Industrial Customers Group ("ICG")
Information Request No. 1

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

1.0 Reference: Exhibit B-1, Section 3.1, p. 10

"FBC has experienced high levels of customer load growth in the Kelowna area and it expects electricity demand will exceed system planning reliability criteria by the summer of 2022."

1.1 Please confirm that forecast summer peak demand of the 138 kV distribution system and not forecast energy requirements determines the need for the Bulk Transformer Addition Project.

1.2 Please confirm that the N-1 planning criteria as applied to the forecast peak demand on the 138 kV distribution system determines the need for the KBTA?

1.3 Please explain FBC's analysis, if any, of the impacts of behind-the-meter installations on the 138 kV distribution system? Please comment on the feasibility of load reductions from behind-the-meter installations delaying the KBTA?

1.4 Please comment on the feasibility of demand response measures for delaying the KBTA? Please identify any triggered demand response in the past five years on the 138 kV distribution system?

1.5 Please quantify current solar installations in the service area of the 138 kV distribution system? Please identify the quantity of solar power on the 138 kV distribution system that has been modeled in the transmission planning study?

1.6 Has FBC conducted a correlation study between the timing of summer peak demand hours, and the corresponding generation of solar installations? If not, why not?

1.7 Please identify and explain the availability factor appropriate for modeling solar generation during peak demand hours?

1.8 Please identify the amount of solar generation required by year during the summer peak hour(s) to keep the loading of the existing LEE and DGB transformers within the N-1 system planning reliability limit?

1.9 Please provide a graph comparing the growth of the peak demand with the growth of energy requirements?

2.0 Reference: Exhibit B-1, Section 3.2, p. 12

"In addition, FBC provides electricity to BC Hydro to service its approximately 8,000 customers in the Duck Lake area…"

2.1 Please file and explain the Duck Lake Wheeling Agreement and any other contracts for electricity service supplied by FBC and required by BC Hydro to service the Duck Lake area?

2.2 Please explain how BC Hydro service to the Duck Lake area is relevant to FBC planning criteria?

2.3 Please identify the period of time the KBTA Project could be deferred if the BC Hydro Duck Lake area loads were to be removed from the FBC system?

3.0 Reference: BC Hydro West Kelowna Transmission Project found at: https://www.bchydro.com/energy-in-bc/projects/wktp.html#alternatives

"Alternative 3d: To FortisBC
Alternative 3d proposes connecting our Westbank Substation to the FortisBC system and would require the following to be built by BC Hydro:

- **A new substation on Westbank First Nation land or in the City of West Kelowna;**
- **Transmission line to connect the new substation to FortisBC's Saucier substation in Kelowna; and,**
- **Distribution line to connect the new substation with the existing Westbank Substation in the City of West Kelowna.**

We're working with FortisBC to determine the feasibility of Alternative 3d."

3.1 Please provide a status update of the discussions with BC Hydro regarding the West Kelowna Transmission Project.

3.2 Please identify the period of time the KBTA Project could be deferred if a source of supply could be provided at the Saucier substation as contemplated in the reference above?

3.3 Please discuss why BC Hydro's West Kelowna Transmission Project was not identified as one of the options considered as an alternative to the KBTA Project?

3.4 Please identify any other potential interconnection points for power purchases from BC Hydro or any upgrades to the BC Hydro transmission and distribution system that may either be an alternative to or delay the KBTA Project?

4.0 Reference: Exhibit B-1, Section 3.2, p. 13

"While there are no significant condition issues known for these transformers at present, FBC discusses the impact of operating the transformers above normal operating limits in Section

3.5."

4.1 Please confirm or explain otherwise that the condition of the existing equipment, including 230kV/138 kV transformers at LEE, is not relevant to the need for KBTA project as determined by planning criteria?

5.0 Reference: Exhibit B-1, Section 3.3.2, p. 15

"FBC forecasts regional load growth using historical regional load data."

5.1 Please file the historical regional load data referenced in the quote above, and include any load data on the 138 kV distribution system relied on to determine the need for the KBTA?

5.2 Please file available load data and any analysis of such data for each of the 12 substations serviced by the 138 kV distribution system? If FBC does not use substation specific load data for transmission planning studies, please explain why not?

5.3 Please identify any previous forecasts of the peak demand on the 138 kV distribution system used for system planning purposes that were not based on a "weather-normalized" forecast? Please file the current forecast of peak demand on the 138 kV distribution system?

6.0 Reference: Exhibit B-1, Section 3.3.2, p. 15

"… therefore historical load growth can be expected to produce a reasonable "status quo" load forecast."

6.1 Please explain whether and/or why a "status quo" load forecast does or does not account for possible weather extremes?

7.0 Reference: Exhibit B-1, Section 3.3.2, Figure 3-3, p. 17

7.1 Please identify any CPCN granted to meet N-1 planning criteria for summer peak loads?

7.2 Please prepare a load duration curve for summer peak loads on the 138 kV distribution system? Please file a graph of actual daily peak demand for July and August, 2019 for the 138 kV distribution system? Please file a graph of actual hourly peak demand for the day with the highest peak demand?

7.3 Please prepare a graph similar to Figure 3-3 with a forecast peak demand based on low, medium and high forecast peak scenarios?

7.4 Please provide FBC's policy on allowable post-contingency transformer loading?

7.5 Please provide a summary of the policies of allowable post-contingency transformer loading used by utilities in the Western Electricity Coordinating Council (WECC) region. If FBC has not conducted a survey of such typical policies, why not? What would be the summer and winter post-contingency transformer limits under such other policies?

8.0 Reference: Exhibit B-1, Section 3.5, p. 20

"While transformers have an average life of 40 years, if a transformer is lightly loaded throughout its in-service life, the winding insulation can be expected to last longer; conversely, insulation life would be expected to be less than a year if the transformer is overloaded on a consistent basis. Each hour that a transformer is loaded above nameplate rating brings a corresponding increase in winding hotspot temperature that has a substantial negative impact on remaining expected lifespan."

8.1 Please provide the loading profile upon which the average transformer life of 40 years is based. Please reference the IEEE standard upon which this criterion is based.

8.2 Is it possible to calculate the expected average life of a transformer that is constantly loaded at half rating throughout its life? If so, please provide that calculation.

8.3 Please quantify, in hours, the reduction in lifetime for a transformer that is overloaded by 5%, 10% and 15% of nameplate rating for 1 hour, 10 hours and 24 hours if the loading prior to the overloading was a) 100% of nameplate rating and b) 50% of nameplate rating.

8.4 Please provide the complete nameplate drawings and/or data for the existing LEE and DGB transformers.

9.0 Reference: Exhibit B-1, Section 4.4.1.1, p. 28

"The existing 13 kV distribution bus and equipment would be demolished and removed from the station since the distribution supply is being eliminated."

9.1 Will the removed 13 kV distribution equipment be re-used elsewhere in FBC's system?

9.2 Please provide dimensioned plan and section drawings for the existing and proposed LEE layout, identifying major equipment, under confidential submission if necessary.

10.0 Reference: Exhibit B-1, Section 4.4.3.2, p. 32

"These 2036 costs have been included in the 40 year financial analysis of this project for comparability to Alternatives A and B."

10.1 Please provide the "Levelized % Increase on 2019 rates" for Alternative C not including the 2036 costs?

10.2 Please identify changes to Appendices C, C-2 and, C-3 that FBC believes would be necessary before those Financial Schedules could be filed on the public record of this proceeding?