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March 19, 2021

VIA ELECTRONIC MAIL

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**Attention: Patrick Wruck, Commission Secretary and
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Dear Sirs/Mesdames:

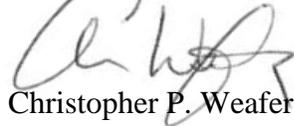
**Re: FortisBC Energy Inc. (FEI) - Application for a Certificate of Public Convenience
and Necessity (CPCN) for the Pattullo Gas Line Replacement Project dated August
31, 2020 ~ Project No. 1599129**

We are counsel to the Commercial Energy Consumers Association of British Columbia (the "CEC"). Attached please find the CEC's Final Submissions with respect to the above-noted matter.

If you have any questions regarding the foregoing, please do not hesitate to contact the undersigned.

Yours truly,

OWEN BIRD LAW CORPORATION



Christopher P. Weafer

CPW/jj
cc: CEC
cc: FortisBC Energy Inc.
cc: Registered Interveners

**COMMERCIAL ENERGY CONSUMERS
ASSOCIATION OF BRITISH COLUMBIA**

FINAL SUBMISSIONS

**FortisBC Energy Inc. - Application for a Certificate of Public Convenience and Necessity
for the Pattullo Gas Line Replacement Project dated August 31, 2020**

Project No. 1599129

March 19, 2021

Commercial Energy Consumers Association of British Columbia

**FortisBC Energy Inc. - Application for a Certificate of Public Convenience and Necessity
for the Pattullo Gas Line Replacement Project dated August 31, 2020
Project No. 1599129**

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**COMMERCIAL ENERGY CONSUMERS ASSOCIATION
OF BRITISH COLUMBIA**

FINAL SUBMISSIONS

**FortisBC Energy Inc. (“FEI”) - Application for a Certificate of Public Convenience and Necessity (“CPCN”) for the Pattullo Gas Line Replacement Project dated August 31, 2020
Project No. 1599129**

The Commercial Energy Consumers Association of British Columbia (the “CEC”) represents the interests of ratepayers consuming energy under commercial tariffs in applications before the BC Utilities Commission (“BCUC” or the “Commission”).

FortisBC Energy Inc. (“FEI”) applies for a Certificate of Public Convenience and Necessity (“CPCN”) to replace its Pattullo Gas Line (“**Pattullo Gas Line Replacement Project**” or “**PGR Project**” or the “**Project**”).

The CEC has participated in the proceeding and reviewed the evidence and provides the following comments for the Commission’s review and consideration.

I. SUMMARY POSITION

1. The CEC finds that the Project, as described in the amended application, is necessary and in the public interest in that it will avert impending capacity constraint issues occurring as a result of the demolition of the Pattullo Bridge.
2. The CEC recommends that the Commission grant the CPCN as requested by FEI.
3. The CEC finds that the PGR Application and Preliminary State Development Costs deferral account is appropriate and recommends that the Commission approve the creation of the deferral account.
4. The CEC submits that the Project appears to be adequately developed and costed, but that the apparent delay in moving forward with the Project may have diminished the quality of the CPCN application (Class 4 costing), affected review proceedings (two stage application with changing information), and potentially limited certain alternatives that might otherwise have been available.
5. While the CEC does not have evidence to suggest that the Project could be more cost-effectively designed, the CEC is nonetheless concerned that the evidence supporting the Project could have been more robustly developed given more lead time. The CEC recommends that the Commission encourage FEI to prepare such applications further in advance than has been done in this proceeding, particularly when they do have time, in order to avoid the risk of questionable project development.
6. The CEC recommends that the Commission permit Interveners to review FEI’s Final Report should the Project costs vary significantly from the current Proposal.

II. SUBMISSIONS

A. BACKGROUND

7. FEI currently provides gas supply across the Fraser River using a Nominal Pipe Size (“NPS”) 20 distribution pressure gas line affixed to the underside of the Pattullo Bridge. (“**Pattullo Gas Line**”).
8. The Pattullo Bridge is scheduled for demolition in late 2023.¹
9. FEI must degasify, purge, and remove (or prepare for removal) the existing gas line to satisfy its obligations to the province.²
10. The province intends to replace the bridge, but will not permit FEI to run its distribution line across the new bridge.
11. The permanent removal of the gas line crossing on the Pattullo Bridge would result in a significant distribution capacity loss potentially affecting approximately 35,000 customers in Burnaby, New Westminster, and Coquitlam³ unless otherwise supplied.
12. FEI must replace the distribution system capacity prior to the demolition of the bridge in order to continue serving customers.⁴
13. FEI has developed a proposal to run a new gas line overland through the City of Burnaby via Sperling Avenue and requests a CPCN so that it can commence construction and meet the scheduling requirements of the Project.⁵
14. Due to the pressing nature of the application, FEI provided its application in two stages with the first section addressing project justification and preliminary alternatives filed on August 31, 2020, and the balance filed on December 15, 2020.

B. PROJECT NEED

15. FEI has provided substantial evidence in its application, responses to information requests and a Final Argument that support the requirement to replace the Pattullo Gas line prior to the demolition of the Pattullo Bridge.
16. The Pattullo Gas Line provides distribution system capacity to supply natural gas to customers in Burnaby, New Westminster and Coquitlam.⁶ It is the largest and most

