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October 2, 2015

**Via Email**
**Original via Mail**

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

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

**Re: FortisBC Energy Inc. (FEI)**

**2015 System Extension Application (the Application)**

**Response to the Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 1**

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On June 30, 2015, FEI filed the Application referenced above. In accordance with Commission Order G-143-15 setting out the Amended Regulatory Timetable for the review of the Application, FEI respectfully submits the attached response to CEC IR No. 1.

If further information is required, please contact Brent Graham at 604-592-7857.

Sincerely,

**FORTISBC ENERGY INC.**

***Original signed by: Ilva Bevacqua***

***For:*** Diane Roy

Attachments

cc: Commission Secretary
Registered Parties (e-mail only)

**1. Reference: Exhibit B-1, Pages 7, 36 and page 37**

> The Company proposed an MX Test based on a DCF analysis that calculated a benefit-to-cost ratio to assess the economic viability of a main extension. The Test compared the net present value (NPV) of estimated gross revenues over the expected life of 50 years for a main extension, with the NPV of the estimated capital costs for a main extension over the first five years of its installation. Estimated gross revenues were calculated exclusive of the cost of gas and were determined based on a number of factors including the premise types the main was expected to serve and the level of saturation of attachments (and associated consumption) expected over the life of the main extension[5]. Estimated capital costs were determined based on expenditures required for mains, services, meters and other project specific costs for the first 5 years of the main extension.
>
> The expected life of the main should be used as the primary reference point for establishing the DCF term because mains represent the largest capital cost component in the construction of a main extension. The 20-year DCF term less than half the expected life of a main. In general, the typical life for distribution mains ranges from 50 to 65 years with significant retirement after 50 years. This is supported by FEI's existing approved depreciation rates. FEI periodically updates its depreciation rates based on depreciation studies. FEI's most recently approved depreciation study was prepared by Gannett Fleming Valuation and Rate Consultants Inc. (Gannett Fleming), a leading firm in North America and was filed as part of FEI's 2012-2013 Revenue Requirement Application[43]. The depreciation study included a review of asset lifespans of various types of infrastructure installed by the Company, including mains, services and meters. Gannett Fleming recommended a 64 year life for mains[44] which was approved by the Commission by Order G-44-12.
>
> EES' survey of the practices of other utilities also suggests that 30 to 40 years is a common DCF term.[45]

1.1 Please confirm that 50 years represents the average expected service life of all relevant pipelines in FEI's service territory.

**Response:**

Not confirmed. Based on the most recent depreciation study conducted by Gannett Fleming, for plant in service as of December 31, 2014, the average expected service life of distribution mains (which FEI considers to be the relevant pipelines for the MX Test) ranges from 50 to 66 years. 50 years represents the low end of the average expected service life for these assets.

1.1.1 If not confirmed, please provide FEI's average expected service life for all relevant pipelines.

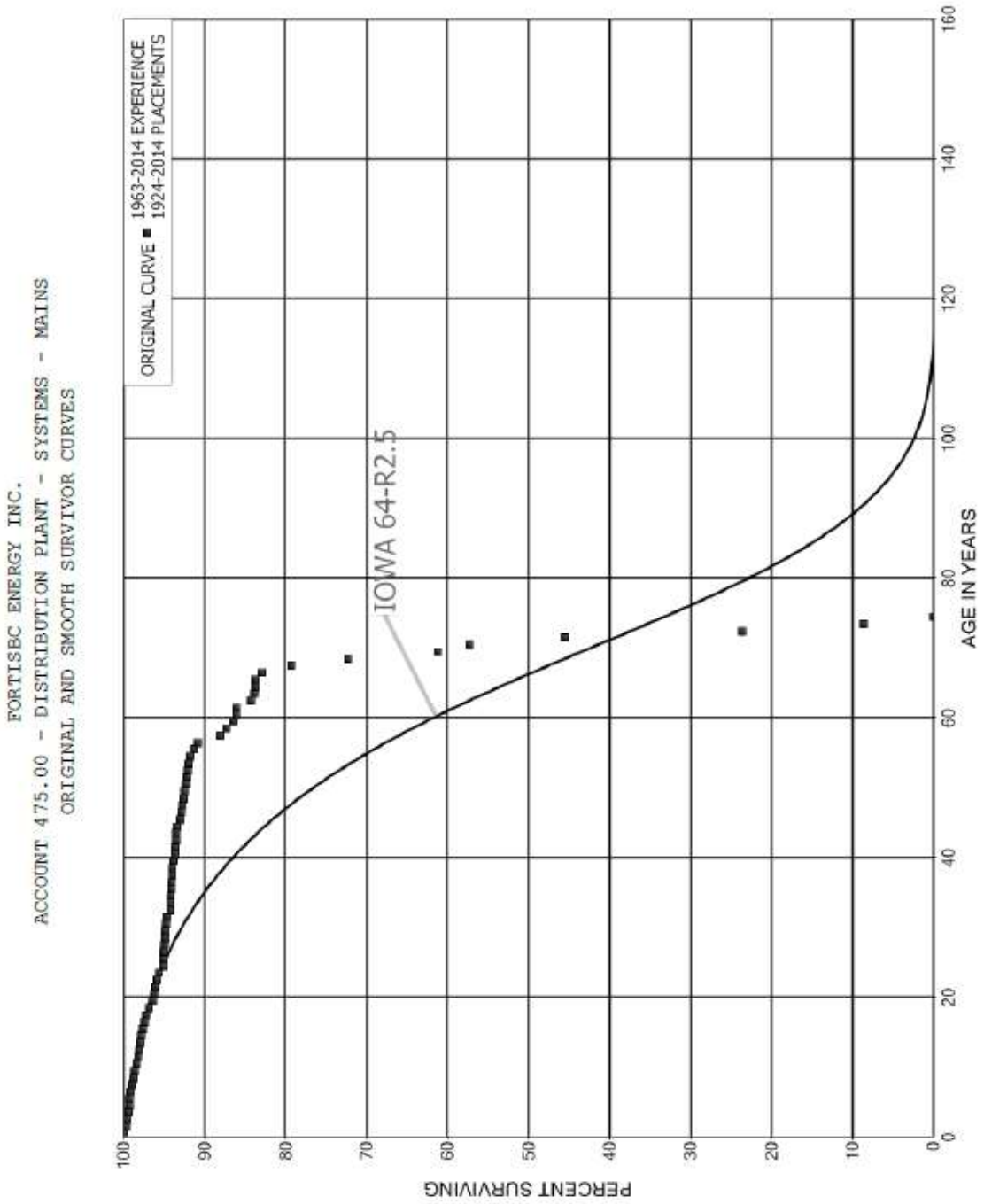
**Response:**

Please refer to the response to CEC IR 1.1.1.

1.2 Please provide evidence for and approximate quantification of 'significant retirement' after 50 years.

**Response:**

Based on Gannett Fleming's depreciation study that was filed in FEI's Annual Review for 2016 Rates, the percentage of surviving distribution mains decreases after 50 years. This is supported by the service life statistical analysis of the FEI mains data presented in the graph below which is taken from Gannett Fleming's depreciation sstudy, which shows a prominent decline in the slope of the curve between years 50 and 60.


FORTISBC ENERGY INC.
ACCOUNT 475.00 - DISTRIBUTION PLANT - SYSTEMS - MAINS
ORIGINAL AND SMOOTH SURVIVOR CURVES
ORIGINAL CURVE ■ 1963-2014 EXPERIENCE
1924-2014 PLACEMENTS
IOWA 64-R2.5
PERCENT SURVIVING
AGE IN YEARS
100
90
80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
120
140
160



1

1.3 Please discuss whether or not with proper maintenance pipelines can last even longer than 65 years.

**Response:**

Although distribution mains do last longer than 65 years, the expected life of a main depends on many factors, many of which cannot be influenced by maintenance activities alone. Thus, if a main does last longer than 65 years, it would not necessarily be correct to assume that it was only due to proper maintenance.

FEI's maintenance activities, including application of cathodic protection to address corrosion, participation in One Call programs to reduce third party damages, and regular monitoring to address natural hazards, all contribute to extending the service life of distribution mains. However, the life of a distribution main is also dependent on such factors as the materials used during installation, the construction practices at the time of installation, third party excavation resulting in damage, third party driven alterations, severe weather events, and replacements to address system capacity. Maintenance activities generally have no or little impact on these factors which can often result in early termination of the service life of a distribution main.

1.4 Please confirm that FEI conducts best practices in its pipeline maintenance

**Response:**

Confirmed. Further, through the application of an Integrity Management Program, FEI manages and/or mitigates risks on its system that have the potential to result in failure with significant consequences.

1.4.1 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.1.4.

1.5 Please discuss whether or not the longevity of pipelines has been increasing or if this has remained stable over the last 10 to 15 years

**Response:**

Evidence and studies over the last 10 to 15 years indicate that the useful life of distribution mains has increased. Better materials, improved construction practices and the introduction of polyethylene pipe in the early 1980s are factors that are likely contributing to the increase in the expected service life of distribution mains. For example, FEI has not seen evidence of a time dependent failure mechanism for polyethylene pipe in its system to date.

1.6 What is the expected average service life for a main extension that is new at this time?

**Response:**

Please refer to the response to CEC IR 1.1.1.

1.7 What is the average expected service life in the industry for all main lines? Please explain.

**Response:**

FEI is unable to provide an average expected service life in the industry for distribution mains as this would be a function of the amount of distribution main each utility has in service and their own determination of an average expected life of the mains within their systems.

As explained in the response to CEC IR 1.1.3, the expected service life is dependent on many factors. One that may be significantly different for each utility is the materials used for the distribution mains in their respective systems. Other utilities may have older types of metal pipes (e.g. cast iron), older types of polyethylene pipe, and other types of plastic pipes. These would all have an influence on the expected service life for their mains. The FEI system no longer has

any cast iron, "first generation" polyethylene pipe, or PVC pipe, which many utilities are still removing due to integrity concerns.

1.7.1 If the industry average and FEI's average expected service lives are not the same, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.1.7.

1.8 Please confirm that the expected service life of a main pipeline can greatly exceed 50 years with proper maintenance.

**Response:**

Please refer to the response to CEC IR 1.1.3.

1.8.1.1 If not confirmed, please explain why 50 years would represent a maximum average expected service life.

**Response:**

Please refer to the responses to CEC IR 1.1.1 and 1.1.3.

1.8.2 Please discuss any variability that is likely to occur in the expected service life of a main pipeline and explain what factors will influence service life. Ie. size, pressure, type of pipeline coating, environment and other factors.

**Response:**

Please refer to the response to CEC IR 1.1.3.

1.9 What was the original rationale for estimating capital costs over a 5 year term?

**Response:**

In 1993, the predecessor of the Company sought approval in its Phase B Rate Design Application for a single MX Test to be applied across its divisions. The parameter of estimating capital costs (and revenues) over a 5 year term was adopted from the past MX Test for the Lower Mainland Division prior to the formation of BC Gas. The original rationale for the 5 year term for the Lower Mainland Division prior to forming BC Gas is unknown.

1.10 Please provide an overview of the formula methods employed by other jurisdictions, with time frames for the NPV analyses if available.

**Response:**

Please refer to Appendix A of the Application (EES Consulting Report). On Page 14 of that report, EES provides the specific time frames used by other utilities.

1.11 Please confirm that there is nothing directing the Commission to follow other jurisdictions and that the Commission can decide what its own review tests should be to have the MX Test established in the public interest.

**Response:**

Confirmed. FEI is not aware of any statute or regulation that directs or requires the Commission to follow other jurisdiction's practices with respect to MX Test. FEI notes that the Commission has authority to determine the appropriate MX Test to be applicable to utilities in BC generally and to FEI specifically. However, other jurisdictions' practices and methodologies can be of value and assistance to the Commission's determination of the appropriate MX Test for FEI, taking into adequate consideration FEI's individual operating circumstances and potential

1 implications to FEI's operations and customers. As stated in the Application, the Company
2 engaged EES to conduct a preliminary survey of FEI's system connection policies compared to
3 those in other jurisdictions, which could provide value to the Commission.

4

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

> 1. The Commission recommends that evaluation of system extensions be based on a DCF evaluation method that includes, to the extent feasible, all incremental costs and benefits associated with a particular system extension over a time period long enough to consider the full impact of the extension. The Commission also recommends that, as a general principle, the costs of system extensions be allocated to those customers who cause them.
> 2. The Commission recommends that the Utilities evaluate system extensions both from a social perspective, which applies a social discount rate, and a utility perspective, which applies a discount rate based on each utility's cost of capital.

2.1 Are the Bonbright principles of rate design relevant to a system extension test? Please explain why or why not.

**Response:**

Yes, the Bonbright principles of rate design are relevant to a system extension test. These principles were identified as part of the guiding principles for the system extension review in Workshop #2 and the following table provides a summary of the applicability of each of the Bonbright principles to a system extension test:

| Bonbright Principle | Applicability |
|---|---|
| **Customer Impact** | Considers customer rate impacts of system extensions. |
| **Fairness** | Ensures fairness between customers in terms of both cost causation and similar treatment over time, recognizing the changes in housing environment, technology and natural gas usage patterns of new and existing customers. Also recognizes the need for fair access for "off-system" communities who require natural gas service. |
| **Economic Efficiency** | Promotes rational decision making by considering the energy use characteristics of customers at the time of construction for new connections and in the trade-off between main extension policies and rate impacts. |
| **Stability** | Reflects long-term objectives that will not lead to frequent changes so that customers know what to expect over time. |
| **Ease of Understandability** | Allows customers to understand the policies and therefore be able to make appropriate choices, as well as making policies easy to administer. |
| **Competitiveness** | Allows for competitiveness of the utility to attract new customers relative to competing gas utilities as well as competing alternative fuels. |
| **Recovering the Cost of Service** | Allows for recovery of utility cost. |

2.2 Please provide FEI's views as to what constitutes a 'social discount rate' and how that would be calculated.

**Response:**

On pages 13 - 14 of the Guidelines, the Commission notes:

> *The Commission believes that a social discount rate should be used for evaluating projects from a social perspective, and that the utility's discount rate should be used when evaluating projects from a ratepayer and shareholder perspective. The requirement to accommodate both a social and a utility perspective can be achieved by engaging in two calculations: one which adopts a social cost-benefit perspective, and one which adopts a private investment perspective, with each calculation using the discount rates appropriate to its perspective. This approach corresponds to the current approach of the Commission with respect to DSM, for example, wherein the societal cost test would apply a social discount rate while the rate impact test would apply a discount rate based on the utility's cost of capital.*
>
> *An appropriate social discount rate would be the one adopted or mandated by the provincial government for public investment projects by ministries or crown corporations such as BC Hydro.* [Emphasis added]

Today, the social perspective evaluation as described in the Guidelines has yet to be developed in BC. All utilities in BC evaluate system extensions from a utility investment perspective using a single discount rate that is based on the utility's cost of capital and no utilities evaluate system extensions using a social discount rate as specified in the Guidelines. .

The Company believes the exercise of defining a social cost-benefit perspective and a corresponding 'social discount rate' falls well beyond the scope of this Application. The social perspective and what constitutes societal costs and benefits is really a matter of provincial policy and it is in this forum that the societal-cost perspective and the corresponding social discount rate would be most appropriately defined, from a wider policy perspective. For this reason, the Company agrees with the Commission in its Guidelines that the appropriate social discount rate would be one that was adopted or mandated by the provincial government for public investment projects by ministries or Crown Corporation.

Please also refer to the response to BCSEA IR 1.3.1.

2.3 Please provide examples of any historical use of a 'social discount rate' and how it was calculated.

**Response:**

As discussed in the response to CEC IR 1.2.2, no utilities in BC currently evaluate system extensions from a social perspective. As such, the Company is unable to provide any historical use of a 'social discount rate' and how it was calculated.

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

> 4. The Commission expects the Utilities to ensure that estimates are as accurate as possible without adding substantially to the administrative workload associated with estimating system extension costs. The Commission will rely on prudency reviews to examine the accuracy of system extension estimates.
>
> - The Commission's focus in annual reporting appears to have shifted over time. Annual reporting has become less focussed on FEI's compliance with the MX Test, and more focussed on a hindsight review of whether FEI should have undertaken particular extensions. The reporting requirements have become more onerous over time in tandem with the shift in focus. There is a need for the Commission to articulate a clear objective for the reporting, and revisit the reporting framework in light of that objective. FEI submits:

3.1 Does the Commission's focus on hindsight review represent a 'prudency review' as discussed in the Guidelines?

**Response:**

It appears to FEI that the Commission required the re-running of the MX Test with updated information for the purpose of assessing whether certain extensions should have been undertaken. As explained in section 3.4.2 of the Application, the fundamental problem with re-running of the MX Test as the Commission has requested is that the result does not actually provide an indication of whether or not extensions are economic over the life of the main extension.

FEI cannot comment on whether the Commission would characterize this exercise as a prudency review or not. However, assessing prudence by using updated information would be an inappropriate application of the prudence test, which requires an assessment based on what was known or ought to have been known at the time the decision to construct the extension was made. FEI recognizes that, under the established two-part prudence test, evidence based on hindsight may be used in determining whether or not to conduct a prudence review, but cannot be used in the stage 2 of the analysis to find imprudence.

Please refer to the response to BCUC IR 1.13.5 for a discussion on the review that the Commission may undertake with respect to system extension estimates.

3.1.1 If not, please explain why not.

**Response:**

Please refer to the responses to CEC IR 1.3.1.

3.2 Does the Commission's focus on a hindsight review result in a reduction in the administrative workload associated with estimating system extension costs? Please explain why or why not.

**Response:**

No. The Commission's focus on hindsight review results in an increase in the administrative workload for the Company. As discussed in the response to BCUC IR 1.32.2, the current MX reporting requirements from the Commission require significant internal resources, while as illustrated in the response to BCUC IR 1.32.4, the Company's reporting proposal requires considerably less resources to provide the annual MX report and the periodic Rate Impact analysis.

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

> 5. The Commission recommends that the costs and benefits to be considered in the analysis of proposed system extensions include pre-construction estimates of the following:
>
> a) construction costs of the system extension;
>
> b) associated incremental system improvement costs, where these can be identified and assessed in a cost-effective manner;
>
> c) associated incremental operation and maintenance costs, where these can be identified and assessed in a cost-effective manner;
>
> d) net costs of connection (i.e., cost of connection less connection fees);
>
> e) net revenues from the system extension (i.e., customer payments less revenues to provide for commodity purchases and upstream transmission charges); and
>
> f) a reasonable consideration of externalities (for the social perspective evaluation).

4.1 Did the Commission require a certain AACE Class level of cost estimate for a system extension test?

**Response:**

No, the Commission does not require a certain AACE Class level of cost estimate for a system extension test.

4.1.1 If yes, please provide it.

**Response:**

Please refer to the response to CEC IR 1.4.1.

4.1.2 If no, what level of cost estimate does FEI normally undertake in its construction estimates for a system extension test.

**Response:**

There is no specific level of AACE estimating used for all mains. Please refer to the description of FEI's estimating process on pages 74 and 75 of the Application and also the response to BCUC IR 1.1.7 for a description of the most commonly used estimating method, that of Goe-Pricing. Further, given that there are approximately 785 mains installed per year with an average cost of only $11,600, providing engineering cost estimates such as Class 3 estimates would result in additional costs that in many cases would be higher than the actual cost of the main.

4.1.3 Please provide FEI's view of what constitute 'externalities' and how they should be considered.

**Response:**

Please refer to the response to BCSEA IR 1.3.1.

4.1.4 Please provide any other criteria that are typically included in the 'social perspective evaluation'. Please provide any other criteria that are typically included in the 'social perspective evaluation'.

**Response:**

As discussed in the response to CEC IR 1.2.2, no utilities in BC currently evaluate system extensions from a social perspective. As such, the Company is unable to provide what is typically included in a 'social perspective evaluation'.

4.1.5 Please confirm that a social perspective becomes more relevant and important as the size of area in which customers are located and are to be integrated into the FEI network increased. (ie subdivision, neighbourhood development, community integration)

**Response:**

As indicated in the response to CEC IR 1.2.2, evaluation of a system extension policy from a social perspective, which applies a social discount rate, is a matter of provincial policy. As no such perspective has been defined provincially, the Company is unable to comment on whether or not a social perspective would becomes more relevant as the size of the area in which customers are located and are to be integrated into the FEI network increases.

