

COMMERCIAL ENERGY CONSUMERS ASSOCIATION  
OF BRITISH COLUMBIA (“CEC”)

INFORMATION REQUEST NO. 2 TO FORTISBC ENERGY INC.

British Columbia Utilities Commission – FortisBC Energy Inc. 2017 Long Term Gas  
Resource Plan ~ Project No. 1598946

May 29, 2018

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1. Reference: Exhibit B-4, CEC 1.3.1 and 1.7.4

- 3.1 How are new residential dwellings, commercial floor area and industrial facilities added based on the account growth rates? Please explain.

Response:

FEI consulted with Posterity to provide the following response.

New residential dwellings are added to the end-use model in each forecast year, based on the forecast customer growth rate for the applicable scenario (Section 1.2.1.1 of Appendix B-1 of the Application describes how FEI developed scenario-specific customer forecasts for all sectors). Dwellings are added as whole (not fractional) dwelling units. UPC is based on the evolving fuel shares, appliance saturations, and unit energy consumption, by end use, of the newest vintage of each region’s dwellings of each dwelling type.

New commercial customers are added to the model in each forecast year, based on the forecast customer growth rate for each rate class for the applicable scenario. Commercial customers are added as whole (not fractional) buildings. Floor area for the new customers is based on the average floor area for each region’s buildings of each commercial building type in each rate class. UPC is based on the evolving fuel shares and consumption per floor area, by end use, for each region’s commercial buildings of each building type.

New industrial customers are added to the model in each forecast year, based on the forecast customer growth rate for each rate class for the applicable scenario. Industrial customers are added as whole (not fractional) customers. Consumption for the new customers is based on the evolving fuel shares and existing customer consumption, by end use, for each region’s industrial customers of each industrial sub-sector and rate class.

- 7.4 Please provide the source of information for the 'Residential Building Stock' metric.

**Response:**

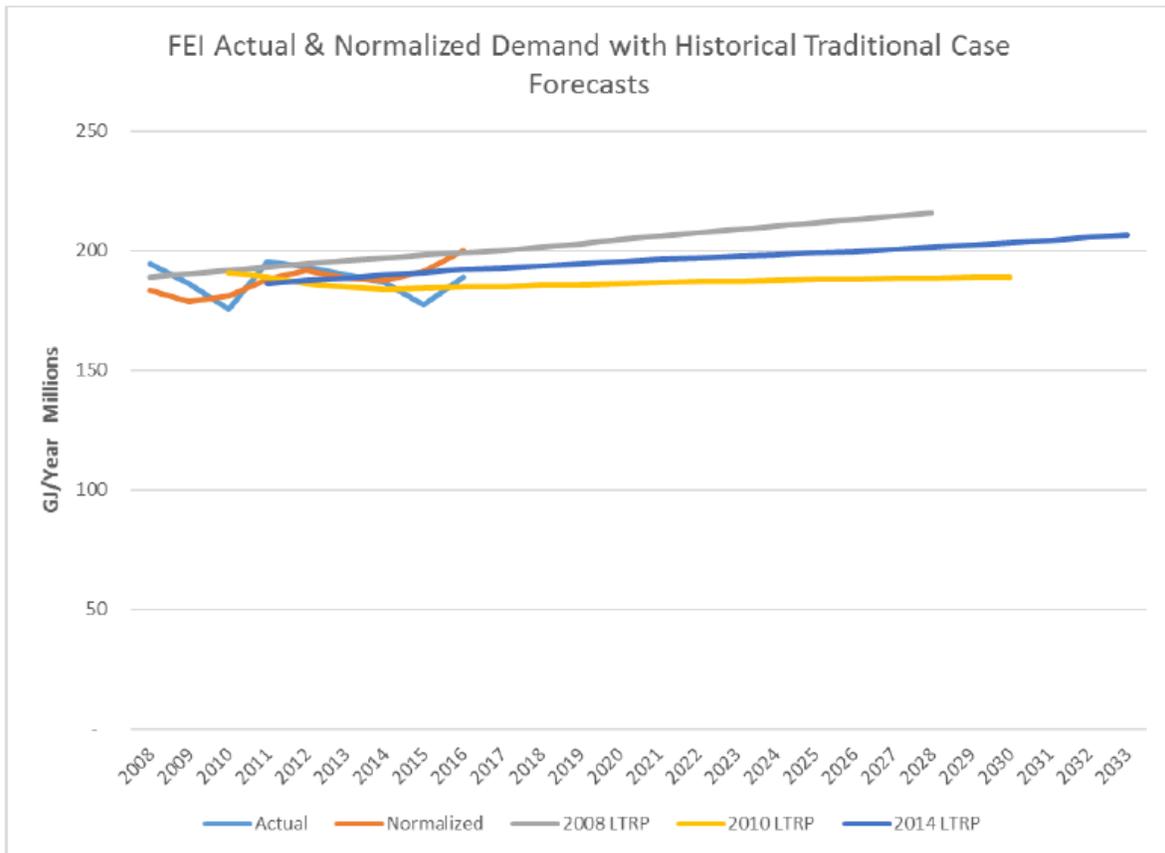
FEI consulted with Posterity to provide the following response.

