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February 17, 2022

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

Attention: Mr. Christopher P. Weafer

Dear Mr. Weafer:

Re: FortisBC Energy Inc. (FEI)

Project No. 1599211

Application for a Certificate of Public Convenience and Necessity (CPCN) for Approval of the Advanced Metering Infrastructure (AMI) Project (Application)

Response to the Commercial Energy Consumers Association of British Columbia (CEC) Information Request (IR) No. 2

On May 5, 2021, FEI filed the Application referenced above. In accordance with the regulatory timetable as amended in British Columbia Utilities Commission Order G-389-21 for the review of the Application, FEI respectfully submits the attached response to CEC IR No. 2.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Commission Secretary
Registered Parties

99. Reference: Exhibit B-8-1, CEC 1.1.2 and 1.1.4

> 1.2 Please provide the error rates for each for the meter reading, recording and processing of meter readings.
>
> **Response:**
>
> The average error rate for reading and recording of meter readings is approximately 1.1 percent of all monthly readings. Issues related to the processing of meter readings are typically identified and rectified immediately; therefore, FEI does not record an error rate for this type of error. The frequency at which these meter reading processing issues occur is one per year on average.
>
> While these error rates may appear low, the effort required to correct errors can be significant as well as have negative impacts on customers.

> 1.4 What are the inconveniences to customers related to meter reading and what, if any, types of costs or other consequences do customers experience from these inconveniences?
>
> **Response:**
>
> Please refer to the response to CEC IR1 1.1.
>
> Section 3.1.3 of the Application provides a summary of the inconveniences that customers experience from manual meter reading, the consequences of those inconveniences, and how automation of the meter reading function will improve those experiences. Some customers could also face direct or indirect costs to arrange for access to the meter; however, FEI is unable to identify and quantify these costs.

99.1 Please briefly elaborate on the types of activities required to correct errors and why the efforts underlying the activities can be considered as significant.

Response:

There are many activities that go into correcting errors related to meter reading and the recording and processing of meter readings.

These activities are triggered when a case is created due to a meter reading being outside the expected tolerance levels for that billing period. Cases are assigned to analysts who then review factors such as consumption, established historical information, temperatures, and system expected consumption. If the error is not corrected after this review, the analyst will then attempt to contact the customer to discuss the issue. If they cannot reach the customer, or if the meter read is significantly outside of the tolerance levels, the analyst will request a new meter read (called a meter reading order). The meter reading order will be completed either by an FEI technician (requiring a truck roll and potentially impacting other scheduled work) or by a meter reader as an off-cycle read. If the read is adjusted, the customer's bill will need to be reversed and changed based on the accurate read.

FEI considers the efforts underlying these activities to be significant because of the time involved and impacts on customers. This includes the analysts' time spent investigating and verifying reads, the analysts' time spent correcting reads and billing, the technician or meter reader's time completing the meter reading order and the other costs associated with completing meter reading orders to verify those reads, which include fuel and vehicle wear and tear. From a customer perspective, there may be the time required to connect with FEI and inconveniences that may be associated with bill estimates and adjustments.

In 2021, for example, FEI estimates the amount of time spent by its analysts to investigate and verify meter reads to be approximately 830 hours, or the equivalent of 110 work days. This includes only the work performed by the analysts, and does not take into account the costs associated with meter reading orders or the time spent in performing the verifying read.

100. Reference: Exhibit B-8-1, CEC 1.2.3 and 1.2.4

> 2.3 Please describe customer reactions to bill estimates such as in regard to making bill payments and/or making calls to customer service.
>
> **Response:**
>
> Generally speaking, customer reactions to bill estimates are dependent on the circumstances. That is, some customers may not have concerns with estimates to the extent there is minimal impact on their bill or payment circumstances; however, bill estimates can create a challenging and dissatisfying experience for many customers. Because estimated meter readings are based on historical consumption, changes to the normal consumption patterns at a premises can lead to customers having high bills from the estimated meter readings or from an actual reading after an estimated reading. This can create a negative reaction to the estimated meter reads and the customer may contact FEI for an explanation of the unexpected charges.
>
> With respect to making bill payments, FEI does not have analysis on whether customers exhibit different bill payment behaviour if their bill is based on an estimated or actual meter read. However, challenging bill payment circumstances may arise from estimates to the extent that multiple estimates occur and/or significant variances in the billed amounts occur once the actual read is completed. Customers in this circumstance may experience negative reactions, including confusion, anger, and frustration as a result.
>
> 2.4 Please provide quantitative data on customer service phone calls regarding bill estimating and/or bill complaints that go toward causes related to meter reading, or confirm that the figure on Page 23, 2800 per month, would be the applicable figure.
>
> 2.4.1 Please confirm that this is an average rate which would therefore be applicable throughout the year.
>
> **Response:**
>
> Please refer to the response to CEC IR1 1.1.
>
> FEI estimates that there are approximately 2,800 monthly interactions, and approximately 34,000 each year, related to customers questioning the accuracy of their bills. As discussed in Section 3.1.2 of the Application, this monthly average applies throughout the year and is based on reason code identifiers for the years 2018, 2019, and 2020. Interactions include telephone calls, emails, and chat requests.

100.1 Please provide any quantitative or metric-based evidence FEI may have from other utilities that customer frustration declines with automation.

Response:

As noted in Section 3.2.1 of the Application, FEI commissioned Util-Assist to complete a report detailing the gas utility automation projects across Canada and the United States. This report (the Util-Assist Report) is included as Appendix A to the Application.

While the Util-Assist Report does not specifically address whether customer frustration declines with automation, it does discuss the benefits expected and realized for each project. Many of these benefits include improved billing accuracy and customer convenience. With respect to the potential negative reactions to bill estimates described in the response to CEC IR1 2.3, FEI believes the Util-Assist report supports the premise that as billing accuracy improves and

customers are inconvenienced less often (which is an expected outcome with automation), customer frustration lessens.

100.2 Does FEI expect improvement to customer satisfaction SQIs as a result of the AMI implementation? Please explain why or why not.

100.2.1 If yes, please provide estimates of the likely improvements in SQI and when they can be expected to occur.

100.2.2 Would it be reasonable for the Commission to alter the SQI benchmarks or thresholds as a result of the automation? Please explain why or why not.

Response:

FEI assumes that the customer satisfaction SQIs referred to in the question refer to those SQIs FEI described in its Annual Review for 2022 Delivery Rates as Responsiveness to the Customer Needs SQIs.

The following Responsiveness to the Customer Needs SQIs may be impacted as a result of AMI implementation:

1. Meter Reading Accuracy: This SQI measures the number of scheduled meters that were read. FEI expects this SQI will improve as a result of AMI implementation, because FEI will receive automated reads for the majority of its meters. AMI meter reading does not have 100 percent performance and accuracy (for several reasons, including radio-off meters due to location or by customer request, or due to communications failures resulting from weather or system issues). However, automated reads are not impacted by factors such as meter access issues or meter reader availability. For comparison, the meter reading accuracy benchmark that considers the impacts of AMI for FBC is 98 percent as compared to the benchmark of 95 percent currently set for FEI.

2. Meter Exchange Appointment: This SQI measures the percent of appointments met for meter exchanges. FEI notes that if the Project is approved, this SQI may no longer be informative. This is because bypass valves will be installed along with the new meters; therefore, when meters do need to be replaced in the future, no appointments will be required.

Concerning revising the benchmarks and thresholds, FEI is unable to determine when or if adjustments may be required to the SQIs benchmarks and thresholds until a representative period of performance (i.e., three years of actual performance) has been observed with the AMI system in operation. As a result, FEI will not be able to establish this comparison until the AMI system is

1 fully implemented by the 2025/2026 timeframe which is after the term of the MRP in 2024. The
2 BCUC can determine whether any modifications to SQIs should be made in a future proceeding.

3

101. Reference: Exhibit B-8-1, CEC 1.7.1

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

Table 3-4: Total Estimated FEI Meter Reads 2016-2020

Year	# of Estimates	# of Meter Read Requests	Estimates as % of Total
2016	380,398	12,159,770	3.13%
2017	463,564	12,313,865	3.76%
2018	579,997	12,602,206	4.64%
2019	613,849	12,696,599	4.83%
2020	1,398,982	12,894,341	10.85%

7.1 Please provide the total payment for meter reads for each of the years 2016 to 2020.

Response:

The total payments that FEI has made to Olameter for manual meter reading for each of the years 2016 to 2020 are shown in the table below. These are invoiced amounts and are not adjusted for performance penalties paid by Olameter.

