May 7, 2019

VIA E-FILING

Reply to: Leigha Worth
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Ph: 604-687-3034
Our File: 7311.220

Patrick Wruck
Commission Secretary
BC Utilities Commission
6th Floor 900 Howe Street
Vancouver, BC V6Z 2N3

Dear Mr. Wruck,

Re: FortisBC Inc. Certificate of Public Convenience and Necessity Application for the Grand Forks Terminal Station Reliability Project ~ Project No. 1598987

We represent the British Columbia Old Age Pensioners' Organization, Disability Alliance BC, Council of Senior Citizens' Organizations of BC, and the Tenant Resource and Advisory Centre known in this and other FBC regulatory processes as BCOAPO et al.

Enclosed please find the BCOAPO's Final Argument with respect to the above-noted matter.

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

Sincerely,
BC PUBLIC INTEREST ADVOCACY CENTRE

Original on file signed by:

Leigha Worth
Executive Director | General Counsel

Encl.

BC OLD AGE PENSIONERS' ORGANIZATION, COUNCIL OF SENIOR CITIZENS' ORGANIZATIONS OF BC, DISABILITY ALLIANCE BC, AND TENANT RESOURCE AND ADVISORY CENTRE, ("BCOAPO")

FortisBC Inc. Certificate of Public Convenience and Necessity Application for the Grand Forks Terminal Station Reliability Project

Intervener Final Argument

May 7, 2019

Please be advised that we make the following final argument regarding the above-noted application on behalf of our client groups known in this and other regulatory processes as BCOAPO or BCOAPO et al. The constituent groups of BCOAPO et al. represent the interests of low- and fixed-income energy consumers within BC and more specifically in this process, the interests of FortisBC Inc's ("FBC") low and fixed income electrical residential ratepayers whose rates and service will be affected by the proposed project.

Application

On November 19, 2019, FBC filed its application (the Application) with the British Columbia Utilities Commission (BCUC) pursuant to sections 45 and 46 of the *Utilities Commission Act* for a Certificate of Public Convenience and Necessity (CPCN) for the Grand Forks Terminal Station Reliability Project (the Project).

The process set by the BCUC for this Application consists of two rounds of information requests followed by FBC's final argument, the intervenor submissions due today with FBC's reply due May 21, 2019.

Background and Approvals Requested

The Grand Forks Terminal Station is supplied at 161 kV by both the 11 Line E from the AS Mawdsley Terminal Station (near Warfield) and the 11 Line West from the Kettle Valley Terminal Station (near Rock Creek). The Grand Forks Terminal Station consists

of a single 161/63 kV transformer (referred to as GFT T1) nominally rated at 45/60 MVA which provides local 63 kV transmission supply to four distribution stations supplying the City of Grand Forks, the Town of Christina and the surrounding area. These serve a combined customer base of over 5,700.

In the event of an outage to GFT T1, the system is designed for a 63 kV backup supply from the Warfield Terminal Station via the 63 kV transmission lines 9L and 10L. There is also a spare on-site transformer.

FBC is seeking approval from the BCUC to purchase and install a 161/63kV transformer at the Grand Forks Terminal Station; and to remove 44.6 km of the 65.4 km of transmission lines 9L and 10L from the Christina Lake substation (CHR) to Cascade substation (CSC); and repurpose the remaining 20.8 km of transmission lines 9L and 10L to distribution lines to continue to supply power to customers.

The estimated cost of the Project is $13.71 M, including Allowance for Funds Used During Construction and the cost of removal of lines 9L and 10L. The cost of the Project falls below the $20 M CPCN dollar threshold established pursuant to BCUC Order G-120-15 and the PBR materiality threshold established under FBC's current PBR Plan (Order G-139-14). As such, FBC would not normally file a CPCN application for such a project.

As per its 2012/2013 Capital Plan FBC has sought approval for the installation of a second transformer at the Grand Forks Terminal Station as well as the removal of 9L and 10L along with the relocation of a spare transformer at Grand Forks. However, in its Decision and Order G-110-12 the BCUC endorsed the relocation of the spare transformer but rejected the proposed expenditures related to the second transformer as the need for the increased reliability was not apparent. The BCUC also directed FBC to apply for a separate CPCN to test the project.

Based on this history, BCOAPO submits that FBC has appropriately applied for a CPCN approval for the proposed Project.

NEED

As noted in the Application, the "need" for the Project is driven by reliability considerations as opposed to the need for additional capacity. The maximum winter and summer peak loads on GFT T1 have been approximately 34 MW and 33 MW respectively, well below GFT T1's nominal rating of 45/60 MVA. Furthermore, the capacity of GFT T1 is expected to be sufficient to meet the forecasted distribution demand for the Grand Forks area load over the system planning horizon of 20 years.

