commercial customers report being aware of FortisBC's equal payment plan (EPP), a minority of residential (36%) and small commercial (18%) customers are actually on the plan.
- Low income customers are more likely to be taking advantage of the plan, with nearly one-half (45%) currently using it.
- Other customer groups who are more likely to be on the EPP compared to their counterparts include:
  - Older (55+) customers (45%)
  - Those in townhouses/duplexes (43%)
  - Those using natural gas to heat their home (39%)
  - Small commercial customers with 10 or fewer employees (22% versus 8% among those with over 10 employees).
- Among the three segments it is *Stability Seekers* and the *Anxious & Uncertain* who are most likely to be on the EPP (44% and 37%, respectively). *Strong Opposers*, while aware of the EPP, are the least likely to be using it (27%). 19% of the *Anxious & Uncertain* are unaware of the plan.
- Since 2012, awareness of the EPP appears to have increased, while usage appears stable.



Note: In 2012, the proportions who were aware of/signed up for FortisBC's EPP were as follows: Aware – All Residents (78%), Low Income Residents (75%), Small Commercial (80%); Signed Up – All Residents (41%), Low Income Residents (40%), Small Commercial (13%).

Q15. Which of the following best describes your [household / organization]? / q16. [Have you / Has your organization] ever been on FortisBC's Equal Payment Plan?



# Reasons for Leaving Equal Payment Plan

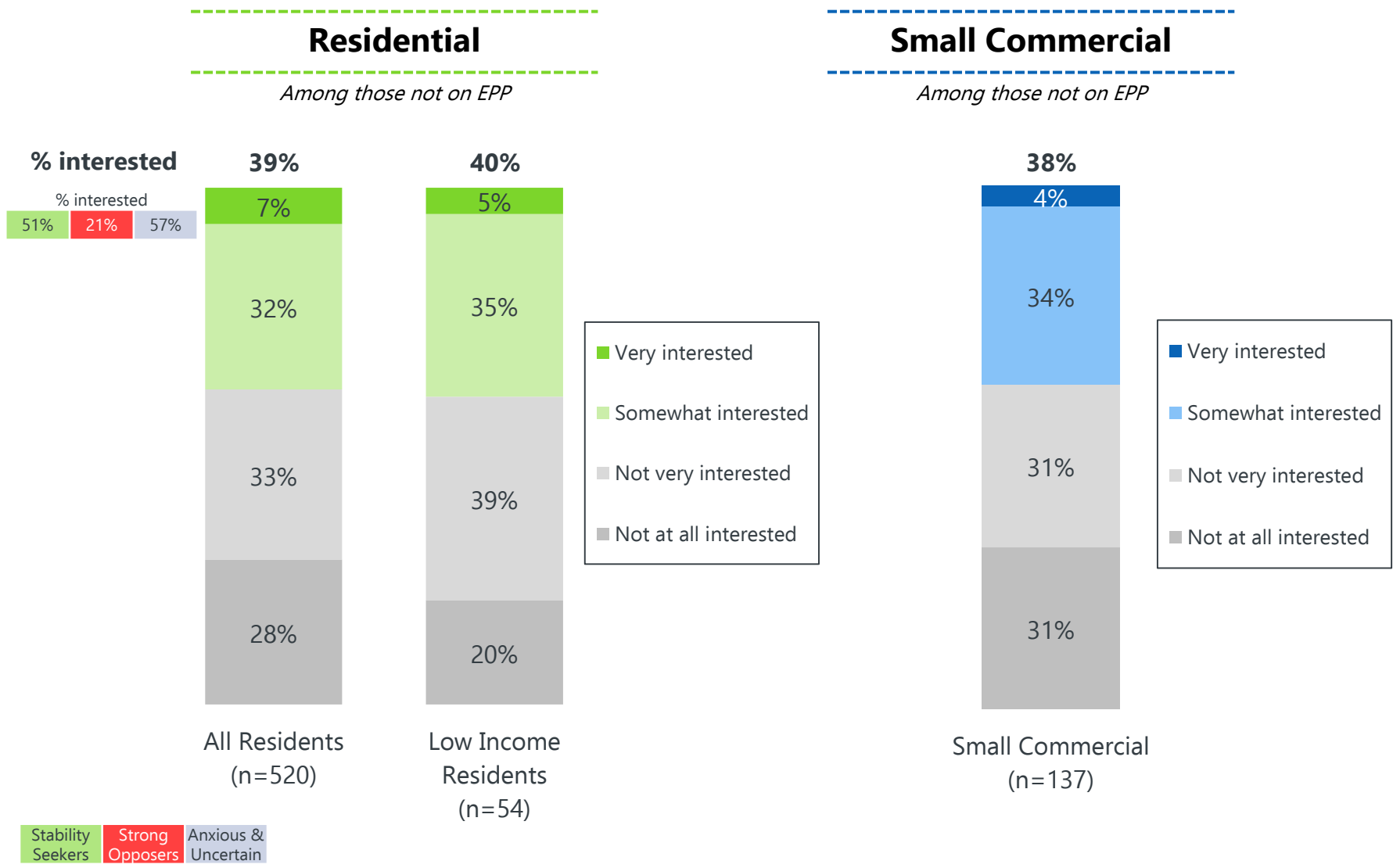
› For the small group of customers who have been on the EPP in the past but no longer use it, moving or no longer needing the service, preferring to just pay what they owe, and lack of affordability are the main reasons for not using it any more.

	Residents
Base: Previously on FortisBC's EPP	(38)
Moved/no longer needed service	29%
Prefer to pay what I owe	23%
Could not afford/price too high/unexpected charges	22%
Incorrect billing/overcharged	9%
It's a scam	8%
Other	11%
Don't know	4%



# Interest in Joining Equal Payment Plan

- › Interest in joining FortisBC’s EPP among residential and small commercial customers who are currently not on the plan stands at about four-in-ten among both groups, including low income customers.
- › Residential customers who are not on the EPP, but express interest in it, include:
  - › Apartment/condo dwellers (70%)
  - › Those on the pre-approved payment plan (53%)
  - › Renters (50%)
- › While the *Anxious & Uncertain* residents who are not on the EPP express the greatest interest in joining (57% are very or somewhat interested), *Strong Opposers* not on the EPP are clearly not interested (79% say they are not interested).
- › Broad comparisons to 2012 indicate that strong interest in joining the EPP is at best marginally higher among residential customers. (Please note that different scales were used in 2012 and 2017.)



Small Commercial

Among those not on EPP

38%

4%

34%

31%

31%

Small Commercial  
(n=137)

Very interested

Somewhat interested

Not very interested

Not at all interested

Stability Seekers

Strong Opposers

Anxious & Uncertain

Note: In 2012, the proportions who said they ‘definitely will’ sign up (on a 5-point scale) for FortisBC’s Natural Gas EPP were as follows: All Residents (3%), Low Income Residents (3%), Small Commercial (6%).

Q17. How interested would [you / your organization] be in joining FortisBC’s Equal Payment Plan [again]?



# Reasons for Lack of Interest in Joining Equal Payment Plan



- › Customers who are not interested in joining the EPP would rather pay for their actual usage, like having lower bills in the summer or are simply happy with the way their billing is now.
- › Small commercial customers not interested in the EPP also mention that they like to know what they are spending each month, that they don't want to have to 'owe" FortisBC at any point or that their bill just isn't that high to require it.

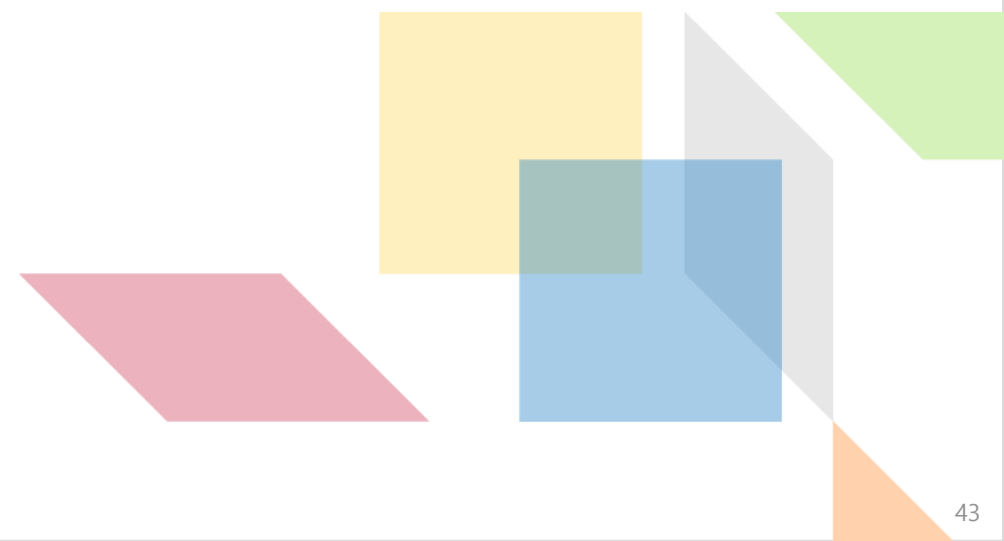
	All Residents	Low Income Residents	Small Commercial
Base: Not interested in joining FortisBC's EPP	(342)	(35)	(84)
Prefer to pay for actual usage	28%	25%	25%
Our consumption fluctuates/lower bill in the summer	18%	4%	11%
We don't need it/happy the way it is now	15%	23%	12%
We can afford to cover fluctuations ourselves	12%	7%	5%
I like to know what I'm spending each month/manage it myself	10%	10%	26%
It's a scam	8%	6%	1%
I don't want to overpay	7%	9%	5%
Our bill isn't very high right now	6%	5%	10%
I don't want to owe FortisBC after	2%	7%	12%
I don't have the budget to pay all at once	1%	2%	1%
Other	5%	4%	12%
Don't know, N/A	3%	9%	1%

