bcuc
British Columbia
Utilities Commission

Patrick Wruck
Commission Secretary

Commission.Secretary@bcuc.com
bcuc.com

Suite 410, 900 Howe Street
Vancouver, BC Canada V6Z 2N3
P: 604.660.4700
TF: 1.800.663.1385
F: 604.660.1102

June 9, 2017

Sent via eFile

FEI 2016 RATE DESIGN
EXHIBIT A2-5

To: All Registered Parties

Re: FortisBC Energy Inc. – 2016 Rate Design Application – Project No. 3698899 – Elenchus Research Associates, Inc. Response to Information Requests

Commission staff submit the following document for the record in this proceeding:

Elenchus Research Associates, Inc.
Response to British Columbia Utilities Commission Information Request
dated June 9, 2017

Sincerely,

Original signed by Katie Berezan for:

Patrick Wruck
Commission Secretary

ES/kbb
Enclosure

1.0 **Reference: COST ALLOCATION THEORY/OVERVIEW**
Exhibit A2-2, Section 2, p. 5
Frequency of COSA studies

On page 5 of Exhibit A2-2, Elenchus Research Associates Inc. (Elenchus) states: "The frequency with which COSA studies are updated varies across jurisdictions and is typically linked to the rate setting process. Updates are typically expected at least every five years."

Elenchus further explains that Union Gas Limited conducts a cost of service study every five years, Enbridge Gas Distribution conducts a cost of service study every year, and ATCO Gas' most recent cost of service studies are from 2008/2009 and 2011/2012 general rate applications.

1.1 Please explain the benefits and disadvantages of performing a full cost of service allocation (COSA) study every five years as opposed to less frequently, for example every 10 years or longer.

RESPONSE:

As stated in Elenchus report, Exhibit A2-2, Section 2, page 5, lines 13 to 15, the frequency with which COSA studies are updated is typically linked to the rate setting process.

The **benefit** of performing a full COSA study every five years instead of every 10 years or longer is that if circumstances change, the change can be reflected in the COSA study sooner rather than later, customer rates can be set based on costs causality principles reflecting more up to date circumstances and this would reduce the probability that some customer classes may be subsidizing other customer classes. Example of changes can be:

- customer class load profiles change resulting from demand management initiatives;
- loss/addition of customers reflecting economic activity change;
- utility standards on assets used to provide services to customers; and
- utility expenditures priorities.

The **disadvantage** of performing COSA studies every five years instead of every 10 years or longer is that it is a resource intensive exercise that may not produce significantly different results, since utility circumstances may not have changed significantly since the last COSA study was performed.

In balancing the advantages and disadvantages, a key consideration is the stability of the factors that may impact significantly on the COSA results. If industry change is anticipated, more frequent updates would be justified.

2.0 Reference: COST ALLOCATION THEORY/OVERVIEW
Exhibit A2-2, Section 2, p. 5; Section 4.5.10, p. 22
COSA using Historical Actual versus Approved Forecast figures

On page 5 of Exhibit A2-2, Elenchus states that "[c]ost of service allocation studies can be done using historical actual data or using future test year data."

On page 22 of Exhibit A2-2, Elenchus explains that "…AUC directed gas utilities to set going-in rates on the basis of a notional year revenue requirement using actual costs experienced…"

2.1 Please explain the advantages and disadvantages of developing a COSA study based on (i) the most recent historical data; and (ii) the most recently approved forecast data. Please highlight the similarities and discuss differences between the two approaches.

RESPONSE:

The **advantages** of using the most recent historical data are that the data are readily available to the utility and reflects actual operating circumstances.

The **disadvantages** of using the most recent historical data are that if there were unique events reflected in the most recent historical data, (e.g. damaging storm), it would not reflect a typical operating year for the utility. Also some of the actual expenses may not reflect prudent investment or maintenance of assets in future years.

The **advantages** of using the most recently approved forecast year are that the operating assets and expenses for the forecast year have been reviewed and approved by the Regulator and would reflect normal operating conditions for the utility, excluding one time non-recurring events.

The **disadvantage** of using the most recently approved forecast year is that the expected operating conditions in the forecast year may not materialize and actual operating expenditures may be different than what was forecasted.

In the event that a COSA study is undertaken in conjunction with a regulatory review of the future test year revenue requirement, the approved COSA methodology can be rerun based on the approved revenue requirement to ensure consistency prior to setting final rates for the test year.

