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## Electronic Filing

British Columbia Utilities Commission  
Suite 410, 900 Howe Street  
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**Attention: Mr. Patrick Wruck, Commission Secretary**

Dear Sirs/Mesdames:

**Re: FortisBC Energy Inc. ( "FEI") Application for a Certificate of Public Convenience and Necessity for the Pattullo Gas Line Replacement Project - Final Submission**

In accordance with the regulatory timetable in the above proceeding, we enclose for filing the Final Argument of FortisBC Energy Inc., dated March 5, 2021.

Yours truly,

**FASKEN MARTINEAU DuMOULIN LLP**

*[Original signed by]*

Christopher Bystrom\*  
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CRB/NR  
Encl.



**British Columbia Utilities Commission**

**FortisBC Energy Inc.**

**Application for a Certificate of Public Convenience and  
Necessity for the Pattullo Gas Line Replacement Project**

**Final Argument of  
of  
FortisBC Energy Inc.**

**March 5, 2021**

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## PART ONE: INTRODUCTION

1. FortisBC Energy Inc. (“FEI” or the “Company”) submits that the Pattullo Gas Line Replacement Project (“PGR Project” or “Project”), as described in the amended application (the “Application”)<sup>1</sup> and responses to information requests (“IRs”),<sup>2</sup> is in the public interest as it is the most cost-effective way for FEI to continue to serve existing customers after the decommissioning of FEI’s gas line affixed to the Pattullo Bridge (the “Pattullo Gas Line”). Therefore, FEI requests that the British Columbia Utilities Commission (“BCUC”) grant a Certificate of Public Convenience and Necessity (“CPCN”) for the Project pursuant to sections 45 and 46 of the Utilities Commission Act (“UCA”). FEI also submits that its proposed PGR Application and Preliminary Stage Development Costs deferral account is just and reasonable, and requests that the BCUC approve the account pursuant to sections 59 to 61 of the UCA.

2. The PGR Project is unique in that it is driven by the scheduled demolition of the Pattullo Bridge in 2023 and FEI’s consequent need to replace the capacity provided by the Pattullo Gas Line. While a like-for-like replacement of the Pattullo Gas Line with a new gas line on the new bridge to be constructed by the Province (the “New Bridge”) would be a preferred solution, the Province will not permit this to occur.<sup>3</sup> Therefore, FEI engaged in a complex and lengthy analysis of various alternatives to cross the Fraser River, in addition to other alternatives, which finally narrowed to constructing a new gas line through an “overland”<sup>4</sup> route. Ultimately, FEI’s proposed Sperling Route (Alternative 6D) was correctly selected as the most cost-effective alternative and is supported by the City of Burnaby.

3. Due to the need to replace the Pattullo Gas Line in time to meet the Province’s scheduled demolition of the Pattullo Bridge, FEI filed its Application in two stages. The first stage filing on August 31, 2020 consisted primarily of the Project need and justification, as well

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<sup>1</sup> Exhibit B-1-1.

<sup>2</sup> Exhibits B-5 to B-9 and Exhibits B-11 to B-14-1.

<sup>3</sup> Exhibit B-1-1, Application, pp. 26-28.

<sup>4</sup> Overland refers to a routing that does not require a crossing of the Fraser River, as noted in Exhibit B-1-1, Application, p. 2, l. 4.

as the alternatives analysis up to that point in time.<sup>5</sup> At the BCUC's request, FEI supplemented this information with a summary of its consultation activities.<sup>6</sup> The second stage, filed on December 15, 2020, completed the Application, including the remainder of the alternatives analysis, the project description, cost estimate, environmental and archeological assessments and consultation activities.<sup>7</sup>

4. FEI appreciates the BCUC's accommodation of FEI's two-stage filing of its Application and for processing this Application in an efficient manner so that FEI can receive a decision in time to commence construction and meet the scheduling requirements of the Project. FEI submits that the regulatory review process has been effective, efficient and thorough. FEI has sought to provide full and complete responses to information requests throughout this proceeding and submits that the result is a complete evidentiary record that will enable the BCUC to make a public interest determination.

5. In the remainder of this Final Argument, FEI summarizes its evidence supporting the approvals sought, and addresses the key issues explored by the BCUC and interveners in IRs. FEI submits that the evidence is robust and compelling, and demonstrates that the PGR Project is needed, that FEI's chosen alternative is the most cost-effective alternative, and that the public interest supports the granting of a CPCN for the Project.

## **PART TWO: THE PGR PROJECT IS NEEDED AND JUSTIFIED**

6. The need for the PGR Project is clear. Without the Pattullo Gas Line, FEI would not be able to serve approximately 35,000 customers in Burnaby, New Westminster and Coquitlam.<sup>8</sup> Therefore, prior to the demolition of the Pattullo Bridge, FEI must replace the distribution system capacity currently provided by the Pattullo Gas Line in order to continue serving customers.

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<sup>5</sup> Exhibit B-1.

<sup>6</sup> Exhibit B-3.

<sup>7</sup> Exhibit B-1-1, B-1-2 and B-1-3.

<sup>8</sup> Exhibit B-1-1, Application, p. 15.

7. In the following sections, FEI addresses the key issues related to the need for the Project, making the following points:

- (a) The Province has jurisdiction to order FEI to remove the Pattullo Gas Line.
- (b) There is insufficient capacity to serve existing customers without the Pattullo Gas Line.
- (c) There is insufficient capacity to serve forecast demand without the Pattullo Gas Line.
- (d) Short-term mitigation measures are not available.

**A. The Province Has Jurisdiction To Require FEI To Remove the Pattullo Gas Line**

8. FEI's right to have the Pattullo Gas Line on the Pattullo Bridge stems from the Bridge Agreement between FEI and the Province, under which the Province can require FEI to remove the line. Specifically, section 2 of the Bridge Agreement provides that the Minister of Highways may terminate the agreement by giving two years notice in writing to FEI. Upon termination of the Bridge Agreement, section 3 requires FEI to remove all gas lines and attachments from the bridge and leave it in a condition satisfactory to the Minister of Highways "within a reasonable time".<sup>9</sup>

9. FEI is required to decommission the Pattullo Gas Line due to the Province's Pattullo Bridge Replacement Project, which includes the demolition of the Pattullo Bridge to which FEI's Pattullo Gas Line is affixed. The Pattullo Bridge Replacement Project has received an Environmental Assessment Certificate from the B.C. Environmental Assessment Office under British Columbia's *Environmental Assessment Act*, as well as a Project and Environmental Review Project Permit from the Vancouver Fraser Port Authority. The existing bridge will remain in use until the New Bridge is open to traffic, which is scheduled for the fall of 2023. Once the New Bridge is open, the existing bridge will be removed.

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<sup>9</sup> Exhibit B-6, BCUC IR1 1.1, 1.2, 1.3 and Attachment 1.1.

10. Based on the current Project schedule, demolition of the Pattullo Bridge is scheduled to proceed by the end of 2023.<sup>10</sup> Prior to the demolition of the existing Pattullo Bridge, FEI will need to degasify and purge the existing Pattullo Gas Line to make it safe for removal, and abandon and/or remove all associated infrastructure, as well as complete any required modifications to the existing infrastructure upstream and downstream of the Pattullo Gas Line.<sup>11</sup> FEI is committed to constructing the PGR Project in time to meet the the Ministry of Transportation and Infrastructure (MoTI's) current 2023 target date for the demolition of the Pattullo Bridge, to the extent it is reasonably able.<sup>12</sup>

**B. There Is Insufficient Capacity To Serve Existing Customers Without the Pattullo Gas Line**

11. The evidence is clear that there is insufficient capacity to serve existing customers without the Pattullo Gas Line.

12. Given that capacity is a property of the system, reflecting how distribution points and delivery requirements interact as a whole,<sup>13</sup> the key to understanding the importance of the Pattullo Gas Line is that it is the main source of supply for the Metro Vancouver 700 kPa trunk distribution system.<sup>14</sup> This is illustrated in Figure 3-2 of the Application, reproduced below, which shows the trunk distribution system in orange and the supply points with yellow arrows proportionate in size to the supply they provide.<sup>15</sup>

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<sup>10</sup> Exhibit B-1-1, Application, p. 18.

<sup>11</sup> Exhibit B-1-1, Application, p. 18.

<sup>12</sup> Exhibit B-6, BCUC IR1 2.2.

<sup>13</sup> Exhibit B-9, CEC IR1 5.2.

<sup>14</sup> Exhibit B-1-1, Application, p. 16.

<sup>15</sup> Exhibit B-1-1, Application, p. 16.



**Figure 3-2: Stations Supplying the Metro Vancouver 700 kPa Trunk Distribution System**



13. Based on FEI's hydraulic modelling process,<sup>16</sup> under peak conditions, the Pattullo Gas Line supplies just over half of the natural gas in the trunk distribution system:<sup>17</sup>

As illustrated in [Figure 3-2] of the Application, the Pattullo Gas Line is one of four feeds into the Metro Vancouver 700 kPa trunk distribution system. When considered in isolation, the Pattullo Gas Line cannot be measured in terms of "system capacity" as there are multiple simultaneous gas supplies to this trunk distribution system. This is because the capacity (or support capability) provided by each feed is dependent on how the load within the trunk distribution system is distributed and how the supplies interact together to support the system.

To illustrate the comparative capacities of the trunk distribution system with or without the Pattullo Gas Line, FEI completed an analysis which proportionally and incrementally increased the load on all the stations in this system until the pressure dropped below levels necessary for at least one of the stations to deliver sufficient gas to downstream customers. This system condition represents the threshold beyond which customer outages would start to occur.

<sup>16</sup> Exhibit B-11, BCUC IR2 22.1.1.

<sup>17</sup> Exhibit B-6, BCUC IR1 3.1; see also Exhibit B-14, CEC IR2 17.1.

The results of this analysis indicate that with the Pattullo Gas Line in place, the ultimate capacity of the trunk distribution system is approximately 250,800 m<sup>3</sup>/hr. This measure is the theoretical peak load that could be supplied to the stations distributed along its length. The current 2020/21 forecast peak demand of the trunk distribution system is approximately 168,800 m<sup>3</sup>/hr. The difference of 82,000 m<sup>3</sup>/hr represents the excess capacity of the current system, which is available to meet growth and provide resiliency.

In summary, without the Pattullo Gas Line, the trunk distribution system capacity would be 95 percent of the current 2020/21 forecast required to serve FEI's existing customers.

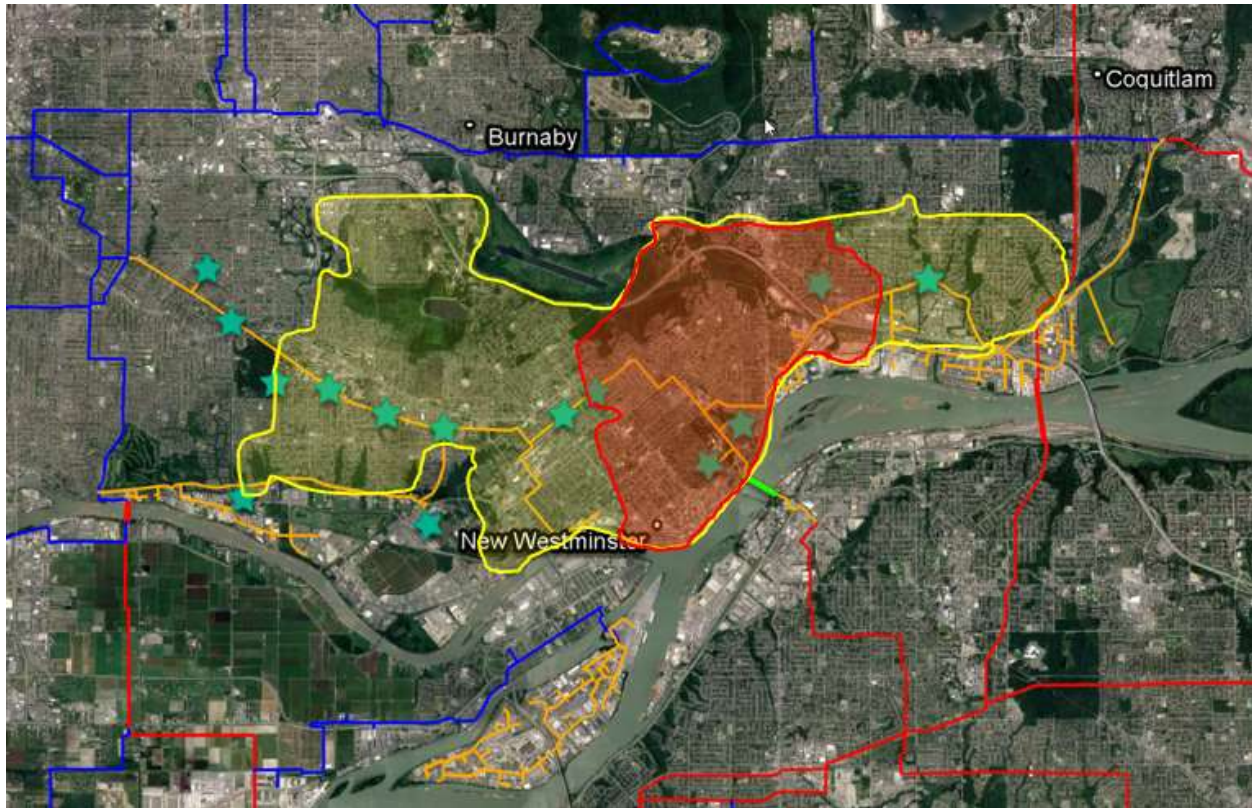
14. Consequently, the removal of the Pattullo Gas Line (without replacement supply) would leave the trunk distribution system incapable of providing sufficient capacity at several district regulating stations during peak winter conditions.<sup>18</sup> Specifically, in 2020, there would be a loss of gas supply to approximately 10,700 customers during the coldest days of the year when peak demand occurs: approximately 2,100 customers in Burnaby, 2,800 customers in New Westminster, and 5,800 customers in Coquitlam. FEI illustrated the loss of gas supply with the area shaded in red in Figure 3-4 of the Application, reproduced below.<sup>19</sup>

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<sup>18</sup> Exhibit B-6, BCUC IR1 10.3.

<sup>19</sup> Exhibit B-1-1, Application, p. 19.

**Figure 3-4: 10,700 Customers Impacted by Loss of Pattullo Gas Line Feed in 2020**



15. Without the Pattullo Gas Line, the inlet pressure to the district stations (marked by green stars) in the areas shaded in red would drop below the minimum pressure required to provide adequate supply peak demand conditions.<sup>20</sup> FEI explained the consequences as follows:<sup>21</sup>

At these low pressures, the stations are no longer capable of passing the volumes of gas needed to serve customers downstream. As a result, the system becomes imbalanced, with more gas being consumed than what is available in the distribution system, and the pressure drops. If this imbalance continues for a sustained period, the distribution system pressure in the area shaded in red would drop below what is required for customer appliances to operate safely.