¹ FEI Final Argument page 2

² FEI Final Argument page 2

³ FEI Final Argument page 2

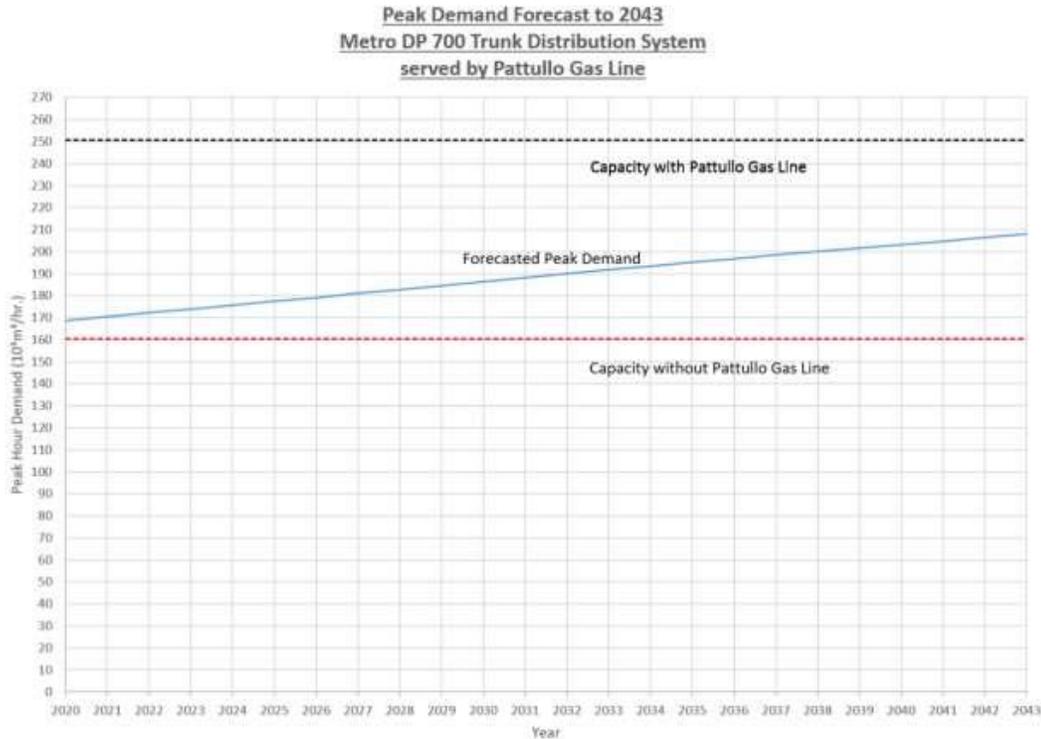
⁴ FEI Final Argument page 2

⁵ FEI Final Argument page 2

⁶ Exhibit B-1-1, page 15

significant feed line into the Metro Vancouver 700 kPa trunk distribution system⁷, and under peak conditions supplies over half of the gas in the trunk distribution system.⁸

17. The following graph illustrates FEI capacity for the affected system with and without the Pattullo Gas Line relative to its forecasted peak demand to 2043.



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IMMEDIACY

18. FEI confirms that loss of the Pattullo Gas Line would not immediately result in a loss of gas supply to customers, but would instead be a risk under design day conditions.¹⁰
19. FEI estimates that the trunk distribution system could not supply the demand requirements of customers during weather colder than minus 10° Celsius (28 degree design day), and that in any given year there is an 11% chance of this, or colder conditions, occurring. At temperatures colder than minus 6° Celsius the stations begin to operate outside the FEI design limits for safe and reliable operation.¹¹

⁷ Exhibit B-1-1, Application page 15

⁸ Exhibit B-14, CEC IR 2.17.1

⁹ Exhibit B-9, CEC IR 1.5.5

¹⁰ Exhibit B-9, CEC IR 1.3.7

¹¹ Exhibit B-9, CEC IR 1.3.7

20. Based on 2020 peak demand, there would be a loss of gas supply to approximately 10,700 customers during the coldest days of the year when peak demand occurs: approximately 2,100 customers in Burnaby, 2,800 customers in New Westminster, and 5,800 customers in Coquitlam.¹²
21. By 2039, an additional 14,800 customers would be affected¹³ because of the expected increase in demand.¹⁴
22. The CEC submits that FEI has clearly established a need to replace the capacity prior to the demolition of the Pattullo Bridge.
23. In CEC IR 1.9.1.2, the CEC inquired as to the customer impacts if there was a delay in the provision of the replacement distribution line, which would not be acceptable.
24. FEI points out the risks identified overall, and notes that even if a low-pressure event were to last only a few hours during the period of highest demand, the restoration process takes considerable time. For outages to thousands of customers, the recovery could span several weeks. Residential and commercial customers could be without heat, hot water or cooking during extreme cold winter conditions.¹⁵
25. FEI also points out that short-term mitigation would not address the underlying need for the Project, and would not be cost-effective nor feasible.¹⁶
26. The CEC finds that FEI has established a clear need for immediate replacement of the gas line.

RESILIENCY

27. The Pattullo Gas Line also provides resiliency to the larger Metro Vancouver Area.¹⁷
28. The Pattullo Gate, by way of the Pattullo Gas Line, serves to compensate if either the Coquitlam Gate or Fraser Gate station is lost. Consequently, the resiliency of FEI's system will erode without the Pattullo Gate Station.¹⁸
29. The PGR Project as proposed will not replace the loss of resiliency that will occur when the Pattullo Gas Line is decommissioned.¹⁹

¹² FEI Final Argument page 6

¹³ Exhibit B-1-1 page 20

¹⁴ Exhibit B-9, CEC IR 1.9.3

¹⁵ Exhibit B-9, CEC IR 1.9.1.2

¹⁶ FEI Final Argument page 11

¹⁷ Exhibit B-1-1, Application page 15

¹⁸ FEI Final Argument page 12

¹⁹ FEI Final Argument page 12

30. FEI states that in order to ensure timely support for the system's capacity it prioritized the replacement of system capacity (as opposed to both capacity and resiliency) in order to meet the Project schedule.²⁰
31. FEI initially pursued alternatives which would replace both the capacity and the resiliency benefits of the existing line.²¹ Both the attachment of a replacement gas line to the new bridge and the trenchless crossing of the Fraser River were found to be not feasible.²²
32. FEI intends to continue evaluating future system improvements to restore resiliency in the Metro Vancouver area distribution system.²³
33. FEI will likely require a separate CPCN to do so, and this will be examined in the next Long Term Resource Plan which will be filed in 2022.²⁴
34. The CEC submits that supporting the resiliency of FEI's system is important and should be pursued as soon as possible.

Alternatives

35. FEI identified 6 main alternatives for the Project, and ultimately selected Alternative 6D, an overland route through Burnaby using Sperling Avenue.
36. FEI initially made high-level assessments of several alternatives, but focussed efforts on Alternative 1 – Attachment to New Bridge.²⁵
37. Alternative 1 included a like-for-like replacement on the new bridge and would have been the most viable option. In addition to avoiding capacity constraints, this option would also have provided the resiliency supporting the Metro Vancouver system, which is not available with the other alternatives. It also had low costs and stakeholder impacts.²⁶
38. FEI made multiple requests over several years for permission to attach a replacement gas line to the new bridge but was unsuccessful in convincing the Ministry of Transportation and Infrastructure (“**MoTI**”) to permit the attachment.²⁷

²⁰ FEI Final Argument page 12

²¹ Exhibit B-1, page 23

²² Exhibit B-1, page 23

²³ Exhibit B-6, BCUC IR 1.5.4

²⁴ FEI Final Argument page 12 and Exhibit B-11, BCUC IR 2.21.1

²⁵ FEI Final Argument page 16

²⁶ FEI Final Argument page 16

²⁷ Exhibit B-1 page 26

39. FEI subsequently developed its alternative options, which included:

Table 4-1: Alternatives and Sub-Alternatives Considered for PGR Project

Alternatives and Sub-Alternatives Considered	
Alternative 1	Attachment to the New Bridge
Alternative 2	Trenchless Crossing of the Fraser River <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Alternative 5A - Liquefied Natural Gas (LNG) • Alternative 5B - Compressed Natural Gas (CNG)
Alternative 6	Overland Gas Line <ul style="list-style-type: none"> • Alternative 6A - Broadway and Gaglardi Way Corridor • Alternative 6B - Cape Horn Gate Corridor • Alternative 6C - Fraser Gate Corridor • Alternative 6D – Sperling Avenue Corridor

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40. Several of the options had varying parameters.

41. FEI provides high-level details of each option in Section 4 of its application, however all options except Alternative 6 were deemed to not be feasible for the reasons outlined, many of which included the inability to meet project schedule.