CHAPTER 4 – FEI'S COST ALLOCATION METHODOLOGY

3.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit B-1, Section 6.3.4.4, pp. 6-14 to 6-15;
Exhibit A2-2, Section 4.1.3, p. 10
Mt. Hayes LNG Storage and LNG facility cost allocation

On page 6-14 of Exhibit B-1, FEI states:

> The existing Tilbury LNG Storage facility … serves as a needle peaking resource to support the CTS's [Coastal Transmission System] ability to meet customer requirements on extreme cold days. The Tilbury LNG Storage facility also supports transmission and distribution operations during maintenance and repair activities, emergency outages and supply constraints. … Mt. Hayes LNG Storage has a separate function from Tilbury LNG Storage. … The Mt. Hayes LNG facility has a dual purpose of serving as (1) a gas supply storage facility and (2) a transmission facility which provides additional transmission system capacity to serve customers in the same fashion that pipeline looping and compression provide such capacity.

On pages 6-14 and 6-15 of Exhibit B-1, FEI states:

> The cost of the Mt. Hayes LNG facility … is allocated to all sales and transport customers on a peak day demand basis. … In this manner, all sales customers receive an allocation of the Mt. Hayes facility through the midstream charge and the transmission delivery component of the cost of service through their delivery charge. Transportation customers receive an allocation through the transmission delivery component through their delivery charge as well.

On page 10 of Exhibit A2-2, Elenchus states in regard to the allocation of the Mt. Hayes LNG Storage costs:

> This facility has a dual purpose of serving as a gas supply storage facility and a transmission facility which provides additional transmission system capacity to serve customers and FEI in the COSA study reclassified a portion of Mt. Hayes costs to the transmission function. This treatment is unusual. Elenchus is not aware of analogous methodologies being used in Canada in allocating the costs of storage or LNG to customer classes. However, it is Elenchus understanding that this unique treatment reflects the unique role that Mt. Hayes LNG Storage serves in the FEI system. Storage is more typically a purely midstream asset, but

Mt. Hayes LNG Storage also provides benefit to the downstream gas distribution system. Consequently, it is appropriate to reflect the multi-faceted role of the facility in the cost of service allocation methodology.

3.1 Please explain what Elenchus has found to be the usual treatment of on-system storage facilities in the COSA studies of other natural gas distribution utilities. Where possible, please provide examples with explanations to support your response.

RESPONSE:

FEI's treatment of Mt. Hayes LNG storage is unusual in the way that the related costs are separated into storage and transmission components and the cost are allocated accordingly. The storage component costs are estimated based on avoided cost of third party storage and transportation and are allocated to Sales customers based on peak day demand in the Cost of Gas model. The transmission component costs are allocated to Sales and Transport customers based on peak day demand in the delivery COSA model.[1]

For other utilities, the on-system storage facilities are functionalized based on the purpose of each facility.

Specifically, for Union, some facilities in the Dawn compression and storage pool that have been installed solely for transmission purposes are functionalized as transmission while other facilities used solely for the provision of storage services are assigned to the storage function[2]. For example, interconnect, compressor, and line extension are functionalized as transmission while storage lines, wells, outboard storage compression and dehydration assets are functionalized as storage. The configuration of Union's storage facilities differs from Mt. Hayes in that Union has several storage facilities located in the Dawn area that are connected to its transmission system. It is therefore feasible to use different facilities for different purposes based on the characteristics of each facility. Mt. Hayes is a single facility that serves multiple functions.

For Enbridge, the Tecumseh gas storage costs are functionalized based on details provided in the accounting system[3]. The Tecumseh gas storage configuration differs from Mt. Hayes in that Tecumseh is not integrated with the Enbridge distribution system.

For ATCO, the storage function was removed because of the removal of carbon related assets from rate base[4]. The storage facilities are much more extensive than Mt. Hayes,

[1] Exhibit B-1, Section 6, page 6-15.
[2] OEB EB-2011-0210 Exhibit G3, Tab 1, Schedule 1, page 3 and 4 of 18.
[3] OEB EB-2016-0215 Exhibit G2, Tab 1, Schedule 1, page 23 of 28.
[4] AUC Decision 2010-496 (October 19, 2010).

which implies that different treatment is required for consistency with the principle of basing cost allocation on cost causality.

CHAPTER 4 – FEI'S COST ALLOCATION METHODOLOGY

3.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit B-1, Section 6.3.4.4, pp. 6-14 to 6-15;
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Mt. Hayes LNG Storage also provides benefit to the downstream gas distribution system. Consequently, it is appropriate to reflect the multi-faceted role of the facility in the cost of service allocation methodology.

3.2 If the Tilbury LNG Storage facility also served a multi-faceted role in the future, which included serving as a gas supply storage facility to some degree, would Elenchus consider FEI's allocation of the Tilbury LNG Storage and Mt. Hayes LNG Storage facilities in the COSA model to be inconsistent and require an update? Please elaborate.