16. If the gas system were to experience a loss of pressure which could lead to the misoperation of gas appliances, FEI would need to isolate the affected system to ensure public safety until a reliable gas supply were re-established. FEI explained that restoring the system

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<sup>20</sup> Exhibit B-6, BCUC IR1 3.3.

<sup>21</sup> Exhibit B-6, BCUC IR1 3.3.

could take several weeks, during which time customers would be without heat during the coldest days of the year:<sup>22</sup>

Although the conditions producing low pressure and misoperation of appliances may only be present for a few hours during periods of highest demand, once the customer supply is isolated the restoration of service will take considerably longer. For outages to thousands of customers, the recovery could span several weeks. The restoration process would require each premise to be visited at least twice during that period: once to isolate the customer meter set, and once to restore gas service and relight customer appliances. If weather conditions persist that would cause low system pressure conditions to recur, FEI would delay service restoration until the weather forecast abated sufficiently to ensure adequate system pressures. During this period, from the loss of supply until service restoration, residential and commercial customers would be without gas for space heating, hot water, and cooking during extreme cold winter conditions.

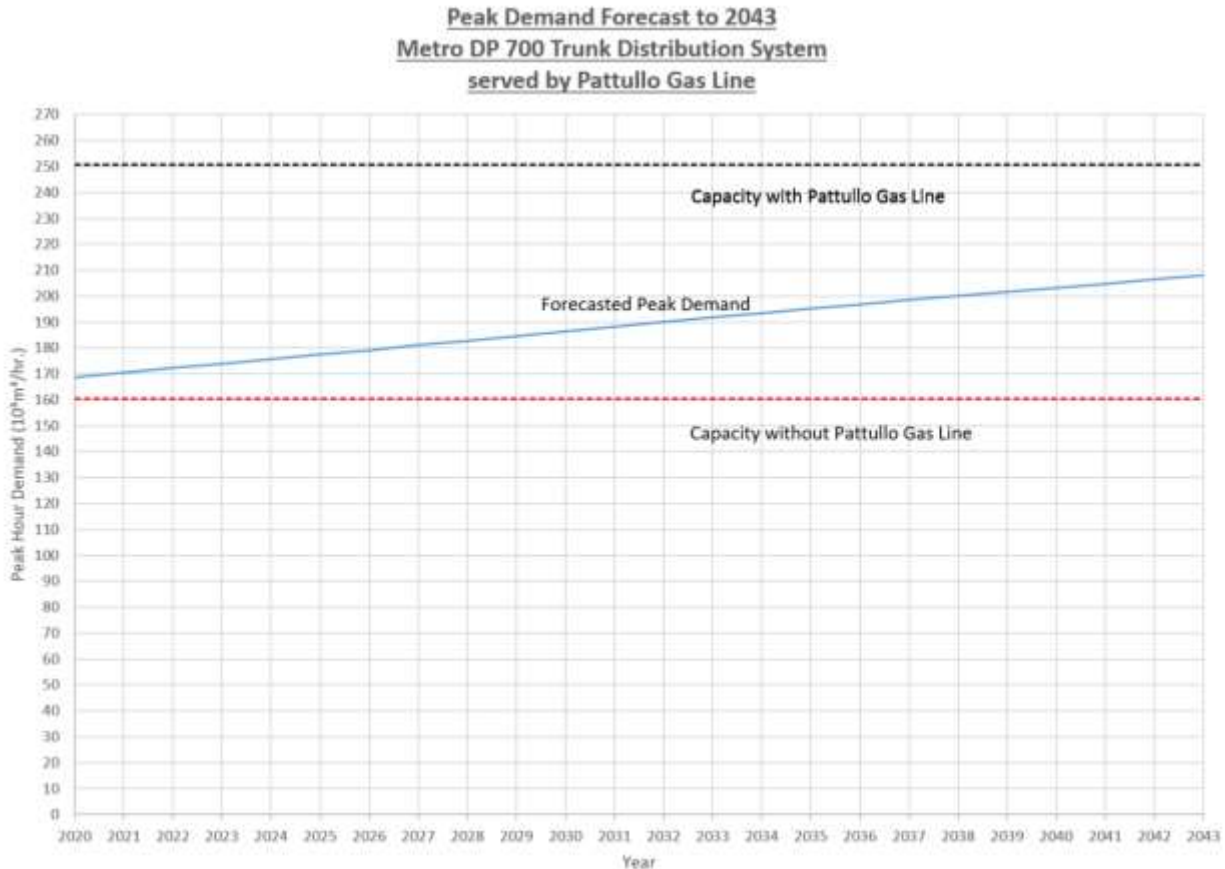
17. To further illustrate the need for replacement of the Pattullo Gas Line, the figure below shows peak demand and available capacity, both with and without the Pattullo Gas Line, over a 23-year period to 2043.<sup>23</sup> As shown in the figure, the capacity without the Pattullo Gas Line would be insufficient to serve existing customers in 2020 and all years going forward.

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<sup>22</sup> Exhibit B-9, CEC IR1 9.1.2.

<sup>23</sup> Exhibit B-9, CEC IR1 5.5.





18. Therefore, FEI must replace the distribution system capacity of the Pattullo Gas Line prior to its decommissioning in 2023 to continue to provide safe and reliable natural gas supply to customers.

**C. There Is Insufficient Capacity To Serve Forecast Demand Without the Pattullo Gas Line**

19. FEI's demand forecast shows that, without the Pattullo Gas Line, an estimated additional 14,800 customers would be without sufficient gas supply by 2039.<sup>24</sup>

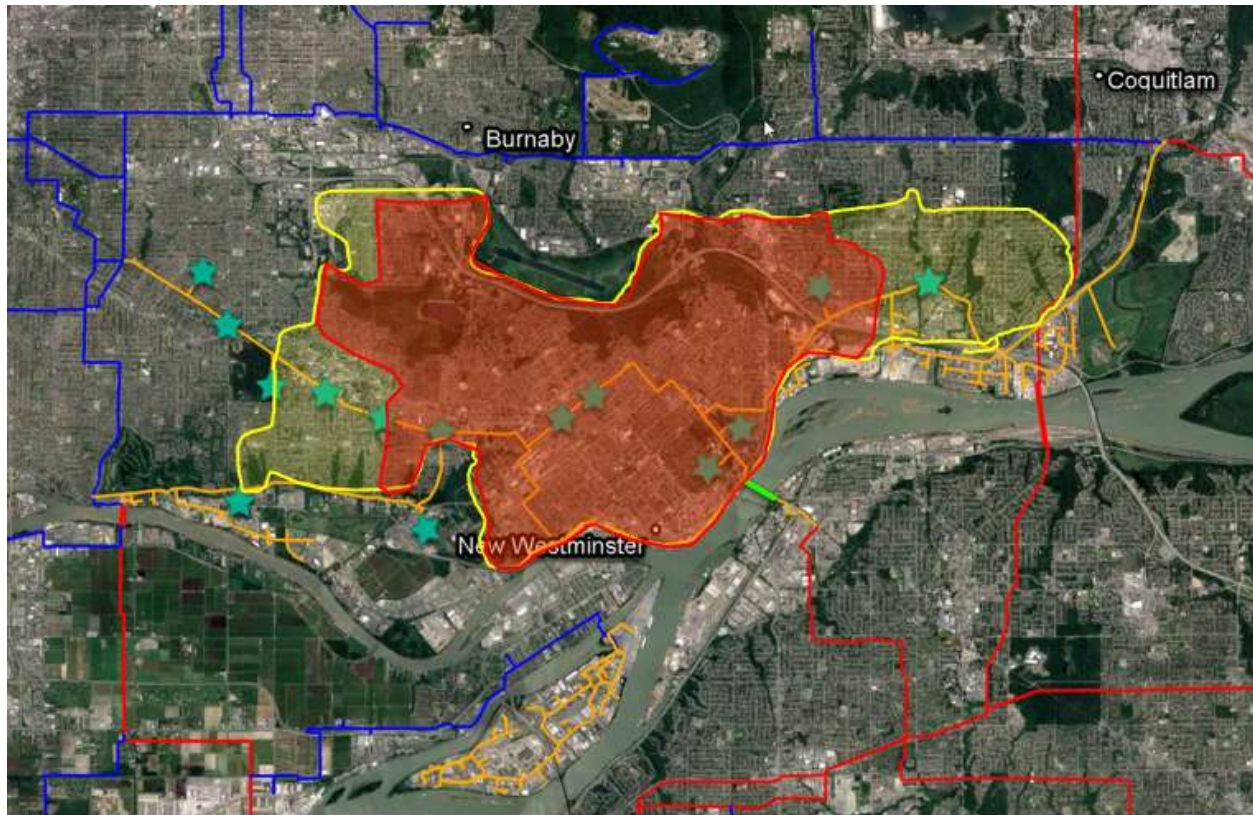
20. FEI's peak demand forecast methodology is consistent with the methodology used in previously approved CPCN applications and Long-Term Gas Resource Plans.<sup>25</sup> FEI uses its demand forecast and a hydraulic model of the system to determine the peak demand of the distribution system, and to plan and understand how the system will respond to changes in

<sup>24</sup> Exhibit B-9, CEC IR1 9.3.

<sup>25</sup> Exhibit B-6, BCUC IR1 4.1.1.

configuration.<sup>26</sup> This modelling shows that, without the Pattullo Gas Line, the impacted area would expand by 2039, as illustrated in Figure 3-5 from the Application, reproduced below.<sup>27</sup>

**Figure 3-5: 25,500 Customers Impacted by Loss of Pattullo Gas Line Feed in 2039**



21. As illustrated above, FEI's demand forecast and hydraulic modelling of the system show that, without the replacement of the Pattullo Gas Line, the number of stations experiencing inadequate inlet pressure to meet demand would grow from three district stations to seven district stations,<sup>28</sup> and approximately 25,500 customers would be impacted by inadequate gas supply.<sup>29</sup>

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<sup>26</sup> Exhibit B-14, CEC IR2 16.1.

<sup>27</sup> Exhibit B-1-1, Application, p. 20.

<sup>28</sup> Exhibit B-9, CEC IR1 9.3.

<sup>29</sup> Exhibit B-1-1, Application, p. 20.

**D. Short-Term Mitigation Measures Would Be Neither Feasible Nor Cost Effective**

22. Given the need to replace the capacity of the Pattullo Gas Line to serve existing customers, a permanent solution is required before decommissioning the Pattullo Gas Line. A short-term mitigation measure would not address the need to undertake the Project and, therefore, would only add additional costs and could not be cost effective. In any case, potential short-term mitigation measures to address system capacity shortfalls, including modifications to the existing system and a temporary virtual gas line, are not feasible.

23. First, even if a short-term mitigation measure could be taken, it would not be cost effective to undertake such measures. As demonstrated above, there is an immediate and ongoing need to replace the capacity of the Pattullo Gas Line once it is decommissioned. A short-term mitigation measure would not meet this need. As such, such measures (even if feasible) would only add further costs to the Project and would not be cost effective.

24. Second, modifications to the existing distribution system through station upgrades to provide a short-term mitigation measure would not be feasible. Upgrades of this kind would require the installation of above-ground bypass assemblies in certain stations to maintain system reliability and ensure the downstream system does not exceed its maximum operating pressure. While this approach may be a feasible short-term mitigation measure in other instances (for example, the Okanagan Capacity Upgrade Project), it is not feasible for the PGR Project due to the location and space constraints at the stations, which are located below ground, in or near city road allowances. In particular, installing above-ground bypasses in these locations is not feasible as they would be exposed to third-party damage (e.g., vehicle accidents or vandalism) and intrusive to the residential and commercial communities where the stations are located.<sup>30</sup>

25. Third, a virtual gas line utilizing either LNG or CNG would not be feasible as a short-term mitigation measure. FEI estimates that up to approximately four to five large truck loads of CNG per hour, or one to two LNG trucks per hour, would need to be injected into the system

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<sup>30</sup> Exhibit B-11, BCUC IR2 31.4.

during peak winter hours in order to ensure operating pressure remains within acceptable limits (based on 2023-2024 demand projections).<sup>31</sup> This imposes significant technical and logistical challenges and an unacceptable risk of interruption.

**E. Future Projects Will Address Loss of Resiliency**

26. The PGR Project will not replace the loss of resiliency that will occur when the Pattullo Gas Line is decommissioned.<sup>32</sup>

27. FEI's Metro Vancouver distribution system relies on the Pattullo Gate station (through the Pattullo Gas Line) to provide resiliency in the event one of the other two stations (Coquitlam Gate or Fraser Gate) are out of service.<sup>33</sup> The resiliency of FEI's system will erode without the Pattullo Gate station as the Coquitlam Gate or Fraser Gate stations cannot independently meet higher demand during colder weather periods. As discussed in Part Three of this Final Argument, FEI investigated alternatives that would replace this loss of resiliency; however, these alternatives were ultimately determined to be infeasible. While the replacement of the Pattullo Gas Line's resiliency benefits was a desirable goal, it was ultimately secondary to the need to replace the system's capacity.<sup>34</sup> Therefore, FEI prioritized the replacement of system capacity (as opposed to both capacity and resiliency) in order to meet the Project schedule and continue to safely and reliably serve customers in Burnaby, New Westminster and Coquitlam.

28. FEI is continuing to evaluate future system improvements to restore the resiliency to the distribution system that will be lost with the decommissioning of the Pattullo Gas Line. Given the likely scope, FEI anticipates needing to file a separate CPCN application with the BCUC.<sup>35</sup> FEI expects to provide further information in 2022 as part of its next Long Term Gas Resource Plan.<sup>36</sup>

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<sup>31</sup> Exhibit B-11, BCUC IR2 22.2 and Exhibit B-1-1, Application, p. 38.

<sup>32</sup> See Exhibit B-6, BCUC IR1 5.1 for a description of resiliency.

<sup>33</sup> Exhibit B-1-1, Application, Section 3.3.2 and 3.6; Exhibit B-6, BCUC IR1 5.3.

<sup>34</sup> Exhibit B-1-1, Application, p. 21; Exhibit B-6, BCUC IR1 3.2.

<sup>35</sup> Exhibit B-6, BCUC IR 5.4.

<sup>36</sup> Exhibit B-11, BCUC IR2 21.1.



## **F. Conclusion**

29. In summary, the evidence in this proceeding shows that, if the Pattullo Gas Line is not replaced, it will result in the loss of safe and reliable gas supply to thousands of existing customers in Burnaby, New Westminster and Coquitlam, and an inability to serve forecast demand. Therefore, FEI must undertake the PGR Project due to the Province's Pattullo Bridge Replacement Project, which requires FEI to decommission and abandon the Pattullo Gas Line in 2023.