Note: In 2012, the top reasons for not being likely to sign up for FortisBC's Natural Gas EPP were: Not being concerned about changes to monthly bill [All Residents (43%), Small Commercial (43%)]; and feeling there is not a lot of difference between winter and summer bills [Low Income Residents (38%)].  
q17b. Why are you [not at all / not very interested] in joining FortisBC's Equal Payment Plan?



A small 3D cube icon with green and grey faces, identical to the one in the header.

# Respondent Profiles





# Respondent Profile: Residents



	All Residents	Low Income Residents
<i>Base</i>	(857) %	(99) %

## Primary Heat Source

Natural Gas	78	76
Electricity (baseboard heaters)	12	12
Electricity (heat pump)	5	5
Wood	2	3
Oil	<1	-
Propane	<1	-
Other	2	2
Don't know	<1	3

## Type of Home

Single detached home	69	52
Townhouse, duplex or triplex	20	19
Apartment or condo	9	11
Mobile home	1	14
Other	1	5
Don't know/not sure	<1	-

## Home Ownership

Own	85	60
Rent	15	40

	All Residents	Low Income Residents
<i>Base</i>	(857) %	(99) %

## Region

Lower Mainland/Fraser Valley	67	61
Island/Coast	10	5
Northern Interior	15	14
Southern Interior	8	20

## Age

18 – 24	3	8
25 – 34	24	11
35 – 44	16	21
45 – 54	23	18
55 – 64	12	16
65 +	22	26

## Gender

Male	58	44
Female	42	56

	All Residents	Low Income Residents
<i>Base</i>	(857) %	(99) %

## Household Size

1	18	32
2	39	30
3	18	17
4	17	13
5	6	5
6	2	1
7 +	<1	2

## Household Income

< \$62,000	28	100
\$62,000 – <\$70,000	10	-
\$70,000 – <\$80,000	10	-
\$80,000 – <\$100,000	14	-
\$100,000 +	27	-
Prefer not to say	11	-



# Respondent Profile: Small Commercial Businesses

	Small Commercial
<i>Base</i>	(167) %

## Primary Heat Source

Natural Gas	77
Electricity (baseboard heaters)	8
Electricity (heat pump)	8
Wood	-
Oil	1
Propane	1
Other	3
Don't know	2

## Role

Owner	36
Partner	6
CEO/President	14
CFO	1
COO	-
Vice President/Senior Executive	1
Accountant/Controller	16
Business Manager/General Manager/Administrator	23
Other	4

	Small Commercial
<i>Base</i>	(167) %

## Building/Facility/Business Type

Automotive	7
Educational Facility	1
Food Store	2
Health Care Facility	4
Lodging	4
Manufacturing/Agriculture	11
Office/Mixed-use Building	16
Public Assembly	1
Restaurant	5
Retail and Personal Services	6
Warehouse	13
Home/home business/home office (unaided)	7
Other	23

## Region

Lower Mainland/Fraser Valley	53
Island/Coast	8
Northern Interior	26
Southern Interior	13

	Small Commercial
<i>Base</i>	(167) %

## Years in Business

0 – 9	22
10 – 19	24
20 – 29	28
30 +	23
Don't know	4

## Number of FTE Employees

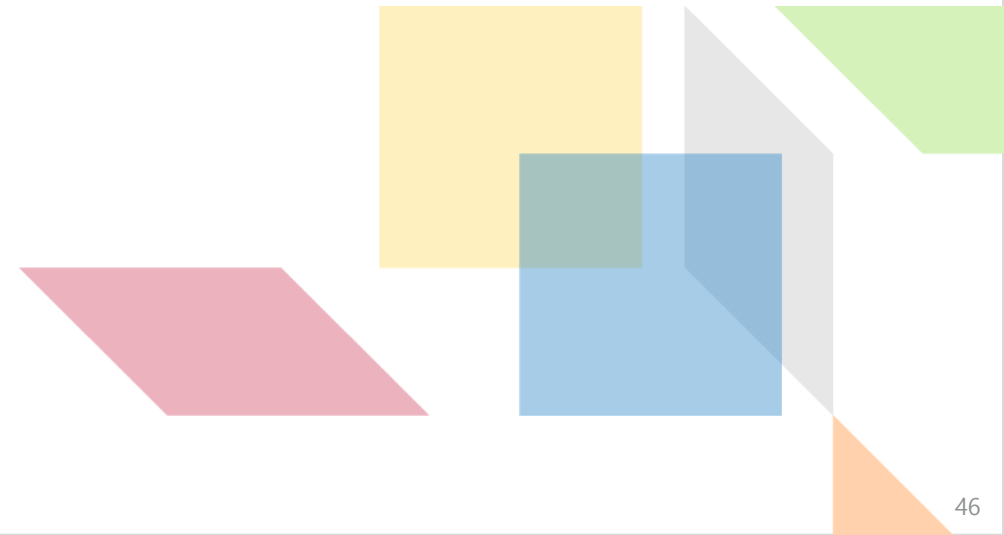
0	8
1	8
2	12
3 – 4	14
5 – 9	19
10 – 19	20
20 +	17
Don't know	3



A small icon of a 3D cube with green and grey faces, identical to the one in the header.

# Appendix

Small Commercial Telephone Screener & Reminder  
Email Invitation & Reminder  
Questionnaire





## **SMALL COMMERCIAL TELEPHONE SCREENER**

Hi, this is [NAME] calling from Sentis Research on behalf of FortisBC.

**S1.** Are you the person or one of the people responsible for your organization's natural gas bill and making decision about payment options and plans?

1. Yes
2. No
3. Refused | **RECORD AS ORGANIZATION REFUSAL**
4. Not a FortisBC customer | **RECORD AS NOT A FORTISBC CUSTOMER**
5. Company does not use natural gas | **RECORD AS DOES NOT USE NATURAL GAS**

**IF NO:** May I speak to that person?

**IF YES AND PERSON COMES TO PHONE, RE-INTRODUCE**

**IF YES, BUT NOT AVAILABLE, ARRANGE CALLBACK**

**IF MAYBE OR HESITATES, THEN USE PERSUADERS**

**IF FIRM NO, THANK AND TERMINATE**

**WHEN TARGET RESPONDENT IS ON THE LINE RE-INTRODUCE THEN ASK:**

**S2.** We're doing research with FortisBC customers to get their feedback on managing energy costs and payments. Would you be interested in participating in an online research survey that we will email you? You can do it any time between today and April 21, 2017. All customers who complete the survey by April 21, 2017 will be entered into a draw to win a grand prize of a \$500 VISA gift card or one of five \$100 VISA gift cards. We're only surveying 200 FortisBC customers so the odds of winning are quite good.

1. Yes | **CONTINUE S3a**
2. Maybe or hesitates | **CONTINUE TO QUESTIONS**
3. Firm No | **THANK AND TERMINATE – RECORD AS RESPONDENT REFUSAL**

**IF NECESSARY:** The online survey will take 8-9 minute to complete.

**QUESTIONS:** Are there any questions I can answer that would help you decide whether or not to participate? **USE PERSUADERS AS NECESSARY**



**S3a.** Before we email you the survey, we just have a few questions to confirm that the survey will be relevant to you. Does your organization receive a **natural gas bill**?

