bcuc
British Columbia
Utilities Commission

Suite 410, 900 Howe Street
Vancouver, BC Canada V6Z 2N3
bcuc.com

P: 604.660.4700
TF: 1.800.663.1385
F: 604.660.1102

FortisBC Energy Inc.

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

---

Decision
and Order C-2-21

June 30, 2021

Before:
D. M. Morton, Panel Chair
T. A. Loski, Commissioner
R. I. Mason, Commissioner

TABLE OF CONTENTS

Page no.

Executive Summary

On August 31, 2020, FortisBC Energy Inc. (FEI) filed an application with the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA)[1] for the Pattullo Gas Line Replacement (PGR) Project (Project) (Application). The objective of the proposed Project is to replace the distribution system capacity currently provided by FEI's distribution pressure gas line affixed on the Pattullo Bridge (Pattullo Gas Line), which must be decommissioned in 2023 prior to the demolition of the Pattullo Bridge by the Province.[2] The Project is scheduled to conclude in 2023 and the total Project cost, including the capital costs as well as the Application and preliminary stage development costs, is $175.354 million.

By Order G-232-20 dated September 11, 2020, the Panel established a regulatory timetable for the review of the Application. The review of the Application proceeded by way of two rounds of information requests and two evidentiary updates. The City of Burnaby, BCOAPO and CEC actively participated as interveners in this proceeding.

Having considered matters relevant to the approval of a CPCN, as set out in the BCUC Guidelines, the Panel finds that a CPCN for this Project is in the public interest. With the removal of the existing line under the Pattullo Bridge and with no ability to run a new line under the replacement bridge, FEI had to consider alternatives. We are satisfied with the analysis of alternatives conducted by FEI and the consultation undertaken. The Project will support the objective of encouraging economic development and the creation and retention of jobs and this is the only directly applicable of BC's energy objectives. We are also satisfied that this Project was sufficiently considered in the review of FEI's most recently filed Long-Term Gas Resource Plan (LTGRP).

The Panel is also satisfied that the rate impact of the Project, over its accounting life of 68 years, is reasonable.

While the Panel is satisfied with FEI's approach to managing the environmental and archaeological impacts of the PGR Project, there remains the potential of identifying areas of moderate or high environmental or archaeological impact as the Project progresses. This remains a risk to the Project's schedule. The Panel therefore directs FEI to report to the BCUC as part of FEI's semi-annual progress reports for the Project any areas of moderate or high environmental or archaeological impact identified and the likely impact to the Project's schedule and cost.

Additionally, the Panel directed various reporting requirements which are set out in the decision.

[1] *Utilities Commission Act*, R.S.B.C. 1996, c. 473.

[2] Exhibit B-1, Section 1.1, p. 1

1.0 Introduction

1.1 Background

On August 31, 2020, FortisBC Energy Inc. (FEI) filed an application with the British Columbia Utilities Commission (BCUC) for a Certificate of Public Convenience and Necessity (CPCN) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA)[3] for the Pattullo Gas Line Replacement (PGR) Project (Project or PGR Project) (Application).[4] FEI is a wholly-owned subsidiary of FortisBC Holdings Inc., a wholly-owned subsidiary of Fortis Inc. FEI is incorporated under the laws of the Province of British Columbia. As the largest natural gas distribution utility in the province, FEI provides residential, commercial, and industrial customers with sales and transportation services in more than 100 communities in B.C.[5]

The objective of the proposed Project is to replace the distribution system capacity currently provided by FEI's distribution pressure gas line affixed on the Pattullo Bridge (Pattullo Gas Line), which must be decommissioned in 2023 prior to the demolition of the Pattullo Bridge by the Province.[6] The Project is scheduled to conclude in 2023 and the total Project cost, including the capital costs as well as the Application and preliminary stage development costs, is $175.354 million.

1.2 Approvals Sought

In its Application, FEI seeks approval of a CPCN for its PGR Project, pursuant to sections 45 and 46 of the UCA.

FEI also seeks approval of a deferral account pursuant to sections 59 to 61 of the UCA to capture the regulatory costs of this Application and the costs expended for the purpose of evaluating the feasibility and preliminary development of the Project.[7]

1.3 Regulatory Process

By Order G-232-20 dated September 11, 2020, the BCUC established a regulatory timetable for the review of the Application which consisted of an evidentiary update (First Evidentiary Update), intervener registration and one round of information requests (IRs).

By Order G-253-20 dated October 8, 2020, the BCUC amended the regulatory timetable to allow for a second evidentiary update (Second Evidentiary Update).

By Order G-350-20, dated December 29, 2020, the BCUC amended the regulatory timetable to allow for a second round of IRs, and establish dates for final and reply arguments.

---

[3] *Utilities Commission Act*, R.S.B.C. 1996, c. 473.
[4] Exhibit B-1, Section 1.1, p. 1
[5] Exhibit, B-1, Section 2.1, p. 12
[6] Exhibit B-1, Section 1.1, p. 1
[7] Exhibit B-1, Section 1.3, p. 8

By letter, dated April 12, 2021, the BCUC further amended the regulatory timetable to allow for a Panel IR, and establish dates for supplemental final and reply arguments.

Four interveners registered in the proceeding: City of Burnaby (Burnaby), Michael-John Bailie (Bailie), British Columbia Old Age Pensioners' Organization et al. (BCOAPO), and Commercial Energy Consumers Association of British Columbia (CEC). Burnaby, BCOAPO and CEC actively participated in this proceeding. The remaining intervener did not. One interested party registered: Badger Daylighting Inc. No letters of comment were received.

1.4 Legal and Regulatory Framework

Section 45(1) of the UCA stipulates that a person must not begin the construction or operation of a public utility plant or system, or an extension of either, without first obtaining from the BCUC a certificate that public convenience and necessity require, or will require, the construction or operation of the plant or system.

Section 46(3) states that the BCUC may issue or refuse to issue a CPCN or may issue a CPCN for the construction or operation of only a part of the proposed facility, line, plant, system, or extension, and may attach terms and conditions to the CPCN. Sections 46 (3.1) and (3.2) require the BCUC to consider:

a) the applicable of British Columbia's energy objectives,[8]

b) the most recent long-term resource plan filed by the public utility under section 44.1, if any, and

c) the extent to which the application for the certificate is consistent with the application requirements under sections 6 and 19 of the *Clean Energy Act* (CEA).[9]

The BCUC has jurisdiction to approve the establishment of deferral accounts, pursuant to sections 59 to 61 of the UCA.

The BCUC's CPCN Guidelines provide general guidance regarding the information that should be included in a CPCN application and the flexibility for an application to reflect the specific circumstances of the applicant, the size and nature of the Project and the issues raised by the application.[10]

1.5 Decision Framework

The structure of this Decision largely follows that of the Application and the BCUC's CPCN Guidelines. Relevant evidence submitted by FEI and interveners is summarized in each section.

Section 2 addresses the Project need and its justification.

Section 3 discusses the alternatives that FEI considered. This section also describes the Project evaluation criteria and methodology.

[8] BC's energy objectives are defined in section 2 of the *Clean Energy Act*.
[9] Sections 6 and 19 of the CEA do not apply to FEI.
[10] BCUC Order G-20-15, 2015 Certificate of Public Convenience and Necessity Application Guidelines.

Section 4 describes the Project.

Section 5 outlines Project costing, accounting treatment, and impact.

The final sections of the Decision address environmental permitting, stakeholder and First Nations consultation, as well as alignment with provincial energy objectives and FEI's internal long-term resource planning.

Panel determinations are provided in Section 9 of the Decision along with BCUC directives relating to detailed reporting requirements. Section 10 summarizes the Panel's approvals and directives.

2.0 Project Need and Justification

As stated previously, the objective of the proposed Project is to replace the distribution system capacity currently provided by FEI's existing Pattullo Gas Line (PGL) attached to the Pattullo Bridge, which must be decommissioned in 2023 prior to the demolition of the Pattullo Bridge by the Province.[11] FEI submits that not replacing the system capacity of the existing PGL would lead to a loss of gas supply to approximately 10,700 customers in Burnaby, New Westminster and Coquitlam during peak demand conditions. Further, FEI projects that if the capacity of the existing PGL is not replaced, the number of customers in these cities without gas supply during cold winter periods would increase by 14,800 by 2039.[12]

The existing PGL is a distribution pressure (DP)[13] natural gas line attached underneath the Pattullo Bridge, which spans the Fraser River from the City of Surrey to the City of New Westminster. The PGL, which has been in operation since 1956, is a component of FEI's Metro Vancouver distribution system that provides two key benefits:

- Distribution capacity to serve customers in Burnaby, New Westminster and Coquitlam; and
- Resiliency for FEI's distribution system providing service to customers in the larger Metro Vancouver area.[14]

As stated above, the objective of the PGR Project is to replace the distribution system capacity provided by the existing PGL. Although the PGR Project does not provide resiliency benefits, the topic was explored in the proceeding. Both benefits are discussed in detail in the following sub-sections.

[11] Exhibit B-1-1, Section 1.2.1, p. 3.

[12] Exhibit B-1-1, Section 1.2.1, p. 4.

[13] A distribution pressure pipeline is a gas utility pipeline that operates below 700 kPa.

[14] Exhibit B-1-1, Section 3.3, p. 15.

2.1 Distribution Capacity to Serve Customers in Burnaby, New Westminster and Coquitlam

The PGL provides capacity to serve customers in Burnaby, New Westminster and Coquitlam through a 700 kPa trunk distribution system,[15] depicted in orange in Figure 2-1. This trunk distribution system, a subset of the Metro Vancouver distribution system, transports natural gas from four points indicated by yellow arrows to 14 regulating district stations represented by green stars, which feed gas into the 420 kPa distribution system that directly supplies customers.[16]

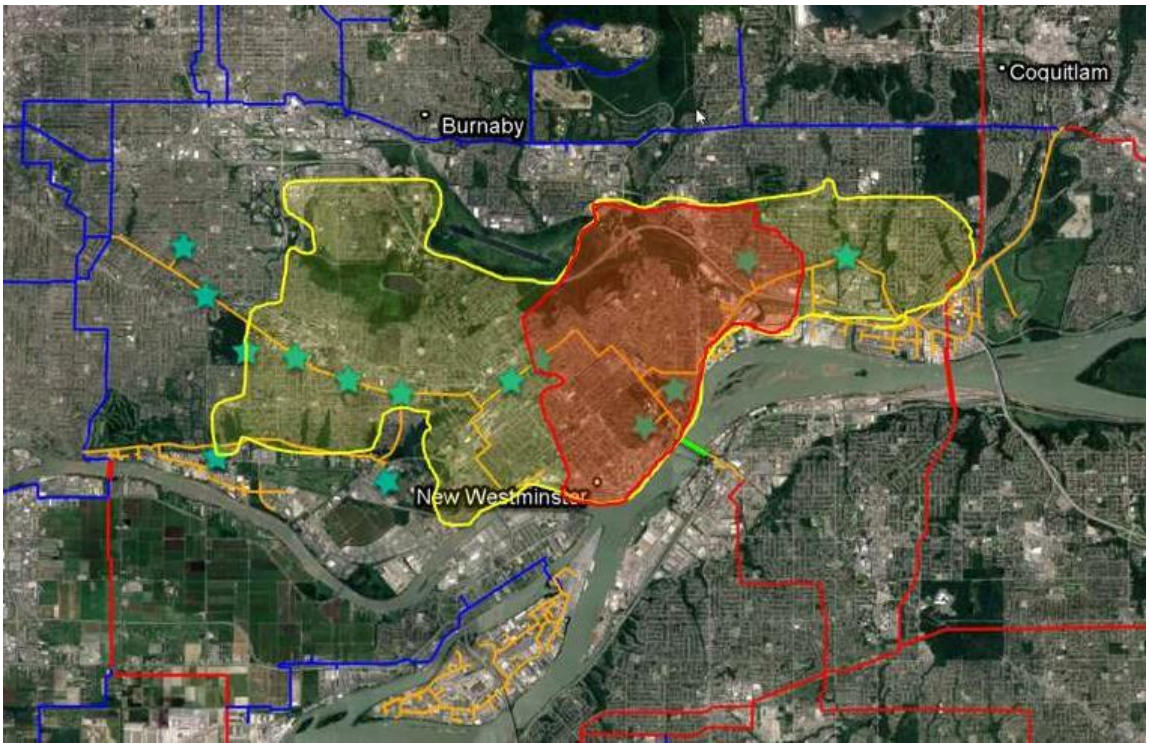
Figure 2-1: Stations Supplying the Metro Vancouver 700 kPa Trunk Distribution System

FEI states that the existing PGL is the largest feed into the trunk distribution system, representing over half of the gas entering the trunk distribution system during cold winter weather.[17] The PGL currently supplies all or a portion of natural gas to approximately 35,000 customers in Burnaby, New Westminster and Coquitlam.[18]

FEI asserts that without the PGL, approximately 10,700 customers in the area shaded in red in Figure 2-2 below would have inadequate gas supply in peak periods to provide necessary heat and hot water for their homes and businesses based on 2020 peak demand projections.[19]

[15] A trunk distribution system is a set of distribution lines or "mains" that supply natural gas to regulating district stations.
[16] Exhibit B-1-1, Section 3.3.1, p. 16.
[17] Exhibit B-1-1, Section 3.3.1, p. 16.
[18] Exhibit B-1-1, Section 1.2.1, p. 3.
[19] Exhibit B-1-1, Section 3.5, p. 19.

Figure 2-2: Customers Impacted by Loss of PGL based on 2020 Peak Demand Projections



FEI clarifies that the loss of the PGL would not immediately result in a loss of gas supply to customers, but would instead be a risk at temperatures colder than minus 10°C. Based on FEI's extreme value analysis of historical weather recorded at the Vancouver International Airport, in any year there is an 11 percent chance of a temperature of minus 10°C or colder occurring.[20]

FEI describes that the area shaded in red in Figure 2-2 covers the distribution area supplied by three regulating district stations. Without the PGL, the inlet pressure to these stations would drop below the minimum required to provide adequate supply at temperatures colder than minus 10°C.

> 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.[21]

FEI explains that when situations arise where the gas system has experienced a loss of pressure which could lead to the unsafe operation of gas appliances, it would isolate the affected system to ensure public safety until a reliable gas supply were re-established. FEI provides the following assessment of the impacts to customers if such a situation where to occur:

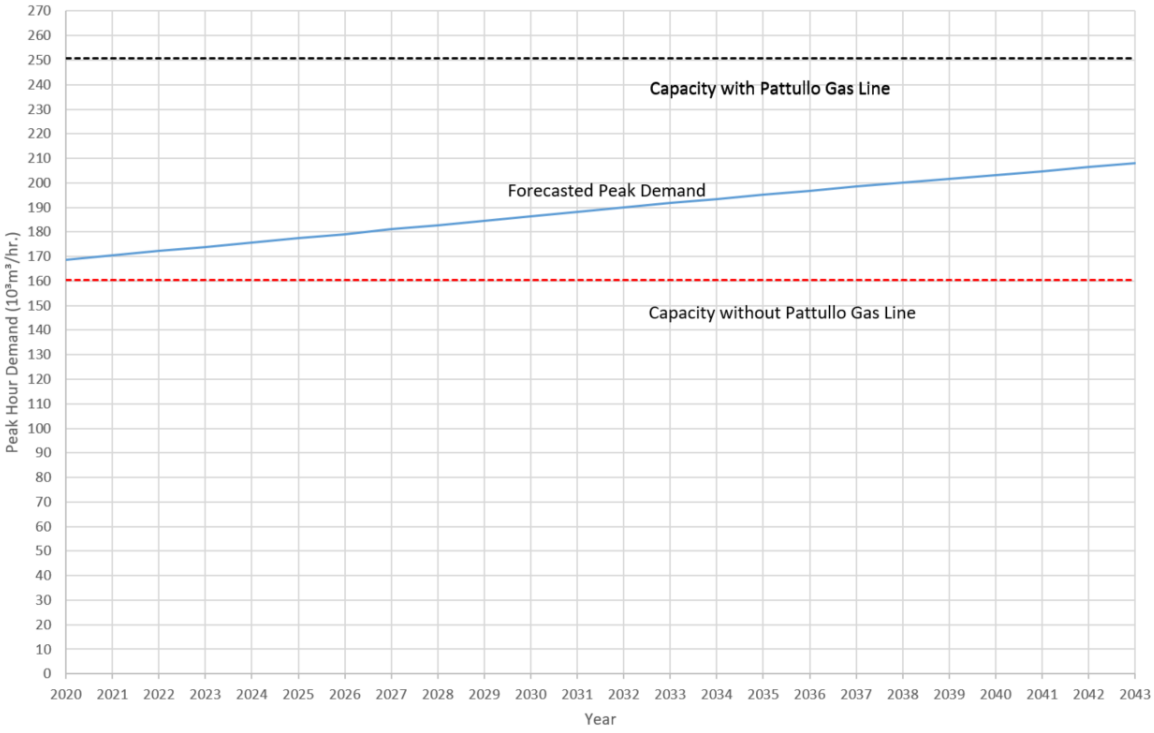
[20] Exhibit B-9, CEC IR 3.7.

[21] Exhibit B-6, BCUC IR 3.3.

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.[22]

FEI provides Figure 2-3 illustrating that system capacity without the PGL would be insufficient to meet peak demand forecast for the trunk distribution system for all years over a 23-year period to 2043.[23]

Figure 2-3: Peak Demand Forecast for the Trunk Distribution System



Positions of the Parties

FEI submits that the evidence in this proceeding shows that, if the capacity of the existing PGL 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."[24]

[22] Exhibit B-9, CEC IR 9.1.2.

[23] Exhibit B-9, CEC IR 5.5.