RESPONSE:

If in the future the use of the Tilbury LNG Storage facility changes and FEI uses it in a similar fashion as FEI uses the Mt. Hayes facility, (e.g. dual purpose), then it is Elenchus view that the COSA study should be updated and should reflect the change in use of the Tilbury LNG Storage.

The allocation of a utility assets and expenses in a COSA study should reflect how the assets and expenses are used to serve classes of customers based on cost causality principles. Storage and transmission services are not be used in the same way to serve customers since different customer classes have different load profiles that require a different mix of storage and transmission. The COSA allocated costs to classes in a manner that reflects the unique requirements of each customer class.

4.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
National Association of Regulatory Commissioners (NARUC), Electrical Utility Cost Allocation Manual, January 1992 (Cost Allocation Manual), p. 95[1] Minimum System Study

Page 95 of the NARUC Cost Allocation Manual, January 1992, states:

> The results of the minimum-size method can be influenced by several factors. The analyst must determine the minimum size for each piece of equipment: "Should the minimum size be based upon the minimum size equipment currently installed, historically installed, or the minimum size necessary to meet safety requirements?" The manner in which the minimum size equipment is selected will directly affect the percentage of costs that are classified as demand and customer costs.

4.1 Please provide the advantages and disadvantages of minimum system studies based on each of the following:

i. The minimum main size of mains currently being installed;
ii. The minimum main size of mains historically installed; or
iii. The minimum main size of mains necessary to meet safety requirements.

RESPONSE:

In the discussion of the Minimum System method, the NARUC Manual makes reference to the "load-carrying capability" of minimum system facilities but does not discuss the Peak Load Carrying Capacity (PLCC) adjustment. The PLCC adjustment should adjust by the appropriate lamount of load carrying capacity that is implied by the different methods. Hence, although the three approaches imply different amounts of load carrying capacity that should be viewed as demand-related rather than customer-related costs, after making the PLCC adjustment the differing amounts of capacity will be removed.

Elenchus considers the minimum system methods to be conceptually equivalent after the PLCC adjustment is made. While there may be small mathematical differences in the results if the three methods were applied to the FEI system, Elenchus is not aware of any reason to consider one approach superior to the others; hence, there are no advantages or disadvantages when the PLCC adjustment is made. FEI makes the PLCC adjustment for the minimum system method.

[1] http://pubs.naruc.org/pub/53A3986F-2354-D714-51BD-23412BCFEDFD

4.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
National Association of Regulatory Commissioners (NARUC), Electrical Utility Cost Allocation Manual, January 1992 (Cost Allocation Manual), p. 95[1] Minimum System Study

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4.2 Which of the three methods listed in the previous question is normally used to prepare minimum system studies in other jurisdictions?

RESPONSE:

Based on Elenchus experience, utilities that apply the minimum system method to classify distribution mains between customer and demand related use the size of mains currently being installed.

As noted in the response to BCUC IR 4.1, when the PLCC adjustment is made, the three methods can be considered equivalent. In Elenchus view, the key consideration should be the availability of appropriate cost data. It is Elenchus understanding that costs related to mains currently being installed are readily available accurate.

[1] http://pubs.naruc.org/pub/53A3986F-2354-D714-51BD-23412BCFEDFD

5.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit A2-2, Section 4.2.4, p. 15;
Exhibit B-1, Appendix 6-5, p. 1; Appendix 6-5, Table 1, p. 2;
Appendix 6-6, p. 3 Minimum size used in the Minimum System Study

On page 15 of Exhibit A2-2, Elenchus states: "Elenchus reviewed the MSS and PLCC adjustment study done by FEI and agrees with how FEI has conducted the study and used the results."

On page 1 of Exhibit B-1, Appendix 6-5, FEI states: "…FEI's mains at the minimum standard size and material [is] (60mm PE)."

Table 1 on page 2 of Appendix 6-5 of Exhibit B-1 shows the MSS results for FEI's entire distribution system. Table 1 shows that FEI has:

- 9,344,973 meters of 60 mm diameter mains in the distribution system, and
- 8,176,149 meters of 42 mm diameter mains in the distribution system.

On page 3 of Exhibit B-1, Appendix 6-6, FEI states:

> Effective Nov 3, 2008 (per IB 2008-43 Elimination of 88 mm PE pipe and restricted use of 42 mm PE Pipe) 88 mm PE is no longer being used for new installations and 42 mm PE will be restricted to single services without branches. <u>Where these 88 mm and 42 mm material would have been selected in the past</u> the next larger pipe size, 114 mm and 60 mm respectively, must be used. [Emphasis added]

5.1 Please explain why Elenchus agreed with FEI's use of 60 mm mains as the minimum size in the MSS study, given FEI's MSS results as shown in the preamble and also given that FEI's design standards allow the use of 42 mm mains in certain circumstances, for single services without branches.