- 1. Yes, I receive a natural gas bill
- 2. No, I do not | **THANK AND TERMINATE**
- 97. Don't know/ not sure | **THANK AND TERMINATE**

**S3b.** Is your natural gas supplied by... **READ**

- 1. FortisBC
- 2. An independent gas marketer | **THANK AND TERMINATE**

**DO NOT READ:**

- 97. Don't know/ not sure | **THANK AND TERMINATE**

**S3c.** And is your organization's total monthly natural gas bill typically under \$2,000 or \$2,000 or higher?

- 1. Under \$2,000/month
- 2. \$2,000 or higher | **THANK AND TERMINATE**
- 97. Don't know/ not sure | **THANK AND TERMINATE**

**THANK AND TERMINATE MESSAGE FOR S3a-c:** For this research we need to speak to FortisBC natural gas customers who have monthly bills under \$2,000, so that will be my last question today. Thank you very much for your time.

**S4.** Does your organization fall into any of the following sectors? **READ LIST**

- 1. Utility company | **THANK AND TERMINATE**
- 2. Natural gas company or gas marketer | **THANK AND TERMINATE**
- 3. Electricity company | **THANK AND TERMINATE**
- 4. Market research company | **THANK AND TERMINATE**
- 5. Newspaper, radio, or TV network | **THANK AND TERMINATE**
- 6. Utility regulatory body | **THANK AND TERMINATE**

**IF NO TO ALL THEN USE CODE 7 BELOW, DO NOT READ:**

- 7. None of the above | **CONTINUE**

**S5. EMAIL.** May I have your email address to send you the link to the survey?

- 1. Yes | **GO TO S6 RECORD EMAIL ADDRESS**
- 2. No | **HAVE DECIDED NOT TO DO IT-THANK AND TERMINATE**



## **S6. RECORD EMAIL ADDRESS.**

Email: \_\_\_\_\_

Let me repeat that back just so I know I've got it correct **[USE ALPHA AS NECESSARY]**

And may I have your name please? **[INTERVIEWER: MAKE SURE SPELLING IS CORRECT]**

First name: \_\_\_\_\_

In the next hour or so, you'll receive an email from [fortisbc@sentis.ca](mailto:fortisbc@sentis.ca) with the subject line: Help FortisBC Manage Energy Costs & Payments. If you do not see the email in your inbox, then please check your junk mail folder.

### **EMAIL SEND/SIGN OFF**

I'd like to thank you for your help today. Your feedback will help FortisBC best meet the needs of its customers.

Have a great day/ evening.

### **[DISPLAY THE FOLLOWING ON THIS PAGE AS WELL]**

Interviewer: Information for email invite below:

EMAIL: **[DISPLAY INFO FROM S4]**

NAME: **[DISPLAY FIRST]**

TOKEN: **[DISPLAY FROM SAMPLE]**



## SMALL COMMERCIAL TELEPHONE REMINDER

Hi, this is [NAME] calling from Sentis Research on behalf of FortisBC. May I please speak to [customer name]?

Hi there. A few days ago you agreed to participate in a survey for FortisBC about managing energy costs and payments. We noticed you haven't had a chance to complete the survey yet and wanted to make sure you received the email and are still interested in participating.

- A. Did you receive the email invitation?
  - 1. Yes: Okay, great. **[GO TO B]**
  - 2. Not sure/Probably **[GO TO C]**
  - 3. No **[GO TO D]**.
  - 4. Already completed survey

**IF NECESSARY:** The email was sent **[DISPLAY DATE]**

**IF NECESSARY:** The subject line: Help FortisBC Manage Energy Costs & Payments.

- B. Do you need us to send it again so you don't have to look for it?
  - 1. Yes **[GO TO D]**
  - 2. No **[GO TO E]**
- C. If you're not a 100% sure if you have it or not, it's no trouble for us to send it again so you don't have to look for it.
  - 1. Yes **[GO TO D]**
  - 2. No **[GO TO E]**
- D. Okay, we will re-send the invitation to you.

To confirm, is your email address: **[DISPLAY EMAIL ADDRESS]**

**USE ALPHA AS NECESSARY**

- 1. Yes
- 2. No **[INTERVIEWER: ENTER CORRECT/ALTERNATIVE EMAIL ADDRESS BELOW THEN RECONFIRM]**

NEW EMAIL: \_\_\_\_\_



Within the next hour or so, you should receive an email from [fortisbc@sentis.ca](mailto:fortisbc@sentis.ca) with the subject line: Help FortisBC Manage Energy Costs & Payments. If you do not see the email in your inbox, then please check your junk mail folder.

I'd like to thank you for your help in answering this survey. Your feedback will help FortisBC best meet the needs of its customers.

Have a great day/ evening.

**DISPLAY SAMPLE INFO:**

Name: \_\_\_\_\_

Token: \_\_\_\_\_

Old Email: \_\_\_\_\_

New Email: \_\_\_\_\_

- E. The survey is open for participation until Wednesday, April 26. Don't forget, for completing the survey you'll be entered into the prize drawing for one \$500 Visa gift card or one of five \$100 Visa gift cards. Since we are only surveying 200 businesses, your chances of winning are quite good!

I'd like to thank you for your help in answering this survey. Your feedback will help FortisBC best meet the needs of its customers.

Have a great day/ evening.



## PERSUADERS

- We're asking customers for their input so that FortisBC can make the most informed decisions about managing energy costs and payments for its customers' future energy services.
- We're asking customers to participate in an 8-9 minute online survey about managing energy costs and payments. As a token of appreciation, we're giving away \$1,000 in prizes. Those who participate are entered into a prize draw to win a grand prize of a \$500 VISA gift card or one of five \$100 gift cards.
- This is a confidential research project – not a sales call. All feedback customers provide is anonymous and used for research and planning purposes only.
- You can verify the legitimacy of this project by contacting Walter Wright at FortisBC: 604.592.7653 or [Walter.Wright@fortisbc.com](mailto:Walter.Wright@fortisbc.com)
- You can complete the survey any time between today and April 21, 2017.
- Sentis is a professional research company commissioned by FortisBC to assist with this research. We are based in downtown Vancouver.





SENTIS ON BEHALF OF FortisBC

## Managing Energy Costs & Payments Survey

Dear [NAME FROM RECRUIT],

Thank you for your interest in this survey. Your input will help FortisBC make the most informed decisions about managing future energy costs and savings.

After completing the survey, you will be entered into the prize draw for one of the following:

- One \$500 VISA gift card
- One of five \$100 VISA gift cards



It's really easy, simply click Start Survey to go to the survey.

The survey should take no more than 8 to 9 minutes to complete.

**Start Survey**

If you begin the survey but can't finish it all at one time, you can return to the point where you left off by clicking on the link - you will not have to go back to the beginning.

If you have any problems accessing the survey or for any other technical issues, please contact Sentis at 1-855-463-4025 or you can email us at: [fortisbc@sentis.ca](mailto:fortisbc@sentis.ca). To verify the validity of this survey you can contact Walter Wright at FortisBC at 604.592.7653 or [Walter.Wright@fortisbc.com](mailto:Walter.Wright@fortisbc.com).

Thank you on behalf of FortisBC.

Having trouble? Copy and paste the link below into your web browser.  
[SURVEY URL]

[Privacy Policy](#)  
[Unsubscribe](#)  
[Contest Rules](#)



Sentis Market Research Inc.  
6<sup>th</sup> flr, 543 Granville Street | Vancouver, BC, V6C 1X8





SENTIS ON BEHALF OF FortisBC

## Managing Energy Costs & Payments Survey

Dear [NAME FROM RECRUIT],

A few days ago we emailed you a link to a confidential survey about managing future energy costs and payments.

If you've already provided your feedback, thank you!

If you haven't had the opportunity to share your feedback, we hope that you'll be able to do so in the next few days. **The survey is open until April 21, 2017**

After completing the survey, you will be entered into the prize draw for one of the following:

- One \$500 VISA gift card
- One of five \$100 VISA gift cards

**Since we are only surveying 200 businesses, your chances of winning are quite good!**



It's really easy, simply click Start Survey to go to the survey.

The survey should take no more than 8 to 9 minutes to complete.

**Start Survey**

If you begin the survey but can't finish it all at one time, you can return to the point where you left off by clicking on the link - you will not have to go back to the beginning.

If you have any problems accessing the survey or for any other technical issues, please contact Sentis at 1-855-463-4025 or you can email us at: [fortisbc@sentis.ca](mailto:fortisbc@sentis.ca). To verify the validity of this survey you can contact Walter Wright at FortisBC at 604.592.7653 or [Walter.Wright@fortisbc.com](mailto:Walter.Wright@fortisbc.com).