### **PART THREE: FEI HAS APPROPRIATELY ANALYZED THE ALTERNATIVES TO THE PROJECT**

30. FEI's identification of the Sperling Route (Alternative 6D) as the preferred alternative is the result of a comprehensive analysis of Project alternatives in order to find a solution that appropriately addresses the need to decommission and replace the capacity of the Pattullo Gas Line. FEI identified the relevant alternatives to meet the need for the Project, analysed and screened out alternatives that were not feasible, and further evaluated those that were feasible based on financial and non-financial criteria. The results of the analysis demonstrate that the Sperling Route is the preferred solution with the lowest overall impact in terms of technical design, scope, complexity, cost, construction, environmental, archaeological and societal impacts.<sup>37</sup> FEI submits that its alternatives analysis was robust and that it correctly identified the Sperling Route as the preferred route.

31. In the sections below, FEI addresses the key topics explored in IRs with respect to the alternatives analysis for the Project, making the following points:

- (a) FEI appropriately identified the alternatives, considering a wide array of potential solutions to meet the Project objectives.
- (b) FEI appropriately screened out infeasible options, including attachment to the New Bridge, trenchless crossing of the Fraser River, and the development of a LNG/CNG peak shaving facility or virtual gas line.
- (c) FEI's evaluation framework was subject to rigorous internal review and properly weighted relevant considerations reflecting the Project's objectives.

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<sup>37</sup> Exhibit B-1-1, Application, pp. 25-26.

- (d) FEI appropriately evaluated Alternatives 6B and 6C, and determined that they could not be completed in time to meet the Project schedule requirements.
- (e) FEI compared Alternatives 6A and 6D and correctly selected the Sperling Route (Alternative 6D) as the preferred route.

#### A. FEI Appropriately Identified the Alternatives

32. FEI examined six alternatives and several sub-alternatives in order to find a solution that would have the lowest overall impact in terms of technical design, scope, complexity, cost, construction, environmental, archaeological and societal impacts.<sup>38</sup> These alternatives are described in Section 4 of the Application, and shown in the figure below, with the exception of Alternative 5 (Peak Shaving Facility / Virtual Gas Line) which does not have a route. As illustrated in the figure, FEI considered a wide array of potential ways to replace the capacity of the Pattullo Gas Line.<sup>39</sup>



33. Each of the alternatives and sub-alternatives that FEI identified are set out in the table below, along with the summary results of FEI's analysis for each alternative.

<sup>38</sup> Exhibit B-1-1, Application, pp. 25-26.

<sup>39</sup> Exhibit B-1-1, Application, Figure 4-1.

Alternatives and Sub-Alternatives Considered		Section of Application	Summary of Evaluation Results
<b>Alternative 1</b>	<b>Attachment to the New Bridge</b>	<b>Section 4.3.1</b>	<b>Not feasible. MoTI will not grant approval.<sup>40</sup></b>
<b>Alternative 2</b>	<b>Trenchless Crossing of the Fraser River</b> <ul style="list-style-type: none"> <li>Alternative 2A - High Pressure Horizontal Directional Drill (TP/IP HDD)</li> <li>Alternative 2B - Distribution Pressure Horizontal Directional Drill (DP HDD)</li> <li>Alternative 2C - Alternate High Pressure Horizontal Directional Drill (TP/IP)</li> <li>Alternative 2D - Other Trenchless Methodologies (Micro-tunneling)</li> </ul>	<b>Section 4.3.2</b>	<b>Not feasible. Sub-alternatives were not constructible.<sup>41</sup></b>
<b>Alternative 3</b>	<b>Through Richmond with Fraser River Crossing</b> <ul style="list-style-type: none"> <li>Alternative 3A - TP Gas Line with 1 Gate Station</li> <li>Alternative 3B - IP Gas Line with 1 Gate Station and 1 District Station</li> </ul>	<b>Section 4.3.3</b>	<b>Not feasible. Sub-alternatives could not be completed within Project schedule due to public impact (i.e., land acquisition and approval timeline with Agricultural Land Commission) and a lack of geotechnical data.<sup>42</sup></b>
<b>Alternative 4</b>	<b>Aerial Gas Line Crossing</b>	<b>Section 4.3.4</b>	<b>Not feasible. Could not be completed within Project schedule, due to long lead time permitting requirements, and cumulative impact concerns.<sup>43</sup></b>
<b>Alternative 5</b>	<b>Peak Shaving Facility / Virtual Gas Line</b> <ul style="list-style-type: none"> <li>Alternative 5A - Liquefied Natural Gas (LNG)</li> <li>Alternative 5B - Compressed Natural Gas (CNG)</li> </ul>	<b>Section 4.3.5</b>	<b>Not feasible. Technical and logistical barriers were identified for both LNG and CNG sub-alternatives.<sup>44</sup></b>
<b>Alternative 6</b>	<b>Overland Gas Line</b> <ul style="list-style-type: none"> <li>Alternative 6A - Broadway and Gagliardi Way Corridor</li> <li>Alternative 6B - Cape Horn</li> </ul>	<b>Section 4.4</b>	<b>Feasible. The Sperling Avenue Corridor (Alternative 6D) was identified as having the least overall impact and was</b>

<sup>40</sup> Exhibit B-1-2, Appendices A-1 to A-3; Exhibit B-7, BCOAPO IR1 5.1; Exhibit B-8, Burnaby IR1 4.2; Exhibit B-9, CEC IR1 8.1.

<sup>41</sup> Exhibit B-6, BCUC IR1 7.4; Exhibit B-8, Burnaby IR1 series 6, 7.3 and series 8; Exhibit B-9, CEC IR1 11.1.

<sup>42</sup> Exhibit B-8, Burnaby IR1 10 series.

<sup>43</sup> Exhibit B-6, BCUC IR1 12.7; Exhibit B-8, Burnaby IR1 11.1, and 11.2; Exhibit B-9, CEC IR1 12 series.

<sup>44</sup> Exhibit B-9, CEC IR1 13.1 and 13.2; Exhibit B-11, BCUC IR2 22 series.

Alternatives and Sub-Alternatives Considered	Section of Application	Summary of Evaluation Results
<ul style="list-style-type: none"> <li>Gate Corridor</li> <li>Alternative 6C - Fraser Gate Corridor</li> <li>Alternative 6D - Sperling Avenue Corridor</li> </ul>		selected as the preferred Project route. <sup>45</sup>

## B. FEI Appropriately Screened Out Infeasible Options

34. As discussed above, FEI determined that Alternatives 1 to 5 were all not feasible, and that the only feasible alternative was to construct an overland gas line (Alternative 6).<sup>46</sup> The infeasible alternatives that were the focus of IRs are discussed below.

### (a) Attachment to the New Bridge Is Not Feasible

35. FEI began diligently pursuing a like-for-like replacement in 2017.<sup>47</sup> This solution (Alternative 1) would have replaced the Pattullo Gas Line's distribution capacity and system resiliency by installing a gas line on the New Bridge. FEI's initial assessment, which included high-level assessments of multiple alternatives, concluded that Alternative 1 had the lowest cost and least stakeholder impacts.<sup>48</sup> Despite multiple requests from FEI regarding this assessment, MoTI would not provide the necessary approval.<sup>49</sup> FEI attempted to continue discussions with the MoTI Chief Engineer, including with respect to possible design modifications,<sup>50</sup> but had exhausted all avenues by January 2020.<sup>51</sup> As a result, this solution is not feasible.

<sup>45</sup> Exhibit B-6, BCUC IR1 8 series and 10 series; Exhibit B-8, Burnaby IR 12 series; Exhibit B-9, CEC IR1 15.1 and 15.2; Exhibit B-11, BCUC IR2 24.7., 24.8 and 25 series; Exhibit B-14, CEC IR2 22.2.

<sup>46</sup> FEI began exploring all other alternatives in August 2019 and immediately proceeded to evaluate the overland route options once MoTI verbally confirmed in January 2020 and that Alternative 1 would not be approved and FEI determined that Alternative 2 was not feasible: Exhibit B-9, CEC IR1 8.1; Exhibit B-1-1, Application, p. 5.

<sup>47</sup> Exhibit B-1-1, Application, pp. 5 and 25.

<sup>48</sup> Exhibit B-9, CEC IR1 8.1.

<sup>49</sup> Investigation of a gas line on the New Bridge (Alternative 1) was abandoned in January 2020; see also Exhibit B-1-2, Appendices A-1 to A-3; Exhibit B-8, Burnaby IR1 2.2, 4.1 and Attachment 4.1 for FEI's correspondence with MoTI regarding Alternative 1.

<sup>50</sup> Exhibit B-1-2, Appendix A-1; Exhibit B-8, Burnaby IR1 4.2.

<sup>51</sup> As explained in response to BCOAPO IR1 5.1 (Exhibit B-7), FEI and the MoTI Chief Engineer met on March 13, 2019. Despite multiple other requests to meet between September 2018 and January 2020, no further meetings were held and the Chief Engineer declined FEI's proposal to undertake an independent technical

**(b) Trenchless Crossing of Fraser River Is Not Feasible**

36. FEI undertook a thorough assessment of options for a trenchless crossing of the Fraser River near the existing Pattullo Bridge and determined that they were not feasible.

37. FEI's analysis of the feasibility of trenchless crossings of the Fraser River near the Pattullo Bridge (Alternative 2) included four sub-alternatives.<sup>52</sup> FEI retained a drilling contractor,<sup>53</sup> Peter Kiewit Sons ULC ("Kiewit"), who together with designers Mott MacDonald for their HDD expertise and Thurber Engineering Ltd for their geotechnical expertise, analysed the potential HDD alignments and other trenchless crossing methods.<sup>54</sup> The engineering, geological and geotechnical studies and assessments of Kiewit, attached to BCUC IR1 7.4, conclude that a trenchless crossing near the Pattullo Bridge is not feasible.<sup>55</sup> FEI also engaged McMillen Jacobs Associates and Golder Associates Corp. as independent engineering firms to review and validate all deliverables provided by Kiewit.<sup>56</sup>

38. At a high level, each of the proposed sub-alternatives were not constructible due to technical issues and risks that could not be adequately addressed or cost effectively mitigated using existing risk mitigation techniques.<sup>57</sup> The three alternatives involving horizontal directional drilling (Alternatives 2A, 2B and 2C) would have increased the likelihood of a significant environmental event, interfered with existing infrastructure or could not be incorporated into the scope of the Pattullo Bridge Replacement Project without the need for change orders from MoTI.<sup>58</sup> While it may have been possible to address the latter concern through earlier engagement with MoTI (i.e., before it commenced the competitive bidding

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review and indicated he would not change his decision; see also Exhibit B-1-1, Application, p. 28 for further discussion.

<sup>52</sup> The options for trenchless crossings included: Alternative 2A - High Pressure Horizontal Directional Drill (TP/IP HDD); Alternative 2B - Distribution Pressure Horizontal Directional Drill (DP HDD); Alternative 2C - Alternate High Pressure Horizontal Directional Drill (TP/IP); and Alternative 2D - Other Trenchless Methodologies (Micro-tunnelling).

<sup>53</sup> The experience of Peter Kiewit Sons ULC, which includes trenchless construction and engineering design, was provided by FEI in response to BCUC IR1 7.2 (Exhibit B-6).

<sup>54</sup> Exhibit B-6, BCUC IR1 7.1.

<sup>55</sup> Exhibit B-6, BCUC IR1 7.4.

<sup>56</sup> Exhibit B-6, BCUC IR1 7.3.

<sup>57</sup> Exhibit B-1-1, Application, p. 28.

<sup>58</sup> Exhibit B-1-1, Application, pp. 28-33; Exhibit B-8, Burnaby IR1 series 6, 7.3 and series 8.

process), inherent design and construction risks would have remained.<sup>59</sup> For example, Alternative 2A would have involved the installation of an NPS 12 (323 mm) TP or IP gas line across the Fraser River near the Pattullo Bridge. This alternative involved an HDD length of 1,063 metres, with additional onshore piping connecting to the existing Pattullo Gas Line, a new pressure regulating station and DP gas line to tie into the NPS 20 DP gas line on McBride Boulevard. FEI determined this alternative was not feasible because, in particular, the HDD alignment could have destabilized the Pattullo Bridge and there was an increased likelihood of “frac-out” causing an uncontrolled release of drilling fluids under the Fraser River. There was no cost-effective mitigation to address these risks.<sup>60</sup>

39. FEI also considered alternative trenchless methodologies to cross the Fraser River near the Pattullo Bridge involving micro-tunnelling and direct pipe (Alternative 2D); however these methods of construction would face multiple challenges. In particular, crossing the Fraser River would have been the longest and deepest attempted micro-tunnel in North America (a crossing length of 750 metres and depth of 70 metres versus typical lengths of 600 metres and 35 metres, respectively) and the required hydrostatic pressure to accommodate the depth would be twice what current technologies are capable of withstanding.<sup>61</sup> This type of specialized work would have also made meeting the Project schedule difficult as the availability of experienced contactors is limited.<sup>62</sup>

40. Based on these findings, and as supported by reports from multiple engineering firms, a trenchless crossing near the Pattullo Bridge is not feasible for the PGR Project.

### **(c) LNG/CNG Peak Shaving Facility or Virtual Gas Line Is Not Feasible**

41. FEI sufficiently investigated supplementing the City of New Westminster DP system using a peak shaving facility or virtual gas line, and conclusively determined that using LNG

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<sup>59</sup> Exhibit B-9, CEC IR1 11.1.

<sup>60</sup> Exhibit B-1-1, Application, pp. 29-30.

<sup>61</sup> Exhibit B-1-1, Application, p. 33; Exhibit B-8, Burnaby IR1 9.1.

<sup>62</sup> Exhibit B-1-1, Application, p. 33.

(Alternative 5A) or CNG (Alternative 5B) delivery alternatives were not feasible due to the technical and logistical challenges.<sup>63</sup>

42. As described in Section 4.3.5 of the Application, the CNG or LNG would be transported via trucks from a supply location to a pressure reduction station without the need for permanent transmission gas line infrastructure. Under peak demand conditions, the peak shaving facility or virtual gas line would need to deliver approximately 100,500 standard cubic metres per hour ( $\text{Sm}^3/\text{hr}$ ) of gas into the system. A tank similar to the size of the legacy Tilbury LNG storage tank ( $26,000 \text{ m}^3$ ) would need to be constructed in Burnaby, New Westminster or Coquitlam.<sup>64</sup>

43. Through hydraulic modelling,<sup>65</sup> FEI calculated the amount of gas that would be required to meet demand by the end of the forecast period (i.e., 2039) and an optimal injection location in order to minimize the amount of gas injection requirements (i.e., where potential supply could be located close to the need).<sup>66</sup> Despite these optimizations, both delivery alternatives (LNG and CNG) failed to adequately address the risk of a loss of pressure on the system. In particular, the delivery and injection of gas could be interrupted (e.g., traffic disruption), which would result in significant customer outages. The likelihood of interruption increased using CNG as its lower energy density would require 12 trucks per hour in order to serve peak demand.<sup>67</sup>

44. Further, finding an appropriate site for a peak shaving facility within New Westminster, Burnaby or Coquitlam would not be feasible within the time available to meet the Project schedule requirements.<sup>68</sup> Finally, based on the capital costs of the recently completed Tilbury Expansion Project (approximately \$495 million), the cost of supplying the required load using a

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<sup>63</sup> Exhibit B-1-1, Application, pp. 37-39.