Residential building stock, for the base year, is based on FEI's data on the number of Rate Schedule 1 customers in 2015. Growth in residential building stock is based on the forecast number of account additions for Rate Schedule 1. Please refer to FEI's response to CEC IR 1.3.1 for an explanation of how residential customers are added throughout the planning horizon.

- 1.1. Please explain why adding dwellings as a whole, instead of fractional units, is the appropriate measure for forecasting account growth.

2. Reference: Exhibit B-4, CEC 1.4.2 and 1.5.1.1

Figure 1: FEI Actual and Normalized Demand with Traditional Case LTRP Forecasts<sup>2</sup>



Note that residential and commercial demand is normalized prior to being used in either the Traditional or End Use method. As a result the forecast also assumes normal weather. Plotting actual data against the forecast is not recommended but shown here in an effort to be responsive to this question.

Climate change	FEI considered analyzing the impact of climate change on outdoor air temperature but did not include this uncertainty because the FBC 2016 Long Term Electric Resource Plan analyzed this critical uncertainty and found its impact to be immaterial.
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- 2.1. Please provide a brief description of FEI’s weather normalization processes and include the period of time over which any average temperatures are determined.
- 2.2. Are traditional weather normalization practices becoming less useful given increased climate variability? Please explain.

- 2.2.1. If yes, how does FEI account, or intend to account, for increased climate variability in its demand forecasts.
- 2.3. Please provide FEI's comments on the document by Scott Madden Management Consultants 'Are Traditional Weather Normalization Practices Used by Utilities in the Ratemaking Process Appropriate Given Increased Climate Variability'. The document is found at: <https://www.scottmadden.com/insight/traditional-weather-normalization-practices-used-utilities-ratemaking-process-appropriate-given-increased-climate-variability/>
- 3. Reference: Exhibit B-4, CEC 1.15.4 and 1.15.5 and Exhibit B-2, BCUC 1.19.4**

15.4 What actions, if any, could FEI take to maximize RNG sales under the Lower Bound circumstances.

**Response:**

FEI has taken a number steps to increase demand and is seeing increased interest from customers. With Commission approval, FEI lowered the price for customers to purchase RNG. This has already resulted in an increase in demand. FEI has also increased market awareness through an education campaign. Last, FEI engages directly with customers to offer products such as RNG.

15.5 What strategy options is FEI considering to enable increased demand for and supply of RNG after 2026.

**Response:**

FEI has seen customer demand for RNG grow faster than expected over the past year while carrying out its' education efforts. This suggests that there is appetite for RNG. At current customer interest, FEI believes that it has sufficient demand to absorb supply as it comes on to the system.

Government Policy: Under the British Columbia Low Carbon Fuel Requirements Regulation (BC LCFRR), RNG is an ultra-low carbon fuel option for transport consumers. FEI is currently validating the carbon intensity of RNG for the BC LCFRR but based on analyses in other jurisdictions RNG could be up to 90% less carbon intensive than the current transport fuel intensity in the province and would generate more than double the emissions credits compared to compressed natural gas. With recent average credit prices of \$170 per tonne in the BC LCFRR, RNG would be a very attractive option for fleet operators with natural gas vehicles.

