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October 7, 2021

British Columbia Utilities Commission
Suite 410, 900 Howe Street
Vancouver, B.C.
V6Z 2N3

Attention: Mr. Patrick Wruck, Commission Secretary

Dear Mr. Wruck:

Re: FortisBC Energy Inc. (FEI)

**Application for a Certificate of Public Convenience and Necessity (CPCN) for
Approval of the Coastal Transmission System Transmission Integrity
Management Capabilities Project (Application)**

**Response to the British Columbia Utilities Commission (BCUC) Information
Request (IR) No. 2**

On February 11, 2021, FEI filed the Application referenced above. FEI respectfully submits the attached response to BCUC IR No. 2 in advance of the deadline established in BCUC Order G-285-21.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC ENERGY INC.

Original signed:

Diane Roy

Attachments

cc (email only): Registered Parties

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8

9 A. PROJECT NEED

10 34.0 Reference: PROJECT NEED AND JUSTIFICATION

11 Exhibit B-5, BCUC IR 4.3

12 Higher Risk ITS Pipelines

13 In response to British Columbia Utilities Commission (BCUC) Information Request (IR)
14 4.3, FEI stated:

15 The inclusion of higher risk pipelines in the ITS [Interior Transmission System]
16 would have delayed CPCN development and submission due to an overall larger
17 Project scope with the inclusion of additional pipelines. Further, FEI's ITS TIMC
18 CPCN development activities have confirmed that the ITS pipelines are capacity
19 constrained if required to operate at a reduced pressure. Therefore, as described
20 in Section 5.5.4 of the Application, pressure reductions may be required after the
21 EMAT [electromagnetic acoustic transducer] ILI [in-line inspection] run. FEI does
22 not face the same challenges with the CTS pipelines and thus, FEI has had to
23 spend significantly more time determining ways to manage the capacity constraints
24 on the ITS pipelines post-EMAT.

25 34.1 Please identify the "higher risk" ITS pipelines mentioned in the preamble.
26

27 Response:

28 The higher risk ITS pipelines mentioned in the preamble refer to the Savona Vernon 323 and
29 Vernon Pentiction 323 pipelines, which were identified as having the first and second highest risk
30 among ITS pipelines as part of the QRA.

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34.2 Please explain the extent to which inclusion of higher risk ITS pipelines would have delayed CPCN development.

Response:

If the higher risk ITS pipelines were included in this Application it is likely that submission of the CPCN application would have been delayed by a year or more.

FEI has been developing the ITS TIMC Project in parallel with the CTS TIMC Project to address the risk cracking threats pose to the ITS pipelines. The results of the QRA demonstrated that the CTS pipelines posed the highest overall safety risk at the system level, and based on this risk assessment, FEI has prioritized work on the CTS with this Application. Moreover, due to capacity constraints (as discussed in the response to BCUC IR1 4.3), there are more complexities and challenges associated with implementing EMAT ILI on the ITS pipelines. As including the higher risk ITS pipelines would have delayed the CPCN application by a year or more, limiting the scope of the Application to only the CTS pipelines was appropriate and allows FEI to address the highest safety risk pipelines in a timely manner.

34.3 Please quantify the pressure reduction that may be required after the ITS EMAT ILI runs, detailing any relevant government regulations or technical standards.

Response:

Following completion of the ITS TIMC Project, FEI will have the capability to reduce the operating pressure of the ITS pipelines by 20 percent following the initial EMAT ILI runs. This pressure reduction is a reasonable and accepted industry standard practice.

The Canadian Standards Association (CSA) Z662:19 *Oil and Gas Pipeline Systems* standard includes the following requirement for operating pipelines (Clause 10.3.2.2):

Where an engineering assessment, the company's integrity management program, or observation indicates that portions of the pipeline system are susceptible to failures, the operating company shall either implement measures preventing such failures or operate the system under conditions that are determined by an engineering assessment to be acceptable.

If the crack defects identified by the EMAT tool run could not be addressed in a timely manner, FEI would conduct an engineering assessment in accordance with CSA Z662 and implement measures for preventing failures or operate the system under conditions that are determined by an engineering assessment to be acceptable.

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In the case of a 20 percent pressure reduction, the pipeline, operating at its new restricted pressure, would have the same safety factor as a pipeline subject to a hydrostatic pressure test with a test factor of 1.25. This is the minimum safety factor adopted in CSA Z662, when verifying the pressure-containing capacity of a pipeline by hydrostatic testing, and has become the industry standard safety factor for integrity decision-making as illustrated by the examples below. This new operating pressure could be relied upon for a finite period until FEI completes all required defect assessments and repairs.

An example of the adoption of the 20 percent reduction in operating pressure by industry (operators and regulators) is illustrated by the Westcoast Energy Inc. (Enbridge) and the National Energy Board (now known as the Canada Energy Regulator) response to the October 2018 cracking-related failure of a transmission pipeline in the Prince George area.¹ In that instance, Westcoast's two pipelines in the vicinity were operated with a 20 percent reduction until such time as the integrity of the lines could be confirmed.

Other gas transmission pipeline incident reports published on the Transportation Safety Board of Canada's website² also support this integrity response, including the TransCanada PipeLines Ltd. (NOVA Gas Transmission Ltd.) failure near Fort McMurray, Alberta³ (Incident date: 2013-10-17, Report release date: 2015-11-03). The failed pipeline, when it was returned to service approximately one month after the incident, had a restricted operating pressure of 80 percent (7168 kPa) of its pre-failure operating pressure (8960 kPa). Another pipeline operating in the vicinity of the failure site was also temporarily reduced to 80 percent of the discovery pressure as a precaution.

34.4 Please elaborate on what FEI means by "FEI does not face the same challenges with the CTS pipelines..."

Response:

The challenges referred to by FEI in the preamble above relate to the capacity constraints that can result if a pipeline is required to operate at a reduced pressure in response to the findings from an EMAT ILI run.

With their current system configurations, the CTS and ITS both face capacity constraints when a pipeline is required to operate at reduced pressures. The CTS does not have sufficient capacity when a pressure reduction is required on any individual CTS pipeline because the inlet to the CTS has only a single pressure control point (the Huntingdon Control Station), which means that the pressure reduction must be applied to the entire CTS (not just the pipeline where an anomaly

¹ <https://www.tsb.gc.ca/eng/rapports-reports/pipeline/2018/p18h0088/p18h0088.html>.

² <https://www.tsb.gc.ca/eng/rapports-reports/pipeline/index.html>.

³ <https://www.tsb.gc.ca/eng/rapports-reports/pipeline/2013/p13h0107/p13h0107.html>.

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1 is identified). As proposed in the Application, FEI will be able to mitigate this capacity constraint
2 by expanding and repurposing the existing pressure reduction capabilities at the Huntingdon
3 Control Station and installing four⁴ distributed pressure regulating stations to allow for pressure
4 reduction on individual pipelines. This solution was relatively easy to identify because the
5 interconnected nature of the CTS pipelines helps mitigate pressure reduction impacts.

6 The ITS pipelines also do not have sufficient capacity if required to operate at a reduced pressure.
7 Further, the ITS pipelines are cross-country pipelines and have no interconnections comparable
8 to the CTS. As a result, the ITS is much less able to accommodate pressure reductions and, as
9 referenced in the preamble, FEI was required to perform a more extensive review of capacity
10 scenarios to develop cost-effective pressure reduction management solutions for its post-EMAT
11 response on the ITS, which presented a greater challenge compared to the CTS.

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14
15 34.5 Please provide an anticipated filing date for the ITS TIMC CPCN application.
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17 **Response:**

18 FEI anticipates filing its ITS TIMC CPCN Application in 2022 following the receipt of a decision on
19 the CTS TIMC Application.
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⁴ One of the four pressure regulating stations was installed to support the pilot EMAT-ILI run and is currently in service.

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1 **35.0 Reference: PROJECT NEED AND JUSTIFICATION**

2 **Exhibit B-5, BCUC IR 4.4**

3 **Okanagan Capacity Upgrade Project**

4 In response to BCUC IR 4.4, FEI stated:

5 In order to address the cracking threats on the highest risk ITS pipeline, the
6 Okanagan Capacity Upgrade (OCU) Project, for which a CPCN Application was
7 filed with the BCUC on November 16, 2020, must be in service to ensure that FEI
8 is able to meet customer demand in the event that the SCC-susceptible pipeline in
9 the ITS is required to operate at a 20 percent pressure reduction for an extended
10 period.

11 35.1 Please identify the “highest risk” ITS pipeline mentioned in the preamble and
12 provide a map showing its proximity to populated areas.

13
14 **Response:**

15 The highest risk ITS pipeline mentioned in the preamble is the Savona Vernon 323 mm (SAV
16 VER 323) pipeline. The second highest risk ITS pipeline is the Vernon to Penticton 323 mm (VER
17 PEN 323) pipeline. These pipelines are connected and were constructed at the same time, and
18 are therefore expected to have similar material properties and to have been subjected to similar
19 manufacturing, installation, and construction practices. As such, FEI plans to address the cracking
20 risk identified on these pipelines concurrently through the ITS TIMC Project. The map below shows
21 the SAV VER 323 and VER PEN 323 pipelines and their proximity to communities throughout the
22 Thompson Okanagan.

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35.2 Please explain whether the CPCN Application for the OCU Project describes the cracking threats on the highest risk ITS pipeline.

35.2.1 If so, please identify the section(s) in the CPCN Application which give details on cracking threats.

35.2.2 If not, please explain why not.

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Response:

The OCU Project CPCN Application does not directly describe—nor will the OCU Project directly address—the cracking threats on the highest risk ITS pipeline (SAV VER 323). However, in Section 4.5.2.2 of the OCU Project CPCN Application, FEI describes the requalification test requirements for sections of the VER PEN 323 pipeline associated with OCU Alternative 1 and Alternative 2 to recommission the pipe to its original maximum operating pressure. In that description, FEI identifies that retesting promotes the opening of existing cracks that are near failure and the growth of smaller sub-critical cracks, thus acknowledging the presence of cracking and potential to impact the integrity of the VER PEN 323 pipeline.

The OCU Project is a capacity-driven project required to meet the increase in peak demand throughout the central and north Okanagan regions forecast to occur over the next 20 years. As noted above, the OCU Project is not intended to address integrity-related cracking threats. Rather, by adding the necessary capacity to support the long-term (20 year) customer needs in the central and north Okanagan, the ITS TIMC Project will leverage the operational flexibility and additional capacity provided by the OCU Project in the near term to help manage capacity needs during the pressure reduction scenarios that may result after the initial EMAT ILI tool runs.

35.3 If the BCUC did not grant a CPCN for the OCU Project, please explain the implications for managing cracking threats on the highest risk ITS pipeline (e.g. cost, timing, scope) and how FEI may adjust its approach to the TIMC projects.

Response:

If the BCUC did not grant a CPCN for the OCU Project there would be a capacity shortfall for customers in the central and north Okanagan regions, meaning that FEI would not be able to serve the peak demand of its existing and forecast customers beyond 2023. It would have no impact on the CTS system or the CTS TIMC Project which is the subject of the current Application.

The current scope of the ITS TIMC Project assumes that the central and north Okanagan, which are served by the highest risk ITS TIMC pipelines (SAV VER 323 and VER PEN 323), will have sufficient capacity at normal operating pressures. Without the OCU Project in-service, these areas would not have sufficient capacity at normal operating pressures, thereby preventing any further pressure reductions. This would pose challenges in running EMAT ILI tools and responding to potential findings.

In order to successfully mitigate cracking threats on these pipelines, FEI would be required to look at capacity improvements similar in scope to the alternatives proposed in the OCU Project CPCN Application as part of the ITS TIMC Project. FEI would first have to re-establish capacity at normal operating pressures and then address any capacity shortfalls in the pressure reduced scenarios.



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- 1 These alternatives would significantly increase the scope and cost of the ITS TIMC Project, and
- 2 would delay the timelines in which the risk of cracking could be mitigated on the ITS pipelines.
- 3

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36.0 Reference: PROJECT NEED AND JUSTIFICATION

Exhibit B-5, BCUC IR 2.8

CTS Pressure Reduction in Advance of EMAT ILI

In response to BCUC IR 2.8, FEI stated:

While FEI recognizes that a pressure reduction could reduce the likelihood and/or consequences of a leak or rupture, FEI has not implemented such measures on the basis that:

- FEI requires the CTS to be at full operating pressure to maintain the capacity to serve its customers reliably throughout the year, and to respond to changes in load/demand; and
- FEI has no certainty in the degree of risk mitigation that may be achieved in the absence of specific crack data that will be obtained through the use of EMAT ILI technology on the CTS.

36.1 Please provide graph(s) which demonstrates that the CTS would be required to operate at full operating pressure to maintain capacity to serve customer demand, showing anticipated capacity required to serve customer demand for the period 2021 to 2030, the CTS capacity at full operating pressure and the capacity at reduced operating pressure. In the response, please provide a graph for each CTS pipeline, if available.

Response:

Figure 1 below shows the capacity of the existing CTS at both the current full operating pressure and also at a 20 percent reduction in maximum pressure. The figure also shows the forecast system peak hour demand between 2021 and 2030. As can be seen in the graph, the forecast winter peak demand exceeds the available system capacity during a pressure reduction in all years.

FEI expects continued growth in the CTS due to customer additions, consistent with ongoing growth in recent years. Currently, FEI is forecasting peak demand to increase at approximately 0.8 percent per year in the CTS as a result of added residential, commercial, and industrial customers. This includes increased expansion of natural gas liquefaction at FEI's Tilbury LNG plant in Delta (estimated at up to 122,400 standard cubic meters per hour) and the proposed Woodfibre (WFLNG) LNG facility in Howe Sound on the Vancouver Island Transmission System (VITS) (estimated at 290,300 standard cubic meters per hour). The VITS is served by the CTS via deliveries to the Eagle Mountain Compressor Station.