<sup>64</sup> Exhibit B-1-1, Application, p. 38.

<sup>65</sup> Exhibit B-1-1, Application, p. 37; Exhibit B-11, BCUC IR2 22.1.1.

<sup>66</sup> Exhibit B-11, BCUC IR2 22.1

<sup>67</sup> Exhibit B-1-1, Application, pp. 38-39.

<sup>68</sup> Exhibit B-1-1, Application, p. 38.

virtual gas line is not cost-effective relative to overland gas line options like the Sperling Route.<sup>69</sup>

### **C. FEI's Evaluation Framework Appropriately Considered the Relevant Criteria**

45. To compare overland gas line routes for the Project, FEI developed a comprehensive evaluation framework, with non-financial and financial criteria. FEI's evaluation criteria are appropriate and properly weight relevant considerations based on internal feedback in consideration of the underlying Project objectives.

46. FEI's four criteria and weightings of each is shown in Table 4-3 of the Application, as reproduced below.<sup>70</sup> Each criteria is described in detail in sections 4.4.2.1 and 4.4.2.2 of the Application.<sup>71</sup>

**Table 4-3: Weightings within Non-Financial and Financial Criteria**

<b><u>Non-Financial</u></b>	<b>90%</b>
<ul style="list-style-type: none"><li>Schedule Impacts</li></ul>	(54%)
<ul style="list-style-type: none"><li>Community, Indigenous and Stakeholder Impacts</li></ul>	(22.5%)
<ul style="list-style-type: none"><li>Environmental and Archaeological Impacts</li></ul>	(13.5%)
<b><u>Financial</u></b>	<b>10%</b>
<ul style="list-style-type: none"><li>Levelized Delivery Rate Impact</li></ul>	

47. The non-financial criteria were reviewed by subject matter experts in order to recommend a weighting that reflected their experience with similar projects<sup>72</sup> and the Project objectives.<sup>73</sup> This process included breaking down each criteria into sub-criteria. For example, the "Schedule Impacts" criteria takes into account the project schedule, project execution certainty and construction and permitting, weighting each sub-criteria individually to ensure granularity in the underlying evaluation.<sup>74</sup> Similarly, the financial criteria for each alternative was designed to be ranked on a scale from the lowest levelized delivery rate impact to the

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<sup>69</sup> Exhibit B-9, CEC IR1 13.1 and 13.2.

<sup>70</sup> Exhibit B-1-1, Application, Table 4-3.

<sup>71</sup> Exhibit B-1-1, Application, pp. 43-44.

<sup>72</sup> See Exhibit B-8, Burnaby IR1 5.1 for a list of subject matter experts and associated project experience.

<sup>73</sup> Exhibit B-11, BCUC IR2 24.8.

<sup>74</sup> Exhibit B-11, BCUC IR2 24.8.



highest.<sup>75</sup> The Project Sponsor then reviewed and accepted the proposed evaluation criteria and weighting.<sup>76</sup>

48. FEI submits that its evaluation framework was comprehensive and appropriately considered the relevant aspects of the competing alternatives.

#### **D. Alternatives 6B and 6C Analysed and Determined To Be Not Feasible**

49. Prior to the identification of the Sperling Route (Alternative 6D), FEI identified and evaluated three potential overland route corridors that could interface with its existing infrastructure: Alternative 6A - Broadway and Gaglardi Way Corridor; Alternative 6B - Cape Horn Gate Corridor; and Alternative 6C - Fraser Gate Corridor.

50. FEI compared the three route options based on its financial and non-financial evaluation criteria.<sup>77</sup> The results of the comparison are summarized in Table 4-7 of the Application, as reproduced below.<sup>78</sup>

**Table 4-7: Overall Alternative Evaluation Summary**

<b>Criterion</b>	<b>Weighting</b>	<b>Alternative 6A: Score</b>	<b>Alternative 6B: Score</b>	<b>Alternative 6C: Score</b>
Schedule Impacts	54%	3	1	1
Community, Indigenous and Stakeholder Impacts	22.5%	3	1	1
Environmental and Archaeological Impacts	13.5%	1	1	3
Rate Impact	10%	3	1	2
<b>Weighted Score:<sup>1</sup></b>	100%	<b>2.73</b>	<b>1</b>	<b>1.37</b>

<sup>75</sup> Exhibit B-1-1, Application, p. 44. FEI adjusted the analysis period for the financial criteria from 73 years to 65 years to align with the average service life of IP pipelines in FEI's 2017 Depreciation Study; however, the analysis period does not impact the results the alternatives analysis. (Exhibit B-11, BCUC IR2 24.1 and 24.2.)

<sup>76</sup> Exhibit B-11, BCUC IR2 24.8; Exhibit B-8, Burnaby IR1 5.3.

<sup>77</sup> Exhibit B-1-1, Application, pp. 42-48.

<sup>78</sup> Exhibit B-1-1.

Note:

<sup>1</sup> Weighted total is calculated for each alternative by multiplying the weighted score for each criterion with its associated overall weighting, and then summing these scores. The maximum possible weighted total is 3.

51. Alternative 6A was identified as the superior alternative by a wide margin, having the shortest schedule duration, least community impacts and lowest financial impact.<sup>79</sup> Moreover, Alternative 6A was the only route analysed that could be constructed in time to allow FEI to decommission the Pattullo Gas Line before MoTI's scheduled demolition of the Pattullo Bridge.<sup>80</sup> Alternative 6A had a lower schedule impact for the following reasons:<sup>81</sup>

- (a) it does not cross private land so no private land statutory right-of-way ("SRW") negotiations are required;
- (b) permitting was only required from one municipality; and
- (c) there was less overall congestion due to third party utilities in the route corridor compared to other alternatives.

52. In contrast, based on the significant schedule impacts, Alternatives 6B and 6C would not meet Project schedule requirements and were therefore considered to be not feasible. The schedule impacts of Alternatives 6B and 6C are summarized in the table below.<sup>82</sup>

Schedule Impacts	
Alternative 6B - Cape Horn Gate Corridor	Alternative 6C - Fraser Gate Corridor
<ul style="list-style-type: none"><li>• Requires negotiations with private landowners for right-of-way ("RoW") access and is expected to be a lengthy process</li><li>• Increased complexity and coordination required due to permitting from two municipalities</li><li>• High congestion of third-party utilities along/near United Boulevard leading to increased complexity for construction</li></ul>	<ul style="list-style-type: none"><li>• Requires negotiations with private landowners for RoW access and is expected to be a lengthy process</li><li>• Increased complexity and coordination required due to permitting from two municipalities</li><li>• High congestion of third-party utilities along Buller Ave leads to increased complexity for construction</li></ul>

<sup>79</sup> Exhibit B-1-1, Application, pp. 45-48; Exhibit B-9, Burnaby IR1. 12.

<sup>80</sup> Exhibit B-1-1, Application, p. 6.

<sup>81</sup> Exhibit B-1-1, Application, Table 4-5.

<sup>82</sup> Exhibit B-1-1. Table 4-5.

53. FEI elaborated on the schedule impacts of Alternatives 6B and 6C as follows:<sup>83</sup>

- For Alternative 6A, the durations for the summary activities, engagement, design, permitting and construction are likely to be executed with durations in the lower to mid ranges of the estimates because of fewer land issues and obstructions. The high-level estimates for the summary activities are approximately 6-9 months for design, 9-12 months for permitting and 6-9 months for construction. When integrated into the master project schedule a likely outcome for the overall project duration could range from 33-45 months.
- For Alternatives 6B and 6C, the durations for the summary activities, engagement, design, permitting and construction are likely to be executed with durations in the mid to upper ranges of the estimates because of coordination with multiple municipalities and a more congested construction environment. The high-level estimates are approximately 9-15 months for design, 12-18 months for permitting and 9-12 months for construction. When integrated into the master project schedule a likely outcome for the overall project duration could range from 45-63 months.

54. To illustrate the schedule challenges, FEI identified the third-party utilities located along United Boulevard and how they would affect the construction of Alternative 6B - Cape Horn Gate Corridor. For example, FEI identified 28 trenchless crossing that would be required:<sup>84</sup>

There are 28 identified trenchless crossings along United Boulevard and Braid Street due to third party utilities and intersections during the Class 5 development from Burbridge Street to Rousseau Street. Track boring construction would require receiving and launching pits within the travel surface of United Boulevard. Finding appropriate locations for the pits without impacting third party utilities or causing major traffic disruptions would be challenging. Several water lines, sewer lines and storm water lines would require temporary relocation from the pits to facilitate boring operation. Temporary relocation and permanent restoration of third party utilities would lead to low productivity, increasing the construction cost, schedule, and traffic disruption.

55. FEI similarly identified the third-party utilities located along Buller Avenue and how they would affect construction of Alternative 6C - Fraser Gate Corridor.<sup>85</sup> FEI also identified businesses and private land that could be impacted by Alternatives 6A, 6B and 6C.<sup>86</sup>

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<sup>83</sup> Exhibit B-6, BCUC IR1 10.1.

<sup>84</sup> Exhibit B-8, Burnaby IR1 12.11.

56. FEI submits that it appropriately determined that Alternative 6B and 6C would not meet Project schedule requirements and were therefore considered to be not feasible.

#### **E. Sperling Route Is the Most Cost-Effective Alternative**

57. The Sperling Route was identified in July 2020 as part of FEI's ongoing consultations and negotiations regarding the Project,<sup>87</sup> and was ultimately determined to be the preferred route.

58. FEI investigated and developed the Gaglardi Route (Alternative 6A) and Sperling Route (Alternative 6D) to an AACE Class 4 level of definition.<sup>88</sup> FEI then compared Alternatives 6A and 6B using its evaluation framework. The results of FEI's financial and non-financial weighted analysis found that the Sperling Route is superior from a non-financial perspective and comparable from a financial perspective.<sup>89</sup> The results are summarized in Table 4-10 of the Application, as reproduced below.<sup>90</sup>

**Table 4-10: Overall Alternative Evaluation Summary**

<b>Criterion</b>	<b>Weighting</b>	<b>Alternative 6A: Gaglardi Route (Class 4)</b>	<b>Alternative 6D: Sperling Route (Class 4)</b>
Schedule Impacts	54%	2	3
Community, Indigenous and Stakeholder Impacts	22.5%	2	3
Environmental and Archaeological Impacts	13.5%	3	2
Rate Impact	10%	3	3
<b>Weighted Score:<sup>1</sup></b>	100%	<b>2.24</b>	<b>2.87</b>

59. Based on the Project's evaluation criteria, FEI has selected the most cost-effective route among the feasible alternatives. The Sperling Route poses the least risk from the perspective of

<sup>85</sup> Exhibit B-8, Burnaby IR1 12.12.

<sup>86</sup> Exhibit B-8, Burnaby IR1 12.13, 12.14; see also Burnaby IR1 12.15 for the impact of Alternative 6C on the City of Vancouver.

<sup>87</sup> Discussions with the City of Burnaby began in February 2020 when FEI first presented Alternative 6A to city staff: Exhibit B-1-1, Application, p. 49.

<sup>88</sup> Exhibit B-1-1, Application, pp. 49-56.

<sup>89</sup> Exhibit B-1-1, Application, pp. 55-56 and Table 4-10.

<sup>90</sup> Exhibit B-1-1.

the community and stakeholders, the environment, cultural heritage, construction, operations, adjacent infrastructure and project execution certainty.<sup>91</sup> While the Sperling Route had a lower score for environmental and archaeological impacts, FEI expects that all environmental and archaeological impacts associated with Alternative 6D will be mitigated through standard environmental and archaeological permitting processes and the implementation of best management practices during construction. No unresolved issues are anticipated.<sup>92</sup>

60. Significantly, both routes pass through the City of Burnaby, but only the Sperling Route has the support of the City as evidenced by the agreement between FEI and the City dated December 11, 2020.<sup>93</sup> This contrasts with Alternative 6A which is opposed by the City of Burnaby.<sup>94</sup>

61. FEI conducted a sensitivity analysis, after scoring of each alternative was complete, and confirmed the above-noted weightings. The results of this analysis did not change the conclusion that the Sperling Route was the most cost effective.<sup>95</sup>

62. FEI also demonstrated that variations within the AACE Class 4 cost estimate range, even at the extremes, would not change the results of the analysis. The two alternatives are equivalent when compared financially, even if the low (P10) and high (P90) range of cost estimates are considered. Moreover, even in the unlikely scenario where the cost estimate for Gaglardi Route (Alternative 6A) is realized in the low range of P10 and the Sperling Route (Alternative 6D) estimate is realized in the high range of P90, the Sperling Route has a higher overall weighted score than the former. This is shown in the table below.<sup>96</sup>

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<sup>91</sup> Exhibit B-14, CEC IR2 22.2.

<sup>92</sup> Exhibit B-14, CEC IR2 9.1.

<sup>93</sup> Exhibit B-1-1, Application, p. 117.

<sup>94</sup> Exhibit B-1-1, Application, pp. 116-118; see also Exhibit B-7, BCOAPO IR1 5.2, which confirms that the City of Burnaby was aware that FEI could not place the gas line on the New Bridge.

<sup>95</sup> Exhibit B-11, BCUC IR2 24.8.

<sup>96</sup> Exhibit B-11, BCUC IR2 24.7.

**Table 2: Overall Alternative Weighted Score  
(Alternative 6A @ P10 cost estimate and Alternative 6D @ P90 cost estimate)**

Criterion	Weighting	Alternative 6A: Gagardi Route (Class 4)	Alternative 6D: Sperling Route (Class 4)
Schedule Impacts	54%	2	3
Community, Indigenous and Stakeholder Impacts	22.5%	2	3
Environmental and Archaeological Impacts	13.5%	3	2
Rate Impact	10%	3	1
<b>Weighted Score:</b>	100%	2.24	2.67

63. FEI submits that the Sperling Route has the least overall impact, and is correctly identified as the preferred route.

#### **PART FOUR: PROJECT DESCRIPTION AND COST ESTIMATE**

64. FEI submits that it has appropriately defined the project and estimated its costs. FEI has demonstrated that it has appropriately considered project risks, incorporated those risks into the contingency for the Project, and has processes in place to manage risks throughout the life of the Project.