TIMELINE IMPACT ON ALTERNATIVE SELECTION

42. The CEC is concerned with the overall timing of the application, and the potential impacts of FEI’s approach to the project.

43. The significant timing constraints identified throughout the application could suggest that FEI might not have anticipated the need for a project without the new bridge option early enough to provide sufficient degrees of freedom in choosing its best Alternative.

44. The CEC does acknowledge that FEI would not have considered any other options if it had earlier information.²⁹

²⁸ Exhibit B-1-1, page 23

²⁹ Exhibit B-9, CEC IR 1.8.2

45. The CEC notes that FEI was notified by Translink in June 2017 that the Pattullo Bridge was being replaced.³⁰
46. FEI was advised a year later, in mid-2018, that it would not be permitted to install a natural gas pipeline on the New Bridge. The company began to focus on the next lowest cost option in late 2018.³¹
47. It was not until determining that Option 2 was not feasible, in August 2019, that FEI proceeded to analyse other alternatives.³²
48. In its application, FEI states that:

FEI pursued Alternative 1 – Attachment to the New Bridge, through multiple submissions to TransLink and MoTI in an effort to obtain approval to install a natural gas line on the New Bridge.

In a letter dated July 3, 2018 MoTI communicated its decision to not allow FEI to install a replacement natural gas line on the New Bridge. The rationale provided was as follows:

1. MoTI's Utility Policy Manual notes that while DP and IP natural pipelines can sometimes be accommodated on provincial bridges, such pipelines are only considered when other crossing alternates are not feasible or if the alternate approaches result in environmental risk or other sensitivities. Fortis has developed potential alternate solutions.
2. MoTI's policies of restricting natural gas pipelines on bridges are in line with other North American jurisdictions, where such installations are highly discouraged and only allowed as a last resort when no other feasible crossing alternative exists.
3. The New Bridge will be designed as a lifeline structure with the highest standard of seismic design, requiring the New Bridge to be usable by traffic after a seismic event for both emergency response and economic recovery. The bridge is a key link between communities. The presence of a natural gas pipeline represents a significant risk to the reliability of the structure post a major seismic event that impacts the Greater Vancouver region.³³

49. FEI goes on to point out additional communications they had with MoTI, and note that they received further communications in October 2018, and final verbal confirmation in January 2020 that they would not be permitted to use the New Bridge for a replacement gas line.

³⁰ Exhibit B-9, CEC IR 1.8.1

³¹ Exhibit B-9, CEC IR 1.8.1 and Exhibit B-1-1 page 25

³² Exhibit B-1, page 24-26

³³ Exhibit B-1-1, pages 27-28

50. They state:

‘Having exhausted all possibilities for approval by MoTI, FEI concluded that this alternative was not feasible’.³⁴

51. While the CEC applauds FEI’s significant efforts to make use of the best available option, it appears FEI may have had too great an expectation that the replacement line on the bridge would be permitted. This focus potentially postponed more detailed examination of other alternatives to such an extent that they reduced their viability due to scheduling requirements.

52. After discovering Alternative 1 was not feasible, FEI pursued Alternative 2 and its sub-options to a significant level³⁵, which were also deemed to not be constructible due to the compounding of impacts, one of which included timing related issues (Alternative 2C).³⁶

53. After determining that Alternative 2 was not feasible, FEI proceeded to analyse all other alternatives beginning in August 2019³⁷ with the following results:

Alternative 3 - ‘Through Richmond with Fraser River Crossing’ was not deemed feasible because ‘these alternatives pose a significant schedule risk and cannot be constructed prior to the Pattullo Bridge demolition and decommissioning.’³⁸

Alternative 4 - ‘Ariel Gas Line Crossing’ was screened out based on its inability to meet the schedule requirements³⁹ which included long lead time permitting requirements and cumulative impact concerns.⁴⁰

54. In CEC IR 1.12.1, FEI states:

Consistent with AACE RP 27R-03 Schedule Classification System, a schedule for Alternative 4 was completed at a semi-detailed level which concluded that it would not have met the Pattullo Bridge Replacement project timelines.⁴¹

55. FEI was unable to provide a brief analysis of Alternative 4 and does not have historical cost data as a basis to develop a high-level cost estimate.⁴²

³⁴ Exhibit B-1-1, page 28

³⁵ Exhibit B-6, BCUC IR 1.7 series

³⁶ Exhibit B-9, CEC IR 1.11.1.2

³⁷ Exhibit B-1-1, page 25

³⁸ Exhibit B-1-1, page 36

³⁹ Exhibit B-1, pages 37-38

⁴⁰ FEI Final Argument page 15

⁴¹ Exhibit B-9, CEC IR 1.12.1

⁴² Exhibit B-9, CEC IR 1.12.2

56. Alternative 5A ‘Peak Shaving Facility/Virtual Gas Line - Liquefied Natural Gas’ was determined to be not feasible due to technical and logistical barriers, but was also impacted by timing issues.
57. FEI states:
- Finding an appropriate site for a tank of this size within New Westminster, Burnaby or Coquitlam would be challenging, and the timeline to complete this alternative would exceed the Project schedule timelines.⁴³
58. FEI was unable to provide an NPV for Alternative 5A as there was insufficient information developed, but did note the sizeable costs related to the Tilbury expansion.⁴⁴
59. In CEC IR 1.11.1.2, FEI states that:
- “To clarify, no alternatives were dismissed solely ‘because of timing’.... In order to be responsive to CEC’s request, FEI speculates that had it further developed a horizontal directional drilling (“**HDD**”) alternative prior to MoTI starting their competitive bidding process, it is possible some of the ...challenges could have been addressed through early engagement...”
60. FEI goes on to point out that inherent design and construction risk would have remained, among other concerns which may not have been addressed even with the benefit of additional time.⁴⁵
61. The CEC notes that screening out three significant alternatives based on schedule-related risks means that high-level financials were not developed for a large number of the alternatives, thus diminishing the pool of potentially cost-effective and otherwise viable options.
62. Finally, as FEI had to prioritize the replacement of system capacity in order to meet the Project schedule, it remains unclear if other options might have been developed which also addressed the issue of resiliency. These must now be the subject of an additional, future CPCN.

ROUTE SELECTION

63. FEI states that its route selection and design process for the PGR Project follows industry practice and considers the recommendations of the Canadian Standards Association standard CSA Z662:19 Oil and Gas System Pipelines.⁴⁶ Gas line routing is an ‘iterative

⁴³ Exhibit B-1, page 39

⁴⁴ Exhibit B-9, CEC IR 1.13.1 and IR 1.13.2

⁴⁵ Exhibit B-9, CEC IR 1.11.1

⁴⁶ Exhibit B-1-1, page 58

process’ starting with a corridor of interest and narrowing the corridor to a defined area as the data allows.⁴⁷

64. FEI initially identified three options for Alternative 6, which included:
 - a) Broadway Gaglardi corridor;
 - b) Cape Horn Gate corridor; and
 - c) Fraser Gate corridor.
65. This was later expanded to include:
 - d) Sperling Avenue corridor.
66. Alternatives 6B and 6C were eventually screened out, resulting in a final comparison of 6A and 6D.