<u>RESPONSE:</u>

Based on FEI's evidence, Elenchus understands that the standard smallest size mains currently being installed is 60 mm. 42 mm mains size, based on FEI's evidence, can be used in limited circumstances. Given the restricted use of 42 mm pipe, Elenchus considers the 60 mm to be an appropriate minimum system standard.

Elenchus also notes that FEI utilizes the PLCC adjustment to recognize the load carrying capacity of the minimum pipe. This adjustment minimizes the impact of the choice of minimum pipe size on the overall COSA result.

Also see the responses to BCUC IR 4.1 and 4.2.

The Minimum System study is a theoretical exercise used to classify mains between customer and demand related comparing the smallest main currently being installed by the utility with the replacement costs of all mains. The ratio of the smallest to the replacement is the customer portion of mains used in a COSA study. The Minimum System study is not a scientifically precise study, simplifying assumptions are usually made in order to make the study easier to conduct and to understand.

5.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit A2-2, Section 4.2.4, p. 15;
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5.2 Please explain if and how the total installed length (quantity) of each of the different size mains in the distribution network has an impact on the minimum size typically used in a Minimum System Study.

<u>RESPONSE:</u>

The total installed length of the different size mains in the distribution network has no impact on the minimum size used in a Minimum System Study. The total installed length of each of the different sizes will only affect the proportion of total costs that are allocated as customer related. Larger mains will have a larger proportion of capacity-related costs.

6.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit A2-2, Section 4.2.4, pp. 14–15
Minimum System Study and Peak Load Carrying Capacity Updates

On page 14 of Exhibit A2-2, Elenchus states: "Union gas uses the minimum system method to classify mains into demand and customer related. ATCO also uses minimum system method to classify costs of distribution mains."

On page 15 of Exhibit A2-2, Elenchus states:

> These studies [MSS and PLCC] are typical reviewed and updated periodically but typically not with every COSA update. MSS and PLCC reviews are only required when there is reason to believe that the latest study needs to be updated, for example if the distribution asset minimum standards change.

6.1 Please state the year in which the MSS for (i) Union Gas; and (ii) ATCO was most recently reviewed and updated and provide the reason(s) for the update of each utility's MSS.

RESPONSE:

For Union Gas, the minimum plant method of classifying distribution costs was reviewed in 2011 as part of Union's 2013 Cost of Service Application[1].

ATCO Gas updated its distribution mains classification using 42 mm pipe instead of 26 mm[2] as the minimum system size in Minimum Plant method in its 2008-2009 General Rate Application – Phase II filling[3].

[1] OEB EB-2011-0210.
[2] AUC Decision 2010-291 (June 25, 2010), page 25.
[3] Note that the Negotiated Settlement from ATCO 2008-2009 GRA-Phase II resulted in a negotiated classification of 35% customer and 65% demand, which was adopted in ATCO 2011-2012 GRA Phase II.

6.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
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> These studies [MSS and PLCC] are typical reviewed and updated periodically but typically not with every COSA update. MSS and PLCC reviews are only required when there is reason to believe that the latest study needs to be updated, for example if the distribution asset minimum standards change.

6.2 Please provide additional examples of scenarios where Elenchus would expect the MSS and PLCC to be reviewed and updated.

RESPONSE:

The only additional example of where Elenchus would expect the Minimum System Study and PLCC to be reviewed and updated would be if the utility is directed by its Regulator to conduct the study.

As stated in Elenchus report, the only circumstances under which Elenchus expects Minimum System Studies to be reviewed and updated, other than by directive from the Regulator, are: as part of a COSA study update and/or if the distribution standards used by the utility have changed since the last Minimum System Study was conducted and/or if there is an engineering or technological innovation (e.g., in trenching methods) that significantly alter the typical installed cost of new mains.

7.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit A2-2, Section 4.4, p. 18;
Exhibit B-1, Section 10.2.3.1, p. 10-6;
FortisBC Midstream Inc. Application for Approval of the Acquisition of the Shares of Aitken Creek Gas Storage ULC, Order G-39-16 dated March 18, 2016;[1]
FEI 2017 All-Inclusive Code of Conduct and Transfer Pricing Policy proceeding, Exhibit B-2, Section 3.1, Figure 1, p. 9;[2]
Storage and Transport

On page 18 of Exhibit A2-2, Elenchus states:

> Storage and transport costs are incurred by FEI in order to satisfy sales customers demand on a daily basis and the pipeline system stays in balance on a daily basis. The storage and transport resources that FEI has in place are to meet design day and design year conditions, and are secured in an open and competitive marketplace.