[24] FEI Final Argument, p. 13.

BCOAPO accepts that with all things considered, FEI has justified the need for the Project "as the risks to existing and future customers of not replacing the lost capacity of the PGL are not acceptable."[25]

The CEC finds that FEI has established a clear need for the replacement of the capacity of the PGL prior to the demolition of the Pattullo Bridge.[26]

Panel Discussion

The Panel is persuaded by the evidence and arguments provided by FEI and the interveners that there is a need for the PGR Project. The existing PGL provides important capacity benefits to more than thirty thousand customers in Burnaby, New Westminster and Coquitlam. The Panel is satisfied that without the PGR Project moving forward to replace the capacity of the existing PGL, there will be an inability to serve near-term forecast peak demand for thousands of customers. This could result in loss of any ability to heat homes and businesses and cook meals on peak days. The Panel finds that such a loss is unacceptable, and the existing capacity of the PGL must be replaced.

2.2 Resiliency for FEI's Distribution System Providing Service to Customers in the Metro Vancouver Area

FEI describes resiliency as follows:

> The ability to prevent, withstand and recover from system failures or unforeseen events. Resiliency is directly linked to the concept of reliability in the sense that a system cannot be resilient without first having reliable components. However, resiliency also encompasses concepts such as preparing for, operating through, and recovering from significant disruptions, no matter the cause.[27]

In the context of this Application, FEI states that resiliency is "the ability to operate during a major supply disruption to or from one of the two major gate stations serving the Metro Vancouver area (i.e. Fraser Gate or Coquitlam Gate station)."[28] FEI explains that the capacity to withstand such a disruption was added through two recent major system upgrades: Lower Mainland Intermediate Pressure System Upgrade (LMIPSU) Project, and Coastal Transmission System (CTS) Project.

FEI submits that the resiliency benefits of the PGL allow for the full capacity of the Metro Vancouver distribution system to be maintained should Coquitlam Gate or Fraser Gate station be unable to supply gas into the system. FEI describes the resiliency impact of losing the PGL as follows:

[25] BCOAPO Final Argument, p. 6.
[26] CEC Final Argument, p. 4.
[27] Exhibit B-6, BCUC IR 5.1.
[28] Exhibit B-6, BCUC IR 5.1.

> If the Pattullo Gas Line is removed without replacement, and if the gas supply from either Coquitlam Gate or Fraser Gate station is lost, the sole remaining gate station would need to compensate for both the loss of the Pattullo Gas Line supply and the failed gate station. Under this scenario, the resiliency of the system is eroded and there is insufficient capacity to support the lost station. This represents a loss of resiliency, as the remaining gate station could only support customers in warmer weather when system demand is lower.[29]

FEI states that it does not have explicit criteria for determining an acceptable level of system resiliency in the Metro Vancouver area, but FEI considers that with the existing PGL and the completion of the LMIPSU and CTS projects, the "resiliency of the Metro Vancouver system has achieved an appropriate level for this large urban area."[30]

FEI determined that there is no feasible alternative that would replace the system resiliency currently provided by the PGL and meet the schedule requirements of the Project. As a result, FEI decided to prioritize the replacement of system capacity (as opposed to both capacity and resiliency) to meet the Project schedule.[31]

Positions of the Parties

FEI states that it investigated alternatives that would replace the resiliency benefits of the PGL; however, these alternatives were ultimately determined to be infeasible.

> While 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. 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.[32]

FEI submits that it continues to evaluate future system improvements to restore the resiliency provided by the PGL.

> Given the likely scope, FEI anticipates needing to file a separate CPCN application with the BCUC. FEI expects to provide further information in 2022 as part of its next Long Term Gas Resource Plan.[33]

BCOAPO is concerned about the loss of resiliency in the Metro Vancouver area without the PGL, as the "implications of this lost benefit on the provision of safe and reliable service to FEI's customers has only been canvassed in a cursory fashion in the current proceeding."[34]

---

[29] Exhibit B-1-1, Section 3.6, p. 21.
[30] Exhibit B-6, BCUC IR 5.2.
[31] Exhibit B-1-1, Section 1.2.1, p. 4.
[32] FEI Final Argument, p. 12.
[33] FEI Final Argument, p. 12.
[34] BCOAPO Final Argument, p. 7.

BCOAPO believes that FEI's commitment to address this loss of system resiliency through a separate CPCN and its next LTGRP should be formalized and recommends that the BCUC direct FEI to file a "resiliency plan" in its 2022 LTGRP and potentially as part of a separate CPCN, as part of its decision on the PGR CPCN.[35]

The CEC submits that "supporting the resiliency of FEI's system is important and should be pursued as soon as possible."[36]

In response, FEI submits that there is no need for the BCOAPO's requested direction for FEI to file a "resiliency plan" since it will be addressing the lost resiliency benefit of the PGL through a separate CPCN and expects to file further information in its next LTGRP. Further FEI argues:

> It is unclear what exactly BCOAPO's recommended "resiliency plan" would consist of and there is an insufficient evidentiary foundation in this proceeding for the BCUC to make directions on the scope of such a plan. FEI is concerned that such a directive will cause unnecessary confusion and uncertainty with respect to proper compliance and, given FEI's commitment to address the loss of resiliency, serves no clear purpose.[37]

Panel Determination

FEI has provided limited evidence regarding its plans for addressing resiliency of its distribution system serving the Metro Vancouver area. FEI appears to be taking a non-systematic approach to resiliency of its entire system. Although resiliency is a key driver of FEI's Tilbury LNG Expansion Project CPCN, resiliency was not a key subject of its previous Long Term Gas Resource Plan. In addition, resiliency was not addressed in any substantive way in other recent CPCN applications brought forward by FEI, including the Inland Gas Upgrades Project and the Okanagan Capacity Upgrade Project. The Panel is concerned with the loss of resiliency and FEI's lack of a firm plan to replace the lost resiliency.

Given this apparent existing non-systematic approach to addressing resiliency of its system, the Panel considers it necessary for FEI to address resiliency in a more comprehensive and holistic manner. FEI expects to provide further information regarding the lost resiliency in its next Long Term Gas Resource Plan and may file a separate CPCN to replace the lost resiliency. Accordingly, the Panel makes no determination on the merits of the most appropriate method to address the reduction in resiliency issues resulting from the PGR project. However, the Panel considers that the lack of evidence on the scope of a plan does not negate the need for a comprehensive resiliency plan. Further, the Panel considers that FEI has the capability and capacity to develop a comprehensive resiliency plan for its system. Accordingly**, the Panel directs FEI to address resiliency in a comprehensive manner in its 2022 Long Term Gas Resource Plan.**

[35] BCOAPO Final Argument, p. 7.

[36] CEC Final Argument, p. 5.

[37] FEI Reply Argument, pp. 13–14.

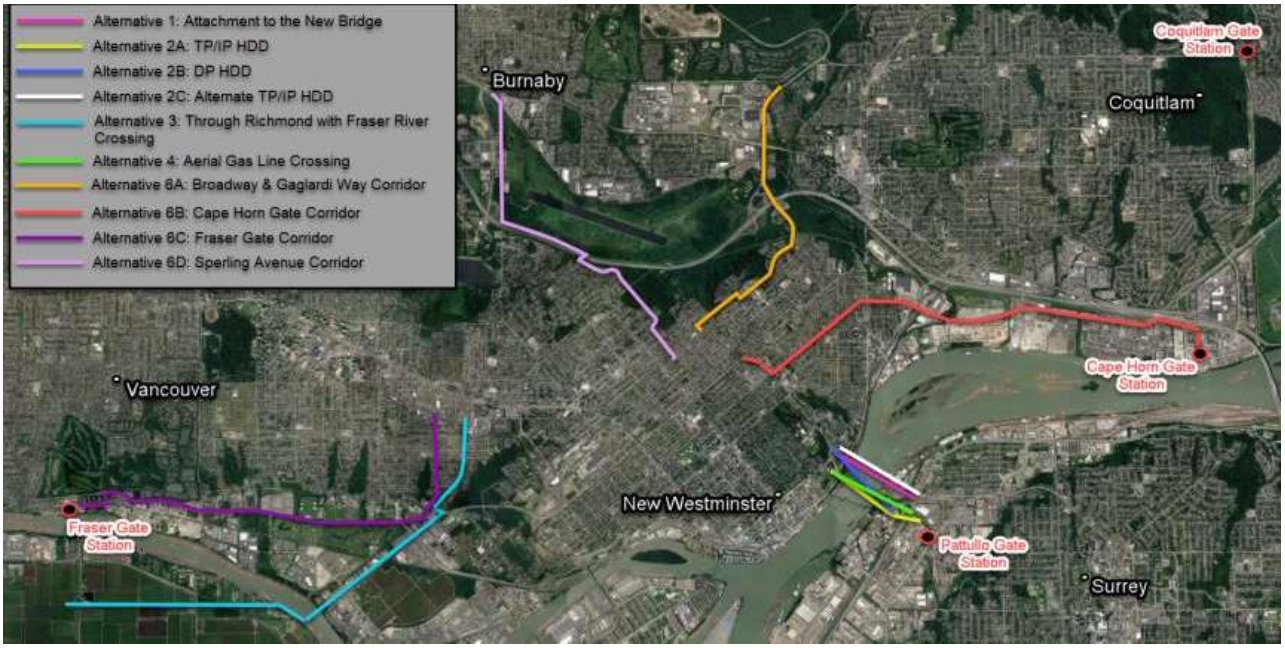
3.0 Description and Evaluation of Alternatives

FEI identified six alternatives and numerous sub-alternatives that could, in theory, have met the Project's objective of replacing the system capacity provided by the PGL. These alternatives and sub-alternatives are listed in Table 3-1 and illustrated in Figure 3-2.

Table 3-1: Alternatives and Sub-Alternatives Considered for PGR Project[38]

Alternatives and Sub-Alternatives Considered	
Alternative 1	**Attachment to the New Bridge**
Alternative 2	**Trenchless Crossing of the Fraser River** • 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) • Alternative 2D - Other Trenchless Methodologies (Micro-tunneling)
Alternative 3	**Through Richmond with Fraser River Crossing** • Alternative 3A - TP Gas Line with 1 Gate Station • Alternative 3B - IP Gas Line with 1 Gate Station and 1 District Station
Alternative 4	**Aerial Gas Line Crossing**
Alternative 5	**Peak Shaving Facility / Virtual Gas Line** • Alternative 5A - Liquefied Natural Gas (LNG) • Alternative 5B - Compressed Natural Gas (CNG)
Alternative 6	**Overland Gas Line** • Alternative 6A - Broadway and Gaglardi Way Corridor • Alternative 6B - Cape Horn Gate Corridor • Alternative 6C - Fraser Gate Corridor • Alternative 6D – Sperling Avenue Corridor

Figure 3-2: Map of PGR Project Alternatives[39]



[38] Exhibit B-1-1, Section 4.2, p. 23.

[39] Exhibit B-1-1, Section 4.2, p. 24.

The following subsections include a description of the alternative and sub-alternatives considered and the methodology used to evaluate the alternatives and select the preferred alternative.

3.1 Description of Alternatives

A brief description of each of the alternatives is discussed below.

Alternative 1 – Attachment to the New Bridge

This alternative involves the installation of a distribution pressure gas line on the underside of the New Bridge like the current gas line on the Pattullo Bridge. FEI states that it "diligently pursued" this alternative though multiple requests to the Ministry of Transportation and Infrastructure (MoTI) from the time it received notice to remove the PGL in June 2017 until it received final verbal confirmation from MoTI in January 2020 that the installation of a gas line on the New Bridge would not be allowed.[40]

Alternative 2 – Trenchless Crossing of the Fraser River

FEI evaluated several options for a trenchless crossing of the Fraser River near the Pattullo Bridge, including three horizontal directional drill (HDD) alignments and other trenchless crossing methods. FEI engaged a drilling contractor teamed with an engineering design firm and a geotechnical consultant to assess these alternatives.[41] FEI determined that all of the proposed options for a trenchless crossing were identified as "not being constructible and had other technical issues and risks which could not be adequately addressed or cost effectively mitigated using risk mitigation techniques."[42] As a result, FEI determined that these alternatives were not feasible.

Alternative 3 – Through Richmond with Fraser River Crossing

This alternative involves installing a gas line through the Cities of Richmond and Burnaby and a trenchless crossing of the Fraser River. FEI identified two configurations to achieve this alternative: Alternative 3A - TP Gas Line with one Gate Station; and Alternative 3B - IP Gas Line with one Gate Station and one District Station. FEI determined that both configurations would require lengthy negotiations with landowners and extensive permitting applications. Therefore, FEI screened out these options based on their inability to meet the Project schedule objective.[43]

Alternative 4 – Aerial Gas Line Crossing

[40] Exhibit B-1-1, Section 4.3.1.1, p. 27.
[41] Exhibit B-6, BCUC IR 7.2.
[42] Exhibit B-1-1, Section 4.3.2, p. 28.
[43] Exhibit B-1-1, Section 4.3.3.3, p. 35.

This alternative involves the construction of an aerial gas line support structure across the Fraser River near the Pattullo Bridge. In addition to the evaluation of FEI building its own support structure, FEI reviewed the feasibility of using the existing Pattullo Bridge piers upon decommissioning of the bridge for the aerial crossing. However, it was determined that this option would not allow FEI to meet the Project schedule requirements due to the long-lead time permitting process.[44]

Alternative 5 – Peak Shaving Facility / Virtual Gas Line

This alternative involves supplementing the trunk distribution system in the City of New Westminster using a peak shaving facility or virtual gas line supplied by one of two possible road delivery methods: liquified natural gas (LNG); or compressed natural gas (CNG). FEI states that both LNG and CNG would not be feasible since they would be unable to meet the system capacity requirements during peak demand conditions. Further, FEI submits that the timeline to permit and construct an LNG storage tank would exceed Project schedule requirements.[45]

Alternative 6 – Overland Gas Line

The Overland Gas Line alternative includes gas line installations in the Cities of Burnaby, Coquitlam, New Westminster and / or Vancouver. FEI initially identified three potential route corridors (Alternatives 6A, 6B and 6C) by completing a search over a broad area between available start and end points to interface with existing infrastructure. Subsequent consultation and negotiations with the City of Burnaby regarding the route for the Project resulted in the identification of the fourth route option (Alternative 6D).[46]

3.2 Project Alternatives Evaluation

FEI used a multi-year process to identify and evaluate Project alternatives. In June 2017, after receiving notice of the replacement of the Pattullo Bridge, FEI first pursued the installation of a gas line on the new bridge. In July 2018, after receipt of the MoTI's initial response denying FEI's request to install a gas line on the new bridge, FEI next investigated a trenchless crossing of the Fraser River. In August 2019, after determining a trenchless crossing of the Fraser River was not feasible due to constructability issues, FEI then considered various other alternatives, including a gas line installation through Richmond and across the Fraser River, an aerial crossing near the site of the Pattullo Bridge, a peak shaving facility or virtual pipeline and overland gas line routes. Ultimately, FEI determined that an overland gas line routed through the City of Burnaby would be the only solution available that can meet Project schedule requirements.[47]

FEI submits that it initially pursued alternatives that would have "the least impact and replace both the capacity and resiliency benefits of the Pattullo Gas Line."[48] FEI states further that the alternatives considered beginning in

[44] Exhibit B-1-1, Section 4.3.4.1, p. 37.
[45] Exhibit B-1-1, Section 4.3.5, p. 38.
[46] Exhibit B-1-1, Section 4.4.3, p. 49.
[47] Exhibit, B-1-1, Section 4.1, p. 22; Section 4.2, p. 25.
[48] Exhibit, B-1-1, Section 4.1, p. 22.

August 2019 "would not be like-for-like replacements and would not be able to replace the resiliency benefits currently provided by the Pattullo Gas Line."[49]

3.3 Evaluation of Overland Gas Line Sub-Alternatives

Prior to identification of Alternative 6D, FEI evaluated Alternatives 6A, 6B and 6C applying a weighted-average methodology based on non-financial and financial criteria. FEI's analysis of these alternatives was based on an Association for the Advancement of Cost Engineering (AACE) Class 5 level. FEI subject matter experts used their collective experience on past projects to determine categories within each criterion and the appropriate weightings described below:[50]

Non-Financial	(Evaluation weighting = 90 percent)
Financial	(Evaluation weighting = 10 percent)

The Non-Financial category provided FEI with a means to select an alternative that met the schedule requirements of the Project and have the least environmental, archaeological, and societal impacts, therefore was assigned the highest weighting. The Financial category considered the levelized delivery rate impact to FEI's non-bypass customers.[51]

FEI states that Alternative 6A is preferable to Alternatives 6B and 6C based on the weighted score with respect to non-financial criteria.[52] Alternative 6A would also have the lowest levelized delivery rate impact to FEI's non-bypass customers.[53] Furthermore, based on the significant schedule impacts, FEI determined that Alternatives 6B and 6C would not meet Project schedule requirements and were therefore considered to be not feasible.[54]

FEI submits that the estimated overall project duration is 33–45 months for Alternative 6A and 45–63 months for Alternatives 6B and 6C. FEI further explains that these estimates are based on its assumptions made about potential schedule impacts and on its experience with similar urban gas line projects. In FEI's view, Alternative 6A had the lower schedule impact for the following reasons:

- The Project does not cross private land, so no private land statutory right-of-way negotiations are required;
- Permitting is only required from one municipality; and
- There is less overall congestion due to third-party utilities in route corridor compared to other alternatives.[55]

[49] Exhibit B-1-1, Section 4.2, p. 25.
[50] Exhibit B-1-1, Section 4.4.2.3, p. 45.
[51] Exhibit B-1-1, Section 4.4.2, pp. 43–44.
[52] Exhibit B-1-1, Section 4.4.2.4, p. 45.
[53] Exhibit B-1-1, Section 4.4.2.5, p. 47.
[54] Exhibit B-1-1, Section 4.4.2.4, p. 45.
[55] Exhibit B-6, BCUC IR 10.1.