Year	Amount ($ millions)
2016	$ 11.344
2017	$ 11.415
2018	$ 11.416
2019	$ 11.874
2020	$ 11.862

101.1 Please explain why the total payments made to Olameter increased by less than 5% between 2016 and 2020 while the estimates more than tripled during that same period. This change appears to be primarily driven by 2020 experience and likely COVID-19 impacts. Please confirm or otherwise explain.

Response:

FEI confirms that the increase in the total number of estimated reads shown in Table 3-4 for 2020 over 2019 was primarily a result of COVID-19 pandemic impacts. Please refer to the response to BCOAPO IR1 3.1 for additional information regarding the impact of the COVID-19 pandemic on estimated meter reads.

The estimated reads listed in Table 3-4 cited in the preamble are made up of two different categories of estimates: skipped reads (where an attempt is made to read the meter but the meter cannot be accessed) and forced completes (where the read is skipped without an attempt being made to read it).

Under the terms of its contract with Olameter, FEI is charged for any skipped reads. Therefore, there is not a direct correlation between a change to the number of estimates experienced in a

given year and the payments made. In addition, the number of FEI customers that require meter reading services has increased year over year, which further impacts the calculation.

102. Reference: Exhibit B-8-1, 1.9.1

9. Reference: Exhibit B-1, Page 23

> Inaccurate bills, whether due to human error or estimates, often result in customer confusion on their actual energy use, resulting in payment issues, dissatisfaction, and inquiries in the form of calls, emails or chat requests into the contact centre. Although FEI does not separately track meter reading-related contacts by communications channel from customers, it estimates that of monthly meter reading-related inquiries there are approximately 2,800 interactions via telephone, email and chat requests.[18]

9.1 Please provide the average cost for FEI to respond to communications of this nature from customers.

Response:

The average cost for FEI to respond to communications related to customer concerns that bills may be inaccurate is estimated to be approximately $250 thousand per year.[3]

102.1 What proportion of the $250,000 does FEI expect to save as a result of the AMI project?

102.1.1 Please confirm that all savings are identified and captured in the Application, and identify where these are included.

Response:

The referenced $250 thousand is a high-level calculation based on the approximate average number of total interactions over a three-year period for all meter reading related inquiries and was not used as the basis for estimating Customer Service savings resulting from the AMI Project.

As discussed in Section 6.2.2.5 of the Application, the AMI Project will enable savings in FEI's customer service functions related to the following reduced activities (which include customer communications around meter reading):

- billing investigation and exceptions;
- meter reading coordinator workload;
- improvements in vacant premises processing; and
- meter switching identification and validation.

Due to annual variations in interaction volumes, changes in customer behavior, and multiple reasons for a single interaction, FEI is not able to precisely allocate cost savings amongst these categories. Instead, FEI has provided an overall savings estimate for Customer Service operations associated with AMI. In this regard, FEI estimates overall post-deployment savings for the customer service function to be $12.7 million over the 26-year analysis period of the

Project[1], of which a small portion is likely to relate to reduced volumes of communication associated with estimated bills.

102.1.2 Please confirm that all anticipated savings will be passed on to ratepayers, or explain why not.

Response:

Over the course of deployment there may be some years where costs outweigh savings, but on balance and over the term of the analysis period, FEI expects net benefits to customers as a result of AMI. In this regard, FEI intends to make adjustments to the formula O&M in the MRP such that actual savings and costs associated with AMI are reflected.

As discussed in the response to BCUC IR1 20.2, if the AMI Project is approved, during the current MRP term FEI will adjust the Base O&M unit cost under the formula O&M to remove the O&M costs related to the existing meters that were embedded in the Base O&M and will forecast the new AMI O&M as flow-through O&M costs/savings until the end of the MRP term (2024). This will ensure any costs or savings expected from AMI will be included in the forecast delivery rates and passed on to customers. Similar to various flow-through items within FEI's revenue requirement, the O&M costs or savings due to AMI would be subject to forecast risk; therefore, during the MRP term, any variances between forecast and actual would be captured by the flow-through deferral account and returned to/recovered from customers.

Post MRP, the O&M treatment for the AMI O&M costs/savings will depend on the regulatory framework at that time.

102.1.3 Please provide information specifically on the cost of communications with customers about bills for each of the years 2016 through 2020, specifically so that any COVID-19 2020 impacts can be discerned.

Response:

FEI assumes this IR is asking FEI to provide information specifically on the cost of communications with customers related to customer concerns that bills may be inaccurate for each of the years 2016 through 2020.

[1] These savings are embedded in Confidential Appendix G and more specifically are highlighted as part of the total savings shown in Line 8 of Schedule 2 of Confidential Appendix G-5 to the Application.

As noted in the preamble, FEI does not separately track meter reading-related contacts by communications channel from customers. The estimate of annual meter reading-related inquiries for each of the years 2016 through 2020 and the associated estimated costs are shown in the table below.

Despite a higher number of estimates in 2020, approximate meter reading inquiries were lower than previous years and this is attributed to a number of factors, including FEI's introduction of the Customer Recovery Fund, which allowed customers who met certain criteria to defer payments for three months. In addition, FEI suspended all collections activities in 2020, including late payment charges, disconnections for non-payment, and collections agency referrals. Although meter reading estimates increased, these actions temporarily alleviated customer billing concerns, which in turn likely reduced the volume of customer communications specific to meter reading related inquires. While decreases in this type of inquiry may have occurred, this was offset by increases in other types of inquiries, such as payment arrangements, rebates and construction related interactions with customers.

Year	Meter Reading Inquiries (Estimated)	Average Estimated Cost[2] ($000s)
2016	58,500	434
2017	46,000	341
2018	44,600	332
2019	35,600	264
2020	20,700	154
Average (2016-2020)	41,100	305
Average (2018-2020)	33,600	250

[2] Costs are not tracked and this calculation is based on annual estimated number of meter reading inquiries multiplied by average cost per interaction as used for intercompany cross charge purposes. The average cost per interaction is for the period January 1, 2020 to June 30, 2021, which is the same cost per interaction used in the calculation of the response to CEC IR1 9.1.

103. Reference: Exhibit B-8-1, CEC 1.15.1

15. Reference: Exhibit B-1, Page 32

- New meter readers (or meter readers who are new to a particular route) work less efficiently; they are unfamiliar with the routes and spend more time locating the meter on the premises. This also leads to a greater number of meter readings being estimated until the meter reader is familiar with the route; and

15.1 Please provide the turnover rate for meter readers that Olameter experienced in 2020.

Response:

Since meter reading is an outsourced function, FEI does not have detailed meter reader staffing information and as such, does not have the turnover rate for meter readers for any year. However, based on anecdotal information shared from Olameter throughout the course of the contract on the high level staffing challenges they face, FEI is aware that recruitment and retention of meter readers are challenging and have an impact on overall levels of estimated reads. As demonstrated in Table 3-5, supervisory estimates due to resource challenges is consistently the cause of over half of the estimated reads each year.

Please also refer to the response to CEC IR1 8.3.

103.1 Is it fair to say that Olameter would likely continue to experience meter reader turnover which in turn would continue to result in a high level of meter reads? Please explain why or why not.

Response:

Please refer to Section 3.3.1 of the Application where FEI describes how the nature of manual meter reading work can make it difficult to recruit and retain meter readers (which in turn negatively impacts the total number of estimated meter readings, and therefore the customer experience). Based on this, FEI believes it is reasonable to assume Olameter will continue to experience meter reader turnover.

104. Reference: Exhibit B-8-1 CEC 1.16.1

16.1 Please provide the cost estimate for in-house meter reading that would be comparable to the cost for the Olameter services in 2020 and provide the Olameter cost for 2020 and confirm that this difference would be a future avoided cost achieved by adopting the AMI project.

Response:

The following table provides the 2020 cost estimate for in-house meter reading.