On page 10-6 of Exhibit B-1, FEI discusses its gas supply resources used to meet the demand of sales customers and indicate that Aitken Creek is a storage resource. FEI states: "… Resources such as storage are deployed as required depending upon the type of storage contract and weather conditions. Storage contracts with a longer duration of deliverability (i.e., Aitken Creek) are used sooner to provide supply into the System …"

Commission Order G-39-16 approved the acquisition of all of the issued and outstanding shares of Aitken Creek Gas Storage ULC by FortisBC Midstream Inc. (FMI) In addition, page 3 of the reasons attached to G-39-16 state: "FMI is a wholly owned subsidiary of FortisBC Holdings Inc. (FHI), which is a wholly owned subsidiary of Fortis Inc."

Figure 1 on page 9 of Exhibit B-2 of the FEI 2017 All-Inclusive Code of Conduct and Transfer Pricing Policy proceeding shows that both FMI and FEI are subsidiaries of FortisBC Holdings Inc.

7.1 Please explain if the information regarding FEI and Aitken Creek being affiliates, and that FEI contracts storage resources from Aitken Creek has any impact on Elenchus' statement as quoted in the preamble above.

[1] http://www.ordersdecisions.bcuc.com/bcuc/orders/en/item/143037/index.do?r=AAAAAQAHZy0zOS0xNgE
[2] http://www.bcuc.com/ApplicationView.aspx?ApplicationId=537

RESPONSE:

Elenchus understands that the ownership structure has no impact on how the Aiken Creek storage facilities are utilized by FEI; hence, the way in which the associated costs are caused by customer classes will not be affected. It is also Elenchus' understanding that the services provided by Aitken Creek to FEI are valued based on what it would costs FEI to secure the same services from external parties. Based on this understanding, Elenchus would not expect that the affiliate relationship will have an impact on the way costs are allocated in the COSA.

8.0 Reference: FEI'S COST ALLOCATION METHODOLOGY
Exhibit A2-2, Section 4.5.10, p. 22
Tilbury Expansion Project

On page 22 of Exhibit A2-2, Elenchus states:

> The 10 year horizon used by FEI in its COSA study to reflect the impact of the Tilbury Expansion project is <u>not consistent with standard practice</u>. Utilities undertake new investments on an ongoing basis and as a result the revenue requirement in any year includes costs for older assets that have a diminished impact on the total revenue requirement as well as new assets that have a <u>high initial impact</u>. Except in extraordinary cases, it would be inconsistent to levelize the costs of a single project while not levelizing the costs associated with other investments. Elenchus is not aware of any unique aspects of the Tilbury Expansion Project that make its impact on customers generally, or any class of customers, that justify exceptional treatment of this project in the form of levelizing its costs for purposes of the COSA. [Emphasis Added]

8.1 Please explain the standard practice for treatment of large projects, such as the Tilbury Expansion project, in COSA studies. In your response, please elaborate on whether or not it is normal to levelize the costs.

<u>RESPONSE:</u>

Elenchus experience is that once a utility has received regulatory approval for the costs of large capital projects, the standard practice is to include the capital cost of the new facility in its rate base and include in its revenue requirement the: a) amortization/ depreciation of the project, b) return on investment, c) operation and maintenance expense related to the ongoing use of the project, and d) any revenues collected from the project for additional services provided if applicable.

Once the project is in the utility rate base and revenue requirement it would be treated in a COSA study similarly to the treatment of other assets and expenses. Cost causality principles would be identified in order to classify and allocated the project assets and expenses to customer classes reflecting costs causality. The costs and revenues for the project would be for the test year, in dollars of the year and would not be levelized.

This approach does not normally involve levelizing the costs.

8.1.1 If possible, please provide an example from another jurisdiction to support your response to the previous question.

RESPONSE:

For example, the OEB approved Enbridge's forecast revenue requirements for 2016, 2017 and 2018 for the Greater Toronto Area (GTA) project and the proposed cost allocation method based on cost causality principles[1].

[1] OEB EB-2012-0451, Decision and Order (January 30, 2014).

CHAPTER 6 – REVENUE TO COST RATIO AND MARGIN TO COST RATIO

9.0 Reference: REVENUE TO COST RATIO AND MARGIN TO COST RATIO
Exhibit B-1, Section 6.1, p. 6-1; Section 6.2, p. 6-2, Section 6.2.1.4, p. 6-5; Section 6.5.2, p. 6-34; Appendix 6-1, p. 27;
Exhibit A2-2, Section 6.1.1, pp. 28–29
Use of the R:C ratio versus the M:C ratio range of reasonableness

On page 28 of Exhibit A2-2, Elenchus states: "[t]he revenue to cost ratio is calculated by dividing total revenue from the rate schedule by the total allocated cost of delivery plus storage and transport and gas."

