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June 8, 2023

Industrial Customers Group
c/o #301 – 2298 McBain Avenue
Vancouver, BC
V6L 3B1

Attention: Robert Hobbs

Dear Robert Hobbs:

Re: FortisBC Inc. (FBC)

Application for Approval of a Certificate of Public Convenience and Necessity for the A.S. Mawdsley Terminal Station Project (Application) ~ Project No. 1599424

Response to the Industrial Customers Group (ICG) Information Request (IR) No. 1

On February 24, 2023, FBC filed the Application referenced above. In accordance with the regulatory timetable established in BCUC Order G-70-23 for the review of the Application, FBC respectfully submits the attached response to ICG IR No. 1.

For convenience and efficiency, if FBC has provided an internet address for referenced reports instead of attaching the documents to its IR responses, FBC intends for the referenced documents to form part of its IR responses and the evidentiary record in this proceeding.

If further information is required, please contact the undersigned.

Sincerely,

FORTISBC INC.

Original signed:

Sarah Walsh

Attachments

cc (email only): Commission Secretary
Registered Interveners

1. Reference: Exhibit B-1, Section 3.2, System, Overview and Description, Table 3-1, p. 13

1.1 Please provide a graph and table for the customer counts shown in Table 3-1 for each of the last 10 years.

Response:

The below table and graph show the customer counts for the Boundary and Similkameen areas for each of the last 10 years.

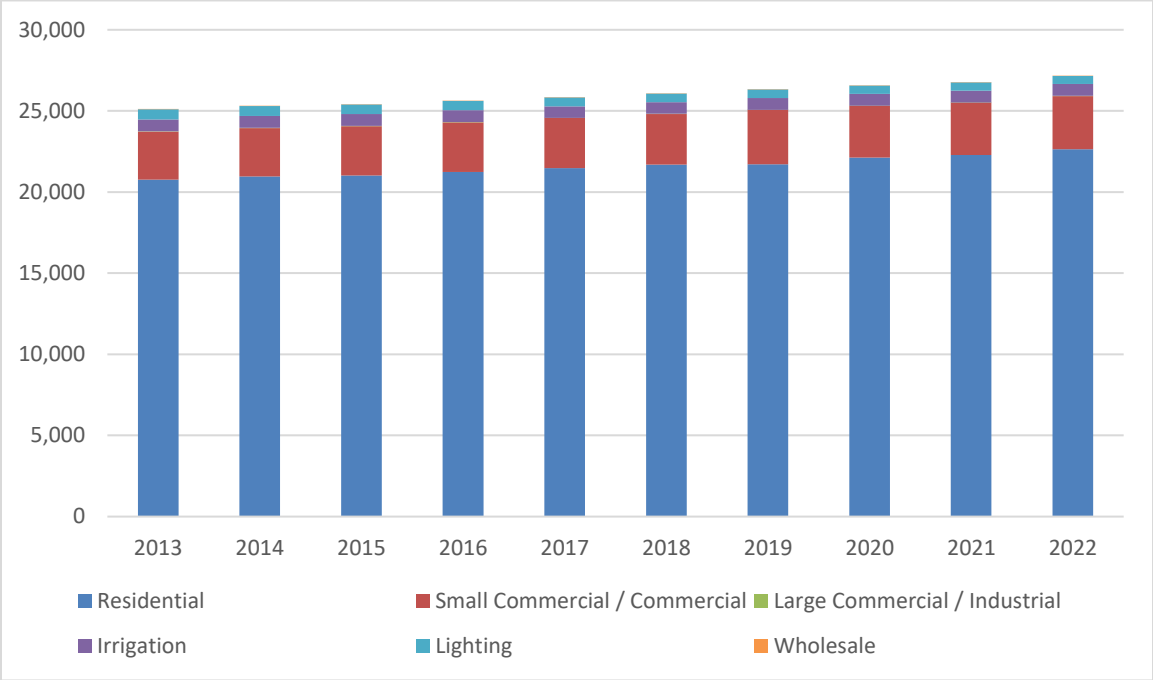
In responding to this IR, FBC discovered an error in Table 3-1 of the Application which resulted in a lower number of direct customers in the Boundary and Similkameen areas than were actually recorded for 2022. This error was due to FBC inadvertently extracting some data from outside of the Boundary and Similkameen boundaries and omitting some data from within the boundaries.