Meter Reading Capital and Costs - $millions	2020
Technology Setup Costs	1.4
Mobile Computing Tablets - 5YR Refresh	0.2
Vehicles - 9YR Refresh	3.0
Total Meter Reading Capital	**$ 4.6**
Cost of Service on Meter Reading Capital	1.1
Meter Reading Labour	12.7
Meter Reading Non Labour	3.4
Total Meter Reading Costs	**$ 17.2**

In 2020, the forecast capital cost to bring meter reading in house would be $4.6 million. The annual operating cost in 2020 would have been $17.2 million. That amount includes $1.1 million cost of service on the meter reading capital, $12.7 million for labour, and $3.4 million for non-labour expenses.

The total amount paid to Olameter in 2020 was $11.9 million. FEI notes price increases are expected for Olameter in 2021 and beyond.

FEI confirms the difference between Olameter's costs and the future cost of in-house meter reading would be a future avoided cost achieved by implementing the AMI Project. However, as discussed in the response to BCUC IR1 22.2, FEI anticipates that the cost of providing manual meter reading in house will become more comparable to third party costs in the future and as such, this difference is expected to lessen over time.

104.1 Did FEI experience any price increases from Olameter in 2021? Please explain and quantify if yes.

Response:

Yes. The original contract for meter reading services between Olameter and FEI expired on December 31, 2020. A new contract was entered into January 1, 2021 with new pricing terms. Under the terms of the new contract, pricing for all services increased in 2021. The price of a regular monthly read increased approximately 17 percent. Price increases for other services differed depending on the service. The new contract is the first time since the original contract was entered into in 2013 that pricing was subject to negotiation.

The renewal contract expires December 31, 2026 and includes inflationary pricing adjustments of 2 percent per year.

Beyond that, and as described in the response to BCUC IR1 22.1, the cost and availability of outsourced manual meter reading is unknown.

104.2 Please provide FEI's best assessment of the price increases expected for Olameter in 2022 and beyond. Please provide in a confidential submission if required.

Response:

Please refer to the response to CEC IR2 104.1.

104.3 Recent news articles have suggested that there may be increases in interest rates in the near future. How does FEI expect that such increases could affect the costs of the AMI project, and the comparative costs of bringing the meter reading in-house?

Response:

The impact of higher interest rates would have minimal impacts to the AMI Project given the fixed contract in place for the deployment of the AMI. It would result in higher financing costs during the deployment of the AMI Project, but the impact to FEI's incremental requirement related to the AMI Project would be minimal as this primarily affects the short-term debt component only. Using FEI's approved 2022 revenue requirement as an example, the short-term debt component makes up of approximately 0.25 percent of FEI's delivery margin.

With respect to the comparative costs of bringing the meter reading in-house versus Olameter's costs under the baseline scenario (i.e., no AMI meters), the higher interest rates would have minimal impact to the in-house meter reading costs as shown in CEC IR1 16.1 since the rates only affect FEI's short-term debt. FEI cannot speculate on the impact of interest rates on Olameter's costs; however, FEI does not expect the conclusions reached on the comparison between in-house meter reading and third-party meter reading costs in the response to CEC IR1 16.1 would change.

105. Reference: Exhibit B-8-1, CEC 1.33.4

> 33.4 Would it become more feasible in the future for the locations where fixed communications infrastructure would be prohibitively expensive to link communications through the emerging space satellite communications infrastructure? Please explain why or why not.
>
> 33.4.1 If it would be feasible, would FEI consider such an option in the future? Please explain.
>
> **Response:**
>
> FEI does not expect space satellite communications infrastructure will become a feasible option for gas meters in the foreseeable future, at least not as a direct to meter communications option for two main reasons:
>
> - A relatively high transmit power is needed to allow two-way communications to a satellite in orbit and would significantly decrease battery life; and
> - Satellite communications require a large, well-aimed antenna. While technically possible, logistically it would be very challenging to affix such a device to customer premises.
>
> Currently, space satellite communications infrastructure is used as backhaul for AMI fixed base stations in locations where more cost-effective options like wireless cellular are not available. Using satellite backhaul will be a feasible option for FEI during deployment of the proposed AMI Project for this application.

105.1 Satellite phones and other satellite communications such as the Garmin In-Reach are readily hand-held. Would FEI consider such devices to be too large? Please explain why or why not.

Response:

While the integrated antenna available on handheld satellite communications devices, such as the Garmin inReach, may be sufficiently small to include as part of a meter set, this is not the sole limiting consideration. Unlike electric AMI meters, gas AMI meters have no external source of power and must rely solely on their internal battery for all metering, processing, and communications functions. As such, if installed as part of an AMI system, a small antenna would also increase the transmission power needed, drastically decreasing battery life. Additionally, it would need to be located some distance away from the customer building in an open area. As stated in the Garmin inReach manual:

> The inReach Explorer needs a clear satellite signal from the sky to complete the setup process. Go outside and stand in an open area away from tall buildings, roof overhangs, and trees.

While these antennae may not be too large, a satellite system is not feasible for the reasons discussed above and in the response to CEC IR1 33.4.

105.2 Please describe how FEI will and/or could be using satellite backhaul during deployment of the proposed AMI project.

Response:

FEI could use satellite backhaul to carry aggregated communications from its FlexNet Base Stations to the Head End System. Base Stations are located on tall infrastructure, and generally have unobstructed views of large portions of the sky. This is important when using satellite communications as it maximizes the probability of being able to "see" and therefore be able to communicate with orbiting satellites. In addition, Base Stations are supplied from the electric power grid, and so the level of transmit power needed is not constrained by a battery as is the case for the proposed AMI meters.

106. Reference: Exhibit B-8-1, CEC 1.36.5

> 36.5 Please quantify the potential revenue opportunity under some specified assumptions with respect to shared use of this infrastructure platform.
>
> **Response:**
>
> To date, FEI has had discussions with a number of municipalities across BC for two main purposes:
>
> - To understand which municipalities are developing water metering programs; and
> - To introduce FEI's AMI project and the potential to use the network infrastructure available for their planned water metering programs.
>
> The goal of these early discussions has been to attempt to quantify the number of metering endpoints each municipality is contemplating and also to communicate the timelines of FEI's AMI Project deployment schedule to better understand how FEI's timeline coincides with each municipality's schedule.
>
> At this point in time, it is too early for FEI to quantify the potential revenue opportunity with respect to the shared use of its infrastructure.

106.1 When does FEI expect to be able to quantify the potential revenue opportunity?

Response:

FEI will consider engaging in discussions with interested municipalities related to commercial terms for the use of shared infrastructure only if the Application is approved.

FEI also notes that the need to automate the meters for its customers as described in the Application is not dependent on the potential revenue opportunity that may result from the sharing of infrastructure with municipalities, and no estimate of this revenue has been included in the financial analysis for the Project. Any revenue that may be realized from this potential opportunity would serve to further mitigate rate impacts for FEI's customers.

106.2 Would FEI consider deferring its AMI project until this opportunity can be quantified? Please explain why or why not. Please also explain how FEI can easily proceed with some degrees of uncertainty.

Response:

FEI would not consider deferring the AMI Project until the infrastructure sharing opportunity can be quantified. The need to automate meter reading for FEI customers as described in the

Application is not dependent on the potential revenue opportunity that may result from the sharing of common infrastructure with municipalities.

Further, as explained in the responses to BCSEA IR1 6.1, BCUC IR1 22.1 and 22.3, and BCOAPO IR1 5.1, the uncertainty in the manual meter reading marketplace has led FEI to move forward with the Project at this time. This will ensure that FEI and its customers are not left in a vulnerable position later, requiring a significant, short-term investment in a meter reading solution that is trending toward obsolescence.

106.3 Did FEI consider the possibility of completing a joint project, or Public Private Partnership, with one or more municipalities such that the municipalities assume a portion of the capital costs? Please explain why or why not.

Response:

FEI did not consider the possibility of completing a joint project with one or more municipalities. The municipalities that expressed interest in discussing FEI's AMI Project were exploring various alternatives toward developing their own strategies related to metering. The municipalities were each at different stages in their planning cycles and many were gathering information regarding the different types of vendors and technologies that are available in the marketplace. It would not be efficient or practical to develop a joint project given the degree of uncertainty regarding the technology and timing, and the large number of different municipalities that would potentially be involved.

106.4 Would FEI consider it possible to defer the AMI project and pursue such a joint project? Please explain why or why not.

Response:

No. Please refer to the responses to CEC IR2 106.2 and 106.3.