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

> Commission recommends that the Utilities come forward with options for connection fees that send an appropriate signal about the net social costs of less efficient energy use.

5.1 Please provide FEI's interpretation as to what constitutes an 'appropriate signal about the net social costs of less efficient energy use'.

**Response:**

An appropriate signal about the net social costs of less efficient energy use should be one that incentivizes behavior towards energy efficiency. The Company believes that promoting efficient energy use is best dealt with by its current DSM programs. Please refer to the response to BCUC IR 1.31.1 for a description of the DSM programs that incentivize the efficient use of natural gas.

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

> **2.1.3 1996 Rate Design Application and the Service Line Cost Allowance and Commission Decision & Order G-104-96**
>
> In 1996, the Company filed a rate design application (the 1996 Rate Design Application), in which the Company sought approval of a SLCA to serve new residential and small commercial customers connecting to existing mains (referred to as 'infill' customers). While the MX Test can be used to determine if any contribution is required from customers wishing to connect to *new* mains, the SLCA was intended to determine if any contribution is required from infill customers wishing to connect services from *existing* mains (i.e. where only a service line is required), where the application of a comprehensive MX Test is administratively impractical. The proposed SLCA effectively limited the amount the Company would contribute to a service line connection. Any cost requirement for a service line connection that exceeded the proposed allowance would require a contribution from the customer wishing to connect. The proposal provided greater flexibility for residential and small commercial customers to choose a service route other than the most cost effective one while ensuring that costs were adequately and fairly recovered by the Company.
>
> The SLCA was proposed to replace a number of then existing customer connection charges for infill customers that were not reflective of the actual cost to connect. Based on cost data in 1996, the Company proposed an SLCA of $1,100 per service line connection along with an $85 application fee to be applicable to infill customers.
>
> In the Decision accompanying Order G-104-96, the Commission approved the $1,100 SLCA and a service line installation fee (SLIF) of $215, in addition to the proposed application fee of $85, applicable to infill customers. A new customer wanting to connect to an existing main was now required to pay a standard fee of $300, in addition to any costs incurred that exceeded the $1,100 SLCA threshold.

6.1 Please confirm or otherwise explain that there could be multiple end customers connected to a single service line, such as in the case of multiunit complex where there is one customer but many end customers.

**Response:**

Confirmed.

6.2 If confirmed, please confirm that the $300 charge would be applicable to the single service line customer, and not a charge for each unit attached.

**Response:**

Confirmed.

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

> • A reduction to the revenue forecast time frame for the MX Test to match the IRP planning time frame of 20 years, in order to align more explicitly with the Company's IRP criteria as required by BCUC Order G-101-93. Note that the reduction to 20 years was proposed as a trade-off in order to reach a decision. This was a reduction from the 33 year revenue forecast time frame that was used and that aligned with the depreciation life of meters, which was already significantly less than the life of a main.

7.1 Please provide a summary of the rationale for matching revenue forecast to the IRP planning time frame.

**Response:**

The following response answers CEC IRs 1.7.1 and 1.7.2.

The use of the 20 year DCF to align with the 20-year planning horizon applied in the Company's Long Term Resource Plan (referred to as Integrated Resource Plan at the time) was at the direction of the Commission. The Commission noted at page 30 of the decision accompanying Order G-101-93 :

> *The Commission is of the view that a consistent set of evaluative criteria should be generally applied to BCGUL investments, be these main extensions, an LNG plant, transmission lines, DSM programs or appliance marketing. Therefore, the Commission directs BCGUL for the next revenue requirement hearing to align its main extension test more explicitly with the criteria applied in its IRP.*

The Company does not believe that the 20-year IRP planning time frame is appropriate for establishing a revenue forecast for main extensions as it does not reflect the full economic impact of a main, and thus has proposed a 40-year DCF term.

7.2 Please provide FEI's views of the appropriateness of this rationale.

**Response:**

Please refer to the response to CEC IR 1.7.1.

7.3 Please confirm that IRP planning horizon time frame has little to do with economic impact of a main.

**Response:**

Confirmed.

**8. Reference: Exhibit B-1, Page 18**

> The fact that the DCF analysis assumes no customer additions after an initial five year period makes it an appropriate conservative basis for an *ex ante* test for main extensions. However, that same feature makes re-running the MX Test each year for past main extensions with updated forecasts inappropriate for determining *ex post* whether those extensions have been economic. An extension will continue to generate benefits for its service life (in excess of 50 years), and customers will continue to join the system after the fifth year. This is one of the key objections that FEI has to the Commission's current practice of asking FEI to re-run the MX Test for the purpose of evaluating whether or not past extensions have been beneficial to customers. This is addressed later in sections 3 to 5.

8.1 Please explain when an ex-post determination would be made on the economics of an MX extension (i.e., 5 years after the decision?)

**Response:**

FEI does not believe it is necessary or appropriate to look at every single extension on an ex-post basis. Please refer to the responses to BCUC IRs 1.32.1 and 1.32.7.1 for an explanation of FEI's view on ex-post determination on an extension-by-extension basis. An ex-poste review of the economics of a single main extension may be available in the event that a prudence review is triggered, but this should not be triggered by a specific time period such as five years. FEI notes that there are often many customers attaching to mains after a five year period (see also BCUC IR 1.3.1).

8.2 Please provide documentation of how an ex-post determination of system extension is conducted or identify where it is included in the application.

**Response:**

The Rate Impact analysis is a model of an ex post determination of system extensions in aggregate for the period 2008 through 2014. Please refer to section 3.4.3 and Appendix A (pages 22-27) of the Application for a more detailed discussion of this model.

**9. Reference: Exhibit B-1, Page 20**

> 2.2.1.1.3 OPERATIONS AND MAINTENANCE (O&M)
>
> The O&M input to the Test is intended to capture the incremental O&M required to connect a new customer to the Company's distribution system, derived by multiplying the O&M per customer by the number of customers. O&M is updated on an annual basis.
>
> 2.2.1.1.4 SYSTEM IMPROVEMENT (SI)
>
> The SI charge is a per gigajoule charge and is a proxy for the incremental system improvement costs associated with growth that are not attributable to a specific customer. At a high level, the SI formula is as follows:
>
> SI = Number of Customers x Consumption per Customer x SI Charge per GJ
>
> As requested in Commission Letter L-67-11, the Company updates the SI charge on an annual basis using a methodology developed together with Commission staff.

9.1 Please provide FEI's O&M per customer.

**Response:**

Please refer to the table below for the O&M per customer included in FEI's 2015 MX Test parameters by customer type.

| Customer Class | O&M/Customer |
|---|---|
| **Residential** | $77 |
| **Small Commercial** | $81 |
| **Large Commercial** | $150 |
| **Industrial** | $737 |

9.2 Is the O&M per customer derived from the total O&M/total number of customers?

**Response:**

No, the O&M per customer used in the MX Test reflects the estimated incremental O&M cost of adding customers.

9.3 If so, please confirm, or otherwise explain, that the O&M per customer derived from total O&M/total number of customers does not represent the incremental

cost of customer O&M as there are significant fixed costs and semi-variable costs that included in total O&M.

**Response:**

Please refer to the response to CEC IR 1.9.2.

9.4 Would FEI agree that to the extent that a new customer contributes to fixed and semi-variable costs in the O&M beyond their incremental variable costs, they are benefiting existing ratepayers?

**Response:**

FEI agrees that to the extent that customers contribute more than their incremental variable costs, other customers benefit because the fixed costs are spread out over a larger customer base. Please see also the response to BCUC IR 1.39.1.

9.4.1 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.9.4.

9.5 If available, please provide an approximation of the truly incremental variable costs that are attributable to an incremental customer and contrast this with the proposed O&M cost

**Response:**

Please refer to the response to CEC IR 1.9.1, in which FEI provides the estimated incremental O&M cost that is used in the 2015 MX Text.

9.6 Please provide the methodology used to calculate the SI Charge per GJ.

**Response:**

A levelized SI Charge per GJ is used in the MX Test and is calculated based on a five year period as follows:

a) Sum the ensuing five years of distribution system improvement (SI) forecast capital costs;

b) Divide (A) by the increase to peak day demand over the same 5 years resulting in an SI cost per peak day GJ;

c) Divide (B) by 365 multiplied by the 5 year average load factor resulting in an SI capital cost per GJ of annual capacity; and

d) Multiply (C) by the levelized revenue requirement per dollar of capital[1] and the result is the SI charge per GJ.

[1] The levelized revenue requirement per dollar of capital is the levelized annual revenue required to fund one dollar of capital over 20 years and includes depreciation, return on rate base and income taxes.

**10. Reference: Exhibit B-1, Page 20**

> 2.2.1.1.5 MUNICIPAL TAX
>
> The municipal tax input is derived by taking the sum of the delivery margin for all customers multiplied by an in lieu rate of municipal taxes. An in lieu value is updated annually.

10.1 Please explain how the 'in lieu rate' of municipal taxes is determined.

**Response:**

The in-lieu rate in the MX Test equals forecast revenue divided by forecast margin divided by 100 (calculated by rate schedule).

The Company is charged a 1% in-lieu municipal tax based on the revenue that it collects from its customers. The MX Test does not include a gas cost component (only delivery margin), therefore to calculate the municipal tax an in-lieu rate based on delivery margin, as described above, is used.

For example, if the total revenue for a rate schedule is $2.5 million, the 1% in-lieu tax collected would equal $25 thousand. If the corresponding margin is $1 million, then the in-lieu rate used in the MX test would equal 2.5% ($2.5 million / $1 million / 100). Using 2.5% multiplied by the margin of $1 million yields $25 thousand, which is equal to 1% multiplied by revenues. In the case of transportation customers who purchase their natural gas from third parties and essentially only pay for delivery, their in-lieu rates are typically close to 1% ($1 million / $1 million / 100).

10.2 Please explain why municipal tax related RRA would be deducted from revenue.

**Response:**

Municipal taxes included in the MX Test are a proxy for the 1% in-lieu tax that municipalities levy on FEI. The in-lieu tax is included in the calculation of delivery rates of customers, and becomes an incremental cost to FEI when new customers are added; accordingly, it has been deducted from delivery margin benefits within the MX Test.

**11. Reference: Exhibit B-1, Page 20**

> 2.2.1.1.6 PROPERTY TAX
>
> Property tax is calculated by multiplying the cost for mains and services by FEI's property tax rate. FEI's property tax rate is updated annually.

11.1 Would it be accurate to say that the highest portions of FEI's property taxes are likely located in the highest density, urban areas with potentially lesser extension requirements, such that the incremental property tax for a new extension might not likely be as high on a per customer basis as it is for the existing customer base?

**Response:**

To clarify, the MX Test does not use an average per customer amount for the forecast incremental property taxes. Rather, the MX Test applies the average FEI property tax rate to the forecast capital costs and separately accounts for the in lieu component of property taxes. Further, there is no distinction between urban and rural customers for property tax expense purposes. Similar to the other MX Test paramaters, the property tax is an average rate.

Since the same rate is applied to all extensions, to the extent that a new extension in a rural area may require more capital costs due to the location and length of the pipe it would also attract a higher (not lower) amount of property tax expense in the MX Test.

11.1.1 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.11.1.

11.1.2 If yes, please provide a gross estimate of the likely % premium that property tax for an urban customer would have versus that for a remote customer.

**Response:**

Please refer to the response to CEC IR 1.11.1.

**12. Reference: Exhibit B-1, Page 21**

> 2.2.1.2.2 OVERHEAD
>
> Overhead is a proxy for the incremental overhead that is allocated to an individual project. Overhead is calculated by multiplying mains, services and meter costs by the overhead rate.
>
> The overhead rate is updated annually.

12.1 Please provide the 'overhead' rate and how that is determined.

**Response:**

FEI's 2015 overhead rate included as an MX test parameter is 23.3%.

The annual overhead percentage is a combination of direct and indirect overheads as they relate to capital additions. The direct overhead percentage largely reflects planning costs for main extensions that have not been charged to a specific project. That is, the capital cost for adding a customer can include costs such as planning, drafting, staking, supervision, clean-up and paving. If the customer addition is carried out, these costs are typically charged to the job; however, there are circumstances where these costs are not directly capitalized into the job. For example, if after planning, the customer addition is not performed, the planners time, and any other overhead that would have accumulated until such time that the job is cancelled falls into the category of direct overheads. These overhead costs are added up each year and are divided by the mains and services additions in the year, to calculate a percentage of direct overhead costs applicable to mains and services additions.

The indirect overhead percentage reflects a portion of the general overhead of FEI and is calculated using the following steps:

1. Divide the total capitalized overhead dollars (12% of Gross Operating and Maintenance Expense) that are allocated to services, mains, house regulators and meters (asset classes 473, 474, 475) by the capital additions in those same categories to calculate a percentage.

2. Determine an incremental percent of indirect overheads applicable to mains extensions by using the most recent overhead capitalized study and the overhead capitalized pool represented by Distribution Operations. The Distribution Operations portion represents the portion that is directly attributable (incremental) to mains extensions.

3. Apply the percentage calculated in Step 2 to the percent as determined in Step 1.

The sum of the direct overhead percentage and the indirect overhead percentage is used as a parameter in the MX Test.

**13. Reference: Exhibit B-1, Page 22 and Page 63**

> **2.2.2 Service Line Cost Allowance (SLCA)**
>
> The SLCA represents the maximum allowance each infill customer receives when connecting to an existing main. A single family residential dwelling or small commercial customer[20] is currently allocated a SLCA of $1,535 ($3,070 for a duplex).
>
> The derivation of the current SLCA values is detailed in Section 4.2

> **4.2.3 SLCA Recommendations**
>
> The Company is proposing an SLCA of $2,150 for single family dwellings and $4,300 for duplexes for 2016. The proposal reflects that:
>
> 1. The use of the SLCA continues to be an appropriate construct to meet the needs of customers; and
> 2. FEI has followed the same methodology approved by the Commission following the 1996 and 2007 MX applications, but with current inputs.
>
> The Company is also proposing to update the SLCA annually, as it does with other MX Test parameters. In this way, FEI will be treating customers the same each year and not in a manner that leads to intergenerational inequity. Specifically, the Company will file an SLCA analysis and updated values in November each year following the same methodology it has used in 1996, 2007 and in the current Application. FEI expects that the SLCA value and tariff updates would be approved by end of the calendar year for implementation January 1 of the following year. For example, in November of 2016, the Company will file a request to the Commission to approve a revised SLCA value which would be effective January 1, 2017.

13.1 Please provide further details of the calculation of the SLCA or direct where it is included in the application.

**Response:**

Please refer to the response to BCUC IR 1.30.3.

13.2 Please provide an overview of the change in inputs that has resulted in the 40% increase in the SLCAs, and provide a rationale for any of the inputs which have experienced clearly greater increases than the others.

**Response:**

Please refer to the response to BCUC IR 1.30.3.

13.3 Please explain why some SLCA costs for customers might be more expensive than for other customers.

**Response:**

The SLCA is an allowance, not a cost. The SLCA is a credit applied towards the cost of a customer's service line. If the estimated cost to install the service line exceeds the SLCA, the customer pays the difference in the form of a CIAC. The contribution amount varies based on the customer's unique requirements such as service length and other characteristics such as environmental or archaeological considerations.

The SLCA value differs for a single detached home and duplex. Since a duplex has two customers on one service line, each customer would receive a credit of $2,150, resulting in a $4,300 SLCA. A single detached home only has one customer and would receive only one SLCA credit of $2,150.

13.4 Can municipal planning, zoning, codes, permits and approval processes result in differences in SLCA costs for specific customer situations?

**Response:**

Yes, different municipal planning, zoning codes and permits can result in different service line (not SLCA) costs. Some municipalities do have more stringent permitting requirements than others.

There are special instances due to specific types of permitting requirements that could result in a higher cost service line and the customer having to make a CIAC such as the following:

- Special crossings such as highway, bridge water or railway
- Environmental Impacts such as fish-bearing streams
- Archaeological Impacts
- Heritage Trees

**14. Reference: Exhibit B-1, Page 22 and Page 40**

> As approved by Order G-152-07 and reflected in section 12 of FEI's General Terms and Conditions, if the MX Test results indicate a PI of less than 0.8, the main extension may proceed provided that the shortfall in revenue is eliminated by the CIAC paid by the customers to be served by the main extension.
>
> The total required CIAC will be paid by the customers connecting at the time a main extension is being built, and FEI will collect contributions from all customers connecting during the first five years after the main extension is built. As additional contributions are received by customers connecting to the main extension, partial refunds are made to those customers who had previously made a contribution. At the end of the fifth year, all customers will have paid an equal contribution, after reconciliation and refunds. In instances where refunds are granted to customers who have contributed, the main is referred to as a "contributory main."
>
> The CIAC is an upfront cost to be borne in full by the customer at the time of the construction of the main extension.

> The Company currently recovers a CIAC from a customer based on the results of an MX Test. In the event that the project is a contributory main[49], the customer paying a CIAC is entitled to a pro-rata refund if a future customer connects within a five year window. The Company currently doesn't provide alternatives for recovering CIACs associated with system extensions.
>
> [48] EES Report, Appendix X, page 13.
> [49] Refers to a main where a customer (s) has made a CIAC.

14.1 Please provide the original rationale for using 0.8 as the demarcation between when CIAC is required and when it is not.

**Response:**

The rationale for proposing a minimum PI threshold of 0.8 for individual main extensions to proceed without a contribution was to broaden the scope of the Company's main extension policy to promote fair and equitable treatment of new and existing customers. Prior to the approvals resulting from the 2007 System Extension Policy Review application, the minimum PI threshold was set at 1.0 for all main extensions. In the 2007 application, the Company showed that by requiring every MX test to have a PI equal to 1.0, on average new customers would pay more than their fair share of costs (since many would be over 1.0). To better balance the interests of new and existing customers, the Company proposed the 0.8 PI for individual main extensions and the 1.1 PI for the portfolio in aggregate. This better aligned the interests of new and existing customers, although the Company notes that by having an aggregate PI of more than one (1), the balance of interests is shifted toward the existing customer. This is supported by the Rate Impact Analysis which shows that the addition of new customers results in a reduction in rates of existing customers.

The Commission accepted the Company's rationale and approved the individual and aggregate PIs as proposed by order G-152-07. Both PIs are still in use today.

14.2 Please provide the original rationale for using 5 years as the end point for determining when contributions are required and reconciling the account.

**Response:**

Please refer to the response to CEC IR 1.1.9.

14.3 Please confirm that a Contributory Main is one in which customers have contributed to CIAC regardless of whether or not they receive a refund (as indicated on page 22) and further that a main in which customers contributed CIAC but received a full refund would Not be called a Contributory Main.

**Response:**

Please refer to the response to BCUC IR 1.10.4.

14.3.1 If not confirmed, please provide further clarification as to why the refund distinguishes a contributory main,

**Response:**

Please refer to the response to BCUC IR 1.10.4.

14.3.2 If not confirmed, how does FEI refer to mains in which customers contributed but did not receive refunds?

**Response:**

Please refer to the response to BCUC IR 1.10.4.

14.4 If Contributory Mains were financed by the utility over time and charged to the relevant customer over time with new customers picking up charges when they connect, could the utility handle the adjustment of charges on an ongoing basis without need for refunds and specific lump contributions from a new customer.

**Response:**

FEI interprets the question to be asking whether FEI could develop a financing program for contributory mains. Yes, FEI could develop a financing program for contributory mains; however, such a program would likely be administratively burdensome and potentially result in additional administrative costs, The availability of a financing program would give the customer an option with respect to the payment of the contribution but it would not change the the need for refunds.

14.5 Please confirm that Contributory Mains in any given year are a small portion of the overall extension costs and provide the % dollar split based on current data for a number of years of history.

**Response:**

Confirmed. From 2008 to 2014, the actual cost for contributory mains was approximately $2.3 million, which represents 3.5% of the total actual main extensions expenditures of $65.6 million (excluding CIAC) over the same period. For clarity, the actual cost of $65.6 million does not include costs for service lines, meters or regulators.

