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August 27, 2026

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

Dear Registrar:

Re: FortisBC Energy Inc. (FEI)

2026 Review of Mains Extension and Connection Policies (Application)

Response to the British Columbia Utilities Commission (BCUC) Information Request (IR) No. 1

On May 15, 2026, FEI filed the Application referenced above. In accordance with the regulatory timetable established in BCUC Order G-122-26 for the review of the Application, FEI respectfully submits the attached response to BCUC IR No. 1.[1]

FEI has filed a portion of the response to BCUC IR1 9.3 on a confidential basis as identified in the response and has provided a redacted version for the public record of this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Registered Interveners

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[1] For convenience and efficiency, if FEI has provided an internet address for referenced reports instead of attaching the documents to its IR responses, FEI intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

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A. MAINS EXTENSION TEST REVIEW AND PROPOSALS

1.0 Reference: MAINS EXTENSION (MX) TEST REVIEW AND PROPOSALS

Exhibit B-1 (Application), Section 4, p. 33, Section 4.1.2.1, p. 37, Section 4.1.3, p. 38

Individual Profitability Index (PI) Threshold

On page 33 of the Application, FortisBC Energy Inc. (FEI) states it proposes to change the individual MX Test PI from 0.8 to 0.6 and maintain the aggregate PI of 1.1.

On page 37, FEI states an individual PI threshold (i.e. floor) that is lower than the aggregate target provides flexibility to account for unique circumstances and prevents the undue exclusion of new connections.

On page 38 of the Application, FEI presents a comparison of Canadian utility system extension policies, which indicates that, among the jurisdictions applying a project-level PI, all use a project-level PI of 1.0, with the exception of Enbridge Gas Distribution (EGD), which authorizes exceptions for projects with a PI as low as 0.8.

1.1 Please discuss how FEI proposes to ensure the aggregate PI is maintained above 1.1, such as any mechanism or safeguard in place during the review of each prospective project on an individual basis.

Response:

FEI provides annual reporting on individual and aggregate PI results through the Annual MX Report, which allows the BCUC and FEI to monitor the aggregate PI and identify any trends that may warrant further consideration. From 2014 through 2025, FEI maintained an aggregate PI well above 1.1 (averaging approximately 1.9), which supports FEI's proposal to reduce the individual PI threshold.

The aggregate PI is based on the ratio of the total revenues to total costs of all MX Tests completed in a year, including projects with higher PIs that offset projects with lower PIs. As such, the aggregate PI is only used to evaluate MX Test results at the portfolio level and is not used in the review of a single prospective project. FEI has also already implemented key controls and an

oversight process governing the accuracy of cost estimates used in the MX Test. Accordingly, implementing additional project-specific safeguards or reviews beyond the current MX Test review process would not provide a reliable safeguard. This is because such an approach would assess a single project in isolation, without accounting for the offsetting effect of higher-PI projects across the portfolio.

FEI expects that continuing to assess each project against the proposed minimum individual PI threshold of 0.6, with a CIAC required where necessary to bring the project to that threshold, will maintain the aggregate PI well above 1.1. As shown in Table 4-11 of the Application, applying the proposed individual PI threshold of 0.6 to the historical MX Test results from 2017 to 2025, all else equal, would have resulted in an aggregate PI well above 1.1 in every year. Please refer to Section 4.3.3.3 for further discussion on why reducing the individual project PI threshold to 0.6 is highly unlikely to result in the aggregate PI falling below 1.1.

1.2 Please discuss whether FEI is aware of any other North American gas jurisdictions that apply a project level PI below 0.8. If yes, please provide which jurisdictions those are and how the project level PI is applied (e.g. exceptional basis, or any required conditions that needs to be met). As part of the response, please address the rationale and operational experience of a project level PI below 0.8 in those jurisdictions, if available.

Response:

Based on FEI's scan of other jurisdictions, 0.8 is the lowest project-level PI threshold used by gas utilities that utilize a DCF and PI threshold approach.

As shown in Table 4-3 of the Application, many gas utilities in the US use footage and dollar allowance or revenue multiplier approaches for their MX Test. While these alternative approaches are derivatives of the DCF approach, they have no PI threshold.

1.3 Please discuss whether the connection of individual projects with a PI below 1.0 and above the proposed individual PI threshold of 0.6 results in a shortfall in recovering the cost of service of that one customer, which is offset by recovery from other new connections with a PI above 1.0 or from other existing customers on the system. If confirmed, please discuss why this approach is fair and reasonable.

Response:

A PI score below 1.0 and above 0.6 indicates that, based on the MX Test forecasts, the revenues attributable to the individual project, together with any CIAC, are forecast to be less than the project's costs over the 40-year DCF term. However, at the portfolio level, the forecast shortfall associated with projects having a PI below 1.0 is offset by projects having a PI above 1.0.

The aggregate PI measures whether the forecast revenues from all main extensions completed in a year are sufficient to recover their aggregate forecast costs. The aggregate PI threshold of 1.1 provides a reasonable expectation that FEI's system extension activities, considered together, will not adversely affect existing customers. Accordingly, when the aggregate PI remains above 1.1, the MX Test does not forecast that existing customers will be required to bear a portfolio-level shortfall.

This portfolio-level approach reflects the rate design principles of fair apportionment of costs and avoidance of undue discrimination because it protects existing customers from the aggregate cost of new connections without requiring each new customer to bear the full forecast cost of the particular extension needed to serve that customer. This approach also reflects the principle of postage stamp rate design where, in practice, some customers cost more to serve than others, yet customers within the same rate class pay the same tariff rate regardless of their geographic location or individual cost of service. The MX Test reflects this postage stamp rate design principle by assessing cost recovery across the portfolio rather than by individual project. FEI has been using postage stamp rates for decades, and they are a standard utility practice.

Setting an individual PI threshold of 1.0 for all individual projects would not eliminate cross-subsidization among customers; rather it would just change who subsidizes whom. For example, setting the individual PI threshold at 1.0 would result in an over-recovery from new customers on an aggregate basis, as well as an over-recovery of costs from some individual customers. This is because every project below this threshold would have to pay a contribution to achieve the PI target, while projects with PIs above 1.0 would not be eligible for a credit to lower their PI to 1.0. Setting an individual PI threshold of 1.0 would also increase the cost burden on new customers even though the aggregate PI has historically remained well above 1.1 and the RIA shows that new connections have reduced delivery rates for existing customers. FEI therefore considers the proposed individual PI threshold of 0.6, together with the retention of the aggregate PI threshold of 1.1, provides a fair and reasonable balance by accommodating differences among individual projects while maintaining protection for existing customers at the portfolio level.

1.3.1 Please discuss whether establishing an individual PI of 0.6 is preferential towards customers with a PI below 1.0.

Response:

FEI's proposal to lower the PI threshold to 0.6 is consistent with section 59(1) of the *Utilities Commission Act* (UCA), which states that a public utility must not make, demand or receive an unjust, unreasonable, unduly discriminatory or unduly preferential rate for a service provided in British Columbia. The "undue" qualification in the UCA is fundamental to rate design, as every individual customer has a different cost of service, and other rate design considerations (e.g., ease of administration and implementation) are routinely used to depart from purely cost of service-based rates. That is the basis of postage stamp rates that have been in place for FEI for decades and is a familiar part of rate designs in place for other BC utilities. Similarly, it is not uncommon for revenue-to-cost ratios for rate classes to depart from 1.0, and the BCUC has consistently accepted a range of reasonableness when considering whether rebalancing amongst rate classes needs to occur. Consistent with concepts such as postage stamp rate-making or applying ranges of reasonableness to the rebalancing of revenue amongst rate classes, an individual PI threshold that is less than (or greater than) 1.0 does not result in treatment that is unduly preferential to certain customers. The absence of undue preference or discrimination is also illustrated by having the same tariff provisions apply to all customers.

While lowering the PI threshold to 0.6 will reduce the CIAC payable by customers whose individual project PI is below the current threshold of 0.8, this outcome is an intended consequence of recalibrating the MX Test to achieve a fairer allocation of costs between new and existing customers at the portfolio level, consistent with the BCUC's longstanding use of separate individual and aggregate PI requirements and the utility rate design principles described in the response to BCUC IR1 1.3.

The evidentiary basis for lowering the threshold includes the results of the updated RIA, which demonstrate that, under the current 0.8 individual PI threshold, the addition of new customers has reduced delivery rates for existing customers. The updated RIA therefore indicates that new customers continue to bear a disproportionate share of connection costs.

FEI proposes to lower the individual PI threshold from 0.8 to 0.6 as a targeted means of moving the RIA results closer to zero at the portfolio level. This approach was chosen as it is simple to understand and directly affects the CIAC payable by projects below that threshold, without changing the other inputs and parameters of the MX Test.

1.4 Please discuss whether FEI considered applying a minimum PI of 1.0. In the response, please comment on the cost causation principle and how the under-recovery of costs caused by customers with a PI of less than 1.0 over the discounted cashflow (DCF) term are recovered by FEI and from whom.

Response:

FEI evaluated the effects of applying a minimum PI of 1.0 as part of its review of alternative connection policy approaches; however, as explained in Section 4.3.3 of the Application, FEI rejected increasing the individual PI threshold because:

- It would result in an unfair apportionment of costs between new and existing customers (Bonbright Principle 2); and
- It would have disproportionate impacts, adding a material burden onto each new customer while resulting in only a minor delivery rate benefit to existing customers (Bonbright Principle 8).

FEI noted in Section 4.3.3.1 of the Application that if the minimum PI threshold is increased from the current threshold of 0.8 to 1.0, the number of main extension projects in 2025 requiring a CIAC would nearly double (from 71 projects to 136 projects). The aggregate CIAC requirement would also increase substantially, from approximately $0.981 million to $2.938 million, which is an increase of nearly three times (or an increase of approximately 200 percent). The highest amount of CIAC from a single main extension project in 2025 would also triple from approximately $0.102 million to $0.302 million.

Under the cost causation principle, a PI of 1.0 indicates that a customer is expected to cover the full incremental capital and operating costs attributable to their connection over the DCF term. Using a portfolio approach (i.e., aggregate PI), projects with PIs above 1.0 offset forecast under-recovery from projects with PIs below 1.0. Any remaining aggregate shortfall would be recovered from FEI's customers through rates, while aggregate revenues exceeding costs would reduce the amount otherwise recovered through rates.

As demonstrated by the most recent RIA, new customers are already contributing more than the incremental costs they impose on the system. If FEI were to adopt a minimum PI of 1.0, the mandatory CIAC payments would increase and would result in additional over recovery from new customers as a group. Further, FEI does not provide compensation to new customers with an MX Test result that exceeds 1.0. Such customers are forecast to pay more than their share of costs with no reasonable way for FEI to ensure that they are held to a PI of 1.0.

2.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 4.3.3.3, p. 52

Impact on Aggregate PI Threshold

On page 52 of the Application, in Table 4-11, FEI shows the aggregate PI under a minimum individual PI threshold of 0.8 versus 0.6 between years 2017 to 2025. FEI states it is reasonable to expect that additional projects (i.e. projects that never underwent the MX Test or projects that failed the MX Test previously) might have proceeded with a lower individual PI, therefore the aggregate PI is expected to reduce more than indicated in its analysis.

2.1 Please provide, for each year from 2017 to 2025: (i) the number of projects that failed the individual MX Test at a PI threshold of 0.8; (ii) the PI for each project that failed the individual MX Test; and (iii) the number and percentage of projects that failed the individual MX Test that were ultimately connected to FEI's system.

Response:

FEI does not collect or retain all relevant data for projects that did not achieve an initial PI of 0.8. This is because, as a first step to obtaining a connection to the gas system, customers typically engage with a Key Account Manager (KAM) to discuss their project scope, expected gas load and design considerations. Based on these initial discussions, the KAM performs a preliminary economic assessment, including a high-level MX Test, to assess the likelihood and potential magnitude of a CIAC. Only projects that appear to have customer buy-in at this stage are formally entered into FEI's project management system (i.e., CAFE). This process is designed to scale the effort and cost of managing preliminary inquiries prior to customer buy-in.

Since these early-stage inquiries are informal, they are not routed to Operations and are not recorded in CAFE. Because FEI does not maintain a systematic record of these pre-CAFE inquiries, FEI cannot produce a complete historical count of projects that failed the individual MX Test. While CAFE contains formalized projects that may have stalled or did not proceed, it does not capture the broader set of preliminary discussions that never advanced to project creation.

FEI has provided data in the following tables for projects that proceeded past the preliminary stage, were entered into CAFE, did not achieve an initial PI score of 0.8 and, therefore, required a CIAC to proceed, and were ultimately installed. Accordingly, and as shown in the tables below, from 2017 to 2025, 1,053 projects with an initial PI below 0.8 paid a CIAC and were connected to FEI's system. Please refer to Attachment 2.1 for a breakdown of all projects that failed the individual MX Test but ultimately connected to FEI's system.[1]

[1] Since FEI does not collect or retain all relevant data for projects that did not achieve an initial PI of 0.8 and ultimately did not proceed to connect to the system, all of the projects listed in all of the tables in this response, including Attachment 2.1, initially failed the MX Test but then proceeded to connect because the customers chose to pay a CIAC. Therefore, 100 percent of the projects listed in the tables and Attachment 2.1 connected to FEI's system.

Table 1: Number of Projects by Year with Initial PI Below 0.8

Year	Number of Projects with initial PI < 0.8
2025	72
2024	94
2023	108
2022	121
2021	125
2020	128
2019	132
2018	160
2017	113

Table 2: Distribution of Project PIs by Year with Initial PI Below 0.8

PI	2017	2018	2019	2020	2021	2022	2023	2024	2025
0.0-0.09	2	2	5	3	5	4	3	3	4
0.1-0.19	3	2	1	1	0	2	1	1	1
0.2-0.29	7	14	8	5	10	4	12	10	9
0.3-0.39	17	20	13	8	7	14	8	21	10
0.4-0.49	19	24	20	17	17	18	18	18	8
0.5-0.59	18	34	22	28	22	18	16	15	12
0.6-0.69	25	34	29	35	34	35	33	12	21
0.7-0.79	22	30	34	31	30	26	17	14	7
Total	113	160	132	128	125	121	108	94	72

2.1.1 For the projects that failed the individual MX Test but were ultimately connected to FEI's system, please summarize the circumstances for proceeding with the connection (e.g. required a Contribution in Aid of Construction (CIAC), adjusted the project scope to improve the PI, etc.). For any projects that were modified to improve the PI, please elaborate on the process that took place between FEI and the customer for the modification and explain the aspects of the project that were modified.

Response:

When a project does not achieve the minimum PI threshold of 0.8, FEI works with the customer through the KAM to review available options. A project may proceed if the customer pays the required CIAC, if changes to the project improve the PI, or, for an eligible residential customer, with assistance from the SEF. These circumstances are described below.

- **Payment of a CIAC:** A customer may elect to pay the CIAC required to bring the project from its initial PI to the minimum PI threshold of 0.8. Each of the 1,053 projects identified in the response to BCUC IR1 2.1, Attachment 2.1 ultimately proceeded after the customer paid the required CIAC.
- **Adjustments to project scope:** Some customers explore changes such as increasing the forecast gas load, adding appliances or revising building plans. These adjustments are highly customer-specific and depend on factors such as building code requirements, space constraints and cost considerations. Where a customer proposes changes that affect the project's forecast costs or revenues, FEI performs a revised MX Test to determine the resulting PI and CIAC requirement.
- **Application of the SEF:** Eligible residential customers may qualify for SEF support, which can fund the approved portion of the CIAC required to proceed.

Because each project's design, constraints and customer priorities differ, FEI does not maintain a standardized record of which specific modifications were attempted or implemented. The process generally involves a discussion between the KAM and the customer to identify feasible options, followed by a revised MX Test if changes are made. As such, FEI is not able to provide project-level detail on whether modifications occurred or what specific changes were made, as these decisions are unique to each customer and not systematically tracked.

2.2 Please replicate the analysis presented in Table 4-11, assuming that all projects reviewed by FEI between 2017 and 2025 proceeded with connection and paid a CIAC, where applicable. Please explain all assumptions used in the analysis.

Response:

Table 4-11 already includes all projects between 2017 and 2025 that proceeded with connections, as well as the projects with an initial PI less than the threshold that paid a CIAC to achieve a final PI that met the threshold (i.e., for a PI of 0.8 and 0.6).

As explained in the response to BCUC IR1 2.1, FEI does not retain the relevant data for projects that were only discussed at the preliminary level between the customer and FEI's key account managers without any formal work order creation (whether the project had a preliminary PI above the threshold or not). Without this information, FEI is unable to include these projects in Table 4-11.

3.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 4.1.2.1, p. 36, Section 4.3.1, p. 47

Aggregate PI Methodology

On page 36 of the Application, FEI states the application of a PI floor of 1.0 on an individual project basis is misaligned with the postage stamp rate design principle that informs FEI's rate design. This well-established regulatory principle contemplates that all customers in the same rate class are treated equally and charged a common rate regardless of their geographic location and differing individual cost of service.

On page 47, FEI presents Table 4-7 and Figure 4-1 to show the minimum and aggregate PI values between 2014 and 2025.

In Section 4.1.2 of the Application, FEI addresses how its MX Test proposal reflects accepted regulatory principles, including the eight rate design principles identified by Dr. James Bonbright.

3.1 Please explain how the aggregate PI is calculated and assessed on an annual basis. As part of the response, please clarify whether the aggregate PI is applied for each rate class separately (e.g. residential, commercial, industrial).

3.1.1 If the aggregate PI is not considered for each rate class separately, please reconcile how FEI's application of the aggregate PI threshold is aligned with its stated regulatory principle that all customers in the same rate class are treated equally and charged a common rate regardless of their geographic location and differing individual cost of service.

3.1.2 If the aggregate PI is not considered for each rate class separately, please discuss the pros and cons of applying the aggregate PI by rate class. As part of the response, please address the merits against the regulatory principles outlined in Section 4.1.2 of the Application.

Response:

The aggregate PI is the ratio of the discounted revenues to the discounted costs of all main extensions completed during the year. FEI calculates the aggregate PI by taking the sum of all forecast revenues (i.e., for customer attachments to the main occurring within 5 years) and dividing by the sum of all forecast costs associated with all the main extensions completed in the year. This approach is essentially the weighted average of all main extensions for the year being reported on, and is preferable to a simple average of individual project PI values, which does not account for the relative size or total cost of each project.

The aggregate PI is not applied separately for each rate class. The purpose of the aggregate PI is to assess whether the forecast revenues and CIACs associated with all main extensions completed in a year are sufficient to recover their aggregate forecast costs. An aggregate PI above 1.1 provides a reasonable expectation that FEI's main extension activities, considered together, will not be detrimental to existing customers. As further explained below, the treatment

of revenue within FEI's revenue requirement is the same regardless of the customer rate class. Therefore, it is reasonable to apply the aggregate PI across all rate classes when the purpose of the aggregate PI is to assess whether there is sufficient revenue from all new customers collectively to avoid a negative rate impact to all existing customers across all rate classes.

The discussion on page 36 of the Application (referenced in the preamble) around the regulatory principle that all customers in the same rate class are treated equally and charged a common rate regardless of their geographic location and differing individual cost of service was made in the context of whether an individual PI threshold of 1.0 (i.e., a floor of 1.0) should be applied to the individual project level. As explained in the Application, if a PI floor of 1.0 is applied to each individual project, it effectively requires every new customer connection to fully recover its own incremental costs of the connection, which is inconsistent with FEI's postage stamp approach to rate design (e.g., a customer located near the upstream supply might have a lower cost of service than a customer located near the end of the distribution system but both customers would pay the same rate within the same rate class).

The objective of the MX Test is to ensure that the portfolio of all new customer connections is not detrimental to existing customers overall, not to ensure that every individual connection fully recovers its incremental costs of connection. Accordingly, the combination of setting an individual PI threshold of less than 1.0 and an aggregate PI of 1.1 strikes an appropriate balance between postage stamp rates and ensuring existing customers are not impacted financially through higher delivery rates.

FEI is not able to reproduce Table 4-7 and Figure 4-1 of the Application by rate class. FEI's information system is not set up to automatically distinguish connections by rate class between those that are part of an MX Test project and those that are infill customers. As such, FEI would have to go into each individual project manually to retrieve the customer class information within each MX Test. Given FEI had over 9,000 MX Tests and averaged over 750 MX Tests per year from 2014 to 2025, it would be resource intensive to provide the aggregate PI breakdown by rate class over the 12-year period. Instead, FEI provides Table 1 below for the aggregate PI by rate class for 2025. As shown in the table, even if the aggregate PI is calculated at the rate class level, all customer classes would have met the threshold of 1.1, thus there would be no cross-subsidization between rate classes.

Table 1: Aggregate PI by Rate Class based on 2025 Data

Rate Class	Minimum Individual PI	Aggregate PI with CIAC
Residential	0.80	1.90
Commerical	0.80	1.73
Industrial	0.80	2.76
Mixed-Use[1]	0.80	2.76
Total	**0.80**	**2.15**

Note to Table:

[1] Projects with mixed-use occupancy (i.e., projects that include residential, commercial, and/or industrial customers) do not have separate costs (or costs allocated) by rate class. As such, these projects are grouped together as one customer category.

FEI does not believe there are any benefits to applying the aggregate PI separately by rate class. Further, for the reasons set out below, FEI considers such an approach would be unreasonable and impractical.

- The aggregate PI provides a reasonable check at the end of each year to ensure that new customers are not negatively impacting existing customers. The treatment of revenue from new customers is the same, regardless of whether the customer is residential, commercial, or industrial, as each class will equally help offset future delivery rate increases that would be applicable to all customers. For instance, the revenue from new residential customers will benefit all customers, not just FEI's residential customers. As such, having an aggregate PI for residential customers only would be inconsistent with how the revenues from new customers are treated in FEI's revenue requirement for rate-setting purposes.

- Applying the aggregate PI requirement of 1.1 separately by rate class would not be practical because it is common to have main extensions serving a mixture of residential, commercial and industrial customers (i.e., mixed-use occupancy). Therefore, the aggregate PI check cannot be applied separately by rate class for these projects. Further, it would not be reasonable to complete separate MX Tests for different customer classes within the same main extension (in order to calculate the aggregate PI separately by rate class) because the extension would be used by all connecting customers and generate revenues that are reflected in the revenue requirements recovered from all customers.

- There are typically fewer commercial or industrial customer projects than residential customer projects, and commonly there are only one or two industrial customer projects per year (e.g., in 2025, there was only one industrial customer MX Test). If the aggregate PI was to be applied separately by rate class, it would force a higher standard/requirement for the rate classes with a smaller number of projects. For example, if there is only one industrial project in a year (as was the case in 2025), applying an aggregate PI threshold of 1.1 separately to the industrial category would effectively require that individual project to achieve a PI of at least 1.1. This would eliminate the flexibility that the separate individual and aggregate thresholds are intended to provide and would impose a different individual threshold based solely on the number of projects in the customer category.

- As discussed above, FEI would have to go into each individual project to manually retrieve the customer class information of each MX Test in order to apply the aggregate PI separately by rate class, or FEI would have to incur the necessary costs to update its existing information system to enable reporting at the rate class level for each MX Test.

In terms of the merits of applying the aggregate PI separately by rate class against the regulatory principles outlined in Section 4.1.2 of the Application, FEI considers it would reduce the alignment with Principles 4, 5, and 8:

- **Principle 4 – Customer understanding and acceptance:** Applying an aggregate PI separately by rate class effectively means that the surplus from new customers (i.e., expected revenue less the cost to connect) would only benefit existing customers from the same rate class. This would be inconsistent with the existing rate-setting approach where all revenue is treated the same within FEI's revenue requirement. Further, applying an aggregate PI separately by rate class would create a higher standard/requirement for rate classes with a smaller number of projects, particularly the industrial class. These results would likely be difficult for customers to understand and accept.
- **Principle 5 – Practical and cost-effective to implement:** As discussed above, there would be no practical way to separately apply an aggregate PI by rate class for main extensions with mixed-use occupancy. As such, the aggregate PI for these projects would still have to be evaluated across rate classes. Further, it would not be cost-effective to implement as FEI would have to incur costs to upgrade its information system in order to calculate the aggregate PI by rate class.
- **Principle 8 – Avoidance of undue discrimination:** As discussed above, applying the aggregate PI by rate class could result in an individual project being required to achieve a PI of at least 1.1 (this would have been the case in 2025 where there was only one industrial customer connection), thus imposing a higher standard/requirement for rate classes with a smaller number of projects. This could be seen as unfair for certain customer classes (particularly industrial customers) and thus has a negative impact on Principle 8.

With regard to Principles 1, 2, 3, 6, and 7, FEI considers there would be a neutral impact if the aggregate PI were applied separately by rate class:

- **Principle 1 – Recovering the cost of service (the aggregate of all customer rates and revenue must be sufficient to recover the utility's total cost of service):** Under both approaches (applying an aggregate PI to all projects or separately by rate class) FEI would continue recovering its cost of service, given the aggregate PI at the portfolio level would be above 1.0 regardless.
- **Principle 2 – Fair apportionment of costs among customers:** The MX Test is completed at the individual project level and compares the costs of connecting the new customers against the expected revenues from the new customers. This does not change whether the aggregate PI is applied to all projects or separately by rate class.
- **Principle 3 – Price signals that encourage efficient use and discourage ineffective use:** This principle is not applicable in the context of the MX Test, as the test is determining whether and how much a customer needs to contribute to connect to the system, not how much energy a customer might use once connected to the system.

- **Principle 6 – Rate stability:** Whether the aggregate PI is applied to all projects or separately by rate class has no impact on FEI's rate stability.
- **Principle 7 – Revenue stability:** Whether the aggregate PI is applied to all projects or separately by rate class has no impact on FEI's revenue stability.

3.2 Please replicate Table 4-7 and Figure 4-1 by rate class.

Response:

Please refer to the response to BCUC IR1 3.1 for a discussion on why FEI is not able to provide aggregate PI scores disaggregated into its rate classes.

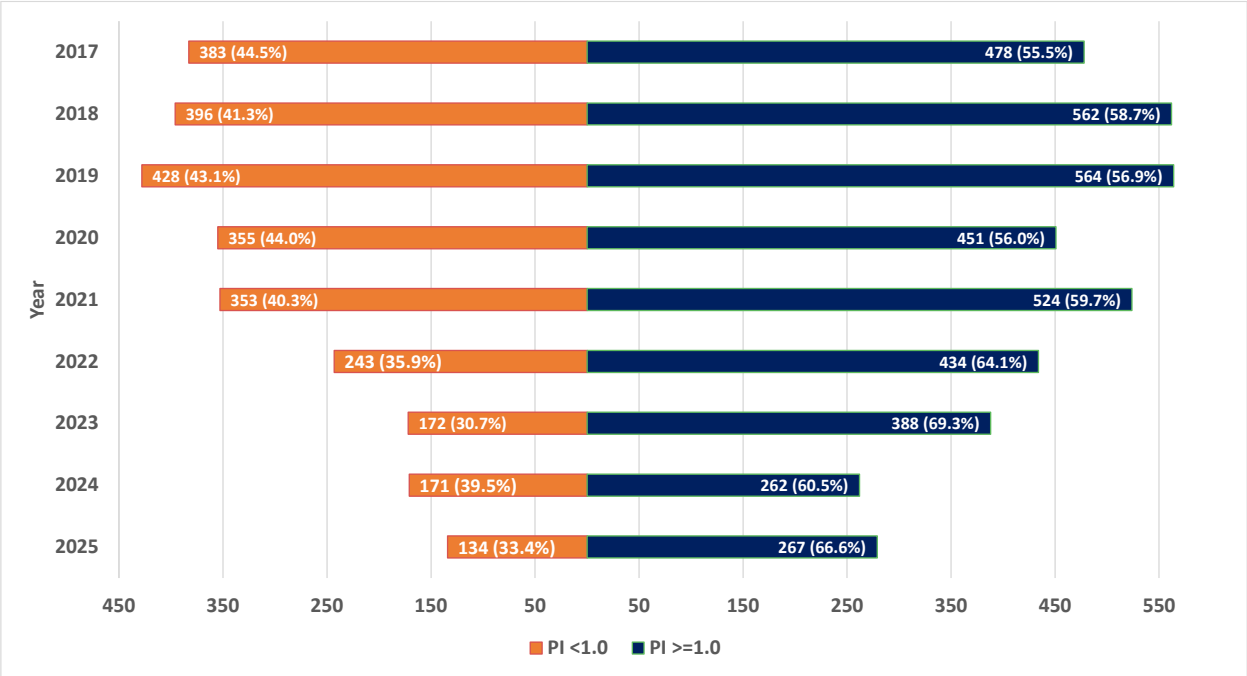
3.3 Please provide an annotated tornado chart for each year from 2015 to 2025 showing the number and percentage of total connections with an individual PI of less than 1.0 versus an individual PI of 1.0 or greater. The chart should show years on the y-axis, number of connections on the x-axis, and use a PI threshold of 1.0 as the centre line. Please replicate this analysis by rate class (e.g. residential, commercial, and industrial) for each year from 2015 to 2025.