Current Price: In 2016 the Commission approved a new lower price for RNG. At the time FEI had put forth an argument that the price was too high for market uptake. Since the time of the price change, FEI has seen a steady increase in the overall number of RNG customers. This suggests to FEI that price was a factor in the slowing uptake.

FEI believes that the demand will more likely continue upward rather than flatten in the future but demand may be constrained by supply.

- 3.1. Please provide quantification in units and percentages of the increase that FEI is seeing in RNG demand over the last 5 years.
- 3.2. Please elaborate on the steps that FEI has taken to increase demand in addition to price reductions and identify any additional factors that FEI could adjust to increase RNG demand.
- 3.3. Does FEI's demand absorb new supply that comes onto the system or all the supply coming on to the system?
- 3.4. Does FEI expect that its sales of RNG will ultimately result in a zero balance of unsold biomethane in the Biomethane Variance Account (BVA)? Please explain.
  - 3.4.1. If yes, when does FEI expect this to occur?

**4. Reference: Exhibit B-2, BCUC 1.9.1**

On page 53 of Exhibit B-1, FEI states:

Capitalizing on the LNG marine bunkering opportunity is a key part of FEI's strategy to leverage pre-existing Company-owned assets and operational expertise to drive growth in new markets. While the Tilbury LNG facility primarily serves as a winter peaking facility, over time, the facility has also evolved to serve a variety of new LNG markets.

- 9.1 Please confirm, or otherwise explain, that FEI's strategy involves capitalizing on LNG marine bunkering opportunities with organizations and companies that are not based in BC or do not have operations in BC.

**Response:**

FEI currently has customers under contract under Rate Schedule 46 (RS46) that are not based in BC that use LNG not only for marine bunkering, but for a variety of end uses in other parts of Western North America and in Asia.

FEI provides LNG through RS46 to customers that satisfy the contracting requirements as outlined in RS46. This means that customers that are eligible to receive LNG dispensing service under RS46 may or may not be based in BC. FEI does not differentiate between BC-based companies and those based outside of BC in terms of LNG supply under RS46.

With respect to the marine bunkering market, the nature and makeup of the LNG bunkering industry means that FEI expects to have customers that are based outside of BC.

- 4.1. What, if any, constraints exist for FEI in its ability to differentiate between BC-based companies and those based outside of BC in terms of LNG supply?

**5. Reference: Exhibit B-4, CEC 1.26.1**

26.1 Please provide a list and detailed definition of these longer term commodity strategies and purchasing instruments used for gas supply purchase.

**Response:**

The following are potential alternatives to manage long term (i.e. beyond five years) price risk.

***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 fixed price purchases or financial 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 physical 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. FEI expects that the maximum term for these types of arrangements would be up to ten years based on the liquidity of the AECO/NIT market.

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.

- 5.1. Why are physical supply arrangements of long term fixed price purchases and financial swaps not commonplace in the industry?
- 5.2. What time periods would FEI consider for long term fixed price purchases or financial swaps?
- 5.3. Has FEI identified suppliers who may be willing to transact with FEI, or those who are definitely unwilling to transact? If so, how many suppliers has FEI identified as willing or unwilling?
  - 5.3.1. Who are the suppliers identified by FEI who may either be willing or are not willing to participate in such transactions?
- 5.4. What volumes (or range of volume) would FEI consider to be optimal for Long Term Hedging? Please explain why this is the appropriate volume.

5.5. What pitfalls, other than availability, does FEI anticipate with a Long Term Hedging strategy? Please explain.

**6. Reference: Exhibit B-4, CEC 1.26.1**

***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. 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. The capital investment would be included in FEI's rate base and earn a rate of return for shareholders.

6.1. Are there any constraints on the number of gas producers that would serve as participants, or for the volumes for which FEI could contract? Please explain.

6.2. How many gas producers has FEI identified as prospective partners in VPP arrangements? Please identify if not confidential.

6.3. What volume (or range of volumes) would FEI consider to be optimal for VPP price risk management? Please explain.

6.4. What pitfalls does FEI expect from employing VPP strategies, if any? Please explain.

6.5. Does FEI have experience in VPP strategies?

6.5.1. If no, please explain whether or not FEI expects its inexperience to be problematic and why.

**7. Reference: Exhibit B-4, CEC 1.26.1 and BCUC 1.37.1 and CEC 1.30.2**

***Investing 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 the utility 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.