An annual breakdown is provided below:

| Year | Total Expenditures on Main Extensions | Total Expenditures on Main Extensions that Required CIAC's |
|---|---|---|
| 2008 | $ 18,854,976 | $ 366,394 |
| 2009 | $ 8,652,598 | $ 308,824 |
| 2010 | $ 6,947,390 | $ 302,157 |
| 2011 | $ 7,994,503 | $ 125,015 |
| 2012 | $ 8,055,730 | $ 325,606 |
| 2013 | $ 6,932,818 | $ 407,998 |
| 2014 | $ 8,114,041 | $ 482,931 |
| Total | $ 65,552,056 | $ 2,318,924 |

*Costs presented are exluding all customer contributions

1

2

**15. Reference: Exhibit B-1, Page 23**

> In terms of reporting, the Commission identified as a purpose of the reporting as being "to determine if the aggregate PI thresholds need to be adjusted on a go forward basis in order to achieve the aggregate PI of 1.1." Ensuring that the MX Test is doing what it was intended to do is a reasonable objective. However, some of the annual processes since 2007 have taken on more of a character of hindsight assessments of whether FEI ought to have undertaken particular extension(s). As explained later in this Filing, the evaluation methodology used by the Commission is not fit for the purpose of assessing FEI's prudence, and there are better ways to assess whether or not the MX Test parameters continue to meet the initial goals of the Test.

15.1 Please confirm or otherwise explain that a key purpose of the MX test is to balance the interests of the existing ratepayers, with those parties who will or would like to become customers (and therefore ratepayers) in the future.

**Response:**

Confirmed.

15.2 Does FEI agree that a key purpose of a utility is to capitalize on economies of scale, and enable a large number of customers to receive service as a group so that services that would otherwise be unaffordable individually are affordable for the group.

**Response:**

The following response applies to CEC IRs 1.15.2 and 1.15.3.

FEI is a natural monopoly for the provision of natural gas due to the large capital investment required to provide service and the inefficiencies that would occur by having multiple distribution systems providing the same service to the same area. The economies of scale resulting from one service provider in a service area is a key aspect of natural monopoly service and the ability to serve as many customers as possible with that same fixed system provides lower cost service to all customers, all else equal. If that same fixed system were installed to serve one individual it would be much more costly and would in fact be unaffordable in terms of either the CIAC required or the resulting rates.

Further detail on these issues is provided in the EES Report (Appendix A, pages 9-10):

> *"Serving a larger number of customers is generally less costly due to added efficiency on a per customer basis…For larger physical assets that are primarily fixed, such as transmission and storage, incremental costs for new customers are zero when no new assets are required…While it is important that existing customers do not see a rate*

*increase as a result of customer growth, it is equally important that new customers do not pay more than their incremental costs…The Commission is directed [by the U.C.A.] not just to consider the impact on existing customers, but the impact on those customers that may receive service from the utility in the future.[2]"*

15.3 If no, please explain why not and provide any alternative purposes that FEI considers appropriate.

**Response:**

Please refer to the response to BCUC IR 1.15.2.

15.4 Please confirm that BC Hydro has a Heritage contract which ensures that future customers have access to BC Hydro's embedded cost benefits.

**Response:**

Confirmed. The BC Hydro Public Power Legacy and Heritage Contract Act was put in place to ensure that heritage assets remain publicly owned and so that a regulatory framework for the Province to establish rates that reflect the low cost electricity produced from these assets was in place. To the extent that these assets remain available for use and producing power, future BC Hydro customers will have access to these benefits, just as current customers do, through the use of the embedded cost ratemaking that BC Hydro has in place. In the government's own words at the webpage identified in the footnote,[3] *"(t)he Heritage Contract preserves the value of BC Hydro's existing, low-cost electricity generation for all British Columbians."*

15.5 Please confirm that FEI has embedded cost benefits in its pipeline network investments.

[3] http://www.empr.gov.bc.ca/EPD/PolicyRegulationLegislation/Leg/Pages/default.aspx

**Response:**

FEI confirms that it has "embedded cost benefits" in its pipeline network and other assets in rate base. There are two main ways that embedded cost benefits develop in utilities that are regulated using a historical cost rate base. First due to cost inflation over time, it is more costly to add new customers to the system than it was in the past. Existing customers which may have joined the system over a span of many years previously were less costly to add to the system when they joined. Second, the rate base cost for customers added in the past becomes smaller as the facilities and assets supporting those customers are depreciated in rates over their useful lives. As assets approach being fully depreciated, their impact on rate base and the capital-related cost of service components would become successively smaller. Since a historical rate base (or embedded cost) approach is used in the setting of FEI's delivery rates embedded cost benefits of this nature are implicit in its rate structure.

15.6 Please confirm that the heritage benefit sharing concept is a social value concept in the determination of a fair sharing of costs and benefits between existing customers and future customers.

**Response:**

The main guidance, to FEI's knowledge, that the Government provides with respect to allocation of the Heritage Contract benefits between BC Hydro's customers is that the benefits should be available to all (as noted in the response to CEC IR 1.15.4), whether current or future customers. To this extent it seems clear that all electricity consumers in the province should share in the benefit of low-cost electricity from existing assets.

Although natural gas distribution is not the subject of the Heritage Contract, FEI believes that it is equally appropriate that there is sharing of embedded cost benefits between existing and future natural gas utility customers as it is for existing and future electricity customers.

**16. Reference: Exhibit B-1, Page 24**

> 1. Customers wanted FEI to examine potential barriers to accessing natural gas service;
> 2. The Company had identified several potential enhancements to its current system extension policies; and
> 3. There were opportunities to improve MX reporting and evaluation practices.

16.1 Please provide a full discussion of the barriers identified as being in place to accessing natural gas service.

**Response:**

Based on the stakeholder consultation discussed in the Application, the biggest barrier to accessing natural gas service is the likelihood of having to pay additional upfront capital costs compared to alternative energy sources such as electricity. Specifically, these potential upfront capital costs include the requirement to pay a CIAC, security and the incremental costs to install natural gas appliances compared to electric alternatives.

Each barrier is further described below.

CIAC Barrier

The likelihood of having to pay a CIAC can be a significant barrier to accessing natural gas service since it represents an additional transactional cost to customers and requires upfront capital. Having to provide a CIAC can create a barrier for any customer; however, for the following customers this issue is especially prevalent:

- For lower income customers, having to pay a CIAC can be prohibitive due to constraints on their financial resources;
- For customers living in communities that are less densely populated and those that live further away from existing natural gas infrastructure, they are more likely to be required to pay a high CIAC by virtue of their location of residence;
- Vancouver Island customers are also more likely to pay a CIAC following the Company's amalgamation as compared to before amalgamation, since lower rates decrease the forecast revenue in the MX Test;
- Customers attaching over a longer term may also face a CIAC barrier due to the restriction in the current MX Test to forecast attachments over 5 years
- Customers whose mains cost more than $25,000, which are currently allocated a flat overhead rate, also potentially face the barrier of CIAC due to a disproportional amount of overhead being allocated to the main extension project.

Security Barrier

Builders and developers have also indicated that more stringent requirements for security would add additional costs to the development of a project and decrease the likelihood of them choosing to use natural gas. Please refer to the response to BCUC IR 1.9.1 for a discussion on how security would create a significant disincentive to accessing to natural gas distribution system.

Upfront Capital Cost Barrier

Upfront capital costs to install natural gas appliances, including costs such as ducting, constitute the other main barrier to connect. As discussed in the NRRI report provided in Appendix A of the Application[4], energy choices are mainly driven by unfront costs whereas future benefits from operating costs are less important to customers. Please refer to the response to BCUC IR 1.43.2, which provides a discussion of the upfront capital cost and competitiveness of natural gas compared to electricity.

[4] Report No.13-01. *Line Extensions for Natural Gas: Regulatory Considerations*, February 2013. Page 13

**17. Reference: Exhibit B-1, Pages 25 and 26**

### 3.2 CONSULTATION PROCESS

In order to have an effective review of the Company's system connection policies, FEI also initiated a consultation process that involved a wide range of participants. FEI met individually with prospective stakeholders in late 2013 and obtained support for conducting a consultative review of its system extension policies starting in early 2014. FEI obtained input on the design of the consultation process, as well as the substance of the system connection policies. The key consultation materials have been appended to this filing.

| | | |
|---|---|---|
| | Chris Garand | Engineer, Infrastructure |
| Chawathil First Nation | Norman Florence | Council Member |
| | Bobbi Ellen Peters | Council Member |
| Commercial Energy Consumers | David Craig | President, Consolidated Management Consultants |
| EES Consulting | Gail Tabone | Senior Consultant, EES Consulting |
| Fortis BC | Mike Metza | Energy Products & Services Manager |
| | Brent Graham | Manager, Energy Products & Services |
| | Jason Wolfe | Director, Market Development |
| | Dennis Swanson | Director, Regulatory Affairs |
| | Corey Sinclair | Manager Regulatory Affairs |
| | Vanessa Connolly | Government Relations and Public Affairs Manager |
| | John Turner | Director, Energy Solutions |
| Fraser Valley Regional District | Lloyd Foreman | Director, Electoral Area A |
| | Dennis Adamson | Director, Electoral Area B |
| MLA Boundary - Similkameen | Colleen Misner | Constituency Assistant to Linda Larson, MLA |
| MLA Kootenay West | Katrine Conroy | MLA |
| Okanagan - Similkameen Regional District | George Bush | Board Member |
| Peace River Regional District | Karen Goodings | Board Director |
| Pacific Northern Gas | Janet Kennedy | Vice President, Regulatory Affairs and Gas Supply |
| | Peter Schriber | Manager, Financial Planning & Business Development |
| Seabird Island Band | Brian Titus | Consultant |
| | Chief Clem Seymour | Chief |
| Ucluelet Chamber of Commerce | Susan Payne | Executive Director, Ucluelet Chamber of Commerce |
| Yale First Nation | Steven Patterson | Natural Resource Manager |

1

17.1 How did FEI select the First Nation and other communities to participate?

**Response:**

The following response adresses CEC IRs 1.71.1 to 1.17.3.1.

The purpose of the stakeholder workshops was to provide a venue to inform stakeholders and solicit their feedback on the MX Test and related policies. For this reason, the Company invited to workshops, and sought feedback from, those entities or individuals that had expressed interest to the Company in gaining access to natural gas and in matters related to natural gas system extension policies. These stakeholders included:

- Chawathil First Nation;
- Seabird Island Band;
- Yale First Nation;
- Fraser Valley Regional District;
- Peace River Regional District; and
- Ucluelet Chamber of Commerce.

The MLA from Kootenay West and the MLA from Boundary-Similkameen and the Okanagan Regional District dealt with the Company regarding the Residential Conservation Rate and expressed interest in natural gas system extension policy.

The BC Ministry of Energy and Mines and the BC Ministry of Jobs, Tourism and Skills Training participated in the workshop as these ministries represent the interests of the provincial government.

CEC and BCOAPO participated as they often intervene in FEI proceedings.

BC Hydro and PNG participated because they have an interest in FEI's system extension policies and any changes that may be incorporated into their respective policies.

BCSEA began participating following the issuance of Commission Letter L-34-14.

Not all the First Nations, communities or regional disctricts had an opportunity to participate as there were practical limitations related to the number of participants that would allow for effective consultation.

In addition, as a part of the regulatory proceeding reviewing this Application, the Company complied with the Commission's requirement to post a public notice, which informs the public of the nature of this Application and invites interested parties to participate in the Company's system extension policies. The Company notes that several parties that did not participate in the workshops, such as the City of Port Alberni, the District of Saanich and the Greater Victoria Chamber of Commerce, have recently submitted letters of comment to the Commission.

17.2 Did all the FNs that do not have Natural Gas service have the opportunity to consult?

**Response:**

Not all First Nations were invited to participate in the referenced process. Please refer to the response to BCUC IR 1.17.1 for a discussion of the process FEI followed to invite participants.

17.2.1 If not, please explain why not and identify those FN that do not have NG service and were not invited to participate.

**Response:**

As discussed in the response to CEC IR 1.17.1, the Company invited those entities or individuals that had expressed interest to the Company in gaining access to natural gas and in matters related to natural gas system extension policies FEI also considered practical limitations related to the number of participants that would allow for effective consultation.

17.3 Did all the communities or regional districts which do not have Natural Gas service have the opportunity to participate?

**Response:**

No. Please refer to the response to CEC IR 1.17.1 for a discussion of the process FEI followed to invite participants.

.

17.3.1 If not, please identify the communities or regional districts with a population over a reasonable threshold size that do not receive natural gas service and were not invited to participate.

**Response:**

Please refer to the response to CEC IR 1.17.1 for a discussion of the process FEI followed to invite participants.

**18. Reference: Exhibit B-1, Pages 28 and 31**

> A common interest among stakeholders was that the Company's system extension policies should promote energy choice in the Province. During the workshops, many stakeholders pointed out the potential benefits of using natural gas due to a relatively large drop in the price of natural gas in recent years compared to other energy sources. These benefits include lower
>
> - Customers want access to natural gas to save money on their total utility bills since heat and hot water are the biggest energy requirements in homes, and natural gas is less expensive to operate compared to heating oil, propane and electricity.
> - Communities would support residents and businesses having more disposable income to invest in the regional economy rather spending it on utility bills.
> - The provincial government could garner greater tax and royalty revenue from the increased domestic use of natural gas.
> - Some municipalities could generate additional revenue from operating fees charged to customers who utilize natural gas in their communities.

18.1 Were there benefits identified with respect to having 'customer choice' in energy selection per se? i.e., perceived value for having choice amongst alternatives regardless of perceived cost benefits?

**Response:**

The following response adresses CEC IRs 1.18.1 to 1.18.3.1.

Yes, FEI believes that stakeholders have expressed perceived value for having choice amongst alternatives regardless of perceived costs and benefits. Pages 31 to 32 of the Application provided a summary of the need for greater customer choice and the challenges and opportunities stakeholders face in having access to this choice.

The Commission has also identified the benefits of customer choice in energy through the AES Inquiry proceeding, which was highlighted by FEI in its Final Submissions in the Creative Energy Platforms Inc. for a Low Carbon Energy System Application:

> *"The Commission recognized in the AES Inquiry Report that choice and competition at the developer level ultimately benefit end users. It concluded that competition should be preferred and not be hindered where competition is feasible."* [5]

[5] Application for a CPCN for a Low Carbon Neighborhood Energy System for Northeast False Creek and Chinatown Neighborhoods of Vancouver, Final Submission of FortisBC Energy Inc. September 25, 2015, page 49

In the context of system extension policy, customer choice of energy selection refers to the ability to fairly access available energy options (whether the customer is a developer or an end user).

In addition to the inherent benefits of choice, and the competitive benefits customers enjoy as a result of the ability to choose between a variety of energy providers, there are a number of benefits of using gas including reliability, comfort and convenience. In FEI's experience, customers value the reliability and comfort provided by natural gas for heat and hot water applications. Moreover, customers express a preference for natural gas appliances such as barbeques, cooktops and fireplaces. Stakeholders identified that there are environmental benefits of using natural gas, compared to higher GHG fuels such as heating oil and propane and compared to wood in terms of particulate matter savings. Lastly, customers have experessed that the price of energy is a key factor in making a decision on energy. Customers who choose gas will benefit from access to an energy form that is one-third the price of electricity.

18.2 If yes, please provide a brief discussion of the benefits from choice that were identified.

**Response:**

Please refer to the response to CEC IR 1.18.1.

18.3 Please confirm that there are benefits to having natural gas service that extend beyond economics such as control and response time in cooking, convenience.

**Response:**

Please refer to the response to CEC IR 1.18.1.

18.3.1 If confirmed, please provide a list of the benefits that customers may receive from natural gas vis-a-vis other alternatives.

**Response:**

Please refer to the response to CEC IR 1.18.1.

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

> Serving a larger number of customers is generally less costly due to added efficiency on a per customer basis. This is true for any cost that has a fixed component to it. For example, with billing there is a fixed cost associated with billing software that can be spread among more customers when growth occurs, however, there is an added cost for postage for each new customer. For large physical assets that are primarily fixed, such as transmission and storage, incremental costs for new customers are zero when no new assets are required.
>
> While the MX test is designed to reflect incremental pricing and economies of scope in a manner such that new customers are not facing a rate increase as a result of customer growth, the MX test is based on assumptions about the various inputs in the test and is designed to look forward for a particular customer or project. While the Commission has requested that actual data be looked at on a retrospective basis through the MX reporting process, that data is also limited and does not necessarily capture all of the factors that impact rates when new customers are added to the system.
>
> While it is important that existing customers do not see rate increases as a result of customer growth, it is equally important that new customers do not pay more than their incremental costs. According to NRRI, "If instead the utility recovers more than incremental costs from new customers...new customers are cross-subsidizing existing customers."[5] Existing customers should not receive all of the benefits of efficiencies and economies of scope related to new customers, thereby lowering their rates as a result of new customer growth. It is important to strike the proper balance where both new and existing customers are paying their share of the costs they cause and neither group is cross-subsidizing the other group.

19.1 Please confirm that to the extent that a PI of greater than 1 is used in aggregate, the new customers are, in aggregate, subsidizing the existing ratepayers to the extent the data used capture a full and accurate picture and are not designed to be conservative or understated for one side of the evaluation.

**Response:**

Confirmed. The current aggregate threshold PI of 1.1 results in the balance of interests shifting towards existing customers. Using an aggregate PI of 1.0 would result in an even balance of interests (assuming that the test incorporates the "whole reality" referenced in CEC IR 1.19.3).

19.2 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.19.1.

19.3 Please confirm that an aggregate PI of 1 would result in neither new or existing rate payers subsidizing the other, again provided that the data used capture the whole reality

**Response:**

Confirmed..

**20. Reference: Exhibit B-1, Page 31**

> • A possible generational inequity in the current system extension policy was discussed by stakeholders based on the understanding that the interests of new natural gas customers were being overshadowed by those of existing customers. Many stakeholders described how existing customers have access to the benefits of low cost natural gas whereas many prospective customers face a barrier, such as the CIAC.

20.1 Please confirm that under the Utilities Commission Act (UCA) there is no distinguishing considerations between those who receive service and those who may receive service from a public public utility in terms of the expectation under that UCA that the receive fair, just and reasonable treatment under their tariffs.

**Response:**

FEI's view is that, in considering an appropriate MX Test, the Commission is required to consider the interests of both existing customers and those customers who wish to take service.

For instance, section 30 provides:

> 30 If the commission, after a hearing, determines that
>
> (a) an extension of the existing services of a public utility, in a general area that the public utility may properly be considered responsible for developing, is feasible and required in the public interest, and
>
> (b) the construction and maintenance of the extension will not necessitate a substantial increase in rates chargeable, or a decrease in services provided, by the utility elsewhere,
>
> the commission may order the utility to make the extension on terms the commission directs, which may include payment of all or part of the cost by the persons affected.

The public interest analysis involved in this exercise extends to consideration of existing and potential customers. The weight or consideration given to the interests of different persons will be at the Commission's discretion and will depend on the circumstances.25.13.

Moreover, if the Commission has determined that a rate for a service offered by a public utility, including a schedule or tariff respecting a rate, is just and reasonable, section 59 of the UCA requires that the rate should be "regularly and uniformly extended to all persons under substantially similar circumstances and conditions for service of the same description". Thus, if a person who wants to receive a service from the public utility meets the conditions and criteria set forth by the public utility for the service (i.e. being in "substantially similar circumstances" as others for currently receiving the same service), the person should receive the same rate treatment.

20.2 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.20.1.

20.3 If confirmed, please provide FEI's views as to whether or not the wording 'those who receive service or may receive service from a public utility' in the UCA implies a requirement that the Commission should treat each group with equal consideration.

**Response:**

Please refer to the response to CEC IR 1.20.1.

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

> While FEI is not proposing funding for the expansion to off system communities at this time, the potential for savings to new customers and other societal benefits should be a consideration when looking at changes to the extension policies of the utility. If FEI does wish to provide funding for off system communities in the future, the impact of societal benefits will be a large factor that will need to be addressed.

21.1 Has FEI identified any off system communities that it anticipates integrating and funding in the future?

**Response:**

FEI has not identified any specific off system communities that it anticipates integrating and funding in the future. Please refer to the response to CEC IR 1.31.1 for the critical role provincial government policy must play in connecting these off system communities. Please refer to BCSEA IR 1.14.3 for the current status of FEI's plans for Revelstoke.

21.2 If yes, please identify and provide any anticipated time horizons which FEI is contemplating for them.

**Response:**

Please refer to the response to CEC IR 1.21.1.

**22. Reference: Exhibit B-1, Page 33**

> ***3.2.4.3 Support Government Objectives***
>
> Throughout the four workshops, there was considerable dialogue about the various provincial government objectives and how best to meet them. There were differing opinions on the relative importance of objectives, the consistency between government energy objectives, as well as the best way to accomplish the objectives. Stakeholders were, however, united in the belief that any proposed changes to system extension policies need to support the provincial government in meeting its objectives.