Having trouble? Copy and paste the link below into your web browser.  
[SURVEY URL]

[Privacy Policy](#)  
[Unsubscribe](#)  
[Contest Rules](#)



Sentis Market Research Inc.  
6<sup>th</sup> flr, 543 Granville Street | Vancouver, BC, V6C 1X8



**QUESTIONNAIRE****Demographic & Screening Questions**

**DS1a.** In which area is your primary residence?

1. Lower Mainland/ Fraser Valley (includes Whistler and Squamish)
2. Vancouver Island/ Sunshine Coast
3. Southern Interior (Kootenays/ Okanagan/ Thompson)
4. Northern Interior (North of Kamloops)

**DS1b.** And what are the first 3 digits of your postal code?

— — —

**DS2.** Into which of the following categories does your age fall?

1. Under 18      **THANK AND TERMINATE**
2. 18 to 24
3. 25 to 34
4. 35 to 44
5. 45 to 54
6. 55 to 64
7. 65 or older

**DS3.** Are you...?

1. Male
2. Female

**DS4.** Including yourself, how many people live in your household?





**DS5a.** Is your annual household income above \$62,000 or below \$62,000?

1. \$62,000 or above **GO TO QDS5c**
2. Below \$62,000 **IF QDS4=7+ AND REGION=LARGE URBAN CENTRE, And DS5a=2, THEN RECORD AS MEETS LICO & SKIP DIRECTLY TO QDS6.**
3. Prefer not to answer **GO TO QDS6**

LICO Cut-offs			
Family Size	Rural/Small Pop'n Centres	Med Urban Pop Centres (PG, Kam, Pent, Nan, Vernon, Courtney, Campbell R)	Lg Urban Pop'n Centres (Metro Van, FV, CRD, Kelowna)
Person not in an economic family	18,000	21,000	23,000
2 persons	23,000	26,000	29,000
3 persons	28,000	32,000	36,000
4 persons	34,000	39,000	44,000
5 persons	38,000	44,000	49,000
6 persons	43,000	50,000	56,000
7 or more persons	48,000	56,000	62,000

**DS5b. IF BELOW \$62,000:** Is it above or below [INSERT \$ AMOUNT FROM TABLE ABOVE BASED ON LOCATION (reference FSA spreadsheet) & HH SIZE (DS9)]

1. Above (or equal to)
2. Below **[RECORD AS MEETS LICO & GO TO DS6]**

**DS5c. IF \$62,000 or ABOVE:** Please indicate the range in which your annual household incomes falls.

1. \$62,000 to less than \$70,000
2. \$70,000 to less than \$80,000
3. \$80,000 to less than \$100,000
4. \$100,000 or higher

**DS6.** Are you or any member of your immediate family or household employed in the following sectors?

*Select all that apply*

- |  |                              |
|--|------------------------------|
| 1. Utility company                     | <b>  THANK AND TERMINATE</b> |
| 2. Natural gas company or gas marketer | <b>  THANK AND TERMINATE</b> |
| 3. Electricity company                 | <b>  THANK AND TERMINATE</b> |
| 4. Market research company             | <b>  THANK AND TERMINATE</b> |
| 5. Newspaper, radio, or TV network     | <b>  THANK AND TERMINATE</b> |
| 6. Utility regulatory body             | <b>  THANK AND TERMINATE</b> |

**EXCLUSIVE CODE:**

- |                       |                   |
|-----------------------|-------------------|
| 99. None of the above | <b>  CONTINUE</b> |
|-----------------------|-------------------|





**DS7.** Do you receive a **natural gas bill**?

1. Yes, I receive a natural gas bill
2. No, I do not | **THANK AND TERMINATE**
98. Don't know/ not sure | **THANK AND TERMINATE**

**DS8.** Is your natural gas supplied by:

1. FortisBC
2. An independent gas marketer | **THANK AND TERMINATE**
98. Don't know/ not sure | **THANK AND TERMINATE**

**DS9.** Are you the person in your household who is responsible for, or who shares responsibility for making payment decisions for your natural gas bill?

1. Yes, I am responsible or share responsibility
2. No, I am not | **THANK AND TERMINATE**
98. Don't know/ not sure | **THANK AND TERMINATE**

**Show message for Panel (Residents):** Thank you! You have qualified for this survey. We appreciate your candid and accurate responses.

**Show Landing page for Small Commercial when they enter survey:**

Thank you for agreeing to participate in this survey. FortisBC is looking to get your feedback on managing energy costs and payments. It should take 6-8 minutes to complete.

**DS10.** How do you receive your FortisBC natural gas bill? *Select one*

1. Bill is emailed to me
2. Bill is mailed to me
3. Don't know | **GO TO DS12**

**DS11.** Do you use a Pre-Authorized Payment Plan (money is automatically debited from your account) to pay your FortisBC natural gas bill?

1. Yes
2. No
3. Don't know





**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)**

### **Understanding Of Natural Gas Bill**

**Q1.** When you get your FortisBC natural gas bill, would you say you...

1. Thoroughly review the bill
2. Give the bill a quick review to make sure everything looks as expected
3. Rarely review the bill
4. Never review the bill
98. Don't know/ Not sure

**Q2.** And when it comes to how your FortisBC natural gas bill is calculated, would you say you are...

1. Very clear on how your bill is calculated
2. Somewhat clear
3. Not very clear
4. Not at all clear on how your bill is calculated





## Importance/Concern Regarding Natural Gas Costs

**Q3.** Many consumer products and services go through price fluctuations, meaning the prices go up or down depending on a variety of factors.

**IF RES:** How concerned are you about the price of the following increasing in the next few years?

**IF BUS:** When it comes to your organization, how concerned are you about the price of the following increasing in the next few years?

### Q3 AND 4 TO BE ON SAME SCREEN

<b>RANDOMIZE</b>	Not At All Concerned				Extremely Concerned
a. Electricity	1	2	3	4	5
b. Groceries ( <b>RES ONLY</b> )	1	2	3	4	5
c. Gasoline	1	2	3	4	5
d. Auto Insurance	1	2	3	4	5
e. Natural Gas	1	2	3	4	5
f. Cell Phone/Wireless Charges	1	2	3	4	5
g. <b>IF RES:</b> Housing (this could include a mortgage, rent or the price to buy a home) <b>IF BUS:</b> Commercial Property/Office Space (rent, lease payment or purchase price)	1	2	3	4	5

**Q4. IF RES:** Have you ever taken any actions or done anything differently in the past to reduce your natural gas bill?

**IF BUS:** Has your organization ever taken any actions or done anything differently in the past to reduce its natural gas bill?

1. Yes **IF YES, ASK Q4b.** And what did you do? *Please list everything you can think of.*
2. No
3. Can't recall/ Not sure



**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**

**Q5** Prior to this survey, were you aware that you pay the same price for your natural gas that FortisBC pays?

1. Yes, definitely aware of this
2. Yes, assumed this was the case
3. No, did not know this

**Pop up Q6 on same page as Q5 once C5 Answered**

**Q6** And prior to this survey, how well did you understand the Cost of Gas charge?

1. Understood it very well
2. Understood it somewhat
3. Didn't understand it very well
4. Didn't understand it at all

**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



**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

**ASK Q10 IF ANY OF Q7, Q8, OR Q9 = 3, 4 OR 5. OTHERWISE GO TO Q11**

**Q10.** What changes do you think you would most likely make? *Select all that apply*

**RANDOMIZE**

- 1. Turn down the thermostat/ heat
- 2. Try to use natural gas appliances/ equipment less or less often
- 3. Cut back spending in other areas
- 4. Actively look to replace existing natural gas heating appliances/ equipment with more efficient appliances
- 5. Actively look to replace natural gas with other fuel/ energy alternatives
- 6. Take measures to better draft proof/ insulate (e.g. improve insulation, install more weather stripping, install double-glazed windows, etc.)
- 7. Dress warmer/ use portable space heaters/use blankets
- 96. Other (specify)
- 98. None of the above
- 99. Don't know

**EXCLUSIVE CODE****EXCLUSIVE CODE**



**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



**Equal Payment Plan**

**Q15.** One way FortisBC helps customers smooth out their natural gas bill is to offer an Equal Payment Plan (referred to as the EPP). This plan takes your total estimated annual natural gas bill for the year and divides it into 12 monthly payments.

FortisBC also reviews your plan every quarter and adjusts your monthly payment up or down to reflect the change in gas prices. The EPP does not protect customers from natural gas price increases, but simply ensures that your payments are distributed as equally as possible across the year.

Which of the following best describes your **IF RES:** household / **IF BUS:** organization?

1. We are on FortisBC's Equal Payment Plan (EPP) **GO TO Q18**
2. I am aware of the EPP, but we are not on it
3. I am aware of the EPP, but I am not sure if we are on it
4. I had never heard about the EPP before this survey

**IF NOT ON EPP, BUT AWARE OF IT (Q15=2 OR 3) ASK Q16:**

**Q16. IF RES:** Have you / **IF BUS:** Has your organization ever been on FortisBC's Equal Payment Plan?

1. Yes
2. No
98. Don't know/ Can't recall

**IF BEEN ON EPP BEFORE (Q16=1), POP UP Q16b ON SAME PAGE:**

**Q16b.** Why did you stop using FortisBC's Equal Payment Plan?

**IF NOT ON EPP (Q15=2, 3 OR 4) ASK Q17:**

**Q17.** How interested would **IF RES:** you / **IF BUS:** your organization be in joining FortisBC's Equal Payment Plan **[IF Q16=1, ADD IN: again]**?

