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September 17, 2020

VIA ELECTRONIC MAIL

British Columbia Utilities Commission
6th Floor, 900 Howe Street
Vancouver, B.C. V6Z 2N3

Attention: Marija Tresoglavic, Acting Commission Secretary

Dear Sirs/Mesdames:

Re: FortisBC Inc. Application for a Certificate of Public Convenience and Necessity for the Kelowna Bulk Transformer Addition Project

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 Inc.
cc: Registered Interveners

COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA

FINAL SUBMISSIONS

FortisBC Inc. Application for a Certificate of Public Convenience and Necessity for the Kelowna Bulk Transformer Addition Project
Project No. 1599088

September 17, 2020

Commercial Energy Consumers Association of British Columbia

FortisBC Inc. ("FortisBC") Application for a Certificate of Public Convenience and Necessity for the Kelowna Bulk Transformer Addition Project
Project No. 1599088

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COMMERCIAL ENERGY CONSUMERS ASSOCIATION OF BRITISH COLUMBIA

FINAL SUBMISSIONS

FortisBC Inc. ("FortisBC") Application for a Certificate of Public Convenience and Necessity for the Kelowna Bulk Transformer Addition Project Project No. 1599088

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

FortisBC Inc. ("**FortisBC**" or "**FBC**") applies to the Commission for the granting of a Certificate of Public Convenience ("**CPCN**") for its Kelowna Bulk Transformer Addition Project ("**KBTA Project**" or, the "**Project**") (the "**Application**"). The Project involves the purchase and installation of a third terminal transformer at the F.A. Lee Terminal Station ("**LEE**"), in the City of Kelowna, including the reconfiguration of the existing 138 kV bus into an industry-standard ring bus configuration, at a cost of approximately $23 million.

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

1. The CEC recommends the Commission approve the Application as filed by FBC.

II. SUBMISSIONS

A. BACKGROUND

2. FBC applies to the Commission for a CPCN for the Project pursuant to sections 45 and 46 of the *Utilities Commission Act* ("**UCA**").

3. FBC submits that the pertinent considerations include:

   a) the need for FBC to continue to serve all load in the event of an outage or failure of one of the LEE transformers;

   b) the safety of FBC's employees and contractors operating the system, or carrying out system repairs or maintenance;

   c) the operability of FBC's system;

   d) the reliability of FBC's system, including the resulting customer benefits of this reliability;

e) the impact on potentially affected First Nations and members of the public;

f) British Columbia's energy objectives;

g) the cost-effectiveness of the Project; and

h) the rate impact of the Project.[1]

4. FBC outlines its views with regard to the applicability to the UCA in its Final Submissions at pages 3 and 4.

5. The CEC accepts FBC's review of the considerations as reasonable and submits that the key issues revolve around the requirement to serve load and the reliability of the system.

B. PROJECT NEED

6. FBC's Kelowna area system is part of FBC's interconnected system in that it is supplied from more than one 230 kV source.[2]

7. FBC's transmission planning criteria for the interconnected system specify that customer load should be able to be supplied under both normal (N-0) and single contingency (N-1) operations.[3]

8. Single contingency (N-1) transmission planning criteria is considered to be the industry standard, and requires that in the event of an outage FBC is reliably able to meet customer demand even during periods of forecast peak demand.[4]

9. Although certain customers have back up generation, FBC states that:

> 'The ability of customers to self-generate in the event of a system outage does not relieve FBC of the requirement to serve customer load, nor does it affect FBC's system planning criteria. FBC does not include customer back-up generation in any system planning studies.'[5]

10. The CEC agrees that this is the correct approach for FBC. The CEC submits it would inappropriate for FBC to rely on customer back-up operations, over which it has no control, to reduce its reliability requirements.

11. FBC provides evidence as to where N-1 planning criteria applies in BCUC IR 1.6 series and BCUC Confidential IR 2.9.1.

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[1] FBC Final Argument page 3

[2] Exhibit B-1, page 18

[3] Exhibit B-1, page 18 and FBC Final Argument page 6

[4] FBC Final Argument page 4

[5] Exhibit B-2, BCUC 1.2.2

12. The CEC has reviewed the evidence and submits that continuing to meet FBC's N-1 planning criteria is appropriately treated as an important objective for FBC.