22.1 Please provide a list of all the government energy objectives that were identified to the stakeholders.

**Response:**

This response responds to CEC IRs 1.22.1, 1.22.2 and 1.22.3.

The BC provincial government's Natural Gas[6] and LNG[7] strategies, BC's Job Plan[8] as well as the Clean Energy Act[9] (CEA) were the government policies discussed with stakeholders. In this context, the following government objectives were discussed:

- The importance of natural gas in sustaining and growing BC's economy;
- Encouraging the creation and retention of jobs through the use of natural gas; and
- Meeting provincial GHG targets.

Some stakeholders placed greater importance on the provincial economy (such as creating and maintaining jobs) while others on the relevant environmental objectives. As noted in the Application, FEI notes the views of the stakeholders are different on some issues; however, FEI is not in a position to represent individual views of stakeholders. FEI believes that the Commission's regulatory process currently underway is the correct venue for these views to be expressed to the Commission by stakeholders themselves.

[6] BC's Natural Gas Strategy, Fueling BC's Economy for the Next Decade and Beyond, BC MEM, February 3, 2012.
[7] LNG: A Strategy for BC's Newest Industry, BC MEM, 2012.
[8] http://engage.gov.bc.ca/bcjobsplan/.
[9] https://www.leg.bc.ca/39th2nd/1st_read/gov17-1.htm.

22.2 Which of these objectives were identified as the most important by stakeholders?

**Response:**

Please refer to the response to CEC IR 1.22.1.

22.3 What were the differences in relative importance of the objectives, the consistency between government objectives and the best ways to accomplish them?

**Response:**

Please refer to the response to CEC IR 1.22.1.

**23. Reference: Exhibit B-1, Page 33**

> The Company and many stakeholders see converting higher carbon energy users to natural gas users as opportunities to support government objectives to reduce GHGs and support the related energy objectives set forth in the CEA. For example, between 2008 and 2014, approximately 10,000 existing, on-main[36] homes in FEI's service territory converted from another energy source to natural gas service. The majority of these homes were on Vancouver Island and typically used heating oil or propane for heating purposes before converting to natural gas. FEI's most recent long term resource plan described how a residence converting from using heating oil for heating to natural gas for heating avoids 1.6 tonnes of carbon dioxide equivalent emissions per year.[37] The Company estimates there are potentially up to 100,000 additional BC homes in its service territory that could convert from a higher carbon fuel to natural gas[38]. These homes are within a relatively close proximity (50 metres) of one of the Company's mains. Additionally, there are approximately 87,000 people living in 180 off-system communities throughout BC that do not have access to natural gas service[39]. These homes are often heated with heating oil or propane; moving to natural gas would reduce emissions. Providing the option to access renewable natural gas (RNG) service would further reduce these emissions.

23.1 Please provide a rough estimation of the cost of a main extension of less than 50 meters.

**Response:**

To clarify, in the passage above, the 50 meters was referring to a home that would be served by a service line connecting to an existing main. The estimated cost of a 50 m service line under this circumstance is approximately $2,500. The estimated cost for a new main with a length of less than 50m is approximately $5,000, based on 2014 average cost data. For individual main extensions, the cost will vary depending on topography, region and specific requirements..

23.2 Please provide the total number of customers that are on the FEI system by rate class.

**Response:**

The table below reflects the 12 month average customer count by rate category in 2014.

| | FEI | FEVI | FEW | Total |
|---|---|---|---|---|
| **Residential** | 770,284 | 95,668 | 2,382 | 868,334 |
| **Commercial** | 78,612 | 9,301 | 350 | 88,263 |
| **Small Industrial/Seasonal** | 253 | 68 | | 321 |
| **Commercial (Rate 23) – T-Service** | 1,513 | | | 1,513 |
| **Small Industrial – T-Service** | 618 | | | 618 |
| **Large Industrial – Sales/T-Service** | 48 | | | 48 |
| **NGV/VRA** | 13 | | | 13 |
| **Total** | **851,341** | **105,037** | **2,732** | **959,110** |

23.3 Do all FEI customers have the option to choose renewable natural gas, or is this option restricted to certain customers? Please explain and provide approximate numbers of those who have access versus those who do not if applicable.

**Response:**

All FEI customers with the exception of Revelstoke (approximately 1,500 customers) and Fort Nelson (approximately 2,500 customers) have the option to choose Renewable Natural Gas (RNG).

Based on the year end 2014 FEI customer count, customers eligible to participate in the RNG program are approximately 965,000.

23.4 What proportion of FEI customers choose some portion of renewable natural gas?

**Response:**

As of December 31, 2014, there were a total of 6,824 customers participating in the RNG Program, representing approximately 0.7% of FEI's customers.

**24. Reference: Exhibit B-1, Page 34**

> ***3.2.4.4 Recognize First Nations***
>
> First Nations can be impacted by changes to system extension policies. As discussed in the workshops, this recognition of this fact can come in different forms and generally is covered in the two previously mentioned Guiding Principles:
>
> - Providing energy choice; and
> - Supporting First Nations' government objectives.
>
> In other words, First Nations stakeholders are seeking energy choice, as well as support to meet their own First Nations government objectives. During the workshops, discussion was at a high level as it relates to specific First Nations' government energy objectives.

24.1 Please provide FEI's views of the First Nations' government energy objectives.

**Response:**

The Company supports First Nations' government energy objectives regarding the MX Test and endeavors to provide energy choice through this Application. As the discussion at the Stakeholder Workshops was at a high level as it relates to specific First Nations' government energy objectives, the Company is unable to provide further comment.

**25. Reference: Exhibit B-1, Page 37**

> ***3.3.1.3 Customer Forecast Period***
>
> A second area where FEI believes that there is room for improvement in the existing MX Test is the customer forecast period. For the majority of main extensions, the current 5 year horizon for customers may be sufficient; however, for projects with a longer horizon, a longer term would be appropriate.
>
> As discussed in Section 2, the MX Test currently allows for a five year window in which to consider the customers added to a main extension and the scope of the build out of the main extension itself. As a result, the PI of a project is contingent upon the number of customer attachments expected to occur in the first five years of a main extension and any customers added beyond the first 5 years have no consideration in the MX Test revenue calculation.

25.1 Please confirm that the current 5 year horizon for the majority of main extensions is sufficient because there will be enough customers so that a CIAC would not be required.

**Response:**

FEI confirms that the current 5 year horizon is sufficient for the majority of main extensions. However, this expection is not predicated upon a CIAC not being required. FEI believes there will continue to be main extension projects where a 5 year forecast is appropriate and a CIAC will be required.

25.1.1 If not confirmed, please provide further clarity as to why the 5 years is sufficient for most main extensions.

**Response:**

Please refer to the response to CEC IR 1.25.1.

25.1.2 Please confirm that where an FEI forecast anticipates sufficient customers to avoid a CIAC, but fewer customers materialize, that the customers are not later charged a CIAC.

**Response:**

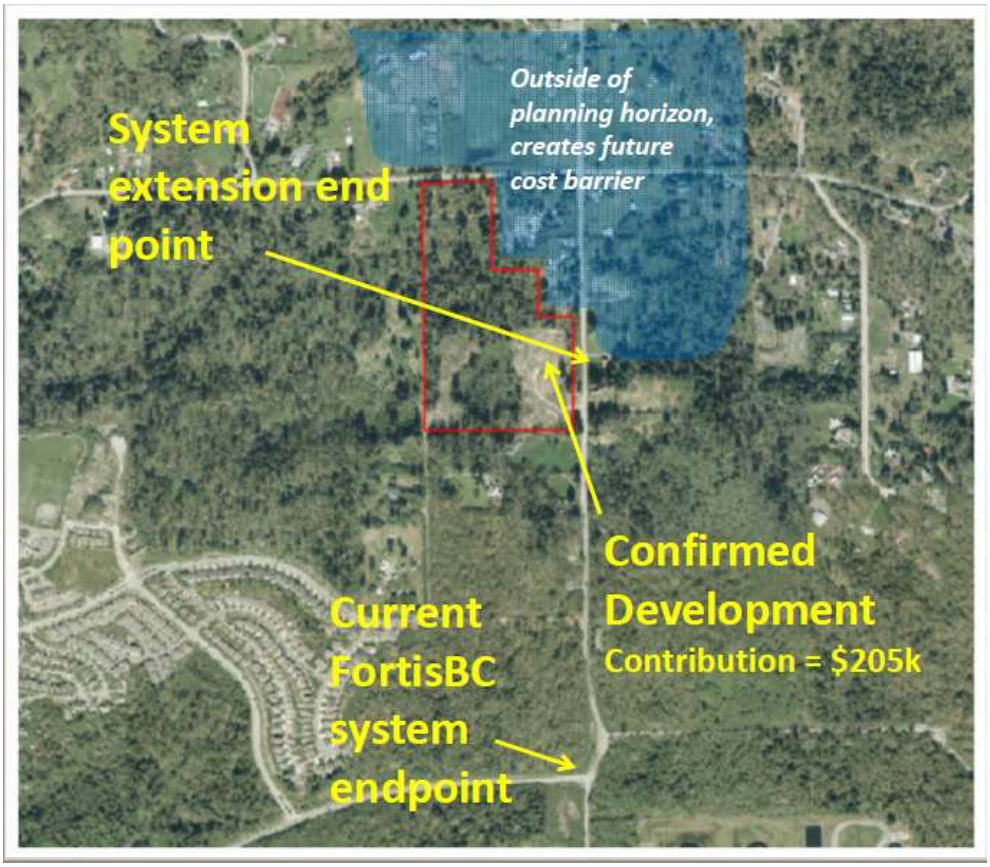
Confirmed.

25.1.3 Please identify under which kind of situation longer horizons would be required for a customer forecast period.

**Response:**

As indicated in Section 4.1.2.1 of the Application, a longer 10-year forecasting horizon would be appropriate in instances where there is sufficient indication of a build-out plan that exceeds 5-years. This would be determined on a case-by-case basis.

In the second stakeholder workshop[10] FEI provided an example of a scenario where the five year planning horizon was used, but a 10 year forecast would have been more appropriate. For convenience, FEI has provided the relevant project details below:




[10] Appendix B, page 12, June 18, 2014.

In the example, a customer was contemplating natural gas service for a new home construction development on Sumas Mountain in Abbotsford. The contemplated main extension[11] required a $205,000 CIAC from the customer taking into account a five year customer attachment period (outlined in red). The CIAC was calculated assuming 30 lots being developed by the customer in the first 5 years. An additional 37 lots were owned by the customer, zoned for residential development by the municipality and expected to be built in 6 to 10 years.

The Company believes that a 10 year customer attachment forecast may have been appropriate in this example for the following reasons:

- There was high probability of future customer attachment beyond the five year period; and
- The cost to serve customers may have been lower using one longer main extension installed all at once, versus installing separate main extensions over a 10 year period.[12]

Since the Company did not have a 10 year forecast available as a tool in the MX Test at the time the project was contemplated, it did not perform a comparative analysis of the potential cost savings to the customer from a lower CIAC by incorporating additional customers, or the potential cost savings to existing customers by installing one longer main extension all at once.

Please also refer to the response to BCUC IR 1.2.4 for a discussion on information considered by FEI when forecasting attachments.

25.1.4 Please explain whether or not there is a maximum period or whether really the period is variable by extension and dependent significantly on the size and complexity of the development requiring the main extension.

**Response:**

The customer forecast period is variable by each extension and depends significantly on the size and complexity of the development requiring the main extension. Consequently, FEI is proposing to use a 10 year forecast on a case by case basis to respond to the unique circumstances of each main extension project.

[11] The main extension extended from “Current FortisBC system endpoint” to “System extension end point”.

[12] The main extension in this scenario would have extended past “System extension end point” to some point in the blue shaded area.

**26. Reference: Exhibit B-1, Pages 37 and 38**

> The Company only installs an individual main based on the additions that will occur over a five year period, even if it is more cost effective to install additional main that would be used beyond the five year period. Even if FEI is aware that one main extension project was required in order to access a future development beyond the five year window, this situation is not currently considered in the current main extension planning.
>
> A part of the building process includes the pre-installation of underground utilities such as natural gas, electricity, data and water. If the Company is able to consider that an area will be built out over a period greater than 5 years, it can be more cost effective to install the necessary natural gas infrastructure all at once early in the development process, rather than in discrete segments over time. Installation in a development should occur at the beginning of a project since it is more cost effective to install a main to an area before significant development takes place rather than installing individual segments of main over the course of several years after paving, landscaping and other development may have already occurred. Not only are there fewer encumbrances encountered, the costs would be lower to install given that less time and resources need to be spent on planning, construction work and mobilization. Overall, for most developments with a planning horizon greater than 5 years, the cost of installing the required gas mains all at once would be less than the sum of the total costs of smaller, discrete main extensions over a number of years for the same area.
>
> The Commission discussed the issue of sequential extensions in the Guidelines as follows:
>
> > *"With respect to the aggregation of longer system extensions, the Commission believes that there may be situations where two or more system extensions should be reviewed in aggregate. One situation could be where the grouping of contiguous system extensions would likely lead to cost savings due to efficiencies in construction. There may also be situations where an initial system extension that is uneconomic is required prior to subsequent further system extensions which would render the result economic."*[47]

26.1 Please provide a discussion, with quantification where available, of the potential costs or lost benefits associated with not installing a main extension for a project where it would be required in a future development.

**Response:**

In very general terms, if a main extension does not proceed due to a prohibitive CIAC, there would be lost benefits from the forgone revenue associated with the project. Also, if it is not possible to get a main to the first (closest) customer to the existing main, it is less likely that it will be possible to extend the main to customers further away. Additionally, there are likely circumstances where it would be more cost effective to install a main extension all at once rather than in discrete sections over a 10 year period.

The response to CEC IR 1.25.1.3 provides an illustrative example of an instance where a five year planning horizon was used, but a 10 year forecast would have been more appropriate. As

seen in the satelltite image below, if FEI were to miss a main extension customer such as the one that approached FEI for servece, there may be a foregone benefit of attaching future customers on a larger scale.


The image shows the area of the proposed main extension project as well as the advancement of new home construction in and around Sumas Moutain. These residential and commercial developments are progressing over a term longer than 5 years. It is essential that FEI establish main infrastructure to link gas service from one developmnet project to the next, or FEI risks losing communities altogether. Hence, FEI is proposing the use of a 10 year term to realize future benefits for projects such as the one described in this example.

26.2 Has FEI had instances in which it has not utilized the most cost effective approach because of the five year planning horizon?

**Response:**

No. FEI has always endeavored to utilize the most cost effective approach for a project. However, in order to provide more details on the specific instances of the Company's approach, FEI has to retroactively identify if there were instances in which the Company could have adopted a different approach. FEI is unable to do so because the Company would need to:

- Review over 5,000 main extensions installed from 2008 to 2014 and identify projects where a 10 year estimate may have been appropriate (which would be impossible for reasons described in response to BCUC IR 1.24.2);
- Re-design new, hypothetical main extension(s) deemed applicable for a 10-year customer additions forecast period; and
- Compare the original cost of the 5 year main extension(s) to the hypothetical main extension(s) to identify any potential the cost differences.

26.2.1 If yes, please identify how often such a situation occurs.

**Response:**

Please refer to the response to CEC IR 1.26.2.

26.2.2 If yes, please provide one or more examples of such a situation.

**Response:**

Please refer to the response to CEC IR 1.26.2.

26.3 Did the Commission provide any recommendations as to how such a situation could be addressed to improve cost effectiveness?

**Response:**

This response addresses CEC IRs 1.26.3 and 1.26.3.1.

With the exception of what is stated in the Guidelines as noted in the preamble, the Commission has not provided any specific recommendations as to how a utility could improve cost

effectiveness of main installations where a development will have a build-out period longer than five years.

26.3.1 If yes, please provide the Commission recommendations.

**Response:**

Please refer to the response to CEC IR 1.26.3.

26.3.2 If not, does FEI have a remedy for such a situation through an application to the BCUC or other avenues? Please explain and indicate whether or not it has exercised any of the options available to address the situation.

**Response:**

The Company has proposed for the first time in this Application to use a 10-year forecast period for certain main extensions that will have a longer build out period to better capture benefits from such mains.

26.4 What would be the minimal expected cost of such a remedy?

**Response:**

For FEI, there is no expected cost to use a 10 year forecast as proposed in the Application. For customers, there may be a decrease in costs for new home construction projects where a 10 year forecast is used, all else being equal.

**27. Reference: Exhibit B-1, Page 38**

> In addition, there are some circumstances where an initial system extension may require a CIAC that would otherwise not be required if the full impact of the benefits of the main extension were considered. In this type of scenario, if additional customer additions beyond the current five years were considered in the Test, a CIAC wouldn't be required, or it would be less than if the time horizon was limited to five years.

27.1 Please confirm or otherwise explain that customers who contributed CIAC do not receive any compensation for customers added after the 5 year period.

**Response:**

Confirmed that no refund is available after the 5 year period under the current system extension policies.

27.2 Please confirm that the regulator must allow the regulated utility "an opportunity to earn a fair return on its invested capital."

**Response:**

Confirmed.

27.2.1 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.27.2.

27.3 Please explain why a customer should not have an opportunity to earn a fair return on its investment as a pioneer on a main extension.

**Response:**

"A reasonable opportunity to earn a fair return" applies to a utility on its invested capital. A contribution in aid of construction represents an amount required to obtain service and is not an investment in the utility infrastructure and as such, does not attract a return on investment in that sense. Presumably, customers proceed with their "investment" in a CIAC because they believe they are receiving value from the service they will receive. In making this decision, they are made aware of the five year period to receive refunds of their contribution from other customers that may attach.

27.4 Please confirm that cutting off potential benefits from others using a main extension at 5 years or even ten years would not necessarily reflect the economic benefit associated with some main extensions.

**Response:**

Confirmed. As indicated in the response to BCUC IR 1.3.1, the economic benefit associated with a main extension continues throughout the useful life of the main.

**28. Reference: Exhibit B-1, Pages 38 and 39**

> ***3.3.1.4 Overhead Allocation***
>
> A third area where FEI believes that there is room for improvement in the existing MX Test is the overhead allocation. Under the present approach, FEI believes that larger projects are being allocated a disproportionally large share of overhead.
>
> The application of overhead to the MX Test is intended to represent an allocation of general costs that are incurred by the Company to install main extensions that cannot be associated to a particular main extension. The overhead allocation includes, among other items, administrative duties related to mains extensions, right of way management and governmental fees. The
>
> percentage value for overhead is updated annually. The overhead rate has ranged from 23% to 33% between 2008, with 2014 and at 23%.

28.1 Please provide an overview of how the overhead costs are calculated and computed annually.

**Response:**

Overhead is calculated by multiplying an overhead rate by the forecast mains, services and meter costs associated with the extension. Please refer to the response to CEC IR 1.12.1 for discussion on the determination of the overhead rate.