Table 4-7: Overall Alternative Evaluation Summary

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

48

67. Alternative 6D, Sperling Avenue Route, is the only route with the support of the City of Burnaby.⁴⁹

⁴⁷ Exhibit B-1-1, page 58

⁴⁸ FEI Final Argument page 21

⁴⁹ FEI Final Argument page 25

68. FEI selected Alternative 6D, and the proposed overland route is along Sperling Avenue in Burnaby as indicated below:

Figure 1: Preferred Route Alignment along Sperling Avenue



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69. FEI used the following criteria to select the route as provided in pages 53-55 of the amended application.

⁵⁰ FEI Final Argument page 30

Table 4-9: Financial Evaluation Summary

	Alternative 6A: Gaglardi Route (Class 4)	Alternative 6D: Sperling Route (Class 4)
Total Capital Costs, AACE Class 4, 2020 (\$ millions)	173.313	175.354
PV of Incremental Revenue Requirement ²² over 68 years (\$ millions)	176.881	178.560
Levelized Delivery Rate Impact over 68 years (in %)	1.13%	1.14%
Levelized Delivery Rate Impact over 68 years (in \$/GJ)	0.0510	0.0515
Average Residential UPC (in GJ/yr)	90.00	90.00
Average Residential Bill Impact per year over 68 years (in \$)	4.59	4.64
Financial Evaluation Score	3	3

70. The final scoring analysis was established as below.

Table 4-10: Overall Alternative Evaluation Summary

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

Note:

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

71. FEI conducted further route design analysis as presented in the amended application at pages 60 through 65.

⁵¹ Exhibit B-1-1 page 55

Table 5-2: Gas Line Route Evaluation Weighting⁵²

Criterion	Weighting	Evaluation
Community and Stakeholder Considerations Weighting		
Health and Safety	10	Assessment of the construction zone environment, nature of the planned construction activities and proximity to vulnerable entities.
Traffic Impacts	12.5	Roadway usage impacts, number of intersections impacted, number of commercial accesses impacted, etc.
Socio-Economic	7.5	Properties and businesses directly impacted during construction and nature of impacts, community infrastructure impacted (e.g. schools, hospitals, recreation centers, etc.)
Sub-total:	30	
Environmental Considerations Weighting		
Ecology	5	Natural and environmentally sensitive areas impacted.
Cultural heritage	5	Culturally sensitive areas impacted.
Human Environment	12.5	Nature and proximity of visual, noise and vibration impacts, residential accesses impeded, etc.
Sub-total:	22.5	
Technical Considerations Weighting		
Construction	15	Type of construction required, pipe installation productivity, length of gas line, and overall construction footprint, etc.
Operation	10	Areas of potential operational difficulty identified.
Adjacent infrastructure	10	Type of adjacent infrastructure, proximity and spacing, planned infrastructure, ability to manage sufficient clearances, etc.
Project Execution Certainty	12.5	An evaluation of impacts such items as regulatory permitting, timeline/schedule, budget certainty, scope certainty, environmental and archaeological impacts, geotechnical conditions and various constructability considerations (including resources).
Sub-total:	47.5	
Total	100	

52

Table 5-3: Route Evaluation Scoring

Score	Impact Evaluation
5	Very low (negligible) impact, best choice
4	Low impact, better choice
3	Moderate impact, good choice
2	High negative impact, poor choice
1	Very high negative (unacceptable) impact, not feasible

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72. FEI stated that it ‘implicitly considered costs’ in each of the categories, but did not consider least cost as a route evaluation criterion on its own, as the impacts on costs are inherent to any challenges associated with a specific criterion.⁵⁴

⁵² Exhibit B-1-1 pages 60 and 61

⁵³ Exhibit B-1-1 pages 60 and 61

⁵⁴ Exhibit B-14, CEC IR 2.22.1

73. The CEC inquired if FEI could definitively state that it had selected the most cost-effective route, to which FEI replied:

FEI can definitively state that it has selected the most cost-effective route considering the evaluation criteria in Table 5-1 of the Amended Application. The preferred route poses the least risk to the community and stakeholders, the environment, cultural heritage, construction, operations, adjacent infrastructure and project execution certainty. FEI implicitly considered both cost and schedule risk when completing the route evaluation. While FEI did not complete cost estimates for every possible route alignment and therefore cannot definitively say the preferred route is the least cost, the preferred route minimizes impacts to all criteria without adding extensive length, which means that it is likely the least cost route.

55

74. Table 5-1 is reproduced below.

Table 5-1: Gas Line Route Evaluation Criteria Definitions

Category 1: Community and Stakeholder Considerations	
Health and Safety	Considers the risks to the community, stakeholders, employees, and contractors during construction and during the life of the gas line.
Traffic Impacts	Considers the direct and indirect effects of the Project on traffic and commercial/residential access during construction of the gas line.
Socio-Economic	Considers the effect of the Project on the cultural values, economic well-being, and daily life for local stakeholders and citizens during construction and during the life of the gas line.
Category 2: Environmental Considerations	
Ecology	Considers the impact during construction and during the life of the gas line to the environment including environmentally sensitive areas along the project corridor.
Cultural Heritage	Considers the impact during construction and during the life of the gas line to known archaeology and culturally sensitive areas at the project site.
Human Environment	Considers the impact of the Project to the human environment including noise, local emissions, aesthetics, nuisance factor and the short and long-term effects that may be observed by residents and visitors in the project area.
Category 3: Technical Considerations	
Construction	Considers the existing above and belowground constraints in terms of gas line construction activities, pipe-laying productivity, requirements for non-standard higher risk construction techniques, and construction footprint.
Operation	Considers long-term impacts including those to employees and contractors to maintain the gas line integrity and complete maintenance and repairs. Also considers impacts to adjacent development and third party land ownership and use.
Adjacent Infrastructure	Considers the potential impacts on adjacent (existing and planned) facilities and buried/above ground utility infrastructure and risk to longevity and safe operation of the gas line and facilities from adjacent infrastructure.
Project Execution Certainty	Considers the impact of compounding risks associated with the criteria in Categories 1, 2 and 3.

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⁵⁵ Exhibit B-14, CEC IR 2.22.2.2

⁵⁶ Exhibit B-1-1, page 60

75. The CEC submits that cost-effectiveness should generally be considered in an explicit manner.
76. While the CEC accepts FEI’s statement that cost-effectiveness is implicit in resolving the stated issues, it could nonetheless potentially be addressed as a separate item in future projects.

TIMING IMPACT ON ROUTE SELECTION

77. When comparing its Alternative 6A, 6B and 6C options, FEI noted that Alternative 6A was the only route analysed that could be constructed in time to allow FEI to decommission the Pattullo Gas Line before MoTI’s scheduled demolition of the Pattullo Bridge⁵⁷, whereas Alternatives 6B and 6C would not be feasible because they could not meet Project schedule requirements.⁵⁸
78. The CEC acknowledges that Alternative 6A had superior financial impacts relative to options 6B and 6C⁵⁹, but is nonetheless concerned that the schedule issues potentially had a significant influence on the ultimate route selection.
79. In its application FEI states that:

“In order to meet the stringent PGR Project schedule requirements driven by the Pattullo Bridge Replacement Project, FEI weighted schedule impacts highest.”⁶⁰
80. FEI assigned a 54% weighting to schedule impacts and only a 10% weighting to Financial criteria (defined as the Levelized Delivery Rate Impact),⁶¹ and 13.5% to Environmental and Archaeological impacts.