On page 6-34 of Exhibit B-1, FEI states that: "… [g]as and storage and transport costs are excluded from both the numerator and denominator when calculating the M:C ratios."

On page 28 of Exhibit A2-2, Elenchus further states:

> The definition of R:C and M:C ratios implies that the calculated R:C ratio range would always be less than the calculated M:C ratio range. Specifically, the M:C ratio would be less than the calculated R:C ratio for the same rate schedule if the R:C ratio is less than 1.00 and the M:C ratio would be greater than the calculated R:C ratio for the same rate schedule if the R:C ratio is greater than 1.

9.1 Please explain if Elenchus considers that the use of an R:C ratio range of 0.90 to 1.10 (+/- 10%) for rebalancing is equivalent to the use of a M:C ratio range of the same 0.90 to 1.10 (+/- 10%). For your response, please take into consideration:

i. FEI's explanation of R:C ratios on pages 6-1, 6-2 and 6-5 of Exhibit B-1;
ii. FEI's explanation of M:C ratios on page 6-34 of Exhibit B-1; and
iii. Elenchus' statement on R:C and M:C ratios in the preamble.

RESPONSE:

Elenchus considers that the use of an R:C ratio range of 0.90 to 1.10 for rebalancing is an alternative to the use of a M:C ratio range of 0.90 to 1.10. For the ranges to be equivalent in terms of the results that imply a need for rate rebalancing, the R:C ratio range would have to be narrower than the equivalent M:C ratio range. However, since the equivalence depends on the ratio of margin costs to total costs, and that ratio differs across classes, it would not be possible to define an equivalent range that can be applied to all classes to produce identical results in terms of when to rate rebalance.

Nevertheless, while the methods are mathematically different, they are equivalent in that they represent alternative approached to defining a range of reasonableness for the deviation for rates that generate revenues that exactly equal allocated costs. In essence, the two approach are equivalent in the sense that in appropriate circumstances, either approach may be reasonable, just as different ranges (0.9 to 1.1 or 0.95 to 1.05) can be considered equivalent, but different. Neither can be considered to be more or less appropriate in general; either may be preferred in a particular fact situation.

CHAPTER 6 – REVENUE TO COST RATIO AND MARGIN TO COST RATIO

9.0 Reference: REVENUE TO COST RATIO AND MARGIN TO COST RATIO
Exhibit B-1, Section 6.1, p. 6-1; Section 6.2, p. 6-2, Section 6.2.1.4, p. 6-5; Section 6.5.2, p. 6-34; Appendix 6-1, p. 27;
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On page 6-34 of Exhibit B-1, FEI states that: "… [g]as and storage and transport costs are excluded from both the numerator and denominator when calculating the M:C ratios."

On page 28 of Exhibit A2-2, Elenchus further states:

> The definition of R:C and M:C ratios implies that the calculated R:C ratio range would always be less than the calculated M:C ratio range. Specifically, the M:C ratio would be less than the calculated R:C ratio for the same rate schedule if the R:C ratio is less than 1.00 and the M:C ratio would be greater than the calculated R:C ratio for the same rate schedule if the R:C ratio is greater than 1.

9.2 Based on FEI's explanation of R:C and M:C ratios and Elenchus' statement on R:C and M:C ratios in the preamble, please explain if an R:C ratio range should be greater (wider) than a M:C ratio range in order for both to be applied in an equivalent manner during rate design.

RESPONSE:

As noted in the response to BCUC IR 9.1, since the equivalence between the two approaches to refining a range of reasonableness depends on the ratio of margin costs to total costs, and that ratio differs across classes, it would not be possible to define R:C and M:C ranges that are exactly equivalent in terms of indicating when rate rebalancing should be considered.

It is Elenchus' views that one method should be considered to be the primary basis for determining when rate rebalancing is to be considered and the second measure, if used, would be considered to be for informational purposes only. It is conceivable, for example, that a decision on the whether rebalancing should be spread over two or more years could be influenced by the additional information.

CHAPTER 6 – REVENUE TO COST RATIO AND MARGIN TO COST RATIO

9.0 Reference: REVENUE TO COST RATIO AND MARGIN TO COST RATIO
Exhibit B-1, Section 6.1, p. 6-1; Section 6.2, p. 6-2, Section 6.2.1.4, p. 6-5; Section 6.5.2, p. 6-34; Appendix 6-1, p. 27;
Exhibit A2-2, Section 6.1.1, pp. 28–29
Use of the R:C ratio versus the M:C ratio range of reasonableness

On page 29 of Exhibit A2-2, Elenchus states:

> For ATCO, the Alberta Energy and Utilities Board (now AUC) noted that revenue to costs ratios within a target range of 0.95 to 1.05 are generally considered to be appropriate. … The usual revenue to cost range of acceptable ratios that Elenchus has observed is between 0.90 and 1.10 or a narrower range of 0.95 to 1.05. A narrower range of 0.95 to 1.05 is usually used by regulators and utilities in instances when there is good load and costing data available to be used in a COSA study and the utility and regulator have had experience and history in using COSA studies in order to set rates.