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.

On pages 33 to 34 of FEI's 2018 PRMP, FEI states:

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. [emphasis added]

- 37.1 Please reconcile FBC's statement contained in its Application and in its 2018 PRMP on whether FEI plans to further explore the option of investing in natural gas reserves.

**Response:**

After reviewing potential long term price risk management alternatives since filing the Application, FEI has determined that long term supply arrangements other than investing in natural gas reserves may be more appropriate in terms of balancing meeting the price risk management objectives and mitigating any potential risks and costs. However, FEI is not completely ruling out the alternative of investing in gas reserves should FEI be able to mitigate the risks associated with drilling and production at an acceptable cost. Therefore, while FEI is considering all long term alternatives, it is not actively exploring this option at this time. For a detailed list of long-term price risk management alternatives please refer to the response to CEC IR 1.26.1.

- 30.2 Does FEI believe that FEI owned reserves would increase its overall gas supply portfolio flexibility? If so, explain how.

**Response:**

As discussed in the response to BCUC IR 1.37.1, FEI is not actively exploring investing in reserves and so does not have an understanding of whether or not owning reserves would increase FEI's overall gas supply portfolio flexibility. The parameters regarding the reserves supply, such as supply profile or flexibility, would likely be determined in negotiations with the gas producer.

- 7.1. Why was investment in natural gas reserves not considered to be one of the better options? Please explain and provide order of magnitude quantification of costs and/or benefits that FEI has available, and provide any internal reports on assessment of this option.
- 7.2. What options were considered to be the best options? Please explain why and provide order of magnitude quantification of costs and/or benefits that FEI has available.

- 7.3. When, if known, will FEI make a final determination as to whether or not it will invest in natural gas reserves?
- 7.4. What circumstances would lead FEI to commence active consideration of the option to invest in natural gas reserves? Please discuss.
- 7.5. If FEI were to pursue investments in natural gas reserves in the future, where would FEI expect to invest in natural gas reserves?
- 7.6. Please discuss the risks to ratepayers of investing in natural gas reserves.
- 7.7. Does FEI consider that any special expertise is required to invest in natural gas reserves? Please explain.
  - 7.7.1. If yes, how does FEI expect to acquire such expertise?
- 7.8. Please discuss the risks and benefits to FEI shareholders of investing in natural gas reserves.

**8. Reference: Exhibit B-4, CEC 1.26.1**

***Other Long Term Supply Arrangements***

In addition to the more common types of arrangements to mitigate long term price risk described above, there may be other long-term supply arrangements with gas producers to manage price volatility and capture low-cost supply for the longer term. These could include an arrangement where FEI provides an upfront lump sum prepayment to a gas producer in exchange for long term supply. The amount of the prepayment would depend on the amount of supply to be delivered, the term of the agreement and the cost to produce and deliver this supply by the producer. The term of such an arrangement could be between ten and twenty years. The gas producer would benefit from receiving upfront capital to fund gas production and operations without resorting to more debt and equity, while FEI's customers would benefit from long-term cost-based supply. FEI expects that any capital investment would be included in rate base upon which the utility would earn a rate of return, benefitting FEI's shareholders.

- 8.1. Please discuss the risks to FEI ratepayers of providing upfront lump prepayments in exchange for long term gas supply.
- 8.2. What, if any, risks accrue to FEI shareholders? Please discuss.

**9. Reference: Exhibit B-4, CEC 1.26.1 and 1.41.6**

***Current Discussions***

FEI is currently in the process of discussing options with producers to see if they have any interest in a long-term cost-based supply arrangement with FEI. At this point, FEI does not know which type of arrangement producers might have more preference for, if any, and it is possible that there may be supply arrangements of interest not listed in this response. If there is interest, and provided the arrangement meets the objectives of FEI's ACP and PRMP in the interests of customers, FEI would bring this forward in an application to the Commission for approval.

- 41.6 Please provide information on FEI's discussions with producers potentially interested in joint ventures and or long-term contracts. If this is confidential information please supply this under the Commission's confidentiality arrangements.