13. The CEC submits that FBC's N-1 planning criteria for its integrated system has been accepted by the Commission in other applications and may appropriately be considered the accepted standard.

14. For instance, the issue was raised in the Grand Forks Terminal Station Reliability Project.[6] Additionally, in Decision C-5-08, relating to the Okanagan Transmission Reinforcement Project, the Commission writes:

> "N-1: (single contingency)
>
> If a system meets the N-1 criterion then, with all other elements in service, an outage on a single element (e.g. a transmission line, a transformer, a generating unit, a capacitor bank, or a reactor) can be accommodated with no load loss. This s a normal bulk transmission system design criterion."[7]

15. Although FBC is currently able to meet its N-1 planning criteria, FBC provides evidence that the Kelowna area demand is continuing to grow, and will negatively impact FBC's ability to meet this standard.[8]

16. In particular, FBC would be unable to meet peak load above 315 MW in the event of a loss of a single 230/138 kV transformer at LEE. FBC nearly exceeded the 315 MW limit in 2020 and is forecast to do so by 2022.[9] Without expanding FBC's current resources, load will need to be shed in 2022 in the event of an outage or failure of one of the two existing transformers at LEE.[10]

17. In the CEC's view, it is appropriate for FortisBC to maintain its commitment to its N-1 planning criteria and investigate means for meeting these criteria on an ongoing basis.

Load Justification - Kelowna Area Load Forecast

18. The Kelowna area is the fastest growing region in FBC's service area, with an average growth rate of 1.6% per year over the 1996-2016 period, which is expected to continue at 1.5% per year through to 2036.[11]

19. FBC provides its sources of population projection in its application and in responses to various information requests.[12]

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[6] Grand Forks Station Reliability CPCN ICG IR 1.7.1

[7] BCUC Order C-5-08

[8] Exhibit B-1, pages 18-21

[9] Exhibit B-1, pages 16-19

[10] Exhibit B-1, page 10

[11] Exhibit B-1, page 14

20. The CEC is satisfied with the validity of FBC's population and growth projections.

21. FBC uses a 1-in-20 year peak load forecast for planning purposes and has been doing so since at least 2011.[13] Although there is no single standard accepted by all utilities,[14] the 1-in-20 peak load forecast for planning purposes is standard for FortisBC and has been used in other applications and accepted by the Commission.[15]

22. The CEC accepts the 1-in-20 standard of peak load forecasting for planning as being the appropriate metric to use. The CEC submits it would be incorrect for FBC to make variations in its planning forecast methodologies depending on the project.

23. FBC provides details as to how it generates its system-wide 1-in-20 load forecast in BCUC IR 1.4.4 and BCUC IR 2.34 series.

24. Based on the 1-in-20 peak load forecast, FBC expects that summer peak load will be almost 315 MW in the summer of 2021 and exceed 315 MW in the summer of 2022 and onwards. Beginning in 2023, once the duration of transformer overloading exceeds the limits of FBC's operating procedures, FBC will no longer be able to reliably maintain service to the Kelowna area load during peak periods in the event of an outage of one of the two existing 230/138 kV transformers at LEE. At this point, additional resources (such as an additional transformer, as contemplated by the KBTA Project) will be necessary in order for FBC to continue to satisfy its transmission planning criteria.[16]

25. FBC provides additional evidence that it has almost reached the 315 MW load level at which point it will no longer be able to satisfy its N-1 transmission planning criteria. FBC submits that peak load in the upcoming years may also be higher than forecast.[17]

26. FBC also confirms that the COVID-19 pandemic has not had any significant impact on load. While commercial loads were down from 2019, the reductions were offset by higher load in other segments.[18] In BCUC IR 1.7.3, FBC modelled reductions in commercial load growth but does not expect a significant reduction because residential load growth will offset those declines.