For illustrative purposes, Figure 1 assumes the WFLNG and Tilbury load additions occur in 2026. However, FEI does not yet have firm confirmation that the increased demand will occur in the year indicated. If both load additions proceed in the timeframe and magnitude represented in Figure 1, some additional system upgrades such as expanded compression or pipeline looping would be necessary to support the increased demand even at full operating pressure, as shown

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by the demand curve crossing above the system capacity line in 2026 (indicated by the red star). Since the scope of capacity upgrades required to address the increasing demand is currently under development, Figure 1 does not show the capacity of any future upgrade(s) supporting these potential concurrent increases in industrial demand. Rather, it shows the capacity of the existing CTS infrastructure compared to the projected demand.

Until additional pressure reducing stations such as those described in the Application are constructed, a pressure reduction on the CTS can only be implemented at Huntingdon Control Station and hence would affect the entire CTS. Currently, the CTS peak demand exceeds the available system capacity during a system-wide 20 percent pressure reduction.

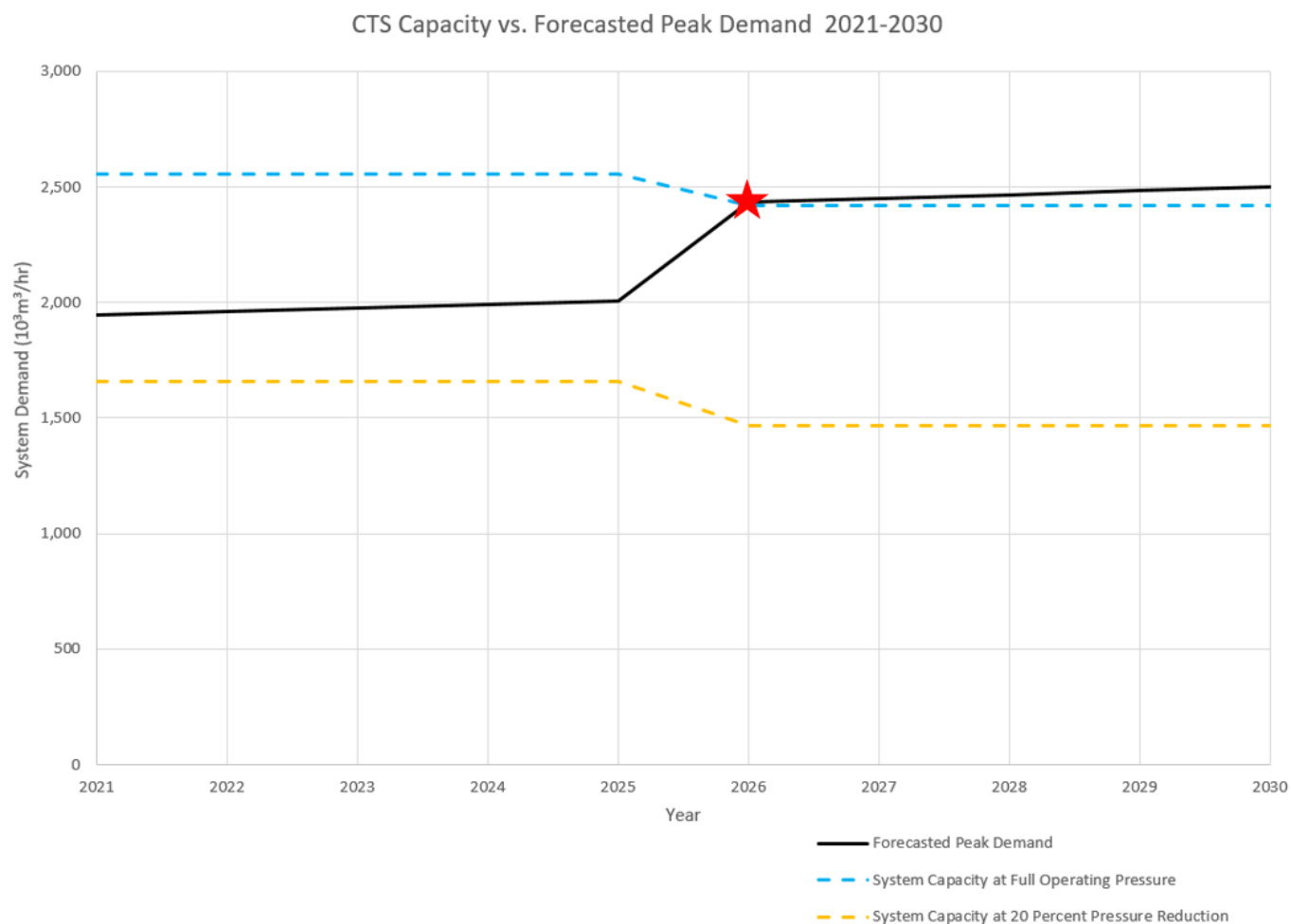
Figure 1 also shows that significant load additions (such as the proposed Tilbury expansion and the WFLNG facility) will actually reduce the available system capacity reported. This is because the demand of these facilities are concentrated at specific locations on the system and not distributed across the system in the same way that increased residential and commercial customer loads would attach to the system. As a result, these large point-load additions can cause pressures in the system to reach minimum values sooner (i.e. system capacity limits are reached sooner) because they are located close to the furthest downstream points of the system. FEI further discusses the method for determining CTS capacity in the response to BCUC IR2 36.1.1.

FEI is unable to plot a meaningful capacity value for each CTS pipeline independently. System capacity is an attribute of the system as a whole, defined by input and output constraints at the boundaries of the system, and how customer demand is distributed throughout the system. System capacity cannot be represented in any meaningful way as a summation of the capacities of individual pipeline components within the system. As a result, there is no means available for providing a capacity figure for each CTS pipeline separately that is relevant and comparable to the system as a whole.

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1

Figure 1 - CTS Capacity vs. Forecast Peak Demand (2021-2030)



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36.1.1 Please discuss FEI's methodology for determining the CTS capacity required to serve customer demand, detailing all assumptions made.

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Response:

10 The system capacity values presented in Figure 1 of the response to BCUC IR2 36.1 are
 11 determined using pipeline hydraulic modelling software. FEI starts with a current hydraulic model
 12 of the CTS that accurately represents the CTS pipeline system and the gate stations supplying
 13 the downstream distribution systems. In this model, FEI's customer peak demand is set at
 14 locations throughout the system to represent the current distribution of demand.

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The model incorporates boundary conditions and other operating criteria that define the minimum and maximum pressure criteria in the system. Under normal operations the criteria and assumptions for the CTS includes:

- The minimum contract delivery pressure from Enbridge into the CTS at Huntingdon Control Station, which is currently 3447 kPa (500 psig).
- The maximum discharge pressure in the pipeline system for locations such as Huntingdon Control Station and Langley compressor station, which is currently 4020 kPa (583 psig).⁵
- The minimum delivery pressure that needs to be maintained into major demand centers, most importantly at the downstream ends of the CTS, such as: (1) the Coquitlam Gate Station (2415 kPa / 350 psig) which serves the Metro Vancouver area; and (2) the Eagle Mountain Compressor Station (2070 kPa / 300 psig), which feeds the Vancouver Island Transmission System and provides gas to Squamish/Whistler, the Sunshine Coast, and Vancouver Island.

Starting with the current load, and the criteria and assumptions noted above, FEI uses the hydraulic model to determine if any minimum inlet pressure constraint is violated (i.e., the station inlet pressure drops below the minimum required pressure). At present, the CTS has sufficient capacity to support peak demand and so the model shows no violation of minimum inlet pressures. The forecast future demand increase for each year is then added onto the current peak demand forecast in the model until a minimum inlet pressure constraint is violated. The total calculated demand on the CTS when the constraint is violated is used to represent the capacity of the CTS. In instances where applying the current 20-year peak demand forecast to the model does not violate any minimum inlet pressure constraint, the demand on the model is increased at all demand points proportionally until a constraint is violated and an estimate of the current CTS capacity is then determined.

36.1.2 Please describe any anticipated changes in customer load/demand from 2021 to 2030, and the reasons for those changes.

Response:

Please refer to the response to BCUC IR2 36.1

⁵ For scenarios such as a 20 percent pressure reduction or operation at less than 30 percent of SMYS this maximum operation pressure would be correspondingly reduced.

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4 36.2 Please explain whether FEI applied any scenario modelling to its customer
5 demand forecast.

6
7 **Response:**

8 FEI does not apply any scenario modelling to its customer peak demand forecast for the purposes
9 of facility design. Instead, FEI first uses its Traditional Peak Demand Forecast Method which
10 determines the peak use per customer (UPC_{peak}) for existing customers, derived from current
11 consumption measurements. FEI then uses the current average UPC_{peak} of existing customers
12 in each rate schedule multiplied by the number of accounts and forecast additions in each rate
13 schedule provided in FEI's 20 Year Account Forecast to determine the peak demand forecast.

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16
17 36.2.1 If so, please provide details of any scenarios assessed and discuss the
18 results with respect to FEI's assessment of the CTS operating pressure
19 required to serve customer demand.

20
21 **Response:**

22 Please refer to the response to BCUC IR2 36.2.

23
24
25
26 36.3 Please explain why it is necessary for FEI to have certainty in the level of risk
27 mitigation achieved by pressure reduction prior to implementing a pressure
28 reduction on the CTS.

29
30 **Response:**

31 FEI considers it necessary to have certainty in the level of risk mitigation achieved by a pressure
32 reduction prior to implementing a pressure reduction on the CTS because of the capacity
33 limitations that will result from reducing the system pressure. In other words, if FEI cannot be
34 certain that the pressure reduction is actively mitigating an integrity risk, it would not be
35 appropriate or reasonable to expose customers to the risks of significant load curtailment and
36 associated social and economic impacts of supply interruptions during extreme cold winter
37 conditions.

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1 Please also refer to the response to BCUC IR2 36.1 which describes the lack of system capacity
2 available to support a 20 percent pressure reduction. FEI has calculated that if a system-wide
3 pressure reduction were to occur, industrial interruptible load would need to be curtailed in the
4 late fall and winter periods when average daily temperature fall to minus 2°C or colder and that
5 firm customers would be curtailed at temperatures below minus 5°C. These are temperature
6 ranges that regularly occur, sometimes for extended periods, each winter season in the Lower
7 Mainland. In addition to the capacity limitation, the pressure reduction also reduces line pack and
8 associated system resiliency, decreasing FEI's ability to respond to rapid weather-related
9 changes in demand when the entire system, and not just a portion of the system, is impacted.

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37.0 Reference: PROJECT NEED AND JUSTIFICATION

Exhibit B-1 (Application), Section 5.5.4, p. 99

Pressure Reduction Required to Support EMAT ILI Activities

On page 99 of the Application, FEI states:

Once the EMAT ILI tool has completed its run, with the exception of the HUN ROE 1067 transmission pipeline, it is not known how many features will be found, and as such, it may not be possible to complete all repairs in the same calendar year. Should this be the case, the integrity risk of having unrepaired features on those pipelines can be mitigated by a 20 percent reduction in operating pressure until all repairs are complete.

37.1 Please provide the level of risk mitigation that may be achieved through a 20 percent reduction in operating pressure, detailing any relevant government regulations or technical standards.

Response:

As described in the response to BCUC IR2 34.3, reasonable and accepted industry standard practice considers that applying a pressure reduction by 20 percent provides an appropriate safety factor between a previously established operating pressure and a new restricted operating pressure. Relevant regulatory and standard information is also discussed within that response.

37.2 Please discuss whether FEI anticipates any supply shortfalls on the CTS if the 20 percent pressure reduction in operating pressure is required after the EMAT ILI run.

37.2.1 If yes, please quantify anticipated supply shortfalls and provide the number of customers that could experience disrupted service.

37.2.2 If yes, please explain how FEI intends to manage supply shortfalls until all repairs are complete.

37.2.3 If not, please explain why not.

Response:

All CTS pipelines, with exception of the HUN ROE 1067 pipeline, will be able to have their operating pressure reduced by 20 percent year-round without any supply shortfalls once the proposed PRS facilities are installed and the modifications to Huntingdon Control Station are completed as part of the CTS TIMC Project.

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1 As described in the response to BCUC IR2 36.1, the CTS has insufficient capacity when operating
2 the HUN ROE 1067 pipeline with a 20 percent pressure reduction through the winter. This is
3 because the HUN ROE 1067 serves as the backbone of the CTS, supplying a majority of gas to
4 the other transmission pipelines in the CTS. Thus, a pressure reduction on the HUN ROE 1067
5 pipeline effectively results in a pressure reduction for the entire CTS. As a result, FEI will avoid
6 implementing a pressure reduction on the HUN ROE 1067. Instead, FEI will prioritize the EMAT
7 ILI run on the HUN ROE 1067 pipeline, work with the ILI vendor to accelerate data reporting, and
8 ensure sufficient resources are available to perform all repairs on the HUN ROE 1067 pipeline to
9 avoid the need for a pressure reduction. FEI does not anticipate any supply shortfalls on the CTS
10 after the EMAT ILI runs.

11

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38.0 Reference: PROJECT NEED AND JUSTIFICATION

Exhibit B-5, BCUC IR 1.1, 1.3, 1.5

Future Risk Assessment Activities

In response to BCUC IR 1.1, FEI stated: “There are 106 FEI transmission pipelines (including laterals) that are not included in the two reports prepared by JANA.”