FBC accordingly provides a revised and expanded Table 3-1 which provides the corrected customer count for the Boundary and Similkameen areas by rate class for 2022 and for the previous nine years. FBC notes that the minor change in customer count does not have any impact to any other analysis provided in the Application (i.e., the load forecasts for the areas are unaffected).

Revised and Expanded Table 3-1: FBC Similkameen and Boundary Area Customers by Rate Class (2013-2022)

Rate	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Residential	20,771	20,962	21,013	21,238	21,469	21,700	21,707	22,120	22,281	22,629
Small Commercial / Commercial	2,957	2,983	3,047	3,060	3,093	3,116	3,356	3,194	3,235	3,289
Large Commercial / Industrial	8	10	10	10	10	11	11	9	9	9
Irrigation	735	738	740	731	717	713	714	721	722	725
Lighting	632	617	595	584	553	539	536	515	504	493
Wholesale	1	1	1	1	1	1	1	1	1	1
Total:	**25,104**	**25,311**	**25,406**	**25,624**	**25,843**	**26,080**	**26,325**	**26,560**	**26,752**	**27,146**

Figure 1: FBC Similkameen and Boundary Area Customers by Rate Class (2013-2022)



2. Reference: Exhibit B-1, Section 3.3.1.2, Historical and Forecast Peak Load, Table 3-2, Figure 3-7, pp. 18-19

2.1 Please assign the loads shown in each year in Table 3-2 to the customer classes identified in Table 3-1.

Response:

As explained in the response to CEC IR1 4.2, FBC is not able to break down peak load by rate class for the Boundary and Similkameen areas. FBC's metering equipment does not make this distinction when recording data.

2.2 Please provide a table of the amount of load that the Ponderosa Substation contributed to summer and winter peak for the period 2017 to 2027. Please update Figure 3-7 to show the actual/forecast winter and summer ASM transformer flow without the Ponderosa Substation load. Please also provide a table and graph (time distribution graph for winter and summer respectively) that shows how often the AMS transformer flow exceeded the N-1 ASM transformer limit in each year since 2017, with and without the Ponderosa Substation load.

Response:

FBC is not able to provide the requested information because the Ponderosa Substation serves only one customer. Providing the requested information would show a single customer's load (and forecast load) for the requested period and, as such, would be a breach of customer privacy.

2.3 Do any Mandatory Reliability Standards address exceeding the N-1 capability limit of transmission system infrastructure? If so, please identify.

Response:

Yes, the TPL-001-4 – Transmission System Planning Performance Requirements standard addresses N-1 capability limits of transmission system infrastructure for Bulk Electric Systems.

2.4 Please identify any alleged violations or self-reports of violations of Mandatory Reliability Standards at the ASM or WTS stations since 2017.

Response:

FBC has not had any alleged violations or self-reports of violations of Mandatory Reliability Standards at the ASM Terminal Station or WTS since 2017.

3. Reference: Exhibit B-1, Section 3.3.1.2, Forecast Peak Load, Table 3-3, Figure, 3-7, pp. 18-19

"Table 3-3 shows the forecasts of peak load based on historical data which are used in power flow simulations to determine compliance with FBC's Transmission Planning Criteria, and also includes forecast load growth related to electric vehicles (EVs) and load from one known large capacity customer. Greater EV adoption and new government policy favouring electrification have the potential to result in increases beyond the "1-in-20" load forecast shown below."