Response:

FEI interprets the question as requesting a comparison of the number and percentage of total MX Tests with an individual PI of 1.0 or less against those with individual PIs of 1.0 or greater. FEI has presented the requested information at the project level because the MX Test, and therefore the resulting individual PI, is completed at the main extension project level, not at the individual connection level. Each main extension may have multiple customer connections attached to it.

Please refer to Figure 1 below for an annotated tornado chart showing FEI's total MX Tests from 2017 to 2025, differentiated by an individual PI of less than 1.0 versus greater than or equal to 1.0. The results are shown from 2017 to 2015 to be representative of the MX Test that is currently in use (i.e., since the 2016 Decision).

Figure 1: FEI's Total MX Tests Separated by Individual PI of Less than 1.0 versus PI of Greater than 1.0 from 2017 to 2025



The objective of the MX Test is not to ensure that there are more projects with an individual PI above 1.0 than projects with an individual PI below 1.0. As discussed in the response to BCUC IR1 3.1, the purpose of the aggregate PI is to assess whether the forecast revenues and CIACs associated with all main extensions completed in a year are sufficient to recover their aggregate forecast costs. For example, 10 small projects with an individual PI below 1.0 could be offset by one large project with an individual PI above 1.0, with the overall aggregate PI remaining above 1.0. Accordingly, the number of projects on either side of 1.0 does not, by itself, establish whether main extension activity is economic in aggregate.

Figure 1 above shows that the number of MX Tests with an individual PI greater than or equal to 1.0 has been consistently higher than those MX Tests with an individual PI less than 1.0 from 2017 to 2025. The percentage of MX Tests with an individual PI greater than or equal to 1.0 was also higher in 2025 than in 2017, increasing from 55.5 percent in 2017 to 66.6 percent in 2025. This is an indication that although the overall number of MX Tests has been declining since 2017, the projects have become on average more economical (i.e., the expected revenue outweighs the costs of the main extension and connections).

FEI notes that, as discussed in the response to BCUC IR1 3.1, it is unable to replicate Figure 1 above by rate class due to limitations in FEI's information system.

4.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Appendix A, Section 2, p. 3

Historical PI Forecast Accuracy

On page 3 of Appendix A to the Application, FEI provides the following formula for the MX Test:

$$PI = \frac{\text{NPV(Delivery Margin + Application Fees – O\&M – System Improvement Cost – Municipal \& Property Tax – Income Tax)}}{\text{NPV(Capital Costs of Mains, Services, and Meters + Overhead + Working Capital)}}$$

4.1 Using actual data, please compare the actual individual PI for connections between 2017 to 2023 versus the individual PI calculated at the time FEI received the interconnection request. As part of the response, please provide the summary statistics (min, max, mean, standard deviation) of the variance between forecast and actual PI for each year, respectively.

4.1.1 Please provide a breakdown of the variance between forecast and actual individual PI by variable within the MX Test formula and explain the primary factors contributing to any differences between forecast and actual PI values.

Response:

FEI is unable to provide the requested comparison and variance analyses due to the limitations discussed below, including limitations within its information systems. Although FEI's systems record the actual costs of installed mains, service lines and meters, they do not identify which service lines were installed in connection with which main extensions. Nor do FEI's information systems provide a means of distinguishing between service lines installed in connection with a main extension and service lines installed for infill customers requesting a gas connection. As such, FEI is unable to pair the actual costs of mains with the actual costs of associated service lines and meters or reliably match each original MX Test with the associated customer accounts, attachments and consumption data. FEI therefore cannot reconstruct and rerun the MX Tests completed from 2017 to 2023 using all of the corresponding actual information.

Further, an "actual individual PI" cannot be calculated before the end of the DCF term. The original MX Test is a forecast used before construction to determine whether a CIAC is required. For main extensions completed from 2017 to 2023, less than half of the 40-year DCF term has passed. Any recalculated PI would therefore combine actual information available to date with updated forecasts for the remaining period. The result would be an updated PI that would vary depending on when it was calculated, rather than a definitive actual PI.

In the 2015 System Extension Application proceeding, FEI described the limitations of its information systems as follows:[2]

> In general, the primary function of CAFÉ is to facilitate the design and installation of natural gas distribution infrastructure. It provides an efficient and cost effective way of allowing the Company to install approximately 785 mains per year and 11 thousand services per year. The MX test currently resides in CAFÉ and was included as a single step in a one way process to install a main or service in a safe and efficient manner. From a technological standpoint, the MX test was designed as a connection tool as part of this one way process, where it can determine how much a customer should pay to connect to the system, after which the main or service would proceed to a detailed construction design and eventually installation. The Company's IT infrastructure follows this one way process from CAFÉ to SAP to GIS to Billing but there is no IT mechanism in place to automatically go backwards through this system, such as tracing a new customer account in billing back to the original forecasted attachment in the main extension test. Acquiring data of this type remains a costly and manually intensive process.
>
> Therefore, the most burdensome information relates to the line by line matching of forecasted costs, attachments and consumption to the actual costs, attachments and consumption… That is, matching a specific forecasted MX test input to an installed main or service requires a large amount of time and resources. …this process is manually intensive and requires merging and categorizing data from four different systems within the Company's IT infrastructure.

In addition to these information system limitations, rerunning individual MX Tests using information available after construction would not provide a definitive assessment of the economic performance of the main extensions. This was explained in FEI's 2015 System Extension Application as follows:[3]

> Another concern with the shift in focus towards assessing individual extensions, in addition to the efficiency considerations, is that the Commission is employing a methodology that is not suited for that purpose. Specifically, the Commission is re-running the MX Test for certain already completed extensions. Using the current annual MX reporting as a tool to evaluate the performance of completed main extensions does not produce results that are informative about the performance of the main extensions themselves.
>
> …
>
> The MX Test has been employed by the Commission in the context of annual reporting for the purpose of a hindsight evaluation of the financial impact of a main on customers. The MX Test is neither designed nor equipped for that purpose.

---

[2] 2015 System Extension Application, Exhibit B-9, BCUC IR2 4.8.

[3] 2015 System Extension Application, Exhibit B-1, p. 44.

…

> 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.

FEI also explained that re-running MX Tests would be subject to three significant methodological limitations:[4]

> There are also three assumptions implicit in how the Commission is assessing main extensions after the fact that are invalid and/or may negatively skew the forecast to actual/re-forecast consumption comparisons.
>
> 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*."[55]
>
> 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.

[4] 2015 System Extension Application, Exhibit B-1, pp. 45-46.

Second, the current reporting approach begins with an original forecast of attachments used in the MX Test, then, when deriving "actuals" for comparison purposes, as requested by Commission staff, the Company is required to assume that delayed attachments do not materialize. The assumption could give rise to a very erroneous conclusion about the economics of an extension. It skews the data and incorrectly results in the updated forecast being lower than the original forecast.

This assumption, since it results in the analysis being so timing-dependent, can also fail to capture what is happening in the new home construction marketplace. The customer attachment forecast is based on the data available at the time, derived directly from customers, municipal building and permit plans and FEI's industry experience. However, attachments can be delayed when outside events impact the marketplace. For example, the financial crash of 2008/09 delayed many customer attachments until the market recovered. Builders and developers are highly motivated to sell their properties to homeowners and re-coup their investments. The longer lots sit unsold, the greater the carrying costs, the lower the profit margin. This means that builders and developers will continue to pursue attachments and, although delayed, they will usually materialize.

Third, the analysis that FEI is required to undertake in the MX Report does not produce actual results, but rather produces an updated forecast. It re-runs an original MX Test, at future annual intervals for the first five years coinciding with the annual reporting cycle, but updated with actual costs, project to date attachments, actual volumes to date and re-forecasted future attachments and volumes at that point in time. There remains considerable uncertainty in the updated analysis.

For these reasons, the current reporting approach does not produce results that are meaningful or indicative of the economic performance of a main extension. The current practice of using the MX Report information for evaluating the performance of individual main extensions should be discontinued. The focus should be on compliance with the MX Test and how to assess the parameters of the Test itself. [Emphasis in original]

The BCUC addressed these limitations in the 2016 Decision as follows:[5]

The Panel finds the use of MX Test results, as reported in accordance with the Commission reporting requirements, is not an appropriate mechanism to evaluate the economic impact of main extensions on ratepayers. The Panel is persuaded that the Modified MX Test approach has limited usefulness as an evaluation tool given the numerous shortcomings identified by FEI. The Panel accepts that a final evaluation of the impact of a main extension can only occur at the end of the useful life of the main, whereas the Modified MX Test does not

[5] Decision and Order G-147-16, pp. 10-11.

account for activity which may occur after the first five years of an extension. As FEI points out, the main extension will continue to generate benefits for its service life and customers may continue to join the system after the fifth year. [Emphasis in original]

The BCUC instead accepted the RIA as the appropriate mechanism for assessing how main extensions and infill customers have affected existing ratepayers over multiple years. The RIA uses actual cost, revenue requirement and consumption information to evaluate the aggregate rate impact of new customer growth without attempting to characterize an incomplete, updated forecast as an actual PI for each individual extension. The BCUC stated in the 2016 Decision:[6]

> **The Panel accepts the use of the rate impact analysis, modified to include an estimate of sustainment and other capital, as an appropriate mechanism to evaluate the economic impact of main extensions and infill customers on existing ratepayers.** The Panel notes the RIA uses new customer additions resulting from extensions after application of the MX Test or the SLCA and qualifies a reasonable estimate of actual incremental revenue and cost impacts associated with this growth over a period of time. This quantification provides an acceptable snapshot of how the growth in customers has impacted rates over multiple years, without the need to wait until the end of the mains' life (i.e. 50 years) to do an actual assessment and without the requirement to make further detailed forecasts about the expected future rate impacts. [Emphasis in original]

4.2 Please discuss whether reducing the PI threshold from 0.8 to 0.6 is reasonable in consideration of any historical variance between forecast and actual PI values.

Response:

The reasonableness of reducing the PI threshold from 0.8 to 0.6 is based on the RIA results and not on historical forecast-to-actual PI variances.

As explained in the response to BCUC IR1 4.1, historical PI variances reflect updated forecasts rather than the final economic performance of individual main extensions and therefore do not provide a reliable basis for selecting the individual PI threshold. The proposed reduction to 0.6 is instead supported by the RIA, which shows that new customer growth has reduced delivery rates for existing customers.

Forecast uncertainty is inherent in the MX Test but is not a determining factor in FEI's proposal to reduce the individual PI threshold. The RIA results demonstrate existing customers are benefiting from system extensions at the expense of new customers, thus reducing the individual

[6] Decision and Order G-147-16, p. 17.

PI threshold is a simple and easily understandable lever that can be adjusted to achieve a better balance between new and existing customers. The effectiveness of the proposed threshold in improving the balance between new and existing customers can be assessed through the updated RIA that FEI proposes to file seven years after the BCUC's decision on the Application. The updated RIA provides a check or safeguard against forecast uncertainty by enabling FEI to assess the impact of the change to the threshold and propose any further changes based on the updated results, if necessary.

4.3 Please explain how FEI accounted for forecast uncertainty in determining the proposed threshold. If no allowance for forecast uncertainty was incorporated, please explain why not.

Response:

Please refer to the response to BCUC IR1 4.2.

5.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 9.2, pp. 91, 92; Appendix A, p. 5; Appendix C, p. 14; FEI 2026 Long Term Gas Resource Plan (LTGRP) proceeding, Exhibit B-1,[7] Section 2.7, pages 2-17 to 2-18

Consumption Forecast Methodology

On pages 91 to 92 of the Application, FEI states that for each MX Test, FEI uses consumption credits based on information on expected appliance installations from the developer and anticipated appliance consumption provided by the Residential End-Use Study (REUS). FEI states the most recent 2022 REUS was affected by changes in consumption patterns during the COVID-19 pandemic, yielding results that skewed upward. Therefore, FEI has maintained the 2017 REUS for the 2026 MX Test parameters.

On page 5 of Appendix A to the Application, FEI presents Table 2-2 showing the consumption use per appliance for MX Test. FEI also states: "For commercial and industrial customers, consumption is evaluated on a case-by-case basis in accordance with the specific business needs and/or operational requirements, as well as the specific equipment/appliances to be installed by each customer."

On page 14 of Appendix C to the Application, FEI states:

> Under Energir's approach, the project's expected revenues are forecast based on customers' contractual commitments. These contractual commitments are ordinarily valid for five years […].
>
> Additionally, pointing to Energir's recurring challenges in customer retention and declining volumes in residential and commercial sectors, the Régie concluded that it is prudent to further mitigate the risk of revenue shortfall over the longer term and directed Energir to apply a negative 15 percent adjustment to its volume forecasts for its residential and commercial customers.

On pages 2-17 to 2-18 of the FEI 2026 LTGRP Application, FEI states:

> The importance of the energy transition has amplified the urgency for innovation and the adoption of new technologies in the energy sector to advance the reduction of GHG [greenhouse gas] emissions. Recognizing this imperative, FEI supports innovation through its CGIF [Clean Growth Innovation Fund], DSM [Demand-Side Management] portfolios, and the evaluation of emerging technologies.

5.1 Please explain whether FEI could use information not impacted by end-user behaviour from the 2022 REUS such as dwelling characteristics, penetration of gas for space heating and hot water, efficiency of appliances, but apply the data from the 2017 REUS on consumption volume. If not, please explain why not and

[7] FEI 2026 LTGRP Application, retrieved from: https://docs.bcuc.com/documents/proceedings/2026/doc_86847_b-1-fei-2026-long-term-gas-resource-plan-application.pdf.

discuss what the directional impact would be if the 2022 REUS information regarding appliance efficiency and penetration were used.

5.1.1 If yes, please expand Table 2-2 in Appendix A to the Application with data on the energy requirement and penetration of appliances from the 2022 REUS and apply consumption information from the 2017 REUS.

Response:

FEI cannot take information from different REUS years (e.g., using 2022 efficiency and penetration data with 2017 consumption volumes) and integrate them into the findings of other REUS years.

The REUS is an integrated empirical study used to calculate the average consumption per appliance used for the MX Test. These average consumption values are driven by the effect of several interdependent factors, including dwelling characteristics, appliance penetration, appliance efficiency and end use behaviour. The REUS calculates average consumption by linking survey information on dwelling characteristics, equipment stock, appliance efficiency, and customer usage characteristics with the actual gas consumption records of those same customers. Taking information from different REUS years would break that link and the resulting consumption values would not be representative of any actual cohort of customers.

While adjustments to reflect other REUS years would not be representative for the reasons above, FEI expects that the directional impact of applying the 2022 appliance efficiency and penetration information to the 2017 REUS would likely be slightly lower consumption, as higher efficiency appliances and changes in penetration reduce end use consumption.

5.2 Please explain how FEI has accounted for impact of any future adoption of new technologies in the energy sector to advance the reduction of GHG emissions as outlined in the FEI 2026 LTGRP Application as part of its revenue forecast in the MX Test. If not, please explain why not and discuss what the directional impact would be if this was accounted for.

Response:

FEI has not incorporated assumptions about the future adoption of technologies identified in the 2026 LTGRP into the MX Test revenue forecast. Instead, the MX Test reflects the information and requirements applicable to the proposed connection when the test is performed. This approach embeds MX Test inputs that reflect the adoption of new technologies and how those technologies affect the characteristics or expected consumption of new connections at the time that the MX Test is performed.

This approach reflects the different purposes and methodologies of the LTGRP and the MX Test. The LTGRP is a long-term planning tool that assesses how the gas system could evolve under different demand and supply futures. As described in the 2026 LTGRP, FEI's long term planning outlook considers a range of potential technologies expected to support provincial GHG-reduction objectives. These include increased energy efficiency, building electrification, renewable and lower-carbon gases, advanced end-use equipment, and other technologies that may alter customer consumption profiles over time. The 2026 LTGRP therefore evaluates potential technologies in terms of their long-term system impacts, adoption uncertainty and potential contributions to decarbonization so that FEI can plan for a range of possible outcomes over a multi-decade time horizon.

In contrast, the MX Test is a forecasting tool that FEI uses to determine whether a CIAC is required for a given main extension to proceed. It forecasts project revenues and costs over the 40-year DCF term using inputs established when the MX Test is performed. Those inputs, including the applicable delivery rates and consumption credits, are held constant over the DCF term. The MX Test does not separately forecast how each input may change over that period as a result of future technological, market or policy developments. For example, the MX Test uses the delivery rates at the time the test is performed and volumes based on the most recent REUS.

The MX Test does, however, reflect known characteristics of the proposed connection that are influenced by enacted policy requirements when the test is performed. The Zero Carbon Step Code is an example of an enacted policy that influences the design of new buildings (i.e., the impact is known prior to connection), placing constraints on the use of natural gas that can be reflected in the MX Test. For example, in jurisdictions where a higher step of the Zero Carbon Step Code has been adopted, a building will not have as many gas appliances and, as a result, lower total gas volumes will be used to determine revenue in the associated MX Test performed at the time of the connection.

FEI does not incorporate assumptions about future technology or policy adoption in the MX Test as that would require FEI to determine which technologies and polices will be adopted, the timing and extent of their adoption, and how they will affect the consumption of customers connected through a particular main extension. For example, policies such as the Highest Efficiency Equipment Standard (HEES), if enacted, could shape a newly connecting customer's choice of appliance once their original equipment reaches its end of life and requires replacement. Given that a customer could choose to replace their gas appliance with an electric appliance or with a compliant gas appliance, such as a dual-fuel heating system that has an efficiency of greater than 100 percent, selecting an assumed technology pathway for the MX Test would introduce speculative assumptions into the determination of a customer's CIAC and could result in materially different contribution requirements depending on the scenario selected. Given this uncertainty, changes in gas use that flow from future technology or policy adoption are instead reflected in periodic updates to MX Test inputs that capture changes in consumption over time.

The directional impact on the output of the MX Test will depend on how technology and policy impact gas consumption. For example, technologies that reduce forecast gas consumption, such as electrification or higher-efficiency gas equipment, would generally reduce forecast project

revenues and could increase the CIAC required under the MX Test. Technologies that increase gas consumption would generally increase forecast revenues and could reduce the required CIAC. Technologies that change the source or carbon intensity of the gas without changing consumption would not necessarily affect the revenue forecast.

However, it would also be inappropriate to adjust only the consumption component of the revenue forecast while holding all other inputs constant. Technology and policy adoption and the associated changes in demand could also affect delivery rates and other MX Test inputs over time, which counteract the loss of load.

As new technologies or policies are adopted, their associated gas consumption profiles will be reflected in the inputs to the MX Test. Because the timing, extent and effects of future technology and policy adoption are uncertain, FEI cannot reliably quantify the overall directional impact for individual main extensions.

5.3 Please explain how FEI has included any consideration for anticipated future policy changes, such as energy transition and GHG reduction targets, that may impact the revenue forecast in the MX Test. If not, please explain why not and discuss what the directional impact would be if this was accounted for.

Response:

Once a policy change is adopted and its implications for the MX Test can be determined, FEI can assess whether changes to the MX Test inputs or methodology are required. As described in the response to BCUC IR1 5.2, FEI accounts for policy changes (including those that could increase or decrease gas use) in the MX Test through periodic updates to MX Test inputs that reflect changes in consumption patterns over time.

Anticipated future policy changes, including those related to energy transition or GHG reduction targets, cannot be incorporated reliably into the MX Test for several reasons. First, an anticipated future policy change may not ultimately be adopted, or the measure that is adopted may differ from what was originally anticipated. Second, even if adopted, a policy change may not apply to FEI's system extension activities or affect the inputs to the MX Test. Third, where a policy change does affect the MX Test, the nature and extent of that impact will depend on the final requirements and how they are implemented. Incorporating an anticipated change before these matters are known would therefore be premature and would require FEI to rely on speculative assumptions over the 40-year forecast period.

5.4 Please explain whether FEI applies any contractual commitment on new customers, similar to the practice at Energir. If not, please discuss the pros and cons of this practice with regards to customer retention and revenue forecast certainty.

Response:

FEI does not limit the number of customer attachments used in the MX Test to only contractually committed customers in the same manner as Energir. Instead, similar to the approach used by Enbridge, FEI forecasts new customer attachments over a 5- to 10-year period, with a longer attachment horizon used where the foreseeable build-out of customer attachments extends beyond 5 years. These forecast customer attachments are included as an input to the MX Test.

The use of contractual commitments cannot be considered in isolation from the other parameters and inputs of a utility's system extension test. Although Energir's policy of including only contractually committed customers in revenue calculations may produce a more conservative customer attachment forecast than FEI's approach, Energir excludes corporate overhead costs and system improvement/reinforcement costs from project-level PI calculations, which has the opposite effect. Further, as stated in the Application (Appendix C, footnote 21), Energir's customer base is heavily skewed towards large volume customers with the industrial sector constituting more than 60 percent of its annual volumes. The use of contractual commitments, either directly in the MX Test or outside the MX Test via contractual securities/guarantees, is more common for these types of customers. As discussed in the response to BCUC IR1 6.3, in certain cases, FEI may also require its large volume customers to provide contractual security before incurring any extension costs.

Subject to the above, FEI identified the following advantages and disadvantages of requiring contractual commitments.

Advantages

During the contractual period, the use of contractual commitments provides greater certainty regarding the number of customers expected to connect and reduces the risk that forecast attachments will not ultimately materialize. This provides greater certainty regarding the revenues included in the MX Test and may support customer retention during the contractual period.

Disadvantages

By excluding highly probable, but non-contracted, future customer connections, the expected revenues may be underestimated, impeding the otherwise economic customer attachments. This could increase the required CIAC or prevent an otherwise economic main extension from proceeding. Requiring contractual commitments could also add cost and complexity to the connection process and may discourage customers who are not prepared or able to make a long-term commitment.

Further, a contractual commitment from new customers does not necessarily provide certainty regarding consumption or the associated revenues. This is because developers' and builders' commitments relate to the number of units ("doors") to be connected to the gas distribution system, rather than a commitment to consume a specified volume of gas. Actual revenues would therefore continue to depend on the consumption of the customers who connect.

On balance, FEI considers that its forecast-based approach is reasonable because it recognizes probable customer attachments over the foreseeable build-out of a main extension without requiring each prospective customer to enter into a contractual commitment. The RIA then provides a separate means of assessing, in aggregate, how customer growth from main extensions and infill connections has affected existing customers' delivery rates and whether the MX and Connection Policies continue to achieve a fair allocation of costs between new and existing customers. Given the results of all RIAs to date, there is no evidence to suggest that contractual commitments are necessary.

5.5 Please discuss the pros and cons of applying a negative 15 percent adjustment to FEI's volume forecasts for its residential and commercial customers, similar to the practice at Energir.

Response:

The Régie's decision to apply a negative 15 percent adjustment to the forecast volumes used in Énergir's MX Test for small and medium-volume customers was driven by its historical challenges with accurately forecasting the new customers' volumes. The Régie concluded:[8]

> The Régie considers that the observed customer attrition and volume losses are persistent and recurring, and that they are greater than the non-fulfillment of sales and the effect of non-activated and inactive meters, for which Énergir applies the negative 7.4% adjustment to anticipated residential market sales …
>
> Based on the data presented by Énergir, in order to take into account all the factors that are negatively influencing the expected volume growth of network extension projects, the Régie considers that it is necessary to apply an adjustment rate of

[8] D-2018-080, R-3867-2013 Phase 3, pp. 66-67. Original in French:

La Régie considère plutôt que les phénomènes d'attrition de la clientèle et de pertes de volumes observés sont persistants et récurrents et qu'ils sont d'une ampleur supérieure à la non-matérialisation des ventes et à l'effet des compteurs non ouverts et inactifs pour lesquels Énergir applique l'ajustement de - 7,4 % aux ventes anticipées du marché résidentiel …

Sur la base des données mises en preuve par Énergir, afin de tenir compte de l'ensemble des facteurs influençant à la baisse la croissance des volumes attendue des projets d'extension de réseau, **la Régie juge qu'il y a lieu d'appliquer aux prévisions de ventes associées aux projets d'extension de réseau un taux d'ajustement de – 15 %, pour chacun des marchés résidentiel et commercial**.

negative 15% to the sales forecasts associated with network extension projects, for each of the residential and commercial markets.

In the same decision, the Régie also indicated that this adjustment could be revisited if Énergir demonstrates improved accuracy of the expected volumes in future applications.

In other words, the Régie's decision to apply a negative adjustment to consumption data was based on evidence that these new customer cohorts failed to meet the expected revenue contributions, resulting in, all else equal, higher rates for existing customers.

In contrast, FEI's current and historical RIA results have shown that new customer growth has reduced delivery rates for existing customers without a negative adjustment to the volume forecasts used in the MX Test. Therefore, FEI considers a similar negative adjustment to be unwarranted.

Subject to the above, FEI identified the following advantages and disadvantages of applying a blanket negative adjustment to volume forecasts:

Advantages

- **Greater protection for existing customers:** In circumstances similar to those observed at Énergir, where retrospective reviews indicate that forecast volumes used in the MX Test have consistently exceeded actual volumes, applying a systematic negative adjustment would reduce the present value of expected revenues in the MX Test. This would make it more difficult for projects to meet the PI threshold and would increase the likelihood and magnitude of CIAC requirements. As a result, existing customers would be better protected from the risk of lower-than-expected revenues from new connections.

Disadvantages

- **Risk of new customers subsidizing existing customers and creating barriers for otherwise economic connections:** In the absence of evidence of systematic over-forecasting, applying a uniform reduction to all residential and commercial volume forecasts would artificially lower projected revenues, increase required CIACs, and make it more difficult for projects to satisfy the PI threshold. This could discourage potential customers from connecting to the gas system, thereby limiting otherwise economic system expansion opportunities that help spread fixed costs across a larger customer base. Furthermore, where customers choose to proceed despite higher contribution requirements, they may effectively subsidize existing customers through contributions that exceed the level supported by FEI's current volume forecasts and RIA results.

The MX Test uses the best available cost and consumption information when a connection request is evaluated to forecast project revenues and costs over the 40-year DCF term. It does not determine the actual effect of new connections on existing customers' rates. The RIA performs that separate function using actual cost and consumption information across multiple years, and shows that new customer growth has reduced delivery rates for existing customers under the

current MX Test inputs. Applying an additional 15 percent reduction without evidence that FEI's volume forecasts systematically overstate realized volumes would further reduce forecast revenues and increase CIAC requirements for new customers, moving the allocation of costs further out of balance by increasing the benefit that existing customers receive from new customer connections.

6.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 4.1, pp. 37, 41, Section 4.2.1, Tables 4-4, 4-5 and 4-6, pp. 42–44

Discounted Cashflow (DCF) Term

On page 37 of the Application, FEI states the costs and revenues are considered over the same DCF term aligned with useful life. FEI elaborates on page 41 that "the 40-year DCF term continues to be appropriate because it closely reflects the weighted average service life of the assets associated with new connections, including new distribution mains, services, meters, and related assets...".

FEI presents the sensitivity analysis on the changes of CIAC requirements, range of the increase/decrease to CIAC requirements, and the estimated rate impact due to new customer connections under various DCF Terms in Tables 4-4, 4-5, and 4-6, respectively.

In Table 4-2, FEI presents a Canadian jurisdictional comparison of system extension policies, which shows that Energir and EGD apply a different DCF for different customer classes.

On page 10 of Appendix C to the Application, regarding the jurisdictional scan on EGD, FEI states for large-volume customers the maximum revenue horizon is 20 years from the customer's initial service. A project-specific revenue horizon is used when the project life cycle is determined to be shorter than the prescribed time horizons.

On pages 16 to 17 of Appendix C to the Application, regarding the jurisdictional scan on Energir, FEI states in 2023, Energir adjusted the DCF term to better align Energir's system extension policies with its new focus on dual-fuel heating systems and the promotion of renewable natural gas (RNG) consumption. This includes reducing the DCF term to 20 years to reflect the average useful life of the appliances for selected targeted groups of customers that opt out of Energir's hybrid heating offerings and/or RNG offering.

6.1 Please expand Tables 4-4, 4-5, and 4-6 to include a scenario of a 10-year DCF term and for Table 4-4 add a column with the Mean CIAC Requirement ($) calculated for each row.

Response:

Please refer to updated versions of Tables 4-4 and 4-5 of the Application which include a 10-year DCF term scenario using the 2025 MX Test data. FEI notes that the column "Average CIAC Requirement" in Table 4-4 is the same as "Mean CIAC Requirement" (i.e., the sum of all CIAC requirements in dollars divided by the number of projects required to pay a CIAC).