28.2 Please provide the annual overhead rates between 2004 and 2014.

**Response:**

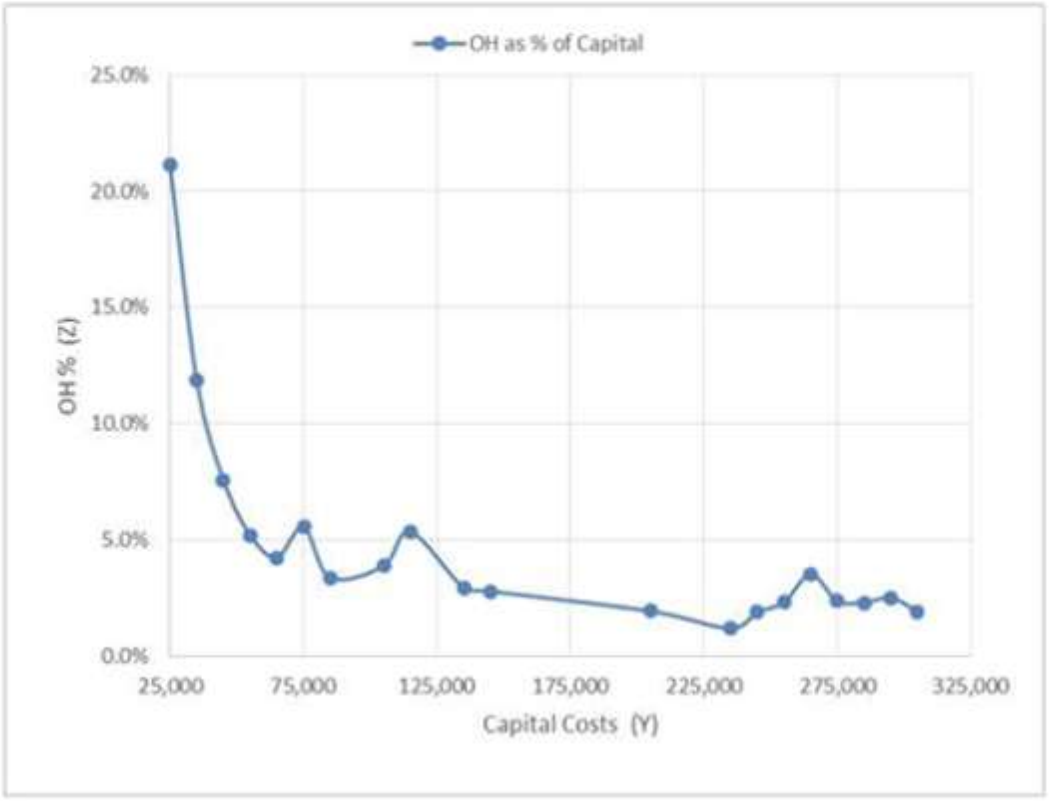
The overhead rates FEI used for the MX test are provided in the table below.

| Year | Overhead Rate |
|---|---|
| 2004 | 32.0% |
| 2005 | 32.0% |
| 2006 | 32.0% |
| 2007 | 32.0% |
| 2008 | 32.0% |
| 2009 | 32.0% |
| 2010 | 32.0% |
| 2011 | 30.0% |
| 2012 | 27.4% |
| 2013 | 27.0% |
| 2014 | 26.3% |

**29. Reference: Exhibit B-1, Page 39**

> Based on FEI's analysis of the relationship between overhead costs and the capital costs o main extensions installed between 2008 and 2014, the overhead costs of a project do no increase linearly with direct capital costs. This is portrayed in the following Figure 3-3; i overhead costs had increased linearly, the blue line would have been flat versus the declining curving slope that the analysis produces.

**Figure 3-3: Overhead as a Percentage of Capital Costs**




29.1 Please provide the approximate proportion of main extensions that fall below $11,000, between $11,000 and $25,000, between $25,000 and $50,000; between $50,000 and $125,000 and those above $125,000.

**Response:**

The requested information is provided in the table below and is based on all main extensions that were completed from 2008 to 2014.

| Capital Cost Range | Proportion % |
|---|---|
| <$11,000 | 70% |
| $11,000- $25,000 | 20% |
| $25,000- $50,000 | 7% |
| $50,000- $125,000 | 2% |
| >$125,000 | 1% |
| **Total** | **100%** |

29.2 Does the overhead as a percentage of capital costs increase above 23% for those projects below $25000?

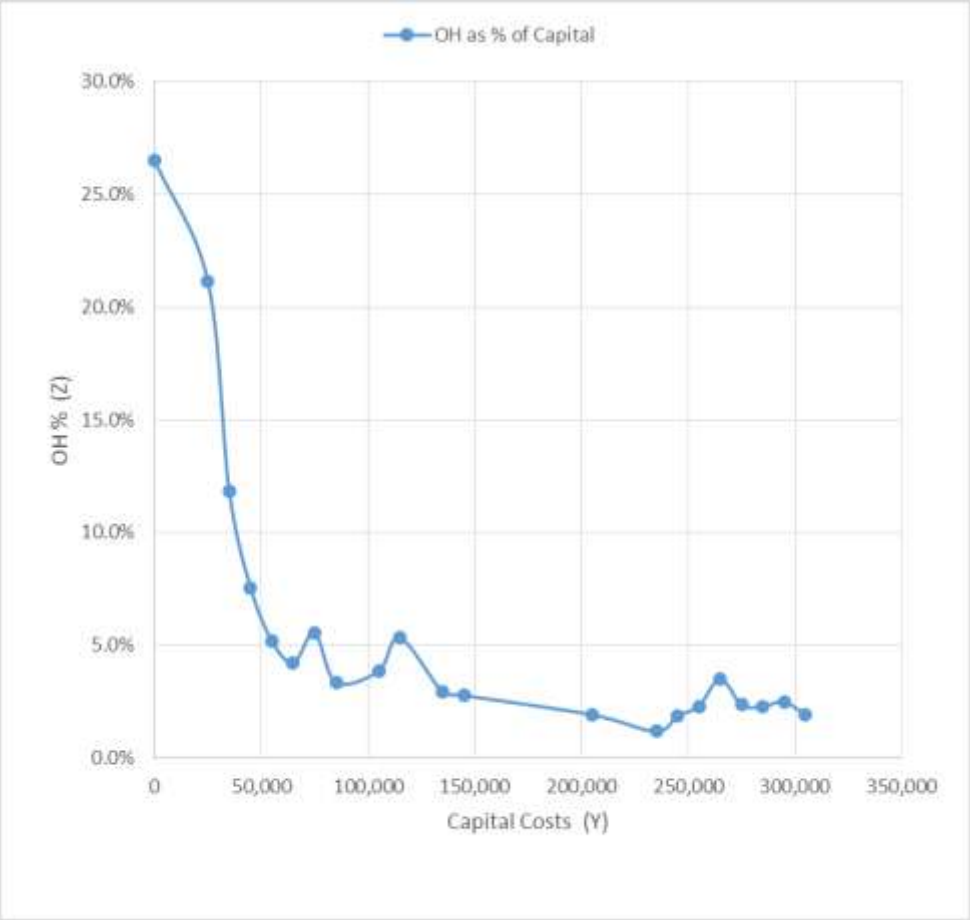
**Response:**

Yes, the direct overhead as a percentage of capital costs for all projects with direct capital costs below $25,000 is approximately 27%.

29.2.1 If yes, please extend the graph to include all the smaller project sizes.

**Response:**

Please refer to the graph below, which includes all projects below $25,000.




29.3 Please provide FEI's understanding of the why there is a minor increase at about $250,000 if one is available.

**Response:**

FEI notes that there was only one data point for a project with a capital cost of $250,000 and that this extension took place in 2008. With no comparable extensions, it is not possible to determine why the direct overheads were slightly higher than less costly extensions.

29.4 Please confirm that on average from the evidence above the overhead related to capital costs over $125,000 is closer to 2.5% than to 5%.

**Response:**

Confirmed.

29.5 Please confirm that the overhead amounts calculated include some relatively fixed costs that would remain a cost for existing customers if not charged out to capital such as the main extensions.

**Response:**

This is generally true for allocating overhead to capital projects. In the case of the MX Test, there is no "charging out" of overhead. The overhead in this case is only a percentage that is applied in the MX test and as such there is no amount that remains as a cost.

29.6 Please give some examples of the relatively fixed costs which might be included in the overhead.

**Response:**

Salaries and benefits (COPE & M&E) are the two largest costs in overhead that could be considered relatively fixed.

**30. Reference: Exhibit B-1, Appendix A, Page 20 and Page 64**

> The Uneconomic Fund is a cost included in the annual revenue requirements of BC Hydro and is funded from customer rates. We believe it would be appropriate for FEI to offer a similar program funded through rates to provide a level playing field between the two utilities and to reflect the fact that while these types of extensions may not be immediately cost-effective, they have the potential to lead to future growth and could therefore prove to be cost-effective in future years. Further, this fund would lead to savings to the customer and could potentially provide other societal benefits that are not measured by the MX test.
>
> As BC Hydro's current Uneconomic Fund is rather complex in its determination of the sharing of costs between the utility and the customer, it is recommended that the funding mechanism be simplified for FEI. This will provide greater customer understanding, allow a more

> As discussed in Section 3.3.4, BC Hydro has had a mechanism to accommodate these types of customers through its Uneconomic Fund for many years. BC Hydro's Uneconomic Fund is recovered through BC Hydro's electric rates and is capped at $1.5 million per year. It has been in place for roughly 30 years. Applications are taken twice a year and if more applications are received than the fund can allow, they are ranked on the basis of lowest cost per customer. Under BC Hydro's Uneconomic Fund, the utility sets aside $1.5 million per year to assist customers with their share of the customer contribution that would otherwise be required. The fund applies to individual customers only and is not available for new subdivisions. It therefore reaches those customers that are building individual homes in areas where distribution lines are nearby but not in front of the property. The customer is still required to pay a portion of the cost of the extension, however it is a sharing approach as opposed to the customer paying all costs above the allowed extension credit.

30.1 Please provide a brief discussion of the rationale that was used to determine that $1.5 million was the appropriate amount for the fund.

**Response:**

FEI does not know the rationale used by BC Hydro in determining the appropriate amount for its Uneconomic Fund at the time it was developed.

30.2 Please explain why it is important to offer a 'level playing field' between the two utilities.

**Response:**

Please refer to the response to BCUC IR 1.13.1.

30.3 Please provide a review of the rather complex determinations of the sharing of costs between the utility and the customer.

**Response:**

The formula for the cost sharing for BC Hydro's Uneconomic Fund can be found at page 32 of BC Hydro's Terms and Conditions.[13] Based on FEI's reading of the tariff provisions, under the formula the customer must pay for the first span, including transformation and a crossing pole, 10% of the next 800 metres and 100% of anything beyond the first span plus 800 metres.

30.4 Please provide the number of extensions that are funded annually in BC Hydro's Uneconomic Fund.

**Response:**

Please refer to the response to CEC IR 1.45.7.

30.5 Please provide the average funding that is provided.

**Response:**

Please refer to the response to CEC IR 1.45.7.

30.6 Please provide further explanation as to the ranking based on the lowest cost per customer.

[13] https://www.bchydro.com/content/dam/hydro/medialib/internet/documents/appcontent/your_account/BC_Hydro_Electric_Tariff.pdf.

**Response:**

The following describes the method, as found on page 32 of BC Hydro's Terms and Conditions.[14]

> *"Each year applications will be received and funds will be allocated on the basis of lowest cost per Customer connected to the BC Hydro distribution system."*

The Company is unable to provide further explanation other than what is in BC Hydro's Terms and Conditions about the ranking method.

30.7 Please provide a description why a residential condominium or rental accommodation would receive discriminatory treatment versus single family detached dwellings or duplexes.

**Response:**

The excerpt provided is for BC Hydro's Uneconomic Fund and as such FEI cannot comment on the eligibility requirements. Please refer to the response to CEC IR 1.47.6 for a discussion of the eligibility for FEI's SEF.

30.8 Please explain why commercial customers would be discriminated against in favour of a select group of residential customers.

**Response:**

Please refer to the response to CEC IR 1.30.7.

30.9 Please confirm that in customer rates for all classes the costs related to main extensions paid for by the utility are included in all customer rates or if not please provide the explanation.

[14] https://www.bchydro.com/content/dam/hydro/medialib/internet/documents/appcontent/your_account/BC_Hydro_Electric_Tariff.pdf.

**Response:**

Under FEI's cost of service ratemaking, the cost of distribution mains are allocated to all non-bypass customers and correspondingly are included in the applicable rates for those customers.

**31. Reference: Exhibit B-1, Page 41**

> In BC, similar government policy promoting the expansion of natural gas to off system communities does not yet exist as it does in Ontario, Quebec and parts of the US. The Company notes that having a supportive government policy is critical to the successful development of a program to serve these types of customers. FEI intends to continue to pursue the need to provide natural gas service to off system communities with the provincial government. Consequently, FEI does not make any related recommendations in this Application.

31.1 Please explain further why having a government policy in place is critical to the development of a program to serve off system communities and cannot be undertaken in its absence.

**Response:**

This answer responds to CEC IRs 1.31.1 to 1.31.4.

In the absence of relevant government policy supporting the connection of off-system communities, it would be difficult for a community to meet the existing MX Test parameters to connect to the system. The existing test was not developed for, and did not consider, the adition of whole communities. In the past whole communities connected as a result of the desire for municipal and provincial governments to bring gas to new area. The MX test in comparison primarily is designed to extend the system a short distance to nearby homes and businesses.

As discussed in the response to BCUC IR 1.45.5, there are a number of ways in which governments can enable the adoption of natural gas in communities that are not currently attached to a distributed system. One such example is found in Ontario. There the provincial government recently created a policy regarding serving off system communities and made $230 million available to support the policy. In support of this policy, Union Gas submitted an application for a reduction to their PI from 0.8 for individual main extensions to 0.4 for off-system communities to make it easier for them to connect. Union Gas' application is also requesting that off system communities be exempt from the current 1.0 portfolio threshold.

Main extensions to the 180 off system communities FEI identified are likely to not meet the PI threshold in the MX Test. In FEI's experience, the CIAC for these types of projects would be cost prohibitive for these customers and municipalities; as a result, these projects would not likely proceed. Without policy assistance from the BC government, it is unlikely that these communities could attach.

FEI has had and continues to have on-going discussions with the provincial government about servicing off system communities; however, at this time FEI does not know, nor does it have any evidence of, the provincial government's intent to develop a policy or funding, or its timeline to do so.

31.2 Please describe the ways in which FEI will pursue he need to provide natural gas service to off system communities with the provincial government.

**Response:**

Please refer to the response to CEC IR 1.31.1.

31.3 Please describe when FEI intends to conduct these activities, and when it expects to achieve a government policy in this regard.

**Response:**

Please refer to the response to CEC IR 1.31.1.

31.4 Please provide evidence with respect to the government's policy intent to do this.

**Response:**

Please refer to the response to CEC IR 1.31.1.

31.5 Please confirm that the Commission jurisdiction in this application has not been limited by government.

**Response:**

Confirmed.

**32. Reference: Exhibit B-1, Page 44**

> The Company has addressed the additional requests of Commission staff. However, the level of MX reporting has become highly dis-aggregated and represents an administrative burden. FEI feels strongly that continuing to incur the time and expense on an annual basis to respond to the increased MX reporting requirements will not deliver benefits in terms of a better understanding of the performance of the main extensions and does not warrant continuing with the current approach.
>
> With the additional requirements imposed over time, FEI's MX reporting practices are much more stringent than is the norm. EES concluded that FEI has the most stringent reporting requirements of the utilities surveyed, and the Company is the only major utility in BC that is required to provide system extension related reporting to the Commission.[54]

32.1 Please provide FEI's approximation of the costs associated with the administrative burden relative to the 'norm'.

**Response:**

For clarity, the Company's reference to the norm is with respect to the reporting requirements of some of the other utilities. The EES Report attached as Appendix A to the Application contains the results of a utility survey which found that the Company's reporting requirements are the most stringent out of all the utilities surveyed. For instance, in BC, neither BC Hydro nor PNG is obligated to provide the annual reporting that is required of FEI. Further, ATCO Gas is in the process of eliminating any reporting requirements as part of their PBR (Performance Based Ratemaking).

In total, the Company estimates the MX Report, excluding extraneous activities, requires approximately 500 labor hours, costing approximately $100,000 annually to produce. Please refer to the response to BCUC IR 1.32.2.

**33. Reference: Exhibit B-1, Page 45**

> The current approach to MX reporting, as it has evolved, is an exercise of re-running the original main extensions test that was conducted at the time a main extension was contemplated, with the best information available at the time, but updated with some actual values for cost, consumption and customer attachments that have been realized at the time the reporting is conducted; while re-forecasting future costs, consumption and attachments. The reporting approach compares the updated PI's produced for reporting purposes with those produced at the time the main extensions were contemplated, with the goal of evaluating the profitability of the main extension at that point in time.
>
> FEI understands that the intended result of this analysis is to indicate the economic impact on existing customers from the Company's main extension activity. The Company submits that the current approach to reporting of comparing forecast to a combination of actuals and re-forecasted information is not meaningful for determining the economic performance of main extensions and does not and cannot indicate if customers have been exposed to an undue cost burden.
>
> The MX Test conducted at the time a system extension is contemplated is based on a forecast. There are a variety of factors at play, and there is a practical limit on the amount that can be invested cost-effectively in refining estimates for main extensions. As such, it is expected that there will be differences between the forecast and what actually occurs. Therefore the comparison of the PI results of an MX Test updated with actual data from the reporting year and other data which is re-forecasted from a different point in time, with the PI results of the original Test does nothing more than highlight the inevitable variances over an arbitrary reporting period. This does not indicate the economic performance of a main extension over its life.

33.1 Please provide a summary of the historical results for the last 10 years' analysis of mains extensions that has been undertaken, and compare these results to the original expectations for the economic performance of the Main extensions.

**Response:**

As discussed in the response to BCUC IR 1.2.1, the Company is unable to provide the information requested.

33.2 Would it be reasonable to assume that a reasonable forecast should not be consistently over or under, but should even out over a period of time?

**Response:**

It is reasonable to expect a forecast to even out over time. This is particularly true with main extensions as more customers will attach to a main throughout the useful life of the main. As shown in the response to BCUC IR 1.3.1, a significant portion of actual customer attachments happen beyond a five or even 10 year forecast, suggesting that the actual number of customer attachments at end of the life of the main extension could exceed the original forecast.

33.3 However, would it be absolutely certain that at any given point in time it would be impossible to have definitive data with respect to the performance of the MX test on the basis of analysis of past data for any reasonable length of time?

**Response:**

This answer responds to CEC IRs 1.33.3 and 1.33.3.1.

It would be impossible at any given point in time to have definitive data to evaluate the performance of a main based on past data, except at the end of life of the main. Note also that the MX Test cannot be used to evaluate the past performance of a main. Rather, at the end of the useful life of a main a cost of service evaluation (for each year of the main) would be required.

Evaluating the forecast to actual variance annually, as is the case with the current MX reporting, is only valuable to show the inevitable variability in forecasts. It in no way can suggest the performance of the main. The Company believes, however, that over time the attachments variance between actual and forecast will narrow. Please refer to the response to CEC IR 1.33.2.

33.3.1 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.33.1.

33.4 How should the Commission assess the adequacy of FEI forecasting and economic planning if not through a comparison of forecast to actual results?

**Response:**

Please refer to the responses to BCUC IRs 1.32.1 and 1.32.7.1 for a discussion of the Company's proposal for an annual report and for the Company's view on a more granular level of reporting.

**34. Reference: Exhibit B-9, CEC 1.33.6**

> First, the approach assumes consumption as reflected in the MX Test is intended to be a forecast of what new customers on the extension will consume, when in fact it is a credit for consumption based on the usage of *existing* customers that is intended for a different purpose. EES stated:
>
> > *"These average use numbers are not intended to reflect the use of customers in the future but rather reflect the average usage of all customers on the system. That allows new customers to be treated equitably compared to existing customers."*[66]
>
> The 2015 EES Report shows that it is standard practice to use the consumption of existing customers when developing an estimate for revenue.
>
> In essence, evaluating a main extension based on variances of use per customer misses the point. The appropriateness of the credit based on average use per customer does not change simply because the consumption of new customers on a particular extension differs from the rest of the system.

34.1 Please confirm that in 'developing an estimate for revenue' the existing customer use is intended as a proxy for the forecast customer use?

**Response:**

This answer responds to CEC IRs 1.34.1, 1.34.1.1 and 1.34.2.

Confirmed that in developing an estimate for revenue, the existing customer use (i.e. the credit) is used as a "proxy" in the MX Test in that it provides an indication of the value of consumption based on the REUS. Please refer to the responses to BCUC IR 1.4.3 and 1.35.1 for further discussion.

34.1.1 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.34.1.

34.2 Please explain what options are open to FEI to acquire information so that they can generate a revenue forecast based on the expectations of the new customer use rather than on existing customer use.

**Response:**

Please refer to the response to CEC IR 1.34.1.

34.3 Please confirm that changes in future use of customers can be highly dependent on new building design, equipment specification and behavioural aspects of customer use.

**Response:**

Confirmed.

34.4 Please confirm that many new buildings using natural gas will have potentially multiple customers and cycles of equipment over the life of a main extension.

**Response:**

Confirmed.