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

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

⁵⁷ FEI Final Argument page 22

⁵⁸ FEI Final Argument page 22

⁵⁹ FEI Final Argument page 21

⁶⁰ Exhibit B-1-1, page 2 and page 44

⁶¹ Exhibit B-1-1, page 55

⁶² Exhibit B-1-1, page 45

81. FEI states that the non-financial weightings were determined through collaborative discussions with FEI subject matter experts⁶³ which were provided in Burnaby IR 1.5.1.
82. In its response to CEC IR 1.14.2, FEI states that:
- “As explained in the Application, FEI must undertake and complete the Project in advance of the scheduled Pattullo Bridge demolition to continue providing safe and reliable gas service to its customers. Consequently, FEI ‘heavily weighted non-financial criteria including schedule impacts as compared to financial criteria.’”⁶⁴
83. The CEC considers a 10% weighting to Financial - Delivery Rate Impact to be very low, though potentially appropriate under the current circumstances.
84. FEI has previously weighted financial evaluation criteria in other applications between 10% and 35%.⁶⁵
85. The CEC does not dispute that the proposed route may be the best option available at this time and under the given circumstances, and notes the Sperling Avenue route is the only route supported by the City of Burnaby.
86. In fact, the financial evaluation of the two options are nearly equal in Capital Costs and PV of Incremental Revenue Requirements.

Table 4-9: Financial Evaluation Summary

	Alternative 6A: Gaglardi Route (Class 4)	Alternative 6D: Sperling Route (Class 4)
Total Capital Costs, AACE Class 4, 2020 (\$ millions)	173.313	175.354
PV of Incremental Revenue Requirement²² over 68 years (\$ millions)	176.881	178.560
Levelized Delivery Rate Impact over 68 years (in %)	1.13%	1.14%
Levelized Delivery Rate Impact over 68 years (in \$/GJ)	0.0510	0.0515
Average Residential UPC (in GJ/yr)	90.00	90.00
Average Residential Bill Impact per year over 68 years (in \$)	4.59	4.64
Financial Evaluation Score	3	3

⁶³ Exhibit B-1, pages 45 and 46, and FEI Final Argument page 20

⁶⁴ Exhibit B-9, CEC IR 1.14.2

⁶⁵ Exhibit B-9, CEC IR 1.14.2

87. Nonetheless, had the Schedule Impacts been weighted significantly lower and the environmental and archaeological impacts rated higher, it is conceivable that the decision-making might have been different.

Table 4-10: Overall Alternative Evaluation Summary

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

Note:

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

88. FEI states that it conducted a sensitivity analysis to confirm the impacts of the weightings, and the results indicated no change to the preferred alternative.⁶⁷
89. The CEC notes that FEI has not yet completed all aspects of the detailed design. FEI will complete the detailed design to achieve a fully engineered and defined final route alignment reflecting consultation environmental and technical considerations.⁶⁸
90. In the event that this process results in a material change to the proposed route alignment (i.e., a portion of the gas line cannot be constructed in the approved route), FEI will file an application for approval from the BCUC to modify the route at least 90 days before construction is proposed to commence. To support the material change to the route alignment, FEI’s application will include the justification, incremental cost and schedule impacts, and additional risks including associated consultation, technical and environmental considerations.⁶⁹ They note that this is consistent with BCUC’s direction to FEI in its Decision and Order G-11-15, granting a CPCN for FEI’s Lower Mainland Intermediate Pressure System Upgrade Project.⁷⁰

⁶⁶ Exhibit B-1-1 page 55

⁶⁷ Exhibit B-11, BCUC IR2.24.8

⁶⁸ FEI Final Argument page 30

⁶⁹ FEI Final Argument page 30

⁷⁰ FEI Final Argument page 30

C. PROJECT DESCRIPTION AND COST ESTIMATE

91. The proposed Project includes:
- the installation of a 5.6 km of NPS 20 (508 mm) gas line that will operate at a Maximum Operating Pressure (“**MOP**”) of 2,070 kPa;
 - a new underground district pressure regulating station (“**PRS**”);
 - 50 meters of new NPS 20 gas line operating at a MOP of 700 to connect the PRS to the existing trunk distribution centre.⁷¹
92. The Project scope includes:
- abandoning and removing the Pattullo Gate Station in the City of Surrey and approximately 800 meters of NPS 20 gas line affixed to the Pattullo Bridge;
 - abandoning in place an additional 1.2 km of NPS pipeline in the City of Surrey; and
 - modifying approximately 5.5 km of NPS 18 transmission gas line and associated work.
93. FEI has responded to multiple information requests regarding its proposed Project details which the CEC finds to be generally satisfactory, although many of the design details are not yet finalized.
94. 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.⁷²
95. FEI has finalized the preferred crossing methods for the three major crossings required, and proposes to use a trenchless methodology.⁷³ Since the filing of the application, FEI completed further work into the crossing methods which is outlined in the Final Argument at pages 31-32.
96. It has identified key areas of potential challenges which it expects to manage adequately given its existing experience.⁷⁴
97. FEI will include In-line Inspection capability that is consistent with FEI’s practices for new construction of similar pipelines and facilities in anticipation of integrity and asset management practices.⁷⁵
98. FEI has demonstrated reasonable expectations for receiving necessary approvals, such as from the BC Oil and Gas Commission.⁷⁶

⁷¹ Exhibit B-1-1, page 57

⁷² Exhibit B-11, BCUC IR 2.20.1

⁷³ Exhibit B-11, BCUC IR 2.27 series

⁷⁴ Exhibit B-11, BCUC IR 2.28 series

⁷⁵ Exhibit B-14, CEC IR 2.23.1

99. FEI's agreement with the City of Surrey permits the abandonment of the existing gas line.⁷⁷
100. The CEC notes that the capacity with the PGR Gas Line will exceed that currently available with the existing Pattullo Gas Line by approximately 8%.⁷⁸
101. FEI summarizes its rationale for the Project pipe sizing at pages 27 to 28 of its Final Argument.
102. FEI points out that the only material cost reduction that could be undertaken would be to reduce the diameter of the pipe.⁷⁹
103. FEI describes the need for the NPS 20 pipeline in BCUC 2.31.3.1 and notes that a smaller diameter pipe would result in minimal savings and meet capacity requirements for only 3 years after project completion. FEI would need to replace the gas line with a larger diameter pipe within a relatively short time period.⁸⁰
104. The CEC has reviewed the evidence and accepts these statements as appropriate.
105. FEI provides the following graph illustrating that it would expect to have capacity constraints within approximately 20 years.