**Response:**

FEI is currently involved in initial discussions with gas producers to determine their interest in long term cost-based supply arrangements, such as those discussed in the response to CEC IR 1.26.1. FEI does not have any more information to provide at this time as these initial discussions have not yet concluded. Please refer to the response to BCUC IR 1.36.1.

- 9.1. Please compare the various options open to FEI from a ratepayer risk and opportunity perspective and discuss which options are preferable and less preferable and why.
- 9.2. Please compare the various options open to FEI from a shareholder risk and opportunity perspective and identify which options are preferable and less preferable and why.
- 9.3. How does FEI view the progress of its current discussions? Please explain.

**Reference: Exhibit B-4, CEC 1.27.1**

**27. Reference: Exhibit B-1 Section 5.2, Page 136, lines 27-29**

TransCanada's proposed projects will compete for the same supply currently accessed by Westcoast Energy Inc. (Westcoast) and on which FEI is reliant on for its customers.

27.1 Please outline long term strategies FEI has for procuring and maintaining long term replacement supply if or as supplies are lost to competing markets on the TransCanada system.

**Response:**

FEI is actively involved in National Energy Board (NEB) proceedings, which potentially affect FEI's access to supply, and is also involved in developing solutions with regional stakeholders to help ensure issues related to third party pipeline infrastructure are resolved fairly. These activities are important because they help to ensure that customers in BC will continue to have access to gas supply at fair market prices.

FEI also attempts to establish relationships with all producers and other counterparties<sup>10</sup> actively engaged in developments in northeast BC. Establishing these relationships has provided FEI with several long term supply commitments at Station 2, which helps promote the long term viability of the Station 2 marketplace and ensure the continued availability of supply from there over time. Moreover, maintaining these relationships is key, as it is important to keep an open dialogue so FEI and the producers can better understand each other's long term plans.

<sup>10</sup> Other counterparties include marketers and aggregators including financial institutions that are active in energy trading. These relationships are also important because they form part of the wholesale marketplace where FEI participates.

- 9.4. Who are the 'regional stakeholders' to whom FEI is referring, or are they the same counterparties identified in the footnote?
- 9.5. What does FEI currently consider to be the long term plans of the natural gas producers in the areas FEI is interested? Please explain.
- 9.6. Has the long term viability of the Station 2 marketplace been threatened? Please explain.
- 9.6.1. If no, why is it necessary to promote the long term viability of the marketplace to ensure supply from there over time.
- 9.6.2. If yes, what supply options will FEI pursue if the Station 2 marketplace is not viable? Please discuss.

**10. Reference: Exhibit B-4, CEC 1.28.1**

28.1 Has FEI identified any other transmission, storage or contract assets which it may be able to use to the benefit of customers in various future scenarios, other than its existing assets, and if so what might these be under different future scenarios.

**Response:**

FEI is always evaluating resource options to ensure security of supply for various future scenarios. Over the past few years, FEI has participated in two open seasons offered by Westcoast Energy (i.e. Winter Firm Service and T-South pipeline expansion). Moreover, FEI has evaluated storage expansions at Tilbury and Mist, and expanding FEI's Southern Crossing Pipeline.

10.1. Please briefly describe the outcome of FEI's review of the Tilbury, Mist, and Southern Crossing pipeline evaluations and provide quantitative assessment of their cost/benefit value potential.

**11. Reference: Exhibit B-4, CEC 1.29.1, Attachment 1.29.1 and 1.29.2**

**29. Reference: Exhibit B-1 Section 5.4, Page 142, lines 1-4**

In addition to these strategies, FEI has also started to contract for some resources in excess of what Core customers are forecast to require in the short term. This approach is reasonable because the costs and ability to manage contract renewals within the portfolio of resources help to reduce the risk to Core customers.

29.1 Which excess resources are being contracted for?

**Response:**

The excess resources that FEI is referring to is the 75 TJ/day of additional T-South Huntingdon Delivery capacity that FEI secured effective November 1, 2015. FEI secured this capacity for RS 46 demand and the potential return of Firm Transportation customers to Core service. Please refer to Attachment 29.1 for a copy of the non-confidential 2014/15 Amendment to the Annual Contracting Plan for additional details.