FEI submits that the replacement of system resiliency was excluded as a criterion in the evaluation of the overland alternatives on the basis that they all would erode the existing system resiliency provided by the PGL.[56] However, FEI provides evidence that Alternative 6C would have improved resiliency compared to the other overland routes.

> Until 2023, the Metro Vancouver system (with the Pattullo Gas Line in service) would have full resiliency to shift load at temperatures as cold as minus 12.2 °C. In 2023 onward with the Pattullo Gas Line replaced, Alternative 6A and 6B would limit that ability to temperatures of minus 8.5 °C or warmer. As load growth occurs on the system each year the temperature at which full resilience can be achieved is warmer than the previous year. Alternative 6C would not see a reduction in capacity to support full resilience until 2027, and then would remain capable of full resiliency at temperatures 4.3 °C colder than Alternatives 6A and 6B (i.e., minus 12.8 °C).[57]

FEI acknowledges that the City of Burnaby requested that FEI further explore Alternative 6C as the City expressed an interest in whether FEI would be able to coordinate and execute the construction of the Project with a future City district energy project planned in proximity to the Fraser Gate Corridor route. FEI completed a further analysis of the Alternative 6C route and provided the City with a memo reiterating its earlier conclusion that Alternative 6C was not feasible.[58]

3.4 Selection of the Preferred Alternative for the Project

Using the evaluation criteria and weighting described in the previous section, FEI re-evaluated Alternative 6A and evaluated Alternative 6D as developed to an AACE Class 4 level.[59] Based on this analysis, FEI chose Alternative 6D, the Sperling Route, as its preferred alternative.

FEI states that Alternative 6D is preferable to Alternatives 6A based on the weighted score with respect to non-financial criteria.[60] Alternatives 6A and 6D would have comparable levelized delivery rate impact to FEI's non-bypass customers.[61] Moreover, FEI asserts that the City of Burnaby is opposed to Alternative 6A but supports Alternative 6D.[62]

Positions of the Parties

FEI submits that its evaluation framework was "comprehensive and appropriately considered the relevant aspects of the competing alternatives."[63] Further, FEI submits that the Alternative 6D has the least overall impact and is correctly identified as the preferred alternative.[64]

---

[56] Exhibit B-1-1, Section 4.4.2, p. 42.
[57] Exhibit B-6, BCUC IR 11.9.1.
[58] Exhibit B-1-1, Section 8.2.5.3, p. 116–117.
[59] Exhibit B-1-1, Section 4.4.4, p. 49.
[60] Exhibit B-1-1, Section 4.4.4.4, p. 54.
[61] Exhibit B-1-1, Section 4.4.4.4, p. 54.
[62] Exhibit, B-1-1, Section 8.2.5.3, p. 117.
[63] FEI Final Argument, p. 21.
[64] FEI Final Argument, p. 26.

BCOAPO is of the view that FEI has taken a reasonable approach in its identification and evaluation of alternatives for the Project.[65] However, BCOAPO is concerned with respect to the fact that FEI did not identify the Sperling Route based on its own analysis. BCOAPO states:

> It appears from the record that the City of Burnaby brought the Sperling Route alternative to FEI's attention during their ongoing consultations and negotiations and to a large extent the City drove the selection of this alternative as the preferred route.[66]

The CEC does not dispute that Alternative 6D may be the best option available at this time and under the given circumstances,[67] but stated that the "apparent delay in moving forward with the Project" may have limited certain alternatives that might otherwise have been available.[68]

In reply to the CEC comment, FEI submits:

> FEI undertook a timely and robust alternatives analysis, eliminating a number of infeasible alternatives, before correctly identifying the Sperling Route (Alternative 6D) as the preferred solution. Beginning in 2017, FEI undertook initial investigations of multiple Project alternatives to identify alternatives that would be feasible from a cost, schedule, stakeholder and technical perspective. A like-for-like replacement, which involved installing a gas line on the new bridge to be constructed by the Province ("New Bridge"), was found to have the lowest costs, least stakeholder impact and would replace the system capacity and resiliency lost from decommissioning the Pattullo Gas Line. FEI made numerous attempts to reach an agreement with the Ministry of Transportation and Infrastructure ("MoTI") until January 2020 while, in parallel, continuing to investigate other alternatives. FEI submits that this approach was appropriate, reflecting its preliminary alternatives analysis, and it would have been difficult to justify the significant study costs required to progress each alternative while a like-for-like replacement remained potentially feasible.[69]

Further, in reply to the BCOAPO comment, FEI submits that the identification of Alternative 6D was a result of FEI's engagement with the City of Burnaby and should be viewed as an example of "meaningful consultation in practice, as contemplated by the BCUC CPCN Guidelines."[70]

Panel Discussion

The Panel is satisfied that the identification of alternatives and the evaluation framework used by FEI are reasonable and appropriate for the replacement of the distribution system capacity lost due to the decommissioning of the existing PGL. The Panel considers it reasonable that FEI pursued in earnest an agreement with MoTI while investigating other alternatives in parallel. The Panel also considers it reasonable

[65] BCOAPO Final Argument, p. 10.
[66] BCOAPO Final Argument, p. 10.
[67] CEC Final Argument, p. 16.
[68] CEC Final Argument, p. 1.
[69] FEI Reply Argument, pp. 2–3.
[70] FEI Reply Argument, p. 4.

that an alternative was identified during its engagement and consultation efforts and subsequently added to its list of options to be evaluated as part of the proceeding.

The Panel is persuaded that FEI's preferred option, Alternative 6D, the Sperling route, is the best option available at this time. The Panel notes Alternative 6D is supported by the City of Burnaby.

4.0 Project Description

The PGR Project involves the installation of approximately 5.6 kilometres of a nominal pipe size (NPS) 20 (508 mm outside diameter) intermediate pressure (IP)[71] pipeline in the City of Burnaby between the existing LMIPSU gas line at Lougheed Highway and Sperling Avenue and a new underground pressure regulating station (PRS) near the intersection of 16th Avenue and 4th Street. A 50 metre, DP gas line would connect the PRS to the existing trunk distribution system.[72] FEI submits that its pipeline route selection and design process for the PGR Project follows industry practice and reflects the recommendations of the Canadian Standards Association standard CSA Z662:19 Oil & Gas Pipeline Systems, which is the standard specification for the design, construction, operation, and maintenance of Canadian gas lines.[73]

The PGR Project scope will also include the decommissioning, abandonment and/or removal of existing infrastructure no longer required due to the removal of the existing PGL crossing of the Fraser River and the modification of approximately 5.5 km of the existing Livingston to Pattullo transmission gas line.[74]

The following subsections discuss the pipeline capacity needed to replace the PGL, the finalization of FEI's preferred pipeline route, future PGR Project schedule delays, and the decommissioning and abandonment of the existing PGL.

4.1 Pipeline Capacity Needed to Replace the PGL

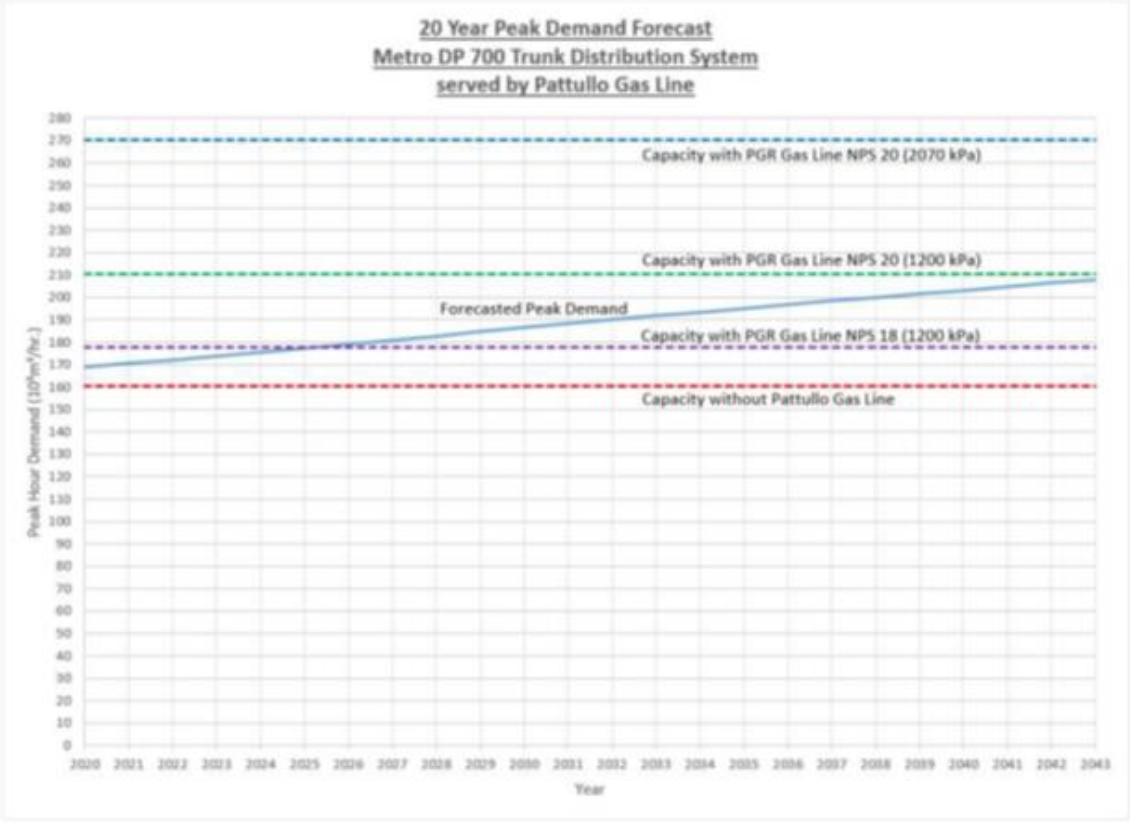
FEI states that the new pipeline will be able to meet the capacity needs of customers in Burnaby, New Westminster and Coquitlam resulting from the demolition of the PGL. FEI submits that it has appropriately sized the pipe for the PGR Project to meet customer demand and there are no opportunities to reduce costs by reducing the capacity of the PGR Project. FEI explains that 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.

[71] An intermediate pressure pipeline in a natural gas utility pipeline operating between 701 kPa and 2069 kPa.
[72] Exhibit B-1-1, Section 5.2, p. 57.
[73] Exhibit B-1-1, Section 5.3, p. 58.
[74] Exhibit B-1-1, Section 5.2, p. 57.

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. [75]

FEI provides Figure 4-1 showing that an NPS 20 gas line would have sufficient capacity to meet customer demand to the end of the 20-year planning horizon, while the next smallest pipe size, NPS 18, would only have sufficient capacity to meet customer demand until 2025.[76]

Figure 4-1: Trunk Distribution System Capacity



Positions of the Parties

The CEC and BCOAPO support FEI's project scope, including design capacity, as being reasonable.

BCOAPO agrees that "it would not be prudent or cost-effective to undersize the diameter of the new pipeline to allow for only three years of forecast customer demand."[77]

[75] Exhibit B-11, BCUC IR 31.3.

[76] Exhibit B-11, BCUC IR 31.3.1.

[77] BCOAPO Final Argument, p. 12.

The CEC submits that it is appropriate to plan for future capacity increases as proposed and "supports FEI's project scope as being reasonable."[78]

Panel Discussion

The Panel is persuaded that the proposed pipeline and resulting capacity for the PGR Project have been appropriately sized to meet customer demand and there are limited opportunities to reduce costs by reducing the capacity of the PGR Project. The Panel notes that both the CEC and BCOAPO support the design capacity as being reasonable.

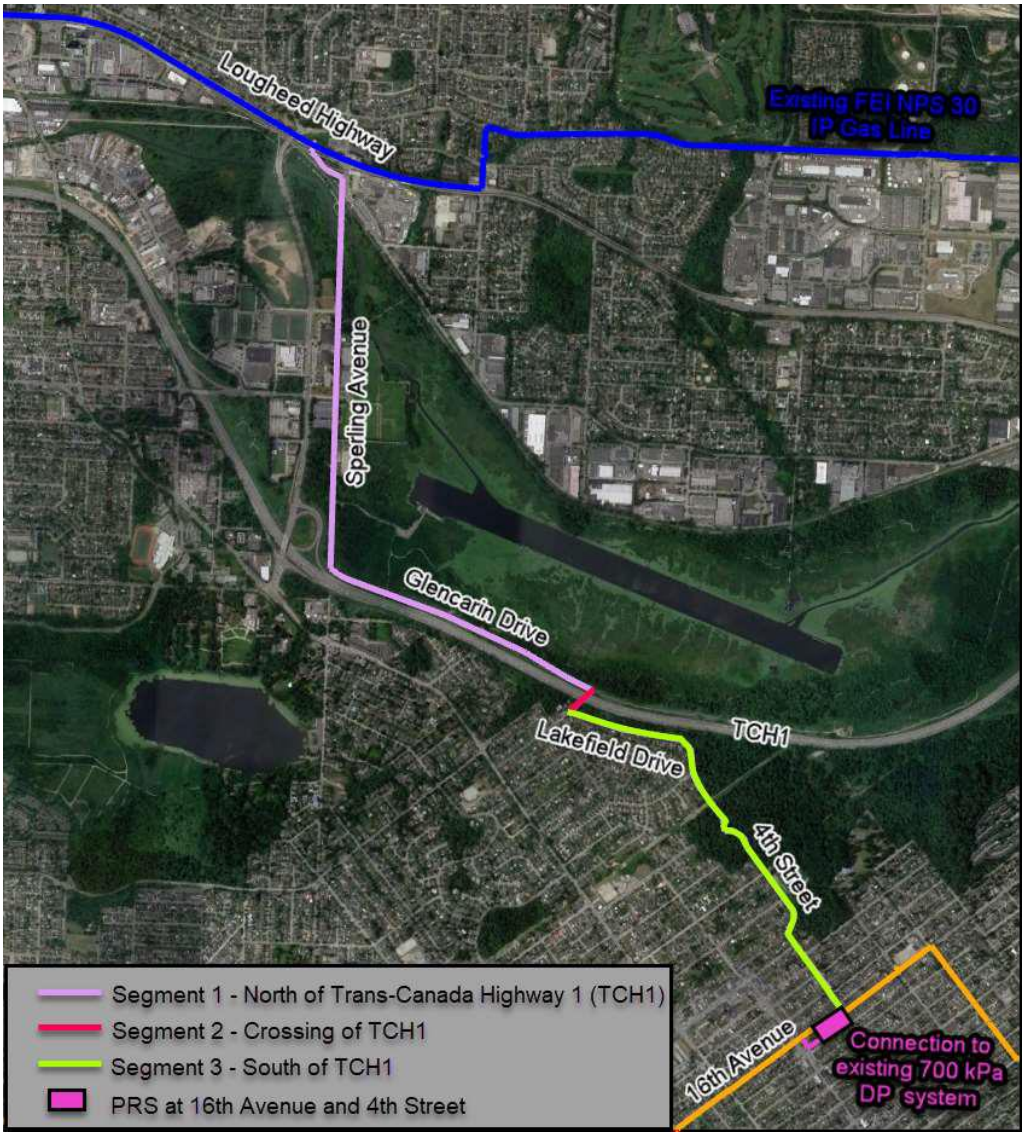
4.2 Finalization of FEI's Preferred Pipeline Route

FEI is requesting approval of a CPCN to construct and operate the PGR Project pipeline along its preferred route, as shown in Figure 4-2 below.[79]

Figure 4-2: FEI's Preferred Pipeline Route for the Project

[78] CEC Final Argument, p. 20.

[79] Exhibit B-11, BCUC IR 26.2.



FEI states that it plans to finalize the pipeline route within the Sperling Route corridor during the detailed design phase of the PGR Project, which is scheduled for completion after close of the evidentiary record in this proceeding. The final route alignment will reflect consultation, environmental, and technical considerations and is a required deliverable for an AACE Class 3 cost estimate for the PGR Project.[80]

FEI proposes that if there is a material change to the preferred route within the Sperling Route corridor (i.e. a portion of the gas line cannot be constructed in the approved route), it will file an application (and supporting justification) for approval from the BCUC to modify the route at least 90 days before construction is proposed to commence. FEI submits that this approach "will provide the BCUC an opportunity to assess the revised Project route, and 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."[81]

[80] Exhibit B-11, BCUC IR 26.3 and 26.4.

[81] Exhibit B-11, BCUC IR 26.2, as corrected by Exhibit B-11-1.

Positions of the Parties

BCOAPO questions the need for FEI to wait until as late as 90 days before the commencement of construction to notify and file an application with the BCUC to approve a material change in the proposed route alignment. As a result, BCOAPO recommends that the BCUC direct FEI to report on any material changes to the proposed routing within 30 days of the date on which the material change occurs.[82]

In reply to the BCOAPO comment, FEI states "it is concerned that imposing a 30-day time period suggested by BCOAPO would adversely impact the scope and quality of information it could provide the BCUC."[83]

Panel Determination

The Panel considers it reasonable in this instance for FEI to proceed with its detailed design of the pipeline route following the close of the evidentiary record. The Panel accepts that FEI's efforts during the detailed design may identify the need for changes to the preferred route. The Panel agrees with BCOAPO that if FEI determines a material change to the route is necessary that it must file a CPCN application with supporting justification for BCUC approval.