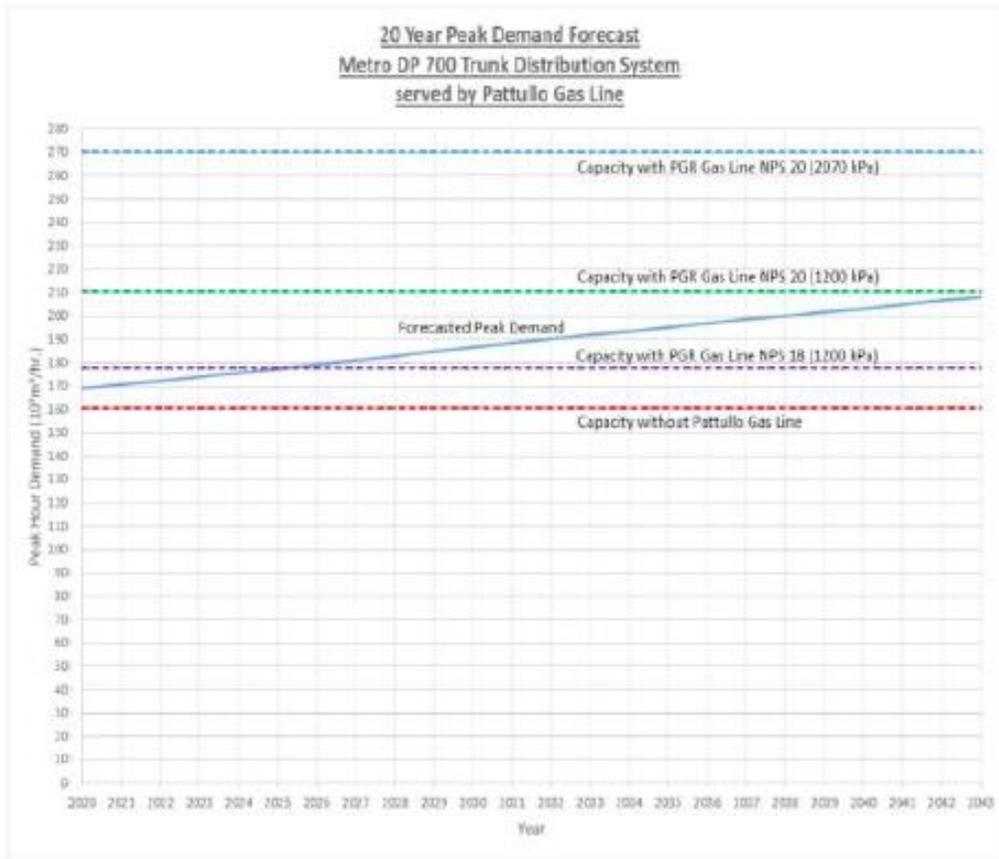
⁷⁶ Exhibit B-11, BCUC IR 2.30.3

⁷⁷ Exhibit B-14, CEC IR 2.24.1

⁷⁸ Exhibit B-11, BCUC IR 2.31.1

⁷⁹ FEI Final Argument page 28

⁸⁰ Exhibit B-11, BCUC IR 2.31.3.1



- 106. The CEC notes in the graph above that a line at 1200 kPa would meet forecast Peak Demand through to 2043 but did not find evidence to suggest that such an option was viable or cost effective.
- 107. The CEC submits that it is reasonable to plan for future capacity increases as proposed and supports FEI’s project scope as being reasonable.

Cost Estimate

- 108. The cost estimate for the Project is estimated at \$175.354 million in as-spent dollars including AFUDC,⁸² with a levelized Delivery Rate Impact of 1.14% over 68 years.⁸³

⁸¹ FEI Final Argument page 29

⁸² FEI Final Argument page 26

⁸³ Exhibit B-1-1 page 55

Table 4-9: Financial Evaluation Summary

	Alternative 6A: Gaglardi Route (Class 4)	Alternative 6D: Sperling Route (Class 4)
Total Capital Costs, AACE Class 4, 2020 (\$ millions)	173.313	175.354
PV of Incremental Revenue Requirement ²² over 68 years (\$ millions)	176.881	178.560
Levelized Delivery Rate Impact over 68 years (in %)	1.13%	1.14%
Levelized Delivery Rate Impact over 68 years (in \$/GJ)	0.0510	0.0515
Average Residential UPC (in GJ/yr)	90.00	90.00
Average Residential Bill Impact per year over 68 years (in \$)	4.59	4.64
Financial Evaluation Score	3	3

84

109. The following provides a breakdown of the capital cost estimate.

Table 6-1: Breakdown of the PGR Project 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 \$)

85

110. FEI's cost estimate was conducted at AACE Class 4 level,⁸⁶ which is a lesser standard than the Class 3 estimate recommended in CPCN Guidelines and typically provided in CPCN applications, and is discussed further below.

⁸⁴ Exhibit B-1-1 page 55

⁸⁵ Exhibit B-1-1, page 90

⁸⁶ FEI Final Argument page 33

111. The expected accuracy range of the Project's Class 4 estimate is approximately -20% to +27%, which is between the expected accuracy range for a Class 3 estimate (Low: -10% to -20%, High: +10% to +30%) and a Class 4 (Low: -15% to -30%, High: +20% to +50%) cost estimate.⁸⁷
112. FEI completed planning and design activities to improve the maturity level of project definition deliverables beyond the requirements of a typical AACE Class 4 cost estimate, as outlined in CEC IR 2.20.1.
113. The estimate was validated by both internal reviews and independent third-party reviews.⁸⁸
114. The CEC has reviewed the evidence and is satisfied that it has been completed appropriately for the AACE Class 4 costing requirements.
115. FEI states that the next step will be completion of the Class 3 deliverables to achieve the 30% design milestone and the associated cost estimate would be completed by May 26, 2021.⁸⁹
116. The CEC notes that as of February 18, 2021, FEI had not yet reached the 30% design milestone, but is expected to do so by February 26, 2021,⁹⁰ and FEI intends to develop a Class 3 estimate before it contracts out work.⁹¹
117. The CEC also notes that while a Class 4 estimate has a wider range of accuracy than a Class 3 estimate, only prudently incurred costs may be recovered from ratepayers⁹², and the Project need is overwhelming.
118. Overall, the CEC accepts the FEI cost estimate with the caveat that FEI undertakes the appropriate Class 3 estimates before contracting out work, and provides ongoing reporting to the Commission with regard to significant changes as indicated by FEI in its Final Argument.⁹³

⁸⁷ FEI Final Argument page 34

⁸⁸ Exhibit B-14, CEC IR 2.29 series

⁸⁹ Exhibit B-14, CEC IR 2.26.6

⁹⁰ Exhibit B-14, CEC IR 2.26.6

⁹¹ Exhibit B-14, CEC IR 1.20.3

⁹² Exhibit B-1-1 page 3

⁹³ FEI Final Argument page 30

TIMING IMPACT ON COST ESTIMATE

119. The CEC notes that the cost estimate was undertaken at a Class 4 level instead of a Class 3 as a result of the tight schedule of the application. At page 2 of its application FEI states that:

“...in order to commence the regulatory review process and meet the Project Schedule, FEI is providing the PGR Project cost estimate at an AACE Class 4 level of project definition”.⁹⁴

120. FEI goes on to point out why they consider that the BCUC should accept a Class 4 estimate as providing sufficient information for such a Project.