107. Reference: Exhibit B-8-1, CEC 1.44.1 and 1.44.3

> 44.1 Please provide FEI's historical frequency of requirements for these sensor-related system characteristics anomalies.
>
> **Response:**
>
> FEI performs approximately 1,100 corrective maintenance repairs on distribution system stations per year, on average.
>
> Currently, most distribution stations use mechanical recorders to track the station's operational performance. FEI employees drive to these stations and review the information captured by the mechanical recorder on a monthly basis. If, after review, the station's operational performance does not meet expected parameters (e.g., gas pressure and/or temperature) FEI takes corrective action, which could include corrective maintenance. This manual process can create a delay as long as a month before the station's operational performance is identified.
>
> FEI has identified 175 distribution system stations that will be upgraded from manual monitoring to AMI-enabled automated monitoring. AMI will allow FEI to receive distribution station alarms in near-real time. This automation will allow FEI to respond more quickly to distribution system station operational issues, which will improve FEI's ability to provide reliable service to customers.

> 44.3 Please identify and quantify to the extent possible the benefits of more timely maintenance and repair activities.
>
> **Response:**
>
> FEI is unable to directly quantify the benefits associated with more timely maintenance and repair activities. However, the following example illustrates the reduced costs and durations associated with the detection and repair of underperforming cathodic protection (CP) systems, which are critical to ensuring the safety and reliability of buried steel pipelines.
>
> The Canadian Standards Association (CSA) Standard Z662 *Oil and Gas Pipeline Systems* references the Canadian Gas Association (CGA) Best Practices OCC-1-2013 *Control of External Corrosion on Buried or Submerged Metallic Piping Systems* with respect to the monitoring of impressed-current CP systems states that: "[…] impressed current sources should be monitored at a frequency of once every 2 months. Longer or shorter intervals may be appropriate. Evidence of proper functioning may be current output, normal power consumption, a signal indicating normal operation, or satisfactory cathodic protection potential levels of the protected piping." [10]
>
> Currently, FEI takes manual readings on a monthly schedule, and not exceeding six weeks. Consequently, a CP system could be operating below specification for up to six weeks before being tested and any deficiencies identified. Following the installation of the AMI network and associated field sensors, real-time monitoring will reduce the time to identify and react to problems to days, instead of a month or more. Reducing this delay improves the overall health of FEI's underground assets and reduces the probability of future corrective maintenance or asset replacements. As well, the automated nature of the CP monitoring provided by AMI will reduce the manual testing activities currently conducted by FEI technicians, as identified in Section 6.2.2.4 of the Application.

107.1 Has FEI captured any of the cost savings expected from improved distribution maintenance repairs arising from AMI in its application?

107.1.1 If no, please explain why not.

107.1.2 If no, will FEI do so in the future so that ratepayers receive the benefit of such operational savings under an MRP regime? Please explain why or why not.

107.1.3 How will FEI gather and report the various cost savings that arise from the project that are not anticipated and/or quantified in the Application so that ratepayers receive the full unshared benefit of the cost savings, given that the ratepayers will be covering the full costs of the capital investment and the full costs of the operations of the implemented AMI project?

Response:

As discussed in the response to CEC IR1 44.3 cited in the preamble, the real-time monitoring provided by the AMI system could reduce the time for FEI to be made aware of a problem existing within the distribution system from approximately 4 to 6 weeks to just day(s), and therefore reduce the time to identify and respond to the problem. However, it is not possible for FEI to predict in advance the nature or timing of individual problems within the distribution system. As such, FEI is not able to quantify the cost to mitigate the problems, nor the associated savings due to the shorter time period for identifying the problems. For these reasons, FEI conservatively has not included these potential savings in the financial analysis for evaluating the AMI Project.

FEI clarifies that, although the potential savings for the reduced time associated with identifying and mitigating problems within the distribution system due the AMI Project were not included in the financial analysis for evaluating the AMI Project, it does not mean that these potential savings will not be realized. As described in Section 6 of the Application, the deployment phase of the proposed AMI Project is from 2023 to 2026 with the majority of the savings from AMI realized during the post-deployment phase from 2027 onward, which is well after the current MRP term (2020 to 2024). Incremental costs and savings due to the implementation of AMI will be a consideration in future rate setting proceedings, along with all of the other changes that are relevant at that time.

108. Reference: Exhibit B-8-1, CEC 1.50.3.1

> 50.3.1 Please briefly describe these types of changes.
>
> **Response:**
>
> To facilitate the work described in CEC IR1 49.1, the addition of network routers, switches, and firewalls will be required, as well as the procurement of leased data circuits between FEI and Sensus data centres.

108.1 Does FEI expect that there will be additional benefits arising from new network routers, switches, and firewalls that will be required that extend beyond the AMI project? Please explain why or why not.

108.1.1 If yes, please describe these benefits and identify whether or not they are captured in the AMI application.

Response:

For security reasons FEI does not expect the referenced infrastructure would be used for applications not falling within the scope of the AMI Project.

109. Reference: Exhibit B-8-1, CEC 1.55.1

55. Reference: Exhibit B-1, Page 70

3. Enable remote turn off/on (valve closure/open) of gas service for residential and small commercial meters;
4. Turn off gas supply to large groups of customers quickly in the event of an emergency, for residential and small commercial meters;

55.1 Please confirm or otherwise explain that it is the bypass valve sets along with the module placed on the gas meter that are instrumental in enabling the turn off/on function and the particular benefits associated with being able to control the gas supply to customers at the customer site.

Response:

AMI's ability to remotely turn off or on a residential or small commercial gas service is solely reliant on the AMI network and the advanced meter's internal valve; it is not reliant on the bypass valve. The bypass valve allows a field technician, when at a customer's premises, to perform maintenance on the meter set without having to interrupt gas supply to the customer.

109.1 Does FEI expect that electrical outages could be associated with gas emergencies? Please explain why or why not.

Response:

FEI anticipates that electrical outages could be associated with gas emergencies. For example, a gas emergency may require the electricity to be shut off to a premises in order to eliminate a potential source of ignition. As well, certain types of natural disasters (e.g., major landslides, wildfires, etc.) could conceivably result in a loss of both gas and electric service to customers in a local area.

109.2 Would or could an associated electrical outage negate the benefits of the AMI in an emergency? Please explain.

Response:

FEI's AMI network will be designed such that the majority of advanced meters will connect to at least two Base Stations. This network redundancy will allow the vast majority of FEI's advanced meters to remain connected to the network if one of the Base Stations loses electrical power or fails for other reasons. Further, FEI's Base Stations will be equipped with a backup local power supply which allows the Base Station to remain operational for some time after an electrical outage. In the extremely unlikely event that a lengthy electrical outage impacts all the Base Stations in an area that can communicate to an advanced meter, FEI's ability to remotely disconnect meters could be impacted. However, because FEI's proposed advanced meters are

battery powered, the meters themselves will still be capable of collecting consumption readings, and performing high-flow or high-temperature shutoffs that are local to the meter. Further, FEI employees attending an emergency during a power outage would be capable of both controlling the meter valve and collecting information from the meter from the street, such as readings and diagnostic information, therefore avoiding the need to enter the customer's property.

Please also refer to the responses to BCOAPO IR1 8.2 and ICLR IR1 1.9 and 1.10.

110. Reference: Exhibit B-8-1, CEC 1.59.2

> 59.2 Please indicate whether either or both of these modules have any ability to communicate with customer appliances and/or equipment if necessary and approved by the customer.
>
> **Response:**
>
> The Sensus Sonix IQ meter can be equipped with a volume-based pulse output that can be used by customer-owned energy management systems to monitor energy usage. This functionality requires wiring directly to the meter, and is not analogous to the home area network functionality that is offered by electric advanced meters.
>
> FlexNet SmartPoint modules do not offer a similar option. Volume-based pulse outputs are typically provided by the host meter to which the SmartPoint module is connected.

110.1 Is it likely that future generations of gas appliances and/or heating will be developed in a manner that affords the same home area network functionality offered by electric advanced meters? Please explain why or why not.

110.1.1 If yes, how and when would FEI expect to incorporate such attributes into its AMI infrastructure? Please explain.

Response:

While FEI considers it probable that future generations of gas appliances will be capable of participating in wireless home energy/automation systems, it is unlikely to be similar to the home area network (HAN) functionality offered by electric advanced meters. FEI notes that there has been a trend in home automation moving away from having the utility meter as a network hub and toward the devices just participating in the customers' existing Wi-Fi network.