3.1 Please assign the loads shown in each year in Table 3-3 to the customer classes identified in Table 3-1.

Response:

Please refer to the response to ICG IR1 2.1.

3.2 Please provide the amount of EV load added to the forecasted values in each year in Table 3-3.

Response:

The EV loads included in the forecast values in Table 3-3 are provided in the table below.

Year	2023	2024	2025	2026	2027
Forecast EV Load (MW)	1.31	2.06	2.89	4.06	5.58

3.3 Why was only 50 percent of the EV load from the 2021 LTERP added to the forecast?

Response:

FBC clarifies that, as noted in Footnote 11 on page 18 of the Application, it used 50 percent of the total EV forecast load filed in the 2021 LTERP as the base for determining forecast peak load attributable to the Boundary and Similkameen areas. FBC used 50 percent of the total EV forecast load as the base because it assumes that the other 50 percent of EV load will be shifted to off peak. Of that 50 percent forecast base load, FBC assumed 20 percent was attributable to the Boundary and Similkameen areas.

3.4 Please provide an update of the actual EV load by month in the Boundary and Similkameen areas and since the 2021 LTERP, and compare these values against the forecast in the 2021 LTERP.

Response:

Please refer to the response to CEC IR1 7.2.

3.5 Please update Figure 3-7 to show the actual/forecast winter and summer ASM transformer flow without the Ponderosa Substation load and EV load. Please also provide a table and graph (time distribution graph for winter and summer respectively) that shows how often the AMS transformer flow exceeded the N-1 ASM transformer limit in each year since 2017, with and without the Ponderosa Substation load and EV load.

Response:

FBC is unable to provide the requested information. Please refer to the responses to ICG IR1 2.2 and CEC IR1 7.2.

4. Reference: Exhibit B-1, Section 3.3.2, ASM Transformer Condition, pp. 21-22

4.1 Please provide a list of the age of each of FBC's transmission-level transformers in order from oldest to newest.

Response:

The table below lists the age of each of FBC's owned transmission-level transformers in order from oldest to newest.

Transformer	Age (Years)
Grand Forks Terminal T1	58
A.S. Mawdsley Terminal T1	58
A.S. Mawdsley Terminal T2	52
A.A. Lambert Terminal T1 ABC*	47
R.G. Anderson Terminal T1	47
F.A. Lee Terminal T4	45
Bentley Terminal T1	42
F.A. Lee Terminal T4	38
D.G. Bell Terminal T1	32
Warfield Terminal T1	21
Vaseux Lake Terminal T1	18
Vaseux Lake Terminal T2	18
A.A. Lambert Terminal T3	16
R.G. Anderson Terminal T4	13
Bentley Terminal T2	13
Bentley Terminal T3	13
Grand Forks Terminal T2	3
F.A. Lee Terminal T2	1

*Represents three single-phase units

4.2 Please provide a history of FBC's in-service transmission-level transformer failures in the last 30 years, the age of those transformers at failure, and the cause of the failure.

Response:

FBC's digital records do not extend back before 2006. Since 2006, no transmission transformer failures have occurred. Six transmission transformers, listed in the table below, were retired from

1 service from 2006 to 2022. Because in-service failures have a costly impact, these transformers
2 were replaced due to end-of-life conditions.

Removal Year	Age at Removal
2011	54
2011	42
2010	58
2010	58
2010	45
2008	51

3

5. Reference: Exhibit B-1, Section 4.2.6, Alternative 6, pp. 29-30

"Although additional land could be acquired, the availability of useable land is limited due to the terrain. Further, this alternative fails to meet the Project objective of replacing aging infrastructure. As such, FBC rejected this option in the screening stage."

5.1 Please discuss in detail the investigations that undertaken or options considered to overcome the terrain challenges of the 1 km distance between ASM and WTS. How many landowners are there in the route options that were considered between ASM and WTS?