9.3 Please explain how a utility can determine if it has good load and/or costing data.

RESPONSE:

A utility will have good load data if it has good load profile information for each customer class. Accurate load profile information requires either advanced metering that enables the utility to determine coincident and non-coincident peak values based on metered demand, or else load research based on a program that has been undertaken in a statistically valid manner (i.e., large enough sample, randomly distributed across regions, customers, etc.).

Good costing data is based on an appropriately designed system of accounts that facilitates detailed functionalization, classification and allocation, as well as strict procedures for ensuring that all financial information is accurately and systematically recorded.

CHAPTER 6 – REVENUE TO COST RATIO AND MARGIN TO COST RATIO

9.0 Reference: REVENUE TO COST RATIO AND MARGIN TO COST RATIO
Exhibit B-1, Section 6.1, p. 6-1; Section 6.2, p. 6-2, Section 6.2.1.4, p. 6-5; Section 6.5.2, p. 6-34; Appendix 6-1, p. 27;
Exhibit A2-2, Section 6.1.1, pp. 28–29
Use of the R:C ratio versus the M:C ratio range of reasonableness

9.4 Please explain if Elenchus considers that FEI has good load and costing data? At a minimum, please take into consideration the data included in:

i. FEI 2016 Rate Design Application Proceeding, Exhibit B-3, COSA Models;
ii. FEI 2016 Annual Review for 2017 Deliver Rates Proceeding, Exhibit B-2, Appendix A;[1] and
iii. FEI 2016 Annual Review for 2017 Deliver Rates Proceeding, Exhibit B-2-1.[2]

RESPONSE:

Elenchus' expects that FEI's data quality is similar to the data quality of other utilities. FEI has been operating in a regulated environment for many years, its evidence has been subject to review by the Regulator, Stakeholders have had opportunities to review FEI's data and FEI's data has been accepted for Cost Allocation and Rate Design purposes.

Elenchus' would not be in a position to offer a more substantive opinion unless it were to conduct a detailed audit of FEI's load research and also of its accounting procedures. These types of audits are not within the area of expertise of the project team and are beyond the scope of work for this retainer.

[1] http://www.bcuc.com/ApplicationView.aspx?ApplicationId=556
[2] Ibid.

CHAPTER 6 – REVENUE TO COST RATIO AND MARGIN TO COST RATIO

9.0 Reference: REVENUE TO COST RATIO AND MARGIN TO COST RATIO
Exhibit B-1, Section 6.1, p. 6-1; Section 6.2, p. 6-2, Section 6.2.1.4, p. 6-5; Section 6.5.2, p. 6-34; Appendix 6-1, p. 27;
Exhibit A2-2, Section 6.1.1, pp. 28–29
Use of the R:C ratio versus the M:C ratio range of reasonableness

9.5 Please state, to the best of your ability, the most recent revenue to cost ratio utilized by the natural gas utilities identified in the EES jurisdictional review of rates, included on page 27 of Exhibit B-1, Appendix 6-1:

i. Pacific Northern Gas (PNG)
ii. AltaGas Utilities Inc. (AltaGas)
iii. SaskEnergy Incorporated (SaskEnergy)
iv. Manitoba Hydro (Centra Gas)
v. Union Gas Ltd. (Union)
vi. Enbridge Gas Distribution Inc. (Enbridge)
vii. Gaz Métro
viii. Gazifere
ix. Puget Sound Energy
x. Avista
xi. Northwest Natural

RESPONSE:

Please refer to Table 1 for the most recent revenue to cost ratio utilized by the natural gas utilities identified in the EES jurisdictional review of rates. Information for Gaz Metro and Gazifere have not been utilized because documents related to their applications on Regie du lodgement website are only available in French. Northwest Natural is not included in the table because its cost of service study was based on marginal cost rather than embedded cost.