In response to BCUC IR 1.3, FEI stated:

For the TIMC project, FEI optimized the scope of work of its QRA by including transmission pipelines of NPS 10 or larger for which EMAT ILI tools are commercially available. As EMAT ILI tools are not yet generally commercially available for the smaller pipe diameters typical of FEI’s laterals, smaller pipe diameters were generally excluded from JANA’s assessment.

In response to BCUC IR 1.5, FEI stated:

The QRA [quantitative risk assessment] submitted as part of the CTS TIMC Application is the first iteration of FEI’s QRA. FEI currently envisions that its second and future QRA iterations will be undertaken using internal resources as part of a sustainable, ongoing process for risk management of its transmission pipelines. While FEI is unable to confirm the timing of future iterations, FEI is developing a risk assessment process that will be applicable to all of FEI’s BCOGC-regulated pipeline assets, and will, in time, be implemented for all of these assets.

38.1 Please further explain the scope FEI will include in future QRA iterations. For example, will each iteration include all FEI’s BCOGC-regulated pipelines.

Response:

QRA processes are data intensive, and FEI does not yet have all the required data capabilities for all of its BCOGC-regulated pipelines (including the 106 pipelines) to produce a meaningful quantitative estimate of risk for all of its pipelines. To achieve this, and as described further in the response to BCUC IR2 38.2, FEI is implementing a software tool for performing QRAs, planning QRA-related resources, and evaluating its data readiness for quality QRAs. Once FEI has implemented the QRA software tool, FEI will be conducting further iterations of its QRA, which will expand in scope as FEI establishes the required data capabilities to conduct meaningful assessments of risk. Through this iterative process, the scope of FEI’s QRAs will over time include all of FEI’s buried pipeline assets regulated by the BCOGC.

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38.2 Please describe the risk assessment process that FEI is developing and provide a copy of any risk assessment process development plans, detailing scope, cost and schedule.

Response:

FEI is currently focused on developing in-house QRA capabilities to facilitate an ongoing quantitative risk assessment process. FEI's implementation of a quantitative risk assessment of its transmission pipelines has been, and will continue to be iterative in that FEI is allowing for the learnings from previous steps to inform next steps in its planning. As an example, FEI was able to apply learnings from the Baseline QRA in defining technical requirements for its internal quantitative risk assessment software.

The acquisition and implementation of quantitative risk assessment software tool for calculating transmission pipeline risk is the next step in developing the process. The following is FEI's prior and forward-looking schedule for the purchase and implementation of the software tool and next QRA iteration:

- **October 2019:** FEI issued an RFI to obtain information regarding the capabilities of multiple vendors of quantitative risk assessment software.
- **September 2020:** FEI issued an RFP to its short-listed vendors with capabilities most closely aligned with its RFI evaluation criteria.
- **February 2021:** FEI issued a Letter of Intent to its selected vendor indicating its intention to enter into contract negotiations.
- **July 2021:** FEI approved Information Systems (IS) capital expenditures for the risk assessment software implementation.
- **September 2021:** FEI issued a purchase order for procurement of the quantitative risk assessment software that was established with the selected vendor. Total IS capital expenditures associated with the software implementation (i.e., including vendor and internal costs) are expected to be approximately \$0.5 million.
- **Q3 2022:** Projected completion of QRA software installation.
- **Q4 2022 to Q4 2023:** Projected timing of second iteration of QRA.

Once FEI has implemented the quantitative risk assessment software tool, FEI will implement a segment-by-segment quantitative risk assessment process consisting of the following steps:

- Objective;
- System Description;
- Hazard Identification;
- Frequency Analysis;

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- Consequence Analysis;
- Risk Estimation;
- Risk Evaluation/Refinement Risk Control; and
- Risk Monitoring and Review.

After implementation and use of the quantitative risk assessment software tool, FEI will be able to define estimates of the resources required for the following activities required for an ongoing quantitative risk assessment process:

- Resources for ensuring quality and suitable data inputs are fed into the risk model; and
- Resources for assessing risk and driving risk-informed and risk-based decisions.

FEI's initial estimate for these resources is \$1.5 million O&M per year (i.e., not including IS capital); however, ongoing internal resources cannot be sufficiently defined or optimized with currently available information. FEI will establish these resources incrementally as needs are established and confirmed.

Through FEI's baseline QRA, FEI learned of potential issues with respect to data that is the foundational input into a software calculator and that is required to create a meaningful quantitative risk assessment. Data improvements will encompass issues including data governance, data flow control, data accessibility, data traceability, data verification, and addressing potential data gaps. Data challenges will be mitigated through combinations of people, processes, and technology. Some data improvements may be required over the short to medium-term, while others may be implemented over many years.

FEI expects that it will propose incremental costs related to future QRA iterations in future revenue requirement applications as needed.

38.2.1 If FEI has not prepared a plan for developing the risk assessment process, please provide a time frame for when the plan will be complete.

Response:

Please refer to the response to BCUC IR2 38.2 for FEI's plan for developing its segment-by-segment risk assessment process for transmission pipelines.

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38.2.2 Please explain why FEI is unable to confirm the timing of future QRA iterations. If possible, please give an estimate of the timeframe to complete future QRA iterations.

Response:

As explained in the response to BCUC IR2 38.2, FEI has taken, and is continuing to take steps in developing its sustainable, ongoing process for segment-by-segment risk management of its transmission pipelines. Since submitting its responses to CTS TIMC IR1, FEI has obtained internal approval for Information Systems capital expenditures for a software tool and has established a Purchase Order with the software provider. As such, FEI now has additional information to estimate the timing of its next QRA iteration. In accordance with the schedule included in the response to BCUC IR2 38.2, FEI plans to perform its second iteration of a QRA by the end of 2023. The timing of future QRA iterations will be determined following completion of the second iteration of the QRA.

38.3 Please explain why FEI envisions future QRA iterations will be undertaken using internal resources.

38.3.1 Please discuss what factors (e.g. resource, schedule limitations) FEI considered when determining whether to use internal resources for future QRA iterations.

Response:

While FEI expects that specialized consultants will always play a role in supporting its risk management activities, 100 percent reliance on external resources for this important task would not be appropriate. Risk management of FEI's system is a core function and expectation of a regulated transmission pipeline operator, and as such, warrants internal competency and resources. Specifically, the use of internal resources to develop, maintain, and sustain future QRA iterations offers the following benefits:

- **Cost control:** By not relying as substantively on consultant resources for future QRA iterations, FEI will have more control over its costs for conducting ongoing segment-by-segment risk assessments.
- **Ability to meet regulatory expectations:** By using internal, rather than external, resources, FEI will be better able to influence resource availability and prioritize work to meet regulatory expectations.
- **Opportunity for improved capabilities to understand and mitigate risk:** Developing in-house expertise, knowledge and experience typically enables a greater understanding

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of FEI's system, practices, and objectives with respect to risk management, compared to the use of external resources.

- **Alignment with industry practice:** It is common industry practice among Canadian transmission pipeline operators to leverage internal resources in performing segment-by-segment risk assessments.

38.4 Please explain whether FEI has completed a risk assessment, whether quantitative or otherwise, of the 106 pipelines. If not, please explain why not.

Response:

FEI assesses and manages risk qualitatively on the 106 pipelines through its IMP-P, including identifying relevant hazards, considering potential consequences, and selecting and implementing appropriate mitigation. For the reasons noted in the preamble, FEI has not yet completed a segment-by-segment quantitative risk assessment of the 106 pipelines that were not included in the two reports prepared by JANA. As explained in the responses to BCUC IR2 38.1 and 38.2, FEI is taking an iterative approach to developing a segment-by-segment quantitative risk assessment process which will over time include all of FEI's BCOGC-regulated pipeline assets.

38.4.1 Please explain whether these pipelines are capable of failure by rupture.

Response:

FEI confirms that the 106 pipelines are operating above 30 percent of SMYS, and are, therefore, capable of failure by rupture. These pipelines are smaller diameter transmission pipelines for which EMAT tools are not currently available. FEI will continue to monitor EMAT technology developments for use on smaller diameter transmission pipelines as it becomes available and will continue to inspect pipelines for cracking during opportunity digs.

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39.0 Reference: PROJECT NEED AND JUSTIFICATION

Exhibit B-1, Appendix C; Exhibit B-5, BCUC IR 5.1;

**FEI Application for a Certificate of Public Convenience and
Necessity for the Inland Gas Upgrade Project proceeding, Exhibit B-
2, Attachment 6.5**

BC Oil and Gas Commission Support for Project

In Appendix C to the Application, the BC Oil and Gas Commission (BCOGC) states: “The Commission is supportive of FEI taking action to address its known integrity concerns and to ensure that it meets its requirements as a permit holder under the Oil and Gas Activities Act.”

In response to BCUC IR 5.1, FEI stated:

FEI currently meets all of its requirements and obligations as a permit holder under the Oil and Gas Activities Act (OGAA) related to integrity management on the CTS.... The BCOGC has previously directed FEI to conduct a segment-by-segment risk assessment of its pipelines, and has expressed its support for the CTC [sic] TIMC Project, as included in Appendix C of the Application.

In Attachment 6.5 to Exhibit B-2 in the FEI Application for a CPCN for the Inland Gas Upgrade Project proceeding, the BCOGC stated:

The risk assessment finding required FortisBC to develop and implement a segment-by-segment risk assessment process to determine the risk associated with its pipeline assets in BC...

The Commission notes that recently FortisBC has made progress with respect to determining risk for capital projects to enable better decision making. These initiatives for capital risk assessments are steps in the right direction. However, the Commission requires FortisBC to commit, develop and implement a risk management process for operating pipelines. This must be carried out to fully meet the requirements of the risk assessment non compliance and meet CSA Z662-15 Clause 3.4....

FortisBC shall move forward with suitable actions in a timely manner to meet the above requirement.

39.1 Please explain whether FEI currently meets all its requirements as a permit holder under the *Oil and Gas Activities Act* related to integrity management on all FEI assets in British Columbia.

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1 **Response:**

2 As explained in the response to BCUC IR1 5.1, FEI currently meets all of its requirements and
3 obligations as a permit holder under the *Oil and Gas Activities Act* (OGAA) related to integrity
4 management on all FEI assets in British Columbia.

5 Furthermore, FEI has no indication from the BCOGC that it is not currently meeting its
6 requirements and obligations as a permit holder under the OGAA related to integrity management
7 on all FEI assets in British Columbia.

8
9
10
11 39.2 Please confirm that the BCOGC has confirmed FEI has completed its obligation to
12 conduct a segment-by-segment risk assessment and is fully compliant with CSA
13 Z662-15.

14 39.2.1 If yes, please confirm whether the segment-by-segment risk assessment
15 has been completed for all FEI pipelines in British Columbia.

16 39.2.2 If no, please explain the status of the segment-by-segment risk
17 assessment and reporting to the BCOGC to date.

18
19 **Response:**

20 The BCOGC has confirmed that it has closed the corrective action plan for FEI to develop and
21 implement a segment-by-segment risk assessment process. However, both FEI and the BCOGC
22 understand that the development and implementation of this process is an ongoing and iterative
23 one and, therefore, FEI's obligation to conduct a segment-by-segment risk assessment is
24 ongoing. FEI is continuing to develop and implement the process, and understands and expects
25 that the BCOGC will continue to follow FEI's progress.

26 On January 16, 2020, FEI received the following advisement from the BCOGC, regarding
27 Corrective Action Plan #432 "Segment by Segment Risk Assessment Process Development &
28 Implementation; ref: 2014 IMPP Audit of FortisBC":

29 Based on the discussions held and evidence of progress made so far towards
30 implementing a segment by segment risk assessment process, presented at
31 January 15, 2020 meeting, BC Oil & Gas Commission is formally notifying FortisBC
32 that above mentioned Corrective Action Plan (CAP #432) is complete now.
33 Commission will subsequently close this CAP.

34 Commission may query and seek further evidence on the implementation of the
35 process during future audit of FortisBC's Integrity Management Program for
36 Pipelines.

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1 The BCOGC conducts regular audits of FEI's integrity management programs. FEI was notified
2 in February 2021 of its selection for audit by the BCOGC's Compliance Assurance Process for its
3 Integrity Management Programs, including its IMP-P. FEI recently completed its document
4 submission to the BCOGC in accordance with the established timeline. FEI is currently scheduled
5 for a virtual audit discussion with the BCOGC on Friday, October 22.

6

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1 **B. PROJECT ALTERNATIVES**

2 **40.0 Reference: DESCRIPTION AND EVALUATION OF ALTERNATIVES**

3 **Exhibit B-5, BCUC IR 6.2**

4 **Delay Pipeline Modifications**

5 In response to BCUC IR 6.2, FEI stated:

6 FEI did not explore a Project alternative to perform above-ground facility
7 modifications and delay replacement of the 13 heavy wall segments after the first
8 run of the EMT ILI tools for the following reasons:

9 • Running an EMAT ILI tool through the pipeline without replacing the identified
10 heavy wall pipe segments would result in speed excursions. It is known that these
11 speed excursions will compromise the quality of data collected by the tool and/or
12 compromise the ability of the tool to collect any data at all. This would result in
13 sections of pipe where FEI will have compromised and/or no data to assess the
14 integrity of the pipe, thereby necessitating alternative means of evaluating the pipe
15 (i.e. exposing, inspecting, and recoating the pipe). This alternative process is
16 onerous and would ultimately be more expensive...