The Panel is concerned with FEI filing such an application only 90 days prior to commencement of construction, as it will provide a very short window for BCUC review. Accordingly, **the Panel directs FEI to file any Notification of a Material Change for an alternative route within 30 days of identifying the need for the alternative route and a CPCN application at least 90 days before construction begins.**

4.3 Future Pattullo Bridge Replacement Project Schedule Delays

FEI states that it will lose the PGL, and the benefits it provides, due to the Province of British Columbia's Pattullo Bridge Replacement Project, which includes the demolition of the Pattullo Bridge on which FEI's PGL is attached.[84] The Province's jurisdiction for requiring the removal of the PGL results from the Bridge Agreement made between FEI and the Province.[85]

FEI asserts that the existing PGL cannot be taken out of service and decommissioned until a replacement gas line is constructed and commissioned.[86] FEI is currently working towards a target date of commissioning the new gas line and decommissioning the existing PGL by March 31, 2023.[87]

On April 1, 2021, the Provincial Government of British Columbia (Province) indicated that the construction timeline for the project has been adjusted, moving the bridge opening date from late 2023 into 2024.[88] FEI

[82] BCOAPO Final Argument, p. 14.
[83] FEI Reply Argument, p. 12.
[84] Exhibit B-1-1, Section 3.4, p. 18.
[85] Exhibit B-6, BCUC IR 1.2.
[86] Exhibit B-6, BCUC IR 2.2.
[87] Exhibit B-6, BCUC IR 2.2.
[88] Exhibit B-15, BCUC Panel IR No. 2.

states that based on available information, it has "no certainty about the extent of any schedule delay in the opening of the new bridge and, as such, may not have any additional time in which to complete the PGR Project."[89]

Positions of the Parties

FEI submits that it does not have any certainty regarding the extent of any delay in the Pattullo Bridge Replacement Project; therefore, is prudently maintaining the PGR Project schedule and cost estimate.[90]

BCOAPO does not see any evidence on the record that might indicate that the delay in Pattullo Bridge construction would have any significant impact on the timing or estimated cost of the Project.[91]

The CEC accepts FEI's assessment that the delay will not significantly alter FEI's schedule or cost estimate now that it has committed to Project specifics.[92]

Panel Discussion

Based on the evidence on the record, the Panel accepts that there is no certainty about the extent of any schedule delay in the opening of the new bridge. The Panel considers there is no evidence on the record to indicate the announced delay would result in a change in the estimated costs of the PGR Project. Accordingly, the Panel considers that the delay announced by the Province will not significantly alter the PGR Project schedule or estimated costs.

4.4 Decommissioning and Abandonment

As noted above, the new bridge is scheduled to open in early 2024, and once open the existing bridge will be removed. This subsection discusses the decommissioning and abandonment of the existing PGL, including (i) the scope of work; (ii) the schedule; (iii) consultation with municipalities; and (iv) the agreement with the province.

Scope of Work

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.[93]

The PGR Project scope includes the modification, decommissioning and/or abandonment of existing infrastructure no longer required due to the removal of the Pattullo Gas Line crossing of the Fraser River. This includes:[94]

[89] Exhibit B-15, Panel IR 2.1.
[90] FEI Supplemental Final Argument, p. 1–2.
[91] BCOAPO Supplemental Final Argument, p. 1.
[92] CEC Supplemental Final Argument, p. 1.
[93] Exhibit B-1-1, Section 3.4, p. 18.
[94] Exhibit B-1-1, Section 5.2, p. 58; Exhibit B-11, BCUC IR 36.1.

- Abandoning and removing the Pattullo Gate Station in the City of Surrey and approximately 800 metres of NPS 20 (508 mm) gas line operating at a Maximum Operating Pressure of 700 kPa affixed to the Pattullo Bridge;
- Abandoning in place approximately 1.2 km of the remaining NPS 20 (508 mm) gas line operating at a Maximum Operating Pressure of 700 kPa from the Pattullo Gate Station in the City of Surrey to the intersection of McBride Boulevard and Royal Avenue in the City of New Westminster. These sections on either end of the bridge will be grout filled and capped every 200 meters; and
- Modifying approximately 5.5 km of the Livingston to Pattullo NPS 18 (457 mm) (LIV PAT 457) transmission gas line and associated work due to the removal of the Pattullo Gate Station.

FEI submits that none of the above-ground assets will be abandoned in place. Instead, each above-ground asset will be removed.[95]

FEI explained that the following restorative work will be completed following the removal or abandonment of the Pattullo Gas Line:[96]

- The abandonment and removal of the Pattullo Gate Station in the City of Surrey, which involves the demolition and removal of building, foundation, piping and equipment, will require restoration work including regrading and seeding of the site.
- The abandonment in place of approximately 1.2 km of the remaining NPS 20 (508 mm) gas line, located between the Pattullo Gate Station and the intersection of McBride Boulevard and Royal Avenue, will involve the restoration of approximately 10 sites. This restorative work will include backfilling and compaction in order to restore these sites to at least their pre-existing condition. In undertaking this restorative work, FEI may be required to follow the City of Surrey and City of New Westminster Municipal Master Construction Document requirements.

Schedule

FEI expects to remove the decommissioned gas line from the Pattullo Bridge once the new gas line is constructed, commissioned, in-service and operating safely in conjunction with the overall gas distribution system.[97] Decommissioning and abandonment of the existing Pattullo Gas Line is scheduled to be complete by the end of Q1 2023 (i.e. March 31, 2023), excluding removal of the decommissioned gas line from the Pattullo Bridge.[98] FEI commits to making every reasonable effort to expedite the PGR Project completion.[99]

FEI submits any other existing infrastructure modifications that do not affect the timelines associated with the Project schedule will continue and be complete by Q3 2023.[100] Modifications that are not timeline dependent

[95] Exhibit B-11, BCUC IR 36.3.
[96] Exhibit B-11, BCUC IR 36.4.
[97] Exhibit B-11, BCUC IR 20.1.
[98] Exhibit B-11, BCUC IR 36.5.
[99] Exhibit B-6, BCUC IR 2.2.
[100] Exhibit B-1-1, Section 5.6.6, p. 77; Exhibit B-6, BCUC IR 2.2.

relate to the LIV PAT 457 transmission gas line.[101] FEI states there are no significant risks or consequences associated with not completing the system modifications by Q3 2023.[102]

Consultation with Municipalities

FEI notes that it entered into an operating agreement with the City of Surrey on May 31, 2019 (Operating Agreement), which, among other things, establishes the agreed terms and conditions under which FEI may abandon its gas lines in place. This includes the abandonment of the portion of the Pattullo Gas Line Crossing located within the City of Surrey. Under the Operating Agreement, FEI and the City of Surrey have agreed that where FEI intends to permanently cease the use of a gas line located on, along, across, over or under Public Places (as defined under the Operating Agreement):[103]

- FEI is required to promptly notify the City of Surrey;
- FEI may, in its discretion, remove or leave a gas line in place; and
- FEI shall fill any gas lines left in place, which has a nominal diameter greater than 323 mm (12 inches) with sand, controlled density fill or similar material to prevent their collapse.

FEI met with the City of Surrey on June 19, 2020 to review the PGR Project and will continue to meet and consult with the City of Surrey as project planning proceeds.[104]

FEI states it also consulted about the PGR Project, including the proposed abandonment in place of the Pattullo Gas Line, with the City of New Westminster on July 7, 2020. FEI submits that similar to the City of Surrey, it will continue to consult with the City of New Westminster on the proposed treatment of the Pattullo Gas Line as the Project progresses.[105]

Agreement between FEI and the Province of BC

An agreement between the Province of British Columbia (represented by the Ministry of Highways, now MoTI) and British Columbia Electric Company (now FEI), dated April 11, 1957 (Bridge Agreement), establishes the terms and conditions of the gas line located along and under the existing Pattullo Bridge.[106]

The Bridge Agreement gives the Province the right to require the movement or alteration of the pipeline or the transmission of gas to cease if that is necessary for reconstruction, alteration, or repairs of the bridge.[107] Additionally, the Bridge Agreement provides that the Province may terminate the agreement by giving two years notice in writing to FEI. On termination, FEI is required to remove all pipeline and attachments from the bridge and leave the bridge in a condition satisfactory to the Province within a reasonable time.[108] Unless FEI reaches

[101] Exhibit B-11, BCUC IR 36.5.
[102] Exhibit B-11, BCUC IR 36.5.1.
[103] Exhibit B-14, CEC IR 24.1.
[104] Exhibit B-11, BCUC IR 36.1.1; Exhibit B-14, CEC IR 24.1.
[105] Exhibit B-11, BCUC IR 36.1.1.
[106] Exhibit B-6, BCUC IR 1.1.
[107] Exhibit B-6, BCUC IR 1.1.1.
[108] Exhibit B-6, BCUC IR 1.1.1, 2.1, 16.4.

an agreement with MoTI providing otherwise, FEI is responsible for all costs associated with removing the gas line.[109] FEI states that it received written notice in June 2017 "to move the Pattullo Gas Line or cease transmission of gas."[110]

FEI continues to meet with the MoTI and the Pattullo Bridge Replacement project team on a regular basis and is committed to meeting MoTI's current 2023 target date to the extent FEI is reasonably able. FEI believes that active co-operation between FEI and MoTI will support the success of both the Pattullo Bridge replacement and the PGR Project.[111]

Positions of the Parties

FEI submits that undertaking the PGR Project requires it to decommission and abandon the Pattullo Gas Line in 2023. FEI adds that it has consulted customers, residents, businesses, stakeholder groups and local governments about the abandonment in place of the Pattullo Gas Line, including specifically the City of Surrey and the City of New Westminster.[112]

No intervener commented specially on the abandonment in place of the Pattullo Gas Line.

Panel Determination

Pursuant to sections 45 and 46 of the UCA, the Panel approves the decommissioning of the existing Pattullo Gas Line and the abandonment in place of sections of that gas line. While FEI does not explicitly request permission to decommission the Pattullo Gas Line and abandon parts of it in place, the Panel considers it advisable to grant this approval explicitly to provide clarity and regulatory certainty.

In its reasons attached to Order G-75-20 the BCUC found that it has the jurisdiction to authorize the decommissioning of public utility assets, either expressly pursuant to sections 45 and 46 of the UCA or by necessary implication.[113] Further, the BCUC found that its jurisdiction over public utility assets continues after they are decommissioned and that the BCUC may authorize their abandonment in place.[114]

In the present circumstances, FEI proposes abandoning in place the decommissioned gas pipeline at either end of the existing Pattullo Bridge. The Panel is satisfied that FEI has consulted with both the City of Surrey and the City of New Westminster, the two municipalities in whose public lands the decommissioned gas pipeline will be abandoned. Further, the Panel is satisfied with FEI's plan to fill and cap the abandoned pipe and to restore the surface to at least its pre-existing condition.

The Panel also notes that no intervener objected to FEI's plans to abandon the gas pipeline in place.

[109] Exhibit B-6, BCUC IR 16.4.
[110] Exhibit B-1-1, p. 25.
[111] Exhibit B-6, BCUC IR 2.1, 2.2.
[112] FEI Final Argument, pp. 13, 50–52.
[113] BCUC Order G-75-20, pp. 10–11.
[114] BCUC Order G-75-20, pp. 12–14.

5.0 Project Costs, Accounting Treatment and Rate Impact

5.1 Project Costs

The total cost estimate of the PGR Project is $175.354 million in as-spent dollars,[115] which includes Allowance of Funds Used During Construction (AFUDC).[116] The PGR Project estimated capital cost, provided in the table below, includes the following components:[117]

- A base cost estimate of $124.333 million in 2020 dollars developed by FEI and Mott MacDonald Canada Ltd. (Mott MacDonald) plus $5.612 million of capitalized development costs incurred by FEI between February and November 2020 (prior to the development of the base cost estimate by Mott MacDonald);[118]
- A contingency estimate of $30.100 million in 2020 dollars (approximately 24 percent) of the base cost estimate, which provides a P50 confidence level for the PGR Project capital costs;
- A escalation value of $7.733 million (P50 confidence level) during the construction period from 2021 to 2023 applied to both the base cost and contingency estimate;
- Deferred costs of $2.857 million (as-spent) for the application and preliminary stage development costs; and
- AFUDC, estimated based on FEI's 2021 approved rate of 5.47 percent, which is equal to FEI's after-tax weighted average cost of capital (WACC).

Table 5-1: Breakdown of the PGR Prject Capital Cost Estimate ($millions)

	2020 $	As-Spent $	Reference
Engineering and Development	9.935	9.946	Section 5.10.1 and Confidential Appendix D (2020 $)
Material	4.419	4.777	Section 5.10.1 and Confidential Appendix D (2020 $)
Construction - Direct and Indirect	86.162	90.020	Section 5.10.1 and Confidential Appendix D (2020 $)
Decommission and Abandonment	11.151	11.867	Section 5.10.1 and Confidential Appendix D (2020 $)
Property and Right of Way	4.166	4.237	Section 5.10.1 and Confidential Appendix D (2020 $)
Project Management and Owner's Costs	14.113	15.293	Section 5.10.1 and Confidential Appendix D (2020 $)
Subtotal Project Capital Cost	129.946	136.140	See Note 1 for 2020 $ and Note 2 for As-spent $
Contingency	30.100	31.640	Section 5.10.4.4 and see Note 2 for As-spent $
Subtotal Project Capital Costs w/ Contingency	160.046	167.779	Table 6-2; Row 10; Col 1 (2020 $) & Col 2 (As-spent $)
CPCN Application	0.350	0.350	Section 6.4.3
CPCN Preliminary Stage Development	2.507	2.507	Section 6.4.3
Subtotal w/ Deferral Costs	162.903	170.636	Table 6-2; Row 14; Col 1 (2020 $) & Col 2 (As-spent $)
AFUDC	-	7.305	Table 6-2; Row 14; Col 3
Tax Offset	-	(2.587)	Table 6-2; Row 14; Col 4
TOTAL Project Cost	***162.903***	***175.354***	***Table 6-2; Row 14; Col 1 (2020 $) & Col 5 (As-spent $)***

Notes
1. The Project capital cost of $129.946 million in 2020 dollars is equal to the base cost estimate of $124.333 million plus $5.612 million of capitalized development costs incurred by FEI from February to November 2020.

[115] "As-spent dollars" refers to both dollars that have been spent (and not escalated) as well as future expenditures that need to be escalated to represent nominal dollars that are forecasted to be spent.
[116] Exhibit B-1-1, Section 6.1, p. 90.
[117] Exhibit B-1-1, Section 6.2, pp. 90–91, Table 6-1.
[118] Exhibit B-11, BCUC IR 35.1.1.

2. The as-spent cost is equal to the amount in 2020 dollars plus escalation. The total escalation at a P50 confidence level is $7.733 million, of which $6.193 million is escalation on the base capital cost and $1.540 million is escalation on contingency.

Mott MacDonald developed an AACE Class 4 Project cost estimate from designs and material take-off quantities. FEI completed planning and design activities to refine the maturity level of project definition deliverables beyond the requirements of a typical AACE Class 4 cost estimate.[119] The output of the quantitative risk analysis concluded that P50 confidence level for the capital cost estimate is approximately $154.4 million (includes base cost and contingency estimate and is before escalation and AFUDC), with P10 to P90 ranges of approximately $123.2 million to $195.2. Based on these numbers, the expected accuracy range of the PGR Project AACE Class 4 cost estimate is approximately -20 to +27 percent.[120] FEI submits 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.[121] FEI continues to refine the budget as more information becomes available.[122] It anticipates having an AACE Class 3 cost estimate including the revised contingency and accuracy range by end of May 2021, prior to contracting work out, and agrees to provide this estimate as part of its reporting.[123]

FEI notes it actively manages the Project with the aim of avoiding any expenditures in excess of the contingency and submits it would only be willing to spend in excess of the contingency if the additional costs were confirmed to be prudent and cost effective based on the particular facts at that time.[124] FEI's cost control mechanisms, including internal approvals, are intended to ensure the Project is completed without the need for additional expenditures, despite project risks and schedule constraint.[125]

As noted in Section 4.3 the Province revised construction timelines for the Pattullo Bridge Replacement Project.[126] FEI states it is completing the PGR Project to meet the existing schedule and does not expect an impact or reduction in the cost estimate due to any delays associated with the Province's target completion date.[127]

The remainder of this subsection provides a discussion on the base cost estimate, process to validate the proposed costs, and the risk analysis utilized to determine the contingency.

Base Cost Estimate

[119] Exhibit B-14, CEC IR 20.1.
[120] Exhibit B-11, BCUC IR 32.1; Exhibit B-14, CEC IR 18.1.
[121] FEI Final Argument, p. 34.
[122] Exhibit B-11, BCUC IR2 34.9.2; Exhibit B-14, CEC IR 20.1.
[123] Exhibit B-11, BCUC IR 34.8; Exhibit B-14, CEC IR 20.3; Exhibit B-15, Panel IR 4.1 series.
[124] Exhibit B-11, BCUC IR 34.9.
[125] Exhibit B-11, BCUC IR2 34.9.2; Exhibit B-14, CEC IR 20.3, 31.1–31.3.
[126] Province of British Columbia April 01, 2021, News Release on the Pattullo Bridge Project (https://news.gov.bc.ca/releases/2021TRAN0049-000604).
[127] Exhibit B-15, Panel IR 2.1, 2.2.

FEI developed the PGR Project base cost estimate in conjunction with Mott MacDonald, based on criteria from AACE International Recommended Practices 18R-97 and 97R-18. Mott MacDonald developed the direct and indirect cost estimates for the following:[128]

- Gas line and station construction costs;
- Construction sub-contracts; and
- Engineering services.

FEI completed the remaining aspects of the PGR Project's base cost estimate, including the following:[129]

- Project management and engineering;
- Land acquisition;
- Permits and approvals;
- Consultation;
- Environmental and archaeological monitoring; and
- Inspection services and additional construction costs associated with alternating current mitigation, cathodic protection, and gas line decommissioning and abandonment.