65. FEI's Application provides a detailed description of the proposed Project, including project components, final route evaluation and selection process, basis of design and engineering, construction, project schedule and resourcing requirements, qualitative risk assessment and analysis and contingency estimate, cost estimate, and accounting treatment.<sup>97</sup> Appendices C to G of the Application provide the supporting FEED Reports, Risk Analysis reports, Project Schedule, and Financial Schedules.<sup>98</sup>

66. The cost estimate for the PGR Project is \$175.354 million in as-spent dollars, including contingency and allowance for funds used during construction ("AFUDC"). The Project will result an estimated delivery rate impact of 1.57 percent in 2025 when all construction,

<sup>97</sup> Exhibit B-1-1, Application, Sections 5 and 6.

<sup>98</sup> Exhibit B-1-2.

including abandonment/demolition, is completed and all capital costs have entered FEI's rate base. The average annual delivery rate impact over the four years from 2022 to 2025 is estimated to be 0.39 percent, which equates to an average bill increase of approximately \$1.62 per year for a residential customer, or cumulatively \$6.39 over four years.<sup>99</sup>

67. In the subsections below, FEI addresses the key topics explored in the IRs related to the Project description and cost estimate:

- (a) FEI has appropriately sized the Project, including the gas line.
- (b) FEI is seeking a CPCN based on the Preferred Route.
- (c) FEI has finalized major crossing methods.
- (d) FEI's cost estimate is credible and will continue to be refined.
- (e) FEI will continue to identify and manage risk over the life of the Project.

**A. FEI Appropriately Sized the Project, Including the New Gas Line**

68. FEI has appropriately sized the Project to meet the need to serve customers. FEI needs to undertake the Project with the system capacity proposed. FEI explained as follows:<sup>100</sup>

There are three major components of the PGR Project that could in theory be adjusted to reduce costs: (i) the interconnection with the existing Coquitlam Gate IP NPS 30 gas line; (ii) the new PRS in Burnaby; and (iii) the length or diameter of the new 5.6 km gas line that will interconnect the two locations.<sup>101</sup>

Adjustments (i) and (ii) would, in fact, not materially reduce costs. First, the interconnection at the Coquitlam Gas IP gas line is required to provide a source of supply to the new gas line. Changes to the equipment at this location to reduce gas flows would have no material impact on costs because the costs of the interconnection are primarily driven by the operating pressures of the equipment, not gas flow rates. Second, the new PRS in Burnaby is required to reduce from IP to DP pressure to ensure safe operation of the distribution

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<sup>99</sup> Exhibit B-1-1, Application, Section 6.

<sup>100</sup> Exhibit B-11, BCUC IR2 31.3.

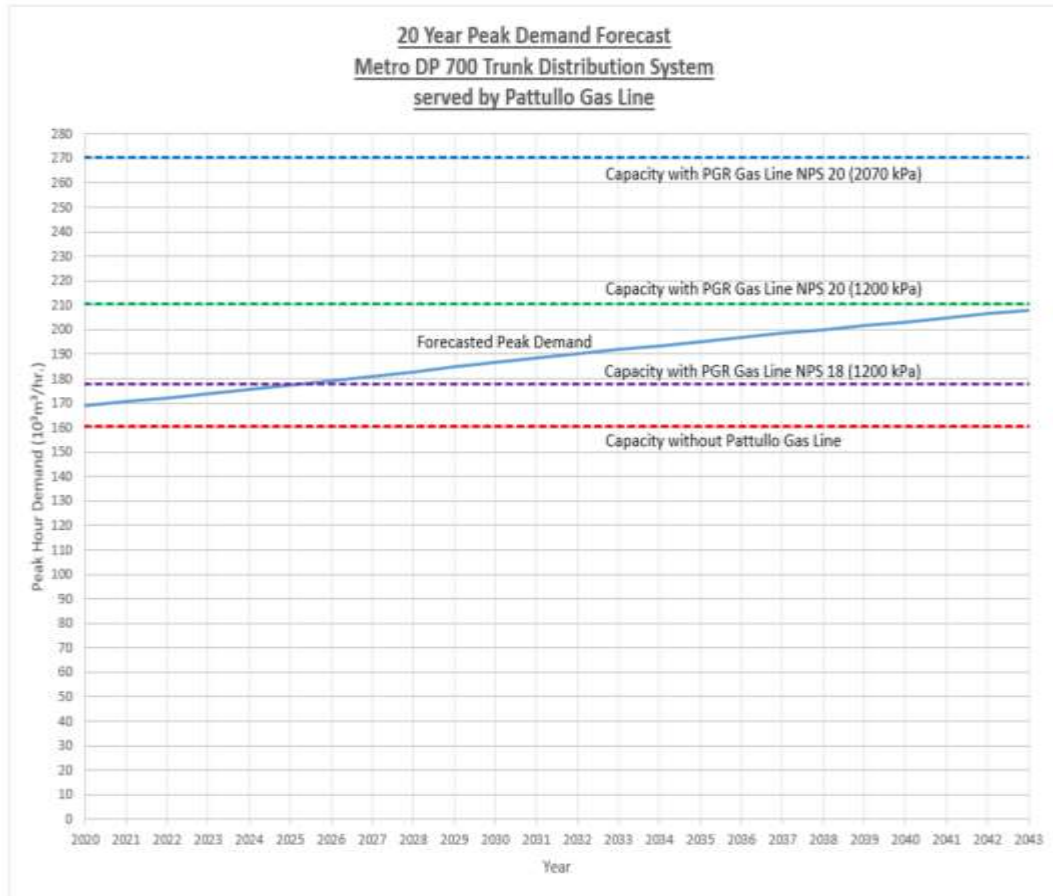
<sup>101</sup> Scope adjustments to the fourth project component – the very short (50 metre) segment of DP gas line required to interconnect the PRS with the existing DP system in Burnaby – would have no material impacts on Project costs.

system and, similar to the above, changes to the flow capacity would have no material impact on the station's cost.

Adjustment (iii), reducing the length or diameter of the pipe, would not be consistent with the Project objectives or be in the interest of ratepayers:

- **Reducing the Length of Pipe:** As described in the Amended Application, FEI considers pipe length as part of its route determination process, and the proposed Sperling Route is the most cost-effective solution that meets the Project objectives. There are no further opportunities to reduce the length of the new gas line.
- **Reducing the Diameter of Pipe:** NPS 20 is the optimal diameter for the gas line. The limiting condition which dictates the minimum size of the new gas line is the lowest sending-end pressure at the inlet to the new gas line where it interconnects with the Coquitlam Gate IP line. In this case, the low-end inlet pressure is 1200 kPa, meaning that the PGR Project must be designed to operate at a minimum pressure of 1200 kPa while still having sufficient capacity to meet forecast customer demand. As shown in the figure below, only an NPS 20 gas line would have sufficient capacity to meet customer demand to the end of the 20-year planning horizon. The next smaller standard pipe diameter of NPS 18 would only result in a minimal reduction in project costs, but would have sufficient capacity to meet forecast customer demand for only three years beyond Project completion. Using a smaller diameter pipe would therefore require FEI to replace the gas line with a new, larger diameter, pipe within a relatively short time period and with similar impacts as those associated with the PGR Project.





69. FEI submits that it has appropriately sized the equipment for the Project, and there are no opportunities to reduce costs by reducing capacity.

**B. CPCN To Be Based on Preferred Route Alignment**

70. FEI is seeking approval of a CPCN to construct and operate the PGR Project based on the preferred Sperling Route, as shown in Figure 1 below.<sup>102</sup>

<sup>102</sup> Exhibit B-11, BCUC IR2 26.1 and 26.2; Exhibit B-11-1; Erratum to BCUC IR2 26.2; see also Exhibit B-1-1, Application, Figure 4-13.

**Figure 1: Preferred Route Alignment along Sperling Avenue**



71. As explained in Section 5 of the Application, during the last stages of FEI's iterative routing process, FEI will complete the detailed design of the Project to achieve a fully engineered and defined final route alignment, reflecting consultation, environmental, and technical considerations. In the event that this process results in a material change to the proposed route alignment (i.e., a portion of the gas line cannot be constructed in the approved route), FEI will file an application for approval from the BCUC to modify the route at least 90 days before construction is proposed to commence. To support the material change to the route alignment, FEI's application will include the justification, incremental cost and schedule impacts, and additional risks including associated consultation, technical and environmental considerations. This approach is consistent with the BCUC's direction to FEI in its Decision and

Order C-11-15 granting a CPCN for FEI's Lower Mainland Intermediate Pressure System Upgrade ("LMIPSU") Projects.<sup>103</sup>

### C. Major Crossings Finalized

72. Since the filing of the Application,<sup>104</sup> FEI completed further work to finalize the crossing methods for BNSF Railway, Still Creek and TCH1, including: detailed site investigations for each crossing; sub-surface geotechnical investigations; and detailed mitigation plans to address the specific construction impacts at each crossing location.<sup>105</sup> The finalized preferred crossing methods for the three major crossings for the Sperling Route are provided in the table below.<sup>106</sup>

Major Crossing	Preferred Crossing Method
Still Creek	Aerial Crossing
BNSF railway	Conventional Auger Bore Trenchless Crossing
TransCanada Highway 1 (TCH1)	Conventional Auger Bore Trenchless Crossing

73. The rationale for the finalized crossing methods at each location is as follows:<sup>107</sup>

#### Still Creek Crossing

FEI has selected an aerial crossing option as the final crossing method of Still Creek. The aerial crossing option includes removing the existing bridge across Still Creek and installing a new bridge that can accommodate supporting the gas line without encroaching within the highwater elevations of Still Creek.

A conventional open trench crossing is not suitable for Still Creek due to environmental impacts. Still Creek is a fish bearing body of water and is the critical habitat for the western painted turtle and Pacific water shrew.

Although the sub-surface geotechnical investigations revealed favorable conditions for an HDD crossing of Still Creek that were not originally anticipated, FEI rejected an HDD methodology due to the following:

An HDD crossing would have significant adverse impacts associated with workspace, commuter/pedestrian traffic impacts, and socio-economic impacts.

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<sup>103</sup> Exhibit B-11, BCUC IR2 26.2, as corrected by Exhibit B-11-1.

<sup>104</sup> In particular, the Trenchless Evaluation Matrix for Still Creek (P-00758-PIP-STD-0001) and the Crossing Methodology Selection Report (P-00758-PIP-REP-0066) in Appendix C-1 of the Application (Exhibit B-1-2).

<sup>105</sup> Exhibit B-11, BCUC IR2 27.1 and 27.2.

<sup>106</sup> Exhibit B-11, BCUC IR2 27.1 and 27.2.

<sup>107</sup> Exhibit B-11, BCUC IR2 27.1 and 27.2.

Due to the current usage of the section of Sperling Avenue south of Sprott Street and the surrounding land, FEI would:

- require additional temporary workspace outside of existing road allowances and into environmentally sensitive areas;
- not be able to accommodate traffic management to allow for safe coordination of product pipe installation into the HDD borehole; and
- cause prolonged disruption for users of the recreational facilities (tennis courts, rowing club, wildlife rescue) in the area.

An HDD crossing would impact the section of Sperling Avenue south of Sprott Street twice during the project: first during the HDD product pipe fabrication and installation and second by the product pipe installation within the Sperling Avenue south of Sprott Street. Each impact could last up to 8 weeks in duration.

An HDD crossing is a risk to project execution schedule. A failed HDD attempt would have a significant impact to the project schedule, which if it occurred, could leave the Project unable to meet the required in-service date, as further discussed in the response to BCUC Confidential IR1 3.4.

### **BNSF Railway**

FEI had previously considered an HDD crossing that would extend across both Still Creek and the BNSF railway in a single, continuous bore. However, as a result of selecting an aerial crossing for Still Creek, a conventional bore crossing of BNSF Railway will be required. FEI's investigation revealed favourable geotechnical conditions at this location which are suitable for this crossing methodology. A conventional open trench crossing is not suitable for this location due to impacts to the BNSF railway; an open trench crossing would potentially disrupt rail service for an extended period and would not be permitted by BNSF.

### **TCH1 Crossing**

FEI has concluded that the preferred method and location for crossing TCH1 is a conventional bored crossing at Nursery Street. A conventional open trench crossing is not suitable at this location due to unacceptable traffic disruption; an open trench crossing would disrupt traffic on TCH1 for several weeks with a minimum of two lanes impacted at a time. Additional trenchless methods were not evaluated at the TCH1 crossing due to the suitability of an auger bore at this location. A conventional auger bore is well suited for the proposed crossing length and anticipated geotechnical materials, allows optimization of the crossing profile, and requires less temporary workspace than other trenchless alternatives.

**D. Cost Estimate Is Reasonable and Will Continue To Be Refined**

**(a) Base Cost Estimate Developed in Conjunction with Mott MacDonald Canada**

74. FEI developed the Project cost estimate in conjunction with Mott MacDonald Canada Ltd (Mott MacDonald), based on criteria from AACE International Recommended Practices 18R-97 and 97R-18. The total base Project cost estimate is \$124.333 million in 2020 dollars, which includes the sum of Mott MacDonald's estimate and FEI's portion of the base estimate.<sup>108</sup> The base cost estimate is included in Confidential Appendix D to the Application. The Basis of Estimate is attached in Confidential Appendix C-3.<sup>109</sup>

**(b) Cost Estimate Improved Beyond Class 4**

75. FEI completed planning and design activities to improve the maturity level of project definition deliverables beyond the requirements of a typical AACE Class 4 cost estimate.<sup>110</sup> FEI provided the following examples:<sup>111</sup>

- FEI finalized the locations of suitable take-off and tie-in, meeting the routing objectives for the new gas line. Current FEI infrastructure and a defined hydraulic design supported the take-off location at kilometre point 11.5 along the existing LMIPSU NPS 30 (762mm) gas line, and tie-in location at 16th Street and 4th Avenue in Burnaby to interconnect with the existing trunk distribution system. FEI has completed preliminary design and construction plans for the take-off and tie-in locations. Details of these installations are provided in Appendix C-2 of the Amended Application.
- As discussed in Section 5.6.1 of the Amended Application, FEI has defined the project delivery method beyond what is expected for an AACE Class 4 cost estimate. As per the Schedule provided in Appendix F of the Amended Application, FEI developed an early procurement strategy to allow procurement of long lead materials to begin in early 2021.
- FEI completed substantial preliminary design of major crossings during the Class 4 estimating stage. This included completing early geotechnical data, selecting the crossing methodology, and developing the crossing and boring

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<sup>108</sup> Exhibit B-1-1, Application, pp. 82-84.

<sup>109</sup> Exhibit B-1-3.

<sup>110</sup> Exhibit B-14, CEC IR2 20.1.

<sup>111</sup> Exhibit B-14, CEC IR2 20.1.

design and drawings to a review stage. FEI believes these deliverables are completed to a preliminary level and significantly influenced the quantitative risk analysis. The crossing details are available in Appendix C-1 of the Amended Application.

- FEI developed the materials specifications and datasheets to a preliminary level, with cross-functional reviews completed by Engineering and Procurement subject matter experts. The material specifications and equipment datasheets are provided in Appendix C-1 of the Amended Application. These support the procurement strategy previously discussed.