17 • In several situations, the pipeline and facility modifications are located within the
18 boundaries of an existing station. For example, at the Coquitlam Gate Station, the
19 scope of Project work involves both facilities alterations and a pipeline alteration.
20 Facilities alterations include extending a pig barrel, installation of a PRS, and
21 modifications to above- and below-grade piping. The pipeline alteration includes
22 replacing a 25 metre length of heavy wall pipe on the CPH BUR 508 pipeline. FEI
23 intends to complete all of the modifications at this station at the same time, rather
24 than splitting the work into stages, which would increase costs and cause
25 operational disruptions.

26 40.1 Please provide a list of pipeline modifications which do not occur within the
27 boundaries of an existing station.

28
29 **Response:**

30 Of the 13 pipeline alterations proposed in the Application, five do not occur within the boundaries
31 of an existing station. These pipeline modifications are included in Tables 5-5 and 5-6 and are
32 summarized in the table below for convenience.

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Pipeline	Event ID	Summary of Alterations
TIL BEN 323	3	Replacement of heavy wall forged elbow
TIL BEN 323	5	Replacement of heavy wall forged elbow
LIV COQ 323	9	Replacement of heavy wall crossing pipe
CPH BUR 508	4/5	Replacement of heavy wall crossing pipe
CPH BUR 508	9	Replacement of heavy wall forged elbow

40.1.1 Please discuss any benefits or drawbacks to delaying the identified pipeline modifications outside of existing stations until after the first run of the EMAT ILI tools to allow for confirmation of speed excursion locations.

Response:

As described in the response to BCUC IR1 6.2, running the EMAT ILI tool prior to replacing the identified heavy wall segments, including those outside of existing stations, would result in sections of pipe where FEI would expect to collect compromised data or no data at all. If FEI were to wait until after the first run of the EMAT ILI tools to receive confirmation of a speed excursion, it would delay crack mitigation to the impacted section of pipe and increase costs as either another pipeline inspection method would be required (e.g. expose and recoat) or the proposed replacement of heavy wall pipe would need to be performed and the EMAT ILI tool run again.

FEI has already observed significant speed excursions at these locations with its MFL-C ILI tools. As such, FEI is confident that speed excursions will also occur with the EMAT ILI tools and as such has not identified any benefits associated with delaying these alterations.

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41.0 Reference: DESCRIPTION AND EVALUATION OF ALTERNATIVES

Exhibit B-5, BCUC IR 10.2

Robotic EMAT ILI

In response to BCUC IR 10.2, FEI stated:

The following is FEI's current assessment of Robotic EMAT ILI tool technologies:

1. The use of Robotic EMAT ILI tools for inspection would require the pipeline to be taken out of service. This would be challenging for cases where the pipeline being inspected is not looped (i.e., does not have a redundant parallel path) and therefore downstream customers would require an alternate source of natural gas (e.g., compressed natural gas) to maintain supply while the pipeline is out of service for inspection.
2. Robotic EMAT ILI tools require the inside surface of a pipeline to be impeccably clean for its sensors to function properly. This is very difficult to achieve for pipelines that have been in service for many decades.
3. The technology utilized on Robotic EMAT ILI tools does not allow it to detect SCC [stress corrosion cracking] within the long seam of a pipe, 30 mm on either side of the long seam, or within 100 mm on either side of a girth weld.
4. Robotic EMAT ILI tools have very low productivity rates when compared to conventional EMAT ILI tools. For example, according to one vendor of Robotic EMAT ILI tools, with their best efforts, the most pipe able to be inspected in one day ranges from only 45 to 90 metres.
5. Robotic EMAT ILI tools need to be inserted into the pipeline through cut-outs at a minimum of every 550 metres. This would require a significant number of excavations depending on the length of the pipeline and involve purging and re-gasifying the pipeline during subsequent re-inspections (i.e., on 5 to 7 year intervals).

Given the constraints identified above, FEI has determined that Robotic ILI tool technology would not achieve the integrity management objectives of the Project.

41.1 Please confirm whether FEI has discussed the use of Robotic EMAT ILI tools with its prospective ILI tool vendors.

41.1.1 If confirmed, please elaborate on the feedback received from each ILI tool vendor FEI has consulted with regarding Robotic EMAT ILI.

41.1.2 If not, why not.

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Response:

FEI discussed Robotic EMAT ILI with the only vendor of these tools. Through this discussion, FEI identified the constraints listed in the responses to BCUC IR1 10.2 and 10.2.1. FEI further discusses the following constraints in the IR responses noted below:

- Pipeline inside surface cleanliness, as explained in the response to BCUC IR2 41.2;
- Limitations to detect SCC, as explained in the response to BCUC IR2 41.3; and
- Productivity concerns, as explained in the response to BCUC IR2 41.4.

As FEI's existing ILI tool vendors do not offer Robotic EMAT ILI, and as Robotic ILI tool technology would not achieve the integrity management objectives of the Project, FEI did not undertake further discussions.

41.2 Please clarify whether the pipeline inside surface cleanliness constraint identified by FEI in its assessment of Robotic EMAT ILI tools applies only to Robotic EMAT ILI tool usage or whether it also applies to EMAT ILI tools propelled through the pipeline using natural gas flow.

Response:

A stringent pipeline inside surface cleanliness requirement (i.e., no more than 0.20 mm of buildup on the pipeline inside surface) is specified by the Robotic EMAT ILI tool vendor. Although the cleanliness of the inside of the pipeline is an important factor for obtaining high-quality data for both Robotic and conventional EMAT ILI tools, there is not such a specific and stringent constraint specified for EMAT ILI tools.

41.2.1 If the constraint only applies to Robotic EMAT ILI usage, please explain why by comparing to EMAT ILI tools propelled through the pipeline using natural gas flow.

Response:

The Robotic ILI tool vendor has not provided FEI with an explanation for the pipeline inside surface cleanliness constraint. As explained in the response to BCUC IR 41.2, this constraint is not as specific or stringent for conventional EMAT ILI tools.

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41.3 Please elaborate why the technology used on Robotic EMAT ILI tools does not allow it to detect SCC within the long seam of a pipe, 30 mm on either side of the long seam, or within 100 mm on either side of a girth weld.

Response:

FEI is unable to elaborate on why the technology currently used on Robotic EMAT ILI tools has limitations for the detection of SCC within the long seam of pipe with precision. This information is part of a tool specification established by the ILI vendor, and FEI expects that it is proprietary and would not be shared with FEI or industry. FEI assumes that the specification is due to a combination of constraints with the current technology (e.g., sensor capabilities) and limitations that may have been identified/confirmed during tool testing.

41.4 Please compare the productivity rate (e.g. metres inspected per day) of Robotic EMAT ILI tools to Robotic MFL ILI tools, to the best of FEI's understanding. If productivity rates are significantly different, please explain why.

Response:

The productivity rates of Robotic EMAT ILI tools and Robotic MFL ILI tools are not expected to be significantly different given that both tools require frequent battery re-charging and travel inside the pipeline at a typical speed of approximately 0.1 metres per second.

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42.0 Reference: DESCRIPTION AND EVALUATION OF ALTERNATIVES

**Exhibit B-5, BCUC IR 11.4.1; FEI 2017 Long Term Gas Resource Plan
Application proceeding, Exhibit B-1, Section 6.3.2, p. 172**

CPH BUR 508 Transmission Pipeline – Alternative Analysis

In response to BCUC IR 11.4.1, FEI stated:

The current operating characteristics of the Cape Horn to Burrard 508 transmission line are provided in Table 1 below. While this transmission line shares common characteristics including diameter, hoop stress, and operating pressure, there are three distinct segments of the pipeline (see Figure 1) where flow rates differ. FEI does not have direct flow measurement on each of the segments, so the flow rates provided in Table 1 are estimated based on average flow rates observed at Coquitlam Gate Station and Eagle Mountain Compressor Station, the two major delivery points along the CPH BUR 508 transmission line.

Table 1 is reproduced below:

Table 1: Current Operating Characteristics of CPH BUR 508

CPH BUR 508	
Maximum operating pressure	4,020 kPa
Average operating pressure	3,620 kPa
Maximum hoop stress	49.3% of SMYS
Average volumetric flow – Cape Horn to Coquitlam (blue line in Figure 1)	19.8 MMSCFD
Average volumetric flow – Coquitlam to Noons Creek (pink line in Figure 1)	54.7 MMSCFD
Average volumetric flow – Noons Creek to Burrard (white line in Figure 1)	0.6 MMSCFD

On page 172 of the Application in the FEI 2017 Long Term Gas Resource Plan Application proceeding, FEI stated:

The Woodfibre LNG [Liquefied Natural Gas] Project facility, should it proceed, will be served from the VI Transmission System. This facility would impact the CTS as the CTS delivers the VITS requirements to the Eagle Mountain compressor facility in Coquitlam.

42.1 Please provide the operating characteristics listed in Table 1 based on the anticipated operation following the completion of the expansion at Eagle Mountain compressor facility required to serve the Woodfibre LNG Project.

Response:

The current operating characteristics in the referenced table were provided by reviewing flow and pressure data collected for every day of operation on these pipelines in recent years. With the exception of the Noon Creek to Burrard segment, which would remain very similar to current day

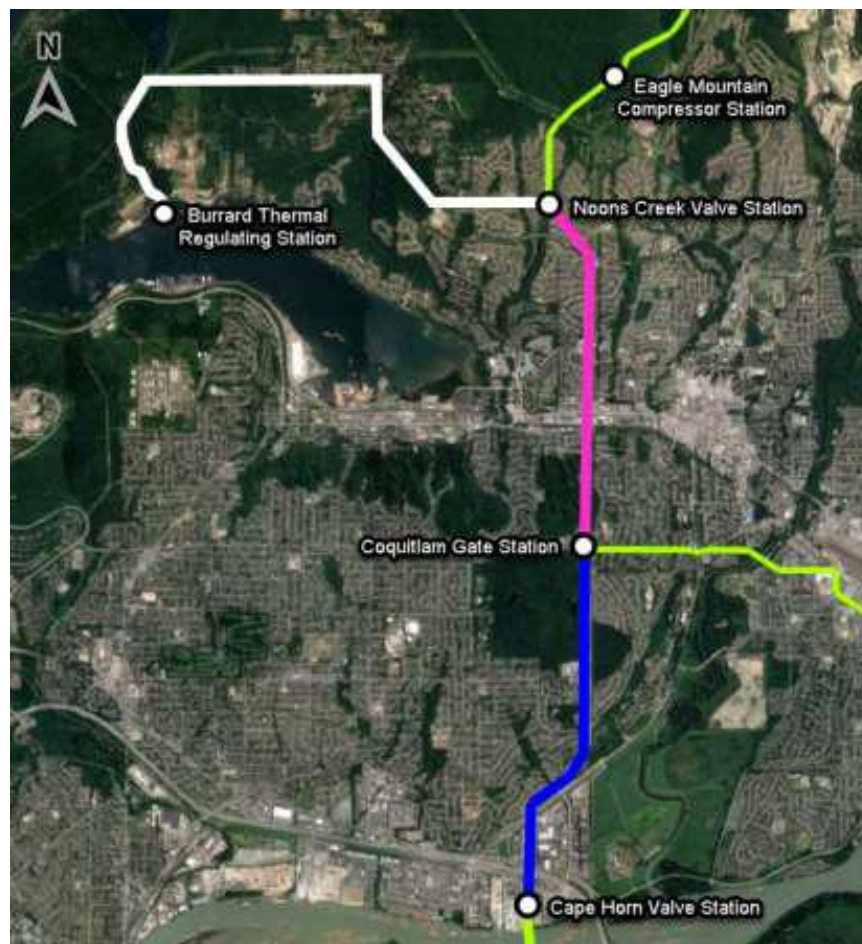
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averages with some allowance for growth in demand, FEI is unable to estimate the expected impacts on average values for facilities that are not in operation and are still in various stages of design. However, FEI provides Table 1 below showing the ranges of pressures and flows that could be anticipated should the expansion proceed at the Eagle Mountain compressor facility to serve the Woodfibre LNG Project. Figure 1 below is also reproduced from BCUC IR1 11.4.1 for reference.

Table 1: Operating Characteristics of CPH BUR 508 with Woodfibre LNG (WFLNG) In-Service

CPH BUR 508	
Maximum operating pressure	4,020 kPa
Operating pressure range	2350 to 3330 kPa
Maximum hoop stress	49.3% of SMYS
Range of volumetric flow – Cape Horn to Coquitlam (blue line in Figure 1)	70 to 210 MMcf/d
Range of volumetric flow – Coquitlam to Noons Creek (pink line in Figure 1)	280 to 435 MMcf/d
Average volumetric flow – Noons Creek to Burrard (white line in Figure 1)	0.6 to 0.65 MMcf/d
Estimated range of Inlet pressure to Eagle Mountain compressor facility	2100 to 3020 kPa

Figure 2 - Segments of the Cape Horn to Burrard 508 Transmission Pipeline



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42.1.1 Please provide the anticipated inlet pressure to the Eagle Mountain compressor facility following the completion of the expansion required to serve the Woodfibre LNG Project.

Response:

Please refer to the response to BCUC IR2 42.1.

42.2 Please explain how FEI's decision to proceed with a Pressure Regulating Station at Noons Creek Valve Station may be impacted should the Noons Creek to Burrard pipeline segment operate at pressures lower than the current average operating pressure, following the completion of the Eagle Mountain compressor station expansion.

Response:

FEI's decision to proceed with the pressure regulating station (PRS) at the Noons Creek Valve Station will not change as a result of the addition of the Woodfibre LNG (WFLNG) load and the corresponding expansion of the Eagle Mountain compressor station. As discussed in the response to BCUC IR2 42.1, the CPH NOO 508 pipeline is expected to have an operating pressure between 2,350 and 3,330 kPa when WFLNG is in-service. As such, the PRS must be in place to ensure the NOO BUR 508 pipeline does not exceed its new lower maximum operating pressure of 2,414 kPa following the CTS TIMC Project.