27. The CEC accepts FBC's evidence as reasonably reflective of the future impact of COVID-19, and notes that there remains considerable uncertainty with respect to COVID-19. The CEC submits that in the absence of strong evidence that the load growth

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[12] Eg. Exhibit B-1, page 14, Exhibit B-2, BCUC 1.3 series

[13] Exhibit B-2, BCUC 1.4.2

[14] Exhibit B-2, BCUC 1.4.1

[15] Exhibit B-2, BCUC 1.4.2

[16] FBC Final Argument page 10

[17] FBC Final Argument page 11

[18] Exhibit B-2, BCUC 1.5.1

will not materialize as expected due to the pandemic, it is reasonable to accept FBC's forecast.

28. FBC also notes that there are potential additional loads such as those from residential developments, cannabis, cryptocurrency, data processing and EV charging which are not included in the forecast.[19]

29. The CEC is of the view that these loads can be considered as potentially significant, and lend support to FBC's expectation of load increases.

URGENCY

30. FBC provides a discussion on the potential for load shedding in the future and the time it would take to install a replacement transformer and issues with prolonged overloading.[20] The LEE T3 and T4 have potential remaining lifespans of approximately 15-20 years each, however there are certain conditions that have been observed at the LEE T4 which could result in premature failure. DG Bell Terminal ("**DGB**") has a potential lifespan of approximately 40-44 years. FBC notes that even well-maintained transformers can fail with no advance indication.[21]

31. The CEC submits that a low likelihood of failure does not diminish the justification in that the N-1 planning criteria is the issue, which is not dependent on the age of the equipment.[22]

32. The CEC has reviewed the evidence with respect to the need for the Project and submits that FBC has made a reasonable case of future risk to its N-1 planning criteria and for proceeding in the near future.

33. The CEC submits it is reasonable for the Commission to consider the need for the Project to be moderate and increasing and to weigh this against the costs of the Project.

C. ALTERNATIVES

34. FBC initially considered multiple alternative solutions including Status Quo, Demand Response, Local Generation and Addition of a Terminal Transformer to Distribution which were not deemed to be feasible.[23] FBC identified 3 key alternatives including the following:

> Alternative A – purchase and install a third terminal transformer at LEE, and reconfigure the existing 138 kV split bus into a ring bus configuration;

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[19] Exhibit B-1, page 18

[20] Exhibit B-1, page 20

[21] Exhibit B-2, BCUC 1.10.3

[22] Exhibit B-2, BCUC 1.10.3

[23] Exhibit B-2, BCUC 1.10.1

Alternative B – purchase and install a third terminal transformer at LEE, and extend the existing 138 kV split bus configuration, which is not currently industry standard; and

Alternative C – purchase and install a second terminal transformer at DGB, and extend the existing 138 kV ring bus configuration.

35. The CEC inquired if Time of Use pricing or Demand Response could be undertaken to defer the project, which was rejected by FBC.[24] The CEC is of the view that in the future it would appropriate for FBC to provide greater consideration and/or information to non-capital options such as Demand Response or Time of Use pricing, or potentially working with BC Hydro to mitigate potential risk.