121. FEI also states that:

“(it has) demonstrated that variations in the AACE Class 4 cost estimate range, even at the extremes, would not change the results of the analysis. The two alternatives are equivalent when compared financially, even if the low (P10) and high (P90) range of cost estimates are considered.”

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

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

95

122. While the CEC appreciates that FEI has undertaken significant steps to mitigate the risks associated with the Class 4 cost estimate, the CEC remains concerned that the Class 4 analysis could potentially have resulted in less than optimal decision-making from a cost-effectiveness perspective if the changes were more significant than anticipated by the P10/P90 cost estimate suggested.

⁹⁴ Exhibit B-1-1, page 2

⁹⁵ Exhibit B-11, BCUC IR 2.24.7

123. The CEC notes that the move from a Class 5 to Class 4 cost analysis of option 6A resulted in an increase of about \$50 million (from \$125.6 million to \$176.88 million) or about a 40% increase over the original Class 5 estimate.

Table 4-6: Financial Evaluation Summary

	Alternative 6A: Broadway and Gaglardi Way Corridor	Alternative 6B: Cape Horn Gate Corridor	Alternative 6C: Fraser Gate Corridor
Total Capital Costs, AACE Class 5, 2019 (\$ millions)	122.2	184.3	167.3
PV of Incremental Revenue Requirement¹⁹ over 68 years (\$ millions)	125.6	189.6	171.2

96

Table 4-9: Financial Evaluation Summary

	Alternative 6A: Gaglardi Route (Class 4)	Alternative 6D: Sperling Route (Class 4)
Total Capital Costs, AACE Class 4, 2020 (\$ millions)	173.313	175.354
PV of Incremental Revenue Requirement²² over 68 years (\$ millions)	176.881	178.560
Levelized Delivery Rate Impact over 68 years (in %)	1.13%	1.14%
Levelized Delivery Rate Impact over 68 years (in \$/GJ)	0.0510	0.0515
Average Residential UPC (in GJ/yr)	90.00	90.00
Average Residential Bill Impact per year over 68 years (in \$)	4.59	4.64
Financial Evaluation Score	3	3

97

124. The CEC is concerned with the use of a Class 4 estimate when comparing alternatives and presenting them in the CPCN application given the significant changes that can occur in refining the cost estimates.

Rate Impact

125. As noted earlier in these submissions, the PGR Project has a levelized Delivery Rate Impact of 1.14% over 68 years.⁹⁸

⁹⁶ Exhibit B-1-1, page 47

⁹⁷ Exhibit B-1-1 page 55

126. FEI provides estimated average bill impacts per year for each customer class in CEC 2.21.1.

Average Bill Impact (\$)	Avg. Use per Customer (UPC) In GJ	Alternative 6A: Gaglardi Route (Class 4)		Alternative 6D: Sperling Route (Class 4)	
Levelized Delivery Rate Impact Over 68 years (\$/GJ)		\$ 0.0510	1.13%	\$ 0.0515	1.14%
Residential					
Rate Schedule 1	90	\$ 4.6	0.76%	\$ 4.6	0.77%
Commercial					
Rate Schedule 2	340	\$ 17.3	1.05%	\$ 17.5	1.06%
Rate Schedule 3	3,770	192.3	1.35%	194.2	1.37%
Industrial					
Rate Schedule 4	9,050	\$ 461.6	2.22%	\$ 466.1	2.24%
Rate Schedule 5	16,240	828.2	1.82%	836.4	1.84%
Rate Schedule 6	2,060	105.1	1.51%	106.1	1.53%
Rate Schedule 7	177,950	9,075.5	3.25%	9,164.4	3.29%

99

127. The PGR Project will have incremental delivery rate impacts from 2022 to 2025 as described at page 96 of the amended application. The impacts relate to the amortization of PGR Application and Preliminary Stage Development Costs deferral account, the in-service placement of new IP pipeline and PTR in the City of Burnaby, and the decommissioning and abandonment costs of the Pattullo Gas line.¹⁰⁰

Table 6-6: 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			

⁹⁸ Exhibit B-1-1 page 55

⁹⁹ Exhibit B-14, CEC IR 1.21.1

¹⁰⁰ Exhibit B-1-1 page 95

128. The average annual delivery rate impact over the four years from 2022 to 2025 is estimated at 0.39%, and an estimated delivery rate impact of 1.57% in 2025 when all construction is completed and capital costs have entered rate base.¹⁰¹
129. Overall the CEC finds that the proposed rate impacts are acceptable given the importance of the replacement project.

Project Life Analysis

130. FEI used 68 years for the financial analysis of the Project, which was reduced from its original analysis of 74, and then altered to 77 years.¹⁰²
131. FEI further changed the analysis period to 68 years to reflect the Average Service Life (“**ASL**”) of pipeline at 65 years pursuant to FEI’s 2017 Depreciation plus three years for construction.¹⁰³ FEI used 60 years for the LMIPSU project based on an ASL of 64 years, apparently not accounting for the project construction time as included in the PGR Project.¹⁰⁴
132. The CEC acknowledges that the change is immaterial in terms of rate impact¹⁰⁵ but submits it would be appropriate for FEI to use a consistent methodology in establishing the Project Life for its financial analysis.
133. The CEC finds the calculations in this case to be founded on reasonable inputs and considers them to be acceptable.

D. PROJECT MANAGEMENT

134. FEI is using a Construction Manager at Risk (“**CMAR**”) project delivery methodology in which the Owner contracts with two separate firms for Design and Contracting. Additionally, the Project Delivery model will use an Open Book cost estimating process.¹⁰⁶
135. FEI provides substantial detail supporting the appropriateness of its contracting methodology in the CEC IR 2.26 series.
136. FEI provides substantial detail supporting the appropriateness of its contractor and Owner’s Engineer selection methodology in the CEC IR 2.27 series.
137. The CEC finds the Project Delivery methodology to be appropriate for the Project.

¹⁰¹ FEI Final Argument page 27

¹⁰² Exhibit B-9, CEC IR 1.3.5 and 1.3.6

¹⁰³ Exhibit B-11, BCUC IR 2.24.2

¹⁰⁴ Exhibit B-11, BCUC IR 2.24.3

¹⁰⁵ Exhibit B-11, BCUC IR 2.24.3

¹⁰⁶ Exhibit B-14, CEC IR 2.26 series

Project Schedule

138. FEI provides the basis of its Project schedule in its amended application at page 74, and further details in Appendices C-4, and F.