The total base 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.[130]

Validation of Cost Estimate

The PGR Project cost estimate was subject to quality assurance and validation reviews, as follows:[131]

- 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, completed by Universal Pegasus International (UPI) and Validation Estimating LLC (Validating Estimating) [132], to verify and validate that the estimate, as well as schedule, met the AACE Class 4 criteria and requirements and ensure that a well-documented, reasonable and defensible estimate was developed; and
- Internal and external reviews related to constructability and productivity.

[128] Exhibit B-1-1, Section 5.10.1, p. 82.
[129] Exhibit B-1-1, Section 5.10.1, p. 82.
[130] Exhibit B-1-1, Section 5.10.1, p. 82.
[131] Exhibit B-1-1, Section 5.10.3, p. 84.
[132] Exhibit B-1-1, Section 5.10.4, p. 84; Exhibit B-11, BCUC IR 33.1 and 33.2.

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, in particular the Coquitlam Gate IP project which was substantially complete by the fourth quarter of 2019, and third-party published data from the public domain.[133]

Risk Analysis and Contingency Estimate

FEI engaged Yohannes Project Consulting Inc. (YPCI), to conduct a qualitative risk analysis to identify and assess all of the risks associated with the PGR Project. YPCI developed a risk register based on the information gathered through multiple workshops with the PGR Project team.[134] Each risk identified in the risk register is classified as either a project-specific risk or a systemic risk[135] and assigned a likelihood and consequence rating to each identified risk using the risk assessment matrix recommended by AACE 62R-11.[136] FEI confirms that both YPCI and it adhered to standard risk analyses and to AACE estimating and risk analysis practices as described in the 2015 CPCN Guidelines. FEI notes that these practices have been applied to previously approved CPCN projects including LMIPSU and the Inland Gas Upgrades Project.[137]

FEI submits it will eliminate or mitigate future risks through continued engagement with stakeholders, including the City of Burnaby, to facilitate their ongoing coordination of the PGR Project and micro-routing activities to minimize construction and environmental impacts to specific areas.[138]

Following the risk analysis, Validation Estimating then completed the contingency estimation using a quantitative analysis to evaluate the impact of the identified risks. A Monte Carlo simulation was used to determine the distribution of possible cost outcomes associated with the existing scope of the PGR Project at various levels of confidence. The analysis derived a risk-adjusted P50 cost of $154.4 million representing a contingency of $30.1 million (24 percent), with P90/P10 ranges of approximately $195.2 to $123.2 million before escalation and AFUDC.[139] FEI selected a P50 level of confidence as it is consistent with the AACE definition for contingency and aligns with the industry best practice for contingency funding.[140]

In addition to the contingency estimate, Validation Estimating also conducted a cost escalation estimate for the PGR Project. The base cost estimate was developed using 2020 pricing data and conditions and does not inherently account for escalation. Price increases/decreases beyond 2020, including contingency, are addressed by the escalation estimate, which in effect converts the costs from 2020 dollars to as-spent dollars. Validation Estimating applied AACE practices to develop the cost escalation estimate of 7.7 million, which corresponds to the P50 level of confidence.[141]

[133] Exhibit B-11, BCUC IR 24.5; Exhibit B-14, CEC IR 29.2.
[134] Exhibit B-1-1, Section 5.10.4. p. 84.
[135] Exhibit B-11, BCUC IR 34.3.
[136] Exhibit B-1-14, Section 5.10.4.2, p. 85.
[137] Exhibit B-14, CEC IR 30.1.
[138] Exhibit B-11, BCUC IR 34.1.1.
[139] Exhibit B-1-1, Section 5.10.4.3, p. 85; Section 5.10.4.4, p. 86.
[140] Exhibit B-1-1, Section 5.10.4.6, p. 88; Exhibit B-11, BCUC IR 34.5.
[141] Exhibit B-1-1, Section 5.10.4.5. pp. 87–88.

Positions of the Parties

FEI submits that it has appropriately estimated the costs of the Project, including an estimate for contingencies. FEI adds that it developed the cost estimate in conjunction with Mott MacDonald, including project planning and design activities beyond those required of a typical AACE Class 4 cost estimate. FEI submits that 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", setting the contingency at a cost value to achieve a P50 confidence level.[142]

The CEC is satisfied that the cost estimate has been completed appropriately for the AACE Class 4 costing requirements, noting that FEI intends to develop an AACE Class 3 cost estimate before it contracts out work. The CEC accepts FEI's cost estimate with the caveat that FEI prepares the AACE Class 3 cost estimate before contracting out work and provides ongoing reporting to the BCUC with regard to significant changes, as indicated by FEI in its final argument.[143]

The CEC is concerned that FEI's analysis based on an AACE Class 4 cost estimate may potentially have resulted in "less than optimal decision-making from a cost-effectiveness perspective," noting that the move from an AACE Class 5 to an AACE Class 4 cost estimate resulted in an increase of about $50 million or 40 percent in the estimated cost of the Project's Option 6A.[144]

FEI submits that its comparison of alternatives using costs based on an AACE Class 4 level of definition is reasonable because the BCUC's CPCN Application Guidelines prescribe an AACE Class 4 cost estimate for comparing the cost of alternatives, FEI has improved the maturity of the project definition beyond that of a typical Class 4 cost estimate and continues to develop progressively more defined cost estimates in conjunction with the progression of the engineering to 90 percent design completion. FEI adds that the AACE Class 4 cost estimate is reasonable because its analysis of overland alternatives showed that the estimated cost was not a determinative factor between the Sperling and Gaglardi routes.

BCOAPO is satisfied overall that FEI has followed a reasonable approach to cost estimating and risk management analysis. While BCOAPO is concerned that FEI has not produced an AACE Class 3 cost estimate, as required by the BCUC's CPCN Application Guidelines, BCOAPO does not believe that BCUC approval of the CPCN for the Project should be withheld or made conditional on the filing of an AACE Class 3 estimate. Rather, BCOAPO recommends that the BCUC direct FEI to file its AACE Class 3 cost estimate when completed as well as semi-annual progress reports including: [145]

> actual costs incurred to date with an explanation and justification of significant variances, updated forecast costs highlighting the reasons for significant change in anticipated project costs and the status of project risks, changes in risks, options available to address the risks and the likely impact of the risks on the projects schedule and cost.

[142] FEI Final Argument, pp. 26, 33, 37.
[143] CEC Final Argument, p. 22.
[144] CEC Final Argument, pp. 23–24
[145] BCOAPO Final Argument, pp. 12–14.

FEI submits that BCOAPO has not submitted "any compelling basis to support the need for any additional reporting requirements." FEI submits it intends to develop an AACE Class 3 cost estimate and will "provide actual costs incurred to date compared to the control budget, which will be based on a Class 3 cost estimate."[146]

BCOAPO also recommends that the BCUC direct FEI to file material change reports within 30 days of the date on which a material change occurs, rather than waiting as late as 90 days before the commencement of construction as proposed by FEI. BCOAPO also submits this recommendation addresses the "significant risk" associated with the lack of a firm date for the decommissioning of the Pattullo bridge and little information on the consequences if an earlier date is indicated.[147]

FEI submits that it proposes reporting material changes to the BCUC within 30 days, and has also proposed to apply for approval of material changes to the route at least 90 days before construction begins. FEI is concerned that the 30-day time period suggested by BCOAPO would adversely affect the scope and quality of information it could provide the BCUC.[148] FEI adds that no additional reporting is required in the event of changes to the Province's decommissioning date for the Pattullo bridge as this will be included in FEI's regular project reporting and would be included as a material change report.

Panel Determination

The Panel accepts FEI's total Project cost estimate of $175.354 million in as-spent dollars, including contingency, escalation, deferred costs for the application and preliminary stage development costs and AFUDC.

The Panel is satisfied with FEI's approach to cost estimating, specifically, that FEI worked with Mott MacDonald, its consultant, in developing the cost estimate; that the cost estimate was reviewed by UPI and Validation Estimating, two external parties; that the risk analysis was prepared by YPCI, an independent, external party; and that the contingency estimate and escalation estimate were prepared by Validation Estimating, an independent external party. The Panel also considers the choice of a P50 level of confidence, implying a 24 percent allowance for contingencies, to be appropriate.

The Panel does not share the CEC's concern about the use of AACE Class 4 cost estimates for the comparison of project alternatives. FEI has complied with the BCUC's CPCN Application Guidelines. Further, accuracy of the AACE Class 4 cost estimate is moot because FEI's analysis of overland alternatives showed that the estimated cost was not a determinative factor between the Sperling and Gaglardi routes.

The Panel agrees with BCOAPO that there is no reason to make the Project's CPCN conditional on FEI filing an AACE Class 3 cost estimate, or even withholding approval of the CPCN in its absence. However, the Panel does consider it necessary for the BCUC to receive the AACE Class 3 cost estimate as soon as it is available, whether or not it constitutes a material change to the Project. Therefore, **the Panel directs FEI to file its AACE Class 3 cost estimate with the BCUC within 15 days of it being prepared**.

[146] FEI Reply Argument, pp. 11–12.
[147] BCOAPO Final Argument, p. 14.
[148] FEI Reply Argument, pp. 12–13.

The Panel acknowledges that FEI suggests in its draft order reporting material changes to the Project to the BCUC within 30 days, and that FEI also proposes applying for approval of material changes to the route at least 90 days before construction begins. The Panel does not see any contradiction between these two suggestions; all material changes are to be reported to the BCUC within 30 days, and for those material changes which involve a material change to the route, approval will be sought at least 90 days before construction begins. In Section 4.2 above the Panel sets out its direction to FEI with regards to handling proposed route changes.

The Panel does not accept FEI's submission that the 30-day period for reporting material changes to the route would adversely affect the quality of the information provided to the BCUC. The Panel considers it important that the BCUC be informed of such a material change as soon as possible, whether or not the change is identified more than 90 days before construction begins, and whether or not additional information is required before FEI is in a position to request approval of a new route.

5.2 Accounting Treatment

This subsection describes the proposed accounting treatment of (i) the PGR Project capital costs including the decommissioning and abandonment costs for the existing pipelines in the City of Surrey and the City of New Westminster; and (ii) the application and preliminary development costs, including FEI's request for a non-rate base deferral account.

5.2.1 Capital Costs Including Decommissioning and Abandonment Costs

In Order G-44-12, the BCUC approved FEI's use of the "traditional approach" for recovering negative salvage values from ratepayers. In the proceeding that led to Order G-44-12, FortisBC Energy Utilities[149] submitted that the traditional approach "is a common, widely used practice amongst comparable utilities across the country and is also the method of accounting for salvage costs generally accepted for use in the United States within the Federal Energy Regulatory Commission's (FERC) Uniform System of Accounts." FEI also submitted that the traditional approach avoids the disadvantage of FEI's then-current approach whereby negative salvage costs were recovered by "tomorrow's ratepayers paying to retire assets used today."[150]

Consistent with FEI's treatment of major project capital costs, the PGR Project will be held in Work in Progress during construction, attracting AFUDC. As the assets are placed into service, the associated capital cost will enter rate base on January 1 of the following year, and depreciation will begin on January 1 of the year the asset enters FEI's rate base.[151] The table below reproduced from the Second Evidentiary Update summarizes the estimated amount of the PGR Project capital costs to be in-service each year between 2022 and 2024:[152]

[149] FortisBC Energy Utilities consists of FortisBC Energy Inc., FortisBC Energy Inc. Fort Nelson Service Area, FortisBC Energy (Whistler) Inc. and FortisBC Energy (Vancouver Island) Inc.; As defined by Order G-44-12 and accompanying decision, Section 1.0, p. 1.
[150] BCUC Order G-44-12, pp. 82–85.
[151] Exhibit B-1-1, Section 6.4.1, pp. 93–94.
[152] Exhibit B-1-1, Section 6.4.1, p. 94, Table 6-4.

Table 5-2: Percentage of Project Complete and In-Service from 2022 to 2024

	Project complete and in-service each year, 2022 - 2024 ($ millions) (To be transferred to Rate Base January 1 of each following year)			
	2022	2023	2024	TOTAL
Project Capital Cost In-Service	157.437	2.127	-	159.564
Decommission & Abandonment Cost	-	14.973	0.262	15.235
Total Annual Project Costs	**157.437**	**17.100**	**0.262**	**174.799**
Annual Project % In-Service	90.07%	9.78%	0.15%	100%

As discussed in Section 4.4 of the decision, approximately 2.0 km of the Pattullo Gas Line will be decommissioned and abandoned between Pattullo Gate Station in the City of Surrey and the intersection of McBride Boulevard and Royal Avenue in the City of New Westminster. The section of gas line located on the existing Pattullo Bridge will be abandoned and removed during bridge demolition.[153]

FEI confirms that, as per the agreement between the Province (represented by the Ministry of Highways) and British Columbia Electric Company, dated April 11, 1957 (Bridge Agreement) FEI is responsible for the costs of decommissioning, dismantling, and removal of the Pattullo Gas Line.[154] FEI notes that it has commenced discussions and continues to negotiate with Ministry of Transportation and Infrastructure (MoTI) with respect to the removal of the Pattullo Gas Line affixed on the Pattullo Bridge. However, it adds that these negotiations have not concluded and, until an agreement is reached, FEI must presume that it is responsible for all costs associated with removing the Pattullo Gas Line.[155]

FEI submits the decommissioning and abandonment costs will be charged to FEI's Net Salvage deferral account in accordance with the approved treatment of these costs as set out in Order G-44-12 and the accompanying decision.[156]

The decommissioning, abandonment, and project close out activities are scheduled to occur in 2023 and 2024, as shown in Table 5-2 above, with an estimated cost of $13.850 million (2020 dollars) or $15.235 million in as-spent dollars (including AFUDC of $0.422 million).[157]

Panel Discussion

The Panel accepts FEI's proposed treatment of the Project's decommissioning and abandonment costs. Charging the PGR Project's decommissioning and abandonment costs to FEI's Net Salvage deferral account is consistent with the "traditional approach" approved in BCUC Order G-44-12, and better allocates the recovery of asset costs to the ratepayers who benefit from the assets.

[153] Exhibit B-1-1, Section 5.4.5, p. 72; Exhibit B-11, BCUC IR 36.1.
[154] Exhibit B-6, BCUC IR 1.1; Exhibit B-11, BCUC IR 19.1.
[155] Exhibit B-11, BCUC IR 19.2.
[156] Exhibit B-1-1, p. 94.
[157] Exhibit B-1-1, Section 6.4.2, p. 94.

5.2.2 PGR Application and Preliminary Stage Development Costs Deferral Account

Pursuant to sections 59 to 61 of the UCA, FEI is seeking approval of the PGR Application and Preliminary Stage Development Costs non-rate base deferral account to record the costs of the Application and regulatory review process, and preliminary costs of developing the PGR Project.

The Application costs are forecast at $350 thousand, and include expenses for the development of the Application for filing, and the regulatory review process such as legal fees, BCUC costs, hearing costs and BCUC-approved intervener costs. The preliminary stage development costs are actual costs incurred up to January 2020 of $2.507 million and include expenses for project management, engineering, and consultants for assessing the potential design and alternatives to complete this Application.[158]

FEI proposes to record the costs in the non-rate base deferral account, attracting FEI's WACC, and on January 1, 2022, the year following the anticipated BCUC approval of the Application, transfer the non-rate base deferral account to rate base and recover the costs over a three-year amortization period.[159]

The table below shows the December 31, 2021 net of tax balance for the PGR Application and Preliminary Stage Development Costs non-rate base deferral account is $0.555 million.[160]

Table 5-3: Forecast PGR Application and Preliminary Stage Development Costs deferral account ($ millions)

	Forecast to Dec 31, 2021 ($ millions)		
Particular	Application	Preliminary Stage Development	TOTAL
Pre-Tax Costs	0.350	2.507	2.857
WACC Return	0.007	0.278	0.285
Total Before Tax Offset	***0.357***	***2.785***	***3.142***
Tax Offset - Costs held in Deferral Account	(0.095)	(0.675)	(0.770)
Tax Offset - Capitalized Costs	-	(1.817)	(1.817)
Total	***0.262***	***0.293***	***0.555***
Annual Amortization for 3 years	(0.087)	(0.098)	(0.185)

Given the size of the projected balance, FEI believes either a one or two year amortization period could also be appropriate, however selected an amortization period of three years to be consistent with recent BCUC approvals for similar deferral accounts.[161] FEI prepared the following table to compare the cumulative financing costs and levelized delivery rate impact in $ per gigajoules (GJ) for FEI's non-bypass customers based on an amortization period of one, three, and five years. FEI notes that once the deferral account is transferred to rate base, the financing cost of the deferral account is effectively FEI's rate base rate of return.[162]

Table 5-4: Cumulative Financing Costs and Impact to Customer Delivery Rates based on Amortization Period of 1, 3 and 5 years

[158] Exhibit B-1-1, Section 1.3.1. p. 9; Section 6.4.3, p. 95; Exhibit B-6, BCUC IR 17.1.
[159] Exhibit B-1-1, Section 1.3.1. p. 9; Section 6.4.3, p. 95; Exhibit B-6, BCUC IR 17.2.
[160] Exhibit B-1-1, Section 6.4.3, p. 95, Table 6-5.
[161] Exhibit B-6, BCUC IR 17.3.2.4.
[162] Exhibit B-6, BCUC IR 17.3.2.4.2.