36. Based on the evidence in the current proceeding the CEC accepts the alternatives identified as being reasonable.

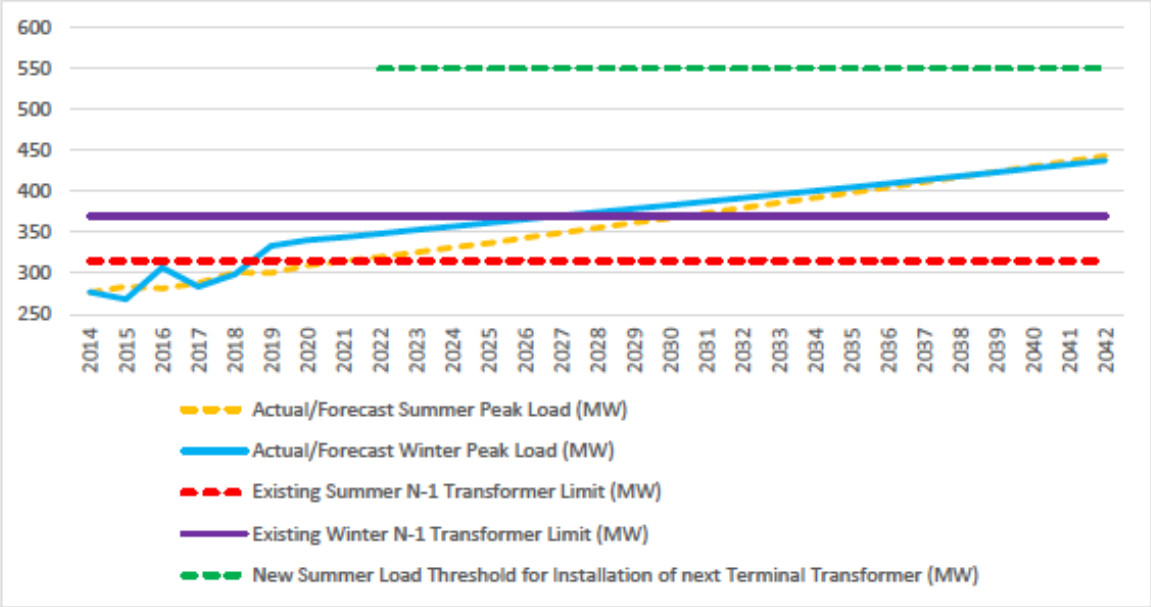
TECHNICAL EVALUATION

37. Each alternative considered involves the installation on an additional terminal transformer at an existing terminal station. They differ depending on which station is affected (LEE or DGB) and whether a ring or split bus configuration is utilized.

38. Key issues being addressed with respect to the selection of the terminal station include the extent of the incremental emergency capacity opportunity and the work requirements. Using the LEE terminal is preferred on both counts.

[24] Exhibit B-4, CEC 9 series

Figure 4-1A: Kelowna Area Peak Loads and N-1 Transformer Limits (LEE Alternatives) Extended to 2042



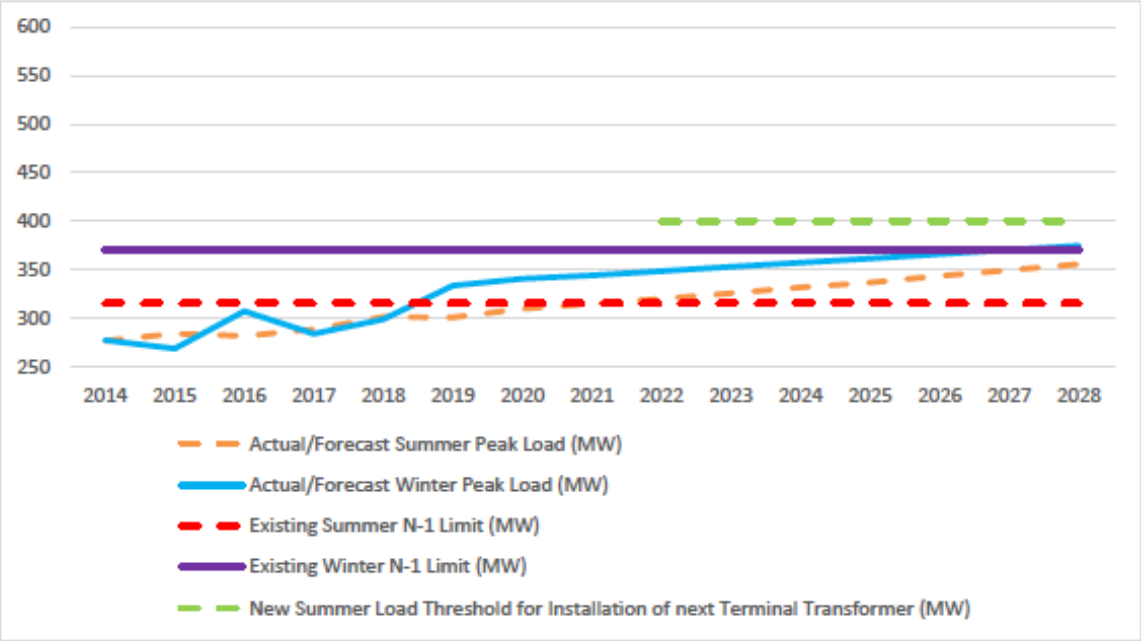
[25]

39. With the addition of an additional transformer at LEE, the next terminal transformer would not be required for the Kelowna area until the summer peak reaches 550 MW,[26] which appears to be substantially more than 20 years in the future.