Gas meters are battery-powered devices and therefore participation in a HAN network would significantly impact battery life, requiring frequent replacement of batteries or, in the case of FEI's AMI meters, the entire meter itself.

111. Reference: Exhibit B-8-1, CEC 1.60.1

60. Reference: Exhibit B-1, Page 79

5.4.1.4.1 SENSUS ANALYTICS

Sensus Analytics (SA) is Sensus' meter data management software application that stores, validates, and processes high volumes of data sent from End Points. Its data management tools aggregate information from multiple systems to produce bill-ready data for use by FEI enterprise systems.

60.1 Please confirm whether or not the SA is also capable of supplying customer information to FEI's customer portal or whether FEI will have to be creating this integration themselves.

Response:

The SA application is capable of, and ultimately will be, supplying the customer information to FEI's customer portal. However, an integration is still required between FEI systems and the SA for this to occur.

111.1 When does FEI expect that such integration will occur?

Response:

Please refer to the response to BCUC IR1 16.4.

111.2 What changes will be required for this integration, and at what cost?

Response:

As discussed in Section 5.4.1.2 of the Application, standards-based interfaces will be used so changes to the underlying applications are not expected. These integration costs are included in the Project and form part of Lines 2 and 3 of Schedule 5, Appendix G-1 of the Application.

111.3 Is this integration cost incorporated in the project cost?

Response:

FEI confirms that all integration costs for connecting the SA application to FEI systems are included in the Project costs.

112. Reference: Exhibit B-8-1, CEC 1.62.1 and 1.63.1

62.1 Please confirm that neither the AMI Program Director nor the AMI Project Director, Technology will have responsibility for ensuring that all of the benefits for the project are realized and are optimized to ensure a cost-effective delivery of the benefits of automation of the FEI meter reading.

Response:

The AMI Project team, led by the AMI Program Director, and including the AMI Project Director, Technology, the AMI Project Director, Deployment, and the AMI Project Director, Planning & Governance are responsible for realizing the Project benefits and the cost-effective management of the Project.

63. Reference: Exhibit B-1, Page 88

5.6.3.2 AMI Project Director, Planning & Governance

The *AMI Project Director, Planning & Governance* is accountable for establishing the methodology for managing the Project and oversees the development of policies, procedures and governance practices required for Project control. This role guides detailed planning of the Project master integrated plan for all scope; signs off on major deliverables; provides approvals to proceed to each succeeding Project phase; resolves and/or escalates issues; and provides guidance and direction to the FEI Planning & Governance team responsible for project reporting, financial management, contracts administration, regulatory and legal interactions, community relations and change management.

63.1 Please confirm that the AMI Project Director, Planning & Governance does not have responsibility for ensuring that all of the benefits for the project are realized and are optimized to ensure a cost-effective delivery of the benefits of automation of the FEI meter reading.

Response:

Please refer to the response to CEC IR1 62.1.

112.1 Please describe the processes that will be undertaken to assess and report the realization of the benefits.

112.1.1 Please explain when the final evaluation of the project will be completed.

Response:

FEI understands the question to be asking how the realization of benefits will be assessed and reported to the BCUC.

The framework for managing the benefits will be defined during the planning phase should the Application be approved. Periodic reviews will be conducted during execution to monitor the benefit measures and confirm that the Project is on track in terms of benefits realization. FEI will report on the progress of the AMI Project as part of the CPCN reporting requirements pursuant to a BCUC order on the Project.

1 FEI will file a final report with the BCUC upon Project completion.

2

113. Reference: Exhibit B-8-1, CEC 1.64.1

> **64. Reference: Exhibit B-1, Page 89**
>
> 5.7.1 Risk Analysis and Management
>
> FEI engaged Yohannes Project Consulting Inc. (YPCI), a company specializing in risk management, to guide FEI's risk analysis. In accordance with FEI's risk management framework, risk drivers were quantitatively and qualitatively identified. The detailed Risk Analysis and Risk Register (the YPCI Risk Report) is included as Confidential Appendix E-1.
>
> 64.1 Please provide (confidentially if necessary) all comments provided by YPCI with respect to the FEI risk management framework that we aimed at improving FEI's risk management process.
>
> **Response:**
>
> The kinds of comments posited in the question did not arise. The risk management framework that was used pre-exists the Project-specific risk analysis that was performed. The framework has been applied on other FEI projects as well. YPCI was involved in developing that framework and has, since then, applied it on several occasions including in relation to the Project.

113.1 Does FEI ever review its risk management framework with experts that did not design the then-current one? Please explain why or why not.

113.1.1 If yes, when does such review normally occur, and what experts does FEI engage?

Response:

FEI confirms that the risk management framework was reviewed by an independent expert that did not design the document: Validation Estimating LLC, USA (Validation Estimating, John Hollmann), a company that provides services in estimate validation, risk analysis and contingency estimation. The review was completed in June 2019. The framework is aligned to the AACE Total Cost Management framework and recommended practices. If the AACE framework or practices are updated FEI will update its framework, as needed.

114. Reference: Exhibit B-8-1 CEC 1.76.1 and Exhibit B-6, BCUC 1.25.1

> **76. Reference: Exhibit B-1, Page 106**
>
> 6.2.2.2 *Meter Installation O&M*
>
> Currently, FEI allocates 14 percent of the meter exchange installation cost to O&M and this has been included in both the AMI Solution and Baseline scenario. However, for the AMI Solution, the incremental meter exchange activities in the Deployment phase are not allocated to O&M, as these activities are incremental to normal operation. All of the exchanges in the Post-deployment phase are allocated 14 percent to O&M.
>
> 76.1 Please explain why FEI allocates 14% of the meter exchange installation costs to O&M.
>
> **Response:**
>
> Please refer to the response to BCUC IR1 25.1.

> 25.1 Please discuss whether the accounting treatment of meter exchange activities being retained as O&M is in accordance with US Generally Accepted Accounting Principles, including appropriate references.
>
> **Response:**
>
> FEI currently allocates a portion (i.e. 14 percent) of the residential meter exchange installation costs to O&M to recognize maintenance activities that are performed in conjunction with the meter exchange and that some of the meter exchanges do not result in an upgrade to the existing meter set assembly (i.e. meter valve, nipples, regulator, and fittings). The majority of the meter exchanges, however, do involve the replacement of substantial portions of the meter set assembly, resulting in an upgrade and extension to the life of the assets with the costs capitalized. This accounting treatment where a portion of the meter exchange activities is considered as O&M is in accordance with US GAAP, since these activities are considered routine maintenance costs which are required to be expensed as incurred. This is consistent with the principles outlined in Accounting Standards Codifications (ASC) 360, *Property, Plant, and Equipment.*
>
> US GAAP is broadly principles based; therefore, the amount of actual guidance to reference is minimal. Instead, FEI has included a reference below from the interpretive guidance released by the international audit and assurance firm Pricewaterhouse Coopers (PwC) which provides a summary of the treatment of maintenance costs under US GAAP. The excerpt is from PwC's May 2021 *Property, plant, equipment and other assets* publication.

114.1 The CEC has reviewed the evidence in BCUC 1.25.1 and does not find an explanation as to why 14% was selected as the appropriate portion. Please explain.

Response:

The allocation of 14 percent of the costs to perform residential meter exchanges to O&M is based on the estimated maintenance activities that are performed in conjunction with the meter exchanges and also takes into account that some meter exchanges do not result in an upgrade to the existing meter set assembly. In determining the estimated 14 percent rate, FEI reviewed the activities for residential meter exchanges and developed an appropriate allocation between

1 O&M and capital costs that is representative of the portion of meter exchange costs attributable
2 to maintenance activities (O&M treatment) and to upgrade activities (capital treatment).

3

115. Reference: Exhibit B-8-1, CEC 1.78.1 and 1.78.2

78.1 Please discuss whether or not FEI would expect to have ongoing costs related to opt-out customers and dealing with their concerns and also with any charges FEI would be implementing for the opt-out option.

Response:

As discussed in Sections 5.8.4 and 5.8.4 of the Application, FEI is proposing that customers choosing to opt out will be responsible for the incremental costs of choosing a radio-off AMI meter through a one-time set up fee and a monthly manual meter reading fee thereafter. Therefore, FEI anticipates the ongoing costs related to customers choosing to opt out of a radio-on meter will be offset by the opt-out fees.