**35. Reference: Exhibit B-1, Pages 47 and 48**

> In simple terms, the Rate Impact analysis looks at what customer rates would be in aggregate with and without actual, historical system extensions installed within a predetermined period (EES used 2008 to 2014[57] in its analysis). This point in time analysis considers whether the incremental revenue and cost of extensions completed in the predefined timeframe raises or lowers customer rates, all else equal. If rates with capital growth equal rates without capital growth, it indicates a balance of new and existing customer interests having been met. If the rates are not equal, the Company may want to consider changes to its policies.
>
> ***3.4.3.2 Results of the Rate Impact Approach***
>
> Within the time frame analysed in the Rate Impact analysis, EES concluded that customer rates have decreased as a result of historical system extensions, meaning that existing customers appear to have benefitted from overall system extensions that occurred from 2008 to 2014. In its most recent report, EES has determined that customer rates have gone down by over $10 per year, equivalent to $0.058 per gigajoule (GJ), as a result of customer growth.
>
> Since the analysis shows that FEI's customers have benefitted through lower rates as a result of historical system extensions in the timeframe reviewed, there is an opportunity to update the Company's policies and still balance the interests of both new and existing customers.

35.1 Please confirm that according to the rate impact approach, a zero change in customer rates would indicate balance between existing customers and new customer benefits in terms of economic impact from the utility.

**Response:**

Confirmed that a zero change in customer rates during the analysis period would indicate a balance between existing customers and new customers in terms of economic impact from the mains added during the period. However it is important to note the the EES approach to reporting only considers the effect over a short window of time. It does not forecast and/or consider the addition of customers beyond the review window (which is appropriate as trying to forecast future years and use this to compare against a previous forecast would result in the same problems as the existing MX reporting methodology). If the rate impact approach to a report shows a zero change to customer rates, and if a similar pattern of attachments to mains occurs as noted in response to BCUC IR 1.3.1, then the lifetime overall effect of the main on existing customers will be much greater than that reported for the time period in the rate impact approach. In other words the impact to customer rates over time would be positive not zero.

35.1.1 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.35.1.

35.2 Please provide further context for the $10 reduction in rates per year (i.e., average residential bill?)

**Response:**

As indicated in the preamble, the Rate Impact Analysis conducted by EES in the most recent report determined that customer rates have gone down by over $10 per year, equivalent to $0.0058 per gigajoule as a result of customer growth. The $10 reduction in rates per year is the average over all customer bills and would differ by individual customer class.

35.3 Please discuss whether or not there are additional societal benefits, other than potential GHG reductions that accrue as a result of growth on the FEI system and identify those benefits.

**Response:**

FEI believes there are many additional societal benefits, other than potential GHG reductions including, but not limited to, the following:

- Energy choice for customers;
- Savings in energy bills for customers;
- Greater disposable income for customers;
- Economic multiplier effect due to greater disposable income;
- Economic development due to attracting new businesses to the Province; and
- Tax and royalty income due to increased domestic use of gas.

All these effects positively impact customers and communities and therefore can be considered a societal benefit.

**36. Reference: Exhibit B-1, Page 51**

> ***4.1.1.1 Analysis of DCF Term***
>
> The following section analyzes the impact of a 40 year term on the incremental revenue in the Test, CIAC and impact on rates. By extending the term to 40 years, the incremental revenue of new customers will be more accurately captured in the Test. This will result in a smaller percentage of customers paying a CIAC, and a reduced amount of a CIAC for those that do pay while still protecting the interests of existing customers.
>
> The Company conducted an analysis of the mains installed between 2008 and 2014 to determine the impact of extending the DCF term to 40 years on:
>
> - the revenue and costs in the MX Test;
> - the percentage of MX Tests requiring a CIAC; and
> - customer delivery rates.

36.1 Please provide the discount rate to be used for the upcoming year.

**Response:**

The discount rate to be used for 2016 will not be available until the approval of the Company's Annual Review for 2016 Rates, which is expected by the end of 2015 The discount rate that was used as a parameter in FEI's 2015 MX test is 4.90% and reflects the after tax inflation adjusted weighted average cost of capital forecast for 2015.[15]

36.2 Please provide further details as to why FEI selected 40 years as the appropriate term when the service life of a main is considerably longer.

**Response:**

This answer responds to CEC IRs 1.36.2 to 1.36.3.2.

FEI considered a DCF term as long as 65 years, which would be consistent with the life of a distribution main, and performed certain analyses (Tables 4-2 and 4-3 of the Application) using DCF terms as long as 50 years. Although an argument could be made for increasing the DCF term to 50 years or greater, the Company selected a 40 year DCF for the following two main reasons:

[15] Due to timing of the FEI Annual Review for 2015 Rates, the 2015 capital structure was not approved by January 1, 2015 for use in the 2015 MX Test parameters.

- Extending the DCF term to 40 years will not unduly burden existing customers as it will have a minimum impact on rates of $0.002/GJ, with a reduction of $2.0 million in CIAC; and
- Consistency with other utilities surveyed.

36.3 Did FEI consider using 50 years or 60 years?

**Response:**

Please refer to the response to CEC IR 1.36.2.

36.3.1 If yes, please discuss why FEI declined to use those terms.

**Response:**

Please refer to the response to CEC IR 1.36.2.

36.3.2 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.36.2.

36.4 Please provide the amount of the expected CIAC contribution with the proposed MX test.

**Response:**

The Company is not able to forecast the number of customers that would change their decision to install natural gas due to the DCF term being extended and thus cannot provide the expected CIAC contribution if the 40 year DCF were approved. However, it is forecast that the frequency of the CIAC will decrease from 10% of the total main extensions to 4.8% as seen in Table 4-3 of the Application (all else equal).

**37. Reference: Exhibit B-1**

> The Company conducted an analysis of the mains installed between 2008 and 2014 to determine the impact of extending the DCF term to 40 years on:
>
> - the revenue and costs in the MX Test;
> - the percentage of MX Tests requiring a CIAC; and
> - customer delivery rates.
>
> Between 2008 and 2014, 5,492 mains were installed by the Company. FEI conducted a CIAC analysis using a proxy version of the 2015 MX Test since it would be impractical to re-run thousands of individual MX tests to determine the impact on each CIAC by extending the DCF term. The analysis was run using sensitivity scenarios with different consumption, capital costs and DCF terms to estimate the potential reductions in customer contributions as a result of considering longer DCF time frames in the MX Test.
>
> The consumption scenarios were as follows:
>
> - 68.3 GJ represents a new customer;
> - 84.2 GJ represents an existing customer; and
> - 58.8 GJ represents a new customer with low consumption.

37.1 Please confirm the figures represent annual consumption.

**Response:**

Confirmed.

37.2 Please provide the average annual consumption for residential, commercial and industrial customers.

**Response:**

The requested consumption (Use Per Customer) values for 2015 (the most recent year of actual information) are provided below. Values can be found in Appendix A2 of FEI's Annual Review for 2016 Rates.

| | | GJ/Yr |
|---|---|---|
| 2014 FEI Actual UPC | Residential (Rate Schedule1) | 84.2 |
| | Commercial (Rate Schedule 2) | 330.6 |
| | Commercial (Rate Schedule 3) | 3,573 |
| | Commercial (Rate Schedule 23[16]) | 5,260 |

An average UPC is not provided for an industrial[17] customer given the magnitude of the consumption variation. For example, an industrial customer's usage can range from less than 5,000 GJ to over 2,000,000[18] GJ per year; therefore, an average UPC for industrial customers would be meaningless.

37.3 Please provide the average annual consumption for all FEI customers.

**Response:**

As stated in the response to CEC IR 1.37.2, the Company is not able to provide an average UPC for an industrial customer and is therefore not able to provide an average UPC for all FEI customers. The Company has approximately 1,000 industrial customers consuming anywhere from less than 5,000 GJ to over 2,000,000 GJ. As a result, the small number of industrial customers using a large volume of gas would significantly skew any average and create a misleading result.

37.4 If the average annual consumption for all FEI customers is not 84.2 GJ, please explain why FEI selected this figure to represent an existing customer.

**Response:**

The average annual consumption for a residential customer is 84.2 GJ. FEI used a residential customer in its sensitivity analysis since the majority of its main extensions are for residential customers.

[16] Transportation only.
[17] Industrial means Rate Schedules 4, 5, 25, 7, 27 and 22.
[18] Excludes NGT, Rate 16, Burrard and TPT 1,2,3 & 4.

37.5 Please explain how FEI selected 68.3 GJ as the figure to represent a new customer.

**Response:**

The normalized average actual consumption for all new residential customers that connected to the Company's system from 2008 to 2014 is 68.3 GJs. Multiple years of data were used to calculate the average because a larger base of customers helps to ensure a more realistic and balanced average consumption value that reflects all FEI regions and weather years.

37.6 Please explain how FEI selected 58.8 GJ to represent a new customer with low consumption.

**Response:**

The Company assumed 30% less for a new customer with low consumption compared to the FEI average residential customer base (84.2 GJ x 70% = 58.8).

**38. Reference: Exhibit B-1, Page 52**

> Table 4-2 below summarizes the increase in revenue associated with various increases in the DCF term in each of the four capital cost scenarios. For example, in one scenario, the DCF term was 40 years, the capital cost was $11,600 and FEI varied the consumption between 58.8 GJ, 68.3 GJ and 84.2 GJ to determine the impact on revenue. In this example, the revenue calculated for the MX Test increased by 41.3% to 43% with an average of 42.2%.

**Table 4-2: Impact on MX Test Revenue of Extending the DCF Term (% increase)**

| DCF Life | $1,060 (Bottom 10%) | $11,600 (Average) | $50,000 (Captures 97%) | $500,000 (Large Project) |
|---|---|---|---|---|
| 30 | 26.4% | 26.2% | 25.6% | 29.3% |
| 35 | 34.7% | 35.2% | 34.3% | 39.0% |
| 40 | **42.5%** | **42.2%** | **41.1%** | **46.8%** |
| 45 | 48.1% | 47.7% | 46.4% | 52.3% |
| 50 | 52.4% | 52.1% | 50.6% | 56.8% |

38.1 Please confirm that the 'increase' refers to an increase in revenues for a single main extension within the size category over that which would have been predicted based on a 20 year planning horizon.

**Response:**

Confirmed.

38.2 If possible, please provide an estimate of what the average revenue increase would be for each DCF life using a proportional weighting for the size of the Main Extension based on actual numbers of extensions in the size categories.

**Response:**

The Company has updated the table below based on cost data for all main extensions installed from 2008 to 2014. The Company clarifies that increasing the DCF term only impacts the required CIAC for main extensions that failed the MX test. For main extensions that passed the MX test, increasing the DCF term will have no impact on CIACs since there would be no required CIAC from the customer. As seen below, using proportional weighting, the average revenue increase for the 40 year DCF would be 42.1%.

| 2015 FEU Residential and Commercial Mixed Use DCF Revenue Impact | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DCF Life | $1,060 (Bottom 10%) | Proportion of Mains in Cost Category | $11,600 (Average) | Proportion of Mains in Cost Category | $50,000 (Captures 97%) | Proportion of Mains in Cost Category | $500,000 (Large Project) | Proportion of Mains in Cost Category | Weighted Average |
| 30 | 26.4% | 4.5% | 26.2% | 67.8% | 25.6% | 24.9% | 29.3% | 2.8% | 26.1% |
| 35 | 34.7% | 4.5% | 35.2% | 67.8% | 34.3% | 24.9% | 39.0% | 2.8% | 35.1% |
| 40 | 42.5% | 4.5% | 42.2% | 67.8% | 41.1% | 24.9% | 46.5% | 2.8% | 42.1% |
| 45 | 48.1% | 4.5% | 47.7% | 67.8% | 46.4% | 24.9% | 52.3% | 2.8% | 47.5% |
| 50 | 52.4% | 4.5% | 52.0% | 67.8% | 50.6% | 24.9% | 56.8% | 2.8% | 51.8% |

38.3 Please provide the dollar increases for each figure in the table based on a single extension in the size category.

**Response:**

The Company chose a random main extension in each cost category and has provided examples of the dollar increases for each one in the table below.

| DCF Life | $1,060 (Bottom 10%) | MX Test Estimated NPV of Cash Inflows (Revenue) | $11,600 (Average) | MX Test Estimated NPV of Cash Inflows (Revenue) | $50,000 (Captures 97%) | MX Test Estimated NPV of Cash Inflows (Revenue) | $500,000 (Large Project) | MX Test Estimated NPV of Cash Inflows (Revenue) |
|---|---|---|---|---|---|---|---|---|
| | Orginal MX Test (20Yr) | $1,167 | Orginal MX Test (20Yr) | $5,684 | Orginal MX Test (20Yr) | $27,481 | Orginal MX Test (20Yr) | $195,097 |
| 30 | 26.4% | $ 1,474 | 26.2% | $ 7,174 | 25.6% | $ 34,514 | 29.3% | $ 252,182 |
| 35 | 34.7% | $ 1,572 | 35.2% | $ 7,684 | 34.3% | $ 36,909 | 39.0% | $ 271,180 |
| 40 | 42.5% | $ 1,663 | 42.2% | $ 8,084 | 41.1% | $ 38,780 | 46.5% | $ 286,348 |
| 45 | 48.1% | $ 1,728 | 47.7% | $ 8,397 | 46.4% | $ 40,245 | 52.3% | $ 297,166 |
| 50 | 52.4% | $ 1,779 | 52.0% | $ 8,643 | 50.6% | $ 41,393 | 56.8% | $ 305,976 |

38.4 If possible, please provide the total dollar figures for the revenue increases that would accrue under each DCF life term.

**Response:**

The Company has provided the total dollar figures of MX test revenue for the 551 main extensions that had contributions in the table below. The Company did not conduct an analysis

on the main extensions that passed the MX test, since a CIAC is not required from those main extensions.

| | MX Test Revenue | Gains Over Original 20 Year DCF |
|---|---|---|
| **20 Years (Original MX Test)** | $ 9,128,021 | $ - |
| **30 Years** | $ 11,573,049 | $ 2,445,028 |
| **35 Years** | $ 12,398,580 | $ 3,270,559 |
| **40 Years** | $ 13,053,009 | $ 3,924,988 |
| **45 Years** | $ 13,549,775 | $ 4,421,754 |
| **50 Years** | $ 13,943,638 | $ 4,815,617 |

38.5 Please provide the cumulative % which each category captures comparable to the 97% for $50,000.

**Response:**

The cumulative percentage for each capital cost category is provided below.

| $1,060 (Bottom 10%) | $11,600 (Average) | $50,000 (Captures 97%) | $500,000 (Large Project) |
|---|---|---|---|
| 4.5% | 72.3% | 97.2% | 100.0% |

38.6 Please confirm whether this % is based on number of extensions or on $ totals of extensions and please provide the other type of cumulative % number not of the type represented by the 97% number.

**Response:**

The table provided in the response to CEC IR 1.38.5 is based on the number of main extensions categorized by their actual capital cost. For example, 72.3% of all main extension have an actual capital cost of $11,600 or less and 4.5% of all main extensions have an actual capital cost of $1,060 or less.

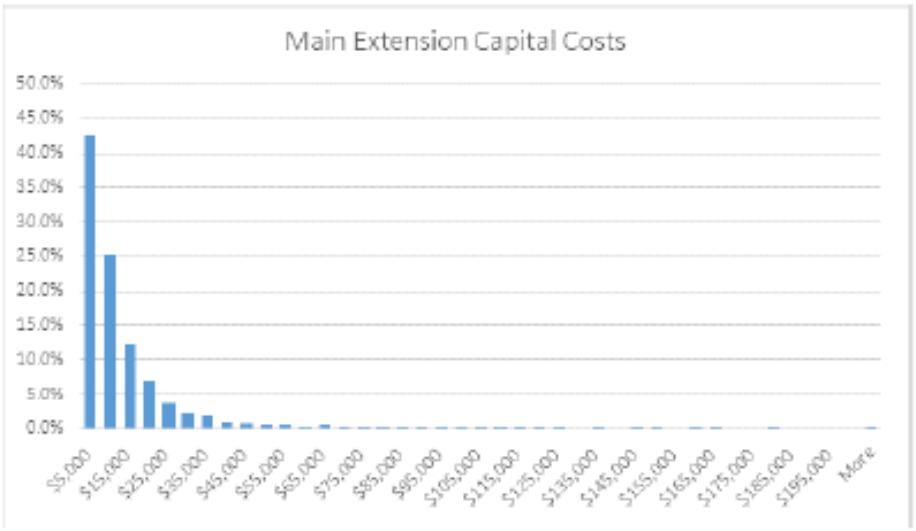
The table below provides a breakdown for each category based on the actual capital expenditures on main extensions from 2008 to 2014 in dollars and as a proportion. The capital cost totals do not include any CIAC's received by the Company.

| Category Range | Category Name | $ | % of Total |
|---|---|---|---|
| **$0-$1,060** | $1,060 (Bottom 10%) | $ 146,830 | 0.2% |
| **$1,061 to $11,600** | $11,600 (Average) | $ 18,889,689 | 28.8% |
| **$11,600 to $50,000** | $50,000 (Captures 97%) | $ 29,919,268 | 45.6% |
| **$50,000-$500,000** | $500,000 (Large Project) | $ 14,169,109 | 21.6% |
| **$500,000+** | Greater than $500,000* | $ 2,427,163 | 3.7% |
| | **Total Main Extension Capital Spend 2008-2014** | **$ 65,552,058** | **100%** |

** Two Projects*

**39. Reference: Exhibit B-1, Pages 54 and 55**

**Figure 4-1: Main Extension Capital Cost Frequency Distribution**

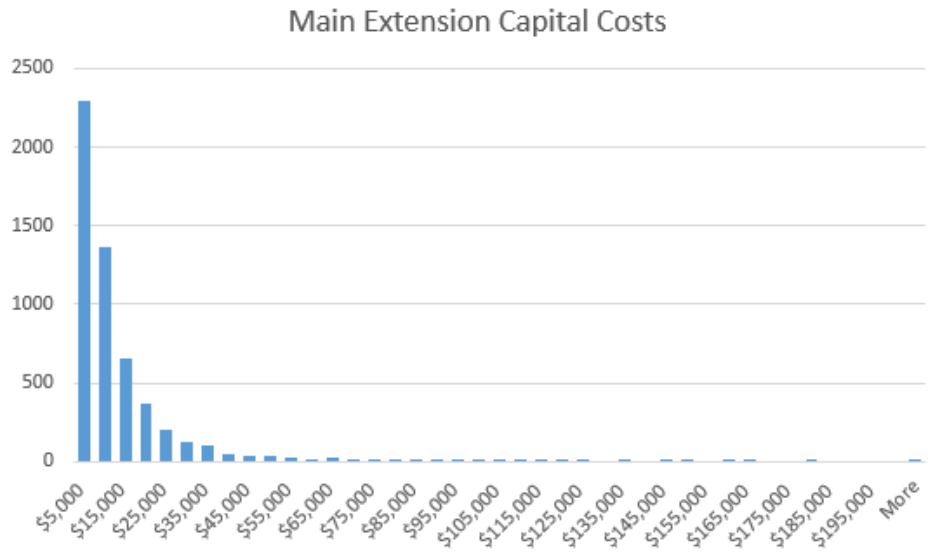



As seen above, between 2008 and 2014, the majority (90%) of main extension costs are $25,000 or less and only 10%, or 549, out of 5,492 mains comprised the balance. Three main extensions had a cost greater than $500,000.

39.1 Please provide this same graphic with the number of mains as the vertical axis.

**Response:**

The requested chart is below.



**40. Reference: Exhibit B-1, Page 55**

> ***4.1.2.1 Recommendations for Customer Addition Estimate***
>
> The Company proposes to use a 10 year horizon for customer attachments in certain circumstances when it can be reasonably demonstrated by the customer or municipality that there is a longer term municipality-accepted plan for growth exceeding five years. The eligibility for the use of a 10 year customer addition forecast in the MX Test will be limited to developers and municipalities on a case by case basis. Requests will be evaluated throughout the year by FEI. FEI will utilize the following types of data to determine if a planning horizon period greater than 5 years is appropriate for use in the MX Test of a given project:
>
> - Municipal Official Community Plans;
> - Zoning plans;
> - Discussions with municipal city planners;
> - Evidence of commercial commitments having been made with developers; and
> - The various options available to the Company to install a main (s) to serve the area.
>
> The Company is also recommending including a summary of the 10 year customer addition forecast projects in its annual MX reporting. Specifically, the Company will provide the following:
>
> - The number of main extensions using a 10 year customer addition forecast;
> - The actual costs for the mains; and
> - The number of customers providing a CIAC and the dollar value of any CIAC provided.
>
> The Company believes the revenue for these longer horizon system extensions will be more fairly represented using a 10 year horizon. Additionally, the Company expects improvements in the efficiency and cost to install these types of main extensions by taking a longer term view. However, it is impractical to estimate the rate impact of this recommendation.