[25] Exhibit B-2, BCUC 1.11.1

[26] Exhibit B-1, pages 24 and 25

Figure 4-2: Kelowna Area Peak Loads and N-1 Transformer Limits (DGB Alternative with 60L and 51L Reconductoring)



[27]

40. The capacity gains from a transformer at DGB (Alternative C) would be considerably lower as demonstrated in the figure above. A second terminal transformer addition would be required for the Kelowna area when summer peak load reaches 400MW, which provides for incremental emergency capacity of 85 MW.[28]

41. The CEC agrees that a transformer at LEE appears to represent a superior and longer-term solution.

42. Key issues being addressed with respect to the bus configuration relate to flexibility, cost effectiveness, complexity, industry standards, reliability, operational safety, opportunity for expansion and others. On page 26 of the Application FBC provides a discussion of various bus configurations. The ring bus configuration is superior to the split bus configuration in many ways which are outlined in the application and in CEC 1.2.2, and BCUC 1.12.4 and 1.12.5.[29] The ring bus is also the minimum industry standard.[30]

43. Overall FBC prefers Alternative A which involves the addition of a transformer at the LEE station, and the converting the existing split bus configuration into a ring bus configuration.

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[27] Exhibit B-1, page 25

[28] Exhibit B-1, page 25

[29] Exhibit B-10, CEC 2.23.1

[30] Exhibit B-1, page 26

44. Alternative A scored 2.98 on the technical criteria, compared with 1.85 and 2.48 for Alternatives B and C respectively.

45. The CEC accepts FBC's technical analysis as being appropriate.

FINANCIAL EVALUATION

46. FBC conducted a financial evaluation on the three alternatives with the following results:

	Financial Considerations				
			OPTION A	OPTION B	OPTION C
6	Annual O&M Costs	N/A	$0.028M reduction	$0.023M reduction	$0.020M increase
7	Present Value Incremental Revenue Requirement	N/A	$23.0M	$17.1M	$44.0M
8	Levelized Rate Impact	N/A	0.39% $0.00045 /kWh	0.29% $0.00034 /kWh	0.75% $0.00086 /kWh

47. As indicated above, Alternative A (Option A) results in a Present Value (PV) cost of $23 million and a levelized rate impact of 0.39%.

48. Alternative B (Option B) has a lower PV cost of $17.1M with a levelized rate impact of 0.29%, however the Technical score was considerably lower at 1.85 vs 2.98 for Alternative A.

49. The cost of Alternative C is nearly double that of Alternative A. It has a good Technical Evaluation result of 2.48, which is only slightly lower than Alternative A. Alternative C was discarded by FortisBC because of its cost, which the CEC submits was the correct approach.

50. The fundamental difference in the two remaining alternatives relates to the bus configuration. As noted earlier in these submissions, the ring bus configuration is superior to the split bus configuration in many ways which are outlined in the application and in CEC 1.2.2, and BCUC 1.12.4 and 1.12.5.[31]

51. While there are quantified O&M savings FBC has not provided a financial value related to the increased reliability or safety benefits of the ring bus.[32]

52. In the CEC's view, the differential cost of approximately $6 million between Alternative A and B is justified based on the difference in the Technical evaluation and the many advantages of the ring bus.

[31] Exhibit B-10, CEC 2.23.1

[32] Exhibit B-10, CEC 2.23.2

53. The CEC notes that from a bill impact perspective the differences between the options are reasonably small, being less than $2 for residential customers, about $4 for small commercial customers and $1150 for large commercial customers.

54. FBC provided average bill impacts for various customer classes in CEC 2.24.1.

> 24.1 Please provide the same table for small and large commercial rate classes and include total average bills for each rate class and for the residential rate class.
>
> **Response:**
>
> The following table has been amended to include the average bill impacts for the small and larger commercial rate class.