42.3 Please provide the total estimated capital cost to construct the Pressure Regulating Station at Noons Creek.

Response:

The total estimated capital cost to construct the pressure regulating station at the Noons Creek Valve Station is approximately \$1.1 million.

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1 **C. PROJECT DESCRIPTION**

2 **43.0 Reference: PROJECT DESCRIPTION**

3 **Exhibit B-1, Section 5.8.3, p. 107**

4 **Land Acquisition**

5 On page 107 of the Application, FEI states: “The Project will require fee-simple temporary
6 construction working space and access rights. FEI will develop a land management plan
7 to assess the required properties and prioritize the access agreements based on risk and
8 impacts to the Project schedule.”

9 43.1 Please confirm that the costs to acquire any lands for this Project have been
10 included in the Project cost estimate.

11

12 **Response:**

13 The only modification currently anticipated to require land acquisition is at the Noons Creek
14 Station, which will allow the station to be expanded to accommodate new equipment. The
15 proposed extension is already encumbered by a statutory right of way, and the cost to purchase
16 this land in fee simple has been assessed and incorporated within the Owner’s cost estimate.

17

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1 **44.0 Reference: PROJECT DESCRIPTION**

2 **Exhibit B-5, BCUC IR 23.1, 23.2.2; Exhibit B-1, Section 5.8.4, p. 108;**
3 **Section 5.9.2.3,**
4 **p. 111; Section 5.9.4, pp. 111-112**
5 **Permits**

6 In response to BCUC IR 23.1, FEI stated:

7 Once the Project detailed engineering designs have been advanced, FEI will
8 conduct a review of Project works occurring in each municipality, and review
9 applicable municipal bylaws and existing Operating Agreements to clarify
10 permitting requirements.

11 44.1 Please explain, based on FEI's past urban construction project experience,
12 whether FEI considered advancing any detailed engineering design work to
13 mitigate the risk of late unexpected construction requirements from third parties,
14 such as British Columbia Hydro and Power Authority (BC Hydro) or other
15 underground utilities.

16
17 **Response:**

18 Advancing the design further prior to submission of the Application was not deemed to be required
19 for the Project. During the Project development phase, various resources conducted desktop
20 reviews to determine third-party agreements that may be required prior to construction. These
21 resources included BC 1 Call (for underground infrastructure), as-built drawings, and publicly
22 available geographical information databases for the various municipalities where the pipeline
23 modification sites are located.

24 Following the desktop reviews, early engagement meetings were held with the identified third
25 parties, including BC Hydro, the Ministry of Transportation and Infrastructure, and various
26 municipalities that own and operate underground utilities, to review the Project scope and design.
27 No concerns were raised during these meetings that would require advancing any detailed
28 engineering work.

29 Further, as discussed in the response to BCUC IR2 46.1, the nature of the CTS TIMC Project
30 work is significantly different from FEI's most recent major urban pipeline project (the Lower
31 Mainland Intermediate Pressure System Upgrade project).

32
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35 44.1.1 Please explain, based on FEI's past urban construction project
36 experience, whether Project cost escalation risks can be mitigated

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against in part by clarifying permitting requirements in advance of the detailed engineering phase.

Response:

Based on FEI's experience with previous projects, including urban construction projects, many project-specific permitting requirements cannot be fully clarified or defined until the detailed design is at a level of definition sufficient to define the nature and type of project activities. As such, permitting requirements are contingent upon completion of the detailed design to a level of definition, typically between 60 to 90 percent of completion. To mitigate the cost escalation risk, FEI engages early with all key stakeholders to identify the number and type of permits required and develops a permit management plan specific to the project. This early engagement and planning provides, in most cases, adequate information to determine the resources, and associated costs, for each permit along with timelines that are incorporated in the project plans and schedule. In addition, FEI uses the information from prior projects to assist in the identification of the types of permits needed and the historical timelines as benchmarks to determine the adequacy of the permit planning process. Furthermore, the proactive and ongoing engagement with stakeholders (as described in the response to BCUC IR2 44.1) has proven to be the most effective way to mitigate and minimize the potential for unexpected changes that could result in cost escalation.

44.1.2 Please confirm whether FEI's current Project cost estimate and/or contingency adequately addresses the risk of late unexpected construction requirements from third parties.

Response:

Confirmed. The risk associated with late unexpected construction permitting requirements has been accounted for during the risk identification process. The additional costs associated with these requirements, including the time-driven (schedule) cost should there be delays, is included in the contingency analysis and is part of the overall Project contingency.

In response to BCUC IR 23.2.2, FEI stated:

FEI considers the risk of cost escalation arising from municipal permit requirements to be negligible. The majority of the construction activities entail replacement or modification of existing infrastructure. As a result, FEI is anticipating that operating agreements will apply to most activities, and hence

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involve limited and standardized municipal permit requirements. The remaining work activities that include new infrastructure, or are not already covered by an existing operating agreement, are contained within FEI's existing rights-of-way and facility stations, thus minimizing anticipated permit requirements. FEI has prepared a preliminary list of municipal permit requirements associated with the proposed scope of work, and accounted for these in the CPCN cost estimate.

44.2 Please provide an estimate of the potential Project costs arising from meeting municipal permit requirements.

Response:

In FEI's experience the costs related to municipal permitting are primarily the costs for the permitting process itself, and not to meet the specific permitting requirements. The specific permitting requirements are generally not over and above FEI's typical construction practice, and in cases where additional requirements do arise, the cost to meet these requirements is not significant.

Based on the defined CTS TIMC Project scope, schedule, and the permitting requirements, the municipal permitting cost is expected to be approximately \$350 thousand and is included in the total Project cost estimate in the construction estimate portion.

44.2.1 Please quantify the risk of schedule delay arising from meeting municipal permit requirements.

Response:

The typical timelines for municipal permits have already been accounted for within the Project schedule and, as such, meeting those permitting requirements is not anticipated to cause any Project schedule delays. Even if there were delays with receiving the municipal permits, these delays are not anticipated to have a direct impact on the critical path as there are other permits with significantly longer lead times.

As explained in the response to BCUC IR2 44.1, third parties will be involved during the detailed design in order to build upon the early engagement discussions that have already taken place. This will keep municipalities up to date as the Project evolves and is intended to avoid any unforeseen delays.

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On page 108 of the Application, FEI states:

FEI will use existing public and private roads in order to access locations along the ROWs [rights-of-way] requiring modifications. Appropriate traffic management will be implemented, as required, adhering to municipal guidelines to ensure safety of the public and construction crews.

44.3 Please explain the extent to which FEI has to date reviewed traffic management planning with each municipality where Project activities will take place.

Response:

Given the level of Project definition to date, FEI has not yet developed its detailed traffic management plans to be reviewed with each municipality. FEI plans to review these documents with municipalities as part of the detailed design phase of the Project. The traffic management planning to date has been completed based on FEI's knowledge and past work experience with municipalities.

44.3.1 Please discuss any efforts to accommodate traffic management requirements into the current design of Project components.

Response:

The design of project components is not anticipated to be impacted by traffic management requirements. The design of components (e.g. fabricated assemblies, skids, etc.) allows for their safe transport to site. FEI does not expect traffic management requirements for transporting project components will be materially different from similar requirements for transporting construction equipment to site.

44.3.2 Please provide an estimate of the potential Project costs arising from implementation of traffic management requirements that may be imposed by municipal traffic permitting authorities.

Response:

FEI has identified approximately \$190 thousand within the Project cost estimate for the development of traffic management plans and the implementation of traffic management during construction.

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On page 111 of the Application, FEI states: “Highways and areas under the jurisdiction of the Ministry of Transportation and Infrastructure will require permits under the Transportation Act. Once the extent of the impact is determined during detailed design, permits will be prepared and submitted for approval.”

44.4 Please confirm that costs associated with any Ministry of Transportation and Infrastructure permitting process that may be required have been included in the Project cost estimate.

Response:

Confirmed. The costs associated with Ministry of Transportation and Infrastructure permitting has been included in the Project cost estimate. These costs are included in the Project Owner’s costs.

On pages 111 to 112 of the Application, FEI states:

In addition to approvals from federal, provincial and municipal governments, the Project may require approvals from other third parties including the following:

- CP Rail
- BC Hydro
- Telus
- Rogers
- Trans Mountain
- FortisBC Energy Inc. (gas)
- Local government utilities.

44.5 Please explain what specific approvals or sign off from BC Hydro may be required.

Response:

FEI will require the following approvals from BC Hydro:

- WorkSafeBC Form 30M33 (Assurance of Compliance with Occupational Health and Safety Regulation, Part 19) permits in order to undertake work near power lines or electrical equipment;

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- Proximity agreements for work near buried infrastructure; and
- Compatible use agreements for BC Hydro right of way boundaries.

44.5.1 Please confirm that costs associated with any BC Hydro permitting process that may be required has been included in the Project cost estimate.

Response:

Confirmed. The costs associated with the BC Hydro permitting process have been included in the Project cost estimate. These costs are included in the Project Owner's costs.

44.6 Please explain what specific approvals or sign off may be required from the remaining third parties noted above.

Response:

FEI may be required to obtain the following specific approvals or sign-offs from the third parties identified in the preamble:

- Proximity agreements;
- Crossing agreements;
- Access agreements;
- Compatible use agreements;
- Accommodation agreements; and
- Third party agreements.

44.6.1 Please confirm that costs associated with any approvals or sign off that may be required from these third parties have been included in the Project cost estimate.



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1 **Response:**

2 Confirmed. The costs associated with third-party approvals or sign offs have been included in the
3 Project cost estimate. These costs are included in the Project Owner's costs.

4

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45.0 Reference: PROJECT DESCRIPTION

Exhibit B-1, Section 5.10.1.1, p. 114

Project Cost Estimate Accuracy

On page 114 of the Application, FEI states:

The Total Project capital cost estimate is \$137.8 million in as-spent dollars, including AFUDC [Allowance for Funds Used During Construction] of \$6.1 million. The total Project capital cost also includes contingency of 10 percent that FEI plans to hold based on its current understanding of the Project's risk profile and to account for possible scope changes or unknown future events which cannot be anticipated and which were not quantified in the risk register. The capital cost estimate with the 10 percent contingency approximates a P50 confidence level and will form the Project capital budget.

45.1 Please confirm the current maturity level of Project scope definition, as a percent complete of engineering work or by a different suitable metric.

Response:

AACE guidelines and recommended practices do not provide a maturity level of Project scope definition as a percent of engineering work. Instead, AACE states that the maturity level of project definition is roughly indicated by a percentage of complete definition. For a Class 3 estimate, this percentage of complete definition varies from 10 to 40 percent. Further, for a Class 3 estimate, the AACE recommended practices state that a project's scope of work must be defined, meaning it is close to 100 percent known except for minor changes as the design progresses.

As FEI has developed an AACE Class 3 estimate for the CTS TIMC Project, the current scope of work definition is close to 100 percent known, while the percentage of overall Project scope definition is approximately 30 percent.

45.2 Please confirm the specific accuracy range of the current Project cost estimate.

Response:

The specific accuracy range for the current Project cost estimate (which was developed to an AACE Class 3 level consistent with current BCUC CPCN Guidelines) is +16 to -14 percent at an 80 percent confidence level (as stated on page 12 of Confidential Appendix E-3 - Validation Estimating Contingency Report).

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1 **46.0 Reference: PROJECT DESCRIPTION**

2 **Exhibit B-1, Section 5.8, p. 106**

3 **Construction Management**

4 On page 106 of the Application, FEI states:

5 Construction activities on the Project will be spread across the Lower Mainland in

6 ten municipalities. Worksites will range from agricultural fields to densely populated

7 urban neighbourhoods, with each worksite presenting its own set of challenges for

8 construction. All work will be performed within the existing pipeline ROW and the

9 station footprints. Only four work sites will require temporary workspace where

10 navigating the existing infrastructure is unachievable and where the existing ROW

11 cannot provide enough room to carry out construction activities safely and

12 effectively.

13 46.1 Please explain whether the construction challenges associated with each worksite

14 in this Project are comparable to any construction challenges that may have been

15 encountered during FEI's recent Lower Mainland Intermediate Pressure System

16 Upgrade (LMIPSU) Project.

17

18 **Response:**

19 The construction challenges expected with the CTS TIMC Project are different from those

20 encountered during the LMIPSU Project. The LMIPSU Project involved the installation of 20 km

21 of continuous NPS 30 pipeline across three densely populated urban municipalities, and

22 modifications to two large gate stations. In contrast, the CTS TIMC Project involves relatively

23 small modifications of facilities in existing stations, and the pipeline alterations will occur within

24 existing rights of way in non-urban areas.

25 In addition, the LMIPSU Project was executed over a relatively small geographical area whereas

26 the distance between the sites for the CTS TIMC Project spans a wide geographic area. This will

27 impact supervision travel times, material handling, and logistics.

28 Some challenges will be shared by the two projects, and other FEI projects, including ensuring

29 high safety standards during construction in close proximity to live facilities in congested areas,

30 and limited availability of temporary workspaces.

31

32

33

34 46.2 Please discuss how any lessons learned from the engineering design and

35 construction management of the LMIPSU Project have been applied to this Project.

36

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1 **Response:**

2 FEI endeavors to continually improve in order to enhance and bridge any gaps in its Major Project
3 delivery processes. Lessons from the LMIPSU Project, as well as other past and ongoing projects,
4 are reviewed and incorporated in future project developments by communicating this information
5 to managers of other Major Projects to incorporate into their project planning. This proactive
6 approach improves safety, efficiency, reliability, and consistency across FEI's projects. These
7 improvements are reflected in changes to the project delivery processes and the development of
8 new procedures, guidelines, and project management tools.