Table 5-10: Project Schedule and Milestones

Activity	Milestone Date
Consultant / Contractor Selection	
Procure Detailed Engineering Services	Dec 2020
Procure Contractor Services	Nov 2020
Detailed Design and Constructability Reviews	
30% Design Package	Feb 2021
60% Design Package	March 2021
90% Design Package	May 2021
Issued for Construction Package	July 2021
Obtain Permit Approvals	
BCOGC Permits – Early Works	Sept 2021
BCOGC Permits – Mainline and Facilities	Jan 2022
Federal Permits (Department of Fisheries and Oceans, Species at Risk Act)	Jan 2022

Activity	Milestone Date
Ministry of Transportation and Infrastructure Permits	Jan 2022
Municipal Permits	Jan 2022
Third Party Utility Permits	Jan 2022
Environmental and Archaeological Permits	Jan 2022
Procurement	
Procure Line Pipe	Mar 2021
Construction Contract Award	
30% Design – Cost Estimate Submission	March 2021
60% Design – Cost Estimate Submission	April 2021
90% Design – Cost Estimate Submission	June 2021
Award Mainline Construction Contract	Sept 2021
Mobilization to Site	
Mobilization for Early Works	Oct 2021
Mainline and Facilities Construction	
Mainline and Facilities Construction	Apr 2022 - Sept 2022
Mechanical Completion	Oct 2022
Commissioning	Oct 2022 – Dec 2022
Restoration and Demobilization	Sep 2022 - Dec 2022
Decommissioning and Abandonment	
Decommissioning of Pattullo Gas Line	Jan 2023 - Mar 2023
Abandonment of Pattullo Gas Line	Jan 2023 - Mar 2023
Infrastructure Modifications	Apr 2023 – July 2023
Project Close Out	Oct 2022 – July 2023

139. FEI appears to be on schedule and has completed the activities related to procuring contractor services and achieved the December 2020 milestone. FEI deferred the Procure Detailed Engineering Services until February 2021, however this is not on the schedule's critical path.¹⁰⁷
140. The CEC is satisfied that the Project Schedule is appropriately developed, but is concerned that there is little room for project delay, and could potentially result in greater costs in order to complete the Project within a hard deadline.
141. The CEC notes that the Project Close Out does not occur until October 2022-2023, or immediately before the scheduled demolition of the Pattullo Bridge.

Risk Mitigation and Environmental and Archaeological Impacts

142. The CEC has reviewed the evidence with respect to FEI's proposed risk mitigation and finds it to be satisfactory.
143. FEI engaged risk specialist 'Yohannes Project Consulting Inc.' to conduct a qualitative risk analysis to identify and assess all of the risks associated with the project.¹⁰⁸ Validation Estimating completed the contingency estimation using quantitative analysis.¹⁰⁹
144. FEI provided a Risk Assessment Matrix and completed a Risk Register, Qualitative Assessment and Action Plan.¹¹⁰ The risk register is used to identify all project risks and categorize each risk as either a project-specific or a systemic risk.
145. FEI confirms that the contingency estimate for the PGR Project covers both project specific risk and systemic risks identified in the risk register.¹¹¹
146. FEI confirms that it adhered to standard risk analyses conducted by third parties in the CEC IR 2.30 series.
147. FEI has a risk management framework in place for identifying, managing and monitoring project risks thought the Project's lifecycle.¹¹²
148. FEI provides an overview of its proposed methods to manage environmental and archaeological impacts in Section 6 of its Final Argument, which the CEC finds to be satisfactory.

¹⁰⁷ Exhibit B-14, CEC IR 2.25.1.2

¹⁰⁸ Exhibit B-1-1, pages 84-86

¹⁰⁹ Exhibit B-1-1, pages 84-86

¹¹⁰ Exhibit B-1-1, pages 84-86

¹¹¹ Exhibit B-11, BCUC IR 2.24.6.1

¹¹² FEI Final Argument page 38

E. PGR APPLICATION AND DEVELOPMENT COSTS DEFERRAL ACCOUNT

149. FEI is seeking BCUC approval under sections 59 to 61 of the *Utilities Commission Act* for deferral treatment of the Application and Preliminary Stage Development costs.¹¹³

150. The forecast balance in the account is \$2.856 million as follows:

Project Application costs	Regulatory preparation and disposition of the Application	\$350,000
Project Development	Actual costs incurred to January 31, 2020	\$2,506,000
Total		\$2,856,000

114

151. FEI proposes to record the costs in a new non-rate base deferral account, ‘PGR Application and Preliminary Stage Development Costs Deferral Account’ attracting FEI’s weighted average cost of capital (“WACC”) until it enters rate base.

152. FEI proposes to transfer the balance to rate base on January 1, 2022 and commence amortization over 3 years.

153. FEI states that while a 1- or 2-year amortization period would also be reasonable, the 3-year amortization period is consistent with certain other similar accounts.¹¹⁵

154. Amortization over 1 year would result in a slightly higher cost/GJ, but a lower cumulative financing cost as noted below.

	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

155. The CEC submits that a 3-year amortization period is acceptable, however a 1-year amortization could be preferable in that it reduces the cumulative financing costs by about \$150,000.

156. The CEC accepts FEI’s argument that a WACC financing return is appropriate based on previous Commission decisions.¹¹⁶

¹¹³ FEI Final Argument page 38

¹¹⁴ FEI Final Argument page 38

¹¹⁵ FEI Final Argument page 39

¹¹⁶ FEI Final Argument page 41

F. REVIEW AND REPORTING

157. As noted earlier in these submissions, if there is a material change to the proposed route alignment FEI will file an application for approval from the BCUC to modify the route at least 90 days before construction is proposed to commence and will include the justification, incremental cost and schedule impacts, and additional risks.¹¹⁷
158. In the CEC IR 2.31 series, the CEC inquired as to whether or not customers were responsible for actual or estimated costs, and potential repercussions if costs were judged to be imprudent in hindsight.
159. FEI replied:
- “FEI expects to provide periodic reporting to the BCUC following the decision approving a CPCN. Consistent with other recent FEI CPCN decisions, the utility expects that it will be required to file quarterly or semi-annual reports, and a final report six months after the Project is complete. These reports include a breakdown of the final Project costs, along with a comparison to the cost estimate provided in the Amended Application, and an explanation of all material cost variances. This process provides the BCUC with visibility into the actual Project costs, and allows the BCUC to determine if any further process is required”.¹¹⁸
160. The CEC is of the view that ongoing review of the Project is particularly important given the Class 4 Cost Estimate and the schedule demands.
161. The CEC recommends that the Commission allow for intervener review of FEI’s Final Report and, to the extent it demonstrates substantial variation from the current proposal, allow for further examination of the causes.

¹¹⁷ FEI Final Argument page 30

¹¹⁸ Exhibit B-14, CEC IR 2.31 series

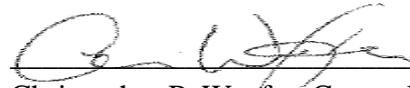
III. CONCLUSION

162. The CEC recommends that the Commission approve the application subject to reporting requirements noted.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

David Craig

David Craig, Consultant for the Commercial Energy
Consumers Association of British Columbia



Christopher P. Weaver, Counsel for the Commercial
Energy Consumers Association of British Columbia