4. Very interested
3. Somewhat interested
2. Not very interested
1. Not at all interested

**ASK Q17b IF NOT INTERESTED (Q17= 1 OR 2):**

**Q17b.** Why are you **[INSERT Q17 RESPONSE]** in joining FortisBC's Equal Payment Plan?



**Other Profile Questions**

**Q18.** Thinking about the past 10 years, to the best of your knowledge, would you say that natural gas prices have...

1. Increased significantly
2. Increased somewhat
3. Stayed the same
4. Decreased somewhat
5. Decreased significantly
98. Don't know/ Not sure

**Q19.** What is the **primary** heat source for your **IF RES:** home / **IF BUS:** premises? *Select one only.*

1. Natural Gas
2. Electricity (baseboard heaters)
3. Electricity (heat pump)
4. Wood
5. Propane
6. Oil
96. Other (specify)
98. Don't know

**IF RES: GO TO QDS13**

**IF BUS: GO TO QDS15**

**Other Demographic/Firmographic Questions**

**DS13.** Are you currently living in ...?

1. An apartment or a condominium in a multi-unit building
2. A townhouse, duplex or triplex
3. A single detached home
96. Other (specify)
97. Don't know/ Not sure

**DS14.** Do you own or rent your home?

1. Own
2. Rent

**RESIDENTIAL: THANK AND END SURVEY**





And just a few final questions for classification purposes.

**DS15.** Which of the following best describes **your role** at your organization?

1. Accountant/ Controller
2. Business manager/ General Manager/ Administrator
3. CEO/ President
4. CFO
5. COO
6. Owner
7. Partner
8. Vice President/ Senior executive
96. Other (Specify)

**DS16.** Which of the following best describes the **type of building, facility or business** served by your FortisBC account?

**SHOW DETAILED OPTIONS ONLY AFTER THEY HAVE SELECTED ONE OF THE MAIN OPTIONS LISTED [MAIN OPTIONS ARE 1 REPLY, BUT WITHIN A MAIN OPTION MULTIPLE SELECTIONS ARE ALLOWED]**

**A. Automotive**

- ☐ Gas station/Automobile service station and shop
- ☐ Automobile sales and service

**B. Educational Facility**

- ☐ University/college
- ☐ Elementary school
- ☐ High school
- ☐ Preschool/daycare

**C. Food Store**

- ☐ Supermarket
- ☐ Convenience store
- ☐ Specialty food store

**D. Health Care Facility**

- ☐ Medical clinic/lab
- ☐ Rehabilitation facility
- ☐ Hospital
- ☐ Medical offices

**E. Lodging**

- ☐ Retirement, group or nursing homes
- ☐ Hotel
- ☐ Motel

**F. Manufacturing/Agriculture**





- ☐ Medium/light manufacturing plant
- ☐ Greenhouse
- ☐ Food processing
- ☐ Other agricultural

G. Office Building and Mixed-use Building

- ☐ Office – in low rise or high rise building
- ☐ Shopping mall/shopping centre (own or manage)
- ☐ Mixed use building – commercial and residential living
- ☐ Strip mall/plaza (own or manage)

H. Public Assembly

- ☐ Theatre/Auditorium
- ☐ Place of worship
- ☐ Museum
- ☐ Community/Recreation centre

I. Restaurant

- ☐ Full service restaurant
- ☐ Bar/pub/nightclub
- ☐ Fast food or self-service restaurant

J. Retail and Personal Services

- ☐ Non-food merchandise (clothing, home furnishings, etc.)
- ☐ Personal services (hair salons, dry cleaners, etc.)

K. Warehouse

- ☐ Warehouse - refrigerated
- ☐ Warehouse - unrefrigerated

96. Other (specify)

98. Don't know

**DS17.** How long has your organization been in business?

*Enter 0 if less than 1 year*

\_\_\_\_\_ years **RANGE IS 0-200**

☐ Don't know

**DS18.** How many FTE (full-time equivalent) employees do you have?

*Enter 0 if no FTE employees*

\_\_\_\_\_ employees **RANGE IS 0-9999**

☐ Don't know

**IF BUS:** Thank-you for your feedback. Prize draw winners will be contacted by email by no later than May 15<sup>th</sup>, 2017.



**Appendix B**

---

**AVAILABLE PRICE RISK MANAGEMENT TOOLS**



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>Alternatives currently used or available to FEI and its customers</b>			
<b><i>Physical Gas Contracting Tools</i></b>			
<b>Contracting with multiple counterparties</b>	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.
<b>Receipt Point allocation</b>	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.
<b>Transportation Pipeline Capacity</b>	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.
<b>Allocation between monthly and daily index priced gas purchases</b>	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.
<b>Long term index price purchases</b>	FEI purchases supply from producers or marketers at market index prices for terms up to ten years to provide security of supply.	Mitigates AECO/NIT-Station 2 basis volatility on an annual basis since the basis is determined and locked in each year.	Does not mitigate AECO/NIT market price volatility or capture low AECO/NIT forward market prices.
<b>Term Purchases Beyond Gas Year</b>	FEI purchases a portion of its supply requirement at Station 2 outside the gas year based on targets laid out in the ACP.	Reduces buying exposure at Station 2 during a given contract year and capture historically high basis differential between Station 2 and AECO/NIT.	Does not mitigate AECO/NIT market price volatility or capture low forward AECO/NIT prices.
<b>Use of storage</b>	Under the Essential Services Model, FEI buys baseload gas every day of the year. FEI injects gas in the summer, when market prices are typically lower, and withdraws it during winter, when market prices are typically higher.	Mitigates some market price volatility for a single winter period only, as most of the injected gas is used during the winter. Can result in low summer market prices for the following winter.	Mitigates price volatility for a single winter period. Sometimes, the summer injection price can be higher than the winter market price. Does not capture low forward summer market prices.



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>Fixed AECO-Station 2 Basis Differential Contracts</b>	FEI locks in the forward market price differential between AECO/NIT and Station 2 to capture the Station 2 discount.	Mitigates the volatility or changes in the price differential between AECO/NIT and Station 2.	Does not mitigate the AECO/NIT market price volatility or capture low forward AECO/NIT prices.
<b>Fixed price purchases</b>	FEI purchases supply from producers or marketers at fixed prices for terms within 3-year horizon to mitigate market price volatility and provide security of supply.	Mitigates market price volatility for a portion of the supply portfolio for up to three years. Customers can benefit if market prices increase above the fixed price. Can capture low forward market prices and improve rate stability.	Limited counterparties may reduce the availability of this option. May not result in lowest possible commodity rate if market prices fall below hedged prices.
<b><i>Rate Setting Mechanisms</i></b>			
<b>Quarterly rate setting (versus annual)</b>	Pursuant to Commission Guidelines, each quarter FEI submits, for Commission review, a report on the actual incurred and forward market prices, and the actual and projected deferral account balances to determine if a commodity rate change is warranted.	<p>Quarterly rate setting results in more frequent, yet smaller, rate changes than annual rate setting.</p> <p>Quarterly rate setting allows FEI to manage the size of the deferral account while providing customers with a balance of rate stability and price transparency through a relatively simple and efficient process.</p>	Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>12-month amortization of CCRA deferral account balance</b>	Consistent with the Commission Guidelines, FEI typically recovers from, or refunds to, customers any projected accumulated deferral account balance at the end of the current period over the next 12 months when setting commodity rates.	<p>12 months is a reasonable amortization period for variances (between the approved recovery rate, based on the forecast cost of gas, and the actual cost of gas incurred) captured in the deferral account.</p> <p>Shorter amortization periods would tend to increase the magnitude of the change in rates. Longer amortization periods would tend to decrease the magnitude of rate changes, but may impair FEI's ability to manage deferral account balances within a reasonable range.</p> <p>Surplus deferral account value can contribute to a lower commodity rate than indicated by forward market price curve alone, but not on a consistent basis.</p>	<p>Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.</p> <p>Amortization of the deferral balance can mask the price signal provided by the commodity rate.</p> <p>Size of deferral account, in conjunction with the amortization period, can impact customer behaviours.</p>
<b>0.95/1.05 cost-recovery ratio deadband</b>	Consistent with Commission Guidelines, a commodity rate change is indicated if the ratio of the forecast 12-month gas cost recoveries at the existing rate compared to the sum of the forecast gas costs for the 12-month prospective period plus the projected CCRA deferral balance at the end of the current quarter is outside the +/- 5 percent deadband. A minimum rate change threshold of \$0.50/GJ was approved pursuant to L-40-11.	Supports rate stability, price transparency, managing deferral account balances, and efficiency of process. Provides a signal of when forward market prices, in conjunction with the deferral account balance, may drive the need to change the commodity rate.	<p>Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.</p> <p>Without the minimum rate change parameter, the trigger mechanism can indicate the need for minor, possibly unnecessary, changes in rates when in a low market price environment.</p> <p>The trigger mechanism by itself excludes consideration of the full circumstances.</p>