Updated Table 4-4: Illustration of Changes in CIAC Requirements (Aggregate, Average, and Highest) Under Alternative DCF Terms (Based on 2025 Data)

DCF Term (Years)	Projects Requiring CIAC	Percentage of Projects Requiring CIAC	Aggregate CIAC Requirement ($)	Average CIAC Requirement ($)	Highest CIAC Requirement ($)
60	62	15%	$ 686,902	$ 11,079	$ 87,867
50	67	17%	$ 794,492	$ 11,858	$ 94,032
40	71	18%	$ 980,532	$ 13,810	$ 102,294
30	112	28%	$ 1,612,649	$ 14,399	$ 113,406
20	173	43%	$ 4,242,401	$ 24,523	$ 638,129
10	277	69%	$ 11,264,175	$ 40,665	$ 1,551,225

Updated Table 4-5: Range of the Increase/Decrease to CIAC Requirements at Different DCF Terms Compared to Current 40 Years (Based on 2025 Data)

Ranges of CIAC Requirement *Increase* ($)	DCF 10 Years	DCF 20 Years	DCF 30 Years
$0 - $5,000	75	89	82
$5,000 - $10,000	54	31	16
$10,000 - $50,000	107	38	12
$50,000 - $100,000	17	9	2
$100,000 - $200,000	16	5	-
> $200,000	8	1	-
Total	277	173	112

Ranges of CIAC Requirement *Decrease* ($)	DCF 50 Years	DCF 60 Years
$0 - $(5,000)	65	58
$(5,000) - $(10,000)	3	8
$(10,000) - $(50,000)	3	5
$(50,000) - $(100,000)	-	-
$(100,000) - $(200,000)	-	-
> $(200,000)	-	-
Total	71	71

As shown in the updated Table 4-4 above, a DCF term of 10 years would have a substantial impact in terms of the number of projects requiring a CIAC and the amount of CIAC requirement for each project. For example, under a DCF term of 10 years, more than half of the 2025 projects (i.e., 69 percent) would require a CIAC and the average CIAC requirement would dramatically increase to over $40,665, which is a 194 percent increase from the current 40-year DCF term. FEI also notes that, based on the 2025 projects, the highest CIAC would increase to over $1.5 million, which is an increase of over 1,400 percent (or 15 times higher) from the current 40-year

DCF term. Further, as shown in the updated Table 4-5, if the DCF term were changed to 10 years for the 2025 projects, a total of 202 projects would have experienced an increase in their CIAC requirement of at least $5,000 (or 148 projects would see an increase of at least $10,000).

It is also important to note that if the DCF term were changed to 10 years, the SLCA amount would become zero ($0). This means that no infill customers would receive an allowance. In other words, all infill customers would have to pay the full cost of installing the service line as well as the meter. This would have a significant negative impact on customers wishing to attach to FEI's system, even if they did not require a new main to be installed. Using the 2025 data as an example, the average cost for connecting new customers in 2025 (service line and meters) was $5,507, while the 2025 SLCA was $3,875, which means on average the cost of infill customers would increase by approximately 237 percent[9] if the DCF term were changed from the current 40 years to 10 years.

Please refer to an updated version of Table 4-6 below for the changes to the 2017-2025 RIA results with the scenario of a 10-year DCF term included.

Updated Table 4-6: Estimated Rate Impacts Due to New Customers Connections if DCF Term of the MX Test is Changed (Based on 2017-2025 RIA Results)

	DCF Term					
2017-2025 RIA	60 Years	50 Years	40 Years	30 Years	20 Years	10 Years
Average Cost per GJ with Growth	$ 6.715	$ 6.715	$ 6.715	$ 6.715	$ 6.715	$ 6.715
Average Cost per GJ without Growth	$ 6.829	$ 6.831	$ 6.833	$ 6.835	$ 6.846	$ 6.870
Rate Impact per GJ	$ (0.114)	$ (0.115)	$ (0.118)	$ (0.120)	$ (0.131)	$ (0.154)
Percentage Rate Impact	-1.67%	-1.69%	-1.72%	-1.76%	-1.91%	-2.25%
Change in Percentage Rate Impact from 40 years	0.05%	0.03%	0.00%	-0.04%	-0.19%	-0.53%

As shown in the updated Table 4-6, all else equal, even if the DCF term were changed to 10 years, it would still have a minor impact on delivery rates based on the MX Test data from 2017 to 2025. For instance, the reduction in delivery rates due to the increased CIAC under the 10-year DCF term scenario is only 0.53 percent based on the 2017-2025 RIA. As discussed on page 44 of the Application, the reason for the minor impact on delivery rates is because the aggregate amount of CIAC (even under the 10-year DCF term scenario) is small when compared to the total aggregate direct costs of main extensions from 2017 to 2025. Thus, a shorter DCF term of 10 years would only achieve minor delivery rate reductions for existing customers, despite significantly increasing costs for new customers wishing to connect to FEI's system. As discussed in Section 4.2.3 of the Application, this approach would have a significantly disproportionate and unfair negative impact on new customers.

[9] Average CIAC to be paid by infill customers under 10-year DCF term is $5,507 while the average CIAC under the current 40-year term is $1,632 ($5,507 less 2025 SLCA of $3,875). $5,507 / $1,632 – 1 = 237 percent.

6.2 Please discuss whether the rationale to reduce the DCF term to 20 years for Energir to reflect the average useful life of appliances also applies to FEI.

Response:

FEI does not believe that the rationale for using a 20-year DCF term for Énergir applies to the DCF term used in FEI's MX Test. FEI's MX Test evaluates whether the present value of the forecast incremental revenues associated with a main extension covers the incremental costs of the infrastructure required to provide that extension. The DCF term should therefore reflect the expected service life of the infrastructure whose costs and revenues are being evaluated, rather than the useful life of the appliances initially installed by the customer.

Using the useful life of the appliances, rather than the useful life of the connection assets, would exclude revenues after 20 years even though the main, service line, meter and regulator are expected to remain in service and may continue generating revenues. The replacement of an appliance at the end of its useful life does not necessarily mean that the customer will disconnect from the gas system or cease using gas. A customer may replace an existing gas appliance with another gas appliance, change the number or type of appliances used, or make a different energy choice. FEI does not have a reasonable basis to assume that appliance turnover after approximately 20 years will result in the termination of gas service or the loss of all associated delivery revenues.

Further, as explained in Sections 4.1.2.1 and 4.2.3 of the Application, it would not be appropriate for the delivery rates used to estimate expected revenues to be based on depreciation rates that assume recovery of the connection assets over their expected service lives, while limiting the revenues recognized by the MX Test to a materially shorter period. FEI's delivery rates, which are an input to the MX Test, include the depreciation of assets in accordance with the approved depreciation study. Therefore, if a shorter DCF term were used, the MX Test would no longer reflect the expected recovery from new customers through FEI's rates. All else equal, if the DCF period was reduced in the MX Test, the delivery rates used in the test would need to increase to match the shorter depreciation period.

In accordance with FEI's most recently approved depreciation study, the weighted average depreciation rate of FEI's mains, meters, regulators and service lines is approximately 2.25 percent which is an approximate 44-year expected service life (i.e., 1/2.25 percent).[10] A DCF term of 40 years is therefore consistent with FEI's currently approved depreciation study and provides a reasonable approximation of the period over which the connection assets are expected to remain in service and generate revenues.

The circumstances underlying Énergir's approach are also different. As described in Appendix C to the Application, Énergir adopted a 20-year DCF term for selected targeted customer groups that opt out of its dual-fuel heating or RNG offerings. FEI does not apply an equivalent customer-

[10] Calculated based on the 2026 Approved plant-in-service and depreciation rates of the following distribution assets: 47300 Service (2.11%), 47400 House Regulators (4.35%), 47402 Meters/Regulators Installation (4.55%), 47500 Mains (1.42%), 47710 Measuring & Regulating Equipment (2.66%), and 47810 Meters (5% for AMI meters – all new connections going forward will be installation with AMI meters).

specific framework in its MX Test since in FEI's view, this is inconsistent with the purpose of the MX Test as a fairness tool and not a policy or promotional tool for certain types of utility offerings. Accordingly, Énergir's use of appliance life for those selected groups does not provide a basis for applying a 20-year DCF term to all FEI main extensions.

6.2.1 Please discuss whether any other variable within FEI's MX Test formula considers the impact of energy policy, such as energy transition and the promotion of higher-cost RNG.

Response:

Where energy policy has been implemented through laws, regulations or other applicable requirements, its effects are embedded over time within the MX Test inputs, including consumption values and rates used to calculate forecast revenues and the costs used to calculate the cost of a main extension. Please also refer to the responses to BCUC IR1 5.2 and 5.3.

As explained in Section 9.2 of the Application, for each MX Test, consumption is based on the expected appliance installations identified by the property developer or building owner, and average appliance consumption rates provided by the REUS, or in the case of large commercial or industrial customers, information provided by the customer's design team. The appliances installed by developers or building owners must comply with applicable legal and regulatory requirements. In the case of residential developments, for example, gas burning appliances to be installed must comply with the BC Building Code, municipal bylaws, Energy Efficiency Standards, and the level of Zero Carbon Step Code adoption in the municipality in which the customer connection will occur. Therefore, appliance configuration and resulting consumption values used in the MX Test incorporate the effects of the requirements applicable when the connection is evaluated.

Higher RNG commodity costs are not reflected in any MX Test variable because commodity costs and revenues are not inputs to the MX Test. Including commodity costs in the MX Test is inappropriate because the purpose of the MX Test is to assess the incremental costs and delivery revenues associated with connecting new customers. Commodity costs are recovered separately through FEI's commodity rates when customers consume gas and are not caused by the physical connection of a new customer. The higher cost of RNG is therefore not reflected in another variable in the MX Test. However, even if RNG costs were considered as part of the MX Test, RNG revenues would also need to be included and together, they would cause the PI scores to tend towards 1.0, as explained in the Section 4.5.2 of the Application.

Finally, in addition to the adjustment of MX Test inputs over time due to the changes in customer appliances and consumption patterns, FEI periodically reviews the RIA, which is the appropriate tool to determine whether the MX Test is working as intended and inform whether any future adjustments to its system extension policies are necessary.

6.3 Please elaborate on the rationale for EGD to apply a maximum revenue horizon of 20 years from the customer's initial service for large-volume customers.

6.3.1 Please compare the characteristics of large-volume customers in EGD's and in FEI's jurisdiction and discuss whether the rationale provided above also applies to FEI

Response:

According to the OEB Decision and Order in proceeding EB-2022-0200, the revenue horizon for EGD's large volume customers is based on "the distribution services contract term, up to a maximum of 20 years".[11] This approach aligns the revenues included in EGD's feasibility analysis with the period during which the customer is contractually committed to receive distribution service, subject to a maximum of 20 years. Where the project life cycle is expected to be shorter, EGD uses a project-specific revenue horizon.

The OEB decision does not provide further rationale for selecting 20 years as the maximum revenue horizon for large volume customers. The OEB noted that the existing approach for those customers was not at issue in that proceeding and remained unchanged. While FEI does not have information about the specific characteristics of EGD's large volume customers and therefore cannot undertake a detailed comparison with FEI's large volume customers, the jurisdictional scan provided in Appendix C to the Application explains that specific elements of a utility's MX Test may be influenced by company-specific factors such as regulatory history, including past experience with industrial customers, and/or the utility's financial condition.

FEI uses a maximum 40-year revenue horizon for industrial customers unless there is information to indicate that the expected period of service is shorter. FEI's industrial tariffs generally roll over from year to year, and there is generally no contractual commitment beyond the one-year period. However, some customers have longer contractual terms, such as bypass agreements.

FEI's KAMs work closely with large industrial customers wishing to attach to the system. Through these ongoing interactions, the KAM assesses factors such as the customer's load requirements, the nature of the business, and business plans. If there are concerns regarding the length of time that a customer will remain on the gas system, security is required in respect of the extension costs. In other cases, if it is known that the industrial customer will only be on the system for 10 years, then only 10 years of revenue is used in the MX Test. Accordingly, 40 years is the maximum period for which revenue is accounted for in the test.

There is, therefore, some similarity between the underlying approaches used by EGD and FEI. Both may limit the revenue horizon based on information indicating that the customer's period of service will be shorter than the otherwise applicable maximum. However, EGD bases the revenue

[11] OEB EB-2022-0200, December 2023, p. 26.

horizon on the distribution services contract term, subject to a general maximum of 20 years for large volume customers, while FEI applies a maximum of 40 years and uses a shorter customer-specific revenue horizon where the available information indicates that the customer will remain on the system for a shorter period.

Given FEI's customer-specific assessment and the limited information available regarding the characteristics and contractual arrangements of EGD's large volume customers, FEI cannot conclude that EGD's general 20-year maximum would be appropriate for FEI's large volume customers. FEI's approach addresses the same underlying concern regarding the risk that revenues may not continue for the full maximum period, but does so based on the information available for the particular customer rather than by imposing a 20-year maximum on all large volume customers or requiring contractual guarantees outside of the MX Test.

6.4 Please discuss the pros and cons of having different DCF terms for different customer classes, similar to EGD and Energir.

Response:

As noted in the response to BCUC IR1 6.3, except where FEI is aware that an industrial customer plans to remain on the system for a shorter period, FEI considers that different DCF terms for different customer classes would be inappropriate. Applying a shorter term to industrial and large-volume customers, as in EGD's approach, or to residential and commercial customers, as in Énergir's approach, would further contribute to the imbalance between new and existing customers and lacks a clear basis from which to differentiate between customer classes as customer class does not, by itself, determine how long a customer will continue using natural gas.

FEI identified the following advantages and disadvantages of having different DCF terms for different customer classes.

Advantages

A potential advantage of different DCF terms is that it may allow the revenue horizon to reflect material differences among customer classes, where there is evidence that one class has a different expected period of service, contractual commitment, or risk profile. This could reduce the risk of recognizing revenues beyond the period during which customers in that class are reasonably expected to remain on the system.

However, FEI does not have evidence supporting different expected service periods based solely on customer class. As discussed in the response to BCUC IR1 6.3, FEI instead addresses known customer-specific circumstances by using a shorter revenue horizon where the available information indicates that a particular industrial customer will remain on the system for less than 40 years.

Disadvantages

FEI's mains often have more than one customer class connecting to them. As a result, adopting different DCF terms would require FEI to allocate the costs of a main between customer classes to run separate MX Tests for the same main. This would introduce additional complexity and require assumptions regarding the extent to which each customer class causes or benefits from the shared main costs. For example, adopting a shorter DCF term for one or more customer classes would require FEI to adjust the delivery charges used in the test upward to reflect the shorter DCF term. As discussed in Section 4.1.2.1 of the Application, adopting different DCF terms would also violate the matching principle, as currently, the delivery charges embedded in the test reflect the useful life of the assets.

6.5 Please discuss the pros and cons of having project-specific revenue horizon, similar to EGD, as compared to FEI's proposal to apply a 40-year DCF term on all projects.

Response:

FEI already applies a project-specific revenue horizon where reliable information indicates that one or more customers served by a main will remain on the system for less than 40 years. The 40-year DCF term is therefore the maximum revenue horizon, rather than a strict term applied to every customer or project. For example, if a main will serve a number of homes and one industrial customer, and the industrial customer plans to operate for only 20 years, FEI will include 20 years of revenue for the industrial customer and 40 years of revenue for the residential customers in the MX Test. As such, 40 years is the revenue horizon used for industrial customers unless there is information to indicate that the expected period of service is shorter.

The principal advantage of a project-specific revenue horizon is that it can better align the revenues included in the MX Test with the period during which the customer is reasonably expected to remain on the system. Where reliable information supports a shorter period, using that period reduces the risk of recognizing revenues that are not expected to materialize and provides greater protection to existing customers. It also allows FEI to respond to the circumstances of a particular customer rather than applying a shorter term to an entire customer class.

However, a project-specific revenue horizon requires sufficient reliable information regarding the customer's expected period of operation or gas use. In many cases, particularly for residential and commercial customers, it cannot be known how long an individual customer will continue to use gas or whether future occupants will continue service. Selecting a shorter revenue horizon without reliable supporting information would introduce subjective assumptions, increase administrative complexity, and potentially result in otherwise similar customers being treated differently. It would also increase the likelihood and amount of CIAC requirements by excluding

revenues that may reasonably be expected over the service life of the connection assets, thereby affecting the balance between new and existing customers.

FEI considers a shorter project-specific revenue horizon appropriate where it is supported by reliable information regarding the particular customer or project. In the absence of such information, subjectively assigning a shorter revenue horizon would increase the customer's contribution requirement without an evidentiary basis and would be unfair to the customer. FEI's existing approach is administratively practical and captures the principal benefit of a project-specific revenue horizon where it is supported.

6.6 Please further explain how FEI's proposal to keep the DCF term at 40 years balances the risks related to the energy transition, and customers potentially moving away from natural gas appliances over time.

Response:

As discussed in Section 2.2.1 of the Application, the purpose of the MX Test is to achieve fairness between new and existing customers. FEI recognizes that adjustments to the MX Test may be necessary over time to maintain this balance as customer behavior, legislation and other factors influence energy consumption patterns and cost trends over time. These uncertainties are inherent in the economic horizon over which a new connection is analyzed. FEI considers that these risks are appropriately addressed through the following features of the MX Test and related review processes, rather than by shortening the DCF term:

- All costs and revenues are discounted to present value (PV), which gives less weight to revenues and costs occurring later in the DCF term;
- The MX Test incorporates the effects of enacted policies, such as building codes that influence building design and appliance configuration, that are known prior to connection and can be used to determine consumption in the MX Test;
- MX Test consumption credit inputs are updated periodically through the REUS to reflect observed use trends that are influenced by technology and policy adoption (i.e., not known prior to connection) over time;
- Depreciation studies periodically examine the useful life of FEI's assets. The resulting approved depreciation rates are reflected in the delivery rates used in the MX Test;
- RIAs provide an opportunity to assess how new customer connections have affected existing customer delivery rates based on actual costs, customer additions and consumption; and

- Review and adjustment of the MX Test and its parameters is performed periodically to implement necessary adjustments.

At present, the RIA indicates that the MX and Connection Policies have resulted in new customer connections providing a favourable delivery rate impact to existing customers; therefore, adjustments are necessary. However, a shorter DCF term would reduce the forecast revenues attributed to new connections and increase CIAC requirements, further contributing to an imbalance between new and existing customers. Thus, shortening the DCF term is not warranted at this time.

As legislation, customer behaviour, and market factors change over time, FEI will continue to monitor the appropriateness of the DCF term and other MX Test parameters to maintain a reasonable balance between new and existing customers.

On page 43 of the Application, FEI states: "Table 4-5 above shows, for instance, that changing the DCF term from 40 years to 20 years in 2025 would have significantly increased the CIAC requirement for a significant number of projects. A total of 84 projects would have experienced an increase in their CIAC requirement of at least $5,000. The largest increase in a CIAC would have been more than $200,000."

6.7 Please confirm, or explain otherwise, that the numbers provided in Table 4-5 are before the application of System Extension Fund (SEF) funds. If confirmed, please provide a version of Table 4-5 with figures net of SEF funding.

Response:

Confirmed. The numbers provided in Table 4-5 are before application of the SEF.

Please refer to an updated version of Table 4-5 below for the range of increases/decreases in CIAC requirements (net of SEF funding) at different DCF terms based on the 2025 MX Test data compared to the current DCF term of 40 years. FEI also included the 10-year DCF term scenario requested by the BCUC in IR1 6.1 for ease of comparison. FEI notes the SEF is limited to 95 percent of the participant's CIAC up to a maximum of $10,000 per customer if the participant meets several eligibility requirements, including but not limited to:

- The applicant must be the homeowner (i.e., developers would not be eligible);
- The connection must be for single-family or townhouse;
- The home must be a principal residence;
- The PI before CIAC must be greater than 0.2 and less than 0.8; and

- The applicant cannot participate in a contributory main model.

Given there were over 400 projects in 2025, FEI is unable to determine and makes no assumption whether each project (i.e., those that did not apply for SEF funding in 2025) would have met all the SEF requirements, especially the conditions that require the applicant to be the homeowner and the home to be a principal residence. As such, FEI only included SEF funding (recalculated depending on the DCF scenarios) to those customers that received SEF funding in 2025. For the customers that received SEF funding in 2025, FEI recalculated the amount based on their PI before CIAC under each DCF scenario (i.e., if the PI before CIAC is greater than 0.2 but less than 0.8, the SEF would be limited to 95 percent of the CIAC required up to a maximum of $10,000).

Updated Table 4-5: Range of the Increase/Decrease to CIAC Requirements (net of SEF Funding) at Different DCF Terms Compared to Current 40 Years (Based on 2025 Data)

Ranges of CIAC Requirement *Increase, Net of SEF* ($)	DCF 10 Years	DCF 20 Years	DCF 30 Years
$0 - $5,000	78	92	85
$5,000 - $10,000	44	27	11
$10,000 - $50,000	114	39	14
$50,000 - $100,000	17	9	2
$100,000 - $200,000	16	5	-
> $200,000	8	1	-
Total	277	173	112

Ranges of CIAC Requirement *Decrease, Net of SEF* ($)	DCF 50 Years	DCF 60 Years
$0 - $(5,000)	66	63
$(5,000) - $(10,000)	2	3
$(10,000) - $(50,000)	3	5
$(50,000) - $(100,000)	-	-
$(100,000) - $(200,000)	-	-
> $(200,000)	-	-
Total	71	71

Updated Table 4-5: Range of the Increase/Decrease to CIAC Requirements (before SEF Funding) at Different DCF Terms Compared to Current 40 Years (Based on 2025 Data)

Ranges of CIAC Requirement *Increase* ($)	DCF 10 Years	DCF 20 Years	DCF 30 Years
$0 - $5,000	75	89	82
$5,000 - $10,000	54	31	16
$10,000 - $50,000	107	38	12
$50,000 - $100,000	17	9	2
$100,000 - $200,000	16	5	-
> $200,000	8	1	-
Total	277	173	112

Ranges of CIAC Requirement *Decrease* ($)	DCF 50 Years	DCF 60 Years
$0 - $(5,000)	65	58
$(5,000) - $(10,000)	3	8
$(10,000) - $(50,000)	3	5
$(50,000) - $(100,000)	-	-
$(100,000) - $(200,000)	-	-
> $(200,000)	-	-
Total	71	71

As shown in the above tables, all else equal, there is only a minor change in the ranges of the increases/decreases in CIAC requirements due to different DCF terms with and without SEF funding. Ultimately, whether the SEF is included in the analysis or not, reducing the DCF term from the current 40 years to 20 years or to 10 years would cause a significant impact to customers or developers wishing to connect to FEI's system.

7.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 2.1, p. 14, Section 2.2.4, p. 22; Appendix D, p. 6; BCUC letter

L-11-25 dated June 17, 2025, p. 2

Application Fee

On page 22 of the Application, FEI states:

> As part of its decision on FEI's 2016 Rate Design Application, the BCUC approved a reduction in the Application Charge from $25 to $15. FEI is not proposing any change to the Application Charge as part of this Application.

On page 6 of Appendix D to the Application, FEI states, "the Application Fee is an administration charge meant to cover the cost to set up a new customer account in FEI's billing system."

7.1 Please provide the annual average historical actual administrative cost ($/account) to set up a new customer account in FEI's billing system for each year in the last five years by the following customer classes: residential, commercial, and industrial.

7.1.1 Please discuss whether the current application fee at $15 continues to fully recover the expected cost to set up a new customer account in FEI's billing system.

7.1.1.1 If not, with reference to the historical actual administrative cost incurred by FEI provided above, please explain: (i) what would be an appropriate application fee to fully recover FEI's administrative cost; and (ii) whether it would be appropriate to have a different application fee by customer class.

Response:

FEI is unable to separate the administrative cost to set up new customers in FEI's billing system by customer class. Application fees are based on the total time Customer Service Representatives (CSRs) work on moves and construction calls, credit check fees, and move in/out read fees. Calls are not separated by residential or commercial customers as they are worked on by the same group of CSRs and follow the same process, therefore costs to set up residential and commercial customers are not expected to vary widely given that the process used for both is largely the same.

Like residential and commercial accounts, FEI also charges the application fee of $15 to set up new industrial accounts as the details required from an industrial customer for account set up are largely the same. FEI utilizes industrial billing representatives to set up industrial customers instead of CSRs. Since there are very few new industrial customers added in a year, FEI does

not specifically track the costs associated with setting up a new industrial account as the majority of industrial customer-related costs are for general account billing and administration.

FEI provides the administrative cost to set up residential and commercial accounts in the past five years, which includes the cost to administer account moves.[12]

Table 1: Administrative Cost to Set Up Accounts

2021	2022	2023	2024	2025
$14.88	$16.65	$18.33	$18.88	$19.36

While the administrative costs have escalated to approximately $20 per account in 2025, FEI estimates that approximately $6 of this $20 cost is associated with move-in/move-out meter reads that will not be required once FEI's Advanced Metering Infrastructure (AMI) meters are fully deployed and operational.

Finally, for the reasons set out above, FEI does not consider there to be merit in having a separate application fee for residential, commercial and industrial customers. Considering the costs reflected in the above table, there would be a negligible price signal to customers wishing to connect to the gas system from changes to FEI's application fee.

On page 14 of the Application FEI states:

> Thus, the MX and Connection Policies should be evaluated against rate design principles (e.g., fair apportionment of costs, avoidance of undue discrimination, ease of understanding and implementation), rather than being approached as tools to advance particular public policy goals such as energy affordability, promoting economic development and housing, or reducing GHG emissions. […]

On page 2 of BCUC letter L-11-25, the BCUC directed FEI to include the following information in its Application:

> **Connection Charges**
>
> - An explanation of FEI's current connection/application charges; and
> - An analysis of alternate approaches to determining the connection charges, such as a connection fee based on a connection pipe length, e.g. Pacific Northern Gas' connection fee of $450 for the first 21 metres of underground pipe, or a connection fee based on service capacity.

[12] FEI determined these costs using the same method as was used in its 2016 Rate Design Application when the BCUC approved FEI's $15 Application Fee pursuant to Order G-135-18.

7.2 Please confirm, or explain otherwise, that the $15 Application Fee is currently the minimum a customer would pay in order to connect to FEI's system. Please discuss the use of a larger Application Fee as a minimum connection charge and discuss the pros and cons of that approach.

Response:

Confirmed. The $15 Application Fee is currently the minimum a customer would pay in order to connect to FEI's system. Please also refer to the responses to BCUC IR1 7.3 and 7.4 where FEI explains that the Application Fee exists to recover the administrative costs of customer account activation and is calculated based on the cost of service, consistent with the purpose of the application fee at other utilities regulated by the BCUC.

A larger application fee in excess of the cost to activate a customer account would over-recover these costs and would be inconsistent with the purpose of the application fee. Further, changing the purpose and design of the application fee to over-recover these costs would be duplicative of the MX Test, which is used to determine an appropriate customer contribution, if any.

7.3 Please provide an analysis of alternative approaches to determining the Application Charge, such as a fee based on a connection pipe length, such as Pacific Northern Gas' connection fee of $450 for the first 21 metres of underground pipe, or a connection fee based on service capacity.

Response:

PNG's connection fee of $450 for the first 21 metres of pipe is not an "Application Charge" – it is a fee for the physical connection of the customer to the gas system. Per PNG's gas tariff, its Application Charge for both existing and new installations is set at $30.

For clarity, FEI's Application Fee is designed specifically to recover the administrative costs of customer account activation and is calculated based on the cost of service. FEI is not aware of any utility that establishes its application or account setup charges based on the length of pipe.

FEI evaluated the merit of a fee-based "connection charge" in Section 5.5.2 of the Application. As explained in the Application, FEI considers that replacing the SLCA approach with a connection fee, while feasible, is unnecessary and would run counter to the objective of treating new and existing customers equitably. Under FEI's current approach, some customers do not need to pay a CIAC because the cost is less than the allowance. In contrast, a fee-based model (e.g., PNG's fixed connection fee) charges a fee to every new customer. This would further compound the issue of new customers subsidizing the delivery rates paid by existing customers. The connection fees collected would need to be credited back to new connections to avoid making this situation worse.

FEI accordingly does not see value in adopting a fee-based connection charge.

7.4 Please provide the current application fee, or comparable customer account setup fee, charged by each electric utility regulated by the BCUC for establishing a new residential service connection. Where applicable, identify the purpose of each fee.

Response:

The account setup charges (application fees) for BC Hydro, FortisBC Inc. (FBC) and Nelson Hydro (Rural customers) are provided below. FEI notes that these are strictly administrative fees for account setup and activation services, rather than charges for physical infrastructure and connections. Physical connection charges vary depending on specific service requirements, including phase configuration (single- or three-phase), installation type (overhead or underground), and requested amperage.