	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

Positions of the Parties

FEI submits that its requested deferral treatment for the PGR Application and Development Costs is just and reasonable and should be approved.[163]

The CEC submits that a three-year amortization period for the PGR Application and Development Costs is acceptable, however a one-year amortization period would be preferable as it would reduce the cumulative financing costs by about $150,000.[164]

FEI submits that the difference in financing costs between a three-year and a one-year amortization period is immaterial, and a three-year period is preferable because it is consistent with past treatment of similar costs.[165]

BCOAPO accepts that the PGR Application and Development Costs are capital-related costs and recommends that they should be included directly in FEI's rate base, consistent with the treatment of other project-related costs. BCOAPO also submits that the PGR Application and Development Costs should be recovered over the useful life of the PGR assets as they provide benefits over the assets' useful life.[166]

FEI submits that, given the relatively low forecast amount of the deferral account balance, it does not consider the PGR Application and Development Costs warrant amortizing over the service lives of the PGR Project's assets.[167]

Panel Determination

The Panel approves FEI's request to establish the PGR Application and Development Costs non-rate base deferral account to record the application and preliminary stage development costs for the PGR Project. The deferral account will accrue interest at FEI's WACC until it is transferred to rate base. Once the balance of the PGR Application and Development Costs Deferral Account is transferred to rate base, the application and preliminary stage development costs will be amortized over a three-year period commencing the date of transfer. **FEI is directed to report the balance of the PGR Application and Development Costs Deferral Account to the BCUC in its Annual Report for the year in which the balance is transferred to rate base**.

It is appropriate for FEI to recover the PGR Application and Development Costs from ratepayers, as these costs relate to activities which are part of a project that is required to provide service to ratepayers, and a deferral account is the appropriate regulatory mechanism for FEI to capture these costs as they are incurred.

---

[163] FEI Final Argument, p. 41.
[164] CEC Final Argument, p. 29.
[165] FEI Reply Argument, p. 10.
[166] BCOAPO Final Argument, p. 15.
[167] FEI Reply Argument, pp. 10–11.

The Panel acknowledges the CEC's submission that a one-year amortization period would reduce the financing costs compared to a three-year amortization period. However, at the other extreme, amortizing these costs over the life of the asset would increase the financing costs. The Panel is satisfied that the three-year amortization period proposed by FEI is reasonable, noting that this amortization period is consistent with previous BCUC decisions, and the Panel sees no compelling reason to deviate from these decisions.

5.3 Indicative Rate Impacts

The PGR Project will have incremental delivery rate impacts from 2022 to 2025 as capital costs enter rate base and commence amortization/depreciation. The capital costs impacting the delivery rates during this period are as follows:[168]

- During the period 2022 to 2024 the delivery rates will be impacted by the amortization of the PGR Application and Preliminary Stage Development Costs deferral account which enters rate base on January 1, 2022;
- The new IP pipeline and PRS in the City of Burnaby are scheduled to be placed in-service during the period from 2022 to 2023 and will enter rate base on January 1 of the following year. Delivery rates will be impacted by these additions beginning January 1, 2023, as depreciation will commence the year the assets enter rate base; and
- Delivery rates will be impacted in 2024 and 2025 by the decommission/abandonment costs for the Pattullo Gas Line which are scheduled to be incurred in 2023 and 2024. Following the decommissioning and abandonment these costs will be transferred to FEI's Net Salvage deferral account on January 1 of the following year. FEI notes that the estimated delivery rate impact in 2025 due to the decommissioning and abandonment costs is offset by the amortization period for the PGR Application and Preliminary Stage Development Costs deferral account reaching a conclusion. Together, this results in a delivery rate credit in 2025.

FEI confirms there will be no additional delivery rate impacts due to the capital cost of the PGR Project past 2025.[169] The following table prepared by FEI presents the annual incremental delivery rate impact from 2022 to 2025 as compared to FEI's 2021 approved non-bypass revenue requirement approved by BCUC Order G-319-20.[170]

[168] Exhibit B-1-1, Section 6.5, pp. 95–96.

[169] Exhibit B-14, CEC IR 34.1.

[170] Exhibit B-1-1, Section 6.5, p. 96, Table 6-6.

Table 5-5: Summary of Delivery Rate Impact for the PGR Project

	2022	2023	2024	2025
Annual Delivery Margin, Incremental to 2021 Approved, Non-Bypass ($ millions)	0.288	5.715	13.890	13.773
% Increase to 2021 Approved Delivery Margin, Non-bypass	***0.03%***	***0.65%***	***1.58%***	***1.57%***
Incremental % Delivery Rate Impact (Year-over-Year)	***0.03%***	***0.62%***	***0.92%***	***(0.01%)***
Average Annual % Delivery Rate Impact (4 years, 2022 - 2025)	0.39%			
Average Annual Delivery Rate Impact (4 years, 2022 - 2025), $/GJ	0.018			
Cumulative % Delivery Rate Impact (4 years, 2022 - 2025)	1.57%			
Cumulative Delivery Rate Impact (4 years, 2022 - 2025), $/GJ	0.071			

When construction is completed, including the decommissioning and abandonment, and all assets have entered rate base, FEI determines the PGR Project will result in an estimated cumulative delivery rate impact of 1.57 percent in 2025. The average annual delivery rate impact from 2022 to 2025 is estimated to be 0.39 percent annually or $0.018 per GJ annually. For a typical FEI residential customer consuming 90 GJ per year, this would equate to an average bill increase of approximately $1.62 per year over the four years, or cumulatively $6.39 over the four years.[171]

In the Application, filed August 31, 2020, FEI considered the long-term rate impact to FEI's non-bypass customers by financially comparing the present value (PV) of the incremental revenue requirement as well as the levelized delivery rate impact over the 73-year analysis period. The 73-year analysis period was chosen based on a 70-year post-project analysis period plus the three-year construction period from 2020 to 2022. The post-project analysis period of 70 years was calculated using the approved depreciation rate of IP pipeline at 1.35 percent (i.e. 1/0.0135 = 74 years, rounded down to 70 years).[172] In the response to CEC IR 3.5, FEI discussed changing the financial analysis period from 73 years to 77 years (i.e. 74 years plus three prior years) to remove the rounding variances.[173]

In the Second Evidentiary Update, filed December 15, 2020, FEI performed the financial evaluation of the PGR Project based on the PV of the incremental revenue requirement and the levelized delivery rate impact to FEI's non-bypass customers over a 68-year analysis period. The 68-year analysis period is based on a 65-year post-project analysis period plus the three-year estimated construction period. FEI set the post-project analysis period to 65 years, based on the average service life (ASL) for the distribution main pool asset account, which includes IP pipelines, as determined in FEI's 2017 Deprecation Study which was approved by BCUC Order G-165-20 as part of FEI's 2020-2024 Multi-Year Plan Application. FEI considers that using ASL is more appropriate for the post-project analysis period. Unlike the approved depreciation rates used to determine the 70-year post project analysis period, and which include accumulated gains/losses that existed at the time of the most recent deprecation study that are unrelated to the prospective future life of the assets, the ASL excludes these gains and losses and merely reflects the average service life of all individual assets in the distribution main pool asset account. Using the ASL is also consistent with the basis of the post-project analysis period used in FEI's recently filed CPCN Applications such as the Okanagan Capacity Upgrade Project, Tilbury LNG Storage Expansion Project, and Coastal Transmission System Integrity Management Capabilities Project. FEI notes that the change from a 73 to 68-year analysis period is immaterial in terms of rate impact.[174]

[171] Exhibit B-1-1, Section 6.5, p. 96.

[172] Exhibit B-1, Section 4.4.2.2, p. 45, footnote 16; Exhibit B-11, BCUC IR 24.1, 24.2.

[173] Exhibit B-9, CEC IR 3.5; Exhibit B-11, BCUC IR 24.1, 24.2.

[174] Exhibit B-1-1, Section 6.3, p. 91; Exhibit B-11, BCUC IR 24.1, 24.2.

Positions of the Parties

The CEC submits that the proposed rate impacts are acceptable given the importance of the PGR Project, and that the calculations are acceptable and founded on reasonable inputs. However, the CEC notes that FEI used a project life of 68 years for its financial analysis, which was reduced from 74 years and then altered to 77 years. The CEC submits that it would be appropriate for FEI to use a consistent methodology in establishing the project life for its financial analysis. [175]

FEI submits that it has adopted a consistent methodology by adjusting to 68 years the project life used in when assessing the delivery rate impact of alternatives. The project life of 68 years aligns with the average service life of IP pipelines in FEI's 2017 Depreciation Study and is consistent with the approach FEI took in recently-filed CPCN applications to the BCUC. FEI submits that the project life of 68 years does not impact the results of the alternatives analysis and is reasonable and acceptable.[176]

Panel Discussion

The Panel is satisfied with FEI's calculation of the rate impact of the PGR Project and that the impact on rates is reasonable.

The Panel finds FEI's use of a 68-year project life for its analysis of the PGR Project to be reasonable because it aligns with the average service life of IP pipelines in FEI's 2017 Depreciation Study. The Panel agrees with the CEC that consistency is generally a virtue, but notes that changing the analysis period from 73 to 68 years made no appreciable difference to the forecast rate impact of the Project.

6.0 Environment and Archaeology

FEI provides supporting environmental and archaeological assessments and reports regarding the construction of the preferred Sperling route and decommissioning the Pattullo Gas Line.[177] These two project components occur in two district geographic areas.

Hemmera Envirochem Lt. and Dillon Consulting Ltd. undertook Environmental Overview Assessments (EOAs) for the replacement gas line along the Sperling Route[178] and the decommissioning of the Pattullo Gas Line respectively,[179] assessing the Project's impacts in relation to current land use, contaminated sites, aquatic resources, wildlife (including species at risk) and vegetation.[180] FEI concludes that the Project's environmental

[175] CEC Final Argument, p. 26.
[176] FEI Reply Argument, pp. 9–10.
[177] Exhibit B-1-1, Appendices H and I.
[178] Exhibit B-1-2, Appendix H-1.
[179] Exhibit B-1-2, Appendix H-2.
[180] Exhibit B-1-1, pp. 99–104.

risk is low, and any potential environmental impacts can be mitigated through the application of standard best management practices and mitigation measures.[181]

To minimize the impacts on the Project's construction costs and related timelines, FEI will continue to assess the Project's impacts on these aspects as part of the detailed engineering phase and before construction begins.[182] 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.[183]

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.[184] Table 6.3 of Appendix H-1 and Section 3 of Appendix H-2 outline the potential regulatory approvals for both the preferred Sperling Route and the decommissioning of the current gas line. FEI will undertake further environmental assessments during the detailed engineering phase of this Project to confirm permitting requirements and will apply for permits as required. The permits identified at this time are based on the current level of Project engineering and may change during the detailed engineering phase.[185]

FEI currently expects to receive approval from the British Columbia Oil and Gas Commission (BCOGC) for its application for a major pipeline amendment application by the end of September 2021.[186]

Using professional third party consultants, FEI assessed the archaeological potential of areas that may be impacted by both the Sperling Route and the decommissioning of the Pattullo Gas Line.[187] The Archaeological Constraints Report for the Sperling Route (Sperling ACR) 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).[188] Elevated archaeological potential was identified adjacent to existing and historical watercourses including Burnaby Lake, Still Creek and Deer Lake Brook.[189] If areas of moderate or high archaeological potential are identified as part of the Archaeological Overview Assessment (Sperling AOA) FEI will be conducting in early 2021,[190] FEI will also undertake an Archaeological Impact Assessment (Sperling AIA) to ensure any impacts to archaeological and cultural resources are properly mitigated.[191]

[181] Exhibit B-1-1, pp. 97, 99.
[182] Exhibit B-1-1, p. 105.
[183] Exhibit B-1-1, pp. 105–106.
[184] Exhibit B-1-1, pp. 104–105.
[185] Exhibit B-1-1, pp. 80, 105.
[186] Exhibit B-11, BCUC IR2 30.4; Exhibit B-1-1, Table 5-10, p. 74.
[187] Exhibit B-1-2, Appendix I-1; Appendix I-2; Exhibit B-14, CEC IR2 35.2.
[188] Exhibit B-1-2, Appendix I-1.
[189] Exhibit B-1-2, Appendix I-1, p. 3.
[190] Exhibit B-1-1, p. 107.
[191] Exhibit B-1-1, pp. 97, 108.

As part of the decommissioning process, FEI will undertake a detailed AIA within areas of moderate and high archaeological potential, which were identified in the Decommissioning AOA.[192] The Decommissioning AOA 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. For safety reasons associated with exaction locations along an existing gas line, the Decommissioning AIA work will be completed at the same time as decommissioning works.[193]

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.[194] FEI provided the Sperling ACR and the Decommissioning AOA report to Indigenous communities who requested drafts for their review and comment in early November 2020.[195]

Before undertaking the archaeological assessments set out above, including the Sperling AOA to be conducted in 2021 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.[196] Preliminary Field Reconnaissance work will also be conducted once FEI obtains necessary permits from Indigenous groups.[197]

Positions of the Parties

FEI submits it 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.[198]

CEC finds FEI's overview of its proposed methods to manage environmental and archaeological impacts to be satisfactory.[199]

BCOAPO is satisfied with the adequacy of the approach and information provided by FEI to date, on an overall basis.[200] BCOAPO notes the risk of identifying areas of moderate to high potential as the PGR Project progresses. BCOAPO recommends that the BCUC direct FEI to file information with respect to the identification of moderate

[192] Exhibit B-1-2, Appendix I-2.
[193] Exhibit B-1-2, Appendix I-2, pp. 36–40.
[194] Exhibit B-1-1, pp. 107–108.
[195] Exhibit B-1-1, p. 98.
[196] Exhibit B-1-1, p. 108.
[197] Exhibit B-1-1, p. 106.
[198] FEI Final Argument, p. 41.
[199] CEC Final Argument, p. 28.
[200] BCOAPO Final Argument, p. 17.

to high environmental and archaeological impacts as part of the semi-annual progress reports consistent with Directive 3 –Item 1 of BCUC Order G-12-20 (with respect to FEI's Inland Gas Upgrade Project), including the likely impact on the Projects schedule and cost.[201]

In reply, FEI submits there is no need for these additional reporting requirements. Consistent with past practice, FEI will provide the BCUC with the categories of information identified by BCOAPO as part of its regular reporting requirements. FEI continues to be mindful of its legal obligations, including those prescribed by the *Heritage Conservation Act*, and will actively manage the Project's environmental and archaeological impacts.[202]

Panel Determination

The Panel is satisfied with FEI's approach to managing the environmental and archaeological impacts of the PGR Project.

The Panel agrees with BCOAPO that there remains the potential of identifying areas of moderate or high environmental or archaeological impact as the Project progresses, and that this remains a risk to the Project's schedule. **The Panel directs FEI to report to the BCUC as part of FEI's semi-annual progress reports for the Project any areas of moderate or high environmental or archaeological impact identified and the likely impact to the Project's schedule and cost.**

7.0 Consultation

Section 3 of the BCUC's CPCN Guidelines outlines the information expected from an applicant regarding consultation with First Nations and the public, which includes: a description of consultation activities; issues and concerns raised; the applicant's assessment of the sufficiency of the consultation process; and a statement of planned future consultation.

FEI's engagement on the Project began in October 2018 with early engagement on the HDD options with Indigenous groups. In 2019, FEI continued early engagement with Indigenous groups, and commenced consultation with the City of New Westminster, the City of Surrey and local stakeholders.[203] Early consultation with the City of Burnaby began in February 2020 regarding the Gaglardi Route.[204] On July 31, 2020, the City of Burnaby asked FEI to investigate the feasibility of the proposed Sperling Route as opposed to the Gaglardi

[201] BCOAPO Final Argument, pp. 17–18.
[202] FEI Reply Argument, p. 13.
[203] Exhibit B-1-1, p. 109; Exhibit B-1-2, Appendix J-1.
[204] Exhibit B-1-1, pp. 109–110; Exhibit B-1-2, Appendix J-3.

Route.[205] FEI has subsequently identified key stakeholders[206] and has focused its consultation activities on the Sperling Route.[207] Discussions regarding the Gaglardi Route ended in August 2020.[208]

The following subsections provide an overview of FEI's consultation activities with First Nations communities and stakeholders such as local governments, landowners and customers regarding the Sperling Route.

7.1 Consultation with First Nations

FEI began engagement with all Indigenous groups with asserted interests[209] in the Project area in October 2018, by sending out Project Notification letters as part of the HDD engagement process .[210] Indigenous groups were identified using information from the BC Government's Consultative Areas Database (CAD) including those that are potentially impacted by the Sperling Route and/or the decommissioning activities associated with the existing Pattullo Gas Line.[211] Table 7-1 below lists the Indigenous groups identified through a CAD query.

Table 7-1: Consultative Area Database (CAD) Query Indigenous Groups[212]

Sperling Route September 2020	Pattullo Gas Line Abandonment/Decommissioning June 2020
Cowichan Tribes	Cowichan Tribes
Halalt First Nation	Halalt First Nation
	Katzie First Nation
Kwantlen First Nation	Kwantlen First Nation
Kwikwetlem First Nation	Kwikwetlem First Nation
Lyackson First Nation	Lyackson First Nation
Musqueam Indian Band	Musqueam Indian Band
Penelakut Tribe First Nations	Penelakut Tribe First Nations
People of the River Referrals	People of the River Referrals
Seabird Island Band	Seabird Island Band
	Semiahmoo First Nation
Shxw'ow'hamel First Nation (via PRRO)	Shxw'ow'hamel First Nation (via PRRO)
Skawahlook First Nation (via PRRO)	Skawahlook First Nation (via PRRO)

[205] Exhibit B-1-1, pp. 9, 116–118.

[206] Exhibit B-1-1, p. 112.

[207] Exhibit B-1-1, pp. 112–114; Exhibit B-1-2, Appendix J-6.