78.2 Please quantify the potential costs for opt-out customer management.

Response:

Please refer to the response to CEC IR1 78.1. As discussed in Section 5.8.5 of the Application, FEI has not yet quantified the opt-out costs, but expects to file for approval of any necessary tariff changes, including opt-out fees at least six months prior to the Project's first regional deployment.

115.1 How frequently does FEI expect to: (a) apply for rate changes, (b) adjust the manual meter reading fees, and (c) adjust its opt-out costs for radio-on meters? Please provide the rationale.

Response:

As discussed in the response to CEC IR1 78.2, if the BCUC approves the Application, FEI will file a further application approximately six months prior to the Project's first regional deployment which will address revisions required for FEI's General Terms and Conditions (GT&Cs) to support AMI implementation, including FEI's Radio-Off Program and associated fees. Once the Radio-Off Program and fees are initially approved by the BCUC, FEI expects that the rates/charges for these fees would be periodically reviewed through FEI's Rate Design Applications, consistent with how all other standard charges in the FEI and FBC GT&Cs are reviewed.[3]

[3] FBC 2017 Cost of Service Analysis and Rate Design Application (2017 RDA), Decision and Order G-40-19, the BCUC approved an increase to the Per-read fee for the Radio-Off AMI option from $18 to $19.50 effective July 1, 2019.

115.2 Would FEI consider requesting a formulaic increase at the time of application to reflect inflation or other predictable cost escalators? Please explain why or why not.

Response:

Please refer to the response to CEC IR2 115.1 where FEI explains that the design of the fees will be the subject of a future application.

116. Reference: Exhibit B-8-1, CEC 1.81.2 and 1.81.5 B-6, BCUC 1.29.4

81.2 Please explain why FEI would propose an amortization period of 5 years instead of 10 years to match the estimated remaining life of the existing meters.

Response:

Please refer to the response to BCUC IR1 29.4.1.

29.4 Please discuss the advantages and disadvantages of amortizing the Existing Meter Cost Recovery deferral account over ten years as compared to five years and please provide the resulting rate impact if a 10-year period was selected in a revised incremental financial analysis.

Response:

Increasing the amortization period of the proposed Existing Meter Cost Recovery deferral account from five years to ten years would result in a small increase to the incremental levelized delivery rate impact over the 26-year analysis period by 0.002 percent from 0.125 percent to 0.127 percent. This increase is primarily due to the increased rate base return on the deferral account for a longer period of time, which offsets the lower annual amortization expense due to a longer amortization period.

From a ratepayer perspective, the advantage of amortizing the proposed Existing Meter Cost Recovery deferral account over ten years versus five years would be the lower annual amortization expense in the delivery rates in the short term. A longer amortization period will help to smooth out the initial incremental delivery rate increase due to the AMI Project. For instance, with a five-year amortization period, the incremental delivery rate increase due to the AMI Project will peak at 4.8 percent while the incremental delivery rate increase would peak at 3.7 percent if a ten-year amortization period is used.

However, as mentioned above, the disadvantage of increasing the amortization period to ten years would be a higher incremental delivery rate impact over a long term (i.e., 26-year analysis period) due to having ten years of rate base return on the balance of the deferral account rather than five years.

81.5 Please confirm that the amortization of the existing meters shows in the cost-of-service analysis as an amortization value spread out over the full analysis period of 26 years.

Response:

Not confirmed. As discussed in Section 6.3.2.4 of the Application, the proposed amortization period of the Existing Meter Cost Recovery deferral account, which captures the $79 million, is 5 years commencing the year after the deferral addition in 2023. This results in amortization in years 2024 to 2031. The deferral account additions and amortization can be reviewed in Confidential Appendix G-3, Schedule 9, Lines 12-18.

116.1 Is it fair to say that increasing the amortization period to 10 years would improve intergenerational inequity, in that later customers will continue to receive the benefits of the AMI project? Please explain why or why not.

Response:

FEI does not believe there is an issue of intergenerational inequity with the Existing Meter Cost Recovery deferral account; therefore, intergenerational inequity would neither be lessened nor increased by changing the proposed amortization period from 5 years to 10 years.

First, FEI does not believe that 10 years or less would be considered as intergenerational. Second, FEI does not believe, and has no historical data to support, that FEI's customers of today will be mostly or entirely replaced by a future generation of customers within a period of 10 years or less. In fact, FEI believes the vast majority of existing customers will likely remain as FEI's customers over the next 10 years; therefore, the amortization of the Existing Meter Cost Recovery deferral account will cover the majority of the same customer group regardless of whether the amortization period is 5 or 10 years.

116.2 With a more rapid write off of the costs, does FEI receive a reduction in taxation costs and, if so, is it possible for FEI to have a longer amortization for its customers rates while at the same time taking a more rapid amortization for taxation purposes?

Response:

FEI interprets this question to be referring to the Capital Cost Allowance (CCA) related to the existing meters that is deducted from FEI's income for tax purposes. There would be no change to the CCA regardless of the amortization period. The retirement of the existing assets and transfer to the deferral account will not result in a change to the undepreciated capital cost (UCC) pool of the existing assets; therefore, there would be no change to the CCA deduction.

117. Reference: Exhibit B-8-1, CEC 1.83.1 and 1.83.1 and Exhibit B-6, BCUC 1.31.3

81.5 Please confirm that the amortization of the existing meters shows in the cost-of-service analysis as an amortization value spread out over the full analysis period of 26 years.

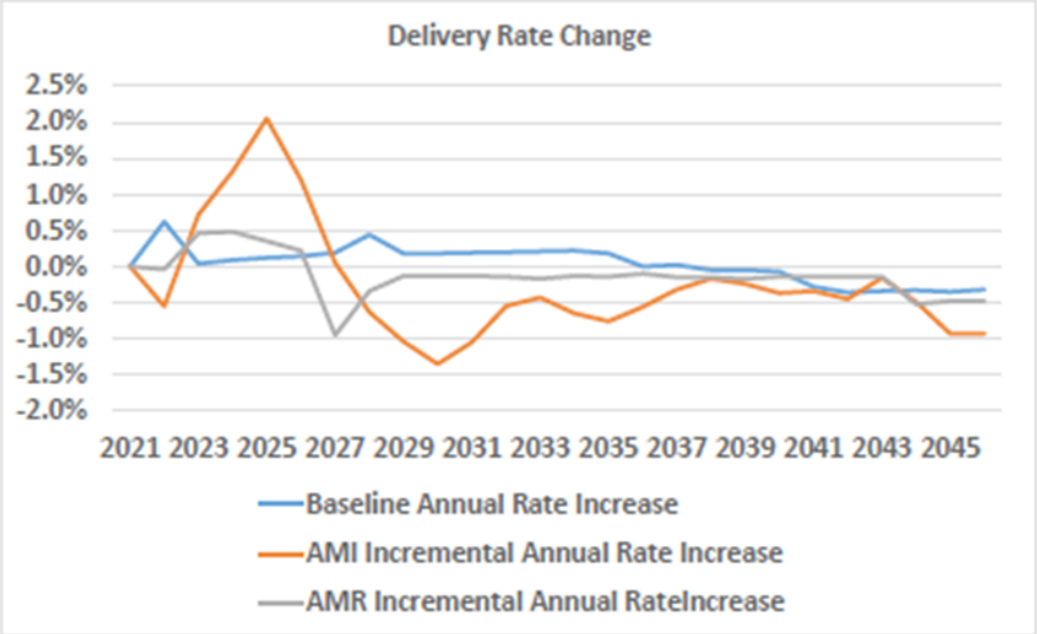
Response:

Not confirmed. As discussed in Section 6.3.2.4 of the Application, the proposed amortization period of the Existing Meter Cost Recovery deferral account, which captures the $79 million, is 5 years commencing the year after the deferral addition in 2023. This results in amortization in years 2024 to 2031. The deferral account additions and amortization can be reviewed in Confidential Appendix G-3, Schedule 9, Lines 12-18.

83.2 Please provide FEI's proposed changes to delivery rate over the full 26 year analysis period in a graphic form with numerical data attached.