Response:

FBC interprets this question to be referring to the terrain challenges related to Alternative 6. This alternative requires the 11E Line (161 kV circuit) to be extended to WTS in a new transmission corridor. Field reviews, survey and route/terrain modeling, land reviews, and preliminary underground locates were conducted to determine the most practical route option for the 11E Line extension to WTS.

Less direct transmission line paths for the new 11E Line extension to WTS were also considered during the review investigations; however, these alternate routes were quickly discarded as unfeasible as they could be more disruptive to the community, disturb more properties, and interfere with other established infrastructure.

There are three impacted landowners (FBC, Teck and MOTI) in the route options that were considered between the ASM Terminal Station and WTS.

5.2 FBC states that alternative 6 would provide "increases in capacity and some redundancy to the system." Would the increased capacity and redundancy afford an opportunity to a staged approach to replace the aging infrastructure at a later time?

Response:

Please refer to the response to BCOAPO IR1 12.1.

5.3 FBC gives numerous reasons why alternative 6 was eliminated at the screening stage, such as "it is not practical or cost-effective due to construction, operability/maintainability and safety limitations and constraints", as well as the

shortcomings in the preamble above. However, there is little to no detail provided on these reasons. Please provide a discussion on each of the criteria that led to alternative 6 being eliminated at the screening stage.

Response:

Alternative 6 was eliminated during pre-screening for the following reasons:

- **Land Use & Adjacent Infrastructure & Land Availability** – The 11E Line extension would require a new transmission corridor. This corridor would have to go through the Teck Metals Ltd.'s (Teck) Warfield Operations and would interfere with Teck's current use of the land and established facilities and infrastructure. Less direct transmission line paths were considered; however, these paths could be more disruptive to the community, disturb more properties, and interfere with other established infrastructure.
- **Constructability** – The required land acquisition process, establishment of a new transmission corridor, increased design complexity, and the transmission line construction involved with Alternative 6 all present significant risks to the project schedule, costs, engineering, and constructability.
- **Operations Accessibility and Operability** – Access to the existing 9 Line, 10 Line and 34 Line corridors is already limited. Establishing another corridor adjacent to these would increase the congestion in the area, making operations and maintenance difficult.
- **Safety** – The ASM Terminal Station has known ground grid limitations with the existing configuration. Additional upgrades to the ground grid have already been exhausted.
- **Ecological** – The 11E Line extension corridor between the ASM Terminal Station and Warfield Terminal Station is a heavily forested gulley. Alternative 6 would require clearing this forested area and disturbing the existing ecosystem and habitats. Removal of the trees could potentially destabilize the bank, compromising the existing infrastructure, in addition to rendering the bank unstable for new infrastructure.
- **Community Impact** – Alternative 6 would have increased community impact both during construction and in the long-term. During consultation for this Application, FBC received feedback that the existing ASM Terminal Station transformers can be heard by area residents. Alternative 6 would require residences to continue to be disturbed by this noise. In Alternative 6, the community would also be negatively impacted by the removal of greenery from the area as the corridor for 11E Line extension was established.
- **System Reliability** – Splitting the supply of 11E Line between WTS and the ASM Terminal Station will increase system complexity in both system configurations. Alternative 6 will not reduce the system risk associated with aging infrastructure of the ASM Terminal Station. In Alternative 6, ASM T1 and ASM T2 would need to operate a single transformer to match the capacity of the new transformer at WTS. Loss of either ASM T1 or ASM T2 will render both units unsuitable for operation. Because ASM T1 and ASM T2 would be a different size than the new transformer at WTS, there would be significant paralleling

challenges, potentially compromising the capacity availability, redundancy, and protection coordination.

5.4 Please provide any cost estimate that been prepared for alternative 6, whether conceptual, feasibility or detailed. If no level of cost estimate has been prepared for comparison against the other alternatives, please explain why not.

Response:

Please refer to the response to BCUC IR1 4.1.