The 63 kV transmission system in the Grand Forks area is part of FBC's interconnected transmission system and, as such, is expected (based on FBC's planning standards) to be able to meet the single contingency (N-1) reliability criteria. This means that if GFT T1 is not in service, FBC must be able to supply 100 percent of the Grand Forks area load from an alternate supply.

GFT T1

Compounding the reliability issue is the fact that the existing GFT T1 is now over 50 years old, exceeding the expected transformer lifespan of 40 years. A condition assessment of GFT T1, undertaken in 2018, calculated the Risk of Failure for the unit to be 2.6 percent. This is on the high side when compared to a typical utility population and exceeds what FBC considers to be an acceptable risk of failure (RoF) for a transmission station based on industry standards. Furthermore, this risk cannot be reduced as all recommended maintenance improvements on GFT T1 have already been undertaken. The condition assessment also recommended that the transformer should not be kept in service for more than 15 years. However, FBC has indicated that it considers an additional ten-year lifespan to be more appropriate.

In the event of a GFT T1 failure, it would likely take more than one year to procure and install a replacement transformer. Currently, there are two alternative sources of supply. However, there are issues regarding the availability of each.

9L and 10L Lines

As noted previously, in the event of an outage to GFT T1, a 63 kV supply can be provided to the distribution stations in the Grand Forks area via the 9L and 10L 63 kV transmission lines from the Warfield Terminal Station. However, customers will be left without supply until the system can be reconfigured to the backup supply from 9L and 10L, an activity that requires switching by field personnel and can take in the order of hours.

Furthermore, the maximum load that can be supplied by either 9L or 10L is 27 MW. We note that individually, these are insufficient to supply the maximum load in the Grand Forks area. In contrast, if the two lines are operated in parallel the maximum load that can be supplied increases to 45 MW, which is sufficient to meet the peak requirement of the Grand Forks area. The problem is that recent condition assessments of the 9L and 10L lines between the Warfield area (specifically the Cascade distribution station) and the Grand Forks area (specifically the Christina Lake distribution station) found that structures on both lines required replacement, with approximately 69% of 10L requiring replacement.

Given the extremely poor condition of 10L, it is normally de-energized between the two referenced distribution stations. The line will need to be visually assessed and rehabilitated to minimum operating standards before it can be energized in the event of an emergency. Compounding the issue is the fact that, in the winter, work on the line may not be possible as access in the snowy and mountainous terrain can be limited. As a result, if there is an outage at GFT T1 and load in the Grand Forks area exceeds 27 MW as is often the case, relying on lines 9L and 10L as the alternatives source of supply would leave customers without power until 10L can be rehabilitated and energized which may not be possible during certain periods of the year.

In response to interrogatories, FBC has also indicated that the 9L and 10L lines have experienced almost three times the number of outages experienced (on average) by its other 60 kV lines.

Spare On-Site Transformer

The other alternative source of supply is the on-site spare transformer (Oliver T1 or OLI T1) currently located at the Grand Forks Terminal Station. However, although OLI T1 is on-site, it could take several weeks to install due to the substation configuration and civil work required. Furthermore, since the spare transformer is normally de-energized, there is always some uncertainty regarding the condition of the unit and its availability for service. Also, it should be noted that the spare on-site transformer has never actually been installed as a result of a failure of GFT T1.

Order G-110-12

In Order G-110-12 the BCUC specifically stated:

> "The Commission Panel notes that the customers served by the existing Grand Forks Terminal T1 have experienced better than average reliability in recent years. (Exhibit B-8, BCUC 2.46.2) Furthermore, the options reviewed by FortisBC, which include the continued use of 9L and 10L between Rossland and Christina Lake, have a lower NPV cost than the proposed project. (Exhibit B-4, BCUC 1.127.1) The removal of both the 9L and 10L transmission lines between Rossland and Christina Lake does not appear to be warranted at this time."

BCOAPO agrees with FBC that the need for the Project is not driven by the reliability of supply to the Grand Forks area in terms of the current duration or frequency of outages to customers but rather the inability of the 63kV system in the Grand Forks area to meet the N-1 contingency planning criteria, as required by FBC's standards for an interconnected system.

BCOAPO submits the question whether the continued use of 9L and 10L (with adequate upgrading) is the least cost and preferred approach is a matter that is best considered in the context of an alternative to the proposed Project.

Overall, in BCOAPO's view, FBC has adequately demonstrated that existing facilities are inadequate to meet the N-1 planning criteria in the Grand Forks area. Also, it is our position that FBC has adequately explained why the Grand Forks area has been prioritized over other areas that do not meet the N-1 planning criteria.