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>\$0.50/GJ minimum rate change threshold</b>	Commission Guidelines were revised pursuant to L-40-11 to include a minimum rate change threshold of \$0.50/GJ.	The addition of the minimum rate change parameter prevents the 0.95/1.05 deadband from becoming too narrow when the price of natural gas remains low, thereby avoiding minor and possibly frequent commodity rate changes in low price environments.	<p>Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.</p> <p>The minimum rate change threshold has a dampening effect on the volatility of rate changes which may mask the price signal provided by the commodity rate.</p>
<b>Consideration of full circumstances to vary from standard guidelines for commodity rate setting (e.g. 24-month amortization)</b>	Consistent with Commission Guidelines, the full circumstances prevailing at the time when a quarterly report and cost recovery rates are under review will be considered. As well as the Commission Guideline trigger mechanism and rate methodology, consideration will be given to factors such as the current deferral balances and, based on the forecast costs, the appropriateness of any rate proposals over a 24-month timeframe.	Supports reduction of rate volatility, while still managing deferral account balances within a reasonable range, when there is a significant difference in the forward gas costs for the next twelve months compared to the subsequent twelve months. In some situations, setting the commodity rate over a 12-month timeframe can result in more rate volatility than if the commodity rate was set using a 24-month outlook.	<p>Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.</p> <p>Opportunities for use of this tool are dependant upon the forward market prices at the time of the quarterly review.</p>
<b>Capping quarterly rate changes at \$1.00/GJ</b>	A rate change cap for quarterly rate setting of +/- \$1.00/GJ that is used for no more than 2 consecutive quarters when the rate changes subject to the cap have been in the same direction.	Reduces rate volatility during periods of short-term market price volatility. May result in lower rate in rising market and higher rate in falling market than without the change cap in place.	<p>Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.</p> <p>Only temporarily dampens the impact of a sustained market price decrease or increase, which is ultimately flowed through to the customer via rates.</p>



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>Established criteria for moving to 24-month amortization</b>	Consideration of 24-month amortization period when 12-month gas costs are significantly different than following 12-month gas costs, while maintaining the CCRA deferral account within a reasonable range over the full duration of the 24-month period.	Supports reduction of rate volatility, while still managing deferral account balances within a reasonable range. In some situations, setting the commodity rate over a 12-month timeframe can result in more rate volatility than if the commodity rate was set using a 24-month outlook.	Does not affect underlying market prices (to mitigate volatility or capture low forward prices) and their impact on gas costs.  Opportunities for use of this tool are dependant upon the forward market prices at the time of the quarterly review.
<b><i>Optional Customer Bill and Rate Tools</i></b>			
<b>Equal Payment Plan (EPP)</b>	Customers can elect to sign up for a program that smooths out their monthly bill payments. Customers' consumption and commodity rates are forecast in order to average out the next twelve months' bills.	Some monthly bill payment smoothing will occur for customers during periods of relatively stable rates and when customers' actual consumption of gas is close to their expected consumption.	During periods of volatile rates and/or higher or lower expected consumption, periodic adjustments may be required within the twelve month period. This is to prevent large adjustments for EPP customers at the end of the twelve month term.
<b>Customer Choice Program</b>	Customers can elect to receive their commodity supply from a natural gas marketer rather than FEI and pay a fixed rate for terms up to five years.	Provides commodity rate stability for customers up to five years. Customers can benefit if market prices increase above their fixed rate.	Customers do not benefit if market prices fall below their fixed rate. Ability to achieve low rate depends on marketers' offerings and terms. Marketers' rates may include a profit margin.
<b>Customer moving from sales to transportation service</b>	Some customers can elect to receive their commodity supply from a natural gas marketer and use FEI transportation service to get their supply.	Customers can determine the desired degree of commodity rate volatility reduction and if they want to capture low forward market prices through their arrangement with the shipper agent.	This option is only available to certain rate classes and is not available to low-volume residential and commercial customers.
<b><i>Financial Tools</i></b>			
<b>Sumas AECO/NIT Swaps</b>	FEI locks in the forward market price differential between AECO/NIT and Sumas to protect against Sumas price disconnections.	Mitigates the volatility or changes in the price differential between AECO/NIT and Sumas.	Does not mitigate the AECO/NIT market price volatility or capture low forward AECO/NIT prices.



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>Fixed price swaps</b>	FEI enters into a financial swap transaction within year year horizon with a counterparty (such as a bank) and pays a fixed price while receiving an index price.	<p>Enables opportunity to capture low forward market prices and improves rate stability.</p> <p>Mitigates market price volatility for a portion of the supply portfolio for up to five years. Customers can benefit if market prices increase above the fixed price.</p>	Counterparty credit exposure must be monitored during periods of volatile market prices. Other than rate stability, customers do not benefit if market prices fall below the fixed hedge prices.
<b>Potential Tools</b>			
<b><i>Optional Customer Rate Tools</i></b>			
<b>Alternate commodity rate offerings</b>	FEI could provide the option to customers to purchase commodity supply from FEI at a fixed rate for up to 5 years.	Provides commodity rate stability for customers. Customers can benefit if market prices increase above their fixed rate.	Additional commodity offerings may be confusing to customers. Customers do not benefit if market prices fall below their fixed rate.
<b><i>Physical Contracting Tools</i></b>			
<b>Volumetric Production Payments (VPP)</b>	The buyer pays an upfront lump sum payment to a gas producer in exchange for specific volumes delivered over the term of the agreement (up to twenty years). The buyer also receives a limited royalty interest in the production volumes which is returned to the seller once the volumes have been delivered.	<p>Provides gas cost certainty for a portion of the commodity supply portfolio for a period up to twenty years. Provides long term security of supply. Customers can benefit if market prices increase above the VPP contract price. Enables opportunity to capture low gas costs for the long term.</p>	Limited counterparties may reduce the availability of this option. Customers do not benefit if market prices decrease below the VPP contract price.
<b>Investment in Reserves</b>	The buyer enters into a joint venture with a gas producer for a term up to thirty years. The buyer would share in the cost of developing and producing the gas and earn the right to a portion of the production.	<p>Provides gas cost certainty for a portion of the commodity supply portfolio for a period up to thirty years. Provides long term security of supply. Customers can benefit if market prices increase above the reserves costs. Enables opportunity to capture low gas costs for the long term.</p>	Limited counterparties may reduce the availability of this option. Significant due diligence is required by the buyer to mitigate production variability and drilling and operating cost risks. Customers do not benefit if market prices decrease below the reserves costs.



Price Risk Management Tool	Description	Degree to which meets objectives	Limitations of Tool
<b>Long term fixed price purchases</b>	FEI purchases supply from producers or marketers at a fixed price for terms up to ten years.	Mitigates market price volatility for a portion of the commodity supply portfolio. Provides long term security of supply. Enables opportunity to capture low forward market prices for the long term and improves rate stability.	Can result in higher than market costs if market prices move lower after locking in.
<b>Financial Tools</b>			
<b>Call options</b>	FEI enters into a financial transaction with a counterparty (such as a bank) where FEI will not pay more than a fixed cap price in exchange for FEI paying a call premium.	Limits market price volatility above the option cap price.	Buyer must pay a call option premium. Does not limit market price volatility below the option cap price or capture low forward market prices.
<b>Costless collars</b>	FEI enters into a financial transaction with a counterparty (such as a bank) where FEI will not pay more than a fixed cap price in exchange for FEI paying at least a fixed floor price.	Limits market price volatility above the option cap price and below the option floor price.	Buyer does not benefit if market prices fall below the floor price. Does not limit market price volatility in between the option cap and floor prices or capture low forward market prices.
<b>Long term fixed price swaps</b>	FEI enters into a financial swap transaction with a counterparty (such as a bank) and pays a fixed price while receiving an index price.	Mitigates market price volatility for a portion of the supply portfolio for up to ten years. Customers can benefit if market prices increase above the fixed price. Enables opportunity to capture low forward market prices and improve rate stability for the long term.	Counterparty credit exposure must be monitored during periods of volatile market prices. Other than rate stability, customers do not benefit from market prices falling below the fixed hedge price.
<b>Rate Setting Mechanisms</b>			
<b>Exceeding current deferral account limits during periods of extreme price volatility</b>	FEI allows the CCRA deferral account acceptable limit to increase from +/- \$60 million to up to +/- \$200 million in determining commodity rate changes.	In certain circumstances, can help delay need to change rates, therefore providing some temporary rate volatility mitigation.	Can delay commodity rate changes so that they are not aligned with market price changes. May not provide any value with \$1/GJ rate change cap and 24-month criteria in place. Additional costs and monitoring required for managing credit facilities.