- **BC Hydro:** Section 11 of BC Hydro's Electric Tariff details the schedule of Standard Charges. Pursuant to Section 11.4, BC Hydro levies a $13.50 (plus GST) "Account Charge", which is an administrative fee for setting up a new customer account (when a change of customer on an account for a premise occurs).
- **FBC:** Section 17 of FBC's Electric Tariff outlines its schedule of Standard Charges. As specified in Section 17.3, FBC levies a $13 "Account Setup and Transfer" charge which is an administrative fee for setting up a new customer account.
- **Nelson Hydro (Rural customers):** Nelson Hydro's Service Bylaw No. 3608 outlines the fees and charges applicable to rural service areas. Under this Bylaw, Nelson Hydro charges its rural customer a $90 "Move-In Connection" fee which includes account activation processes.

7.5 Please discuss whether FEI has assessed the extent to which differences between FEI's application fee and those charged by electric utilities may create different cost signals for prospective customers at the time of connection. If such an assessment has been undertaken, please provide the analysis. If not, explain why not.

Response:

FEI has not assessed the extent to which differences between its Application Fee and those charged by electric utilities may create different cost signals, nor has FEI considered aligning its Application Fee amount with those charged by other electric utilities (or other gas utilities).

The approach and rate design principles underpinning FEI's application fee are consistent with the approach and rate design principles utilized by BC utilities such as PNG, BC Hydro and FBC. In all cases, the customer account setup fees are set to reflect the actual cost of the activity (i.e., the intent of the fee is cost recovery). These fees are not intended to be used as economic price signals to favour gas or electric connections. Further, the fees are nearly identical, with BC Hydro's and FBC's fees slightly less than FEI's fee, as shown in the response to BCUC IR1 7.4.[13] FEI's application fee is designed specifically to recover the administrative costs of customer account activation and is calculated based on the cost of service. Just as FEI's delivery rates are set based on its own cost of service, not the cost of service of another utility, it would be inappropriate to set an application fee that reflects another utility's costs to activate a new customer's account.

7.6 Please discuss whether FEI considered aligning its application fee more closely with the application fee, or comparable customer account setup fee, charged by electric utilities in BC. If so, please provide the analysis and rationale for the fee ultimately proposed. If not, explain why not.

Response:

Please refer to the response to BCUC IR1 7.5.

[13] Nelson Hydro's charge of $90 reflects its unique circumstances wherein a portion of the utility's customers are regulated (i.e., the Rural customers) and a portion of the customers are non-regulated (i.e., the Urban customers).

8.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Appendix D, pp. 15–20; FEI 2022 LTGRP proceeding, Decision and Order

G-78-24 dated March 20, 2024, p. 55

Costs Included in the MX Test Formula

On pages 15 to 20 of Appendix D to the Application, FEI provides the MX inputs for net cash outflows by year from 2014 to 2025.

On page 55 of Decision and Order G-78-24 regarding FEI's 2022 LTGRP, the BCUC stated:

> The Panel notes that FEI's existing main extension test predates the energy transition and does not consider BC's energy objectives. Given this and FEI's stated strategy to move down the diversified energy pathway and significantly decarbonize its system, the Panel sees merit in considering BC's energy objectives and decarbonization in the main extension test in the future. Even though at the moment, FEI is unable to determine to what extent the cost of RNG, hydrogen, or societal cost should be included in the MX test, the Panel believes that in the future it would be prudent to evaluate the merit of incorporating such costs, as well as BC's energy objectives and other implications of the energy transition in FEI's main extension policy.

8.1 Please discuss how FEI determines which costs to include versus exclude in the MX inputs for net cash outflows.

Response:

FEI acknowledges the BCUC's commentary in the 2022 LTGRP Decision; however, FEI respectfully submits that including commodity costs (RNG or otherwise) in the MX Test is misaligned with FEI's unbundled rates and principles of cost causation.

FEI determines which costs to include in the net cash outflows portion of the MX Test based on whether they represent incremental capital, operational and other related costs associated with (i.e., caused by) physically constructing a main extension. FEI uses incremental costs related to the main extension because the customers connecting to the main are causing these "new" costs; therefore, these incremental costs should be compared to the incremental revenue from these same customers.

The cost categories included in the net cash outflows capture the types of costs caused by a new main extension. These categories were established through previous regulatory proceedings regarding FEI's system extension policies dating back to 1996. The costs are also consistent with Section 12.5 of FEI's Tariff and include:

- labour, material, and other costs (capital costs) necessary to serve the new customers including mains, service lines, meter sets and any related new facilities such as pressure reducing stations and pipelines;
- working capital associated with the above capital costs;
- the incremental operating and maintenance expenses necessary to serve the customers connecting to the main;
- an appropriate allocation of FEI's overheads based on the direct capital costs for the construction of the main extension;
- an allocation of system improvement costs; and
- applicable municipal, property and income taxes.

In addition to the costs set out above, the economic test includes the appropriate return on investment.[14]

Please refer to the response to BCUC IR1 8.2 regarding societal costs.

8.2 Please discuss whether FEI considered incorporating a social cost of GHG emissions into the MX Test as a way to reflect a system cost associated with serving new customers, rather than as a mechanism to advance broader public policy objectives.

Response:

FEI interprets the BCUC's term "social cost" to refer to the cost of GHG emissions on society. FEI considers incorporating a "social cost" of GHG emissions into the MX Test to be inappropriate for the reasons set out below:

- The MX Test is a cash-flow tool reflecting FEI's connection policies with the intention of promoting fair and equitable treatment between new and existing customers. It assesses whether the revenues from new customers are expected to reasonably cover the actual capital costs and incremental expenses of the connection over the expected service lives of the assets, such that existing customers are not adversely affected by the addition of new customers. The "social cost" of GHG emissions is not a capital or operating cost incurred by FEI to connect a new customer, an actual cash outflow by FEI, or a cost included in FEI's revenue requirement and recovered through delivery rates. Therefore, adding this non-cash amount to the MX Test would reduce project PIs and increase CIAC requirements, resulting in a CIAC that is recovering an external societal cost from the connecting customer, rather than an incremental cost incurred by FEI in providing the connection.

[14] FEI includes its return on investment in the MX Test by discounting the net revenue in the MX Test by its weighted average cost of capital.

- FEI is not aware of any applicable law or regulation that requires new connections to the gas system to be GHG neutral, or any regulation or tax legislation that would require customers wishing to connect to the gas system to pay the "social cost" of GHG emissions as a condition of connection. Any applicable requirements, including municipal implementation of the Zero Carbon Step Code, that affect whether or how a building may use gas are already reflected in the proposed appliance configuration and consumption inputs included in the MX Test. Adding a separate "social cost" of GHG emissions would not be necessary to enforce those requirements.

- Any consideration of the "social cost" of GHG emissions should be determined and enforced by government to ensure alignment of government policy and consistent application of those policies. In April 2025, the BC government eliminated the retail carbon tax, which is a broadly recognized price of GHG emissions. Should the carbon tax at some point be re-instated by the provincial government, FEI would accordingly levy this tax as enacted.

- GHG emissions primarily arise from future fuel consumption, rather than from the construction of the main extension itself. Requiring the connecting customer to pay a CIAC today based on assumed emissions over the 40-year DCF term would require assumptions about future fuel composition, consumption, appliance use and occupancy that cannot be determined reliably when the connection is evaluated.

However, in order to be responsive, FEI has provided Table 1 below showing the illustrative impact of including a "social cost" of GHG emissions in the MX Test based on the 2025 MX Test data. The analysis is calculated based on the cost of carbon (SCC/SC-CO2) from the Government of Canada in $ per tonne from 2025 to 2064 (i.e., the 40-year period for projects in the 2025 MX Test data)[15] with adjustment to forecasts of lower-carbon and renewable gas blending to 2050 as presented in FEI's 2026 LTGRP.[16] The cost of carbon is treated for illustrative purposes as an outflow in the DCF calculation of the MX Test. Please also refer to Attachment 8.2 for an illustrative example showing how the cost of carbon would be included in the DCF calculation of the MX Test.

Table 1: Impact of Including Social Cost of GHG Emissions in MX Test (Based on 2025 MX Test Data)

Scenario	Aggregate PI (net of CIAC)	Projects Requiring CIAC	Percentage of Projects Requiring CIAC	Aggregate CIAC Requirement ($)	Average CIAC Requirement ($)	Highest CIAC Requirement ($)
Current (Without SCC)	2.15	71	18%	$ 980,532	$ 13,810	$ 102,294
Social Cost of Carbon Included	0.85	284	71%	$ 23,007,571	$ 81,013	$ 3,096,697

[15] https://www.canada.ca/en/environment-climate-change/services/climate-change/science-research-data/social-cost-ghg.html.

[16] Based on FEI's Diversified Approach scenario. For example, if the SCC/SC-CO2 in 2050 is $394 per tonne and the percentage blend of renewable gas from under the Diversified Approach scenario is 84 percent, then the SCC/SC-CO2 in 2050 included in the MX Test would be $63.04 per tonne, i.e., $394 x (1 – 84%).

All else equal, and assuming that customers and developers would proceed despite the resulting CIAC requirements, Table 1 shows that including a "social cost" of GHG emissions would materially affect the results of the MX Test, resulting in a significant and negative impact to customers wishing to connect to FEI's system. The number of projects that would require a CIAC would increase from 71 projects, or 18 percent, to 284 projects, or 71 percent. The aggregate CIAC requirement would increase from approximately $0.980 million to $23.007 million (an increase of 23 times) and the average CIAC requirement would increase from approximately $13.8 thousand to $81 thousand (an increase of approximately 6 times). The aggregate PI would decrease from 2.15 to 0.85, and the highest CIAC requirement would increase from approximately $0.102 million to $3.097 million. FEI notes that in practice, many of the developers and project proponents would decline to pay the CIAC and attach to the system, with existing customers missing out on the benefit of new customers pushing down existing rates.

In summary, these results illustrate that treating the "social cost" of GHG emissions as an MX Test cash outflow would materially increase the costs assigned to new customers and cause the aggregate PI to fall below 1.0. Determining both the need and quantum of a societal cost of GHG emissions is the responsibility of government and it is therefore not appropriate for such a cost to be included in the MX Test.

8.3 Please discuss the pros and cons of including a social cost of GHG emissions in the MX inputs for net cash outflows.

Response:

Please refer to the response to BCUC IR1 8.2.

8.4 For illustrative purposes, please provide a DCF calculation incorporating a monetized social cost of GHG emissions, such as the Government of Canada's social cost of carbon[17] or a similar metric, into the MX Test.

Response:

Please refer to the response to BCUC IR1 8.2.

[17] Government of Canada, Social cost of GHG emissions, retrieved from: https://www.canada.ca/en/environment-climate-change/services/climate-change/science-research-data/social-cost-ghg.html.

9.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 4.5, pp. 56–58; FEI 2022 LTGRP proceeding, Decision and Order

G-78-24 dated March 20, 2024, and Exhibit B-1, pages 9-1 to 9-2

Renewable Gas Costs

On pages 56 to 58 of the Application, FEI discusses the continued exclusion of commodity costs in the MX Test.

On pages 57 to 58 of the Application, FEI states:

> The marginal cost methodology, as noted by the BCUC in Letter L-11-25, is intended to reflect the cost of serving one additional unit using least cost system optimization under existing obligations. RNG is more expensive than conventional natural gas, is supply constrained, is contractually limited, and is capped in the *Greenhouse Gas Reductions (Clean Energy) Regulation* (GGRR). RNG cannot be considered marginal if it would not be selected in a least cost solution absent legislative mandates. Its cost reflects policy preference, not marginal cost economics. *[Emphasis in original]*
>
> Applying RNG costs to only new connections would impose higher costs on a narrow subset of customers to satisfy system wide environmental objectives of reducing GHGs. The environmental benefits of RNG accrue system-wide and should not be attributable exclusively to new customer load. Therefore, RNG costs should be spread broadly, which FEI does by way of its Storage and Transport (S&T) RNG Rider.

In Decision and Order G-78-24, the BCUC accepted FEI's 2022 LTGRP. On pages 9-1 to 9-2 of FEI's 2022 LTGRP Application, FEI described the Diversified Energy Planning Scenario, stating:

> FEI's Diversified Energy (Planning) Scenario, in which FEI models future changes needed to pursue its Clean Growth Pathway, is projected to meet the emissions reductions required by the GHGRS [Greenhouse Gas Reduction Standard] cap on natural gas utility emissions in the CleanBC Roadmap for the Buildings and Industrial Sectors. […]
>
> […]
>
> FEI's transition to renewable and low-carbon gas supplies has the largest impact on GHG emission reductions for residential, commercial and industrial customers. Acquiring and allocating 60.2 PJ [petajoules]of renewable and low-carbon gas supply by 2030 to these customer groups results in emission reductions of 3.0 Mt CO2e [megatonnes of carbon dioxide equivalent]. In 2040, the allocation of 99 PJ of renewable and low-carbon gas to these customer groups results in 4.9 Mt CO2e of GHG emission reductions.

9.1 Please explain whether FEI expects the quantity of natural gas supplied to its customers to decline over the LTGRP planning horizon as the supply of RNG increases. If yes, please quantify the forecast decline in natural gas supply and explain the implications, if any, for the determination of the marginal supply resource.

Response:

FEI expects the quantity of natural gas supplied to customers to decline as RNG supply increases, all else equal, because RNG displaces natural gas within FEI's supply portfolio. However, the proportion of RNG in FEI's supply portfolio is influenced by the overall demand for gas on FEI's system.

The Diversified Approach scenario in FEI's 2026 LTGRP models an increasing share of RNG and hydrogen within FEI's gas supply portfolio. The scenario also illustrates declining natural gas volumes supplied to residential, commercial and industrial customers over the planning horizon. This decline reflects both the displacement of natural gas by RNG and hydrogen and changes in customer demand arising from the scenario assumptions, including energy efficiency, electrification and other policy, market and technology developments.[18]

FEI also identifies potential growth opportunities in transportation, marine, ISO shipments and new large loads, which may increase demand outside of the residential, commercial and industrial customer supply portfolio.[19] Accordingly, the decline in natural gas supply does not necessarily correspond to an equivalent decline in FEI's total natural gas demand. The Diversified Approach scenario illustrates a plausible future under its stated assumptions and does not represent a forecast that total FEI gas demand will necessarily decline.

With respect to the determination of the marginal supply resource, the increase in RNG supply does not fundamentally alter FEI's approach. RNG is procured to meet portfolio and policy objectives and is generally constrained by available supply and contractual arrangements. As such, RNG is not expected to be the marginal resource for most incremental load decisions over the LTGRP planning horizon. The marginal supply resource for economic evaluations, including the MX Test, is expected to remain natural gas even as RNG's share of the overall portfolio increases.

9.2 Please explain whether FEI evaluated whether the forecast increase in RNG, together with the forecast reduction in natural gas supply described in the LTGRP, would affect the marginal cost of serving an incremental customer connection. If

[18] FEI 2026 LTGRP Application, Figure 6-2, p. 6-5.
[19] FEI 2026 LTGRP Application, Table 9-1, p. 9-1.

yes, please provide the analysis and conclusion. If no, please explain why no such evaluation was undertaken.

Response:

FEI did not evaluate whether the forecast increase in RNG, together with the forecast reduction in natural gas supply described in the 2026 LTGRP, would affect the marginal cost of serving an incremental customer connection for the purposes of the MX Test because changes in FEI's gas supply portfolio do not alter the incremental connection costs assessed by the MX Test.

As described in Section 4.5.1 of the Application, FEI has an unbundled rate structure under which commodity costs are recovered through separate commodity rates. The commodity costs are associated with supplying the gas consumed by customers, rather than physically connecting a new customer to the distribution system. The MX Test therefore excludes both commodity costs and the corresponding commodity revenues.

Further, the MX Test does not select or forecast the future mix of natural gas, RNG and other renewable or lower-carbon gases that would serve an individual connection. It forecasts project costs and delivery revenues over the 40-year DCF term using the inputs applicable when the test is performed. The forecast increase in RNG under the 2026 LTGRP Diversified Approach scenario therefore does not provide a basis for changing the commodity cost treatment for an individual MX Test.

FEI nevertheless evaluated the effect of including commodity costs and corresponding commodity revenues in the MX Test as part of the Application. As described in Section 4.5.2, adding these amounts, whether based on natural gas or RNG, causes PI scores to tend towards 1.0. A PI initially above 1.0 decreases towards 1.0, while a PI initially below 1.0 increases towards 1.0. For a project below the minimum individual PI threshold, the resulting increase in the PI would reduce or potentially eliminate the required CIAC. This result arises from adding both commodity costs and an approximately corresponding amount of commodity revenues to the MX Test. It does not demonstrate that changes in FEI's future gas supply portfolio affect the incremental physical cost of connecting a customer.

Please also refer to the response to BCUC IR1 9.1.

9.3 Please provide a table comparing the marginal cost and average cost of gas (both natural gas and RNG) by year from 2015 to 2025.

9.3.1 Please discuss whether there have been changes in the marginal cost and average cost in this period that may warrant adjustments to the MX Test formula. As part of the response, please discuss how FEI's RNG blend percentage is appropriately reflected in the proposed MX Test formula

Response:

For a portion of this response, FEI has redacted certain information for which FEI is requesting that this information be filed on a confidential basis and be held confidential by the BCUC in perpetuity, pursuant to Section 23 of the BCUC's Rules of Practice and Procedure regarding confidential documents as set out in Order G-192-25.[20] The redacted information contains commercially sensitive and market competitive information which, if disclosed publicly, could prejudice or influence future negotiations of contracts between FEI and suppliers or counterparties, which could result in higher costs for customers.

Please refer to Table 1 below for the market price and average cost for both natural gas and RNG from 2015 to 2025.

FEI does not produce any natural gas and currently only produces approximately two percent of the RNG it acquires. Accordingly, FEI has used the applicable market price as a proxy for the marginal cost of acquiring an additional unit of natural gas or RNG. For example, if FEI's customers consume one additional unit of natural gas or RNG, FEI would have to purchase one more unit from the market and recover that cost in its commodity rates for natural gas or in its Storage and Transport (S&T) rider in the case of RNG.

For the market price of natural gas, FEI used the year-ahead forward prices at the market trading hubs where it typically acquires natural gas. For RNG, there is no liquid market price. FEI has therefore used the volume weighted average strike price of the biomethane purchase agreements (BPAs) it signed in each year as a proxy for what a market would be willing to sell RNG in that particular year. If no BPAs were signed in a year, "N/A" is entered in the table. For the average cost of natural gas, FEI used the actual average cost of acquisition reported in its Commodity Cost Reconciliation Account (CCRA) and Midstream Cost Reconciliation Account (MCRA) Status Reports filed annually with the BCUC. For the average cost of RNG, FEI used the actual average cost of RNG from its RNG Account Status Reports filed annually with the BCUC.

[20] As amended by Order G-228-25.

Table 1: Market Price and Average Cost of Natural Gas and RNG[21]

As discussed in Section 4.5.1 of the Application, the cost of natural gas, including commodity and midstream gas costs, and the cost of RNG are not and should not be included in FEI's MX Test formula. As a result, changes to the average cost or market price of natural gas or RNG have no bearing on the MX Test. The costs associated with FEI's RNG Blend are recovered through a rider included in FEI's storage and transport (midstream) charge and are likewise not included in the MX Test. However, if FEI included the cost and corresponding revenues associated with the RNG Blend in the MX Test formula, it would have the same impact as including natural gas, RNG or a blend of the two in the MX Test, as discussed in the response to BCUC IR1 9.2.

On page 58 of the Application, FEI provides Table 4-12: Effect on PI and CIAC of Adding Commodity into MX Test ($). FEI states that if commodity costs were incorporated in the denominator (costs) of the MX Test, then the MX Test would also need to include the recovery of commodity costs (revenues) in the numerator. On the same page, FEI cites an example using a $2.00 per gigajoule (GJ) commodity cost stating that when the commodity cost is added, the CIACs decreased from $0.98 million to $0.61 million. FEI states further that if the cost of RNG is used in the MX Test instead of conventional gas, almost all of the 2025 MX Test CIACs would be reduced to zero dollars.

9.4 Please provide the full calculation for the MX Test examples cited in the preamble.

[21] The Average Cost of RNG includes interconnection and program overhead (O&M) costs, whereas the Market Price of RNG is only the strike price of the BPAs and does not include interconnection or program overhead costs.

Response:

FEI notes that the example referenced in the preamble (i.e., CIACs decreased from $0.98 million to $0.61 million if commodity cost is added) is the aggregate amount of CIACs from the 2025 MX Test data which includes 413 projects. The aggregate CIAC amount was based on recalculating the individual PI and CIAC from the 2025 MX Test data with an adjustment to include commodity costs. Accordingly, FEI is unable to provide the full calculation of 413 individually calculated PIs and CIACs as part of this response.

However, Table 1 below provides an expanded view of the calculations for the two MX Test examples shown in Table 4-12 of the Application in order to illustrate how commodity costs would be included in the MX Test. If the same method is applied to all 413 projects from FEI's 2025 MX Test data, the aggregate CIAC would decrease from $0.98 million to $0.61 million assuming a commodity cost of $2 per GJ.

Table 1: Calculations for MX Test Examples in Table 4-12 With Commodity Costs Included

		Dollars		
Line No.	Particulars	MX Test Example 1	MX Test Example 2	Reference
1	Existing Test Without Commodity			
2	*Present Value*			
3	Capital	218,787	56,538	
4	Overhead	13,127	5,454	
5	Working Capital	775	207	
6	Total Direct Cost Outflow	232,689	62,199	Sum of Lines 3 through 5
7				
8	Demand	62,073	9,586	
9	Effective Delivery Charge	7.330	7.330	Based on Customer Delivery Charges
10	Delivery Charge Revenue	454,994	70,264	Line 8 x Line 9
11	Basic Charge Revenue	290,995	22,723	
12	Connection Fees	1,171	97	
13	Transfer Fees	4,576	416	
14	Total Revenue Inflow	751,736	93,500	Sum of Lines 10 through 13
15				
16	Less:			
17	O&M	101,078	9,930	
18	System Improvement Allowance	64,309	9,931	
19	Property Tax	79,816	20,874	
20	In-Lieu/Franchise Fees	10,349	1,553	
21	Notional Income Taxes	95,398	3,183	
22	Total Expense Outflow	350,950	45,471	Sum of Lines 17 through 21
23				
24	Net Revenue Inflow	400,786	48,029	Line 14 - Line 22
25				
26	**Profitability Index before CIAC**	**1.72**	**0.77**	Line 24 / Line 6
27	CIAC	-	1,730	If Line 26 < 0.8, then Line 6 x 0.8 - Line 24
28	**Profitability Index after CIAC**	**1.72**	**0.80**	(Line 27 + Line 24) / Line 6
29				
30	Adding in Commodity			
31	Demand	62,073	9,586	Line 8
32	Cost of Gas	2.000	2.000	Assumed
33	Total Cost of Gas	124,146	19,172	Line 31 x Line 32
34				
35	Total Direct Cost Outflow + Commodity	356,835	81,371	Line 6 + Line 33
36	Net Revenue Inflow + Commodity	524,932	67,201	Line 24 + Line 33
37				
38	**Profitability Index before CIAC**	**1.47**	**0.83**	Line 36 / Line 35
39	CIAC	-	-	If Line 38 < 0.8, then Line 35 x 0.8 - Line 36
40	**Profitability Index after CIAC**	**1.47**	**0.83**	(Line 39 + Line 36) / Line 35

As shown in Table 1 above, when commodity costs are added to both the revenue (numerator) and cost (denominator), the PI before CIAC moves closer to 1.0, effectively reducing the overall CIAC requirement. As further explained in the response to BCUC IR1 9.5, commodity costs are flow-through costs for FEI (i.e., customers pay for the same commodity cost incurred by FEI); therefore, the same commodity cost must be added to both the revenue side (paid by the new customers) and the cost side (commodity cost incurred by FEI to serve the new customers).

Table 2 below illustrates the effects of using higher-cost RNG (assumed to be $23 per GJ) in the two MX Test examples from Table 4-12 of the Application. As Table 2 shows, the PI before CIAC will move even closer to 1.0 (i.e., the higher the commodity costs added to both the revenue side and cost side, the closer the PI gets to 1.0), reducing the CIAC requirement even further.

Table 2: Calculations for MX Test Examples in Table 4-12 of the Application With RNG Costs Included

Line No.	Particulars	Dollars MX Test Example 1	Dollars MX Test Example 2	Reference
1	Existing Test Without Commodity			
2	*Present Value*			
3	Total Direct Cost Outflow	232,689	62,199	BCUC IR1 9.4, Table 1, Line 6
4	Net Revenue Inflow	400,786	48,029	BCUC IR1 9.4, Table 1, Line 24
5		.		
6	**Profitability Index before CIAC**	**1.72**	**0.77**	Line 4 / Line 3
7	CIAC	-	1,730	If Line 6 < 0.8, then Line 3 x 0.8 - Line 4
8	**Profitability Index after CIAC**	**1.72**	**0.80**	(Line 7 + Line 4) / Line 3
9				
10	Adding in RNG			
11	Demand (RNG)	62,073	9,586	BCUC IR1 9.4, Table 1, Line 8
12	Cost of RNG	23.000	23.000	Assumed
13	Total Cost of RNG	1,427,676	220,473	Line 11 x Line 12
14				
15	Total Direct Cost Outflow + RNG	1,660,365	282,673	Line 3 + Line 13
16	Net Revenue Inflow + RNG	1,828,462	268,503	Line 4 + Line 13
17				
18	**Profitability Index before CIAC**	**1.10**	**0.95**	Line 16 / Line 15
19	CIAC	-	-	If Line 18 < 0.8, then Line 15 x 0.8 - Line 16
20	**Profitability Index after CIAC**	**1.10**	**0.95**	(Line 19 + Line 16) / Line 15

9.5 Please comment on how the MX Test would be affected if the costs of commodity RNG were added into the denominator, at each of 50% and 100% levels, but the numerator is kept constant using the revenues from natural gas. Please cite the commodity costs for each of RNG and natural gas used in the calculation.

Response:

Adding the cost of natural gas into the numerator (revenue paid by customer) and then adding the cost of RNG, whether at 50 percent or 100 percent, into the denominator (cost incurred by FEI) is not logical, would undermine the purpose of the MX Test and would effectively double-charge customers for their consumption of gas.

FEI's cost of gas, either natural gas or RNG, is recovered from customers based on the cost of gas that the customer actually receives. The basis of actual consumption is fundamental to how FEI's commodity rates and RNG riders are set and how commodity costs are treated as a flow-through cost in FEI's revenue requirement. The approach suggested in the question is inconsistent with how FEI recovers its commodity costs as it would effectively create an additional commodity charge embedded within the MX Test to be paid by new customers as a CIAC at the time of connection, depending on their PI.

For the purposes of the MX Test, the volume of gas used per appliance is a credit for gas used based upon existing customer usage. As such, the new customer is not expected to use the exact amount of gas reflected in the credit. Adding gas costs to the MX Test based on this credit would therefore unfairly embed a consumption cost for new customers that would not reflect their actual usage.

The approach suggested in the question would result in the MX Test including a mismatch of commodity costs between revenue to be recovered (i.e., based on natural gas) and costs to be incurred (i.e., based on RNG). FEI sees no logical or mathematical basis that would justify the suggested mismatch in revenues and costs within the MX Test nor the assumption that new customers would consume 50 or 100 percent RNG in the near term.

Further, the approach suggested in this question would artificially lower the PI for new customers, increasing CIACs and deterring new connection projects. This is counter to the RIA results, which show a need to lower contributions from new customers to maintain the balance in fairness between new and existing customers.

While FEI disagrees with the approach suggested in this question, to be responsive, FEI provides Table 1 below where natural gas is included in the numerator (revenue or cash inflow) at $2 per GJ but 50 percent of RNG is included in the denominator (cost or cash outflow) at $23 per GJ to the two MX Test examples in Table 4-12 of the Application. FEI further provides Table 2 below reflecting 100 percent RNG in the denominator (cost or cash outflow) of the same MX Test examples.

Table 1: RNG in Denominator at 50 Percent

		Existing (w/o Commodity)	Commodity	Total (w/ Commodity)
MX Test Example 1	PV Cash Inflow	$ 48,029	$ 19,172	$ 67,201
	PV Cash Outflow	$ 62,199	$ 100,651	$ 162,850
	PI	**0.77**	**0.19**	**0.41**
	CIAC Required to Achieve PI of 0.8	**$ 1,730**		**$ 61,349**
MX Test Example 2	PV Cash Inflow	$ 400,786	$ 124,146	$ 524,932
	PV Cash Outflow	$ 232,689	$ 651,765	$ 884,454
	PI	**1.72**	**0.19**	**0.59**
	CIAC Required to Achieve PI of 0.8	**Not Required**		**$ 182,632**

Table 2: RNG in Denominator at 100 Percent

		Existing (w/o Commodity)	Commodity	Total (w/ Commodity)
MX Test Example 1	PV Cash Inflow	$ 48,029	$ 19,172	$ 67,201
	PV Cash Outflow	$ 62,199	$ 201,302	$ 263,501
	PI	**0.77**	**0.10**	**0.26**
	CIAC Required to Achieve PI of 0.8	**$ 1,730**		**$ 141,870**
MX Test Example 2	PV Cash Inflow	$ 400,786	$ 124,146	$ 524,932
	PV Cash Outflow	$ 232,689	$ 1,303,530	$ 1,536,219
	PI	**1.72**	**0.10**	**0.34**
	CIAC Required to Achieve PI of 0.8	**Not Required**		**$ 704,044**

As shown in Tables 1 and 2 above, the inclusion of gas costs as suggested in this question produces unreasonable MX Test results. In the case of 50 percent RNG in the denominator applied to MX Tests completed in 2025, the CIAC required would be nearly the same cost as the physical assets constructed for the connection. In the case of 100 percent RNG in the denominator, the CIAC required would be 200 percent to 300 percent higher than the costs of constructing the asset for the connections.