[208] This followed the recommendation of the City's Finance Management Committee opposing the Project proceeding through Burnaby: Exhibit B-1-1, p. 117.

[209] Exhibit B-1-1, p. 121.

[210] Exhibit B-1-1, pp. 109, 120; Appendix J-1.

[211] Exhibit B-1-1, p. 121.

[212] Exhibit B-1-1, p. 121–122, Table 8-2.

Soowahlie Indian Band (via PRRO)	Soowahlie Indian Band (via PRRO)
Stó:lō Tribal Council	Stó:lō Tribal Council
Stó:lō Nation	Stó:lō Nation
Stz'uminus First Nation	Stz'uminus First Nation
	Tsawwassen First Nation
Tsleil-Waututh Nation	Tsleil-Waututh Nation

FEI developed a Consultation and Engagement Plan[213] and outlines the engagement to date with Indigenous groups regarding the HDD, Gaglardi and Sperling Route options.[214] FEI's engagement log indicates that in addition to responding to specific queries from each Indigenous group, FEI sent approximately 8 update notifications to Indigenous groups over the period September 2018 to November 2020.[215]

FEI adapted its engagement activities with Indigenous groups in response to capacity challenges resulting from the COVID-19 pandemic, to allow for virtual meetings and additional time to review documents.[216]

FEI began engagement on the Gaglardi Route with Indigenous groups in March 2020.[217] In August 2020 FEI initiated early engagement regarding the Sperling Route with Indigenous groups that had issued cultural or heritage permits or had previously shown interest in monitoring the Project.[218] This was followed by a Project update on September 10, 2020 to all Indigenous groups identified as having interests potentially affected by the Sperling Route.[219]

For both the abandonment and decommissioning activities and for the Sperling Route, FEI has received no formal position regarding the engagement process thus far from Indigenous groups.[220] Feedback from Indigenous groups regarding the Sperling Route has been limited to date, and no concerns have been raised regarding the route in response to Project documents or during virtual meetings with interested Indigenous groups.[221] FEI expects to receive additional feedback as archaeological and environmental overview documents are finalized and shared with these groups in 2021.[222]

FEI has offered capacity funding to all Indigenous groups that have expressed an interest in the Project. At this time, only Kwikwetlem First Nation has requested capacity funding.[223] Representatives of Kwikwetlem First Nation and Kwantlen Nation participated in the geotechnical program as Indigenous monitors 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.[224]

[213] See Exhibit B-1-2, Appendices J-2 and J-5.
[214] Exhibit B-1-1, pp. 122-125; Exhibit B-1-2, Appendices J-1, J-4 and J-7.
[215] Exhibit B-1-2 Appendix J-1, p. 1.
[216] Exhibit B-7, BCOAPO IR1 6.2.
[217] Exhibit B-1-1, p. 109.
[218] Exhibit B-1-1, Table 8-3. p. 122.
[219] Exhibit B-1-1, Table 8-2; Exhibit B-1-2, Appendix J-22.
[220] Exhibit B-1-1, p. 123; FEI Final Argument, p. 54.
[221] Exhibit B-1-1, p. 125.
[222] Exhibit B-11, BCUC IR2 39.2.
[223] Exhibit B-11, BCUC IR2 39.1.
[224] Exhibit B-11, BCUC IR2 39.2.

Panel Discussion

The Panel finds that given that the project will occur on existing municipal lands and no party has asserted actual or potential impacts to claimed or proven Indigenous rights or title to the area of the Sperling Route, and FEI has committed to engage with indigenous groups in an ongoing, transparent and meaningful manner the panel is satisfied with the adequacy of consultation to date.

We are satisfied with the adequacy of consultation FEI has conducted to date with Indigenous groups. FEI notified all Indigenous groups identified in the BC Government's Consultative Areas Database about the Project in September 2018, and provided an update to all Indigenous groups with asserted interests in the area about the Sperling Route in September 2020. FEI has received no concerns with regards to the route and no formal response regarding the abandonment and decommissioning activities.

7.1 Public Consultation

FEI has incorporated feedback from stakeholders into its route selection process and assessed alternative routes, including the Sperling Route.[225] FEI's Consultation and Engagement Plan[226] provides an overview of engagement activities with stakeholders as of the date of filing. FEI has also provided consultation logs since engagement began with stakeholders regarding the Project.[227]

Key stakeholders identified for public consultation include:

- Government officials including Members of Parliament, Members of the provincial Legislative Assembly and their respective constituency offices; and local government, including the cities of Burnaby, New Westminster and Surrey;
- FEI's gas customers, residents, businesses and stakeholder groups;
- Schools, places of worship and places of community gathering in close proximity to the proposed route; and
- Permitting agencies.

FEI began broadly engaging with the public regarding the Sperling Route in November 2020. FEI developed and shared a number of public communications regarding the Project, including: pre-announcement notifications to certain stakeholders in October 2020; information bulletins; a project webpage; social media communications; bill inserts, email newsletters; information cards to residents and business along the route; and both print and digital advertisements.[228]

[225] Exhibit B-1-1, p. 110.
[226] Exhibit B-1-1, Appendix J-5.
[227] Exhibit B-1-2, Appendices J-1, J-3 and J-6.
[228] Exhibit B-1-1, p. 112–114; Exhibit B-1-2, Appendix J.

FEI held two virtual information sessions in November 2020 aimed at customers, residents and businesses.[229] Stakeholder groups such as clubs, schools and boards were contacted by phone and email offering to discuss the project individually, and were notified of the general information sessions.[230]

FEI has focused on frequent and meaningful engagement with the City of Burnaby in an effort to incorporate the City's feedback on the Project and minimize impacts to local residents. This includes investigating the feasibility of a route along Sperling Avenue, at the request of the City. FEI began consultation with the City on the Gaglardi Route on February 11, 2020. Following discussions, the City of Burnaby's council provided a letter of support for the Sperling Route on September 28, 2020.[231] Since receiving this letter of support, FEI has continued to consult and negotiate with the City on a weekly basis regarding the Sperling Route on items such as traffic management planning, gas line alignment, land acquisition and temporary workspace requirements along the Sperling Route.[232]

In an effort to achieve Project acceptance, including obtaining the rights and approvals for the necessary statutory right-of-way and temporary workspace, FEI discussed jointly coordinated projects proposed by the City. These projects include the construction of a bike path along the Sperling route gas line alignment. On December 11, 2020, FEI and the City signed an agreement (Terms of Reference) setting out the terms on which FEI would construct the Project along the Sperling Route Corridor in the City of Burnaby.[233]

FEI provided a summary of questions and concerns raised by customers, residents, businesses and stakeholder groups is provided in the table below, reproduced from the Application.[234] FEI is committed to providing Project updates and proactive communication to minimize concerns and inconveniences associated with construction activities.[235]

Table 7-2: Questions and Concerns from Customer, Residents, Businesses, and Stakeholder Groups

[229] Exhibit B-1-1, p. 115; Exhibit B-1-2, Appendix J-17.
[230] Exhibit B-1-1, p. 115.
[231] Exhibit B-1-2, Appendix J-18.
[232] Exhibit B-1-1, p. 117.
[233] Exhibit B-1-2, Confidential Appendix J-19.
[234] Exhibit B-1-1, p. 119, Table 8-1.
[235] Exhibit B-1-1, pp. 119–120.

Question/Concern	Description of question/concern	FEI's Response
Access during construction	Residents questioned whether the Project would result in full road and multi-use path closures and restrict access to homes, recreation areas and businesses.	FEI will avoid full road and multi-use path closures and maintain access to homes, recreation areas and businesses throughout construction. If access needs to be restricted, it would be communicated proactively and FEI would work with stakeholders to mitigate associated impacts.
Environmental concerns	Several residents and stakeholder groups expressed concerns about potential environmental impacts to Burnaby Lake Regional Park.	FEI will minimize any potential impacts to the environment. This includes conducting pre-construction surveys to identify environmental receptors in the Project study area (e.g., fish, wildlife species at risk etc.), producing an Environmental Management Plan and requiring the contractor to create Environmental Protection Plans that clearly identify how they plan to protect the environment during construction.
Ongoing Project communications	Residents stressed that it is important to promote Project awareness so the community is informed and continues to be informed regarding the Project.	FEI is committed to updating the community as the Project continues to develop.

Positions of the Parties

FEI submits that its 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 will continue engagement activities throughout the lifecycle of the Project, including preconstruction, during construction, and through restoration activities.[236]

FEI's key takeaways related to engagement with indigenous groups and stakeholders are:

- FEI's route selection process and assessment of alternatives incorporates feedback from stakeholders.[237]
- FEI's engagement with Indigenous groups has been thorough, timely and meaningful.[238]

[236] FEI Final Argument, p. 48.
[237] FEI Final Argument, pp. 48–52.
[238] FEI Final Argument, p. 48, 52–55.

FEI states that 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 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.[239]

Further, 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 states it will ensure interested groups are properly informed and that any concerns that arise are addressed.[240]

BCOAPO submits FEI's stakeholder engagement activities thus far in the PGR Project are adequate on an overall basis. BCOAPO acknowledges that in a challenging urban environment, with multiple stakeholder and permitting organizations, FEI appears to have undertaken appropriate steps to be proactive, identify impacted stakeholders or agencies that it requires approval from to proceed, provide information, respond to questions, encourage feedback and incorporate that feedback into its project planning; and the Utility has expressed a willingness and commitment to continue to engage and consult with local stakeholder groups that are most impacted by the PGR project.[241]

However, due to the absence of feedback to date, BCOAPO is unable to fully conclude that the Indigenous engagement activities have been thorough, timely and meaningful, as asserted by FEI.[242] BCOAPO is concerned with respect to the status of Indigenous engagement this far into the PGR Project development. In BCOAPO's view, the current status of Indigenous engagement presents an element of risk to the execution of the project and believes that this is a risk that the BCUC should be proactive in monitoring in the future planning and development of the PGR Project. Consistent with the views expressed with respect to environmental and archaeological impacts, and considering the risks, BCOAPO expects that FEI will be vigilant in its commitment to funding and encouraging Indigenous engagement in the PGR Project and be open to adjusting its plans and developing appropriate strategies to incorporate Indigenous feedback and concerns, as well as economic opportunities, as the Project progresses.

BCOAPO recommends that the BCUC direct FEI to file information with respect to its on-going Indigenous engagement activities, feedback received and related project outcomes as part of the semi-annual progress reports consistent with Directive 3 – Item 1 of BCUC Order G-12-20 (with respect to FEI's Inland Gas Upgrade Project), including the likely impact on the Projects schedule and cost of any significant issues encountered.[243]

In reply, FEI submits there is no need for these additional reporting requirements. Consistent with past

[239] FEI Final Argument, p. 53.
[240] FEI Final Argument, p. 55.
[241] BCOAPO Final Argument, p. 19.
[242] BCOAPO Final Argument, p. 19.
[243] BCOAPO Final Argument, p. 19.

practice, FEI will provide the BCUC with the categories of information identified by BCOAPO as part of its regular reporting requirements. The adequacy of consultation will also be assessed by the BCOGC as part of the permit approval process.[244]

FEI further submits that the consultation process is intended to solicit feedback from stakeholders that may be outside the FEI's knowledge or consideration. By listening to the feedback received from the City of Burnaby and then investigating the Sperling Route Corridor, FEI obtained the support of a key stakeholder within the area affected by the Project. This should be viewed as an example of meaningful consultation in practice, as contemplated by the BCUC CPCN Guidelines, rather than an area of concern as characterized by BCOAPO.[245]

Panel Discussion

The Panel is satisfied with FEI's level of public consultation. The general public, including customers, residents, business and stakeholder groups were notified in October and November 2020 using a range of media, and FEI conducted two information sessions. The concerns raised have been properly documented and FEI's responses are adequate.

FEI's letter of support from the City of Burnaby, the municipality through which the Sperling Route runs, satisfies the Panel that FEI's municipal consultation has been adequate to date, and that FEI has addressed any concerns that the City of Burnaby may have raised.

8.0 Provincial Government Energy Objectives and the Long-Term Resource Plan

Section 46(3.1) of the UCA requires the BCUC to consider:

> (a) the applicable of British Columbia's energy objectives,
> (b) the most recent long-term resource plan filed by the public utility under section 44.1, if any, and
> (c) the extent to which the application for the certificate is consistent with the applicable requirements under sections 6 and 19 of the *Clean Energy Act*.

Sections 6 and 19 of the CEA as referred to in (c) above, do not apply to FEI.[246] Section 6 of the CEA addresses electricity self-sufficiency,[247] while section 19 concerns prescribed targets in relation to clean or renewable energy. FEI is not a prescribed public utility as defined in section 19.[248]

[244] FEI Reply Argument, p. 13.
[245] FEI Reply Argument, p. 4.
[246] Exhibit B-1-1, p. 127.
[247] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/10022_01#section6.
[248] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/10022_01#section19.

Section 6 of the BCUC CPCN Application Guidelines adds that if the nature of the project precludes a direct link to the energy objectives, the application should discuss how the project does not hamper other projects or initiatives undertaken by the applicant or others, from advancing these energy objectives.[249]

According to FEI the PGR project will support the objective of encouraging economic development and the creation and retention of jobs and that it will work with Indigenous and local leaders and organizations to develop the local workforce, support local businesses and connect them to PGR project opportunities.[250]

Section 46(3.2) of the UCA states:

> Section (3.1) does not apply if the commission considers that the matters addressed in the application for the certificate were determined to be in the public interest in the course of considering a long-term resource plan under section 44.1

The PGR Project was described in FEI's most recently filed 2017 LTGRP.[251] At the time of filing the 2017 LTGRP, MoTI (via TransLink) had indicated the existing bridge would be demolished and replaced by the end of 2021, and had directed FEI to remove its existing gas line by the end of 2021. Other than a shift in timing due to MoTI's Pattullo Bridge replacement project schedule, the Project remains consistent with the 2017 LTGRP.[252]

Positions of the Parties

BCOAPO submits that FEI does not acknowledge or address the potential impacts of government climate change or decarbonization policy on the PGR Project and expected customer demand.[253]

BCOAPO notes that governmental climate change and decarbonization policies are continually evolving and while the direct impacts of such policy considerations on specific projects may not be readily discernible in the short-term, it believes that applicants should address the issues, risks and opportunities that are inherent in these evolving policies over the long-term, at least in a directional manner in its future regulatory filings before the BCUC. This would meet what BCOAPO believes is the spirit and intent of section 6 of the BCUC CPCN Application Guidelines with respect to policy considerations. Accordingly, BCOAPO recommends that the BCUC direct FEI to acknowledge and address to the extent possible, the issues, risks and opportunities associated with climate change and decarbonization policies in its 2022 LTGRP and future CPCN applications, as part of its decision on the PGR CPCN.[254]

In reply, FEI submits that BCOAPO's recommendation is beyond the scope of this proceeding, and there is no evidentiary foundation for the BCOAPO's request. It would therefore be inappropriate for the BCUC to issue such a directive in this proceeding. Even so, FEI remains actively engaged with these issues, as supported by FEI's

[249] Appendix A to Order G-20-15, CPCN Guidelines, p. 9.
[250] Exhibit B-1-1, Section 9.2, p. 127.
[251] FEI 2017 Long Term Gas Resource Plan Proceeding, Application, Section 6.4.
[252] Exhibit B-1-1, p. 127.
[253] BCOAPO Final Argument, p. 7.
[254] BCOAPO Final Argument, p. 8.

biomethane program, 30BY30 target and other initiatives canvassed as part of the BCUC's decision FEI's Multi-Year Rate Plan Application. FEI agrees that the long-term gas resource plan is the most appropriate forum in which to discuss these issues.[255]

Panel Determination

The Panel first considers whether s. 46(3.1) of the UCA applies, by virtue of s. 46(3.2). FEI states that the PGR Project was "described" in its most recently filed LTGRP. However, the BCUC made no determination that the matters addressed in this Application were determined to be in the public interest in the review of that LTGRP. Therefore s. 46(3.2) does apply here.

The Panel is satisfied that the Project will support the objective of encouraging economic development and the creation and retention of jobs and that this is the only directly applicable of BC's energy objectives.

The Panel is also satisfied that this Project was sufficiently considered in the review of FEI's most recently filed LTGRP.

With regard to BCOAPO's recommendation to address the issues, risks and opportunities associated with climate change and decarbonization policies in FEI's 2022 LTGRP and future CPCN applications, we do agree with FEI that it is beyond the scope of this proceeding and that the long-term gas resource plan is the most appropriate forum in which to discuss these issues.

With regard to FEI's position that there is no evidentiary foundation for the BCOAPO's request**,** the Panel does not fully concur. For example, in this Decision, the Panel approves a 68-year amortization period for this infrastructure upgrade. While there is no evidence that this period is not appropriate, the Panel acknowledges that there may be an inconsistency in such a long amortization period when GHG emission reduction targets provide for zero emissions by 2050 – less than halfway through the amortization period.

We recognize that FEI is taking steps to reduce the emissions of greenhouse gases (GHGs) from the natural gas it delivers – by using RNG, for example. However, there is no evidence before the Panel of any pathway to zero GHG emissions by 2050. We recognize that FEI may address this issue in its upcoming LTRP. **However**, **to the extent that FEI does not already plan to do so, the Panel directs it to address pathways to zero GHG emissions by 2050 in its upcoming LTRP.**

9.0 CPCN Determinations

Having considered matters relevant to the approval of a CPCN, as set out in the BCUC Guidelines, the Panel finds that a CPCN for this Project is in the public interest. With the removal of the existing line under the Pattullo Bridge, with no ability to run a new line under the replacement bridge, FEI had to consider alternatives. We are satisfied with the analysis of alternatives conducted by FEI and the consultation undertaken to date. The Project will support the objective of encouraging economic development and the creation and retention of jobs and this is the only directly applicable of BC's energy objectives. We are also satisfied that this Project was sufficiently

[255] FEI Reply Argument, p. 14.

considered in the review of FEI's most recently filed LTGRP. **Therefore, the panel grants FEI a CPCN for the PGR Project pursuant to section 45 and 46 of the UCA.**

The Panel is also satisfied that the rate impact of the Project, over its accounting life of 68 years, is reasonable.