76. As shown in Figure 5-5 (Quantitative Risk Analysis - Monte Carlo Simulation) of the Application, the output of the quantitative risk analysis concluded that the P50 capital cost estimate is approximately \$154.4 million, with a P10/P90 range of approximately \$123.2 to \$195.2 million before escalation and AFUDC. Based on these numbers, the expected accuracy range of the PGR Project Class 4 cost estimate is approximately -20 to +27 percent.<sup>112</sup> This is between the expected accuracy range for a Class 3 (Low: -10% to -20%, High: +10% to +30%) and Class 4 (Low: -15% to -30%, High: +20% to +50%) cost estimate.

**(c) Cost Estimate Verified and Validated by Independent Expert Consultant**

77. The Project cost estimate was subject to quality assurance and validation, as follows:<sup>113</sup>

- Internal reviews that included peer reviews, document quality checks, and independent review of project documents;
- Validation reviews involving both Mott MacDonald and FEI team members throughout the estimate development process to confirm that the estimate assumptions were valid;
- An external independent review to verify and validate that the estimate, as well as schedule, met the AACE Class 4 criteria and requirements and that a well-documented, reasonable and defensible estimate was developed; and
- Internal and external reviews related to constructability and productivity.

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<sup>112</sup> Exhibit B-11, BCUC IR2 32.1.

<sup>113</sup> Exhibit B-1-1, Application, p. 84.

78. The independent reviews were completed by Universal Pegasus International (UPI) and Validation Estimating LLC (Validating Estimating).<sup>114</sup> The validation reviews were aligned with AACE RP 31R-03 Reviewing, Validating, and Documenting the Estimate, and focused on:<sup>115</sup>

- Was the estimate developed using contractually or procedurally-required practices, tools and data as defined in FEI's scope of work;
- Did the estimate cover the entire project scope;
- Was the estimate free from errors and omissions; and
- Was the estimate structured and presented in the expected format and did it use FEI's estimating structure.

79. The validation process included a benchmarking of the estimate against and comparative analysis of various cost metrics and cost targets, including similar completed projects from FEI's historical data and third-party published data from the public domain.<sup>116</sup> In particular, the cost estimate was benchmarked against the actual (as built) costs of the Coquitlam Gate IP project. This project is a relevant benchmark as it was recently completed and faced the type of urban construction challenges that would be expected for the PGR Project.<sup>117</sup>

80. No concerns were raised by UPI's independent review.<sup>118</sup> The report identifies various risks that should be quantified. These risks were identified in the Project Risk Assessment Report and quantified as described in the Capital Cost and Schedule Risk Analysis and Contingency Estimate.<sup>119</sup>

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<sup>114</sup> Exhibit B-11, BCUC IR2 33.1 and 33.2.

<sup>115</sup> Exhibit B-14, CEC IR2 29.2.

<sup>116</sup> Exhibit B-14, CEC IR2 29.2.

<sup>117</sup> Exhibit B-1-1, Application, p. 44; Exhibit B-11, BCUC IR2 24.5.

<sup>118</sup> Please refer to the response to BCUC Confidential IR1 1.1 (Exhibit B-12) for the feedback received from the independent reviews.

<sup>119</sup> Exhibit B-11, BCUC IR2 31.1 and 31.2.

**(d) Contingency and Escalation Appropriately Determined by Third Party Experts**

81. The contingency for the PGR Project is set at \$30.1 million (24 percent), to achieve a P50 confidence level.<sup>120</sup> Contingency is expected to be spent and is used as an allocation for risks that are known and likely to be encountered during Project execution. In developing the contingency for the Project, FEI adhered to standard risk analyses which were conducted by external parties.<sup>121</sup>

82. First, FEI engaged Yohannes Project Consulting Inc. (“YPCI”), a company specializing in project risk management, to conduct a qualitative risk analysis to identify and assess the risks associated with the Project. YPCI conducted multiple workshops with the Project team to develop a risk register for the Project.<sup>122</sup> Each risk identified in the risk register is classified as either a project-specific risk or a systemic risk,<sup>123</sup> and assigned a likelihood and consequence level.<sup>124</sup> All of the risks associated with the Project are contained within the Pattullo Gas Line Replacement (PGR) Sperling Avenue Route – Qualitative Risk Assessment Report Class 4.<sup>125</sup>

83. Second, FEI retained Validation Estimating, which provides services in estimate validation, risk analysis, contingency and estimation, to complete the contingency estimation.<sup>126</sup> Validation Estimating completed a quantitative analysis to evaluate the impact of Project specific risks and systemic risks. Validation Estimating completed a Monte Carlo simulation to determine a distribution of possible cost outcomes associated with the existing scope of the Project at different levels of confidence. The analysis derived a risk adjusted P50 cost of \$154.4 million representing a contingency of 24 percent.<sup>127</sup> The estimate covers both the uncertainty of project-specific risks, as well as all systemic risks, identified in the risk

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<sup>120</sup> Exhibit B-1-1, Application, p. 86.

<sup>121</sup> Exhibit B-14, CEC IR2 30.1.

<sup>122</sup> Exhibit B-1-1, Application, p. 84.

<sup>123</sup> Exhibit B-11, BCUC IR2. 34.3.

<sup>124</sup> Exhibit B-1-1, Application, p. 85.

<sup>125</sup> Exhibit B-1-3, Confidential Appendix E-1.

<sup>126</sup> Exhibit B-1-1, Application, p. 84.

<sup>127</sup> Exhibit B-1-1, Application, p. 85.



register.<sup>128</sup> The rationale for selecting a P50 level of confidence is consistent with the AACE definition for contingency and aligns with industry best practice for contingency funding, which was confirmed by a Validation Estimating.<sup>129</sup> The analysis supporting the contingency estimate is described in the PGR Project Sperling Avenue Options Capital Cost and Schedule Risk Analysis and Contingency Estimate.<sup>130</sup>

84. Validation Estimating also conducted a cost escalation estimate for the Project. Validation Estimating applied the AACE “by-period” method to develop the cost escalation estimate of \$7.7 million, which corresponds to the P50 confidence level. The escalation analysis is included in the Validation Estimating Escalation Report.<sup>131</sup>

85. In summary, the total cost estimate for the Project is based on a probabilistic Monte Carlo simulation and properly accounts for systemic and project-specific risks, including potential schedule delays. FEI expects that the Project’s final actual cost will fall within the accuracy range with an 80 percent confidence interval (P10 to P90). By setting the Project contingency at a cost value to achieve a P50 confidence level, FEI has accounted for the expected impact of known risks and events likely to be encountered.<sup>132</sup>

**(e) Cost Estimate Will Be Further Refined**

86. In accordance with AACE recommended practices, FEI’s internal budget will be based on the preferred alternative approved by the BCUC and the Class 3 cost estimate.<sup>133</sup> FEI will actively manage the Project with the aim of avoiding any expenditures in excess of the contingency. As FEI refines the Project budget as more information becomes available, FEI’s cost control mechanisms, including internal approvals, are intended to ensure the Project is

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<sup>128</sup> Exhibit B-11, BCUC IR2 24.6.1

<sup>129</sup> Exhibit B-1-1, Application, p. 88; Exhibit B-11, BCUC IR2 34.5.

<sup>130</sup> Exhibit B-1-3, Confidential Appendix E-2.

<sup>131</sup> Exhibit B-1-1, Application, p. 87; Exhibit B-1-3, Confidential Appendix E-3; Exhibit B-14, CEC IR2 33.3.

<sup>132</sup> Exhibit B-11, BCUC IR2 34.9.2.

<sup>133</sup> Exhibit B-6, BCUC IR1 15.3 and 15.3.1.

completed without the need for additional expenditures, despite project risks and schedule constraint.<sup>134</sup>

**E. FEI Will Continue To Manage Risk Over the Life of the Project**

87. FEI has a risk management framework process in place for identifying, managing, and monitoring project risks throughout each phase of the project's lifecycle. Emerging project risks will be identified on an on-going basis using several methods:<sup>135</sup>

- Review of risks identified from ongoing stakeholder consultations; environmental studies and assessments; engineering studies and investigations; engineering design reviews; contract formation, bid review, evaluation and awards; construction readiness reviews; construction field reports; field inspection and monitoring activities; and commissioning activities.
- Periodic individual or group interviews conducted with risk owners and other selected Project team members.
- Change request reviews – changes that may have an impact to the Project baseline plan (cost, schedule, performance, etc.). Project controls will assess risks of any change request to the project plan using the integrated change management process.

88. Any new risks identified will be recorded in the Project's risk register, as well as risks that are mitigated.<sup>136</sup>

**PART FIVE: PGR APPLICATION AND DEVELOPMENT COSTS DEFERRAL ACCOUNT**

89. FEI is seeking BCUC approval under sections 59 to 61 of the UCA for deferral treatment of the Application and Preliminary Stage Development costs. The forecast balance in the account is \$2.856 million, consisting of the following two components: <sup>137</sup>

- For the Project Application costs, FEI is forecasting \$350 thousand related to expenses incurred by FEI for the regulatory preparation and disposition of the Application. These expenses include legal fees, BCUC

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<sup>134</sup> Exhibit B-11, BCUC IR2 34.9.2; Exhibit B-14, CEC IR2 20.3.

<sup>135</sup> Exhibit B-11, BCUC IR2 34.1.

<sup>136</sup> Exhibit B-11, BCUC IR2 34.1 and 34.4.

<sup>137</sup> Exhibit B-6, BCUC IR1 17.1.

costs, public notice costs, hearing costs (if any), and BCUC approved intervenor costs. Consistent with past CPCN applications, FEI will record all costs related to the preparation and disposition of the Application up to the date of BCUC approval in this deferral account which will extend beyond January 31, 2020; and

- For the Project Development costs, FEI is proposing to record \$2.506 million to the deferral account. These are actual costs incurred by FEI up to January 31, 2020 associated with project management, engineering, and consultants for assessing the potential design and alternatives for the Project. Development costs incurred by FEI from January 31, 2020 until the BCUC decision will be included as Project capital costs.

90. FEI will record these costs in a new non-rate base deferral account, the PGR Application and Preliminary Stage Development Costs deferral account, attracting FEI's weighted average cost of capital until it enters rate base. FEI proposes to transfer the balance in the deferral account to rate base on January 1, 2022 and commence amortization over a three-year period. The continuity of the PGR Application and Preliminary Stage Development Costs deferral account can be found in Confidential Appendix G-2, Financial Schedule 9.<sup>138</sup>

91. In the sections below, FEI addresses the proposed three-year amortization period and financing based on FEI's weighted average cost of capital ("WACC").

**A. Three-Year Amortization Period Is Consistent with Past Approvals**

92. A three-year amortization period is reasonable and appropriate. As shown below, the levelized annual delivery rate impacts of an amortization period of 1, 2 or 3 years would each be very low.<sup>139</sup>

	Amortization Period		
	1 Year	3 Years	5 Years
Cumulative Financing Costs (\$000s)	74	223	372
Levelized Annual Delivery Rate Impact (\$/GJ)	0.017	0.006	0.004

93. While either a one or two-year amortization period would also be reasonable, a three-year period is consistent with recent BCUC approvals of similar accounts, including:<sup>140</sup>

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<sup>138</sup> Exhibit B-1-3.

<sup>139</sup> Exhibit B-6, BCUC IR1 17.3.2.4.2.

- (a) BCUC Order G-12-20 for the Inland Gas Upgrades (“IGU”) Project approved a single Application and Preliminary Stage Development Costs deferral account with a three-year amortization period;
- (b) BCUC Order C-2-14 for the Muskwa River Crossing Project for the Fort Nelson Service Area approved a single Application and Project Development Cost deferral account with a three-year amortization period; and
- (c) BCUC Order C-11-15 for the LMIPSU Projects approved two separate deferral accounts for the Application and Project Development costs, both with a three-year amortization period.

**B. A WACC Financing Return Is Appropriate and Consistent with Order G-42-21**

94. FEI’s submits that financing return based on FEI’s WACC is just and reasonable and should be approved. The costs incurred by FEI for the PGR application and project development are capital-related costs and similar to costs previously approved by the BCUC to receive WACC or rate base deferral account treatment as part of previous CPCN decisions.<sup>141</sup>

95. FEI described the applicable principle as follows:<sup>142</sup>

Whether related to capital or non-capital items, deferrals should attract a rate base rate of return (or an equivalent weighted average cost of capital return for non-rate base deferral accounts) to recognize the financing costs that are associated with the timing difference when there is an outlay of funds and when those costs are recovered from ratepayers (or between when there are costs recovered from customers that will subsequently be returned). Rate base treatment of its deferral accounts is the correct regulatory treatment because it results in the amounts expended on behalf of customers (or, if credits, collected from customers) being financed for rate making purposes at the same rate they are financed by the utility.

96. FortisBC Inc. (“FBC”) made the same arguments in its Annual Review proceeding in respect of the accounting treatment of deferral accounts. In the BCUC’s Decision in that proceeding (Order G-42-21), the BCUC agreed with FBC’s reasoning, stating:<sup>143</sup>

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<sup>140</sup> Exhibit B-6, BCUC IR1 17.3.2.4.

<sup>141</sup> Examples include the deferral accounts approved for the IGU Project CPCN, the LMIPSU CPCN, and the Huntingdon Station Bypass CPCN: Exhibit B-6, BCUC IR1 17.3.2.7.

<sup>142</sup> Exhibit B-6, BCUC IR1 17.3.2.7.

FBC incurs costs to finance its deferral accounts. A deferral account creates a timing difference between when funds are spent and when those costs are returned to or recovered from ratepayers, and that timing difference leads to financing costs for the utility. Rate base treatment is comparable to other circumstances where FBC's recovery of costs are deferred, such as capital expenditures included in rate base as well as a working capital component. The Panel accepts FBC's justification for rate base treatment for these deferral accounts since it results in the amounts expended on behalf of customers being financed for rate making purposes at the same rate they are financed by the utility. Furthermore, rate base treatment is consistent with recent BCUC decisions, including the MRP Decision as well as the FEI 2020-2021 Annual Review Decision, which is based on the same MRP Decision.

97. As such, FEI submits that the requested deferral treatment for the PGR Application and Development Costs, i.e., attracting a WACC return and transfer to rate base January 1, 2022 (or January 1 of the year following a BCUC decision), is just and reasonable and should be approved.