9.6 Please provide a version of Table 4-12 showing the examples cited in IR 9.5 above.

Response:

Please refer to the response to BCUC IR1 9.5.

10.0 Reference: MX TEST REVIEW AND PROPOSALS

Exhibit B-1, Section 2.2, p. 18; Appendix A, p. 7; BC Hydro Distribution Extension Policy proceeding, Exhibit B-1, Section 4.2.3.2, page 4-10[22]

Treatment of System Improvement Costs

On page 18 of the Application, FEI discusses system improvement (SI) costs. FEI states:

> The SI Cost input to the MX Test serves as a proxy for the incremental system improvement costs associated with growth not attributable to any specific customer. As part of the MX Test, the SI Cost is calculated as:
>
> SI = Number of Customer Attachments x Consumption per Customer x SI Charge per GJ
>
> System Improvements are planned annually to meet capacity constraints in certain areas of the gas system based on a forecast of growth in distribution system capacity requirements. System Improvement requirements can be caused by increases in consumption by existing customers and increases in consumption driven by the addition of customers. The current method of determining the SI Charge was originally developed in 1994 as a proxy so that a notional amount for System Improvement costs could be considered within the MX Test.
>
> The SI Charge per GJ is updated on an annual basis.

On page 7 of Appendix A to the Application, FEI provides Table 2-4, SI Charge Calculation for the 2026 MX Test.

10.1 Please explain whether FEI's proposed system improvement costs within the PI formula include costs related to distribution and transmission.

Response:

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. It includes capital expenditures in the gas distribution system to accommodate growth in new customer attachments.

The SI Charge does not include capital expenditures in FEI's transmission system. System improvements or expansions of the transmission system serve all customers broadly and are driven from overall load and not exclusively by new connections.

[22] BC Hydro Distribution Extension Policy Application dated June 27, 2024, retrieved from: https://docs.bcuc.com/documents/proceedings/2024/doc_77683_b-1-bch-distributionextensionpolicy-application-public.pdf.

10.2 Please clarify who pays for system improvement costs – new customers, existing customers, or both.

Response:

Both FEI's new and existing customers pay for system improvement costs through their respective rate schedule's delivery charge; however, the RIA results show that the incremental revenue from new customers is offsetting the cost of new connections, including system improvement costs.

FEI notes that distribution system improvements can be triggered by the incremental load from both new and existing customers and, as such, the improved capacity and reliability of the system improvement benefits both new and existing customers.

On page 4-10 of Exhibit B-1 in the BC Hydro Distribution Extension Policy proceeding, BC Hydro discusses its approach to system improvement costs.

10.3 Please compare FEI's proposed treatment of system improvement costs to BC Hydro's. As part of the response, please discuss whether the two utilities should treat system improvement costs similarly or differently.

Response:

While differences in the technical and economic drivers of SI costs between electric and gas distribution systems can result in different approaches to SI cost treatments, BC Hydro's recently approved Distribution Extension Policy (DEP) establishes a precedent for lower SI charges and limiting direct customer responsibility for these costs. FEI also notes that three gas utilities studied in its jurisdictional scan (PNG, ATCO Gas and Énergir), exclude SI costs from project-level PI calculations.

In BC Hydro's DEP application, which was approved by BCUC Decision and Order G-59-25, SI costs were described as "upstream improvements, such as modifications or upgrades to BC Hydro's existing distribution system, to accommodate the incremental customer load".[23] In the DEP proceeding, BC Hydro explained that the SI charge is intended to apply to "extensions requiring extraordinary System Improvements".[24] BC Hydro further explained that, due to the larger size of extension projects, the electric distribution system was encountering more frequent capacity constraints, particularly in high growth areas. As a result, the "extraordinary" threshold

[23] Exhibit B-1, BC Hydro DEP Application, p. 1-6.

[24] Exhibit B-4, BC Hydro Response to CEC IR1 4.1.

for the SI charge was more frequently triggered, resulting in disproportionate burdens for new customers. Therefore, BC Hydro proposed, and the BCUC approved, a revised approach that provides a utility-funded allowance for SI costs, with the connecting customer responsible for costs exceeding the applicable allowance.[25] As a result, direct customer SI contributions are generally limited to only extraordinary cases.

Under this updated approach, the maximum SI allowances are structured as follows:[26]

> **The Panel approves BC Hydro's proposed amendments to Section 8.3 of its Electric Tariff regarding the treatment of System Improvement costs, including a maximum BC Hydro System Improvement investment of:**
>
> - **$1 million for Extensions with expected maximum demand less than 1 MVA; and**
> - **$1 million per MVA of expected demand, prorated by kVA and up to a maximum total contribution of $10 million per Extension, for Extensions with expected maximum demand of 1 MVA or greater.**
>
> The Panel is satisfied that BC Hydro's proposed changes improve alignment with its current operating environment and stakeholder feedback. The Panel agrees that the current policy's 500 kVA threshold is no longer reflective of an extraordinary circumstance as it was in 2008 and considers that BC Hydro's proposal that all connections receive a level of support proportionate to their expected load improves equity among new customers. The Panel considers that the proposed limit on BC Hydro's System Improvement investment ($10 million per Extension) strikes a reasonable balance between new and existing customers by ensuring that extraordinary costs are not borne by existing BC Hydro ratepayers, while new customers are not disproportionately burdened for System Improvements that typically benefit multiple customers. [Emphasis in original]

Accordingly, BC Hydro bears SI costs up to the applicable allowance, while the connecting customer remains responsible for extraordinary SI costs above that amount. The BCUC found that this treatment appropriately recognizes that system improvements typically benefit multiple customers while protecting existing ratepayers from extraordinary costs. This approach effectively socializes most SI costs across the broader ratepayer base (via rates), making it more affordable for new customers to connect to the electric distribution system.

In contrast, FEI does not have a separate allowance threshold for SI costs and its SI Charge is not limited to projects with an identifiable extraordinary system improvement. FEI's SI Charge is not based on the cost of an identifiable upstream improvement required for a particular connection. Rather, it is calculated based on the approved formula and used as an input in the MX Test.

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[25] Decision and Order G-59-25, p. 7.

[26] Decision and Order G-59-25, p. 9.

Ultimately, both approaches recognize that system improvements may benefit multiple customers and should not necessarily be charged in full to an individual new customer. However, identical treatment is not required; BC Hydro provides an allowance for identifiable system improvement costs associated with a particular extension, while FEI applies a standardized proxy for forecast system-wide improvement costs associated with growth that cannot be attributed to a specific customer. Regardless of the approach taken, the approach adopted ought to provide a fair allocation of shared system improvement costs between new and existing customers, having regard to the nature of the utility's system and the manner in which those costs arise.

B. RATE IMPACT ANALYSIS: PURPOSE, METHODOLOGY AND RESULTS

11.0 Reference: RATE IMPACT ANALYSIS (RIA)

Exhibit B-1, Section 3, pp. 29, 30, Table 3-1, p. 32, Section 4.7, p. 63; Appendix B,

Table 4, p. 4; Appendix C, p. 1; FEI 2015 System Extension Application, Decision and Order G-147-16 dated September 16, 2016 (2015 FEI MX Decision), p. 16

RIA

On page 29 of the Application, FEI states that the "RIA provides a point-in-time view on how the MX and Connection Policies are functioning, rather than a full assessment of whether FEI's system extensions and connections are economic."

In Appendix C to the Application, FEI provides a jurisdictional scan of MX and connection policies.

11.1 Please further explain whether other utilities/jurisdictions use an RIA similar to that of FEI in assessing their MX and connection policies.

11.1.1 If yes, please provide further information on the use of RIAs in those jurisdictions including recent RIA results and RIA targets, if available.

11.1.2 If no, please explain how much weight FEI puts on the RIA results in preparing its MX and connection policies application and why that weighting is appropriate.

Response:

FEI is not aware of any other North American gas or electric utilities that use an RIA similar to FEI's to perform an ex-post analysis of their system extension activities. The RIA was developed in connection with the 2015 System Extension Application, with the assistance of EES Consulting (now GDS Associates) and based on feedback gathered through stakeholder consultation sessions, for the purpose of analyzing the aggregate impact on customer rates of additions of new customers over a past period of time. The analysis is performed using actual cost and consumption data. At the time the RIA was developed, EES Consulting did not identify any other utilities using a similar retrospective rate impact analysis to assess its system extension activities.

The jurisdictional scan did not specifically consider the use of RIA-type assessments by other utilities, as this was not part of the scope of FEI's jurisdictional scan (provided as Appendix C to the Application). FEI's broader research in preparing this response also did not identify another utility that performs a comparable standalone retrospective rate impact analysis of its system extension activities.

FEI has had informal conversations with representatives of other Canadian utilities suggesting that they do not perform an analysis similar to FEI's RIA. However, these conversations were

informal and should not be taken to be definitive. Other utilities may be subject to retrospective reviews of specific elements of their MX Test, such as forecast versus actual variances in particular inputs, as part of their reporting requirements. For example, as explained in the response to BCUC IR1 5.5, Québec's Régie de l'énergie evaluates the forecast and actual volume variances associated with Énergir's MX Test through its annual reporting process. Such input-specific reviews are distinct from FEI's RIA, which is more comprehensive as it assesses the aggregate effect of new customer growth on existing customers' delivery rates.

FEI places significant weight on the RIA results in developing its MX and Connection Policy proposals because the RIA is the accepted mechanism for assessing how new customer growth has affected existing customer delivery rates over the period examined. The RIA directly informs the central rate design issue in this proceeding: whether the MX and Connection Policies are achieving an appropriate allocation of connection costs between new and existing customers. The current and prior RIA results have consistently shown that new customer growth has reduced delivery rates for existing customers, supporting FEI's conclusion that the MX Test can be recalibrated to reduce the cost burden on new customers while continuing to protect existing customers.

However, FEI does not treat the RIA as determinative or rely on it in isolation. The RIA provides a point-in-time, aggregate assessment of rate impacts and is not a full assessment of the economic performance of each individual main extension. FEI considers the RIA together with the historical individual and aggregate PI results, the effects of proposed changes on CIAC requirements and delivery rates, the applicable rate design principles, the expected service lives of the connection assets, the ability of new customers to fairly and reasonably access the gas system, and the other evidence in the Application. Significant weight is therefore appropriate because the RIA measures the aggregate rate impact that the MX and Connection Policies are intended to manage, while its limitations are addressed by considering the other available evidence.

On page 16 of the 2015 FEI MX Decision, regarding sustainment capital included in the RIA, the BCUC states:

> The Panel finds it appropriate for FEI's estimate of incremental capital cost associated with new customers to include an estimate of the impact of new customers on sustainment capital**. In the absence of FEI preparing a more refined estimate, the Panel accepts an estimate using 50 percent of the growth rate of average number of customers.** *[Emphasis in original]*

On page 30 of the Application, FEI states that the RIA methodology has remained consistent since the BCUC first accepted it in the 2015 FEI MX Decision.

In Table 4 of Appendix B to the Application, FEI provides the Rate Impact Analysis results for 2017–2025.

11.2 Please discuss, or explain otherwise, whether FEI has considered alternatives to the 50 percent estimate discussed in the 2015 FEI MX Decision. As part of the response, please explain why the 50 percent estimate remains appropriate for the Application.

Response:

As part of the 2017-2025 RIA included in this Application, FEI has applied 50 percent of the distribution (DP) system improvement capital. For the same reasons set out in the BCUC's Decision and Order G-147-16 on FEI's 2015 System Extension Application (2016 Decision), new customers connecting to the system typically do not immediately trigger system improvements, and system improvements can be caused by incremental load growth from both new and existing customers. As such, FEI applied the same 50 percent from the 2016 Decision to the total system improvement capital costs from 2017 to 2025, which equates to approximately $61.8 million (or $6.9 million per year over the 9-year period). Given that new customers do not linearly affect DP system improvement capital, FEI did not explore including a lesser or greater percentage. However, the results of using a 25 percent and a 75 percent assumption are provided in the response to BCUC IR1 11.3 and FEI confirms that even when 100 percent of DP system improvement capital is included in the RIA, there remains a benefit to existing customers.

Further to the BCUC's direction regarding Sustainment capital included in the RIA, FEI notes that DP system improvement-related costs were included as part of FEI's regular Sustainment capital expenditures at the time of the 2016 Decision. However, commencing in 2020, system improvements are now included in FEI's Growth capital expenditures, consistent with the Growth capital formula approved in the 2020-2024 Multi-year Rate Plan (MRP) Decision.[27] Therefore, applying 50 percent of the growth rate of the average number of customers to FEI's Sustainment capital and adding that amount to the RIA would no longer reflect the costs to reinforce the DP system due to the incremental load growth because these costs are now part of Growth capital. As shown in Table 1 below (based on the same calculation as shown in the response to Panel IR1 2.1 in the 2015 System Extension Application proceeding), if FEI had strictly followed the approach from the 2016 Decision, approximately $61.8 million of system improvement costs would have been removed from the 2017-2025 RIA and replaced with approximately $6.7 million of Sustainment capital. As such, FEI's approach of applying 50 percent of the DP system improvement capital is consistent with the BCUC's previous decision.

[27] FortisBC 2020-2024 MRP Application, Section 3.3.1.1, Line 16-22, p. C-56.

Table 1: Calculation of 50% of Average Customer Growth Rate of Sustainment Capital from 2017 to 2025

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Sustainment Capital - Actual ($000s)		$ 108,036	$ 115,210	$ 109,187	$ 112,405	$ 115,763	$ 124,653	$ 129,588	$ 129,774	$ 133,977	
Average Customer Count - Actual	983,807	997,380	1,016,353	1,031,862	1,044,623	1,057,086	1,067,191	1,080,379	1,093,663	1,101,521	
Average Customer Count Growth Rate (%)		1.4%	1.9%	1.5%	1.2%	1.2%	1.0%	1.2%	1.2%	0.7%	
50% of Customer Growth (%)		0.7%	1.0%	0.8%	0.6%	0.6%	0.5%	0.6%	0.6%	0.4%	
Customer Growth Sustainment Capital ($000s)		**$ 745**	**$ 1,096**	**$ 833**	**$ 695**	**$ 691**	**$ 596**	**$ 801**	**$ 798**	**$ 481**	**$ 6,735**

11.3 Please discuss whether there would be a material change in the RIA results if this assumption were to change to 25 percent or 75 percent. If yes, please quantify the impact to the RIA results.

Response:

Please refer to Table 1 below which shows the change in the results if 25 percent or 75 percent of the system improvement costs were included in the RIA. FEI also includes the scenario where 100 percent of all system improvement costs were included in the RIA for comparison.

Table 1: Estimated Rate Impacts if 25%, 50%, 75% and 100% System Improvement Costs Included in the RIA

	2017 - 2025 (9 Years)			
	25 percent of SI Included	50 percent of SI Included	75 percent of SI Included	100 percent of SI Included
Average Cost per GJ with Growth	$ 6.72	$ 6.72	$ 6.72	$ 6.72
Average Cost per GJ without Growth	$ 6.85	$ 6.83	$ 6.81	$ 6.79
Rate Impact per GJ	$ (0.14)	$ (0.12)	$ (0.10)	$ (0.08)
Percentage Rate Impact	-2.02%	-1.72%	-1.42%	-1.12%
Change in Percentage Rate Impact from approved 50 percent	-0.30%	0.00%	0.30%	0.60%

As shown in the table above, the impact of including either 25 percent or 75 percent of system improvement costs in the RIA compared to the original 50 percent results in a +/- 0.30 percent rate impact per GJ. If FEI included all system improvement costs in the RIA, it would reduce the benefit in rates by approximately 0.6 percent as compared to a 50 percent allocation.

System improvements are typically not immediately triggered by new customers, and they can be caused by incremental load growth from both new and existing customers; therefore, FEI does not consider it be appropriate to allocate all system improvement costs to new customers as part of the RIA.

11.4 Please explain why row j in Table 4 of Appendix B says "100% of Customer Growth Rate."

Response:

Row j of the RIA shown in Appendix B to the Application reflects the discount factor of customer growth (Row p of the RIA) applied to FEI's formula O&M (i.e., Row i of the RIA). As approved in the 2025-2027 RSF Decision and Order G-69-25, the customer growth factor has been changed to 100 percent (i.e., no discounting of customer growth in FEI's formula O&M). As such, FEI updated Row j to 100 percent for the 2017-2025 RIA (i.e., 14.1 percent of FEI's 2026 O&M expenses, which is equivalent to approximately $48.8 million, would be related to the customer growth from 2017 to 2025).

For clarity, when the RIA was first completed in the 2015 System Extension Application (i.e., Table 1 of Appendix B for the 2008-2014 RIA), FEI's formula O&M at that time was approved with a 50 percent customer growth factor as part of FEI's 2014-2019 Performance Based Rate-making (PBR) Plan. As such, the O&M expense due to customer growth was discounted by 50 percent. This is reflected in Table 1 of Appendix B, which shows that only 50 percent of the 8.8 percent customer growth from 2008 to 2014 would be included in FEI's O&M expense (i.e., $238.1 million x 8.8 percent x 0.5).

The customer growth factor was later updated to 75 percent as part of the 2020-2024 MRP Decision and Order G-165-20 issued in June 2020. However, FEI continued to use the 50 percent customer growth factor in the 2020 RIA Compliance Report (i.e., the 2015-2019 RIA as shown in Table 2 of the RIA) because the compliance report was filed in June 2020 and FEI did not have sufficient time to include this change given the 2020-2024 MRP Decision had just been issued.

11.5 Please clarify how FEI's Growth Capital spending is accounted for in the RIA methodology, both with and without the additional customers.

Response:

As defined in the 2025-2027 RSF Application[28], FEI's Growth capital consists of expenditures for the installation of new mains, services, meters, and distribution system improvements to support customer additions. These costs, net of CIAC, are included in the RIA from row a to row e (Appendix B, Table 4). FEI notes that the total Growth capital included in the 2017-2025 RIA is approximately $737 million, which is $98 million less than the total actual Growth capital expenditures over the same period of approximately $835 million (i.e., approximately 88 percent are included in the RIA). The majority of the difference results from the 2017-2025 RIA

[28] Also in FEI's 2014-2019 PBR Plan and 2020-2024 MRP applications.

methodology, which includes only 50 percent of the system improvements costs, as explained in the response to BCUC IR1 11.2.

For clarity, the first column of the RIA represents FEI's revenue requirement and total demand in 2026 that includes new connections from 2017 to 2025 (i.e., with growth) while the third column of the RIA represents the incremental revenue requirement (excluding cost of gas) due to the Growth capital associated with the new connections from 2017 to 2025. The difference between these two columns is the second column (or the middle column) which represents FEI's revenue requirement without the new connections (both capital and revenue) that had occurred from 2017 to 2025 (i.e., without growth). In other words, the middle "without growth" column assumes the Growth capital expenditures did not occur, and the rate impact (or benefit) due to the growth is calculated based on the difference between the first column (with growth) and second column (Row s of Appendix B, Table 4).

On page 32 of the Application, FEI provides Table 3-1 which shows the RIA results:

	2008-2014 7 Years	2015-2019 5 Years	2017-2025 9 Years
Average Cost per GJ with Growth	$ 4.16	$ 4.17	$ 6.72
Average Cost per GJ without Growth	$ 4.22	$ 4.21	$ 6.83
Rate Impact per GJ	$ (0.06)	$ (0.04)	$ (0.12)
Percentage Rate Impact	-1.40%	-1.10%	-1.72%

11.6 Please explain the main drivers of the decrease in the RIA results from -1.10 percent in 2015–2019 to -1.72 percent in 2017–2025.

Response:

Please refer to Table 1 below for a reconciliation of the increase in delivery rate benefits to existing customers from the 2015-2019 RIA period to the 2017-2025 RIA period.

Table 1: Reconciliation of the Increase in Delivery Rate Benefits from 2015-2019 RIA to 2017-2025 RIA

Line	Particular	2015-2019 RIA	2017-2025 RIA	Change in Unit Costs ($/GJ)
1	Incremental Delivery Margin due to New Customers ($ million)	$ 50.15	$ 134.92	
2	Incremental Demand from New Customers (PJ)	14.01	23.23	
3	**Incremental Delivery Margin due to New Customers ($/GJ)**	**$ 3.58**	**$ 5.81**	**$ 2.23**
4				
5	Incremental Revenue from New Customers ($ million)	$ 58.41	$ 156.00	
6	**Average Delivery Rate Recovery ($/GJ)**	**$ 4.17**	**$ 6.72**	**$ 2.55**
7				
8	**Unit Cost/(Benefit) due to Incremental Demand ($/GJ)**	**$ (0.59)**	**$ (0.91)**	**$ (0.32)**

The unit cost incurred by FEI for serving new customers (i.e., unit cost of incremental delivery margin) increased from the 2015-2019 period to the 2017-2025 period, reflecting inflationary pressures and escalations in labour costs for construction, as well as the general decline in use per customer (UPC) across the two periods. However, these impacts were entirely offset by the increase in delivery rate recovery from new customers, resulting in an increase in the unit benefit from 59 cents per GJ to 91 cents per GJ from the 2015-2019 period to the 2017-2025 period.

New customer connections was not the primary driver of the increase in FEI's delivery rates. Across the two periods, a number of significant major capital projects were completed, including the Lower Mainland Intermediate Pressure System Upgrade (LMIPSU) project, Inland Gas Upgrade (IGU) project, Pattullo Gasline Replacement (PGR) project, and the Coastal Transmission System (CTS) and Interior Transmission System (ITS) Transmission Integrity Management Capabilities (TIMC) projects. The drivers of these projects were integrity and reliability (i.e., not due to capacity needs); therefore, the projects would have been needed regardless of the number of new customer connections. The significant increase in DSM expenditures from 2015 to 2025 also contributed to the delivery rate increase across the two periods.

The increase in unit benefit indicates that the rate of increase in the incremental revenues from new customers was sufficient to cover the increasing costs of their connections, while also offsetting some of the costs incurred for the previously discussed major capital projects and DSM expenditures, thereby extending the benefits of new customer connections from the 2015-2019 period to the 2017-2025 period.

On page 63 of the Application, FEI proposes to file an updated RIA seven years after the final decision on this Application.

11.7 Please explain why FEI proposes to file an updated RIA seven years after the final decision on this Application.

Response:

FEI considers that filing an updated RIA seven years after the final decision on this Application provides a reasonable balance between allowing sufficient time for the changes approved in this proceeding to be reflected in actual results and providing a timely opportunity to consider whether further changes are warranted.

FEI's system extension policies have historically been reviewed at varying intervals. The previous applications were filed in 1996, 2007 and 2015, followed by the updated RIA report filed in 2020 in compliance with the 2016 Decision. These filings were separated by intervals of 11 years, 8 years and 5 years, respectively. A seven-year period falls within the range of these historical intervals and will allow sufficient time for the changes approved in this proceeding to affect the actual costs, customer additions and consumption information used in the RIA.

In its 2015 System Extension Application, FEI explained that a review every five to seven years would provide a balance between maintaining the stability of the policies and ensuring appropriate consideration of their impacts on new and existing customers. If the updated RIA or other available information filed with the BCUC indicates that changes to the MX and Connection Policies should be considered, FEI may file a separate application to propose changes at that time.

While filing an updated RIA sooner (i.e., three years) would provide earlier information regarding the performance of the policies approved, FEI considers that a three-year update of the RIA would be premature. While all the expenditures for new mains would have been incurred, not all of the customer attachments and consumption associated with those mains would have materialized. The mains, services and meters in the RIA analysis would be, on average, only 1.5 years old and would not have realized the load growth expected to occur over the initial 5- or 10-year customer attachment forecast periods. The resulting RIA could therefore place disproportionate weight on the upfront capital costs while not yet reflecting the customer additions and consumption expected from the investments. A five-year RIA would provide more information than a three-year RIA, but would retain this limitation to a lesser degree because some mains may not yet have reached the end of their customer attachment forecast periods.

FEI considers that, while a longer period such as 10 years would provide more time for the approved changes to affect the RIA, it could delay identifying an imbalance between new and existing customers. FEI therefore considers seven years appropriate because it provides more mature actual information than a three- or five-year RIA while allowing potential concerns to be identified sooner than under a 10-year period.

11.8 Please discuss the pros and cons of filing an updated RIA sooner than seven years (e.g. five years, three years, or other).

Response:

Please refer to the response to BCUC IR1 11.7.

11.9 Please confirm, or explain otherwise, that the proposed RIA in seven years' time would only be an RIA and not an MX and connection policies review application. If confirmed, please explain the purpose of this filing and the benefits of filing an RIA without an accompanying MX and connection policies review.

Response:

Confirmed, subject to the qualification below. FEI proposes to file an updated RIA seven years after the BCUC's decision, without necessarily filing an accompanying MX and Connection Policies application.

If the RIA results at that time demonstrate that the interests of new and existing customers remain appropriately balanced, with neither group unduly cross-subsidizing the other, FEI would not file an accompanying MX and Connection Policies application. If the results of the RIA demonstrate that the interests of new and existing customers are no longer appropriately balanced, or if there are other concerns or issues that may require changes to the MX Test, then FEI may file an MX and Connection Policies application.

Filing the RIA alone will allow the BCUC to assess whether FEI's MX Test and Connection Policies, as revised based on the BCUC's decision on this Application, continue to balance the interests of new and existing customers. The benefit of filing the RIA without an accompanying application is that it provides a transparent, evidence-based assessment of the effects of the approved policies without requiring a full review where the results do not indicate that changes are warranted. If the RIA or other available information identifies a material concern, the appropriate changes can then be considered through a separate application.

C. SERVICE LINE COST ALLOWANCE REVIEW

12.0 Reference: Service Line Cost Allowance (SLCA) REVIEW

Exhibit B-1, Section 5.1.3, p. 69, Section 5.5, p. 77; Appendix A, Section 2.3, p. 11

SLCA Review

On page 11 of Appendix A to the Application, FEI states:

> The SLCA represents the maximum allowance each infill customer receives when connecting to an existing main. The SLCA is applicable to a single-family dwelling or a small commercial customer. If the cost to connect the individual infill customer (i.e., the service line between the Main and the Meter set) exceeds the SLCA, then the customer would have to pay for the installation costs above the SLCA.

On page 69 of the Application, FEI states:

> The SLCA has been in use since 1996. The SLCA continues to serve its intended rate design purpose, such that this longstanding approach should be largely maintained. The SLCA has proven to be a practical and efficient means of apportioning the costs associated with connecting infill customers between the connecting customer (via a CIAC) and customers generally (via delivery rates).

On page 77 of the Application, FEI summarizes the service line connection policy of four other utilities, and states:

> […] FEI's allowance approach is similar to approaches used at other utilities, with an alternative approach being a mandatory fixed fee for all customers in addition to any variable charges based on length of pipe or volume of demand. Allowances and fees are, ultimately different ways to accomplish the same purpose – recover an appropriate share of connection costs from a connecting infill customer. FEI's assessment is that replacing the longstanding SLCA approach, while feasible, adds unnecessary complexity and would lead to greater inequity between new and existing customers.

On page 74 of the Application, FEI states:

> The RIA results indicating new customers are bearing a disproportionate share of the costs to connect (see Section 3) include infill customers that are subject to the SLCA. As described below, the fact that the SLCA threshold PI has remained at 1.0, rather than being reduced in 2016 along with the MX Test threshold PI, is likely contributing to these RIA results. FEI thus proposes to reduce the PI threshold by 0.2 (from 1.0 to 0.8) to promote a more equitable balance between new and existing customers.

12.1 Please provide, for each of the past 10 years:

(a) The number of infill customer connections by the following categories:

I. Single detached residential;

II. Duplexes;

III. Small commercial;

IV. Multi-unit residential; and

V. Other customer classes, as applicable.

(b) The number and percentage of infill customer connections in each category that were eligible for the SLCA.

(c) The number and percentage of SLCA-eligible customers in each category that paid a CIAC.

(d) The total annual CIAC collected through the SLCA.