Response:

Please refer to the response to BCUC IR1 31.3. FEI clarifies these are not the proposed delivery rate changes from 2021 to 2046. They are what the expected annual delivery rate impacts would be when compared to the Baseline (i.e. incremental to the Baseline) based on the forecast capital and O&M costs over the 26-year analysis period. The actual delivery rate changes from 2021 to 2046 will depend on the revenue requirements of those individual years.



117.1 What options or range of options would FEI consider as being reasonable in order to maximize rate smoothing and minimize intergenerational inequity?

Response:

Deferral accounts are generally used for rate smoothing and to address intergenerational equity concerns. Based on the forecast rate changes associated with AMI, FEI does not foresee a need for such a mechanism. If there is a need for a deferral account in the year or years that AMI rate impacts materialize, this should be considered in future revenue requirement proceedings. As part of revenue requirement proceedings, all components of FEI's revenue requirement are reviewed and the actual rate impact in a given year is known. It is only when all components of FEI's revenue requirement are reviewed together that FEI can determine if any rate smoothing mechanism is warranted.

118. Reference: Exhibit B-8-1, CEC 1.84.1

> 84.1 If FEI is also able to make use of the information to develop new DSM programs, please explain when FEI expects to have enough data to make changes to its DSM programs, and when these would be presented to the Commission.
>
> **Response:**
>
> Although there are claimed benefits associated with leveraging AMI technology to enhance natural gas conservation and energy efficiency programs, further research and field pilots will be required to assess and quantify feasibility prior to developing new DSM programs enabled by AMI data. FEI expects to conduct exploratory research in early 2022 and then assess whether a pilot would be the appropriate next step once AMI is in place. The results of that pilot would be used to assess whether it is feasible to develop a larger scale DSM program which would then go through FEI's program development and approval process.

118.1 What progress has FEI made in planning for the exploratory research to be conducted in early 2022? Please explain.

Response:

FEI has not yet begun the exploratory research. This research project is planned to begin during the first quarter of 2022. Some of the key information gaps that FEI intends this research to explore include: determining pathways and technologies to integrate AMI solutions with Demand Side Management (DSM) offerings; conducting benchmarking research; and determining what barriers, limitations, or risks may exist.

118.2 Please identify which part of the organization will be responsible for conducting the exploratory research.

Response:

FEI expects that the Innovative Technologies program area within the Conservation and Energy Management department will be responsible for conducting the exploratory research.

118.3 When does FEI expect to provide information related to initiating the exploratory research to the Commission, if at all?

Response:

FEI does not typically provide DSM-related exploratory research and study reports to the BCUC but does submit annual reports on DSM expenditures and energy savings. This annual compliance filing will list progress and/or high-level results from this research and, to the extent the exploratory research leads to new program offerings, those expenditures would be included in a future application to the BCUC for approval.

118.4 Is the exploratory research conducted outside of the MRP formula? Please explain.

Response:

As discussed in the response to CEC IR2 118.2, the Innovative Technologies program area within the Conservation and Energy Management department will be responsible for conducting the exploratory research. DSM expenditures and the Conservation and Energy Management department costs are recorded in the DSM deferral account outside of the MRP formula.

119. Reference: Exhibit B-8-1, CEC 1.85.1

> **85. Reference: Exhibit B-1, page 140**
>
> The Project will also support the energy objective stated in section 2(k) of the CEA "to encourage economic development and the creation and retention of jobs". The Project will support this objective by creating jobs and contributing to the local economy. The Project will create jobs in BC through FEI's contractors, and result in the procurement of goods and services from locally-owned and operated vendors and subcontractors. FEI also anticipates an increase in the use of local services, such as dining, accommodations and other services, during deployment, which will benefit the economy.
>
> 85.1 Does FEI expect that the Project will result in Net job increases, accounting for any loss of jobs occurring in meter reading? Please explain and quantify.
>
> **Response:**
>
> FEI will determine internal job impacts during the Define phase of Project implementation (as described in Section 5.5.1.2 of the Application). FEI has estimated automation will result in a reduction of internal activities, which will be offset by new AMI activities and expanded scope of work. Overall, the Project is estimated to result in a net job reduction from current levels, which includes currently outsourced meter reading positions.

119.1 Please explain how the change in Net Jobs will impact the results of the MRP, and please provide potential examples with quantification.

Response:

Please refer to the response to CEC IR2 102.1.2 where FEI discusses the treatment of AMI costs and savings during the term of the MRP. This treatment encompasses the impacts of the changes in meter reading jobs.

FEI is unable to determine the net change in jobs at the present time or to provide an example of quantification for the potential savings resulting from the net change in jobs. As discussed in the response to CEC IR1 85.1 and cited in the preamble, FEI will determine internal job impacts during the Define phase of the Project implementation should the Project be approved. Overall, the AMI Project is estimated to have a net O&M savings of $4.7 million during the deployment phase and $313.9 million during the post-deployment phase, which would include the impact due to the net change in jobs.

120. Reference: Exhibit B-8-1, CEC 1.85.2

> 85.2 How did FEI determine that jobs would be created and that there would be contributions to the local economy?
>
> **Response:**
>
> FEI's determination that jobs would be created and that there would be contributions to the local economy is based on the scope of the Project. Deployment is expected to take three years, and will take place throughout the province. It is FEI's expectation that the Project contractors will be hiring people locally to perform much of the work, and will make other economic contributions through travel, lodging, and the need for other services.

> 85.3 Please provide a chart identifying the expected number of incremental FTE's matched with the following information, and please provide the source of the data:
>
> - Type of employment;
> - Location/local economy affected;
> - Estimated annual wage;
> - Expected timeframe and duration of employment.
>
> **Response:**
>
> As noted in the preamble, FEI expects that jobs will be created through FEI's Project contractors. As FEI is continuing to develop its deployment strategy, the Company is unable to provide the requested details at this time.

120.1 When FEI does not have definitive analytical information, such as in this case, can FEI please make its best estimate of the potential impacts?

Response:

FEI interprets this question as asking FEI to make its best estimate of the expected number of jobs that will be created and the contributions to the local economy as a result of the Project.

FEI anticipates the type of employment could include licensed gasfitters, meter installers, and customer service representatives throughout its service territory at rates in line with that type of work and throughout the period of deployment. FEI anticipates other contributions to the economy could include travel-related goods and services, such as restaurants, accommodations, and fuel.

However, FEI continues to develop its deployment strategy and is unable to provide additional details at this time.

120.2 What indicators, if any, does FEI have about individuals or businesses operating in the local economy who also anticipate a benefit to them arising from the project?

Response:

FEI assumes the benefits referred to in this IR are the benefits that local individuals or businesses might experience during the Project, such as potential employment opportunities or the ability to provide goods and services required by the Project.

FEI has not determined specific individuals or businesses and how they will benefit; this work will be advanced once the Project is approved and the deployment strategy is developed.

121. Reference: Exhibit B-8-1, CEC 1.86.1

> 86.1 Recognizing that natural gas and electricity often have different end-uses, with differing demand drivers (natural gas often being used for heating and hot water), please confirm that the end-use benefits expected to be achieved from AMI type electricity information can also be achieved from natural gas use. For instance, with AMI type information from natural gas, customers could be inspired to turn down their thermostat, or take showers instead of baths, resulting in reduced natural gas use.
>
> **Response:**
>
> FEI could not find a study that confirms that the end-use benefits expected to be achieved from AMI type electricity information can also be achieved from natural gas use. However, FEI agrees with the general presumption in the question that where natural gas and electricity can be used for the same end use, the application of AMI should result in similar benefits.

121.1 Would FEI be willing to promote the end-use benefits over a period of time, and conduct such a study? Please explain why or why not.

Response:

As discussed in the response to CEC IR2 118.1, FEI intends to conduct exploratory research to assess the opportunity for new DSM programs enabled by AMI data. If this research and subsequent work results in the confirmation of end-use benefits, then FEI would look to promote the end-use benefits as part of the applicable program marketing.

121.2 Could FEI please make its best estimate of the potential benefits under the assumption that it will be possible and could be done? Please explain.

Response:

Providing the type of gas consumption information available from AMI could result in customer behavior changes such as turning down the thermostat or taking showers instead of baths. However, as discussed in the response to CEC IR2 118.1, further exploratory research is required in order to make estimates of the potential energy conservation benefits.