Bill Impacts	Alternative A	Alternative B	Alternative C
2024 Cost of Service Rate Increase	0.54%	0.40%	0.74%
2024 Bill Impact *Avg. Residential Customer Using 11,000KWH*	$ 6.87	$ 5.05	$ 9.35
2024 Bill Impact *Avg. Small Commercial Customer Using 24,000KWH*	$ 14.98	$ 11.01	$ 20.39
2024 Bill Impact *Avg. Large Commercial Customer Using 6,900,000KWH*	$ 4,306.50	$ 3,165.30	$ 5,862.34
40 Year Levelized Rate Increase	0.39%	0.29%	0.75%
40 Year Levelized Bill Impact *Avg. Residential Customer Using 11,000KWH*	$ 4.96	$ 3.69	$ 9.49
40 Year Levelized Bill Impact *Avg. Small Commercial Customer Using 24,000KWH*	$ 10.82	$ 8.05	$ 20.70
40 Year Levelized Bill Impact *Avg. Large Commercial Customer Using 6,900,000KWH*	$ 3,111.24	$ 2,313.09	$ 5,950.22

> The additional table below provides the estimated total average bills for each of the residential, small commercial and larger commercial rate classes. The estimated values are based on the 2020 interim rates with the addition of bill impacts from the table above.

Total Bills	Alternative A	Alternative B	Alternative C
2024 Bill Impact *Avg. Residential Customer Using 11,000KWH*	$ 1,508	$ 1,506	$ 1,511
2024 Bill Impact *Avg. Small Commercial Customer Using 24,000KWH*	$ 2,718	$ 2,714	$ 2,723
2024 Bill Impact *Avg. Large Commercial Customer Using 6,900,000KWH*	$ 571,063	$ 569,922	$ 572,619
40 Year Levelized Bill Impact *Avg. Residential Customer Using 11,000KWH*	$ 1,506	$ 1,505	$ 1,511
40 Year Levelized Bill Impact *Avg. Small Commercial Customer Using 24,000KWH*	$ 2,714	$ 2,711	$ 2,723
40 Year Levelized Bill Impact *Avg. Large Commercial Customer Using 6,900,000KWH*	$ 569,868	$ 569,070	$ 572,707

55. The CEC points out that with the additional transformer capacity in a ring bus configuration FortisBC could be expected to experience reduced losses through the transformer. In addition, the increasing utilization of the transformer over the next 20 years would be supported by additional revenue from the load facilitated by the additional transformer capacity. vis-a-vis operating close to the limits of the transformers, FBC could be expected to have reduced exposure to outage risks or load shedding. With the additional capacity of the new transformer the reduced stress on the existing transformers could be expected to extend the life of the existing transformers.

56. For all of the above reasons the CEC submits that the benefits of this Project could be expected to exceed the costs of providing the additional capacity, and may therefore be considered a cost-effective investment.

D. RATEMAKING CONSIDERATIONS

57. The cost of the Project will be recovered from a general rate increase.[33] Consequently, the proportion of the total cost of the project will be recovered about equally from residential and commercial customers as shown below.

> 2.1 Please update Table 3-1 to include the overall load composition broken down for each rate class (i.e. the percent of overall load attributed to each rate class shown).
>
> **Response:**
>
> Based on 2019 billed consumption data for FBC direct customers in the Kelowna area, the table has been updated to include overall load composition:

Rate Class	Customer Count	Percent of Load Attributed to Rate Class (2019 Consumption)
Small Commercial/Commercial	9,781	41.87%
Large Commercial	22	8.88%
Irrigation	212	0.31%
Lighting	467	1.27%
Residential	66,133	47.68%
Total	76,615	100.00%

[34]

58. The CEC inquired if there were any discrepancies between rate classes in terms of the impacts that were experienced as a result of outage. FBC states that in terms of outage minutes per customer the expectation is that the outage impacts would be similar across all rate classes.[35]

59. The CEC submits that given the equitable distribution of benefits it is reasonable for the Project costs to be recovered as a general rate increase.