Alternatives Considered and the Preferred Alternative

In its Application, FBC provides an assessment of three feasible alternatives for meeting the N-1 planning criteria in the Grand Forks area:

> Alternative A: Provide a second transformer at the Grand Forks Terminal (GFT T2) by installing the on-site spare (OLI T1), remove 44.6 km of the 9L and 10L transmission lines, and repurpose 20.8 km of the 9L and 10L transmission lines to distribution lines;
>
> Alternative B: Provide a second transformer at GFT (GFT T2) by purchasing and installing a new 161/63kV transformer, remove 44.6 km of the 9L and 10L transmission lines, and repurpose 20.8 km of the 9L and 10L transmission lines to distribution lines; and
>
> Alternative C: Rehabilitate 9L and 10L transmission lines. The recommended scope of work for this alternative is provided in the condition assessment undertaken for the two lines.

In Alternatives A and B, the repurposing of 20.8 km of the 9L and 10L transmission lines to distribution lines is required to address the fact that over the years, underbuilt

distribution circuits were constructed on portions of both 9L and 10L to serve customers in the vicinity of the lines' right of way.

Other alternatives considered but rejected as being either infeasible or more costly include the possibility of consolidating 9L and 10L into a single circuit using 477 ACSR 32 (Aluminum Conductor Steel-Reinforced). FBC rejected this option because the capacity of the new line could not support the Grand Forks area load.

Another option considered but rejected under Alternatives A and B was not removing the majority of 9L and 10L from service. This was rejected due to its higher cost. Indeed, FBC has confirmed that none of the other options considered for 9L and 10L would result in a lower total lifecycle cost than removing both lines as proposed.

FBC also considered that under Alternative C it could add remote switches to eliminate the need for field staff to manually close the 9L and 10L switches. However, this too was rejected but because there is no fibre network at these sites and, due to the remoteness of these areas, even cell communications may have limited reliability at these sites. FBC has historically had issues with cell communication networks being used on remote switching applications.

Alternatives A and B have a number of advantages over Alternative C. Their costs, which are virtually equivalent to each other (40-year present values of $9.959 M and $9.60 M respectively) are lower than Alternative C's costs (40-year present value $13.94 M). Although Alternative B involves purchasing a new transformer, the rehabilitation costs associated with the use of OLT T1 under Alternative B result in the costs being reasonably similar. These two alternatives provide a higher level of reliability as transmission lines have more frequent outages, particularly given the location of 9L and 10L. Also, under Alternatives A and B, it will be easier to transfer load in the event of an outage at GFT T1 because it can be done remotely from the System Control Centre versus Alternative C where switches would need to be closed manually.

Alternatives A and B are both capable of meeting the forecast load growth for the Grand Forks area over the 20-year planning horizon. However, Alternative C fails in this regard. The current 20-year load forecast indicates the Grand Forks area load will exceed 45 MW by 2031 (45 MW is the maximum Grand Forks area load that can be supported from both 9L and 0L during a GFT T1 outage).

Because OLT T1 is already on site, Alternative A has less schedule risk than Alternative B. The success and usefulness of Alternative B is dependent upon the approximately one-year lead time for the procurement of a new transformer. That being said, the schedule risk associated with Alternative A is considered to be low as estimates have already been acquired for the new transformer and lead times have been established.

Alternative B provides a greater level of reliability since it involves the installation of a new transformer as opposed to relying on the on-site spare and it will still retain the on-site spare for backup.

Overall, FBC considers Alternative B to be the preferred alternative, opining that it is superior from a technical perspective and virtually equivalent to Alternative A in terms of cost.

Towards the end of the regulatory process (i.e., after responses had been filed to the second round of information requests) one of the parties participating sought information regarding the load for largest FBC industrial customer in the Grand Forks area with a view to considering "options that relate to load management and the possibility of delaying the upgrades beyond the project schedule proposed by FortisBC". In responding to this request FBC noted that:

> "load management strategies would require a peak load reduction of at least 7 MW to reduce the maximum load on GFT T1 from 34 MW2 to below 27 MW3 which is the peak load that is supported under the N-1 planning criteria. This degree of peak

> load reduction from a single customer is not reasonable even at current load levels, disregarding future growth."

In Order G-77-19, the BCUC denied the party's request for the additional information.

BCOAPO agrees that load management is not a feasible alternative in this instance. However, integrated resource planning requires the consideration of both supply side and demand side options when seeking to address system needs. As result, it would have been useful if FBC had included in the original Application an assessment of the feasibility of addressing the identified "need" through demand side management, either in whole or in part. BCOAPO asks that the BCUC direct FBC to include such assessments in future CPCN Applications where appropriate.

Conclusion

After a review of the evidence, BCOAPO submits that FBC has identified and assessed the feasible options for addressing the N-1 planning criteria in the Grand Forks area and concurs that the proposed Project is the appropriate alternative.

All of which is respectfully submitted.

Sincerely,
BC PUBLIC INTEREST ADVOCACY CENTRE

Original on file signed by

Leigha Worth
Executive Director | General Counsel