40.1 Will FEI provide any documentation as to how it is reasonably demonstrated by a customer or municipality that a longer term is appropriate?

**Response:**

This answer responds to CEC IRs 1.40.1 and 1.40.1.1.

FEI understand the question to be asking about FEI's annual MX Reporting. With respect to the annual MX reports, the Company is not proposing to provide documentation to show a customer or municipality has reasonably demonstrated that a longer term is appropriate for individual main extensions because such documentation is not necessary for the Commission to have sufficient oversight over the Company's main extension activities. Additionally, such

requirement would add unnecessary administrative burden to track, catalogue and submit documentation on a per project basis.

40.1.1 If not, why not.

**Response:**

Please refer to the response to CEC IR 1.40.1.

40.2 How did FEI select 10 years as the appropriate cut-off for those longer term plans? Please explain.

**Response:**

This response addresses CEC IR 1.40.2, 1.40.3, 1.40.4 and 1.40.4.1.

FEI selected a 10 year term, as opposed to other terms such as 15, 20 or 25 years, based on the practices of some of the other natural gas utilities in Canada using a 10 year term.

Although some municipal and community plans may address periods longer than 10 years and it is clear that the benefit of customer attachments on main extension extends beyond 10 years, the Company believes its proposal represents a reasonable, conservative solution to address the situation of a relatively small percentage of customers.

40.3 Do municipal and community plans ever address terms beyond ten years? Please discuss.

**Response:**

Please refer to the response to CEC IR 1.40.2.

40.4 Did FEI consider other terms such as 15, 20 or 25 years?

**Response:**

Please refer to the response to CEC IR 1.40.2.

40.4.1 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.40.2.

40.4.2 If yes, please explain why each of these options were discarded and how many main extension projects would be affected by the cut-off in any given year and include the expected dollar size of the projects that would benefit from assessment using an horizon greater than 10 years

**Response:**

Please refer to the response to CEC IR 1.40.2.

40.5 Please provide a general estimate as to the proportion of extensions that would fall in the 10 year category.

**Response:**

Please refer to the response to BCUC IR 1.24.2 where FEI estimates less than 1 percent of main extensions would fall in the 10 year category.

40.6 Would it be useful to distinguish between those extensions that are likely to result in commercial or industrial use versus residential use in determining which extensions should have a longer horizon?

**Response:**

Yes, it would it be useful to distinguish between those extensions that are likely to result in commercial or industrial use versus residential and/or residential/commercial mixed-use in determining which extensions should have a longer horizon. As indicated in response to BCUC IR 1.24.3, the Company will rely on the same type of information in forecasting customer additions to apply to an MX Test as described in response to BCUC IR 1.2.4, whether the forecast period be 5 years or 10 years. In reviewing the information, the Company may decide that a longer 10-year forecast period should be applied because there is a reasonable indication of a planning horizon period that exceeds 5 years.

40.6.1 If not, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.40.6.

40.7 Please provide a brief discussion as to whether or not commercial or industrial projects take a potentially longer time to fill in than do residential projects.

**Response:**

The Company does not have any evidence that suggests that commercial projects take a potentially longer time to fill in than do residential projects. Commercial projects are developed to support the changing needs of a neighborhood. However, they are usually built and occupied within a similar time horizon and should be captured in the 10 year horizon (if this horizon is applicable).

Industrial projects on the other hand usually have no direct affiliation to residential, commercial and/or residential/commercial mixed-use developments and therefore would usually be excluded from the MX calculations under the planning horizon.

40.8 If commercial and industrial projects take a longer time to fill in than residential projects, are revenues from these rate classes more likely to be excluded from the MX calculations under a 5 or 10 year planning horizon than the residential rate classes?

**Response:**

Please refer to the response to CEC IR 1.40.7; however any reasonable customer addition that is not considered within the planning horizon will have the effect of lowering the PI of the MX test.

40.8.1 If yes, would such a scenario skew the results of the ex-post analysis of the MX extensions? Please explain why or why not.

**Response:**

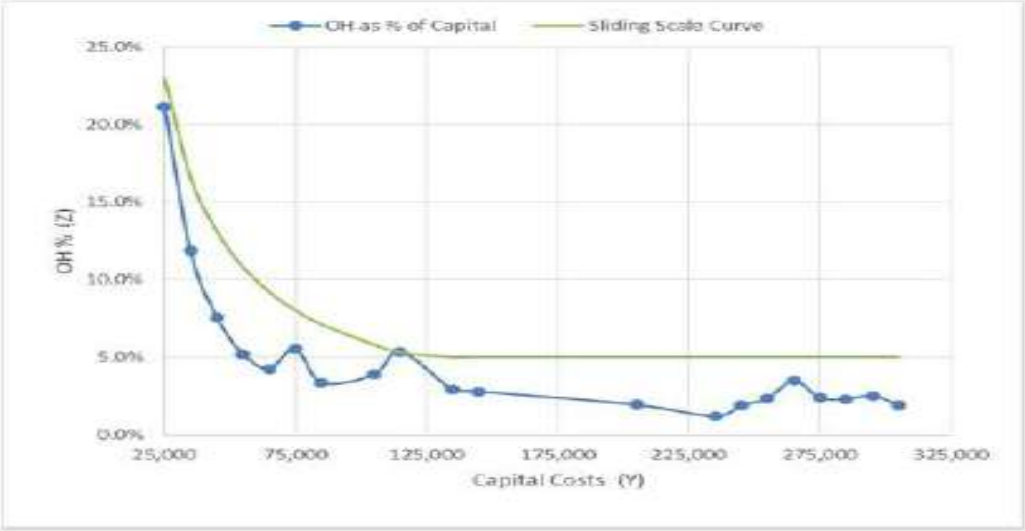
Yes, the addition of a large commercial or industrial customer that was not considered in the original MX test but was then added will have a large positive effect and would skew the ex post analysis of the MX extensions that only considers the original MX test time frame.

**41. Reference: Exhibit B-1, Pages 56 and 57**

FEI is recommending a sliding scale overhead rate for projects with direct capital costs greater than $25,000. The annual overhead percentage applied would decrease based on the percent of direct overheads to direct capital costs. The overhead rate would have a floor equal to five per cent.[62]

As discussed in the Section 3.3.1.4, overhead costs do not have a linear relationship to the direct capital cost of a main extension. The relationship is demonstrated in the following Figure 4-2 where overheads as a percentage of capital costs are graphed in a scatter plot (solid blue line with markers).

**Figure 4-2: Overhead as a Percentage of Capital Cost & Sliding Scale**




**Main Extension Capital Cost of greater than $25,000:**

- The MX Test will calculate the overhead rate as set out in the formula below.

$$Z = Greater\ of \left( \frac{X}{25{,}000^{-0.963}} \times Y^{-0.963} \right) AND\ 5\%$$

Where:
X = Annual fixed overhead rate
Y = Capital cost of project (before overheads applied)
Z = Overhead Rate used for this project in MX Test

41.1 Please explain why FEI selected $25 thousand as the cut off for the sliding scale.

**Response:**

In arriving at a simple and easy to apply threshold to determine when the sliding scale overhead should be applied, FEI considered the overall mix of project cost levels and the magnitude of overhead.

Since the vast majority of projects fall below $25,000 (approximately 89%) and result in an overhead of approximately $6,000 or less (which FEI believes is a reasonable estimate of overhead for projects of this size), FEI found $25,000 to be the reasonable cost threshold that a main extension project must meet or exceed for the application of the sliding overhead scale.

41.2 Please provide the proportion of projects which would likely be under the $25 thousand threshold.

**Response:**

Please refer to the response to CEC IR 1.41.1.

41.3 Why did FEI select 5% as the base?

**Response:**

FEI chose 5% as the base so that the base overhead percentage (floor) was no less than the overhead rate that the data produced. Five percent is a reasonably conservative level.

41.4 Please confirm that the above chart indicates that the overhead rate would exceed the actual overhead costs at all times except at about $120,000.

**Response:**

Confirmed regarding the information in the chart; however, the sliding scale is intended to remove the disproportionate allocation to higher cost extensions by matching the overheads in the MX Test to historical data and the proposed approach is expected to significantly improve

the alignment of the actual overhead costs with the costs allocated in the MX Test while providing a simple to administer calculation.

41.5 Would it be reasonable to provide an overhead rate that matched the actual expected overhead based on capital costs? Please explain why or why not.

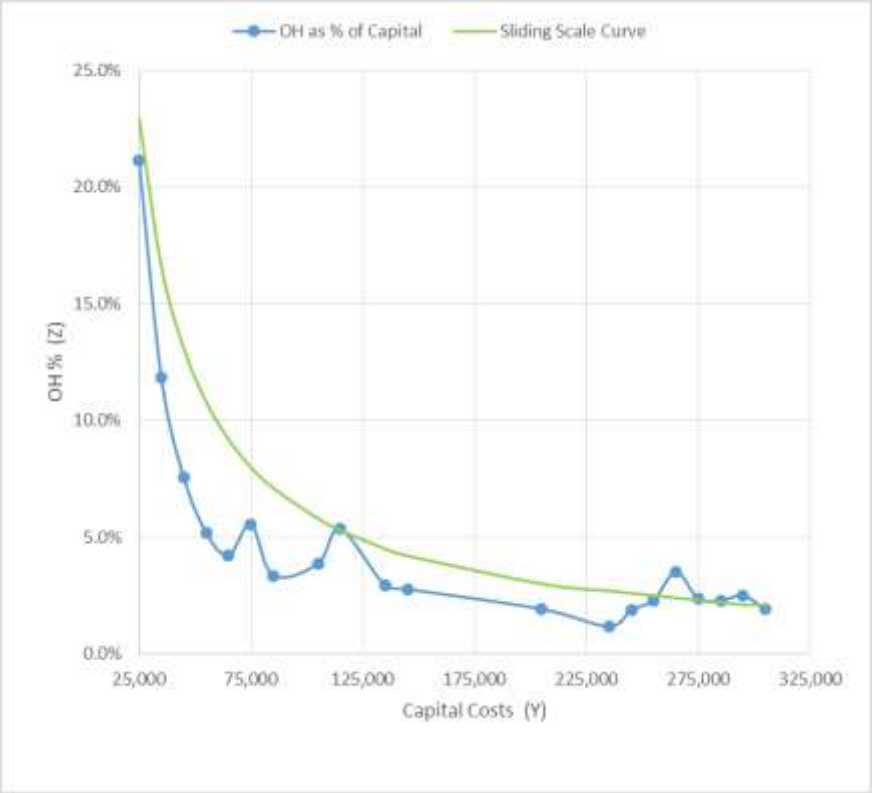
**Response:**

No, it would not be reasonable to provide an overhead rate that matched the actual expected overhead based on capital costs. The estimate of actual overhead incurred would not be known until a project has been completed, and the MX Test is performed before the project is started. Thus, it would be impossible to use an actual overhead rate for a particular mains extension. The sliding scale overhead rate method is a reasonable approach using historical data to estimate the overhead a main extension would likely incur.

41.6 Please extend the curve below the 5% base to capture an average rate for projects over $125,000.

**Response:**

When the floor is set to zero, the sliding scale formula allows the overhead rate to drop to approximately 2%.


OH as % of Capital
Sliding Scale Curve
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
OH % (Z)
25,000
75,000
125,000
175,000
225,000
275,000
325,000
Capital Costs (Y)

1

2

**42. Reference: Exhibit B-1, Pages 59 and 60**

> **4.1.5 Cumulative Impact and Summary**
>
> In summary, the Company is proposing the following related to the MX Test:
>
> 1. Continuing to use the current MX Test while keeping the majority of the existing components of the Test unchanged from current practices;
> 2. Extending the DCF term from 20 to 40 years;
> 3. For projects with a planning horizon greater than 5 years, extending the customer addition forecast from 5 years to 10 years;
> 4. Apply a sliding scale to allocate overhead to projects with a direct capital cost greater than $25,000; and
> 5. Discontinuing the use of energy efficiency credits.
>
> FEI believes that these changes will help promote access to natural gas service for those who want it, while maintaining a reasonable balance with the effect on existing customers. Based on the analysis FEI undertook, the estimated annual cumulative rate impact of all of these changes is approximately $0.003 per GJ as follows:
>
> As seen above, by applying a sliding scale for the overhead allocated to capital projects greater than $25,000 in the MX Test, only 13 main extension projects would be affected by a lower CIAC, equivalent to a 0.2% reduction in the amount of CIAC received. Using the Rate Impact methodology discussed earlier in the Application, the reduction in the CIAC amount of $1,041 thousand would have a minimal impact on rates of $0.001 / GJ.
>
> To provide some context, $0.003/GJ is equivalent to an annual impact of $0.53 for each FEI customer. In addition, the estimates above do not consider the potential benefit of increased system extension installations and resulting customer additions and load that may result.
>
> In comparison, the benefit that EES calculated for existing customers from historical system extensions installed from 2008 to 2014 was significantly higher at $0.058/GJ, equivalent to over $10 per customer annually, providing support for the conclusion that customers will continue to benefit from extension policies with these recommendations in place.

42.1 Please confirm that the reduction in CIAC generated from the sliding scale overhead allocation, the proposed increase in DCF life and case by case extension for the customer addition forecast will effectively stop the benefit (per GJ reduction) for existing ratepayers that has occurred in the past as a result of growth, but will not contribute any additional material burden from new growth in the future.

**Response:**

Please refer to the response to BCUC IR 1.42.2 for a discussion of the combined impact of the Company's proposals as compared to the historical impact of adding new customers as estimated in the Rate Impact analysis.

42.1.1 If not confirmed, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.42.1.

**43. Reference: Exhibit B-1, Page 59**

> At the time the Commission approved the energy efficiency credits in 2007, the Company had a modest DSM program with an annual budget of $3.1 million, excluding partner investment. In contrast, the Commission has approved the Company's DSM program with an annual budget of approximately $35 million over the period 2014-2018.
>
> The Company believes that its current DSM program meets the needs of promoting energy efficiency; therefore, the energy efficiency credits in the MX Test are no longer required for that purpose. Furthermore, the REUS data used to estimate the consumption per customer already reflects the success of the Company's DSM programs, as seen in the gradual decline in the use per customer (UPC). In other words, as customers live in more energy efficient buildings and use more energy efficient appliances, their UPC is declining. In turn, these declining values are reflected in the MX Test.
>
> A beneficial outcome of discontinuing the use of energy efficiency credit is to make it easier to customers to understand and for the Company to administer its use in the MX Test. Only six percent of main extensions completed from 2008-2014 used the 10 percent credit and less than 1 percent used the 15 percent credit.
>
> It is impractical to re-run the MX Tests to determine the rate impact of discontinuing the energy efficiency credits. Directionally, this update will offset other updates in that it will decrease the consumption per customer in the MX Test and increase the likelihood of a CIAC being paid by the customer.

43.1 Would it be reasonable to suggest that the potential social benefit of DSM and general efficiency of energy use might be considered an offset to the revenue reductions related thereto.

**Response:**

In general, it would be reasonable to consider the potential social benefit of DSM to be a positive tradeoff for the revenue reductions to the Company due to DSM programs.

43.2 Would FEI agree the presumably passive home and building design for energy efficiency and near net zero design or even net zero design could be discouraged if the MX Test generated increased likelihood of CIAC for such levels of efficiency.

**Response:**

The Company does not agree with the presumption stated in the question above. The question assumes that home and building design for energy efficiency is related to, or even driven by a need to connect to natural gas, when in reality this is not the case. Home and building design towards near net zero or even net zero occurs independently from the cost to connect to the Company's distribution system and are driven more by government policies and standards,

available technology and a general awareness and appreciation for the environment. However, should the MX test generate increased likelihood for CIAC for homes and buildings with increased levels of energy efficiency, it could further compound the financial barrier that exists for customers to connect to the extent that the efficiency has not been taken into account by the REUS value used. FEI believes that its DSM program is the more direct way to incent energy efficiency.

**44. Reference: Exhibit B-1, Page 63**

> **4.2.3 SLCA Recommendations**
>
> The Company is proposing an SLCA of $2,150 for single family dwellings and $4,300 for duplexes for 2016. The proposal reflects that:
>
> 1. The use of the SLCA continues to be an appropriate construct to meet the needs of customers; and
> 2. FEI has followed the same methodology approved by the Commission following the 1996 and 2007 MX applications, but with current inputs.
>
> The Company is also proposing to update the SLCA annually, as it does with other MX Test parameters. In this way, FEI will be treating customers the same each year and not in a manner that leads to intergenerational inequity. Specifically, the Company will file an SLCA analysis and updated values in November each year following the same methodology it has used in 1996, 2007 and in the current Application. FEI expects that the SLCA value and tariff updates would be approved by end of the calendar year for implementation January 1 of the following year. For example, in November of 2016, the Company will file a request to the Commission to approve a revised SLCA value which would be effective January 1, 2017.

44.1 What was the original rationale for not updating the SLCA annually in the past, when the other parameters were updated?

**Response:**

FEI believes that it was an oversight that the SLCA was not updated annually in the past. The SLCA should have been updated in a manner similar to the annual updates to the parameters of the MX Test.

The Company notes the SLCA values have varied considerably from one application to the next. For example, the current SLCA approved in 2007 was $1,535, whereas the recalculated SLCA as proposed in the Application is $2,150, which represents a 40 percent increase in the cost allowance. Since annual updates will provide for a more gradual calibration of the SLCA, the Company believes it to be more fair for customers. For this reason, the Company is proposing annual updates to the SCLA going forward.

**45. Reference: Exhibit B-1, Page 64**

> **4.3.2 System Extension Fund Recommendations**
>
> FEI is proposing that the Fund be established for its natural gas customers at $1.0 million, equivalent to two thirds the size of BC Hydro's $1.5 million level, to reflect that FEI has a smaller service territory and a smaller number of new customer added annually. This will help alleviate the barrier of CIAC for some customers, and provide greater consistency with the common rate approach for FEI's service area. The fund will be recovered through gas delivery rates and will be accounted for as an offset to the CIAC additions included in rate base each year, based on the actual funding that is provided.

45.1 Please explain how FEI selected $1 million as the appropriate level for the system extension fund and identify any other figures that FEI considered.

**Response:**

Please refer to the response to BCUC IR 1.16.1 for a discussion on the size of the SEF. The Company did not consider other figures because of the analysis discussed in that IR response.

45.1.1 If FEI did not consider any other funding levels, please explain why not.

**Response:**

Please refer to the response CEC IR 1.45.1.

45.2 Please provide the number of BC Hydro customers as a proportion of FEI's customers.

**Response:**

The proportion of BC Hydro customers to FEI customers is 199%. The number of customers is provided in response to BCOAPO IR 1.2.1.

45.3 Please provide the number of customers added annually for both BC Hydro and FEI.

**Response:**

Please refer to the response to BCOAPO IR 1.2.1.

45.4 Please provide the estimated average cost of a system extension for BC Hydro.

**Response:**

According to the BC Hydro representative consulted for this IR response, there were 1,531 extensions that started construction to serve new residential accounts in F2014, with an average net construction cost of $23,345 per extension. The average CIAC for BC Hydro extensions in F2014 (serving residential developments) where CIAC was required was $14,105.

45.5 What is the average CIAC for a BC Hydro system extension where CIAC is required?

**Response:**

Refer to the response to CEC IR 1.45.4.,

45.6 How many system extensions would FEI expect to service annually with a $1 million fund?

**Response:**

Please refer to the response to BCUC IR 1.17.3.

45.7 How many system extensions does BC Hydro service annually with its $1.5 million Uneconomic Fund?

**Response:**

The following statistics were provided by the BC Hydro representative consulted for this IR response:

| Fiscal Year | # of UEA Extensions | Amount Funded by BC Hydro ($000s) |
|---|---|---|
| **2011** | 8 | $144 |
| **2012** | 16 | $198 |
| **2013** | 18 | $317 |
| **2014** | 32 | $454 |
| **2015** | 18 | $389 |

The average funding that has been provided by BC Hydro is $300,377.