Response:

With regard to request (a), FEI is not able to provide this information. FEI's data systems do not allow it to determine how many of the service lines installed in a particular year were installed for infill customer connections specifically. While FEI can determine the total number of service lines installed in a particular time period, the data does not allow FEI to distinguish which service lines were installed for infill customer connections and which were installed as part of new main extensions. New main extensions require new service lines to connect the customer premises to the new mains.

With regard to request (b), FEI is similarly unable to provide the requested number or percentage of infill connections in each category that were eligible for the SLCA. The SLCA applies to eligible infill customers requesting gas service under Rate Schedules (RS) 1 and 2. Accordingly, infill single detached residential, duplex, small commercial and multi-unit residential customers are all eligible for the SLCA where they receive service under RS 1 or 2 and otherwise satisfy the applicable tariff requirements.

With regard to request (c), please refer to the response to BCUC IR1 12.2 for the number of SLCA-eligible infill connections in broadly similar categories that paid a CIAC. Because FEI is unable to identify which service lines were installed for infill customers generally, FEI is not able to identify the total population of SLCA-eligible infill customers in each requested category or determine the percentage of that population that paid a CIAC. FEI is only able to identify the subset of SLCA-eligible infill connections under RS 1 and 2 that paid a CIAC. These connections represent only a subset of the entire population of SLCA-eligible infill customers.

With regard to request (d), please refer to the table below for the total CIAC amount paid in each of the past 10 years, by SLCA eligible customers.

Table 1: Total Annual CIACs Paid by SLCA-Eligible Customers (2016 to 2025)

Year	Sum of CIACs
2016	$1,668,054
2017	$1,140,889
2018	$1,316,966
2019	$1,220,331
2020	$1,298,341
2021	$1,396,781
2022	$1,235,460
2023	$1,249,684
2024	$1,101,577
2025	$1,291,834

12.2 For each of the past 10 years, please provide the number and amount of CIAC's received, broken down by the customer categories from IR 12.1 (the previous IR).

12.2.1 Please confirm, or explain otherwise, that all customers who did not require a CIAC, only paid the $15 connection fee to connect to the FEI system.

12.2.2 Please comment on any observed trend in the number or demographic of customers who pay CIACs.

Response:

FEI is not able to provide the information exactly as requested, as the customer type categories in FEI's information system do not fully align with the requested categories. However, to be responsive, FEI provides Table 1 below which further breaks down the annual CIAC amounts provided in the response to BCUC IR1 12.1(d) by customer categories that most closely align with those listed in BCUC IR1 12.1. Table 1 also provides the number of SLCA-eligible infill connections that paid a CIAC in each category.

Table 1: Number and Amount of CIACs Received by Customer Category (2016 to 2025)

	Customer Category									
	Single Family Dwelling (SFD)		Duplex/Fourplex		Small Commercial		Multi-Unit Residential		Others	
Year	Sum of CIAC	Number of CIAC	Sum of CIAC	Number of CIAC	Sum of CIAC	Number of CIAC	Sum of CIAC	Number of CIAC	Sum of CIAC	Number of CIAC
2016	$ (992,159)	1,319	$ (287,016)	399	$ (298,059)	184	$ (37,215)	50	$ (53,606)	32
2017	$ (797,397)	877	$ (151,195)	171	$ (127,221)	132	$ (21,358)	45	$ (43,718)	46
2018	$ (816,227)	926	$ (194,645)	203	$ (214,652)	168	$ (33,099)	63	$ (58,343)	30
2019	$ (728,550)	907	$ (216,205)	233	$ (198,749)	157	$ (33,561)	64	$ (43,267)	42
2020	$ (832,030)	954	$ (188,411)	226	$ (201,340)	142	$ (39,294)	65	$ (37,266)	45
2021	$ (922,767)	1,057	$ (188,325)	213	$ (194,838)	132	$ (14,024)	34	$ (76,826)	56
2022	$ (858,758)	866	$ (171,314)	197	$ (139,008)	118	$ (21,418)	61	$ (44,964)	48
2023	$ (766,276)	741	$ (242,913)	233	$ (116,593)	110	$ (38,501)	58	$ (85,401)	36
2024	$ (561,001)	530	$ (157,365)	160	$ (271,453)	120	$ (53,596)	80	$ (58,163)	27
2025	$ (709,362)	469	$ (226,913)	199	$ (226,871)	86	$ (68,266)	68	$ (60,422)	23
Grand Total	**$ (7,984,526)**	**8,646**	**$ (2,024,303)**	**2,234**	**$ (1,988,785)**	**1,349**	**$ (360,332)**	**588**	**$ (561,975)**	**385**

As shown in the above table, there has been a general decline in the number of service line installations requiring a CIAC over the period. Across the customer categories, the total number of installations requiring a CIAC declined from 1,984 in 2016 to 845 in 2025. Single-family dwellings accounted for the largest number of installations requiring a CIAC in each year, although the number declined from 1,319 in 2016 to 469 in 2025. The number of installations requiring a CIAC also generally declined for duplex/fourplex, small commercial and other customers, while the number for multi-unit residential customers fluctuated over the period.

The total annual amount of CIACs received fluctuated between approximately $1.10 million and $1.67 million over the period and did not decline in proportion to the number of installations requiring a CIAC. The average CIAC across the customer categories shown in Table 1 increased from approximately $841 in 2016 to approximately $1,529 in 2025.

FEI confirms that all customers who did not require a CIAC paid only the $15 connection fee to the FEI system.

FEI does not generally collect demographic information from customers requesting a connection to the gas system. The only such information collected and retained by FEI is the customer's date of birth, which is used solely to verify a caller's identity when they request account information. FEI does not collect other demographic attributes such as gender, race or household income for the purpose of administering connection requests that could support an analysis of demographic trends among customers who pay CIACs. In addition, CIACs are frequently paid by developers or builders rather than end use customers, meaning that, in many cases, the individual ultimately occupying the premises did not pay a CIAC directly.

12.3 For each of the past 10 years, please provide the number and amount of CIACs that would have been received if the PI threshold was reduced to 0.8.

Response:

FEI is unable to provide the requested information for the following reasons:

1. While FEI can extract actual costs for each service line installed over the requested period from its database, FEI cannot, as noted in the response to BCUC IR1 12.1, determine which of those service lines were installed for infill customers that are eligible for the SLCA and which were associated with new main extensions. FEI therefore cannot compare the infill connection costs with an updated SLCA to determine the effect on the number and amount of the CIACs that would have been required.

2. FEI's actual service line cost data is necessarily limited to the service lines that were actually installed. FEI does not have data on requested infill service line connections that ultimately did not proceed because a CIAC was required and the potential customer cancelled the connection request. As such, even if FEI could recalculate the CIAC for installed service lines, the resulting analysis would not capture potential connections that did not proceed and would not provide a complete estimate of the number or amount of CIACs that would have been received under a 0.8 PI threshold.

12.3.1 Please comment on how the proposed change in PI threshold from 1.0 to 0.8 is expected to improve the balance of cost responsibility between new and existing customers, in the context of the number of new customers that are expected to pay CIACs.

Response:

There are two ways in which the cost of providing new service line connections to the gas system is recovered: (a) through any CIACs collected at the time a new connection is provided; and (b) through the delivery rates paid by customers generally.

Reducing the PI threshold from 1.0 to 0.8 will improve the balance of cost responsibility between new and existing customers by increasing the value of the SLCA, thereby producing a corresponding reduction in the CIACs paid by SLCA-eligible customers whose service line costs exceed the SLCA. A reduction in the CIAC paid by new customers would have a direct impact on the RIA through an increase in FEI's net capital expenditures (i.e., net capital expenditures equal

gross capital expenditures less CIACs received). Increasing net capital expenditures in the RIA would reduce the favourable rate impact that new customer connections have on existing customers. However, as noted in the response to BCUC IR1 12.3, FEI cannot reasonably estimate the number of new infill customer connections that would be expected to pay a CIAC under a PI threshold of 0.8 instead of 1.0.

12.4 Please provide FEI's assessment of the administrative effort and costs associated with maintaining the SLCA, including the annual calculation of the allowance, billing and collection of CIAC, customer support and any other material administrative activities. Where available, quantify these costs.

12.4.1 Please discuss how the above administrative effort would compare to a fee-based structure.

Response:

FEI updates the SLCA annually. The administrative effort is modest because the methodology and data sources have remained stable over time. The key administrative activities are summarized below.

1. **Annual Calculation of the SLCA:** The SLCA calculation follows the same underlying formula as the MX Test. In the MX Test, the unknown is the PI. In the SLCA calculation, the unknown is the allowable service line cost. FEI sets the PI at 1.0 and inputs the average actual revenue and cost values for the year, excluding the service line cost, so that the formula solves for the allowable service line cost.

   Once the target service line cost is determined, FEI would normally proceed with the final step using actual service line cost data to identify the maximum allowance such that the average service line cost of all service lines installed under the maximum allowance equals the target value.

   This annual calculation requires approximately two days of analyst time, including data extraction, validation and documentation.

2. **Uploading the SLCA value into CAFÉ:** After the SLCA amount is finalized, it is provided to FEI's CAFE support team. The CAFE support team enters the new allowance value into the CAFE system as part of its annual update process. This activity requires less than half a day of effort for entry, testing and validation.

3. **Billing and Collection of the CIAC:** Once the SLCA is uploaded, the calculation and billing of any required CIAC is automated through the system. The amount of time related to this is negligible.

4. **Customer Support:** Customer inquiries related to the SLCA are infrequent and typically handled within existing customer service workflows, making the amount of time spent negligible.

5. **Other Administrative Activities:** No other material administrative activities are required beyond the annual update and system upload.

Across all activities, FEI estimates the total annual administrative cost to be less than $1,200, primarily reflecting analyst time for the SLCA calculation and minor support time for the CAFE update.

While a fee-based structure would eliminate the annual SLCA calculation, it would not necessarily reduce FEI's overall administrative effort. The current SLCA requires less than $1,200 in annual administrative costs, while a fee would need to be billed and collected from every applicable infill customer.

As described in Section 5.5 of the Application, FEI considers that a fee-based approach would lead to greater inequity between new and existing customers. A fee-based structure, whereby all infill customers pay a fee upfront to obtain a new connection, would not assess whether the fee is warranted based on the revenues and costs associated with providing a typical infill connection. FEI's RIA indicates that new customer connections, including infill connections, are more than paying for the costs of providing those connections. Requiring every infill customer to pay a fee could therefore likely increase the amount recovered from new customers without evidence that additional recovery is required.

Selecting a fixed fee to impose on new customer connection requests would require little administrative effort and would not need to be updated annually. Even so, FEI would need to bill and collect it from all applicable infill customers. Under the SLCA, a CIAC is collected only where the service line cost exceeds the allowance. A fee-based structure could therefore increase billing and collection activity, including follow-up for unpaid or late fees, and may require hiring additional personnel. While FEI has not quantified the administrative cost of a fee-based structure, it does not expect savings from eliminating the annual SLCA calculation would be material.

Further, as explained in the response to BCUC IR1 12.7, if the fees collected exceeded the amount appropriately attributable to new infill customers, FEI would need to consider how to address that over-collection. Any associated crediting or reconciliation mechanism would introduce administrative effort not required under the current SLCA approach.

12.5 Please discuss whether any changes in housing policy and development patterns over the past 10 years, including increasing growth through higher-density residential developments, have affected:

(a) The proportion of new customer attachments eligible through the SLCA;

(b) The amount of CIAC recovered through the SLCA; and

(c) FEI's assessment that the SLCA continues to be a practical and efficient means of apportioning connection costs between new and existing customers.

Response:

FEI's assessment of the effects of changing housing policy and development patterns on SLCA eligibility, CIAC recovery amounts and the continuing appropriateness of the SLCA is provided below.

Proportion of New Customer Attachments Eligible for the SLCA

Housing policy and development patterns have favoured higher-density residential growth, such as multi-family buildings, mixed-use developments and townhome projects. These types of developments are typically evaluated through the MX Test and do not generally connect as individual infill customers under the SLCA. FEI therefore expects that the shift towards higher-density development has reduced the proportion of new customer attachments that are eligible for the SLCA relative to periods in which single-family development and infill opportunities were more prevalent. SLCA-eligible connections now more commonly arise from single-family redevelopment, laneway homes and other individual infill projects.

FEI is not able to provide the total number or proportion of new customer attachments that were eligible for the SLCA, but the number of CIACs associated with SLCA-eligible connections has declined in recent years. As shown in Table 1 below, the number declined from 1,984 in 2016 to 845 in 2025. This trend is consistent with a shift toward higher-density development and a corresponding reduction in the number of infill connections that would otherwise be eligible for the SLCA. However, because FEI cannot identify the total number of new attachments or SLCA-eligible infill connections, this information does not allow FEI to calculate the proportion requested in part (a).

Table 1: CIACs Received from SLCA-Eligible Connections

Year	Number of CIACs
2016	1,984
2017	1,271
2018	1,390
2019	1,403
2020	1,432
2021	1,492
2022	1,290
2023	1,178
2024	917
2025	845
Grand Total	13,202

Amount of CIAC Recovered Through the SLCA

As shown in Table 2 below, the total annual amount of CIAC recovered from SLCA-eligible connections has remained broadly consistent since 2017, ranging from approximately $1.14 million to $1.32 million annually. However, the average CIAC among connections requiring a CIAC has increased from $898 in 2017 to $1,529 in 2025. The shift towards higher-density development has reduced the number of connections proceeding as individual infill connections under the SLCA. However, the cost to connect those infill customers has increased due to higher construction costs and more complex site conditions, including repaving requirements, permitting, and coordination with shallow utilities. Additionally, revenues in the MX Test are affected by decreasing UPC due to a lower number of gas appliances a building is able to install due to step-code adoption, which also increases CIACs. The resulting increase in the average CIAC has offset the decline in the number of CIACs collected, leaving total annual CIAC recovery broadly consistent.

Table 2: CIACs Recovered From SLCA-Eligible Connections

Year	Sum of CIACs	Number of CIACs	Average CIAC
2016	$1,668,054	1,984	$841
2017	$1,140,889	1,271	$898
2018	$1,316,966	1,390	$947
2019	$1,220,331	1,403	$870
2020	$1,298,342	1,432	$907
2021	$1,396,781	1,492	$936
2022	$1,235,461	1,290	$958
2023	$1,249,684	1,178	$1,061
2024	$1,101,577	917	$1,201
2025	$1,291,834	845	$1,529

Continuing Practicality and Efficiency of the SLCA

Changes in housing policy and development patterns over the past 10 years do not change FEI's assessment that the SLCA continues to be a practical and efficient means of apportioning connection costs between new and existing customers. As explained in Section 5.1.3 of the Application, the SLCA uses actual average cost and consumption information to determine the allowance available to an eligible infill customer and requires the customer to pay a CIAC where the service-line cost exceeds that allowance. The fact that fewer new attachments may arise through individual infill connections does not change the operation or rate design purpose of the SLCA for those customers that remain eligible.

Ultimately, while higher-density development may have reduced the relative role of individual infill connections, it does not provide a basis for replacing the SLCA. The SLCA remains an established and administratively efficient mechanism for allocating the costs of eligible infill connections between the connecting customer and customers generally.

12.6 Please explain whether FEI has assessed if changes in customer attachment patterns, if any, affect its conclusion that the SLCA remains preferable to alternative connection charge approaches, including with respect to administrative efficiency and customer equity. If so, please provide the assessment.

Response:

FEI has assessed the observed changes in customer attachment patterns and does not consider that they alter its conclusion that the SLCA remains preferable to alternative connection charge approaches. Outside of areas where municipal Step Code requirements prevent new attachments to the gas system, the only significant long-term change in customer attachment patterns observed by FEI is the shift towards higher-density residential development. The share of the market made up by townhomes and multi-family residential developments has increased relative to single-family homes. FEI has long observed and considered these changes and does not see a compelling reason to shift to an alternative connection charge approach.

The SLCA provides an allowance towards the cost of installing an infill service line and meter in recognition of the revenues that a typical eligible infill customer will generate. Where the connection costs are expected to exceed the value of the revenues, the connecting customer must pay a CIAC for the amount above the allowance. This principle is well understood and accepted by market participants. Further, as explained in the response to BCUC IR1 12.4, the administrative work required to maintain and update the SLCA annually is modest, with estimated annual administrative costs of less than $1,200. The shift towards higher-density residential developments does not change these features of the SLCA or materially affect the effort required to administer it.

As described in Section 3 of the Application, FEI's RIA has demonstrated that new customer connections, including infill connections, are generating more revenue in aggregate than necessary to recoup the costs of providing the new connections. This supports reducing the cost borne by new customers connecting to the gas system to improve the balance of cost responsibility between new and existing customers. FEI's proposal to reduce the PI threshold in the SLCA calculation from 1.0 to 0.8 is a measured adjustment in this direction. In contrast, a fee-based approach would compound the current issue identified by the RIA by imposing an additional cost on all applicable infill customers, irrespective of whether a CIAC is warranted based on the economics of the connection. As FEI explained in Section 5.5.2 of the Application, this would increase inequity between new and existing customers.

12.7 Please expand on why replacing the SLCA approach would add unnecessary complexity. As part of the response, please specifically compare the relative complexity of the SLCA approach versus a fee-based structure.

Response:

As stated in the preamble to this question, in FEI's context, switching from the SLCA to a fee-based approach would add unnecessary complexity in two primary ways:

1. As explained in Section 5 of the Application, the RIA results indicate that new customers are bearing a disproportionate share of the costs to connect, including infill customers that are subject to the SLCA. In this context, using a fee-based approach would exacerbate this issue, since all customers would have to pay an upfront fee irrespective of whether an additional customer contribution is warranted based on the revenues and costs associated with the connection. If the fees collected exceeded the amount appropriately attributable to new infill customers, FEI would need to consider a crediting or reconciliation mechanism to address the over-collection. This would introduce an additional administrative process that is not required under the SLCA.

2. While a fee-based approach is not necessarily more complex than the SLCA, switching from the long-established SLCA to a new fee-based approach would result in unnecessary operational and administrative complexity. In particular, FEI would need to make changes to various internal and external operational and administrative processes, including information systems, planning, operations and customer support. FEI staff, including KAMs, would need to be trained on the fee-based approach, and FEI would need to communicate and explain the change to customers and the market.

By contrast, the SLCA is already embedded in FEI's systems and processes, is inexpensive to administer and is updated annually using established cost and consumption information. FEI, therefore, considers that replacing the SLCA with a fee-based structure would add unnecessary complexity without improving the allocation of connection costs between new and existing customers.

12.8 Please discuss any other alternative service line connection policies to the SLCA approach that FEI considered. For each alternative, please provide a high-level overview of the approach, and discuss how it compares to the SLCA.

12.8.1 If no other alternatives were considered, please explain why.

Response:

As discussed in Section 5.5 and Appendix C of the Application, FEI's review of service line connection policies in other Canadian jurisdictions identified two primary categories of service line connection policies: (i) an allowance-based approach and (ii) a fee-based approach.

Under the allowance-based approach, connecting customers receive an allowance (expressed in dollar, footage or volume terms) towards the cost of a new infill service line connection and, where their service line cost exceeds this allowance, the customer is required to pay the difference. FEI's SLCA methodology is consistent with this approach as it calculates a dollar allowance for infill connections. A footage-based allowance would cover a specified length of service line, with the customer paying for additional length, while a volume-based allowance would vary according to the customer's expected demand or consumption. These approaches differ in how the allowance is determined, but each allocates a portion of the connection cost to customers generally and requires the connecting customer to pay costs exceeding the allowance.

Under a fee-based approach, customers are charged a fixed fee for new infill service line connections and may also be subject to additional charges for higher cost service lines. As explained in Section 5.5.2 of the Application and in the response to BCUC IR1 12.7, fee-based approaches do not align well with two key rate design principles: (1) fair apportionment of costs; and (2) avoidance of undue discrimination. Unlike the SLCA methodology, a fee-based approach presumes that the revenues generated by an individual new connection will be insufficient to recoup its associated connection costs and therefore requires an upfront customer contribution regardless of the expected future revenues. Adopting such an approach would exacerbate the issue identified in the RIA; namely, that new customers are currently subsidizing the delivery rates paid by existing customers. A fee-based structure could therefore increase the amount recovered from new customers without evidence that additional recovery is required. If the fees collected exceeded the amount appropriately attributable to new infill customers, FEI would need to consider an additional crediting or reconciliation mechanism, which would add significant complexity to the SLCA.

13.0 Reference: SERVICE LINE COST ALLOWANCE CALCULATION

Exhibit B-1, Section 5.1.3, p. 69, Section 5.2, p. 70

Elimination of Final Calculation Step

On page 69 of the Application, FEI states that "The SLCA has been in use since 1996. The SLCA continues to serve its intended rate design purpose, such that this longstanding approach should be largely maintained."

On page 70 of the Application, FEI states:

> FEI is proposing to set the SLCA based on the Target Service Line cost, which essentially means using actual average cost and consumption information from the prior year to solve for the SLCA that will produce the desired PI. As described below, this means removing the final step of the SLCA calculation. While the logic behind the SLCA methodology remains sound, the final step can produce the invalid result that new infill customers would never have to contribute to a connection in those years. […]

Further on page 70 of the Application, FEI states:

> Once the Target Service Line Cost is determined, the final step involves taking the actual service line cost data (before contribution) from the most recent year and determining the maximum amount that FEI can provide (i.e., the maximum allowance) such that the average service line cost (after contribution) would equal the Target Service Line Cost. Conceptually, the final step represents a check using the actual service line cost data from the most recent year.

On page 70 of the Application, FEI refers to Bonbright Principle 4, stating "The SLCA is easy to understand, as it produces a simple dollar allowance that FEI will contribute towards new in-fill customer connections."

13.1 Please discuss the rationale behind the initial inclusion of the final step of the SLCA calculation in 1996, and whether the potential for invalid results was considered at the time.

Response:

The rationale for the final step of the SLCA calculation is to perform a check against actual service line cost data from the most recent year. While the Target Service Line Cost (i.e., Steps 1 and 2 of the SLCA methodology) is calculated using the average residential consumption and the average mains and meter costs from the prior year through a proxy MX Test with the individual PI set at 1.0, the calculated amount does not necessarily represent the "average" service line cost after CIACs are applied. The final step therefore represents a check against actual service line cost data from the most recent year to determine the maximum allowance for infill customers that would result in an average service line cost (net of contribution), equal to the Target Service Line Cost.

Table 1 below provides an example demonstrating how the final step operates. The Target Service Line Cost calculated from the proxy MX Test is $3,300, while the average service line cost from the most recent year, before CIACs, is $3,416.7. If the maximum allowance is set at $3,325, the average service line cost after CIAC is $3,300, equal to the Target Service Line Cost. As such, based on the service line cost distribution used in the example, a maximum allowance of $3,325 (line 7) is expected to produce an average cost, after CIACs, equal to the amount supported by the proxy MX Test at a PI of 1.0.

Table 1: Illustration of the Final Step of the SLCA Methodology

Line	Particular	Reference	Actual Cost (Before CIAC)	CIAC Required	Actual Cost (After CIAC)
			(a)	(b)	(c) = (a) - (b)
1	Service Line 1	Actual	$ 3,450.0	$ 125.0	$ 3,325.0
2	Service Line 2	Actual	$ 3,550.0	$ 225.0	$ 3,325.0
3	Service Line 3	Actual	$ 3,250.0	$ -	$ 3,250.0
4	Average	Average of Line 1 to 3	$ 3,416.7		$ 3,300.0
5					↕
6	Target Service Line Cost	Calculated via Proxy MX Test for a PI = 1.0	$ 3,300.0		$ 3,300.0
7	Max Allowance	Excel Solver for Average (After CIAC) equals the Target Amount	$ 3,325.0		

The Target Service Line Cost is the calculated amount that will result in a PI of 1.0 in a proxy MX Test. The final step is intended to determine, based on actuals from the most recent year[29], the maximum allowance that will result in the average service line cost (net of contribution) equal to the Target Service Line Cost (that is supported by a PI equal to 1.0). The theoretical benefit of the final step is that it uses actual service line costs from the most recent year when calculating the maximum allowance, thereby providing an additional level of accuracy since it is using the most updated cost data available with a comprehensive sample size.

However, as discussed in Section 5.2.2 of the Application and further demonstrated in Table 5-4 of the Application, the final step of the SLCA methodology often produces an invalid result, and has required workarounds in five of the last seven years. This usually occurs when the actual average service line cost before CIACs is lower than the Target Service Line Cost. In those circumstances, no maximum allowance can cause the average service line cost after CIACs to equal the higher target, and the calculation will produce an invalid and illogical negative allowance.

Further, although FEI does not have records dating back to 1996 when the final step was first included in the SLCA calculation, Section 5.2.3 of the Application describes invalid results arising as early as 2006 and the various workarounds FEI applied when the issue occurred. The final step's theoretical accuracy benefit is therefore limited in practice because the calculation has frequently failed to produce a usable result and has required ad hoc workarounds.

[29] Based on the average of actual service line costs from two years prior. E.g., the 2025 SLCA was set at the end of 2024, thus the most recent year's actuals were from 2023.

The principal effect of removing the final step is that the SLCA will be set directly at the Target Service Line Cost and will no longer be adjusted to reflect the most recent year of actual service line cost data available. Based on historical analysis, this means in the years when the final step would have produced a valid result, the allowance given to infill customers would be lower than using the result from the final step, thereby requiring a higher CIAC from infill customers, all else equal.

However, FEI does not consider that any additional modification is required to compensate for removal of the final step of the SLCA calculation. The Target Service Line Cost is calculated through the proxy MX Test using updated average cost and consumption information and continues to determine the service line cost supported by the applicable target PI. Setting the SLCA directly at that amount preserves the fundamental logic of the methodology. The revised approach will also produce a valid allowance each year without requiring a workaround.

13.2 Please discuss the benefit(s) of the final step of the SLCA calculation that is being proposed for removal. As part of the response, please expand on any negative effects of removing the final step of the calculation.

Response:

Please refer to the response to BCUC IR1 13.1.

13.3 Please discuss any implications on the accuracy of the SLCA calculation with the final step removed. As part of the response, please explain whether any additional modifications to the SLCA calculation are required to compensate for the removal of the final step.

13.3.1 If yes, please discuss these modifications and FEI's plans to implement them.

13.3.2 If no, please explain why not.

Response:

Please refer to the response to BCUC IR1 13.1.

D. SYSTEM EXTENSION FUND REVIEW

14.0 Reference: SYSTEM EXTENSION FUND (SEF) REVIEW

Exhibit B-1, Section 6.4, pp. 82–83

Proposal to Expand SEF Availability to Small Commercial Customers

On page 82 to 83 of the Application, FEI states:

> After experiencing several years of strong performance, participation rates in the SEF and the financial relief it provides to customers have decreased in recent years. […]
>
> Expanding the eligibility of the SEF to include small commercial customers is an opportunity to increase participation rates in the SEF and contribute to the SEF's original objective of promoting equity among customers.

On page 83 of the Application, FEI states:

> FEI notes that should its proposal to update the PI threshold to 0.6 in individual MX Tests be approved, then the upper PI limit for eligibility under the SEF will likewise need to be set to 0.6 for both residential and commercial participants. FEI does not see a need to adjust the lower PI limit of 0.2.

14.1 Please explain how the proposed reduction of the PI threshold in individual mains extension tests to 0.6 impacts FEI's assessment of the ongoing need for the SEF. In the response, please comment on the need to reduce customer CIAC for extensions with a PI of less than 0.6, with the principles of cost causation and cross-subsidization.

Response:

The reduction of the individual PI threshold from 0.8 to 0.6 does not eliminate the need for the SEF, although it may reduce the number of projects requiring SEF support. This is because the purpose of the SEF is to aid residential ratepayers who are located further from existing mains, often in low-density communities, and who face higher financial contributions to connect to natural gas compared to homeowners in higher density areas. The SEF promotes equitable access among residential ratepayers, consistent with FEI's postage stamp rate structure. It also provides potential benefits to all ratepayers through increased total volumes and better utilization of FEI's system.

Lowering the PI threshold from 0.8 to 0.6 will provide relief to some of the customers the SEF is designed to assist, but not all. Projects with an initial PI between 0.6 and 0.8 would no longer require a CIAC solely to reach the individual PI threshold and would therefore no longer require SEF support for that purpose. However, qualifying projects with a PI between 0.2 and 0.6 would continue to require a CIAC to reach the minimum individual PI threshold of 0.6. For eligible

residential customers, the CIAC may continue to present a material barrier to connection. The SEF therefore continues to serve its purpose by reducing the CIAC for qualifying higher-cost extensions, although lowering the individual PI threshold may reduce the number of potential SEF participants.