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Table 1. Jurisdictional Review of Revenue to Cost Ratio

PNG[1]	R:C ratio	AltaGas[2]	R:C ratio	SaskEnergy[3]	R:C ratio
Residential Sales	.72	Rate 1/11 - Small General Service	0.99	Residential	0.99
Commercial Sales	.64	Rate 2/12 - Large General Service (Optional	1.03	Commercial Small	1.02
Commercial Transportation	1.27	Rate 3/13 - Demand General Service (Optional)	1.04	Commercial Large	1.03
Small Industrial Sales	.80	Rate 4/14 - Irrigation Pumping Service (Optional)	1.03	Small Industrial	1.03
Small Industrial Transportation	.95				
Methanex Firm	1.21				
Methanex Interruptible	1.82				
Skeena Firm	1.21				

[1] PNG 1998 Revenue Requirements Application and 1998 Cost of Service Allocation/Rate Design Study, BCUC Order No. G-53-98, page 20.
[2] AltaGas 2013-2017 Performance Based Regulation Phase II, page 14.
[3] SaskEnergy Incorporated Rate Application - 2016, slide 19.

PNG[1]	R:C ratio	AltaGas[2]	R:C ratio	SaskEnergy[3]	R:C ratio
Skeena Interruptible	9.97				
Eurocan Firm	1.21				
Eurocan Interruptible	10.98				
Alcan Firm	1.21				
Alcan Interruptible	11.68				
R:C Ratio Range of Reasonableness	0.9 to 1.1		0.95 to 1.05		0.95 to 1.05

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Table 1. Jurisdictional Review of Revenue to Cost Ratio (Cont'd)

Manitoba Hydro	R:C ratio	Union[4]	R:C ratio	Enbridge[5]	R:C ratio
Centra has prepared its Cost Allocation Study with a revenue to cost ratio of one in its 2013/14 General Rate Application.[6]		R01 - Bundled Direct Purchase Contract Rate	1.0	Rate 1 – Residential	1.00
		R10 - Large Volume General Firm Service	1.0	Rate 6 - Commercial and Industrial	1.00
		R20 - Medium Volume Firm Service	1.0	Rate 9 – ABC-T Customers	0.24
		R25 - Large Volume Interruptible	1.0	Rate 100 – Firm Contract Service	0.00
		R100 - Large Volume High Load Factor Firm Service	0.70	Rate 110 – Large Volume Load Factor Service	0.94
		M12 - Firm Transportation	0.984	Rate 115 – Large Volume High Load Factor Service	0.91

[4] Union Gas Limited Exhibit List H 2012, Order EB-2011-0210, page 320 of 479.
[5] Enbridge 2014 Cost Allocation Methodology 2013, Order EB-2012-0459, page 6 of 63.
[6] Centra Gas Manitoba Inc. 2013/14 General Rate Application, Appendix 15.2, page 2 of 5.

Manitoba Hydro	R:C ratio	Union[4]	R:C ratio	Enbridge[5]	R:C ratio
		M13 - Transportation of Locally Produced Gas	1.47	Rate 125 – Extra Large Firm Distribution Service	1.01
		M16 - Storage and Transportation Services Transportation	1.35	Rate 135 – Seasonal Firm Service	0.78
		C1 - Cross Franchise Transportation	2.61	Rate 145 – Interruptible Service	0.74
				Rate 170 – Large Interruptible Service	0.76
				Rate 200 – Wholesale Service	1.04
				Rate 300 – Firm or Interruptible Distribution Service	0.54

Manitoba Hydro	R:C ratio	Union[4]	R:C ratio	Enbridge[5]	R:C ratio
				Rate 325 & 330 – Transmission, Compression and Pool Storage Service	1.00
R:C Ratio Range of Reasonableness	***Unity***		***Close to Unity*** ***Utilities are required to include a comparison of the most recent OEB approved revenue-to-cost ratios and the ratios proposed for the test year in their applications, and provide a summary of any significant changes proposed to revenue-to-cost ratios.***		***Close to Unity*** ***Utilities are required to include a comparison of the most recent OEB approved revenue-to-cost ratios and the ratios proposed for the test year in their applications, and provide a summary of any significant changes proposed to revenue-to-cost ratios.***

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Table 1. Jurisdictional Review of Revenue to Cost Ratio (Cont'd)

Puget Sound Energy[7]	R:C ratio	Avista[8]	R:C ratio
Residential	0.98	General Service	0.83
Commercial & Industrial	0.96	Large General Service	1.83
Large Volume	1.24	Ex. Lg. General Service	1.90
Interruptible	1.21	Interruptible Sales Service	1,54
Limited Interruptible	1.57	Transportation Service	0.83
Non-exclusive Interruptible	0.87		
Special Contracts	0.73		
Rentals	1.97		
R:C Ratio Range of Reasonableness	***Desire to move toward full parity over time***		***N/A***

[7] PSE 2011 PSE General Rate Case, Phelps Testimony, Docket No. UG-111048 – UG-111049, page 26 of 39.
[8] Avista Direct Testimony of Patrick D. Ehrbar, Docket No. UE-150204 – UG-150205, page 20.