**46. Reference: Exhibit B-1, Pages 64 and 65, and Appendix A, Page 8**

> As put forward by EES, *"The underlying theory behind amalgamation is that all customers should be treated equally regardless of location."*[66] By providing the Fund, the Company believes that customers who are further away from our system or, those in less densely populated areas will be able to have more equitable access to natural gas service, consistent with the theory of amalgamation.
>
> **Eligibility**
>
> Funding would be available to the owner of a single-family residential home or townhome that is a principal residence within an existing FEI service area at the time the application is taken. Multi-property developments will not be eligible, as it is targeting home owners rather than builders. Eligibility would be the same as for FEI's contributory main criteria, except that customers would not be eligible for both the Fund and a contributory main refund. FEI will provide information about applying for the Fund to customers that meet the criteria but meet a minimum P.I. ratio of 0.2 resulting from the MX Test.

> As explained by NRRI, "Regulators generally approve rolled-in pricing when a new investment stands to benefit all customers, or when demand by all customers creates the need to increase system capacity."[3] The report further explains that "in the context of gas-line extensions, a utility expands its lines strictly to accommodate new customers. Existing customers are not signaling to the utility that it should invest in new lines. They would not pay for the gas-line extensions at any price. Charging incremental rates in this example would be consistent with the cost-causality principle, which is a tenet of good utility pricing."[4]

46.1 Please provide FEI's views as to the public interest in treating customers equally and or equitably regardless of location.

**Response:**

Please see the response to BCUC IR 1.40.2.

46.2 Please provide a discussion of how the Commission should balance the underlying theory behind amalgamation (ie. treating customers equally regardless of location) with the principles of cost causation.

**Response:**

Please see the response to BCUC IR 1.40.2.

46.3 Please confirm that FEI is not proposing though the MX Test to have customers charged based on cost causation but rather is proposing a threshold or point at which customers would begin to contribute to the cost of a main extension.

**Response:**

FEI is proposing a methodology to determine whether customers contribute to the cost of a main extension and how much they contribute.

46.4 Please provide FEI's views as to whether or not the 0.2 PI serves as a limitation on the principles of treating customers equally.

**Response:**

Please refer to the response to BCUC IR 1.18.1 for a discussion on the rationale for having 0.2 as a PI threshold. The threshold does not violate or "serve as a limitation on" the principle of treating customers equally.

46.4.1 If yes, please provide FEI's views as to why 0.2 PI serves as the appropriate balance.

**Response:**

Please refer to the response to CEC IR 1.46.4

46.4.2 If no, please explain why not.

**Response:**

Please refer to the response to CEC IR 1.46.4.

**47. Reference: Exhibit B-1, Page 65**

> **Eligibility**
>
> Funding would be available to the owner of a single-family residential home or townhome that is a principal residence within an existing FEI service area at the time the application is taken. Multi-property developments will not be eligible, as it is targeting home owners rather than builders. Eligibility would be the same as for FEI's contributory main criteria, except that customers would not be eligible for both the Fund and a contributory main refund. FEI will provide information about applying for the Fund to customers that meet the criteria but meet a minimum P.I. ratio of 0.2 resulting from the MX Test.

47.1 Are multi-property developments an important target market for FEI? Please explain why or why not.

**Response:**

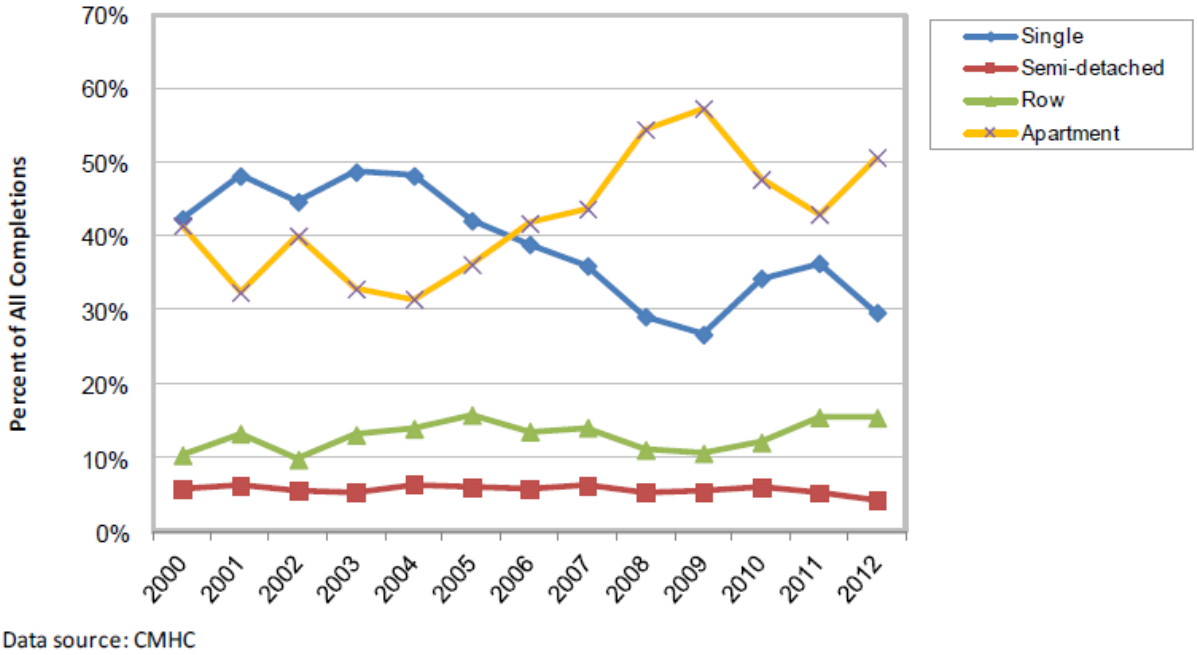
Multi-property developments such as row houses, townhouses, condominiums and apartments are an important target market for FEI. FEI's most recent 2012 REUS indicates that from 2003 to 2012 in the new construction market in BC, there has been a 20% drop in the share of the overall new home market attributable to single family detached dwellings. In contrast, apartments represented more than half of all new construction in 2012 (please refer to the response to CEC IR 1.47.2). The higher density of a multi-property development represents an important opportunity for FEI to be able to serve a multitude of customers at a lower cost per customer than traditional single family detached homes.

47.2 Please provide FEI's data with respect to the size and growth of multi-property developments market relative to single family residential market.

**Response:**

The chart taken from FEI's most recent 2012 REUS (Residential End Use Study)[19] below illustrates the growth in apartment and row homes relative to single family dwellings. Single-detached homes accounted for one-third of housing starts in British Columbia in 2012, which is a significant decline from accounting for just under 50% housing starts at its peak over the last ten years.

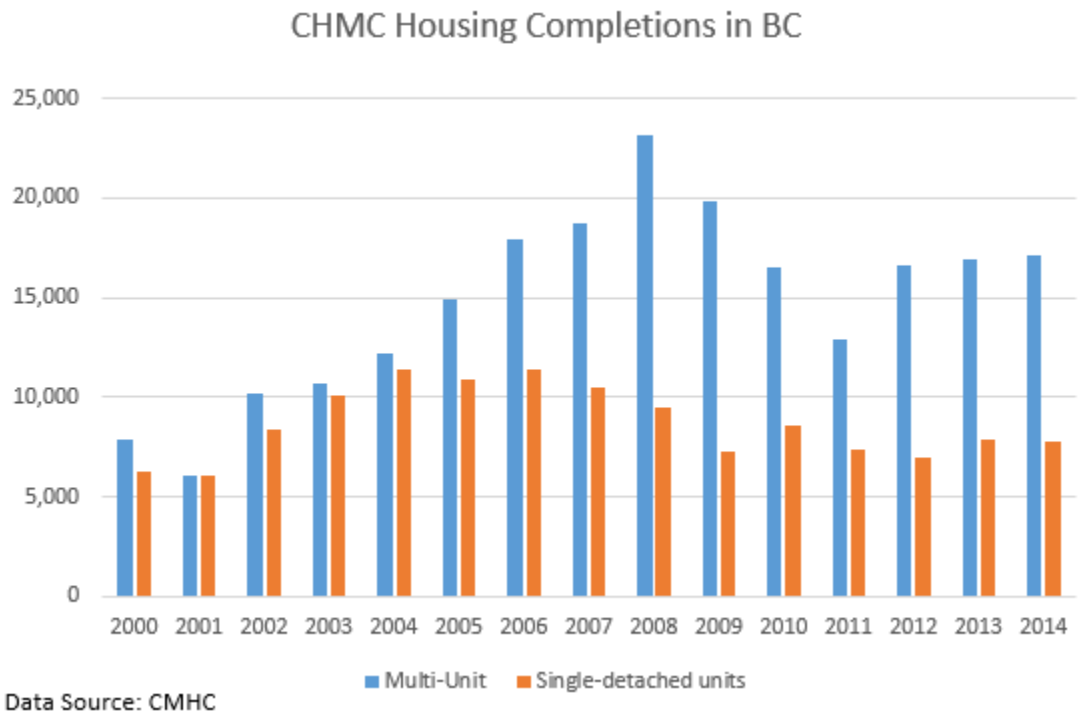
[19] FEI 2012 REUS- Page 23.




Data source: CMHC

Moreover, the chart below provides CMHC[20] data in terms of the relative number of completions for single detached units and multi-unit dwellings. This also indicates the size and growth of multi-unit developments is considerably outpacing the growth single-detached units.

[20] The data was extracted from Statistics Canada CANSIM data tables using CMHC Completions Data. http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0270008&pattern=CMHC&tabMode=dataTable&srchLan=-1&p1=1&p2=-1.




Data Source: CMHC

47.3 Does FEI experience challenges selling into multi-party developments?

**Response:**

Yes. Multi-family dwellings provide developers with an opportunity to maximize land use by increasing the number of housing units on a single parcel. The benefit to purchasers is that they will pay a lower cost as compared to a typical single detached home. As a result, affordability is often at the forefront of marketing efforts for these units and developers are reluctant to install natural gas appliances due to the higher upfront capital costs. These higher capital costs would be included in the selling price of the unit and would make them less competitive. Natural gas space heating equipment also occupies valuable living space within a multi-family unit which could otherwise contribute towards a developer's return.

47.3.1 If yes, please provide FEI's understanding as to why FEI experiences challenges in this market.

**Response:**

Please refer to the response to CEC IR 1.47.3.

47.4 Why is funding not available for commercial main extensions? Please explain.

**Response:**

The SEF is intended to provide assistance to residential customers. In general, residences are more likely to be located in less densely populated area, compared to commercial establishments. Because of the distance the main needs to be extended to serve these customers, the CIAC often becomes cost prohibitive. The SEF fund was designed so that customers who are further away from the system or in less densely populated areas will be able to have more equitable access to natural gas service.

Additionally, many large commercial and industrial customers have high energy requirements and given the large volume of consumption of these customers, a CIAC is often not required, as such they would not need access to the SEF funds.

However, the Company is not opposed to making the SEF fund available to commercial customers.

47.5 Why would certain residential customers be eligible for a benefit defined as PI ratio .2 and other customers not be eligible and why would this not be discriminatory?

**Response:**

The PI requirement of 0.2 is a reasonable threshold to help ensure that SEF funding maintains a balance between new customers and existing ratepayers. Please refer to the response to BCUC IR 18.1 for a discussion on the rationale for having 0.2 PI as a threshold. Like other utility programs, FEI does not believe that having eligibility requirements for such a program constitutes a discriminatory practice.

47.6 Please provide a discussion as to whether or not customers in multi-family residential should be treated equally with those in single family residences and townhomes.

**Response:**

For new construction, applications for natural gas service to large multi-family developments come from builders or developers, even though they will not be the end users of natural gas. The builders/developers are treated equally with the owners of single family residences in that they are all subject to the application of the same main extension test parameters.

In the context of the SEF (referenced in the preamble), the Company's proposed SEF is intended to be applicable to end-users of natural gas, not to builders or developers since the costs for the project will likely be included in the selling price of the units and the Company would have no way of knowing or requiring that the unit selling price would take into account the amount of SEF awarded to the benefit of natural gas end-users.

47.7 Do costs or benefits that are in general accruing to all developers get passed on to their customers as a result of competition? Please explain why or why not.

**Response:**

The Company is unable to comment on whether or not the costs or benefits accrued to developers get passed on to their customers as a result of competition.

47.7.1 Does BC Hydro have a similar PI ratio which it uses to qualify customers? If so, please provide.

**Response:**

As FEI understands it, BC Hydro does not use a PI ratio to qualify customers.

**48. Reference: Exhibit B-1, Page 66**

> With the availability of the Fund, these residents could apply for up to $2,500 per customer, (i.e. 50% of the CIAC). In exchange for the $2,500, the residents would forgo the option to get a contributory main refund in the future in the event additional customers attached to the main. The Company believes that by simply having the Fund as an option, more residents will be likely to commit to the project earlier, thereby lowering the CIAC and the need to access the Fund.

48.1 Why is it necessary for the customers to forgo the option to get a contributory main refund in the future in the event additional customers attach to the main?

**Response:**

The Company proposed forgoing the option to get a contributory refund to facilitate customer choice. With access to the SEF, eligible customers would have the choice of either a) providing the full CIAC and potentially receiving a future contributory refund or b) accessing the SEF and forging a future contributory refund. FEI also believes that it will be easier to administer the SEF. In the event that a customer were to receive SEF funding, the main would not be designated a contributory main and future customers would therefore not be required to provide a contribution.

The Company would not be opposed to exploring the option of providing a contributory refund, since, as will be described in the response to CEC 1.48.2, there would be no rate impact in doing so.

48.2 Please provide the potential rate impacts for existing customers if residents did not have to forgo the option to get a contributory main refund in the future.

**Response:**

There would be no rate impact if the Company were to provide refunds to SEF customers based on their contributions since the all refunds are funded by the contributions of future customers connecting to the main. In other words, the Company is simply brokering refunds between the original customer(s) providing the CIAC and future customer(s) that are required to provide a pro-rata share of the CIAC.

**49. Reference: Exhibit B-1, Page 79**

> FEI's history with developers shows that the Company is able to accurately estimate the number of appliances. However, FEI cannot control the use of appliances once installed in the home. The individual consumption pattern of each customer attaching to a particular main extension contributes greatly to the variance between the forecast and actual consumption of a main extension. FEI has seen an overall reduction in use per customer for new customers compared to existing customers. There are several factors which may contribute to the reduction in use per customer more generally, including successful energy efficiency and conservation efforts, marketplace shifts to high efficiency appliances, and a reluctance of customers to incur the high fixed costs associated with installing multiple gas appliances. As technology continues to evolve, EEC programs expand and building codes reflect more energy efficiency, the Company expects that these factors will continue to impact new customer consumption levels.
>
> With respect to those customers that have installed high efficiency appliances, the Company does not feel it would be appropriate to encourage the customer to consume more gas simply to meet the volume averages of existing customers in order to create a more favourable MX Test result. Nor would it be fair to new customers to use a lower volume for a more efficient appliance as a credit in the test as this would lead to a lower PI forecast and encourage customers to use less efficient appliances in order to pass the MX Test. In addition, the Company does not have data on which to base a volume credit for gas usage in new more efficient appliances. Finally, in a main extension project where there is a mix of both residential and commercial customers, the actual consumption figures and use per customer are subject to significant variation from the forecast if just one of the larger commercial customers delays the attachment, given that the usage of a large business is generally much greater than several single family dwellings.

49.1 Please provide the use per customer for each rate class.

**Response:**

Please see the response to CEC IR 1.37.2.

49.2 Would FEI expect the use per customers for existing customers to eventually catch up to new customers as old appliances turnover and they purchase new energy efficient appliances?

**Response:**

The Company cannot speculate whether the use per customer for an existing customer will eventually catch up to new customers since the characteristics of older homes are much different than new homes. For instance, building codes, energy efficiency requirements, building size and dwelling type (single family or multifamily) are just some of the factors that influence how much energy a home will use. It is also likely that not all older homes will be renovated in their lifetime up to the same level of newer homes. Furthermore, demographics such as density, age and cultural preferences all impact the number of occupants in a building and its resulting energy use regardless of being old or new.

As new customers are added to the system, the Company can confirm their generally higher level of energy efficiency will be reflected in the average use per customer.

49.3 Will the use per customer for existing customers lag new customer use per customer?

**Response:**

The use per customer for existing customers can be higher or lower than the use per customer for new customers depending on the building type, age, demographics and appliances. The Company cannot confirm that there will be a single pattern related to all residential customers.

49.4 Under postage stamp pricing principles why would a lag or difference between one customer's use and another customer's use matter and or become a point for economic discrimination? Please explain.

**Response:**

Please refer to the response to BCUC IR 1.40.2.

**50. Reference: Exhibit B-1, Page 80**

> **5.6.2 Sufficiency of Security**
>
> Security is used in instances where the Company believes that there is a risk that the customer (typically a builder or developer) may not attach to the system in the timeframe expected, the number of appliances will not materialize or, in the case of commercial and industrial customers, when there is risk of the customer leaving the system. The Company adheres to section 12.10 of its tariff that stipulates, "*In those situations where the financial viability of a Main Extension is uncertain, FortisBC Energy may require a security deposit in the form of cash or an equivalent form of security acceptable to FortisBC Energy.*"
>
> Security can provide a further level of ratepayer protection in the event a builder or developer did not deliver on their commitments. Most developers do not require any security as history has shown us that appliances are installed and customers do attach. Developers do have some control over what appliances are in the house/unit but do not control the end use customer's usage or the exact time frame that the end use customer connects to the gas. Where the builder or developer has provided reasonable forecasts of appliances and end use customers, it would then be inappropriate to require security due to ultimate usage not materializing as that is beyond their ultimate control. To do so would be a disincentive to consider natural gas in their building plans.
>
> It should be noted that security is seen by developers and customers as a punitive measure. Rather than increasing existing rate payer protection because security is acquired, developers may choose not to attach, reducing the potential benefit from the addition of new customers to the system. As such, the use of security must be used judiciously.

50.1 Do developers of multi-family residential and commercial customers typically deliver on their commitments? Please explain.

**Response:**

Yes. The Company's experience over decades of dealings with multi-family residential and commercial customers has indicated that developers typically deliver on their commitments.

For example, Table 5-3 of the Application, provided below for convenience, indicates the historical average variance between the forecast and actual number and timing of attachments. The 7.2% variance result supports that developers typically deliver on their commitments, particularly when considering that earlier results in the table were impacted by the global financial crisis in 2008/09.

**Table 5-3: Historical MX Reporting Attachment Variance**

| | Forecast Attachments | Actual Attachments | Variance | Variance (%) | Comments |
|---|---|---|---|---|---|
| 2008 FEI | 571 | 417 | -154 | -27.0% | MX reporting complete |
| 2008 FEVI | 293 | 259 | -34 | -11.6% | |
| 2009 FEI | 1228 | 1061 | -167 | -13.6% | Year 5 of attachment reporting |
| 2009 FEVI | 698 | 430 | -268 | -38.4% | |
| 2010 FEI | 478 | 442 | -36 | -7.5% | Year 4 of attachment reporting |
| 2010 FEVI | 402 | 262 | -140 | -34.8% | |
| 2011 FEI | 715 | 696 | -19 | -2.7% | Year 3 of attachment reporting |
| 2011 FEVI | 291 | 226 | -65 | -22.3% | |
| 2012 FEI | 620 | 853 | 233 | 37.6% | Year 2 of attachment reporting |
| 2012 FEVI | 166 | 173 | 7 | 4.2% | |
| 2013 FEI | 516 | 641 | 125 | 24.2% | Year 1 of attachment reporting |
| 2013 FEVI | 232 | 244 | 12 | 5.2% | |
| | | **Average Variance** | | **-7.2%** | |

50.2 If FEI were to extend the $1 million fund to include commercial customers, would they also waive the security deposit? Please explain why or why not.

**Response:**

Security is a separate issue from CIAC and the SEF. A CIAC is required from and paid for by the customer and makes up for any shortfall for projects with a PI of less than 0.8. The SEF is designed to provide funding to eligible customers who have to pay a CIAC. Security is required by the Company in instances where there is unacceptable financial uncertainty with a main extension project, irrespective of the need for a CIAC.

The Company is not proposing any changes to its security practices, including those for commercial customers.

50.3 Could developers of multi-family residential and commercial customers view their exclusion from the $1 million fund as 'punitive' or discriminatory? Please explain why or why not.

**Response:**

The fact that multi-family residential and commercial customers are not eligible for the SEF does not constitute punitive or discriminatory practices since developers of multifamily residential and commercial customers usually recuperate any required CIAC investment through the sale price of the new housing unit or business to the end use customer. Please refer to the response to CEC IR 1.47.4 for a discussion why main extensions to commercial establishments are not eligilble for the SEF.