**Summary**

With the recent changes occurring in the market for firm transportation capacity on T-South, FEI recommends acting proactively by contracting for an additional 75 TJ/d of capacity on T-South for a minimum five year term. Contracting for this capacity may occur as early as during the next Bid Week that is planned to start on October 1, 2014, with the actual contracted volume to be determined by FEI based on evolving market circumstances faced when the Bid Weeks take place. FEI has flexibility in its contracting portfolio to manage this additional transportation capacity by using it to replace expiring future contracts if sufficient demand does not materialize for all of this capacity.

This approach to securing additional firm transportation capacity is appropriate given the changing market conditions faced at this time.

29.2 What is the contract term of these resources?

**Response:**

The contract terms for these resources (i.e. T-South Huntingdon Delivery capacity) are November 1, 2015 to October 31, 2020 and November 1, 2015 to October 31, 2022. FEI can renew these contracts but must provide Westcoast Energy Inc. 13 months' notice prior to its expiry. Also important to note, FEI's contracted Westcoast's transportation portfolio has been designed so that portions of capacity are up for renewal each year. This flexibility allows FEI to either reduce or roll off existing contracts once they are up for renewal, if it encounters a future where the capacity is no longer required.

11.1. To date, what has been the net result to ratepayers of FEI's excess resource contracting? Has it been a benefit or not? Please provide quantification of the impact in dollars.

**12. Reference: Exhibit B-4, CEC 1.39.1**

**39. Reference: Exhibit B-1, page 140**

18 reliance on these smaller plants may come with additional risk over time. The risk exists that  
19 producers in the Montney basin may not be able to maintain their production levels given the  
20 significant drop in regional prices, as discussed briefly in Section 5.2. Moreover, with  
21 TransCanada's expansions in BC (discussed in Appendix A), the portion of NEBC gas  
22 production could change between Station 2, Alliance, and NGTL.

39.1 Please provide the risks associated with the producers and not being able to maintain their production level.

**Response:**

FEI believes that for producers to continue to invest and procure gas they must make a reasonable return over a period of time. If the prices for their product are lower than their breakeven costs they will likely reduce or slow their capital investment.

Please also refer to the response to CEC IR 1.31.1.

12.1. How would FEI define 'reasonable return over a period of time'?

**13. Reference: Exhibit B-4, CEC 1.48.2.1**

48.2.1 Please describe how FEI intends to manage these risks.

**Response:**

FEI is currently involved in initial discussions with gas producers to determine their interest in long term cost-based supply arrangements. FEI has not completed these discussions and so does not know how the risks related to drilling and production, if applicable, might be managed. As discussed in the response to BCUC IR 1.37.1, FEI is not actively exploring investing in reserves but is instead focusing on other types of long term arrangements. One important feature of any arrangement would be the ability to transfer risks to producers that are appropriate for a producer to manage, such as those relating to drilling and operating gas wells. However, this transfer of risks may not be acceptable to the producer or increase the capital investment required by the producer.

13.1. Please elaborate on how FEI would potentially ‘transfer risks to producers’.

**14. Reference: Exhibit B-4, CEC 1.53.3 and Exhibit B-2, BCUC 1.40.1.1**

53.3 Why does FEI not consider and apply long term trends in  $UPC_{peak}$  to the 20 year account forecast for its long term infrastructure planning in addition to current customer consumption patterns?

**Response:**

As discussed in the response to BCUC IR 1.40.1.1, FEI’s Traditional Peak Method results show that the  $UPC_{peak}$  values have remained relatively constant over the last decade. Therefore FEI believes that holding the  $UPC_{peak}$  values constant throughout a 20 year forecast period is the most reasonable approach supported by evidence for representing long term future trends at this time.