While the Panel is satisfied with FEI's approach to managing the environmental and archaeological impacts of the PGR Project, there remains the potential of identifying areas of moderate or high environmental or archaeological impact as the Project progresses. This remains a risk to the Project's schedule. **The Panel therefore directs FEI to report to the BCUC as part of FEI's semi-annual progress reports for the Project any areas of moderate or high environmental or archaeological impact identified and the likely impact to the Project's schedule and cost.**

Additional reporting requirements are laid out below.

In addition to route change updates under Section 4.2 and specific cost related updates to be provided under Sections 5.1 and 5.2.2, the Panel directs FEI to file the following reports in the manner described below.

Semi-annual Progress Report

The Semi-annual Progress Report is required to detail:

- **Actual costs incurred to date compared to the CPCN Class 4 cost estimate and the AACE Class 3 cost estimate highlighting variances with an explanation and justification of significant variances;**
- **Updated forecast of costs, highlighting the reasons for significant changes in Project costs anticipated to be incurred; and**
- **The status of Project risks, highlighting the status of identified risks, changes in and additions to risks, the options available to address the risks, the actions that FEI is taking to deal with the risks and the likely impact on the Project's schedule and cost.**

FEI must file the semi-annual progress reports within 30 days of the end of each semi-annual reporting period, with the first report covering the period ending December 31st, 2021. Each report must provide the information set out in Appendix A to this Decision.

Material Change Report

A material change is a change in FEI's plan that would reasonably be expected to have a significant effect on the schedule, cost or scope of that particular plan, such that:

- **there is a schedule delay of greater than six months compared to the CPCN schedule;**
- **there is a cost variance of greater than 10 percent of the AACE Class 3 cost estimate; or**
- **there is a change to the scope of work for the Project (for example, but not limited to, a change to FEI's preferred pipeline route).**

In the event of a material change, FEI must file a material change report with the BCUC, explaining the reasons for the material change, FEI's consideration of the Project risk and the options available and actions FEI is

taking to address the material change. FEI must file the material change report as soon as practicable and in any event within 30 days of the date on which the material change occurs. If the material change occurs within 30 days of the date for filing a semi-annual progress report, FEI may include the material change information in the progress report.

Final Report

The Final Report must include a breakdown of the final costs of the Project compared to the CPCN Class 4 cost estimate and AACE Class 3 cost estimate, and provide an explanation and justification of any material cost variances of 10 percent or more of the AACE Class 3 cost estimate.

The Final Report must be filed within six months of substantial completion or the in-service date of the Project, whichever is earlier.

10.0 Summary of Approvals and Directives

This summary is provided for the convenience of readers. In the event of any difference between the approvals and directions in this summary and those in the body of the decision, the wording in the body of the decision shall prevail.

	Directive	Page
1.	The Panel directs FEI to address resiliency in a comprehensive manner in its 2022 Long Term Gas Resource Plan.	9
2.	The Panel directs FEI to file any Notification of a Material Change for an alternative route within 30 days of identifying the need for the alternative route and a CPCN application at least 90 days before construction begins.	19
3.	Pursuant to sections 45 and 46 of the UCA, the Panel approves the decommissioning of the existing Pattullo Gas Line and the abandonment in place of sections of that gas line.	23
4.	The Panel directs FEI to file its AACE Class 3 cost estimate with the BCUC within 15 days of it being prepared.	30
5.	The Panel approves FEI's request to establish the PGR Application and Development Costs non-rate base deferral account to record the application and preliminary stage development costs for the PGR Project. The deferral account will accrue interest at FEI's WACC until it is transferred to rate base.	33
6.	FEI is directed to report the balance of the PGR Application and Development Costs Deferral Account to the BCUC in its Annual Report for the year in which the balance is transferred to rate base.	33
7.	The Panel directs FEI to report to the BCUC as part of FEI's semi-annual progress reports for the Project any areas of moderate or high environmental or archaeological impact identified and the likely impact to the Project's schedule and cost.	39

8.	However, to the extent that FEI does not already plan to do so, the Panel directs it to address pathways to zero GHG emissions by 2050 in its upcoming LTRP.	47
9.	Therefore, the panel grants FEI a CPCN for the PGR Project pursuant to section 45 and 46 of the UCA.	48
10.	The Panel therefore directs FEI to report to the BCUC as part of FEI's semi-annual progress reports for the Project any areas of moderate or high environmental or archaeological impact identified and the likely impact to the Project's schedule and cost.	48
11.	In addition to route change updates under Section 4.2 and specific cost related updates to be provided under Sections 5.1 and 5.2.2, the Panel directs FEI to file the following reports in the manner described below. Semi-annual Progress Report The Semi-annual Progress Report is required to detail: • Actual costs incurred to date compared to the CPCN Class 4 cost estimate and the AACE Class 3 cost estimate highlighting variances with an explanation and justification of significant variances; • Updated forecast of costs, highlighting the reasons for significant changes in Project costs anticipated to be incurred; and • The status of Project risks, highlighting the status of identified risks, changes in and additions to risks, the options available to address the risks, the actions that FEI is taking to deal with the risks and the likely impact on the Project's schedule and cost. FEI must file the semi-annual progress reports within 30 days of the end of each semi-annual reporting period, with the first report covering the period ending December 31st, 2021. Each report must provide the information set out in Appendix A to this Decision.	48
12.	Material Change Report A material change is a change in FEI's plan that would reasonably be expected to have a significant effect on the schedule, cost or scope of that particular plan, such that: • there is a schedule delay of greater than six months compared to the CPCN schedule; • there is a cost variance of greater than 10 percent of the AACE Class 3 cost estimate; or • there is a change to the scope of work for the Project (for example, but not limited to, a change to FEI's preferred pipeline route).	48–49

	In the event of a material change, FEI must file a material change report with the BCUC, explaining the reasons for the material change, FEI's consideration of the Project risk and the options available and actions FEI is taking to address the material change. FEI must file the material change report as soon as practicable and in any event within 30 days of the date on which the material change occurs.	
13.	Final Report The Final Report must include a breakdown of the final costs of the Project compared to the CPCN Class 4 cost estimate and AACE Class 3 cost estimate, and provide an explanation and justification of any material cost variances of 10 percent or more of the AACE Class 3 cost estimate. The Final Report must be filed within six months of substantial completion or the in-service date of the Project, whichever is earlier.	49

DATED at the City of Vancouver, in the Province of British Columbia, this 30th day of June 2021.

Original signed by:
D. M. Morton
Panel Chair / Commissioner

Original signed by:
T. A. Loski
Commissioner

Original signed by:
R. I. Mason
Commissioner

bcuc
British Columbia
Utilities Commission

Suite 410, 900 Howe Street
Vancouver, BC Canada V6Z 2N3
bcuc.com

P: 604.660.4700
TF: 1.800.663.1385
F: 604.660.1102

ORDER NUMBER
C-2-21

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

FortisBC Energy Inc.
Application for a Certificate of Public Convenience and Necessity
for the Pattullo Gas Line Replacement Project

BEFORE:
D. M. Morton, Panel Chair
T. A. Loski, Commissioner
R. I. Mason, Commissioner

on June 30, 2021

ORDER

WHEREAS:

A. On August 31, 2020, FortisBC Energy Inc. (FEI) submitted an application with the British Columbia Utilities Commission (BCUC) pursuant to sections 45 and 46 of the *Utilities Commission Act* (UCA), seeking approval of a Certificate of Public Convenience and Necessity (CPCN) for the Pattullo Gas Line Replacement (PGR) Project (Application);

B. FEI also seeks approval of a non-rate base deferral account pursuant to sections 59 to 61 of the UCA, to capture the regulatory costs of this Application and the costs expended for the purpose of evaluating the feasibility and preliminary development of the Project;

C. By Order G-232-20 dated September 11, 2020, the BCUC established a regulatory timetable for the review of the Application which consisted of an evidentiary update, intervener registration and one round of information requests (IRs);

D. By Order G-253-20 dated October 8, 2020, the BCUC amended the regulatory timetable to allow for a second evidentiary update;

E. By Order G-350-20, dated December 29, 2020, the BCUC amended the regulatory timetable to allow for a second round of IRs and establish dates for final and reply argument;

F. By letter, dated April 12, 2021, the BCUC further amended the regulatory timetable to allow for a Panel IR and establish dates for supplemental final and reply argument; and

G. The BCUC has reviewed the evidence and submissions in this proceeding and finds that certain approvals are warranted.

NOW THEREFORE pursuant to sections 45 to 46 and 59 to 61 of the *Utilities Commission Act* and for the reasons set out in the Decision issued concurrently with this order, the British Columbia Utilities Commission orders as follows:

1. FEI is granted a CPCN for the PGR Project.

2. FEI is approved to establish the PGR Project Application and Preliminary Stage Development Costs deferral account to record the Application and preliminary stage development costs to be amortized over three years commencing January 1, 2022.

3. FEI is directed to comply with all the directives outlined in Section 10 of the Decision issued concurrently with this order.

DATED at the City of Vancouver, in the Province of British Columbia, this 30th day of June 2021.

BY ORDER

Original signed by:

D. M. Morton
Commissioner

Appendix A

FortisBC Energy Inc.
Application for a Certificate of Public Convenience and Necessity for the
Pattullo Gas Line Replacement Project

Table of Contents of Semi-annual Progress Report

FortisBC Energy Inc.
Application for a Certificate of Public Convenience and Necessity
for the Pattullo Gas Line Replacement Project

LIST OF ACRONYMS

AACE	Association for the Advancement of Cost Engineering
AFUDC	Allowance of Funds Used During Construction
Application	An application with the British Columbia Utilities Commission for a Certificate of Public Convenience and Necessity pursuant to sections 45 and 46 of the *Utilities Commission Act* for the Pattullo Gas Line Replacement Project
ASL	Average service life
Bailie	Michael-John Bailie
BCOAPO	British Columbia Old Age Pensioners' Organization et. al.
BCOGC	British Columbia Oil and Gas Commission
BCUC	British Columbia Utilities Commission
Bridge Agreement	An agreement between the Province of British Columbia (represented by the Ministry of Highways, now MoTI) and British Columbia Electric Company (now FEI), dated April 11, 1957
Burnaby	City of Burnaby
CAD	BC Government's Consultative Areas Database
CEA	*Clean Energy Act*
CEC	Commercial Energy Consumers Association of British Columbia
CNG	Compressed natural gas
CPCN	Certificate of Public Convenience and Necessity
CTS	Coastal Transmission System
DP	Distribution pressure

EOAs	Environmental Overview Assessments
FEI	FortisBC Energy Inc.
FERC	Federal Energy Regulatory Commission
First Evidentiary Update	By Order G-232-20 dated September 11, 2020, the BCUC established a regulatory timetable for the review of the Application which consisted of an evidentiary update
GHG	Greenhouse gas
GJ	Gigajoules
HDD	Horizontal directional drill
IR	Information Request
IP	Intermediate pressure
LIV PAT 457	Livingston to Pattullo NPS 18 (457 mm)
LMIPSU	Lower Mainland Intermediate Pressure System Upgrade
LNG	Liquified natural gas
LTGRP	Long-Term Gas Resource Plan
MoTI	Ministry of Transportation and Infrastructure
Mott MacDonald	Mott MacDonald Canada Ltd.
NPS	Nominal pipe size
Operating Agreement	FEI's operating agreement with the City of Surrey, which it entered into on May 31, 2019
Pattullo Gas Line	FEI's distribution pressure gas line affixed on the Pattullo Bridge
PGL	Pattullo Gas Line
PGR	Pattullo Gas Line Replacement
Province	Provincial Government of British Columbia
PRS	Pressure regulating station
PV	Present value

Second Evidentiary Update	By Order G-253-20 dated October 8, 2020, the BCUC amended the regulatory timetable to allow for a second evidentiary update
Sperling ACR	Archaeological Constraints Report for the Sperling Route
Sperling AIA	Archaeological Impact Assessment
Sperling AOA	Archaeological Overview Assessment
Terms of Reference	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.
UCA	*Utilities Commission Act*
UPI	Universal Pegasus International
Validation Estimating	Validation Estimating LLC
WACC	Weighted average cost of capital
YPCI	Yohannes Project Consulting Inc.

IN THE MATTER OF
the *Utilities Commission Act*, RSBC 1996, Chapter 473

and

FortisBC Energy Inc.
Application for a Certificate of Public Convenience and Necessity
for the Pattullo Gas Line Replacement Project

EXHIBIT LIST

Exhibit No.	Description
COMMISSION DOCUMENTS	
A-1	1. Letter dated September 10, 2020 – Appointing the Panel for the review of FortisBC Energy Inc.'s Application for a Certificate of Public Convenience and Necessity for the Pattullo Gas Line Replacement Project
A-2	Letter dated September 11, 2020 – BCUC Order G-232-20 establishing a regulatory timetable for the review of the Application
A-3	Letter dated October 8, 2020 – Panel Information Request No. 1 to FEI
A-4	Letter dated October 8, 2020 – BCUC Order G-253-20 amending the regulatory timetable
A-5	Letter dated October 22, 2020 – BCUC Information Request No. 1 to FEI
A-6	Letter dated December 29, 2020 – BCUC Order G-350-20 establishing a further regulatory timetable
A-7	Letter dated January 28, 2021 – BCUC Information Request No. 2 to FEI
A-8	**CONFIDENTIAL** – Letter dated January 28, 2021 – BCUC Confidential Information Request No. 1 to FEI
A-9	Letter dated April 12, 2021 – Panel Information Request No. 2 to FEI

B-1	**FORTISBC ENERGY INC. (FEI)** - Application for a Certificate of Public Convenience and Necessity for the Pattullo Gas Line Replacement Project dated August 31, 2020
B-1-1	Letter dated December 15, 2020 – FEI Submitting Amended Application
B-1-2	Letter dated December 15, 2020 – FEI Submitting Amended Application Appendices A to K
B-1-3	**CONFIDENTIAL** - Letter dated December 15, 2020 – FEI Submitting Amended Application Confidential Appendices
B-1-4	Letter dated December 15, 2020 – FEI Submitting Amended Application Evidentiary Update
B-2	Letter dated September 18, 2020 – FEI Submitting extension request to file consultation summary
B-3	Letter dated September 21, 2020 – FEI Submitting consultation and engagement summary
B-4	Letter dated September 30, 2020 – FEI Submitting Evidentiary Update
B-5	Letter dated October 15, 2020 – FEI Submitting responses to Panel Information Request No. 1
B-6	Letter dated November 19, 2020 – FEI Submitting responses to BCUC Information Request No. 1
B-7	Letter dated November 19, 2020 – FEI Submitting responses to BCOAPO Information Request No. 1
B-8	Letter dated November 19, 2020 – FEI Submitting responses to Burnaby Information Request No. 1
B-9	Letter dated November 19, 2020 – FEI Submitting responses to CEC Information Request No. 1
B-10	Letter dated December 18, 2020 – FEI Submission on further process
B-11	Letter dated February 18, 2021 – FEI responses to BCUC Information Request No. 2
B-11-1	Letter dated March 1, 2021 – FEI erratum to responses to BCUC Information Request No. 2 Question 26.2
B-12	**CONFIDENTIAL** – Letter dated February 18, 2021 – FEI Confidential responses to BCUC confidential Information Request No. 2

B-13	Letter dated February 18, 2021 – FEI responses to BCOAPO Information Request No. 2
B-14	Letter dated February 18, 2021 – FEI responses to CEC Information Request No. 2
B-14-1	**CONFIDENTIAL** – Letter dated February 18, 2021 – FEI Confidential response to CEC-Information Request No. 2 Question 26.5
B-15	Letter dated April 19, 2021 – FEI responses to BCUC Panel Information Request No. 2

INTERVENER DOCUMENTS

C1-1	**CITY OF BURNABY (BURNABY) -** Letter dated October 6, 2020 Request to Intervene by James Lota
C1-2	Letter dated October 29, 2020 – Burnaby Submitting Information Request No. 1 to FEI
C1-3	Letter dated December 22, 2020 – Burnaby Submitting comments on Further Process
C2-1	**BRITISH COLUMBIA OLD AGE PENSIONERS' ORGANIZATION ET AL. (BCOAPO) -** Letter dated October 15, 2020 Request to Intervene by Leigha Worth & Irina Mis
C2-2	Letter dated October 29, 2020 – BCOAPO Submitting Information Request No. 1 to FEI
C2-3	Letter dated December 23, 2020 – BCOAPO Submitting comments on Further Process
C2-4	Letter dated January 28, 2021 – BCOAPO Information Request No. 2 to FEI
C3-1	**COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA (CEC) -** Letter dated October 15, 2020 Request to Intervene by Christopher Weafer
C3-2	Letter dated October 29, 2020 – CEC Submitting Information Request No. 1 to FEI
C3-3	Letter dated December 23, 2020 – CEC Submitting comments on Further Process
C3-4	Letter dated January 28, 2021 – CEC Information Request No. 2 to FEI
C4-1	**BAILIE, MICHAEL-JOHN (BAILIE) -** Letter dated October 29, 2020 Request for Late Intervener status

INTERESTED PARTY DOCUMENTS

D-1	**BADGER DAYLIGHTING INC. (BADGER DAYLIGHTING)** – Submission dated November 24, 2020 request for Interested Party status by Travas Penney