9 One example of a lesson learned from the LMIPSU Project was the need for the installation of
10 line heaters to counteract the reduction in gas temperature that occurs due to the pressure drop
11 through a pressure regulating station (PRS). The temperature drop was greater than expected
12 and resulted in ground freezing around the buried pipeline and frost heaving to the Como Lake
13 Road surface above. A line heater was subsequently added at the station to prevent the gas
14 temperature from going below zero Celsius. As part of the CTS TIMC Project, FEI proposed to
15 install a PRS at Noons Creek which will also drop the gas pressure. A line heater has been
16 included in the scope at this station in order to avoid temperatures dropping below zero in the
17 downstream pipeline.

18 Finally, the retention and reliance on personnel who have experience on previous projects
19 ensures the lessons and personal experience are retained and communicated for the benefit of
20 future projects.

21

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1 **D. PROJECT COST AND RATE IMPACT**

2 **47.0 Reference: FINANCIAL**

3 **Exhibit B-5, BCUC IR 27.4; Order G-237-18 dated December 13, 2018**

4 **QRA Costs**

5 In response to BCUC IR 27.4, FEI stated:

6 ... FEI will continue to record costs associated with the future ITS TIMC application
7 (which is planned to be submitted in 2022, along with the timeline for completion
8 of that project) in the TIMC Development Cost deferral account, but these costs
9 will be tracked and recorded separately, and disposition will be requested as part
10 of the ITS TIMC CPCN application.

11 [...]

12 As such, with this Application, FEI recognizes that it could have requested the
13 creation of two separate deferral accounts – one for the QRA and one for the CTS
14 TIMC costs.

15 [...]

16 FEI is planning for future iterations of QRAs, although the specific scope and
17 timeline remain under development. FEI requires a sustainable and ongoing
18 process to manage risk of its transmission pipelines, and is planning for future
19 ongoing operations and maintenance expenditures. If the BCUC determines a
20 separate deferral account is appropriate for this purpose and to record the costs
21 related to the QRA that has already been undertaken, FEI requests that the
22 account be a rate base account with an ongoing three year amortization period,
23 and that future costs added to the account be subject to review in future revenue
24 requirement proceedings.

25 47.1 Please confirm, or explain otherwise, that FEI intends to attribute costs related to
26 future iterations of QRAs to the existing TIMC Development Cost deferral account.

27
28 **Response:**

29 FEI does not intend to attribute costs related to future iterations of QRA to the existing TIMC
30 Development Cost deferral account. However, FEI will incur costs (not included in the TIMC
31 Development Cost deferral account forecast, or the CTS TIMC Project forecast) related to future
32 iterations of QRAs in an appropriate account.

33 As the existing TIMC Development Cost deferral account had a specific scope and estimate
34 associated with its creation (including the initial QRA, but not ongoing QRAs), FEI does not
35 consider it appropriate to attribute costs for future QRA iterations to this deferral account.

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FEI expects that it will propose incremental costs related to future QRA iterations in future revenue requirement applications as needed.

47.2 Please discuss why the separate QRA cost account should be a rate base account when the existing TIMC Development Cost deferral account, approved with Order G-237-18, is a non-rate base account.

Response:

The existing TIMC Development cost deferral account, as approved under Order G-237-18, was requested as a non-rate base account, attracting FEI's WACC return, such that the costs incurred would be held outside of FEI's rate base as well as FEI's delivery rates until BCUC approval of the CTS TIMC CPCN. As proposed in the Application, once the CPCN is approved, FEI will transfer the deferral account to rate base on January 1 of the year following approval. Transferring from non-rate base to rate base upon BCUC approval is consistent with past CPCN applications approved by the BCUC, reflecting that assets in service are included in FEI's rate base (including any associated deferral accounts).

In contrast, FEI has requested that, if a separate QRA cost account were to be created, it should be a rate base account because the QRA costs are not the subject of a separate CPCN proceeding; they will be reviewed in FEI's ongoing revenue requirement/annual review proceedings. Rate base treatment is simpler and more transparent, and is FEI's general approach to deferral account requests; FEI only requests non rate base treatment if there is a specific reason for the treatment.

47.3 In a scenario that the BCUC determines separate deferral accounts are appropriate – one for the QRA and one for the CTS TIMC costs, please provide for each account i) the original estimate costs, ii) the actual spend to-date, iii) the projected remaining spend and iv) the total actual and projected costs.

Response:

Please refer to the table below, similar to that which was originally provided in the response to BCUC IR1 26.1, but revised here to provide a breakdown between the QRA costs, CTS TIMC development costs, ITS TIMC development costs and the development costs that were capitalized as proposed in the Application.

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FEI notes the original estimate of \$41.6 million was for the total cost of developing the TIMC project, which includes costs for the QRA and development of both the CTS TIMC and ITS TIMC projects.

For clarity, as discussed in the response to BCUC IR1 27.4, FEI proposes to record the ITS TIMC development costs associated with the future ITS TIMC CPCN Application in the existing TIMC Development Cost deferral account. However, these costs will be tracked and recorded separately, and disposition will be requested as part of the ITS TIMC CPCN Application. For further clarity, even though the ITS TIMC development costs will be recorded in the existing TIMC Development Cost deferral account, FEI will not begin amortization for these ITS TIMC development costs until it receives approval from the BCUC for the ITS TIMC CPCN. FEI will only amortize the costs related to the CTS TIMC development costs over a three-year period if the CTS TIMC CPCN is approved.

Amounts in (\$000s)	Original Estimate	Actual Spend	Projected Remaining Spend	Total Actual & Projected Costs
CTS Development Costs - deferral		2,701	6,117	8,818
CTS Development Costs - capitalized		9,340	3,907	13,247
CTS Carrying Costs		233	257	490
Total CTS Costs		12,274	10,281	22,555
ITS Development Costs	-	-	6,050	6,050
ITS Carrying Costs	-	-	351	351
Total ITS Costs	-	-	6,401	6,401
QRA Costs		11,700	-	11,700
QRA Carrying Costs		1,011	341	1,352
Total QRA Costs	-	12,711	341	13,052
Combined CTS, ITS, & QRA Costs (After Carrying Costs)	41,600	24,985	17,023	42,008

47.3.1 Please confirm if the separate deferral account for the CTS TIMC costs would continue to capture costs associated with both the CTS TIMC application and the ITS TIMC application (similar to the existing "TIMC Development Cost deferral account") or if FEI would request a third separate deferral account to record costs associated with the ITS TIMC CPCN application.

Response:

Confirmed. Please refer to the response to BCUC IR2 47.3.

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1 **48.0 Reference: FINANCIAL**

2 **Exhibit B-5, BCUC IR 28.2; Exhibit B-7, CEC IR 25.1**

3 **EMAT ILI Tool Run Costs**

4 In response to BCUC IR 28.2, FEI stated it “expects to run an EMAT ILI tool eight to ten
5 times per pipeline over the 65- year post-project analysis period.”

6 In response to Commercial Energy Consumers Association of British Columbia (the CEC)
7 IR 25.1, FEI stated it “expects to complete its baseline EMAT ILI runs on the 11 CTS TIMC
8 pipelines between 2024 and 2027.”

9 48.1 Please confirm, or explain otherwise, that FEI expects to run the EMAT ILI tools
10 eight to ten times over the 65-year post-project analysis period, whereby each of
11 the eight to ten sessions of running the tools for all 11 CTS TIMC pipelines will take
12 approximately 3 years to complete.

13
14 **Response:**

15 Confirmed.

16

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E. ENVIRONMENT AND ARCHAEOLOGY

49.0 Reference: ENVIRONMENTAL REPORT

Exhibit B-1, Section 7.2.3, p. 131; Appendix H, p. vi, Exhibit B-5, BCUC IR 30.2

Required Environmental Permits

On page 131 of the Application, FEI states: “During the detailed engineering phase of this Project, FEI will undertake further environmental assessments to confirm permitting requirements and will apply for permits as required.”

On page vi of Appendix H, Stantec states: “Regulatory requirements under the federal Fisheries Act are expected to be required for one event. Provincial permits under the Agricultural Land Commission Act, Wildlife Act, and Water Sustainability Act are anticipated to be required for five events and two facilities. Permits under municipal bylaws are anticipated to be required for two events and seven facilities.”

In response to BCUC IR 30.2, FEI stated: “FEI does not anticipate any issues with obtaining the required environmental permits. The above listed permits are typical of those required for FEI projects and there is sufficient time in the Project schedule to apply for and obtain the permits.”

49.1 Please discuss the potential impacts to the Project scope, schedule or budget if FEI experiences any issues with obtaining the required environmental permits.

Response:

Delays in obtaining the required environmental permits could potentially impact the Project schedule. However, the potential for such delays are low as construction of the Project is not currently scheduled to commence until 2024, leaving ample time to obtain the required permits. FEI anticipates that permitting timelines under the legislation referenced in the preamble will range from 3 to 9 months.

49.1.1 Please provide an estimate of the potential Project costs arising from implementation of requirements that may be imposed by environmental permitting authorities.

Response:

FEI expects environmental permitting authorities, including DFO, ALC and OGC, to impose requirements typically included in issuing these kinds of permits. These costs have been included

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- 1 in the Project cost estimate, and the environmental allocation is approximately \$1.1 million, which
- 2 includes costs associated with: internal staffing, fish and aquatic life salvages, water
- 3 management, erosion and sediment control, environmental monitoring and reporting, and QEP
- 4 inspections and reporting.

5

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1 **50.0 Reference: ARCHAEOLOGY**

2 **Exhibit B-1, Section 7.3, pp. 125, 132-133, 150; Appendix I, pp. vi, 8**

3 **Exhibit B-5, BCUC IR 31.1, 31.2, 31.5**

4 **High Archaeology Potential**

5 On page 132 of the Application, FEI states: “The HUN ROE 1067 Event 12 and Huntington
6 facility are within areas of modelled high archaeological potential, and will require AIA
7 work.”

8 On page 133 of the Application, FEI states:

9 A permit will be required under Section 12.2 of the Heritage Conservation Act
10 (HCA) in order to undertake AIA activities. FEI will obtain any Indigenous cultural
11 heritage permits that are applicable at the time of the AOA and AIA. AIA work will
12 be completed where Project components overlap with areas of moderate or high
13 archaeological potential identified during the AOA. AIA work may begin during the
14 detailed engineering phase and continue throughout construction, especially in
15 areas of potentially deep buried cultural deposits.

16 In response to BCUC IR 31.1, FEI stated:

17 Indigenous cultural heritage permits were received from Katzie First Nation,
18 Kwantlen First Nation, Musqueam Indian Band, Squamish Nation, Sto:lo Nation,
19 and Tseil-Waututh Nation in March 2021 prior to the initiation of the AOA. No permit
20 under the Heritage Conservation Act (HCA) was required for the AOA. An HCA
21 Section 12.2 permit and Indigenous cultural heritage permits will be required for
22 the AIA. Based on the current Project schedule it is estimated that archaeological
23 permit applications will be submitted in approximately mid to late 2022.

24 50.1 Please confirm that the Indigenous cultural heritage permits listed as received in
25 the preamble represent all required Indigenous cultural heritage permits for the
26 Project. If no, please list any further Indigenous cultural heritage permits required
27 but not yet received.

28
29 **Response:**

30 As stated in the preamble, FEI obtained all of the Indigenous cultural heritage permits required to
31 complete the Archaeological Overview Assessment. FEI’s archaeologist will also need to obtain
32 Indigenous cultural heritage permits before conducting the Archaeological Impact Assessment
33 and prior to commencing field work. In order to ensure FEI has obtained all of the required permits,
34 the archaeologist will confirm which Indigenous groups have permitting systems before
35 commencing field work.

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50.2 Please confirm, or explain otherwise, that the HCA Section 12.2 permit is the only government archaeology permit required for the Project.

Response:

Confirmed. The HCA Section 12.2 permit is the only government archaeology permit required for the Project. As no events or facilities are located within known archaeology sites, a HCA Section 12.4 Site Alteration Permit is not required unless there is a chance find during the Archaeological Impact Assessment.

In response to BCUC IR 31.2, FEI stated: “FEI does not anticipate any issues with obtaining the required archaeological permits. The above listed permits are typical of those required for FEI projects and there is sufficient time in the Project schedule to apply for and obtain the permits.”

50.3 Please discuss any potential impacts to the CTS TIMC Project scope, schedule or budget if the archaeological permitting process results in delays.

Response:

Delays in the archaeological permitting process could potentially impact the Project schedule. However, the potential for such delays is low as construction of the Project is not currently scheduled to commence until 2024, leaving ample time to obtain *Heritage Conservation Act* and Indigenous cultural heritage permits. FEI anticipates that archaeological permitting timelines referenced in the preamble will range from 2 to 12 months.

50.3.1 Please provide an estimate of the potential Project costs arising from implementation of requirements that may be imposed by archaeological permitting authorities.

Response:

FEI expects the requirements imposed by the archeological permitting authorities (including the Archaeology Branch and BCOGC) to reflect construction mitigation measures typically included in permits of this kind. The costs associated with these measures have been included in the

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Project cost estimate. The archaeological costs including labour, monitoring during construction, permitting, and reporting included in the Class 3 estimate is approximately \$400 thousand. FEI would use the Project contingency in the event of a chance find occurrence.