Appendix C

---

**BACKGROUND INFORMATION**

**REDACTED**



## 1. BACKGROUND INFORMATION

This appendix provides the regulatory background information relating to FEI's requests for approval. It includes discussion of the FEI 2015 PRMP and the 2017 Annual Report which led up to the filing of the 2017 PRMP and its revision as the 2018 PRMP.

### 1.1 2015 PRICE RISK MANAGEMENT PLAN

On December 23, 2015 FEI submitted to the Commission the 2015 PRMP, which requested approval of specific price risk management tools and strategies for customers who receive commodity supply from FEI. These included the following:

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 25 percent of the FEI commodity supply portfolio;
  - b) Execute hedges when forward AECO/NIT market prices are at or below [REDACTED] percent of the FEI commodity supply portfolio;
  - c) Maximum hedging for any term is 50 percent 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<sup>1</sup> 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. Implementation of enhancements to FEI's quarterly commodity rate setting mechanism, which includes the following components:
  - a) Commodity rate change cap of \$1.00 per GJ, applicable to rate increases or decreases, provided the deferral account balance is maintained within a reasonable range:
    - i. Implementing a commodity rate change cap, plus or minus \$1.00 per GJ, would be utilized for a maximum of two consecutive quarters provided that the rate changes subject to the cap have been in the same direction, and
    - ii. The cap is removed for the third consecutive quarter if the rate change is in the same direction.

<sup>1</sup> Winter term includes November to March, summer term includes April to October and one-year term includes November to October or April to March.



b) Criteria for consideration of using a prospective period beyond the 12-month outlook to determine a new effective commodity rate. A 24-month prospective period may be used in specific situations to maintain the Commodity Cost Reconciliation Account (CCRA) deferral account balance within a reasonable range over the full duration of the 24-month period, which includes:

- i. When a commodity rate change is indicated using a standard 12-month prospective period;
- ii. When there is a difference of \$0.75 per GJ or more between the CCRA weighted average cost of gas (WACOG) for year one versus year two of the 24-month prospective period, and
- iii. The direction of the commodity rate change indicated using a standard 12-month prospective period is opposite to the direction of the CCRA WACOG for year two compared to the CCRA WACOG for year one (for example, if the indicated commodity rate change was an increase, the CCRA WACOG for year two would need to be lower than the CCRA WACOG for year one).

In the 2015 PRMP, FEI did not propose any changes to the Commission guidelines for setting gas cost recovery rates and managing the gas cost reconciliation balances as set out in Letters L-5-01 and L-40-11 (the Guidelines) with respect to the consideration of the full circumstances. FEI did propose some criteria to provide further clarification of when consideration should be given to the appropriateness of commodity rate proposals for timeframes beyond the 12-month outlook, since the Guidelines did not include any specific metrics or criteria in this regard.

In terms of the hedging percentages, the FEI commodity supply portfolio includes the gas purchases FEI requires for its commodity portfolio and excludes any supply provided to FEI by natural gas marketers per the Customer Choice Program. The commodity supply portfolio is determined within the FEI Annual Contracting Plan (ACP) each year. For simplicity, FEI defined the hedging terms as including winter, summer or one-year terms and not including hedging for individual months.

In terms of the rate setting mechanism enhancements, FEI considers a band of approximately +/- \$60 million a reasonable range for the commodity deferral account. Deviations falling materially outside of this range can pose challenges for FEI in terms of the timing of refunding or recovering significant dollar amounts from customers and could impact FEI's balance sheet and potentially its credit rating and borrowing capacity.

FEI recognized that the rate setting enhancement and medium-term hedging strategies are appropriate in the current market price environment but may not be applicable if market conditions changed significantly in the future. FEI suggested that the strategies be reviewed through an Annual Report to discuss how the strategies have worked so far and if any refinements need to be made.



### 1.1.1 Commission Panel Decision

The Panel approved the 2015 PRMP in Order E-10-16 (for hedging) and Letter L-15-16 (for rate setting) dated June 17, 2016. In its decision, the Panel accepted that FEI's current portfolio of comprehensive price risk management strategies and tools are working well from the perspective of managing volatility, sending appropriate market signals and managing the CCRA deferral account balances within a reasonable range. It also noted that the development of effective price risk management tools is an iterative process and the application of these tools will continue to evolve as market conditions change<sup>2</sup>.

The Panel's decision to approve the three-year hedging strategy was made with consideration to the low-price commodity environment which existed at the time FEI submitted its 2015 PRMP<sup>3</sup>. FEI noted in the 2015 PRMP that this low price environment, where market natural gas prices are near their lowest levels in over a decade, 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. The medium-term hedging strategy that includes locking in up to half of the commodity supply portfolio with fixed price purchases or swaps, if pre-defined price targets are reached, would help keep FEI's commodity rate at low and favourable levels relative to historical values.

In its decision, the Panel denied any extension of the hedging horizon beyond the three years ending with the Winter 2018/19 term. The Panel noted that its concern with extending the program beyond three years was not whether capturing hedging opportunities is appropriate in the current environment, but whether it is appropriate to apply a similar methodology in a higher pricing environment than exists today<sup>4</sup>. The Panel stated that there is no evidence on the record attempting to define exactly what a "low-price market environment" is and at what price point a low-price market environment ceases to exist and there is a shift from a risk view to a market view. Therefore, the Panel stated that if FEI wishes to make any change to the term, the price targets or the methodology as outlined in its 2015 PRMP, it must do so by a formal application.

In its decision, the Panel approved the proposal to maintain the CCRA deferral account within a range of +/- \$60 million (after tax) in keeping with FEI's recommendations<sup>5</sup>. However, the Panel considered there to be potential benefit to examining the option of increasing the maximum amount of the CCRA deferral account as a practical solution to control volatility over the longer term. The Panel noted that in the event that FEI sought to extend the hedging program, it expected FEI to include in its application a review of the effectiveness of the approved strategies as compared to the other price risk management tools which may be available to FEI. In particular, FEI was directed to include an evaluation of the option of increasing the acceptable CCRA deferral account balance range to +/- \$200 million to manage CCRA during periods of

<sup>2</sup> Commission Order E-10-16 dated June 17, 2016, page 12.

<sup>3</sup> Commission Order E-10-16 dated June 17, 2016, page 24.

<sup>4</sup> Commission Order E-10-16 dated June 17, 2016, page 24.

<sup>5</sup> Commission Order E-10-16 dated June 17, 2016, page 27.



1 extreme volatility. (FEI discusses increasing the deferral account limit in Section 4.2.7 of this  
2 Application.)

3 In its decision, the Panel directed FEI to file an Annual Report providing an update on the  
4 approved hedging strategies as well as providing relevant commentary on the effectiveness of  
5 enhancements to the commodity rate setting mechanism. The Panel suggested that the  
6 following items should be included in each annual report:

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

16  
17 FEI was directed to file the Annual Report concurrently with its Annual Contracting Plan which is  
18 typically filed at the beginning of May each year. A copy of the report was also to be provided to  
19 all participants of the 2015 PRMP proceeding, redacted if necessary. Once it had been filed, the  
20 need for further process would be assessed by the Commission and, if required, a formal  
21 process determined. FEI submitted the Annual Report to the Commission on April 27, 2017.

### 22 **1.1.2 Clarification of Hedging Implementation**

23 Following the Panel decision, in a letter dated February 21, 2017, FEI sought clarification from  
24 the Panel that the hedging implementation plan is rolled over each year during the hedging  
25 horizon such that year 1 now becomes April 2017 to March 2018 and year 2 becomes April  
26 2018 to March 2019. In its letter dated February 28, 2017 the Panel confirmed that the hedging  
27 implementation as laid out in FEI's letter is consistent with the Panel's directives contained in  
28 Order E-10-16 and accompanying decision.