#### **PART SIX: FEI WILL MITIGATE ENVIRONMENTAL AND ARCHAEOLOGICAL IMPACTS**

98. FEI has demonstrated that the environmental and archaeological impacts associated with the Sperling Route and the decommissioning of the Pattullo Gas Line are low and can be appropriately mitigated. FEI will continue to gather information through additional assessments to inform Project engineering, the permitting process, and to assist FEI to develop a comprehensive impact monitoring system as construction commences. FEI has included Indigenous groups in assessing the Project's environmental and archaeological impacts and will continue to do so as Project development continues. Based on findings to date, FEI does not anticipate any unresolved issues to arise which will impact the Project's costs or schedule.<sup>144</sup>

99. FEI has provided a detailed description of the Project's potential environmental and archaeological impacts in Section 7 of the Application, including the work undertaken by FEI and its consultants to date, mitigation measures, permitting activities (including Indigenous

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<sup>143</sup> BCUC, FortisBC Inc. Annual Review for 2020 and 2021 Rates Decision and Order G-42-21, February 12, 2021, p. 21. Online: [https://www.bcuc.com/Documents/Other/2021/DOC\\_60995\\_Decision-with-Order-G-42-21-FBC-2020-2021-AnnualReview.pdf](https://www.bcuc.com/Documents/Other/2021/DOC_60995_Decision-with-Order-G-42-21-FBC-2020-2021-AnnualReview.pdf)

<sup>144</sup> Exhibit B-14, CEC IR2 19.1.

archaeological and heritage permits) and a summary of the assessments FEI will be undertaking going forward. Appendices H and I to the Application provide supporting environmental and archaeological assessments and reports regarding the construction of the preferred route (Alternative 6D – Sperling Route) and decommissioning the Pattullo Gas Line. These materials align with FEI’s conclusion that the Project’s impact will be low, and with the assistance of its third-party consultants, FEI will continue to refine the Project to mitigate potential environmental and archaeological impacts.

100. In the sections below, FEI addresses the key issues related to the Project’s permitting requirements and the mitigation of environmental and archeological impacts, making the following points:

- (a) FEI will identify and obtain necessary permits, approvals and authorizations to meet the Project schedule.
- (b) FEI has determined that the Project poses a low risk to the environment and that adverse impacts can be appropriately mitigated.
- (c) FEI will undertake further assessments of areas with moderate and high archaeological potential to mitigate potential impacts.

**A. FEI Will Identify and Obtain Environmental and Archaeological Permit Approvals to Maintain the Project Schedule**

101. FEI has identified the federal, provincial and municipal permits or authorizations<sup>145</sup> that are likely required to complete construction and decommissioning activities, based on the current level of project engineering. For example, in response to various IRs from the BCUC, FEI provided a detailed explanation of the process and deliverables for submitting a major pipeline amendment application to the BC Oil and Gas Commission (“BCOGC”). FEI currently expects to receive this approval from the BCOGC by the end of September 2021.<sup>146</sup>

102. FEI will prepare a final list of the Project’s permitting requirements using information acquired as part of the preliminary environmental assessment work and the results of

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<sup>145</sup> Exhibit B-1-2, Appendix H-1, pp. 52-53, Table ES-2, Appendix H-2, Section 3.0 and Appendix I-1, p. 5; see also Exhibit B-1-1, Application, pp. 104-105 and 107.

<sup>146</sup> Exhibit B-11, BCUC IR2 30.0 series.

assessments undertaken during the Project's detailed engineering phase.<sup>147</sup> A summary of permitting approval dates is provided in Table 5-10 of the Application, with the last approvals expected to be received by January 2022.

103. In order to ensure the Project's early works program proceeds as scheduled, FEI has also begun submitting applications for certain environmental permits or authorizations.<sup>148</sup> Once the scope of these early works is defined, the associated regulatory process for obtaining permits will be sequenced and prioritized accordingly.<sup>149</sup>

#### **B. Project Components Pose a Low Environmental Risk and Can Be Mitigated**

104. The Project's environmental risk is low and any potential environmental impacts can be minimized or avoided through standard environmental permitting processes and the implementation of best management practices during construction.<sup>150</sup> FEI will continue to gather environmental information in order to develop and design specific mitigation strategies as Project development progresses, closely monitor construction activities to address adverse effects and ensure impacted areas are restored after construction on the Project is complete.

105. First, FEI's third-party consultants undertook Environmental Overview Assessments ("EOAs") for both the replacement gas line along the Sperling Route ("Sperling EOA") and the decommissioning of the Pattullo Gas Line ("Decommissioning EOA").<sup>151</sup> The EOAs are provided as Appendices H-1 and H-2 of the Application and assess the Project's impacts in relation to current land use, contaminated sites, aquatic resources, wildlife (including species at risk) and vegetation. Each of these categories is summarized in brief below in support of FEI's conclusion that the Project's environmental risk is low:

- **Current Land Use:** The proposed footprint of the Sperling Route is predominantly located within road rights-of-way and existing trails, and

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<sup>147</sup> Exhibit B-1-1, Application, pp. 104-105.

<sup>148</sup> See e.g., Exhibit B-11, BCUC IR2 38.1; Exhibit B-11, BCUC IR2 29.1.

<sup>149</sup> Exhibit B-11, BCUC IR2 29.1.

<sup>150</sup> Exhibit B-1-1, Application, p. 99.

<sup>151</sup> Exhibit B-1-1, Application, p. 97; Exhibit B-1-2, Appendices H-1 and H-2.

therefore, the impacts to parks and conservation areas are expected to be minimal.<sup>152</sup> The decommissioning footprint for the Pattullo Gas Line does not intersect any parks or conservation areas.<sup>153</sup>

- **Contaminated Sites:** There are a total of 12 areas of potential concern (APEC) that overlap with the Project footprint.<sup>154</sup> While low risk APECs are managed during construction, FEI will further assess medium and high risk areas through subsurface soil and water investigations as part of the detailed engineering phase. These investigations are intended to reduce the risk these sites pose to Project costs and timelines.<sup>155</sup>
- **Aquatic Resources:** The EOAs identified 30 watercourses that overlap with the Sperling Route footprint, including Still Creek and multiple tributaries to Burnaby Lake, and five watercourses that overlap with the decommissioning footprint.<sup>156</sup> All of the identified watercourses are considered fish habitats. In order to mitigate impacts from the Project, FEI will apply measures to avoid causing harm to fish and adhere to least impact fish timing windows (in addition to other measures consistent with standard best practices).<sup>157</sup>
- **Terrestrial Resources (Wildlife and Vegetation):** The EOAs identified 22 wildlife and plant species that are considered at risk and have the potential to occur within the Sperling Route study area, and critical habitat used by two species. Five at risk wildlife and plant species were also identified in the decommissioning study area.<sup>158</sup> FEI will adhere to wildlife timing windows, general wildlife measures and minimize the removal or disturbance of vegetation, consistent

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<sup>152</sup> Exhibit B-1-1, Application, p. 100.

<sup>153</sup> Exhibit B-1-1, Application, p. 102.

<sup>154</sup> An area of potential environmental concern is on where there is a medium to high potential for encountering soil or groundwater contamination: see Exhibit B-1-1, Application, Tables 7-1 and 7-2 for a list of APECs.

<sup>155</sup> Exhibit B-1-1, Application, pp. 100 and 103.

<sup>156</sup> Exhibit B-1-1, Application, pp. 100 and 103.

<sup>157</sup> Exhibit B-1-1, Application, p. 104.

<sup>158</sup> Exhibit B-1-1, Application, pp. 101 and 103-104.



with standard best management practices in order to mitigate the Project's potential impacts to these resources.<sup>159</sup>

106. Second, as part of the detailed engineering phase and before construction begins, FEI will continue to refine its understanding of the Project's potential environmental impacts by further assessing vegetation, fish and wildlife and their habitat, and surface/ground water resources.<sup>160</sup> These investigations are intended to minimize the impacts from encountering species at risk, fish habitat, and contaminated soil or groundwater on the Project's construction costs and related timelines.<sup>161</sup> FEI will also develop site-specific mitigation strategies and, as part of the Project's tendering process, will prepare detailed environmental specifications to ensure that contractors are aware of the Project's environmental requirements.<sup>162</sup>

107. Finally, once construction begins, FEI will undertake environmental monitoring to oversee construction activities and identify any adverse effects. Monitoring of this kind will ensure that areas impacted by the Project are returned to pre-construction conditions. FEI will be conducting post-construction inspections to determine the success of restoration efforts and mitigation measures.<sup>163</sup>

### **C. FEI Will Undertake Further Assessments of Areas with Moderate and High Archaeological Potential to Mitigate Potential Impacts**

108. Archaeological impacts resulting from the Project will be mitigated through additional assessment, the implementation of standard best management practices, and standard provincial and Indigenous permitting processes. Consistent with past practice, and to ensure the identification and preservation of archeological and heritage resources, FEI retained third-party consultants to assess the archaeological potential of areas that may be impacted by the

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<sup>159</sup> Exhibit B-1-1, Application, p. 104.

<sup>160</sup> Exhibit B-1-1, Application, p. 105.

<sup>161</sup> Exhibit B-1-1, Application, p. 97; see also Exhibit B-1-2, Appendix H-1, p. iv, Table ES-2 for a list of potential areas of environmental concern.

<sup>162</sup> Exhibit B-1-1, Application, p. 105.

<sup>163</sup> Exhibit B-1-1, Application, pp. 105-106.

Sperling Route and the decommissioning of the Pattullo Gas Line.<sup>164</sup> The conclusions and considerations addressed in Section 7.3 of the Application are described below in relation to each Project component.

**(a) The Majority of the Sperling Route Has Low Archaeological Potential**

109. The Archaeological Constraints Report (“ACR”) assessed the Sperling Route’s high-level archeological constraints and determined that the majority of the Sperling Route’s expected footprint has low archaeological potential within highly developed areas (e.g., roadways, utilities corridors and heavily developed residential areas).<sup>165</sup> No registered archaeological sites or registered historic heritage sites overlap the Sperling Route study area and previous Archaeological Impact Assessment (“AIA”) work completed in areas along the Sperling Route found no archaeological materials.<sup>166</sup>

110. The ACR also identified elevated archaeological potential adjacent to existing and historical watercourses including, in particular, Burnaby Lake.<sup>167</sup> Based on the recommendation of its third-party consultant, and in order to further assess the potential archaeological impacts within the route footprint, in early 2021 FEI will be conducting an Archaeological Overview Assessment (“AOA”) in areas along the Sperling Route where ground disturbance is expected.<sup>168</sup> If areas of moderate or high archaeological potential are identified as part of the AOA, FEI will also undertake an AIA to ensure any impacts to archaeological and cultural resources are properly mitigated.<sup>169</sup>

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<sup>164</sup> Exhibit B-14, CEC IR2 35.2.

<sup>165</sup> The Sperling Route ACR consisted of a desktop review that included examination of an existing archaeological potential model along the route of the preferred alternative, queries of the Remote Access to Archaeological Data application, Provincial Archaeological Report Library, Provincial Consultative Areas Database, and orthophoto imagery: Exhibit B-1-2, Appendix I-1.

<sup>166</sup> Exhibit B-1-1, Application, pp. 106-107.

<sup>167</sup> Exhibit B-1-2, Appendix I-1, p. 3; Exhibit B-1-1, Application, p. 97.

<sup>168</sup> Exhibit B-1-1, Application, p. 107.

<sup>169</sup> Exhibit B-1-1, Application, p. 97.

**(b) Archaeological Impact Assessment Will Be Completed as Part of Decommissioning Activities**

111. FEI will undertake a detailed AIA within areas of moderate and high archaeological potential as part of the decommissioning process.<sup>170</sup> The location of these excavation sites is provided in Figures 1-3 of the AOA.<sup>171</sup> FEI determined that an AIA was necessary based on the findings of an AOA, which covered areas where the Pattullo Gas Line will be decommissioned.

112. The AOA consisted of a desktop review, information obtained from the Pattullo Bridge Replacement Project AOA and Aboriginal Traditional Knowledge Studies and concluded that the proposed excavation sites are mostly located within areas of high archaeological potential due to an extensive history of occupation in the surrounding area.<sup>172</sup> Of the eight excavation sites, four are considered to have elevated potential for intact artefacts.<sup>173</sup> Based on these findings, and for safety reasons associated with exaction locations along an existing gas line, the AIA work will be competed at the same time as decommissioning works.

**(c) FEI's has Adequately Incorporated Indigenous Monitoring, Permitting and Other Processes into Archaeological Assessment Activities**

113. As part of assessing the Project's potential impact on archaeological and heritage resources, FEI has worked with and sought input from Indigenous groups. This included acquiring Indigenous cultural and heritage investigation permits from five Indigenous groups as part of the December 2020 AOA associated with decommissioning the Pattullo Gas Line.<sup>174</sup>

114. Before undertaking the archaeological assessments set out above, including the Sperling Route AOA and any AIAs, Indigenous groups will be notified of the work, applicable Indigenous cultural and heritage investigation permits obtained, and communities provided the opportunity to participate in the archaeological assessments.<sup>175</sup> Preliminary Field

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<sup>170</sup> Exhibit B-1-2, Appendix I-2, p. 36; Exhibit B-1-1, Application, p. 97.

<sup>171</sup> Exhibit B-1-2, Appendix I-2.

<sup>172</sup> Exhibit B-1-2, Appendix I-2, pp. 36-40.

<sup>173</sup> Exhibit B-1-1, Application, p. 107.

<sup>174</sup> Exhibit B-1-1, Application, pp. 107-108.

<sup>175</sup> Exhibit B-1-1, Application, p. 108.

Reconnaissance work will also be conducted once FEI obtains necessary permits from Indigenous groups.<sup>176</sup>

## **PART SEVEN: FEI'S ENGAGEMENT ACTIVITIES WILL CONTINUE TO BE ADEQUATE AND APPROPRIATE**

115. FEI's consultation and engagement with stakeholders and Indigenous groups to date have been appropriate and reasonable, reflecting the Project's stage of development and schedule. FEI's approach to engagement, which promotes ongoing dialogue and the incorporation of feedback during the Project's development and execution, demonstrates FEI's commitment to responding to feedback from stakeholder and Indigenous groups. FEI will continue engagement activities throughout the lifecycle of the Project, including pre-construction, during construction, and through restoration activities. Key components of future consultation can be summarized as follows:<sup>177</sup>

- **Prior to Construction:** FEI will continue to consult with stakeholders and engage with Indigenous groups to understand issues, areas of interest and concerns. This feedback will support FEI's efforts to minimize impacts during construction.
- **During Construction:** FEI will ensure stakeholder and Indigenous groups are provided with up-to-date Project information and address any concerns and questions that arise as part of constructing the new gas line and decommissioning the Pattullo Gas Line.
- **Following Construction and Project Completion:** FEI will continue to consult and engage stakeholders and Indigenous groups throughout restoration activities.

116. In the sections below, FEI addresses the key takeaways related to engagement with stakeholder and Indigenous groups:

- (a) FEI's route selection process and assessment of alternatives incorporates feedback from stakeholders.
- (b) FEI's engagement with Indigenous groups has been thorough, timely and meaningful.

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<sup>176</sup> Exhibit B-1-1, Application, p. 106.

<sup>177</sup> Exhibit B-5, BCUC Panel IR1 1.3.1.