On page 8 of Appendix I to the Application, Stantec states:

However, there may also be sites that have cultural significance or sensitivity to Indigenous groups near the Project that are identified once consultation with those groups begins. In addition, this review does not include information or other input from Indigenous groups regarding their perspectives on archaeological potential or sensitivities that should be considered in future archaeological studies.

On page 150 of the Application, FEI states:

FEI is committed to... Communicating and soliciting feedback regarding construction timelines, scope of work, and safety and mitigation plans. This includes, in particular, working with Indigenous groups in advance of completing an Archaeological Overview Assessment (AOA) and Archaeological Impact Assessment (AIA) by, for example, obtaining relevant Indigenous issued permits and sharing results for assessment review and comment.

In BCUC IR 31.5, the BCUC asked FEI to explain whether all Indigenous Communities that may be affected by the potential for archaeological impact of the Project have been informed about this potential. In response, FEI stated: "FEI sent two notification letters to all Indigenous groups that may be affected by the potential for archaeological impact of the Project to inform them of the Project and its potential for impacts. The Archaeology Constraints Report was sent to all Indigenous groups in November 2020."

50.4 Please explain how FEI determined that sending two letters to contact Indigenous Communities that may be affected by the potential for archaeological impact of the Project was effective and sufficient notification.

Response:

FEI began its engagement and information sharing with Indigenous communities for the TIMC Project through written notification. FEI's notification letters for the Project are an effective and sufficient means of notification and elicited responses and dialogue from Indigenous groups whom asserted their interest in the archaeological activities.

Moreover, FEI's determination that its notification of the Project was effective and sufficient is based on more than just the number of letters it sent. In this case, FEI's engagement with Indigenous groups has been ongoing and includes the exchange of substantive information

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regarding the project beyond the notification letters. For example, in addition to the direct correspondence from FEI to Indigenous groups regarding the Project, FEI's archaeological consultant (Stantec) applied for all necessary heritage permits issued through Indigenous permitting processes. These Indigenous groups include the Kwantlen First Nation, Musqueam Indian Band, Squamish Nation, Tsleil-Waututh Nation, and the Stó:lō Nation. To date, FEI has obtained all but one heritage permit. FEI's consultant remains in contact with the Indigenous group regarding the outstanding permit, which is being delayed due to capacity constraints of the community, not due to concerns with the permit itself. FEI expects to obtain this outstanding permit in Q4 2021.

FEI will continue to engage with Indigenous groups regarding the Project throughout the BCUC review process for the Application, the detailed engineering phase of the Project, the BCOGC permitting phase, and during construction of the Project. FEI will share the Archaeological Overview Assessment in Q4, and continue to involve Indigenous groups in Archaeological field activities.

50.4.1 Please explain, with rationale, any follow up FEI intends to make to engage with Indigenous Communities regarding potential archaeological impacts of the Project. If no follow up is planned, please explain why.

Response:

FEI and its archaeological consultant (Stantec) will continue to engage with Indigenous communities throughout the lifecycle of the Project. In early Q4 2021, Stantec will share a draft Archaeological Overview Assessment (AOA) report with Indigenous groups from whom it received Indigenous-issued permits for review and feedback. FEI will also share the final AOA with all affected Indigenous groups in late Q4 2021.

In addition, FEI and its archaeologist will continue to engage with Indigenous groups during the Archaeological Impact Assessment (AIA) process, providing archaeological monitoring opportunities as well as providing draft reports to affected Indigenous groups for review and comment.

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1 **F. CONSULTATION AND ENGAGEMENT**

2 **51.0 Reference: PUBLIC CONSULTATION**

3 **Exhibit B-1, Section 8.2, p. 144; Appendix J-2**

4 **Issues Raised during Public Consultation**

5 On page 144 of the Application, FEI summarizes its public consultation activities to date.
6 In Appendix J-2 FEI recorded its public consultation activities to date.

7 In Table 8-2 on page 144 of the Application, FEI summarizes the two questions raised by
8 residents using the dedicated project phone line.

9 51.1 Please provide an update to Table 8-2 and Appendix J-2 between July 27, 2021
10 and the date of the response to this IR.

11
12 **Response:**

13 FEI is not aware of any outstanding concerns from stakeholders. As such, there have been no
14 additional issues or concerns raised (Table 8-2) or public consultation activities progressed
15 (Appendix J-2) since July 27, 2021. As discussed in the response to BCUC IR1 32.4, FEI
16 anticipates resuming public consultation activities in 2022 as the Project continues to develop and
17 will continue to respond to feedback throughout the Project's lifecycle.

18

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52.0 Reference: **INDIGENOUS ENGAGEMENT**

Exhibit B-1, Section 8.3, pp. 146, 148-149; Exhibit B-5, BCUC IR 33.1, 33.5, 33.9, 33.11; Appendix J; Appendix K-4; Appendix K-3

Issues Raised during Indigenous Engagement

On pages 148 to 149 of the Application, FEI provides Table 8-5 summarizing questions, issues and concerns raised by Indigenous groups.

On page 146 of the Application, FEI states: “While the constitutional duty to consult with Indigenous groups rests with the Crown, FEI’s Indigenous engagement activities will aid the appropriate Crown agencies in meeting that duty.”

In response to BCUC IR 33.1 i FEI provided updates to its Table 8-5 for feedback obtained between January 18, 2021 and July 27, 2021.

52.1 Please resubmit Table 8-5 with any updates since July 27, 2021.

Response:

Below is the latest version of Table 8-5 which includes updates since July 27, 2021 highlighted in boldface text.

Indigenous Group	Summary of questions, issues or concerns	Next Steps/follow-up
Tsleil-Waututh Nation (TWN)	<ul style="list-style-type: none"> • October 6, 2020: TWN sent a copy of their Stewardship Policy and stated that they require a 45 days for review of documents or materials. • December 17, 2020: TWN sent a cost estimate for review of the Environmental Overview Assessment and Archaeological Constraints Report. • January 19, 2021: TWN reviewed the Archaeological Constraints Report and requested FEI and its consultants apply for TWN archaeological permits for each work sites rather than one permit for the entire project. TWN notified that, due to internal capacity, they are delayed in reviewing the Environmental Overview Assessment. 	<ul style="list-style-type: none"> • FEI has accepted the cost estimate for TWN to review materials. FEI has noted the request for multiple permits and will work with archaeological consultants to obtain the required permits. FEI is awaiting comments on the Environmental Overview Assessment and will continue to engage TWN to address any interests or concerns.

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Indigenous Group	Summary of questions, issues or concerns	Next Steps/follow-up
People of the River Referrals Office (PRRO)	<ul style="list-style-type: none"> • October 8, 2020: PRRO requested geospatial data. FEI provided KMZ file of worksites. • November 30, 2020: PRRO provided Technical Review on FEI's application, which indicated some worksites may potentially impact waterways, and cultural and heritage sites. • December 3, 2020: FEI hosted a virtual meeting with PRRO to discuss the Technical Review and PRRO's interests in the Project. • January 18, 2021: PRRO sent a final engagement report in which PRRO indicated approval with condition(s) for FEI's application. Conditions include a request for FEI to send reports related to watercourses and environmental impacts as they become available through the life of the Project. • February 19, 2021: FEI met with the PRRO and Sto:lo Research and Resource on upcoming geotechnical program and the existing Archaeological Overview Assessment Sto:lo prepared for this area. They confirmed that there is high archaeological potential where geotech work is planned to occur. FEI will complete the geotech work with archaeological monitors on site. 	<ul style="list-style-type: none"> • FEI will continue to keep PRRO informed about the Project as it develops and share documents in advance of further archaeological and environmental assessments and construction activities as PRRO requested on January 18, 2021. • Geotech work has been completed with archaeological monitors.
Matsqui First Nation (MFN)	<ul style="list-style-type: none"> • October 9, 2020: MFN requested additional information about the Project. MFN indicated an interest in training opportunities and to have their own monitors present for project activities. • October 14, 2020: FEI hosted a telephone meeting to discuss the Project. • November 19 and December 3, 2020: FEI hosted a follow-up virtual meeting with MFN to review project details, the Environmental Overview Assessment and the Archaeological Constraints Report, further clarify the request for monitors and training, and respond to any further questions, concerns and interests. 	<ul style="list-style-type: none"> • FEI is planning additional meetings with MFN to continue discussions about their interests in the Project.

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Indigenous Group	Summary of questions, issues or concerns	Next Steps/follow-up
Kwikwetlem First Nation (KFN)	<ul style="list-style-type: none"> • October 27, 2020: KFN indicated an interest in capacity funding to participate in engagement. 	<ul style="list-style-type: none"> • FEI followed-up with KFN to discuss capacity funding. • FEI provided a capacity funding agreement for KFN to review on May 18, 2021 which includes capacity funding for multiple FEI projects. • July – Sept 2021 - FEI has continued discussions regarding capacity funding for multiple FEI projects in KFN's territory, including TIMC. • Sept 24, 2021 - FEI confirmed funding for a Project Coordinator for KFN to support engagement with FEI on TIMC.
Musqueam Indian Band (MIB)	<ul style="list-style-type: none"> • November 13, 2020: Follow-up email to inform MIB about anticipated work in the Delta area. 	<ul style="list-style-type: none"> • FEI will continue to update MIB about the Project as it develops and in advance of further archaeological and environmental assessments and construction activities.
Squamish Nation (SN)	<ul style="list-style-type: none"> • November 10, 2020: SN invited FEI to upload project materials to Squamish Connect referrals portal. • November 24, 2020: SN requested spatial data. 	<ul style="list-style-type: none"> • FEI provided KMZ files through Squamish Connect.
Cowichan Tribes (CT)	<ul style="list-style-type: none"> • December 11, 2020: CT notified FEI of their review of the Environmental Overview Assessment and Archaeological Constraints Report. CT requested that they be engaged on future archaeological activities at Tilbury and Richmond worksites. • January 18, 2021: FEI hosted a virtual meeting with CT to discuss the Project and their interests in archaeological activities. CT re-iterated an interest in participating in archaeological activities at Tilbury and Richmond worksites. 	<ul style="list-style-type: none"> • FEI will continue to send archaeological reports to CT for review and comment. FEI will continue to engage CT on archaeological interests.

Appendix K-4 details the Indigenous Groups Engagement Log.

In response to BCUC IR 33.5, FEI provided Attachment 33.5 to Exhibit B-5, updating Appendix K-4.

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52.2 Please resubmit Appendix K-4 updated with any feedback or engagement since March 31, 2021.

Response:

Please refer to Attachment 52.2 for the updated Appendix K-4 including all engagement activities to date.

In response to BCUC IR 33.5, FEI stated:

FEI will continue to share the results of environmental and archaeological reports with Indigenous groups, including those who have not responded to previous communications. FEI will also engage Indigenous groups on site-specific impacts through the BCOGC permitting process which includes soliciting feedback on environmental and archaeological reports and management plans in advance of construction. FEI will also engage Indigenous groups on employment and contracting opportunities through its Socio-Economic Impact Program. These activities will occur leading up to contracting and construction, between 2022 and 2024.

In response to BCUC IR 33.9, FEI stated: “FEI considers that its early engagement activities have been successful in understanding the level of interest and the nature of interests of Indigenous groups for the Project, reflecting this stage in the Project lifecycle.”

52.3 For the Indigenous communities identified in Appendix K-4 that have not responded to FEI’s notification letter, please discuss, with rationale, what follow-up FEI has undertaken, or plans to undertake.

Response:

FEI will continue to engage with all Indigenous groups, including those that have not yet responded to FEI’s notification letter, throughout the lifecycle of the Project. FEI will communicate specific information regarding the Project’s impacts on Indigenous groups as information becomes available. For example, FEI expects to share the Archaeological Overview Assessment with all Indigenous groups with an asserted interest in the Project area in Q4 2021. In addition, FEI expects to engage with these groups in advance of applying for permitted works and ground disturbing activities. Finally, as discussed in the response to BCUC IR1 33.5, FEI will undertake engagement activities leading up to contracting and construction between 2022 and 2024.

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52.3.1 Please provide a summary of activities with dates as applicable.

Response:

Please refer to Attachment 52.2 provided with the response to BCUC IR2 52.2.

52.4 For the Indigenous communities identified in Appendix K-4 that have indicated that no further information/ engagement is required, please discuss, with rationale, what follow-up FEI has undertaken, or plans to undertake.

Response:

Please refer to the response to BCUC IR2 52.3.

52.4.1 Please provide a summary of activities with dates as applicable.

Response:

Please refer to Attachment 52.2 provided in the response to BCUC IR2 52.2.

In response to BCUC IR 33.11, FEI stated:

FEI is in the process of developing a capacity funding agreement with Kwikwetlem First Nation. On January 21, 2021, FEI also paid an invoice from Tsleil-Waututh Nation to provide them with capacity funding to review the Project's Environmental Overview Assessment and Archaeological Constraints Report.

52.5 Please explain whether FEI expects to enter any further capacity funding agreements with Indigenous groups.

52.5.1 If yes, please identify with which Indigenous groups FEI anticipates entering the agreements, describe the nature of the capacity funding agreements and the total expected cost.

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1 **Response:**

2 Since filing the response to BCUC IR1 33.11, FEI has not received any additional requests for
3 capacity funding from Indigenous groups, or indication that such requests will be forthcoming, in
4 relation to the CTS TIMC Project. It is nonetheless FEI's practice to offer capacity funding to
5 Indigenous groups throughout the Project lifecycle in order to ensure they can assess the
6 Project's impacts on their interests.