**Table 1: Historical UPC<sub>peak</sub> - Core Customers for VITS, CTS and ITS**

Year	CTS UPC <sub>peak</sub> (GJ/hr)			ITS UPC <sub>peak</sub> (GJ/hr)			VITS UPC <sub>peak</sub> (GJ/hr)		
	Rate 1	Rate 2	Rate 3	Rate 1	Rate 2	Rate 3	Rate 1	Rate 2	Rate 3
2007	0.0614	0.1911	1.6881	0.0473	0.1639	1.7391	0.0325	0.0854	0.9556
2008	0.0614	0.1987	1.7305	0.0495	0.1765	1.8602	0.0324	0.0875	0.9710
2009	0.0614	0.2025	1.7326	0.0487	0.1763	1.8831	0.0320	0.0892	0.9693
2010	0.0605	0.2007	1.6904	0.0479	0.1758	1.8749	0.0312	0.0889	0.9985
2011	0.0605	0.2058	1.6817	0.0470	0.1739	1.8718	0.0318	0.0966	0.8843
2012	0.0613	0.2236	1.7010	0.0475	0.1857	1.9181	0.0346	0.1183	0.9128
2013	0.0622	0.2425	1.7364	0.0485	0.1975	1.9629	0.0343	0.1215	0.8971
2014	0.0617	0.2569	1.7966	0.0494	0.2113	2.0586	0.0340	0.1149	0.8264
2015	0.0607	0.2559	1.8165	0.0499	0.2155	2.1111	0.0335	0.2169	1.6405
2016	0.0575	0.2447	1.7790	0.0454	0.1978	2.0123	0.0325	0.2071	1.6247

**Table 2: Historical Combined UPC<sub>peak</sub> - Core Customers for VITS, CTS and ITS**

Year	Transmission Combined UPC <sub>peak</sub> (GJ/hr)		
	CTS	ITS	VITS
2007	0.0850	0.0627	0.0620
2008	0.0863	0.0662	0.0617
2009	0.0869	0.0657	0.0600
2010	0.0864	0.0650	0.0551
2011	0.0856	0.0639	0.0533
2012	0.0873	0.0652	0.0582
2013	0.0896	0.0670	0.0586
2014	0.0904	0.0689	0.0556
2015	0.0897	0.0698	0.0607
2016	0.0857	0.0637	0.0563

- 14.1. Please provide Table 1 and Table 2 dating back 20 years.
- 14.2. The CEC notes that CTS UPC peak for RS 1 has declined modestly while RS 2 and 3 have increased slightly. Does FEI expect these trends to continue? Please explain.
- 14.2.1. If yes, does FEI consider these impacts to be significant? Please explain why or why not.

**15. Reference: Exhibit B-4, CEC 1.59.4 and 1.59.5**

59.4 Please outline the circumstances under which FEI's demand forecast for LNG would not materialize.

**Response:**

Generally speaking, the LNG demand forecasts would not materialize as modelled in the LTGRP if the key marine transportation markets, which make up the large bulk of the long term LNG demand, do not adopt LNG as a maritime fuel. Furthermore, if LNG does become a fuel of choice for the maritime sector but other bunkering (i.e. marine fueling) hubs develop LNG fueling capability for marine vessels before FEI, this could also impact the adoption of LNG sourced from BC.

In terms of LNG demand for all market segments, if the economic price spread between incumbent fuels (i.e. diesel/marine gas oil/marine fuel oil) and natural gas reduces to a level where the economic justification to adopt natural gas as a fuel no longer exists, this could also potentially jeopardize the adoption of natural gas as a fuel more generally across all various market segments.

59.5 If the LNG demand does not materialize, will FEI still construct future phases of Tilbury LNG expansion? Please explain.

**Response:**

Future phases of Tilbury LNG expansions will be assessed with greater scrutiny when the volume of customer demand surpasses the availability of LNG with the facilities currently being put into service at Tilbury.

- 15.1. What are the advantages and disadvantages to ratepayers of having LNG supplied by FEI as opposed to other bunkering hubs?
- 15.2. What are the advantages and disadvantages to FEI shareholders of having LNG supplied by FEI as opposed to other bunkering hubs.
- 15.3. Does FEI consider that development of LNG expansions would influence the adoption of FEI as a maritime fuel? Please explain.
- 15.4. Please identify the other bunkering hubs that could develop LNG fueling before FEI?
  - 15.4.1. Does FEI consider itself in competition with these hubs?
    - 15.4.1.1. If yes, please provide a brief explanation as to how FEI plans to compete with these hubs.

- 15.5. How will FEI ensure that there is no premature development of LNG facilities? Please provide a brief discussion.
- 15.6. Please provide analysis for FEI's existing LNG facilities, showing degree of utilization over time to demonstrate when they have become or will become fully used and useful.
- 15.7. Please provide evidence to support the appropriate economics for building LNG facilities in advance of market for marine hub bunkering.