122. Reference: Exhibit B-8-1, CEC 1.88.1

88. Reference: Exhibit B-1, page 142 and page 143

> **8.3 *LONG TERM GAS RESOURCE PLAN***
>
> FEI's most recent Long Term Gas Resource Plan (LTGRP) was filed on December 14, 2017 (2017 LTGRP) and was accepted by the BCUC on February 25, 2019 by Decision and Order G-39-19. The 2017 LTGRP cites advanced metering solutions in a number of instances as important for gaining better data on customer usage that would allow the utility to better plan its
>
> In Section 2 of the 2017 LTGRP, FEI describes the importance of innovative and integrated customer solutions for positioning natural gas services competitively within BC's energy marketplace for the benefit of all customers. Advanced metering is cited as a potential solution that FEI is exploring.
>
> In addition, FEI responded to a number of information requests (IRs) on AMI technologies related to carbon emissions, demand side management and demand forecasting. In responses to IRs, FEI referred to its investigation of AMI for load aggregation, efficiency, and detection of fugitive emissions.[132]

88.1 **Please confirm that the LTGRP and the application proceeding may be considered to be on the record in this proceeding.**

Response:

Not confirmed. FEI does not believe that the 2017 LTGRP and the application proceeding materials may be considered to be on record in this proceeding. Any materials from the 2017 LTGRP proceeding would need to be specifically filed in this Application's proceeding in order to be considered on record. As the LTGRP was a public proceeding, FEI and interveners can refer to information from that proceeding without placing it on the record.

122.1 Please confirm that this reply would also apply with respect to other FEI public proceedings other than the LTGRP, and that reference to prior public proceeding records may be made by interveners, particularly the prior FBC AMI project record and any BCH SMI related or other BCUC public proceedings dealing with EMR, all without a requirement to have these specifically filed in this proceeding.

Response:

Confirmed.

123. Reference: Exhibit B-8-1, CEC 1.90.1 and Exhibit B-6, BCUC 1.36.4

> 90.1 Please provide a summary list of the lessons learned from the FortisBC AMI experience.
>
> **Response:**
>
> Please refer to the response to BCUC IR1 36.4.

> 36.4 Please explain the lessons learned from FBC's deployment of advanced meters pertaining to consultation, engagement and communications.
>
> **Response:**
>
> FEI has observed the following lessons learned from FBC's Electric AMI project:
>
> - Early engagement and consultation about the Project with customers and stakeholders and Indigenous groups is key to helping inform further consultation and engagement planning and development;
> - Effective communications and consultation need to be frequent, timely, centralized, and easy to understand;
> - Information sessions should be interactive, engaging, and valuable to those who attend;
> - Notification letters should provide Project updates and upcoming appointments;
> - Advertisements should notify when technicians will be in the area; and
> - Customers prefer scheduled appointments as opposed to regional unscheduled installs.
>
> Lessons learned are based on customer consultation such as information sessions and feedback received throughout the FBC project. FEI anticipates that the aforementioned lessons learned will be consistent between FBC and FEI customers and therefore are foundational in the Consultation, Engagement, and Communications plan for the Project.

123.1 A key issue in the FortisBC AMI deployment was a concern over radio frequencies. To the best of FEI's knowledge, has there been any significant change in the evidence related to this topic since the FBC AMI deployment? There will have been considerable new evidence developed by interested parties, but please comment on whether or not FEI or any of the experts it consults have identified any new evidence which would require changes to the installation of FEI's AMI project.

123.1.1 If yes, please provide FEI's understanding of any changes in the evidence.

Response:

To FEI's knowledge, the scientific consensus relating to the health implications resulting from exposure to radio frequencies has not changed in the time since FBC's AMI deployment.

The following additional response has been provided by Exponent.

No, there has not been any significant change in the evidence related to radiofrequency fields (RF) exposure and human health since FBC's deployment of AMI electric meters. The status of research on potential health effects of exposure to RF from communication signals from the proposed AMI gas meters was assessed in the 2021 Exponent report *Status of Research on Radiofrequency Exposure and Health in Relation to Advanced Metering Infrastructure*, referenced as Exhibit F-2. That assessment pointed out that comprehensive evaluations of the relevant scientific research have been regularly and repeatedly performed by numerous health and scientific agencies, including the European Union's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR, 2015), the International Agency for Research on Cancer (2013), Health Canada (2014), and the Swedish Radiation Safety Authority (2016, 2018, 2019, 2020, 2021). Based on their reviews, these organizations concluded that research does not confirm that RF fields at the levels we encounter in our everyday environment are a cause of cancer, chronic disease, or other adverse health effects. The results of studies published since the 2015 review by SCENHIR do not provide sufficient evidence to alter the overall conclusions of these health and scientific organizations. Neither the agency reviews nor the recently published research provide a reliable scientific basis to conclude that the deployment of FEI's current AMI gas meter Project will cause or contribute to adverse health effects or physical symptoms in the population.

124. Reference: Exhibit B-8-1, CEC 1.93.2

> 93.2 Recognizing that there were very few respondents, it appears that 14% of the information session attendees do not feel comfortable with the proposed project. Please explain whether or not this group is expected to be satisfied with the Radio Off option, or if there remain lingering concerns regarding the project altogether.
>
> **Response:**
>
> Although FEI has not conducted further research regarding survey responses, FEI expects the radio off option to alleviate concerns expressed by the two respondents, and also to do so for the majority of the other customers that may express similar concerns. Please also refer to the response to BCSEA IR1 29.1.

124.1 Is it reasonable to expect that the attendees at the information session may not be representative of the general population being affected by the project, but may have a higher proportion that attended because they have a predisposition to be concerned? Please explain.

Response:

In FEI's view it is reasonable to expect that attendees at the information sessions were interested in learning more about the Project, but not necessarily predisposed to being concerned. This is consistent with Appendix H-07, *Advanced Gas Meter Information Session Survey*, where 40 percent of survey respondents indicated that they were not familiar with advanced meters prior to attending the session, and 93 percent of survey respondents indicated that they felt as though they knew more about advanced meters after attending the session. The information sessions were opportunities for attendees to learn more about the Project, ask questions and raise concerns.

125. Reference: Exhibit B-8-1, CEC 1.94.1

Response:

FEI is unable to provide an estimate of the proportion of customers that it believes are aware of the Project due to a number of factors, including a lack of data on which customers may have been reached by multiple forms of outreach. However, FEI is able to confirm that communication on the Project was sent to customers via bill inserts in November 2019, March 2020, and September 2020, each reaching approximately 455,800 gas customers who have registered with Account Online. In addition, Appendices H-6, H-8, and H-9 to the Application include engagement data related to social media content and news coverage of the Project for the period between the Project announcements in fall 2019 to early winter 2021.

125.1 Please confirm that FEI has used prudent and appropriate efforts to communicate widely and engage with the public on this application.

125.1.1 If not confirmed, what additional communications could FEI reasonably undertake to reach more customers? Please explain.

Response:

FEI confirms that prudent and appropriate efforts were made to communicate widely and engage with the public on this Application. This included digital and newspaper advertisements across FEI's service territory (Appendices H-6, H-8, and H-9) as well as through social media. In addition, Appendices H-10 to H-13 and H-20 to H-22 include communication and engagement efforts related to the Project news release, Project webpage updates, bill inserts with customers registered on Account Online, media outreach for in-person information sessions (prior to the COVID-19 pandemic restrictions), Energy Moment newsletter advertisements, and notification letters to MLAs across FEI's service territory.

126. Reference: Exhibit B-8-1, CEC 1.97.1

> **97. Reference: Exhibit B-1, page 134**
>
> FEI seeks to build relationships with Indigenous groups across the province and will continue to abide by its core principles throughout the lifecycle of the Project. At the time of filing, there are no known outstanding issues; however, FEI will continue to engage with Indigenous groups throughout the life of the project and will address issues and concerns that may arise.
>
> 97.1 Will FEI advise the Commission if any concerns arise related to Indigenous groups? Please explain why or why not.
>
> **Response:**
>
> FEI will advise the BCUC through periodic Project updates as to the status of engagement with Indigenous groups affected by the Project, including concerns that arise.

126.1 Please confirm, or otherwise explain, that there continue to be no known outstanding issues at this time.

Response:

There are no known outstanding issues at this time. FEI will continue to engage with Indigenous groups throughout the life of the Project and will address issues and concerns that may arise.