7

TIMC - Indigenous Engagement Log

Date	Engagement Type	External Representative	Indigenous Group	Summary
2-Oct-20	Notification Letter	Ashley Doyle, Lands Manager	Kwantlen First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator	Leq'á:mel First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Alice McKay, Chief	Matsqui First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chris Raftis, Major Project Coordinator	Musqueam Indian Band	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chief and Council	Peters First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Effie Ned, Referrals Clerk	Seabird Island Band	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chief and Council	Semiahmoo First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator	Shxw??whámel First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Robin Buss	Tsawwassen First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chief and Council	Halalt First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Alli Di Giovanni, Referrals Coordinator	Katzie First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals, Lands and Resources Department	Kwikwetlem First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Aaron Hamilton	Lake Cowichan First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chief and Council	Lyackson First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Josh James, Economic Development Officer	Penelakut Tribe	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Chrystal Nahanee	Squamish Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Office	Stz'uminus First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Kate Menzies, Consultation and Accommodation Manager	Tsleil-Waututh Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	Stó:l? Tribal Council	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	Stó:l? Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	Soowahlie First Nation,	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	Skawahlook First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	Sumas First Nation	Transmission System Upgrades Notification emailed.
2-Oct-20	Notification Letter	Referrals Administrator, People of the River Referrals Office	People of the River Referrals Office	Transmission System Upgrades Notification emailed.
2-Oct-20	Email	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Auto-reply that Cowichan Tribes is not working in-office.
2-Oct-20	Email	Katzie referrals	Katzie First Nation	Auto-reply that Katzie is not working in-office.
5-Oct-20	Email	Sheila Williams / Robin Buss	Tsawwassen First Nation	Sheila Williams replied to notify that Robin Buss is the appropriate contact for non-EA referrals; TWN will await environmental and archaeology report.
6-Oct-20	Email	TWN referrals	Tsleil-Waututh Nation	TWN sent Stewardship policy. FEI confirmed receipt.
7-Oct-20	Email	Deanna Rach	People of the River Referrals Office	PRRO requested shape file for StoloConnect. FEI sent .KMZ file.

TIMC - Indigenous Engagement Log

Date	Engagement Type	External Representative	Indigenous Group	Summary
8-Oct-20	Email	Deanna Rach	People of the River Referrals Office	PRRO was unable to use original .KMZ file. FEI followed up with file and PRRO confirmed receipt.
9-Oct-20	Email	Alice McKay, Chief	Matsqui First Nation	Matsqui First Nation requested to have monitors on site.
13-Oct-20	Email	Alice McKay, Chief	Matsqui First Nation	FEI scheduled telephone call with Chief McKay to better understand Matsqui's interest in the project.
15-Oct-20	Phone	Alice McKay, Chief; Cynthia	Matsqui First Nation	Phone introduction. Sent .KMZ file via email and will follow-up with teleconference on November 19th to discuss project timelines and sites important to Matsqui. Chief McKay is also interested in potential training opportunities.
27-Oct-20	email	Sarah Prien	Kwikwetlem First Nation	KFN requested meeting to discuss capacity funding for TSU. FEI is in the process of negotiating a capacity funding agreement with KFN. FEI to discuss with KFN how TSU funding would be included in that agreement.
2-Nov-20	Email	Sarah Prien	Kwikwetlem First Nation	KFN requested meeting to discuss capacity funding to participate in engagement activities on four FEI projects, including TSU. FEI will schedule a telephone meeting to follow-up.
6-Nov-20	Follow up letter (email)	Ashley Doyle, Lands Manager	Kwantlen First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator	Leq'á:mel First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Alice McKay, Chief	Matsqui First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Chris Raftis, Major Project Coordinator	Musqueam Indian Band	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Chief and Council	Peters First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Effie Ned, Referrals Clerk	Seabird Island Band	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Chief and Council	Semiahmoo First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator	Shxw??whámel First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Robin Buss	Tsawwassen First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)

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6-Nov-20	Follow up letter (email)	Chief and Council	Halalt First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Alli Di Giovanni, Referrals Coordinator	Katzie First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals, Lands and Resources Department	Kwikwetlem First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Aaron Hamilton	Lake Cowichan First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Chief and Council	Lyackson First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Josh James, Economic Development Officer	Penelakut Tribe	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Chrystal Nahanee	Squamish Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Office	Stz'uminus First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Kate Menzies, Consultation and Accommodation Manager	Tsleil-Waututh Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	Stó:l? Tribal Council	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	Stó:l? Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	Soowahlie First Nation,	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	Skawahlook First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	Sumas First Nation	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)
6-Nov-20	Follow up letter (email)	Referrals Administrator, People of the River Referrals Office	People of the River Referrals Office	Sent follow up email with attached letter and enclosed updated project worksite map, Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)

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9-Nov-20	email	Robin Buss	Tsawwassen First Nation	Robin acknowledged receipt of documents (Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC)) and requested virtual meeting for additional project details once they have reviewed documents. FEI will set up meeting at TFN convenience.
9-Nov-20	Email	Aaron Marchant, Referrals Analyst	Squamish Nation	SN (Chrystal Nahanee) emailed to update contact information. All correspondence should be sent to Aaron.
9-Nov-20	Email	Referrals Administrator, People of the River Referrals Office	People of the River Referrals Office	Auto reply: Carli Pierrot (Cheam, Kwaw'Kwaw'Apilt, Skwah) (People of the River Referrals Office) changed the status of 605765 - Transmission System Upgrades, Lower Mainland to Awaiting Analysis Response.
10-Nov-20	Email	Aaron Marchant, Referrals Analyst	Squamish Nation	Invitation to join Squamish Connect Portal. Uploaded documents distributed to date as well as .KMZ file.
13-Nov-20	Email	Chris Raftis, Major Project Coordinator	Musqueam Indian Band	Sent follow up email to MIB acknowledging their interests in the Delta/Burn's Bog area and FEI's commitment to ongoing engagement.
19-Nov-20	Virtual meeting (MS Teams)	Cynthia Collins	Matsqui First Nation	FEI presented an overview of the Project. Matsqui First Nation expressed interest in early involvement and will review Environmental Overview Assessment (EOA) and Archaeological Constraints Report (ARC). FEI will follow-up in early December to for a meeting to discuss the reports and continue discussions around Matsqui's interests.
19-Nov-20	Email	Aaron Marchant, Referrals Analyst/ Squamish Connect	Squamish Nation	Automatic update from Squamish Connect stating referral status changed to 'preliminary response'
20-Nov-20	email	Kate Menzies, Consultation and Accommodation Manager	Tsleil-Waututh Nation	TWN requested capacity funding for reviewing Environmental Overview Assessment (EOA), and Archaeological Constraints Report (ARC). FEI agreed and requested estimate.
24-Nov-20	Email	Aaron Marchant, Referrals Analyst	Squamish Nation	Squamish Nation requested that FEI load spatial data to Squamish Connect Portal as original the portal could not read original .KMZ file. FEI provided disaggregated (19 individual files) .KMZ files showing worksites.
25-Nov-20	Email	Cynthia Collins	Matsqui First Nation	Confirmed follow-up meeting for Dec 3, 2020
30-Nov-20	Email	Carli Pierrot, People of the River Referrals, Referrals Lead	People of the River Referrals Office (PRRO)	PRRO sent Technical Review report based on FEI's project information materials sent on October 2, 2020. FEI followed-up with PRRO and will host a virtual meeting in December to discuss PRRO's report and interests in the Project.
3-Dec-20	Virtual meeting (MS Teams)	Cynthia Collins	Matsqui First Nation	Matsqui First Nation expressed interest in training and employment on the Project and with FEI more broadly. Matsqui is interested in having community monitors work alongside certified monitors for environmental and archaeological work. The are specifically interested in impacts to the Labrador tea and fish bearing streams. FEI committed to keeping Matsqui informed about upcoming project activities and to a follow-up meeting in February 2021 on the topic of training and employment.

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3-Dec-20	Virtual meeting (MS Teams)	Carli Pierrot, People of the River Referrals, Referrals Lead	People of the River Referrals Office (PRRO)	FEI presented an overview of the Project. PRRO summarized a Technical Review report based on FEI's project information and explained areas of interest and concern. These areas of interest and concern included potential Project impact to cultural and heritage resources in the Abbotsford area (Sumas Lake) and to sensitive waterways. FEI committed to keeping PRRO informed about the Project as it advances and to providing additional materials, including results of an Archaeological Overview Assessment and Archaeological Impact Assessment once completed.
7-Dec-20	Email	Cynthia Collins	Matsqui First Nation	Received Territorial map from Matsqui First Nation
11-Dec-20	Email	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Cowichan Tribes has reviewed the Environmental Overview Report, and Archaeological Constraints Report. They would like to be engaged on further archaeological activities around Tilbury and Richmond worksites.
17-Dec-20	Email	Lauren Bell, Referrals	Tsleil-Waututh Nation	TWN provided estimate for reviewing Project materials and requested a spatial files. FEI provided .KMZ files
18-Jan-21	Virtual meeting (MS Teams)	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Cowichan Tribes would like to receive copies of future archaeological reports for review and comment. Cowichan Tribes are specifically interested in archaeological activities at Tilbury and Richmond work sites. FEI will continue to engage Cowichan Tribes on participating in future archaeological activities.
18-Jan-21	Email	Carli Pierrot, People of the River Referrals, Referrals Lead	People of the River Referrals Office (PRRO)	PRRO sent Final Engagement report via email which indicates that they would like to receive future report related to watercourse and environmental impacts for Delta, Surrey, Coquitlam, and Township of Langley. FEI has recorded the request and will continue to inform PRRO as the Project advances and provide copies of relevant materials.
19-Jan-21	Email	Lauren Bell, Referrals; Kate Menzies, Referrals Analyst	Tsleil-Waututh Nation	TWN reviewed the Archaeological Constraints report and requested that FEI and its consultants apply for archaeological permits from TWN for each work site rather than one permit for the entire Project. This is due to the geographic scope of the Project and TWN's capacity to process such permit. FEI has noted the request for multiple permits and will work with archaeological consultants to obtain permits at the appropriate time. TWN notified FEI that, due to internal capacity, they are delayed in reviewing the Environmental Overview Assessment. FEI is awaiting those comments and will continue to engage TWN to address and interests or concerns.

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26-Jan-21	Email	Lauren Bell, Referrals; Kate Menzies, Referrals Analyst	Tsleil-Waututh Nation	TWN requested more details about the “historical request from the Ministry for additional environmental investigation related to the [Tilbury] LNG Plant” in Table 11: Contaminants of Concern at Proposed CTS TIMC Project Events. (EOA, page 21). FEI clarified that that FortisBC initiated a building permit application at its Tilbury LNG facility. As part of this application, the BC Ministry of Environment requested a Contaminated Site Investigation for future developments. FortisBC is currently completing the requested investigation as part of the Tilbury LNG Expansion Project. TWN noted no further questions from TWN on this topic.
19-Feb-21	Email	Cara Brendzy, Sto:lo Research and Resource Management Centre; Carli Pierrot, People of the River Referrals, Referrals Lead	Sto:lo Nation	FEI engaged Sto:lo Nation on upcoming geotechnical program and the existing Archaeological Overview Assessment Sto:lo prepared for this area. Email sent on Feb 5 2021. On Feb 19 2021, FEI had a telephone meeting with Cara Brendzy, archaeologist with Sto:lo Research and Resource Management Centre. They confirmed that there is high archaeological potential in where geotech work is planned to occur. FEI will complete the geotech work with Archaeological monitors on site.
29-Mar-21	Email	Ashley Doyle, Lands Manager	Kwantlen First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator	Leq'á:mel First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Alice McKay, Chief	Matsqui First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chris Raftis, Major Project Coordinator	Musqueam Indian Band	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chief and Council	Peters First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Effie Ned, Referrals Clerk	Seabird Island Band	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chief and Council	Semiahmoo First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator	Shxw?whámel First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Robin Buss	Tsawwassen First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Candace Charlie, Referrals Coordinator	Cowichan Tribes	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chief and Council	Halalt First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Alli Di Giovanni, Referrals Coordinator	Katzie First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals, Lands and Resources Department	Kwikwetlem First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Aaron Hamilton	Lake Cowichan First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chief and Council	Lyackson First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Josh James, Economic Development Officer	Penelakut Tribe	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Chrystal Nahanee	Squamish Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Office	Stz'uminus First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Kate Menzies, Consultation and Accommodation Manager	Tsleil-Waututh Nation	Sent follow-up email re: BCUC formal participation process

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29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	Stó:l? Tribal Council	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	Stó:l? Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	Soowahlie First Nation,	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	Skawahlook First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	Sumas First Nation	Sent follow-up email re: BCUC formal participation process
29-Mar-21	Email	Referrals Administrator, People of the River Referrals Office	People of the River Referrals Office	Sent follow-up email re: BCUC formal participation process
30-Mar-21	Email	Carly Spence, Referrals	Katzie First Nation	Updated contact information and requested maps showing project location
31-Mar-21	Email	Karyn Scott, Consulation Coordinator	Lyackson First Nation	Requested copies of EOA and ACR. FEI sent reports
31-Mar-21	Phone/email	Referrals Clerk	Seabird Island Band	Requested copies of EOA and ACR
18-May-21	Email	Referrals Manager	Kwikwetlem First Nation	Sent Capacity Funding Agreement to KFN for review.
16-Jul-21	Email	Consultation and Accomodation Manager	Tsleil-Waututh Nation	Confirmed no further comments on EOA
20-Sep-21	Email	Project Coordinator	Kwikwetlem First Nation	Requested presentation material regarding Project
21-Sep-21	Email	Project Coordinator	Kwikwetlem First Nation	Sent up-to-date Project information.
24-Sep-21	Phone Call	Referrals Manager	Kwikwetlem First Nation	Confirmed capacity funding for Project Coordinator could be used for TIMC