60. The KBTA is classified as a Major Capital Project, which are all excluded from Regular Capital spending under the FortisBC Multiyear Rate Plan ("**MRP**"). Accordingly, there is no spending 'threshold' which affects whether or not the project is included in any formulaic allocations.[36]

61. The CEC submits that this similarity in recovery treatment for the alternatives provides some comfort that the Alternative A selection is not subject to bias by virtue of exceeding the CPCN threshold level and becoming a 'flow through'.

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[33] Exhibit B-10, CEC 2.25.2

[34] Exhibit B-2, BCUC 1.2.1

[35] Exhibit B-10, CEC 2.25.3

[36] Exhibit B-10, CEC 2.22.1.1

62. The Project costs are recorded on a cost of service basis. The Project will result in a reduction to Gross O&M Expense of approximately $28 thousand upon project completion, beginning in 2023. Under the MRP, the majority of O& expense is determined by formula however FBC will reduce the formula amount for the KBTA project.[37]

63. The CEC is satisfied with this approach.

E. PROJECT PLAN

64. The Company's proposal for the KBTA Project requires the installation of a new 230/138kV transformer at LEE on McCurdy Road in Kelowna, and the reconfiguration of the 138 kV bus at the station to a ring bus configuration that is industry standard.[38]

65. Part 5 of the Application provides the details of the Projects. The Project construction period is between 2021 and 2022, with the majority of assets entering rate base in 2023.[39] FBC also provides selected details in its Final Argument at pages 21-22.

66. Engineering and detailed design is expected to start immediately upon approval of the Project. FBC will have a Project Manager/Owner's Representative who will manage all aspects of the Project including permitting, engineering, procurement and construction. FBC will also have a Construction Manager on site who will manage the construction activities and resources.

67. FBC has developed a Preliminary Project Schedule and Risk Register and has assessed Environmental and Archaeological impacts. FBC does not anticipate that the COVID-19 pandemic will have a material impact on the Project schedule.[40]

68. The CEC has reviewed the evidence and has no issues with FBC's proposed Project plan.

F. PROJECT COSTING

69. As noted above, the Project is expected to cost $23.288 million in as-spent dollars. Details are included in Section 6 of the Application.

70. The project has been costed at a Class 3 Estimate as defined by the Association of Advancement of Cost Engineering ("**AACE**") as required under CPCN guidelines.[41] It is expected that project contingencies can be used to account for typical variations and general increases as noted in BCUC 1.27 series. FBC has not included any additional

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[37] Exhibit B-4, CEC 1.19.1

[38] Exhibit B-1, page 37

[39] Exhibit B-1, page 55

[40] Exhibit B-2, BCUC 1.23.2

[41] FBC Final Argument page 22

allowances directly related to the COVID-19 pandemic but will report any material changes to its project costs should they occur.[42]

71. The CEC has reviewed the evidence relating to costs and finds it to be satisfactorily completed.

72. The CEC expects that there may be increases in the Project costs as a result of COVID-19, but submits that the potential issues are sufficiently uncertain as to be appropriately omitted in the project costing.

G. CONSULTATION

73. FBC has provided consultation consistent with the CPCN Guidelines, and outlines various matters in its Final Argument at Part 7.

74. The CEC notes that the Tower Ranch Community Association intervened in the proceeding. In the CEC's view, FBC was responsive to the concerns raised and expressed willingness to include owners of adjacent properties.[43] FBC will continue to inform and engage with Indigenous communities as the Project progresses, and will remain open and available for future discussions.[44]

75. The CEC finds the consultation to be satisfactory.

III. CONCLUSION

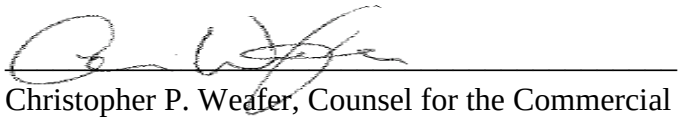
76. The CEC finds that FBC has provided adequate justification for its proposed Project, and reasonable planning and costing.

77. The CEC recommends that the Commission weigh the need for the Project against the Project cost and find the Project to be warranted.

ALL OF WHICH IS RESPECTFULLY SUBMITTED

David Craig

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



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

[42] Exhibit B-2, BCUC 1.23.3

[43] Exhibit B-6

[44] FBC Final Argument page 24