**A. FEI Has Incorporated Stakeholder Feedback into the Route Selection Process and Assessment of Alternatives**

117. FEI has been open and transparent in its consultation and communication with stakeholders regarding the Project, including proactively discussing project details, route information, encouraging feedback and responding to questions and concerns in a timely manner.<sup>178</sup> This approach is consistent with industry best practices and the objectives FEI adopted to guide public consultation, including, in particular, creating awareness of the Project by proactively providing information and mitigating impacts to the public based on stakeholder feedback.<sup>179</sup> FEI will continue to provide Project updates and proactively communicate with stakeholders in order to minimize and mitigate Project impacts.

118. FEI began early consultation and engagement on the Project in October 2018,<sup>180</sup> followed by early consultation with the City of Burnaby in February 2020 regarding the Gagliardi Route.<sup>181</sup> These discussions involved traffic management planning, proposed construction methodologies along the route, the proposed location of the underground pressure regulating station and the possibility of jointly coordinated projects.<sup>182</sup>

119. On July 31, 2020, the City of Burnaby asked FEI to investigate and understand the feasibility of the proposed Sperling Route. Thereafter, FEI identified key stakeholders<sup>183</sup> and has focused its consultation activities on the Sperling Route.<sup>184</sup> FEI's Consultation and Engagement Plan for the Sperling Route, included as Appendix J-5 of the Application, provides an overview of engagement activities with stakeholders as of the date of filing.<sup>185</sup> FEI has also provided

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<sup>178</sup> For example, following early engagement activities (which began in October 2018) and continued into 2019, FEI began consulting regarding the Gagliardi Route in February 2020: see Exhibit B-1-1, Application, pp. 109-110 and Appendices J-2, J-3 and J-4.

<sup>179</sup> Exhibit B-1-1, Application, p. 111.

<sup>180</sup> Exhibit B-1-1, Application, p. 109; Exhibit B-1-2, Appendix J-1.

<sup>181</sup> Exhibit B-1-1, Application, p. 110; Exhibit B-1-2, Appendix J-3.

<sup>182</sup> Exhibit B-1-1, Application, p. 116.

<sup>183</sup> Exhibit B-1-1, Application, p. 112.

<sup>184</sup> See Exhibit B-1-1, Application, pp. 112-114; Exhibit B-1-2, Appendix J-6.

<sup>185</sup> Exhibit B-1-2, Appendix J-5.

consultation logs since FEI began engagement with stakeholders regarding the Project, including with respect to the proposed Sperling Route.<sup>186</sup>

120. At the time of filing the Application, FEI had begun broadly engaging with the public regarding the Sperling Route. For example, FEI developed and shared a number of public communications regarding the Project, including: information bulletins;<sup>187</sup> a project webpage;<sup>188</sup> social media communications;<sup>189</sup> bill inserts,<sup>190</sup> email newsletters,<sup>191</sup> information cards to residents and business along the route;<sup>192</sup> and both print and digital advertisements.<sup>193</sup>

121. FEI has also undertaken specific consultation activities with the following stakeholders, including the proposed abandonment in place of the Pattullo Gas Line, as described in brief below:<sup>194</sup>

- **Customers, Residents and Businesses:** FEI held virtual information sessions in November 2020 in which Project team members participated and answered questions regarding traffic and local access concerns, construction methods and timelines and potential environmental impacts. 21 people participated in the two virtual public information sessions.<sup>195</sup> As explained in response to BCOAPO, FEI does not anticipate any natural gas service interruptions that will adversely affect customers; however, in the event natural gas service interruptions occur, FEI will proactively identify and notify those affected.<sup>196</sup>

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<sup>186</sup> See Exhibit B-1-2, Appendices J-1, J-3 and J-6.

<sup>187</sup> Exhibit B-1-1, Application, p. 112; Exhibit B-1-2, Appendices J-8 and J-9.

<sup>188</sup> Exhibit B-1-1, Application, pp. 112-113; Exhibit B-1-2, Appendix J-10.

<sup>189</sup> Exhibit B-1-1, Application, p. 113; Exhibit B-1-2, Appendix J-11.

<sup>190</sup> Exhibit B-1-1, Application, p. 113; Exhibit B-1-2, Appendices J-12 and J-13.

<sup>191</sup> Exhibit B-1-1, Application, p. 113; Exhibit B-1-2, Appendix J-14.

<sup>192</sup> Exhibit B-1-1, Application, p. 114; Exhibit B-1-2, Appendix J-15.

<sup>193</sup> Exhibit B-1-1, Application, p. 114; Exhibit B-1-2, Appendix J-16.

<sup>194</sup> As described on p. 118 of the Application (Exhibit B-1-1), FEI has also engaged with local constituency offices. No concerns have been raised as of the time of filing.

<sup>195</sup> Exhibit B-1-1, Application, p. 115; see also Exhibit B-1-2, Appendix J-17 for a copy of the virtual information session presentation.

<sup>196</sup> Exhibit B-6, BCUC IR1 18.2.

- **Stakeholder Groups:** FEI reached out via phone or email to local groups, including clubs, schools, boards and places where the community gathers, to discuss the Project and invite them to participate in the virtual information sessions.<sup>197</sup>
- **Local Governments:** FEI has undertaken frequent and meaningful engagement with the City of Burnaby in an effort to solicit and incorporate feedback on the Project and ultimately minimize impacts to local residents. As outlined above, consultation with the City began in February 2020 regarding the Gagliardi Route, with FEI introducing the route to the Burnaby Mayor and Council and followed by weekly negotiations between FEI and the City.<sup>198</sup> Over the course of engagement, the City of Burnaby requested that FEI investigate several route options,<sup>199</sup> including the Sperling Route, which the City has subsequently supported.<sup>200</sup> Discussions regarding the Gagliardi Route ended in August 2020.<sup>201</sup>

In order to achieve Project acceptance, including obtaining the rights and approvals for the necessary statutory right-of-way and temporary workspace, FEI continued to discuss jointly coordinated projects proposed by the City. On December 11, 2020, FEI and the City signed an agreement setting out the terms on which FEI would construct the Project along the Sperling Route Corridor in the City of Burnaby.<sup>202</sup>

Finally, FEI has consulted with the City of Surrey and the City of New Westminster regarding the proposed abandonment of the Patullo Gas Line

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<sup>197</sup> Exhibit B-1-1, Application, p. 115; see also Exhibit B-1-2, Appendix J-6 which provides a record of consultation with stakeholder groups.

<sup>198</sup> Exhibit B-1-1, Application, p. 116.

<sup>199</sup> This included consideration of the Fraser Gate Corridor route (Alternative 6C), which FEI had determined was not feasible: Exhibit B-1-1, Application, pp. 116-117.

<sup>200</sup> Exhibit B-1-1, Application, p. 117; Exhibit B-1-2, Appendix J-18.

<sup>201</sup> This followed the recommendation of the City's Finance Management Committee opposing the Project proceeding through Burnaby: Exhibit B-1-1, Application, p. 117.

<sup>202</sup> The agreement is attached as Confidential Appendix J-19 to the Application (Exhibit B-1-3); see also Exhibit B-12, BCUC Confidential IR1 5 and 6 series.

(located on either side of the Pattullo Bridge).<sup>203</sup> FEI has contemplated necessary restorative work and will continue to consult with each municipality in this regard.<sup>204</sup>

- **Federal and Provincial Permitting Agencies:** FEI continues to consult with permitting agencies regarding the Sperling Route, including Metro Vancouver, Metro Vancouver Regional Parks District, MoTI, public utilities and railway companies, in order to obtain necessary approvals and permits.<sup>205</sup> To date, permitting agencies have primarily asked questions and raised concerns about environmental considerations and working near existing statutory rights-of-way and third-party utility infrastructure.<sup>206</sup>

122. A summary of questions and concerns raised by customers, residents, businesses and stakeholder groups is provided in Table 8-1 of the Application.<sup>207</sup> FEI will continue to engage and consult with local stakeholders by identifying specific opportunities to discuss the Project and more broadly with communities that will be most affected by the Project.

#### **B. Consultation with Indigenous Groups Has Been Thorough, Timely and Meaningful**

123. As outlined in Section 8.3 of the Application, FEI has engaged with all Indigenous groups with asserted interests in the Project area since 2018, as part of FEI's investigation of trenchless crossing alternatives.<sup>208</sup> Engagement activities were commenced early and have been appropriate based on the Project's scope, both with respect to the Sperling Route and the decommissioning of the Pattullo Gas Line. As development of the Project progresses, FEI will continue to engage with these groups in an ongoing, transparent and meaningful manner, with the goal of seeking consensus regarding the Sperling Route. This process will be supported by

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<sup>203</sup> Located between the Pattullo Gate Station in the City of Surrey and the intersection of McBride Boulevard and Royal Avenue in the City of New Westminster: see Exhibit B-11, BCUC IR2 36.1 and 36.1.1

<sup>204</sup> Exhibit B-11, BCUC IR2 36.1.1 and 36.4.

<sup>205</sup> Exhibit B-1-1, Application, p. 118.

<sup>206</sup> See Exhibit B-1-2, Appendix J-6.

<sup>207</sup> Exhibit B-1-1, Application, p. 119.

<sup>208</sup> Exhibit B-1-1.



providing planning and construction information, permitting information and environmental management plans, and ensuring Indigenous groups have adequate time and access to resources to engage with FEI.

124. In developing its Indigenous Engagement Plan for the Sperling Route,<sup>209</sup> FEI recognized that Indigenous groups have focused their resource capacity and attention on the immediate health and safety of their communities as a result of the COVID-19 pandemic, constraining their available time and resources for engagement. As such, FEI adapted its engagement activities with Indigenous groups in response to these capacity challenges<sup>210</sup> and accommodated all requests by potential affected Indigenous groups for virtual meetings regarding the Project and for additional time to review documents.<sup>211</sup> To date, Project timelines have not been adversely impacted by these accommodation, nor is there any indication of future impact to timelines as a result of FEI's engagement with Indigenous groups.<sup>212</sup>

125. A summary of engagement to date is set out in Section 8.3.3 of the Application, along with a complete log of engagement activities in Appendix J-7.<sup>213</sup> For ease of reference, FEI has also provided the key engagement activities in Table 8-4 of the Application.<sup>214</sup> These activities are summarized below:

- **Consultation Regarding the Sperling Route:** FEI initiated early engagement with certain Indigenous groups<sup>215</sup> regarding the Sperling Route in August 2020, soon after the City of Burnaby asked FEI to further investigate the route. This was followed by a Project update to all Indigenous groups identified as having

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<sup>209</sup> Exhibit B-1-2, Appendix J-5.

<sup>210</sup> For example, FEI encountered these constraints in the context of Indigenous groups' review of FEI's Projector ground disturbance activity: Exhibit B-7, BCOAPO IR1 6.1.

<sup>211</sup> Exhibit B-7, BCOAPO IR1 6.2.

<sup>212</sup> Exhibit B-11, BCUC IR2 39.1.

<sup>213</sup> Exhibit B-1-1 and B-1-2, respectively.

<sup>214</sup> Exhibit B-1-1.

<sup>215</sup> These groups included those that had issued cultural or heritage permits or had previously shown interest in monitoring the Project: see Exhibit B-1-1, Application, Table 8-3.

interests potentially affected by the Sperling Route.<sup>216</sup> Feedback from Indigenous groups regarding the Sperling Route has been limited to date. There have not been any concerns raised regarding the route in response to Project documents or during virtual meetings with interested Indigenous groups.<sup>217</sup> FEI expects to receive additional feedback as archaeological and environmental overview documents are finalized and shared with these groups in 2021.<sup>218</sup>

- **Consultation Regarding the Pattullo Gas Line:** In June 2020, FEI began engaging with Indigenous groups<sup>219</sup> regarding the decommissioning of the Pattullo Gas Line. To date, FEI has not received any feedback from these groups indicating their views regarding this component of the Project.

126. As described below, FEI is committed to ensuring that Indigenous groups can participate in consultation through available capacity funding, have the opportunity to effectively assess the Project through monitoring and Indigenous permitting processes, and ultimately benefit from relevant economic opportunities as they arise.

127. In order to ensure Indigenous groups are able to meaningfully engage regarding the Project and associated issues that affect their interests, FEI has offered capacity funding to all Indigenous groups that have expressed an interest in the Project.<sup>220</sup> FEI communicated this offer verbally and through presentation materials.<sup>221</sup> At this time, only Kwikwetlem First Nation has requested capacity funding.<sup>222</sup>

128. As explained in response to BCUC IR2 39.2, representatives of Kwikwetlem First Nation and Kwantlen Nation participated in the geotechnical program as Indigenous monitors

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<sup>216</sup> See Exhibit B-1-1, Application, Table 8-2 (column 1).

<sup>217</sup> Exhibit B-1-1, Application, p. 125.

<sup>218</sup> Exhibit B-11, BCUC IR2 39.2.

<sup>219</sup> See Exhibit B-1-1, Application, Table 8-2 (column 2).

<sup>220</sup> Exhibit B-11, BCUC IR2 39.1.

<sup>221</sup> Exhibit B-7, BCOAPO IR1 7.1.

<sup>222</sup> FEI continues to regularly follow-up with KFN to understand how to support their engagement in the Project: Exhibit B-11, BCUC IR2 39.1.

alongside FEI's archaeological consultants. Musqueam Nation and Tsleil-Waututh Nation participated remotely due to COVID restrictions in their communities. No concerns were raised by these Indigenous groups following their participation.<sup>223</sup> Opportunities to undertake monitoring of this kind will continue as FEI progresses archeological work on the Project.

129. As additional feedback is received from Indigenous groups, including with respect to archaeological and cultural monitoring and contracting opportunities, and as additional information regarding employment opportunities, contracting and procurement becomes available, FEI will ensure interested groups are properly informed and that any concerns that arise are addressed. For example, FEI has committed to speak with Tsleil-Waututh Nation and Kwikwetlem Nation regarding their interest in the economic opportunities associated with the Project, including contracting opportunities.<sup>224</sup>

130. Future engagement activities will continue to be conducted using meetings, document sharing, phone calls, virtual presentations, and letters and emails, as appropriate. Once the Project has been completed, FEI will also offer Indigenous groups the opportunity to share feedback for incorporation into future FEI projects.<sup>225</sup>

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<sup>223</sup> Exhibit B-11, BCUC IR2 39.2.

<sup>224</sup> Exhibit B-11, BCUC IR2 39.2.

<sup>225</sup> Exhibit B1-1, Application, p. 126.

**PART EIGHT: CONCLUSION**

131. FEI submits that the PGR Project is in the public interest and that the BCUC should grant a CPCN for the Project and approve the PGR Application and Preliminary Stage Development Costs deferral account.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

Dated:	March 5, 2021	<b><i>[original signed by Chris Bystrom]</i></b>
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		Christopher R. Bystrom
		Counsel for FortisBC Energy Inc.

Dated:	March 5, 2021	<b><i>[original signed by Niall Rand]</i></b>
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		Niall Rand
		Counsel for FortisBC Energy Inc.