## 29 **1.2 2017 ANNUAL REPORT RECOMMENDATIONS**

30 FEI made a number of recommendations within the 2017 Annual Report but did not make any  
31 requests for approval relating to the recommendations at that time. FEI asked for approvals  
32 relating to these items in the 2017 PRMP. The recommendations included the following items:

- 33 • Extend the hedging horizon out beyond Winter 2018/19 to Summer 2020;



- 1       • Adjust the winter term hedging price targets to account for the seasonality in market  
2       prices;
- 3       • Adjust the one-year term hedging price targets based on the changes to the winter term  
4       hedging price targets;
- 5       • Continue with the approved rate setting enhancements; and
- 6       • Consider a longer term hedging strategy with terms up to ten years.

7  
8       The first recommendation was extending the medium-term hedging strategy horizon out to 2020  
9       in order to position FEI to capture any favourable market pricing opportunities in the next three  
10      years to meet the price risk management objectives. As discussed in Section 3.1.3 forward  
11      market prices are currently low for several years out and there is no certainty on how long this  
12      will last. FEI may have a limited opportunity to capture low market prices and keep rates low  
13      and more affordable than in the past for customers.

14     The second recommendation included adjusting the winter hedging price targets to account for  
15     the seasonality in market prices. This will position FEI to capture low winter prices as well as low  
16     summer prices to keep overall commodity rates low for customers. If the hedging targets are  
17     not adjusted, FEI may miss out on opportunities to capture low market prices for winter terms,  
18     when market price spikes and volatility are typically higher.

19     The third recommendation included adjusting the hedging price targets for one-year terms,  
20     given the increases in the hedging price targets for the winter terms.

21     The fourth recommendation included continuing with the approved rate setting enhancements.  
22     Any further refinements or improvements may come over time once FEI has gained experience  
23     with their use and FEI is able to assess the impacts on commodity rate volatility reduction.

24     The fifth recommendation was to consider extending the hedging strategy beyond the three-  
25     year hedging horizon to take advantage of the current low market prices further out in time.  
26     This could include hedges with terms spanning up to ten years to capture the low market  
27     AECO/NIT or Station 2 forward market prices, which may not remain at current low levels. This  
28     would help capture low market prices and costs further out in time for customers as well as  
29     reduce the impacts of any potential future market price volatility on commodity rates. While the  
30     current hedging program achieves these objectives for up to three years out, it does not achieve  
31     them beyond this period.

32     FEI noted that these recommendations are not fundamental changes or additions but rather  
33     refinements to FEI's existing price risk management strategies, which were supported by  
34     stakeholders and have been approved by the Commission.



### 1.3 2017 PRICE RISK MANAGEMENT PLAN

On June 13, 2017, FEI filed the 2017 PRMP with the Commission. The 2017 PRMP requested approval relating to the recommendations provided in FEI's 2017 Annual Report. These included the following:

1. Extension of the medium-term fixed-price hedging strategy, which includes the following components:

- 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 2017 to October 2020.

The hedging requests listed in a) to c) above are based on the hedging implementation plan for year 1. FEI requested approval for the following portfolio percentage limits with regard to the hedging implementation plan within the three-year hedging horizon.

- e) Execute hedges according to the following implementation limits:

[REDACTED]

[REDACTED]

[REDACTED]



f) Execute hedges according to the following weekly hedging implementation limits:

[REDACTED]

[REDACTED]

[REDACTED]

2. FEI requested approval for a longer term hedging strategy that includes hedges with terms of up to five years, which included the following components

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 2017 to October 2023;

b) Total hedging for any term in combination with the medium-term hedging program is 50 percent; and

[REDACTED]

#### 1.4 2017 PRMP SCOPING DECISION

On August 25, 2017, the Commission issued Order G-133-17 to seek comments on the appropriate scope and process for reviewing the 2017 PRMP. The Commission identified the following fundamental questions:

1. Which objective, or combination thereof, should be used to assess the design and/or subsequent efficacy of FEI's hedging program:

a. Manage price volatility;

b. Manage supply security;

c. Take a market position in anticipation of future commodity price changes; or

d. Other?

2. What are the most appropriate strategies/mechanisms in support of the objective(s) identified in question 1 above:

a. FEI hedging program as applied for;

b. Use of other mechanisms already in place and/or available to FEI (e.g. quarterly gas cost adjustments, equal payment programs);

c. Existing third-party programs/mechanisms (e.g. Customer Choice Program); and/or

d. Other?



3. What are the potential costs/benefits of each strategy/mechanism under various future scenarios, and which parties ultimately bear the risk and/or reap the benefits (e.g. ratepayers, shareholders, other parties):

a. Are the exposures to costs and benefits symmetrical for each party;

b. Are some strategies/mechanisms more effective in one particular future scenario as opposed to other scenarios (e.g. stable price regime, volatile price regime, significant price increase, etc.)

On November 23, 2017, the Commission issued Order G-168-17 directing FEI to file a revised Application and/or addenda to the 2017 PRMP. The Commission stated that it expected FEI's filing to respond to the following:

- The filing should provide a discussion of each question raised in the 2017 PRMP Scoping Decision, including rationale/reasons for the responses provided;
- The discussion should stand on its own presenting the necessary evidence within the submission, and not rely extensively on cross-reference to prior submissions (i.e. in prior PRMP proceedings); and
- The Panel is particularly interested in seeing a clear separation between the discussion of program objectives and the discussion of how various components/elements of the proposed PRMP address the objectives. More specifically, please provide a unified stand-alone set of objectives along with supporting reasons for those objectives. A separate discussion would provide analysis of the merits of specific strategies/tools put forward for approval in terms of specifically how they address the objectives.

The 2018 PRMP addresses these questions and items raised by the Commission.









**ORDER NUMBER**

E-xx-xx

**IN THE MATTER OF**

the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

FortisBC Energy Inc.

Application for Approval of the 2018 Price Risk Management Plan

**BEFORE:**

[Panel Chair]  
Commissioner  
Commissioner

on Date

**ORDER**

**WHEREAS:**

- A. On December 23, 2015, FortisBC Energy Inc. (FEI) filed with the British Columbia Utilities Commission (Commission) the 2015 Price Risk Management Application (2015 PRM Application), which included recommendations by FEI for price risk management strategies, which included the request for approval for the implementation of a medium-term hedging strategy based on pre-defined market price targets and maximum volume limits;
- B. On June 17, 2016, the Commission Panel (Panel) approved the PRM Application in Order E-10-16, which included the medium-term hedging strategy based on the pre-defined price targets and maximum hedging percentages as defined within Section 2 of the Application. The Commission will hold confidential the hedging price targets and volumes;
- C. On February 21, 2017, FEI filed a letter with the Commission, in which seeking clarification of Order E-10-16, FEI sought clarification that the implementation plan is rolled over each year during the hedging horizon and that there would no longer be a year 3 as the extension of the hedging horizon beyond approved timelines was denied in the Commission's PRM Application decision;
- D. On February 28, 2017 the Commission confirmed FEI's interpretation of the hedging implementation;
- E. On April 27, 2017 FEI filed the Price Risk Management 2017 Annual Report (Annual Report), which discusses the outcomes to date of the implemented tools and included some recommendations for enhancing the hedging strategies discussed in FEI's 2015 PRM Application that were approved by the Commission under Order E-10-16.
- F. On June 13, 2017, FEI filed the 2017 Price Risk Management Plan (2017 PRMP), which includes requests for approval to extend and refine the current price risk management strategy outlined within the approved



2015 PRM Application as recommended within the Annual Report and a request for approval to implement longer term hedges if certain market price targets are reached;

- G. On August 25, 2017, the Commission issued Order G-133-17, to establish a Regulatory Timetable for review of FEI's 2017 PRMP, including an invitation to FEI and intervening parties to provide comments on the appropriate scope and process for the proceeding;
- H. On September 11, 2017, FEI filed, in response to Order G-133-17, a submission on the proposed scope and preferred review process for the 2017 PRMP;
- I. On November 23, 2017, the Commission Panel issued Order G-168-17, directing FEI to file a revised Application and/or addenda to the 2017 PRMP to address some foundational questions. The Commission Panel established a regulatory timetable for the review of revised and/or addended 2017 PRMP.
- J. On January 5, 2018, FEI filed the 2018 Price Risk Management Plan (2018 PRMP), which is a revision of the 2017 PRMP and included requests for approval to extend and refine the current price risk management strategy outlined within the approved 2015 PRM Application as recommended within the Annual Report and a request for approval to implement hedges with terms up to five years, if certain market price targets are reached.
- K. The Commission has reviewed the 2018 PRMP and determines that the proposed hedging strategies should be approved.

**NOW THEREFORE** the Commission orders as follows:

- 1. FEI's proposal to modify its hedging strategy as described in section 5 of the 2018 PRMP is approved.
- 2. The Commission will hold confidential the hedging price targets and volumes.

**DATED** at the City of Vancouver, in the Province of British Columbia, this (XX) day of (Month Year).

BY ORDER

(X. X. last name)  
Commissioner

Attachment (Yes? No?)