A qualifying project with an initial PI between 0.2 and 0.6 continues to require a CIAC to reach the minimum individual PI threshold, and the SEF may fund the approved portion of that CIAC for an eligible customer. Although the SEF-funded portion is recovered from customers generally, the BCUC has previously determined that the SEF appropriately balances competing rate design principles, is consistent with postage stamp rates, and does not unduly burden non-participating ratepayers. The resulting cross-subsidization is also constrained by the SEF's eligibility requirements, customer-level funding limit and annual funding envelope, while the aggregate PI threshold of 1.1 provides additional portfolio-level protection for existing customers.

14.2 Please discuss whether FEI considered alternatives to expanding the eligibility of the SEF in light of the proposed reduced PI threshold of 0.6, including maintaining the current scope of the SEF or discontinuing the SEF. For each alternative considered, provide the analysis performed and the reasons it was not proposed.

Response:

FEI considered both discontinuing the SEF and maintaining its current scope, but determined that expanding eligibility to small commercial customers under the existing $1 million annual funding allowance is preferable. Discontinuing the SEF would remove assistance for qualifying higher-cost residential projects that remain after the individual PI threshold is reduced to 0.6 (i.e., those with a PI between 0.2 and 0.6). Maintaining the current scope would preserve that assistance but would forgo an opportunity to extend similar support to small commercial customers and make more effective use of the existing funding allowance.

FEI considered, but rejected, discontinuing the SEF for the reasons described in the response to BCUC IR1 14.1. Although reducing the individual PI threshold to 0.6 may reduce the number of projects requiring SEF support, eligible residential projects with an initial PI between 0.2 and 0.6 will continue to require a CIAC that may present a material barrier to connection. Discontinuing the SEF would therefore remove targeted assistance for the higher-cost projects that the reduced PI threshold does not address.

While FEI also considered maintaining the current scope of the SEF, a review of the regulatory history indicated that the inclusion of commercial customers had been considered previously and

could provide an opportunity to enhance the performance of the SEF. Decision and Order G-338-20 summarized the discussion regarding commercial customer eligibility:[30]

> The CEC submits that a similar program should be developed for commercial customers.
>
> …
>
> In Reply, FEI submits it is amenable to a similar program for commercial customers but has no immediate plans to implement such a program.

The Panel concluded:[31]

> The consideration of whether there should be an SEF for commercial ratepayers is beyond the scope of this proceeding. The Panel takes no position on a similar commercial program but notes that FEI states it is amenable to it.

FEI also considered the utilization and rate impact of the SEF. While the SEF continues to be used by eligible participants, it has been underutilized in recent years. Moreover, as described in both the 2015 System Extension Application, which proposed the SEF as a pilot, and the 2020 Application for Approval of the System Extension Fund on a Permanent Basis (2020 SEF Application) to make the SEF permanent, the rate impact of the program's $1 million funding allowance on non-participating ratepayers is reasonable. In Decision and Order G-338-20, the Panel agreed, as follows: [32]

> The Panel finds the rate impact related to the SEF pilot to be minimal and not unduly discriminatory. The Panel notes BCOAPO also assesses that the impact is 'modest.' While not quantifiable, the Panel also is persuaded that since the estimated rate impact is based on a short rate assessment period, it is likely that attributable revenues will continue over the expected life of the mains. This further reduces the costs to current and future non-participating ratepayers over time.

Maintaining the current scope of the SEF would preserve the support for eligible residential customers, but would leave available funding unused and would not address similar connection barriers faced by small commercial customers. Expanding eligibility to small commercial customers under the existing $1 million annual funding allowance makes more effective use of the SEF without increasing the maximum annual cost to non-participating ratepayers.

Ultimately, the proposed expansion preserves the SEF's existing support for qualifying residential customers while extending similar assistance to small commercial customers without increasing the annual allowance.

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[30] Decision and Order G-338-20, p. 11.
[31] Decision and Order G-338-20, p. 11.
[32] Decision and Order G-338-20, p. 9.

14.3 Please discuss the impact of discontinuing the SEF. As part of the response, please provide FEI's assessment (quantifying where possible) on the number of new customer connections as well as delivery rates for existing customers. Please comment on whether new customers are less likely to proceed with their connection if they have to pay a CIAC.

Response:

The SEF was established to promote equitable access to gas service by addressing barriers that arise from differences in connection costs. In the 2020 SEF Application, FEI provided evidence that the majority of homeowners in dense urban areas around Vancouver typically were not required to pay a contribution for a main extension, while homeowners outside the Vancouver area often faced a significant cost to access the gas system. FEI argued that addressing this discrepancy was consistent with regulatory principles supporting reasonably equitable access to service despite geographic differences in the cost of connecting (attributable in large part, to the location of a customer's home).

In Decision and Order G-338-20, the Panel agreed and made the following findings:[33]

- The SEF program does promote equitable access among residential ratepayers;
- The rate impact on non-participating ratepayers related to the SEF is minimal and is not unduly discriminatory; and
- Setting the SEF funding level at 95 percent of the CIAC results in greater equity among residential ratepayers and based on an analysis of the pilot data this funding level will enable FEI to manage the annual spending level within the annual $1 million cap for a reasonable period.

And:

> Considering the regulatory framework and rate design principles discussed in Section 2, the SEF represents an appropriate balance between competing rate design principles and is consistent with postage stamp rates. The SEF will not impose an excessive cost burden on non-participating ratepayers and there will likely be benefits from increased throughput on the FEI system.

FEI expects that, without the SEF, some homeowners facing high CIACs would be less likely to proceed with a connection. FEI cannot quantify the number of affected connections because the decision to proceed depends on the circumstances and preferences of each prospective

[33] Decision and Order G-338-20, p. 16.

customer. However, this expectation is supported by FEI's experience described in Section 3.2 of the 2020 SEF Application:[34]

> The primary reason given by homeowners who declined to proceed was that even with financial assistance from the SEF toward reducing their required contribution, the remaining required CIAC was still too expensive.

Discontinuing the SEF would re-introduce barriers to equitable access to gas service that are concentrated among customers facing higher connection costs, particularly in areas outside the dense urban areas around Vancouver. Eliminating the SEF would directly reduce the delivery rates of existing customers, but only by approximately $0.001 per GJ ($0.0005 rounded). This estimate also does not account for the loss of revenues and throughput from customers who would have connected with SEF assistance but would not proceed without it. FEI cannot quantify that offsetting effect because it cannot reliably estimate the number of connections that would not proceed.

14.4 Please explain whether FEI expects the proposed PI threshold of 0.6 to affect participation in the SEF. If so, quantify the expected change in the number of residential and small commercial customers expected to receive SEF funding annually.

Response:

FEI expects the proposed reduction in the individual PI threshold from 0.8 to 0.6 will reduce residential participation in the SEF.

Based on a review of SEF participants, approximately 60 percent of applications returned a PI of less than 0.6 under the MX Test, which means 40 percent of applications fell within the 0.6 to 0.8 PI range.[35] Therefore, assuming that the historical distribution of PIs remains unchanged and representative of future PIs, FEI estimates that reducing the threshold to 0.6 would decrease the number of residential SEF participants by approximately 40 percent relative to participation under the current 0.8 threshold, with approximately 60 percent of the residential participants that would have qualified under the current threshold continuing to fall within the proposed SEF eligibility range of 0.2 to 0.6.

FEI cannot estimate the number of small commercial customers expected to receive SEF funding annually because small commercial customers are not currently eligible for the SEF and FEI therefore has no historical participation data on which to base an estimate.

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[34] 2020 SEF Application, p. 5.

[35] FEI also observed year-to-year variation between 47 and 73 percent.

14.5 Please explain why maintaining the lower PI limit of 0.2 remains appropriate under the proposed PI threshold of 0.6. Include any analysis performed regarding alternative lower PI thresholds and the potential impacts on SEF participation and funding.

Response:

FEI considered, but did not change, the lower PI threshold of 0.2 for access to the SEF, as 0.2 continues to represent a reasonable minimum threshold.

An individual PI of 0.2 means that the expected revenues from the customer(s) that connect to the system are sufficient to recover approximately 20 percent of the extension costs through normal utility revenues. Projects below this level would require a large amount of assistance to reach the minimum individual PI threshold, and the SEF's existing funding limits may not provide sufficient assistance to overcome the resulting CIAC. In other words, the assistance from the SEF is not expected to be a determining factor for customers with a PI below 0.2 as it would not materially address the barriers to connect to the gas system.

14.6 Please clarify whether the SEF is available to infill customers connecting under the SLCA methodology.

Response:

No, the SEF is not available to infill customers connecting under the SLCA methodology.

Attachment 2.1

Table 1: Projects with an Initial PI Below 0.8 Which Paid a CIAC and Were Connected to FEI's System

No.	Year	Project	PI
1.	**2017**	5550013243	0.00
2.	**2017**	5550013387	0.04
3.	**2017**	5550013296	0.17
4.	**2017**	5550014297	0.18
5.	**2017**	5550015169	0.20
6.	**2017**	5550013913	0.23
7.	**2017**	5550014246	0.24
8.	**2017**	5550014791	0.27
9.	**2017**	5550014817	0.27
10.	**2017**	5550013641	0.28
11.	**2017**	5550014448	0.30
12.	**2017**	5550013994	0.30
13.	**2017**	5550013275	0.30
14.	**2017**	5550015161	0.31
15.	**2017**	5550013838	0.31
16.	**2017**	5550015008	0.31
17.	**2017**	5550013066	0.33
18.	**2017**	5550015809	0.33
19.	**2017**	5550014226	0.34
20.	**2017**	5550014439	0.35
21.	**2017**	5550015769	0.36
22.	**2017**	5550014354	0.36
23.	**2017**	5550015487	0.36
24.	**2017**	5550014798	0.37
25.	**2017**	5550015718	0.37
26.	**2017**	5550013621	0.39
27.	**2017**	5550014712	0.39
28.	**2017**	5550016011	0.39
29.	**2017**	5550014054	0.40
30.	**2017**	5550014373	0.41
31.	**2017**	5550013991	0.41
32.	**2017**	5550013080	0.42
33.	**2017**	5550013595	0.42
34.	**2017**	5550014655	0.42
35.	**2017**	5550014559	0.43
36.	**2017**	5550014757	0.44
37.	**2017**	5550013986	0.46
38.	**2017**	5550016183	0.46
39.	**2017**	5550014707	0.46
40.	**2017**	5550014767	0.46
41.	**2017**	5550013877	0.47
42.	**2017**	5550015542	0.47
43.	**2017**	5550014381	0.47

No.	Year	Project	PI
44.	**2017**	5550014235	0.48
45.	**2017**	5550015258	0.48
46.	**2017**	5550014500	0.48
47.	**2017**	5550014102	0.49
48.	**2017**	5550015825	0.50
49.	**2017**	5550015468	0.50
50.	**2017**	5550015249	0.50
51.	**2017**	5550014045	0.52
52.	**2017**	5550015538	0.53
53.	**2017**	5550015738	0.54
54.	**2017**	5550016035	0.55
55.	**2017**	5550015189	0.55
56.	**2017**	5550013127	0.56
57.	**2017**	5550014705	0.56
58.	**2017**	5550015480	0.56
59.	**2017**	5550013477	0.56
60.	**2017**	5550013925	0.57
61.	**2017**	5550015315	0.57
62.	**2017**	5550012811	0.57
63.	**2017**	5550014065	0.57
64.	**2017**	5550014327	0.58
65.	**2017**	5550014291	0.58
66.	**2017**	5550013849	0.59
67.	**2017**	5550012606	0.60
68.	**2017**	5550014292	0.60
69.	**2017**	5550014241	0.61
70.	**2017**	5550015855	0.61
71.	**2017**	5550015021	0.61
72.	**2017**	5550016453	0.61
73.	**2017**	5550014308	0.62
74.	**2017**	5550013767	0.62
75.	**2017**	5550015048	0.63
76.	**2017**	5550016212	0.64
77.	**2017**	5550014039	0.64
78.	**2017**	5550014735	0.64
79.	**2017**	5550013727	0.64
80.	**2017**	5550014914	0.64
81.	**2017**	5550013945	0.64
82.	**2017**	5550013824	0.65
83.	**2017**	5550013582	0.65
84.	**2017**	5550014248	0.66
85.	**2017**	5550014393	0.67
86.	**2017**	5550016256	0.68
87.	**2017**	5550014221	0.68
88.	**2017**	5550014239	0.68
89.	**2017**	5550015553	0.69

No.	Year	Project	PI
90.	**2017**	5550014897	0.70
91.	**2017**	5550015231	0.70
92.	**2017**	5550014326	0.70
93.	**2017**	5550013484	0.70
94.	**2017**	5550015525	0.71
95.	**2017**	5550014270	0.71
96.	**2017**	5550015994	0.71
97.	**2017**	5550014786	0.72
98.	**2017**	5550012802	0.73
99.	**2017**	5550014170	0.73
100.	**2017**	5550014890	0.73
101.	**2017**	5550015921	0.73
102.	**2017**	5550013432	0.73
103.	**2017**	5550014231	0.74
104.	**2017**	5550015545	0.74
105.	**2017**	5550013474	0.75
106.	**2017**	5550015500	0.76
107.	**2017**	5550015359	0.76
108.	**2017**	5550013570	0.76
109.	**2017**	5550014207	0.77
110.	**2017**	5550015558	0.78
111.	**2017**	5550014496	0.78
112.	**2017**	5550014759	0.78
113.	**2017**	5550015235	0.79

No.	Year	Project	PI
1.	**2018**	5550012982	0.00
2.	**2018**	5550019107	0.04
3.	**2018**	5550012233	0.18
4.	**2018**	5550018159	0.20
5.	**2018**	5550013163	0.21
6.	**2018**	5550017242	0.21
7.	**2018**	5550015928	0.21
8.	**2018**	5550017284	0.22
9.	**2018**	5550016317	0.22
10.	**2018**	5550012386	0.23
11.	**2018**	5550016690	0.23
12.	**2018**	5550007480	0.24
13.	**2018**	5550017414	0.25
14.	**2018**	5550017036	0.25
15.	**2018**	5550015336	0.26
16.	**2018**	5550018826	0.26
17.	**2018**	5550017499	0.27
18.	**2018**	5550017973	0.29
19.	**2018**	5550018246	0.30

No.	Year	Project	PI
20.	**2018**	5550015885	0.31
21.	**2018**	5550019572	0.31
22.	**2018**	5550017823	0.31
23.	**2018**	5550018275	0.32
24.	**2018**	5550017362	0.32
25.	**2018**	5550019316	0.32
26.	**2018**	5550017599	0.32
27.	**2018**	5550015705	0.33
28.	**2018**	5550017008	0.33
29.	**2018**	5550016022	0.33
30.	**2018**	5550014730	0.35
31.	**2018**	5550018605	0.36
32.	**2018**	5550016364	0.36
33.	**2018**	5550015730	0.38
34.	**2018**	5550018621	0.38
35.	**2018**	5550017649	0.38
36.	**2018**	5550016358	0.39
37.	**2018**	5550018240	0.39
38.	**2018**	5550017789	0.40
39.	**2018**	5550016954	0.40
40.	**2018**	5550016808	0.41
41.	**2018**	5550017961	0.41
42.	**2018**	5550017773	0.42
43.	**2018**	5550018761	0.42
44.	**2018**	5550017616	0.43
45.	**2018**	5550017741	0.43
46.	**2018**	5550018325	0.43
47.	**2018**	5550017323	0.43
48.	**2018**	5550016866	0.44
49.	**2018**	5550019497	0.44
50.	**2018**	5550019509	0.44
51.	**2018**	5550019330	0.45
52.	**2018**	5550014331	0.45
53.	**2018**	5550014584	0.46
54.	**2018**	5550014767	0.46
55.	**2018**	5550018419	0.47
56.	**2018**	5550012947	0.47
57.	**2018**	5550015282	0.48
58.	**2018**	5550018907	0.49
59.	**2018**	5550017815	0.49
60.	**2018**	5550014622	0.49
61.	**2018**	5550017557	0.50
62.	**2018**	5550017462	0.50
63.	**2018**	5550014696	0.50
64.	**2018**	5550009164	0.52
65.	**2018**	5550015437	0.52

No.	Year	Project	PI
66.	**2018**	5550016711	0.52
67.	**2018**	5550019045	0.52
68.	**2018**	5550017980	0.52
69.	**2018**	5550012181	0.53
70.	**2018**	5550017441	0.53
71.	**2018**	5550014525	0.53
72.	**2018**	5550019354	0.54
73.	**2018**	5550017565	0.54
74.	**2018**	5550017214	0.54
75.	**2018**	5550015028	0.55
76.	**2018**	5550013732	0.55
77.	**2018**	5550018399	0.55
78.	**2018**	5550015452	0.56
79.	**2018**	5550019046	0.56
80.	**2018**	5550016195	0.56
81.	**2018**	5550016605	0.56
82.	**2018**	5550017754	0.56
83.	**2018**	5550016899	0.56
84.	**2018**	5550015451	0.57
85.	**2018**	5550016246	0.57
86.	**2018**	5550015748	0.57
87.	**2018**	5550018943	0.57
88.	**2018**	5550019164	0.58
89.	**2018**	5550019227	0.58
90.	**2018**	5550016196	0.59
91.	**2018**	5550019031	0.59
92.	**2018**	5550019444	0.59
93.	**2018**	5550017943	0.59
94.	**2018**	5550016630	0.59
95.	**2018**	5550018425	0.59
96.	**2018**	5550018585	0.59
97.	**2018**	5550012606	0.60
98.	**2018**	5550015456	0.60
99.	**2018**	5550016852	0.60
100.	**2018**	5550018802	0.60
101.	**2018**	5550017001	0.60
102.	**2018**	5550017281	0.60
103.	**2018**	5550016826	0.61
104.	**2018**	5550017632	0.61
105.	**2018**	5550019055	0.61
106.	**2018**	5550018017	0.62
107.	**2018**	5550018518	0.63
108.	**2018**	5550015563	0.63
109.	**2018**	5550013797	0.63
110.	**2018**	5550018270	0.63
111.	**2018**	5550018338	0.64

No.	Year	Project	PI
112.	**2018**	5550018391	0.64
113.	**2018**	5550015396	0.65
114.	**2018**	5550015245	0.65
115.	**2018**	5550018231	0.65
116.	**2018**	5550017861	0.66
117.	**2018**	5550018824	0.66
118.	**2018**	5550019277	0.66
119.	**2018**	5550014475	0.66
120.	**2018**	5550018234	0.66
121.	**2018**	5550016709	0.67
122.	**2018**	5550012418	0.67
123.	**2018**	5550017602	0.67
124.	**2018**	5550015269	0.68
125.	**2018**	5550018618	0.68
126.	**2018**	5550014071	0.69
127.	**2018**	5550016752	0.69
128.	**2018**	5550018800	0.69
129.	**2018**	5550016645	0.69
130.	**2018**	5550016534	0.70
131.	**2018**	5550018754	0.70
132.	**2018**	5550016482	0.71
133.	**2018**	5550015142	0.71
134.	**2018**	5550018293	0.71
135.	**2018**	5550017228	0.71
136.	**2018**	5550014397	0.71
137.	**2018**	5550017139	0.72
138.	**2018**	5550018024	0.73
139.	**2018**	5550016107	0.73
140.	**2018**	5550017966	0.73
141.	**2018**	5550017291	0.74
142.	**2018**	5550015100	0.74
143.	**2018**	5550014722	0.75
144.	**2018**	5550018667	0.75
145.	**2018**	5550017745	0.76
146.	**2018**	5550017811	0.76
147.	**2018**	5550016324	0.76
148.	**2018**	5550016602	0.76
149.	**2018**	5550016976	0.76
150.	**2018**	5550015190	0.76
151.	**2018**	5550018691	0.77
152.	**2018**	5550013968	0.77
153.	**2018**	5550015349	0.77
154.	**2018**	5550018405	0.78
155.	**2018**	5550018590	0.78
156.	**2018**	5550018072	0.78
157.	**2018**	5550018599	0.79

No.	Year	Project	PI
158.	**2018**	5550016929	0.79
159.	**2018**	5550018032	0.79
160.	**2018**	5550018562	0.79

No.	Year	Project	PI
1.	**2019**	5550020611	0.00
2.	**2019**	5550021941	0.00
3.	**2019**	5550014049	0.00
4.	**2019**	5550020518	0.00
5.	**2019**	5550018424	0.03
6.	**2019**	5550015768	0.16
7.	**2019**	5550017912	0.22
8.	**2019**	5550019442	0.22
9.	**2019**	5550018106	0.23
10.	**2019**	5550017915	0.24
11.	**2019**	5550021185	0.25
12.	**2019**	5550018525	0.28
13.	**2019**	5550019722	0.29
14.	**2019**	5550020645	0.30
15.	**2019**	5550020354	0.33
16.	**2019**	5550020937	0.33
17.	**2019**	5550017392	0.34
18.	**2019**	5550020607	0.35
19.	**2019**	5550021345	0.35
20.	**2019**	5550021068	0.36
21.	**2019**	5550015877	0.36
22.	**2019**	5550020179	0.36
23.	**2019**	5550018095	0.37
24.	**2019**	5550019353	0.37
25.	**2019**	5550022287	0.38
26.	**2019**	5550020026	0.38
27.	**2019**	5550020189	0.39
28.	**2019**	5550021389	0.41
29.	**2019**	5550018328	0.41
30.	**2019**	5550021167	0.43
31.	**2019**	5550021963	0.43
32.	**2019**	5550021144	0.45
33.	**2019**	5550021313	0.45
34.	**2019**	5550019829	0.46
35.	**2019**	5550022378	0.46
36.	**2019**	5550016987	0.47
37.	**2019**	5550022033	0.47
38.	**2019**	5550015763	0.48
39.	**2019**	5550021243	0.48
40.	**2019**	5550021126	0.48

No.	Year	Project	PI
41.	**2019**	5550018859	0.48
42.	**2019**	5550020487	0.48
43.	**2019**	5550020166	0.49
44.	**2019**	5550021903	0.49
45.	**2019**	5550020510	0.50
46.	**2019**	5550012613	0.50
47.	**2019**	5550020609	0.50
48.	**2019**	5550021628	0.51
49.	**2019**	5550019104	0.51
50.	**2019**	5550018372	0.51
51.	**2019**	5550017429	0.51
52.	**2019**	5550019983	0.51
53.	**2019**	5550020215	0.51
54.	**2019**	5550014938	0.52
55.	**2019**	5550020455	0.52
56.	**2019**	5550017778	0.54
57.	**2019**	5550021105	0.54
58.	**2019**	5550021154	0.55
59.	**2019**	5550018451	0.55
60.	**2019**	5550019168	0.55
61.	**2019**	5550017978	0.55
62.	**2019**	5550020751	0.56
63.	**2019**	5550019683	0.56
64.	**2019**	5550017925	0.56
65.	**2019**	5550016554	0.57
66.	**2019**	5550020753	0.57
67.	**2019**	5550021776	0.58
68.	**2019**	5550022779	0.59
69.	**2019**	5550020187	0.60
70.	**2019**	5550016052	0.60
71.	**2019**	5550020074	0.61
72.	**2019**	5550021646	0.61
73.	**2019**	5550019117	0.62
74.	**2019**	5550021919	0.62
75.	**2019**	5550020097	0.62
76.	**2019**	5550017423	0.62
77.	**2019**	5550022276	0.62
78.	**2019**	5550020566	0.62
79.	**2019**	5550021155	0.63
80.	**2019**	5550021860	0.64
81.	**2019**	5550022424	0.64
82.	**2019**	5550021120	0.64
83.	**2019**	5550020114	0.64
84.	**2019**	5550019738	0.66
85.	**2019**	5550012777	0.66
86.	**2019**	5550019001	0.66

No.	Year	Project	PI
87.	**2019**	5550016466	0.66
88.	**2019**	5550017005	0.66
89.	**2019**	5550022417	0.67
90.	**2019**	5550020276	0.67
91.	**2019**	5550015559	0.67
92.	**2019**	5550019908	0.68
93.	**2019**	5550019625	0.68
94.	**2019**	5550020347	0.68
95.	**2019**	5550020151	0.69
96.	**2019**	5550019595	0.69
97.	**2019**	5550022079	0.69
98.	**2019**	5550018877	0.70
99.	**2019**	5550022445	0.70
100.	**2019**	5550021104	0.70
101.	**2019**	5550019803	0.71
102.	**2019**	5550020445	0.71
103.	**2019**	5550016208	0.71
104.	**2019**	5550019601	0.72
105.	**2019**	5550021417	0.72
106.	**2019**	5550018999	0.72
107.	**2019**	5550019462	0.72
108.	**2019**	5550021062	0.72
109.	**2019**	5550020910	0.72
110.	**2019**	5550018909	0.72
111.	**2019**	5550017936	0.73
112.	**2019**	5550019804	0.73
113.	**2019**	5550018891	0.73
114.	**2019**	5550022439	0.74
115.	**2019**	5550020512	0.74
116.	**2019**	5550017821	0.74
117.	**2019**	5550019762	0.75
118.	**2019**	5550018556	0.76
119.	**2019**	5550019906	0.76
120.	**2019**	5550021010	0.76
121.	**2019**	5550018561	0.76
122.	**2019**	5550021224	0.76
123.	**2019**	5550017838	0.76
124.	**2019**	5550018898	0.76
125.	**2019**	5550022265	0.77
126.	**2019**	5550018488	0.77
127.	**2019**	5550020744	0.77
128.	**2019**	5550019633	0.77
129.	**2019**	5550018850	0.77
130.	**2019**	5550019206	0.79
131.	**2019**	5550019338	0.79
132.	**2019**	5550020904	0.79

No.	Year	Project	PI
1.	**2020**	5550020432	0.00
2.	**2020**	5550020737	0.00
3.	**2020**	5550024133	0.08
4.	**2020**	5550021664	0.18
5.	**2020**	5550022683	0.20
6.	**2020**	5550022375	0.20
7.	**2020**	5550024453	0.22
8.	**2020**	5550021568	0.23
9.	**2020**	5550022350	0.27
10.	**2020**	5550024183	0.32
11.	**2020**	5550021700	0.32
12.	**2020**	5550024819	0.33
13.	**2020**	5550018594	0.33
14.	**2020**	5550023588	0.35
15.	**2020**	5550025192	0.36
16.	**2020**	5550023903	0.38
17.	**2020**	5550022822	0.39
18.	**2020**	5550024526	0.41
19.	**2020**	5550021605	0.41
20.	**2020**	5550018049	0.44
21.	**2020**	5550023334	0.44
22.	**2020**	5550021719	0.45
23.	**2020**	5550024645	0.45
24.	**2020**	5550023006	0.46
25.	**2020**	5550022043	0.46
26.	**2020**	5550020985	0.46
27.	**2020**	5550024289	0.46
28.	**2020**	5550023834	0.47
29.	**2020**	5550023315	0.48
30.	**2020**	5550023271	0.48
31.	**2020**	5550022302	0.49
32.	**2020**	5550023321	0.49
33.	**2020**	5550022939	0.49
34.	**2020**	5550024250	0.50
35.	**2020**	5550017429	0.51
36.	**2020**	5550022707	0.52
37.	**2020**	5550021942	0.52
38.	**2020**	5550020969	0.53
39.	**2020**	5550024995	0.54
40.	**2020**	5550022594	0.54
41.	**2020**	5550022930	0.55
42.	**2020**	5550021230	0.55
43.	**2020**	5550023141	0.55
44.	**2020**	5550024148	0.56

No.	Year	Project	PI
45.	**2020**	5550023939	0.56
46.	**2020**	5550023272	0.56
47.	**2020**	5550023927	0.56
48.	**2020**	5550023051	0.56
49.	**2020**	5550024122	0.57
50.	**2020**	5550024313	0.57
51.	**2020**	5550022888	0.57
52.	**2020**	5550023036	0.58
53.	**2020**	5550024110	0.58
54.	**2020**	5550017146	0.58
55.	**2020**	5550024051	0.58
56.	**2020**	5550021981	0.58
57.	**2020**	5550022831	0.59
58.	**2020**	5550022128	0.59
59.	**2020**	5550022488	0.59
60.	**2020**	5550023323	0.59
61.	**2020**	5550023035	0.59
62.	**2020**	5550022743	0.60
63.	**2020**	5550023299	0.60
64.	**2020**	5550020340	0.61
65.	**2020**	5550021969	0.61
66.	**2020**	5550024727	0.61
67.	**2020**	5550022366	0.61
68.	**2020**	5550024386	0.62
69.	**2020**	5550022709	0.62
70.	**2020**	5550022661	0.62
71.	**2020**	5550023073	0.62
72.	**2020**	5550023063	0.63
73.	**2020**	5550023587	0.63
74.	**2020**	5550017065	0.63
75.	**2020**	5550023007	0.63
76.	**2020**	5550023181	0.64
77.	**2020**	5550024275	0.64
78.	**2020**	5550021858	0.64
79.	**2020**	5550022201	0.64
80.	**2020**	5550023030	0.65
81.	**2020**	5550024630	0.65
82.	**2020**	5550025839	0.65
83.	**2020**	5550023171	0.65
84.	**2020**	5550021990	0.66
85.	**2020**	5550022170	0.66
86.	**2020**	5550022775	0.66
87.	**2020**	5550024925	0.66
88.	**2020**	5550023981	0.66
89.	**2020**	5550023763	0.66
90.	**2020**	5550020008	0.67

No.	Year	Project	PI
91.	**2020**	5550020812	0.67
92.	**2020**	5550024660	0.67
93.	**2020**	5550023480	0.68
94.	**2020**	5550022730	0.69
95.	**2020**	5550020551	0.69
96.	**2020**	5550020604	0.69
97.	**2020**	5550023092	0.70
98.	**2020**	5550023533	0.70
99.	**2020**	5550024272	0.71
100.	**2020**	5550023196	0.71
101.	**2020**	5550024415	0.71
102.	**2020**	5550019926	0.72
103.	**2020**	5550023816	0.72
104.	**2020**	5550022405	0.72
105.	**2020**	5550018909	0.72
106.	**2020**	5550021634	0.73
107.	**2020**	5550021218	0.73
108.	**2020**	5550022508	0.74
109.	**2020**	5550023819	0.74
110.	**2020**	5550023453	0.74
111.	**2020**	5550023341	0.74
112.	**2020**	5550019386	0.75
113.	**2020**	5550022838	0.76
114.	**2020**	5550024841	0.76
115.	**2020**	5550019149	0.76
116.	**2020**	5550024455	0.77
117.	**2020**	5550020287	0.77
118.	**2020**	5550019161	0.77
119.	**2020**	5550022690	0.77
120.	**2020**	5550023859	0.77
121.	**2020**	5550025021	0.77
122.	**2020**	5550022818	0.78
123.	**2020**	5550024287	0.79
124.	**2020**	5550023024	0.79
125.	**2020**	5550023489	0.79
126.	**2020**	5550024259	0.79
127.	**2020**	5550021850	0.79
128.	**2020**	5550022893	0.79

No.	Year	Project	PI
1.	**2021**	5550025717	0.00
2.	**2021**	5550022794	0.00
3.	**2021**	5550026028	0.00
4.	**2021**	5550027261	0.09
5.	**2021**	5550025402	0.10

No.	Year	Project	PI
6.	**2021**	5550025142	0.22
7.	**2021**	5550026545	0.22
8.	**2021**	5550024251	0.22
9.	**2021**	5550024608	0.23
10.	**2021**	5550024360	0.24
11.	**2021**	5550027626	0.26
12.	**2021**	5550025875	0.27
13.	**2021**	5550022872	0.29
14.	**2021**	5550024330	0.29
15.	**2021**	5550025553	0.30
16.	**2021**	5550023649	0.33
17.	**2021**	5550026636	0.34
18.	**2021**	5550015592	0.35
19.	**2021**	5550024532	0.36
20.	**2021**	5550025805	0.36
21.	**2021**	5550021696	0.38
22.	**2021**	5550021508	0.38
23.	**2021**	5550026577	0.40
24.	**2021**	5550025622	0.41
25.	**2021**	5550025084	0.42
26.	**2021**	5550022652	0.42
27.	**2021**	5550026484	0.43
28.	**2021**	5550027147	0.43
29.	**2021**	5550025555	0.43
30.	**2021**	5550025911	0.43
31.	**2021**	5550024100	0.44
32.	**2021**	5550025198	0.44
33.	**2021**	5550026452	0.46
34.	**2021**	5550025484	0.46
35.	**2021**	5550026112	0.47
36.	**2021**	5550021535	0.47
37.	**2021**	5550026584	0.47
38.	**2021**	5550023512	0.48
39.	**2021**	5550024764	0.50
40.	**2021**	5550026208	0.50
41.	**2021**	5550026457	0.51
42.	**2021**	5550025004	0.53
43.	**2021**	5550025802	0.53
44.	**2021**	5550025619	0.53
45.	**2021**	5550025178	0.53
46.	**2021**	5550027649	0.54
47.	**2021**	5550025628	0.54
48.	**2021**	5550026219	0.55
49.	**2021**	5550026567	0.55
50.	**2021**	5550025104	0.55
51.	**2021**	5550026144	0.57

No.	Year	Project	PI
52.	**2021**	5550023077	0.57
53.	**2021**	5550025279	0.57
54.	**2021**	5550027879	0.57
55.	**2021**	5550019215	0.58
56.	**2021**	5550023914	0.58
57.	**2021**	5550025518	0.58
58.	**2021**	5550026047	0.59
59.	**2021**	5550023531	0.59
60.	**2021**	5550025909	0.59
61.	**2021**	5550025828	0.59
62.	**2021**	5550025689	0.60
63.	**2021**	5550027515	0.60
64.	**2021**	5550021199	0.60
65.	**2021**	5550026677	0.61
66.	**2021**	5550026582	0.61
67.	**2021**	5550024531	0.61
68.	**2021**	5550026986	0.62
69.	**2021**	5550024193	0.62
70.	**2021**	5550026558	0.62
71.	**2021**	5550025867	0.63
72.	**2021**	5550026206	0.63
73.	**2021**	5550027610	0.63
74.	**2021**	5550020919	0.63
75.	**2021**	5550017065	0.63
76.	**2021**	5550025160	0.64
77.	**2021**	5550028495	0.64
78.	**2021**	5550024879	0.65
79.	**2021**	5550026698	0.65
80.	**2021**	5550021145	0.65
81.	**2021**	5550027495	0.66
82.	**2021**	5550025117	0.66
83.	**2021**	5550025530	0.66
84.	**2021**	5550023757	0.67
85.	**2021**	5550024476	0.67
86.	**2021**	5550028530	0.67
87.	**2021**	5550025267	0.67
88.	**2021**	5550025720	0.67
89.	**2021**	5550028516	0.67
90.	**2021**	5550019908	0.68
91.	**2021**	5550024757	0.68
92.	**2021**	5550027181	0.69
93.	**2021**	5550025874	0.69
94.	**2021**	5550023944	0.69
95.	**2021**	5550026556	0.69
96.	**2021**	5550025995	0.70
97.	**2021**	5550027087	0.70

No.	Year	Project	PI
98.	**2021**	5550024201	0.70
99.	**2021**	5550023674	0.70
100.	**2021**	5550024408	0.70
101.	**2021**	5550022438	0.70
102.	**2021**	5550026434	0.71
103.	**2021**	5550025663	0.71
104.	**2021**	5550028532	0.71
105.	**2021**	5550014343	0.72
106.	**2021**	5550026403	0.74
107.	**2021**	5550024674	0.74
108.	**2021**	5550025263	0.74
109.	**2021**	5550025568	0.74
110.	**2021**	5550024548	0.74
111.	**2021**	5550024696	0.75
112.	**2021**	5550025481	0.75
113.	**2021**	5550026182	0.76
114.	**2021**	5550027814	0.76
115.	**2021**	5550028375	0.77
116.	**2021**	5550026952	0.77
117.	**2021**	5550024593	0.77
118.	**2021**	5550025094	0.77
119.	**2021**	5550024943	0.78
120.	**2021**	5550025589	0.78
121.	**2021**	5550022211	0.78
122.	**2021**	5550023758	0.78
123.	**2021**	5550024633	0.78
124.	**2021**	5550025638	0.79
125.	**2021**	5550023134	0.79

No.	Year	Project	PI
1.	**2022**	5550024840	0.00
2.	**2022**	5550026028	0.00
3.	**2022**	5550018840	0.02
4.	**2022**	5550030323	0.07
5.	**2022**	5550021438	0.20
6.	**2022**	5550029472	0.20
7.	**2022**	5550029174	0.28
8.	**2022**	5550029408	0.28
9.	**2022**	5550030073	0.28
10.	**2022**	5550027317	0.29
11.	**2022**	5550027672	0.32
12.	**2022**	5550025803	0.33
13.	**2022**	5550028413	0.33
14.	**2022**	5550029185	0.33
15.	**2022**	5550029723	0.35

No.	Year	Project	PI
16.	**2022**	5550030529	0.35
17.	**2022**	5550023943	0.36
18.	**2022**	5550028279	0.37
19.	**2022**	5550028865	0.37
20.	**2022**	5550030253	0.37
21.	**2022**	5550029367	0.39
22.	**2022**	5550028888	0.39
23.	**2022**	5550029639	0.40
24.	**2022**	5550030283	0.40
25.	**2022**	5550029201	0.40
26.	**2022**	5550028468	0.41
27.	**2022**	5550028972	0.42
28.	**2022**	5550002333	0.42
29.	**2022**	5550023332	0.42
30.	**2022**	5550029176	0.43
31.	**2022**	5550031375	0.44
32.	**2022**	5550030593	0.44
33.	**2022**	5550025764	0.45
34.	**2022**	5550023994	0.45
35.	**2022**	5550028903	0.45
36.	**2022**	5550030887	0.46
37.	**2022**	5550028862	0.47
38.	**2022**	5550029228	0.48
39.	**2022**	5550028436	0.48
40.	**2022**	5550027523	0.48
41.	**2022**	5550029071	0.49
42.	**2022**	5550028894	0.50
43.	**2022**	5550027510	0.50
44.	**2022**	5550028596	0.51
45.	**2022**	5550026565	0.51
46.	**2022**	5550029144	0.52
47.	**2022**	5550029046	0.52
48.	**2022**	5550029138	0.53
49.	**2022**	5550028525	0.54
50.	**2022**	5550030557	0.54
51.	**2022**	5550027714	0.54
52.	**2022**	5550028325	0.54
53.	**2022**	5550029675	0.55
54.	**2022**	5550030184	0.56
55.	**2022**	5550029198	0.57
56.	**2022**	5550030105	0.57
57.	**2022**	5550029835	0.57
58.	**2022**	5550027603	0.58
59.	**2022**	5550030467	0.58
60.	**2022**	5550029463	0.58
61.	**2022**	5550027875	0.60

No.	Year	Project	PI
62.	**2022**	5550029866	0.60
63.	**2022**	5550029244	0.61
64.	**2022**	5550028595	0.61
65.	**2022**	5550028710	0.61
66.	**2022**	5550028476	0.61
67.	**2022**	5550029006	0.62
68.	**2022**	5550029029	0.62
69.	**2022**	5550030055	0.62
70.	**2022**	5550028608	0.63
71.	**2022**	5550029343	0.64
72.	**2022**	5550027990	0.64
73.	**2022**	5550028165	0.64
74.	**2022**	5550030585	0.64
75.	**2022**	5550028666	0.64
76.	**2022**	5550029236	0.65
77.	**2022**	5550021219	0.65
78.	**2022**	5550029941	0.65
79.	**2022**	5550030094	0.66
80.	**2022**	5550027151	0.66
81.	**2022**	5550030688	0.67
82.	**2022**	5550029665	0.67
83.	**2022**	5550028311	0.67
84.	**2022**	5550029439	0.67
85.	**2022**	5550030760	0.67
86.	**2022**	5550025798	0.67
87.	**2022**	5550025720	0.67
88.	**2022**	5550028214	0.68
89.	**2022**	5550029279	0.68
90.	**2022**	5550028910	0.68
91.	**2022**	5550017751	0.68
92.	**2022**	5550030603	0.69
93.	**2022**	5550031084	0.69
94.	**2022**	5550029403	0.69
95.	**2022**	5550009039	0.69
96.	**2022**	5550028420	0.70
97.	**2022**	5550029813	0.70
98.	**2022**	5550021685	0.70
99.	**2022**	5550028334	0.70
100.	**2022**	5550030875	0.71
101.	**2022**	5550022311	0.71
102.	**2022**	5550026120	0.71
103.	**2022**	5550028139	0.71
104.	**2022**	5550029975	0.71
105.	**2022**	5550030207	0.71
106.	**2022**	5550027116	0.72
107.	**2022**	5550028120	0.72

No.	Year	Project	PI
108.	**2022**	5550027129	0.73
109.	**2022**	5550026056	0.73
110.	**2022**	5550026033	0.74
111.	**2022**	5550027816	0.74
112.	**2022**	5550030245	0.74
113.	**2022**	5550030535	0.75
114.	**2022**	5550025059	0.75
115.	**2022**	5550030551	0.76
116.	**2022**	5550028366	0.77
117.	**2022**	5550029887	0.77
118.	**2022**	5550027136	0.78
119.	**2022**	5550029453	0.78
120.	**2022**	5550028899	0.79
121.	**2022**	5550029197	0.79

No.	Year	Project	PI
1.	**2023**	5550030149	0.00
2.	**2023**	4110435968	0.00
3.	**2023**	5550029661	0.04
4.	**2023**	5550021438	0.20
5.	**2023**	4110415888	0.20
6.	**2023**	5550029989	0.22
7.	**2023**	5550030508	0.22
8.	**2023**	5550031813	0.23
9.	**2023**	5550029878	0.23
10.	**2023**	5550030668	0.25
11.	**2023**	5550031451	0.25
12.	**2023**	5550031073	0.26
13.	**2023**	5550031514	0.27
14.	**2023**	5550026517	0.27
15.	**2023**	5550032085	0.30
16.	**2023**	5550027529	0.30
17.	**2023**	5550031167	0.30
18.	**2023**	4110425183	0.31
19.	**2023**	5550031087	0.31
20.	**2023**	5550032218	0.34
21.	**2023**	5550024795	0.36
22.	**2023**	5550030038	0.38
23.	**2023**	5550030179	0.39
24.	**2023**	5550031191	0.40
25.	**2023**	5550031790	0.40
26.	**2023**	5550031200	0.41
27.	**2023**	5550032325	0.41
28.	**2023**	5550031441	0.41
29.	**2023**	5550002333	0.42

No.	Year	Project	PI
30.	**2023**	5550030617	0.42
31.	**2023**	5550028385	0.43
32.	**2023**	5550029894	0.43
33.	**2023**	5550031721	0.43
34.	**2023**	5550026139	0.44
35.	**2023**	5550030918	0.44
36.	**2023**	5550031808	0.45
37.	**2023**	5550031272	0.46
38.	**2023**	5550032018	0.46
39.	**2023**	5550031891	0.47
40.	**2023**	5550030881	0.47
41.	**2023**	5550031184	0.47
42.	**2023**	5550030211	0.49
43.	**2023**	5550030615	0.51
44.	**2023**	5550032050	0.51
45.	**2023**	5550030701	0.52
46.	**2023**	5550031152	0.54
47.	**2023**	5550031502	0.55
48.	**2023**	5550030945	0.55
49.	**2023**	5550025074	0.55
50.	**2023**	5550028494	0.56
51.	**2023**	5550032215	0.56
52.	**2023**	5550030291	0.56
53.	**2023**	5550032293	0.57
54.	**2023**	5550032386	0.57
55.	**2023**	5550025687	0.59
56.	**2023**	5550031405	0.59
57.	**2023**	5550032165	0.59
58.	**2023**	5550032361	0.59
59.	**2023**	5550022310	0.60
60.	**2023**	5550028591	0.60
61.	**2023**	5550030634	0.60
62.	**2023**	5550032189	0.60
63.	**2023**	5550032084	0.61
64.	**2023**	5550022334	0.61
65.	**2023**	5550028846	0.62
66.	**2023**	5550029180	0.62
67.	**2023**	5550031060	0.62
68.	**2023**	5550029182	0.62
69.	**2023**	5550029947	0.62
70.	**2023**	5550031357	0.63
71.	**2023**	5550030902	0.63
72.	**2023**	5550027990	0.64
73.	**2023**	5550026380	0.64
74.	**2023**	5550030587	0.64
75.	**2023**	5550031443	0.65

No.	Year	Project	PI
76.	**2023**	5550032066	0.65
77.	**2023**	5550030789	0.66
78.	**2023**	5550031178	0.66
79.	**2023**	5550030964	0.66
80.	**2023**	5550026104	0.67
81.	**2023**	5550031499	0.67
82.	**2023**	5550030787	0.67
83.	**2023**	5550030429	0.67
84.	**2023**	5550030560	0.67
85.	**2023**	5550032326	0.68
86.	**2023**	5550030692	0.68
87.	**2023**	5550031661	0.68
88.	**2023**	5550030319	0.69
89.	**2023**	5550030564	0.69
90.	**2023**	5550032153	0.70
91.	**2023**	5550029563	0.70
92.	**2023**	5550031026	0.70
93.	**2023**	5550031554	0.70
94.	**2023**	5550032516	0.70
95.	**2023**	5550031821	0.70
96.	**2023**	5550032469	0.71
97.	**2023**	5550030703	0.71
98.	**2023**	5550030812	0.72
99.	**2023**	5550031080	0.73
100.	**2023**	5550031000	0.73
101.	**2023**	5550029903	0.74
102.	**2023**	5550032166	0.74
103.	**2023**	5550031063	0.76
104.	**2023**	5550032517	0.77
105.	**2023**	5550030332	0.77
106.	**2023**	5550030442	0.77
107.	**2023**	5550031778	0.78
108.	**2023**	5550031570	0.79

No.	Year	Project	PI
1.	**2024**	5550033405	0.00
2.	**2024**	5550031464	0.00
3.	**2024**	5550033212	0.00
4.	**2024**	5550032260	0.11
5.	**2024**	5550032536	0.21
6.	**2024**	5550032788	0.22
7.	**2024**	5550033040	0.22
8.	**2024**	5550032939	0.27
9.	**2024**	5550032964	0.27
10.	**2024**	5550032140	0.28

No.	Year	Project	PI
11.	**2024**	5550033521	0.29
12.	**2024**	5550032582	0.29
13.	**2024**	5550032038	0.30
14.	**2024**	5550032627	0.30
15.	**2024**	5550033326	0.30
16.	**2024**	5550032350	0.31
17.	**2024**	5550031087	0.31
18.	**2024**	5550032547	0.31
19.	**2024**	5550033768	0.31
20.	**2024**	5550032391	0.33
21.	**2024**	5550033834	0.33
22.	**2024**	5550033342	0.33
23.	**2024**	5550032799	0.35
24.	**2024**	5550029288	0.35
25.	**2024**	5550033629	0.35
26.	**2024**	5550033267	0.36
27.	**2024**	5550032220	0.36
28.	**2024**	5550033473	0.36
29.	**2024**	5550032914	0.37
30.	**2024**	5550033659	0.38
31.	**2024**	5550032792	0.38
32.	**2024**	5550033390	0.38
33.	**2024**	5550033341	0.38
34.	**2024**	5550033054	0.39
35.	**2024**	5550033439	0.39
36.	**2024**	5550024198	0.40
37.	**2024**	5550032257	0.40
38.	**2024**	5550032055	0.41
39.	**2024**	5550033556	0.42
40.	**2024**	5550032722	0.42
41.	**2024**	5550023332	0.42
42.	**2024**	5550033772	0.43
43.	**2024**	5550032185	0.43
44.	**2024**	5550033730	0.43
45.	**2024**	5550027268	0.43
46.	**2024**	5550032644	0.45
47.	**2024**	5550033370	0.45
48.	**2024**	5550029385	0.46
49.	**2024**	5550032915	0.46
50.	**2024**	5550033530	0.48
51.	**2024**	5550032501	0.48
52.	**2024**	5550031754	0.49
53.	**2024**	5550033082	0.49
54.	**2024**	5550032718	0.51
55.	**2024**	5550033345	0.51
56.	**2024**	5550032372	0.52

No.	Year	Project	PI
57.	**2024**	5550031484	0.52
58.	**2024**	5550031961	0.53
59.	**2024**	5550033140	0.54
60.	**2024**	5550032262	0.54
61.	**2024**	5550033601	0.55
62.	**2024**	5550028494	0.56
63.	**2024**	5550033038	0.58
64.	**2024**	5550033312	0.59
65.	**2024**	5550032697	0.59
66.	**2024**	5550031500	0.59
67.	**2024**	5550032669	0.59
68.	**2024**	5550032504	0.60
69.	**2024**	5550033209	0.60
70.	**2024**	5550032285	0.61
71.	**2024**	5550033554	0.63
72.	**2024**	5550031949	0.64
73.	**2024**	5550032502	0.65
74.	**2024**	5550033579	0.65
75.	**2024**	5550033368	0.65
76.	**2024**	5550029422	0.66
77.	**2024**	5550030789	0.66
78.	**2024**	5550032679	0.67
79.	**2024**	5550033528	0.68
80.	**2024**	5550032241	0.69
81.	**2024**	5550031189	0.70
82.	**2024**	5550033509	0.71
83.	**2024**	5550032422	0.71
84.	**2024**	5550029914	0.72
85.	**2024**	5550032462	0.74
86.	**2024**	5550033426	0.75
87.	**2024**	5550032700	0.76
88.	**2024**	5550033431	0.77
89.	**2024**	5550032124	0.77
90.	**2024**	5550032474	0.78
91.	**2024**	5550031660	0.78
92.	**2024**	5550021868	0.79
93.	**2024**	5550033233	0.79
94.	**2024**	5550031286	0.79

No.	Year	Project	PI
1.	**2025**	5550034164	0.00
2.	**2025**	5550034127	0.00
3.	**2025**	5550034204	0.00
4.	**2025**	5550035029	0.00
5.	**2025**	5550032587	0.20

No.	Year	Project	PI
6.	**2025**	5550033849	0.21
7.	**2025**	5550033774	0.21
8.	**2025**	5550033797	0.21
9.	**2025**	5550033580	0.24
10.	**2025**	5550034788	0.25
11.	**2025**	5550035015	0.27
12.	**2025**	5550033987	0.27
13.	**2025**	5550034770	0.28
14.	**2025**	5550034599	0.30
15.	**2025**	5550030215	0.30
16.	**2025**	5550033393	0.32
17.	**2025**	5550032911	0.32
18.	**2025**	5550033434	0.33
19.	**2025**	5550029241	0.34
20.	**2025**	5550034200	0.35
21.	**2025**	5550033853	0.37
22.	**2025**	5550034185	0.38
23.	**2025**	5550034644	0.38
24.	**2025**	5550034009	0.39
25.	**2025**	5550033372	0.40
26.	**2025**	5550034384	0.41
27.	**2025**	5550034617	0.45
28.	**2025**	5550033490	0.45
29.	**2025**	5550035359	0.47
30.	**2025**	5550033483	0.47
31.	**2025**	5550034525	0.49
32.	**2025**	5550033937	0.49
33.	**2025**	5550034632	0.50
34.	**2025**	5550034226	0.51
35.	**2025**	5550034536	0.51
36.	**2025**	5550033881	0.53
37.	**2025**	5550028494	0.56
38.	**2025**	5550035258	0.57
39.	**2025**	5550035133	0.58
40.	**2025**	5550032167	0.58
41.	**2025**	5550034136	0.59
42.	**2025**	5550034980	0.60
43.	**2025**	5550034457	0.60
44.	**2025**	5550034847	0.60
45.	**2025**	5550033922	0.61
46.	**2025**	5550035342	0.61
47.	**2025**	5550034765	0.61
48.	**2025**	5550034347	0.62
49.	**2025**	5550034090	0.62
50.	**2025**	5550033792	0.62
51.	**2025**	5550031883	0.64

No.	Year	Project	PI
52.	**2025**	5550034431	0.64
53.	**2025**	5550032021	0.65
54.	**2025**	5550030789	0.66
55.	**2025**	5550034580	0.66
56.	**2025**	5550035263	0.67
57.	**2025**	5550018299	0.67
58.	**2025**	5550034595	0.67
59.	**2025**	5550034205	0.67
60.	**2025**	5550034464	0.68
61.	**2025**	5550033715	0.68
62.	**2025**	5550034401	0.68
63.	**2025**	5550033488	0.69
64.	**2025**	5550034173	0.69
65.	**2025**	5550034577	0.70
66.	**2025**	5550034730	0.70
67.	**2025**	5550032956	0.71
68.	**2025**	5550034010	0.72
69.	**2025**	5550029903	0.74
70.	**2025**	5550033841	0.75
71.	**2025**	5550033891	0.75
72.	**2025**	5550034192	0.77

Attachment 8.2

BCUC IR1 8.2 (DCF Example with Social Cost of Carbon)

Line	Particular	Reference	Year 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	**Example Project**																																										
2	Annual Demand (GJ)		47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071	47,071
3																																											
4	RG Blend %	LTGRP (Diversified Approach)	3.5%	4.5%	8.8%	10.9%	13.1%	15.4%	17.0%	18.8%	20.7%	22.7%	24.8%	27.1%	29.5%	32.0%	34.7%	37.7%	40.7%	44.1%	47.7%	51.7%	56.1%	60.9%	66.1%	71.5%	77.2%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%	83.7%
5	NG %	1 - Line 4	96.5%	95.5%	91.2%	89.1%	86.9%	84.6%	83.0%	81.2%	79.3%	77.3%	75.2%	72.9%	70.5%	68.0%	65.3%	62.3%	59.3%	55.9%	52.3%	48.3%	43.9%	39.1%	33.9%	28.5%	22.8%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%	16.3%
6																																											
7	SCC-CO2 ($/tonne) (2021$)	Environment and Climate Change Canada (ECCC)	271	275	280	285	289	294	299	303	308	313	317	322	327	331	336	341	347	352	357	362	367	372	379	384	389	394	399	403	408	413	417	422	427	432	436	441	445	449	453	457
8	SCC-CO2 (Inflation Adjusted 2026$)	Line 7 plus Inflation from 2021 to 2026	314	326	332	338	343	349	355	359	365	371	376	382	388	393	398	404	412	417	423	429	435	441	449	455	461	467	473	478	484	490	495	500	506	512	517	523	528	532	537	542
9																																											
10	SCC-CO2 ($/GJ)	Line 8 x Line 13	5.845	6.062	6.173	6.283	6.371	6.481	6.592	6.680	6.790	6.900	6.988	7.099	7.209	7.297	7.407	7.517	7.650	7.760	7.870	7.980	8.091	8.201	8.355	8.465	8.576	8.686	8.796	8.884	8.995	9.105	9.193	9.303	9.413	9.524	9.612	9.722	9.810	9.898	9.987	10.075
11	SCC-CO2 (NG Portion Only) ($)	Line 2 x Line 5 x Line 10	$ 265,482	$ 272,528	$ 264,930	$ 263,365	$ 260,488	$ 258,224	$ 257,448	$ 255,336	$ 253,539	$ 251,164	$ 247,263	$ 243,594	$ 239,239	$ 233,481	$ 227,526	$ 220,622	$ 213,421	$ 204,326	$ 193,653	$ 181,471	$ 167,152	$ 150,963	$ 133,499	$ 113,650	$ 92,003	$ 66,568	$ 67,413	$ 68,089	$ 68,933	$ 69,778	$ 70,454	$ 71,299	$ 72,144	$ 72,988	$ 73,664	$ 74,509	$ 75,185	$ 75,861	$ 76,536	$ 77,212
12	PV of SCC-CO2 ($)	Line 11 / (1 + Line 16)^Yr	$ 257,933	$ 257,250	$ 242,967	$ 234,664	$ 225,501	$ 217,185	$ 210,375	$ 202,716	$ 195,567	$ 188,225	$ 180,033	$ 172,318	$ 164,425	$ 155,905	$ 147,609	$ 139,060	$ 130,697	$ 121,569	$ 111,943	$ 101,918	$ 91,206	$ 80,031	$ 68,760	$ 56,872	$ 44,731	$ 31,444	$ 30,938	$ 30,360	$ 29,862	$ 29,369	$ 28,810	$ 28,326	$ 27,847	$ 27,372	$ 26,840	$ 26,376	$ 25,858	$ 25,349	$ 24,847	$ 24,354
13	**Total PV of SCC-CO2 ($)**	**Sum of Line 12**	**$ 4,417,414**																																								
14																																											
15	Conversion	$/tonne to $/GJ	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
16	Discount Rate	2025 MX Annual Report	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%	2.93%
17																																											
18	**Current Approved MX-Test**																																										
19	PV Cash Inflow ($)		$ 3,394,070																																								
20	PV Cash Outflow ($)		$ 3,696,044																																								
21	**PI (Before Contribution)**	**Line 19 / Line 20**	**0.92**																																								
22	Contribution Required	If Line 21 < 0.8, then Line 20 x 0.8 - Line 19	$ -																																								
23	**PI (After Contribution)**	**(Line 19 + Line 22) / Line 20**	**0.92**																																								
24																																											
25	**MX-Test with SCC-CO2 as Cash Outflow**																																										
26	PV Cash Inflow ($)	Line 19	$ 3,394,070																																								
27	PV Cash Outflow, incl. SCC-CO2 ($)	Line 20 + Line 13	$ 8,113,458																																								
28	**PI (Before Contribution)**	**Line 26 / Line 27**	**0.42**																																								
29	Contribution Required	If Line 28 < 0.8, then Line 27 x 0.8 - Line 26	$ 3,096,697																																								
30	**PI (After Contribution)**	**(Line 26 + Line 29) / Line 27**	**0.80**																																								