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February 16, 2018

The Board of Commissioners of Public Utilities
Ms. G. Cheryl Blunden, Board Secretary
Prince Charles Building
210 - 120 Torbay Road,
St. John's, NL, A1A 2G8

Re: NLH Capital Application (2018) – Labrador Interconnected Group Submissions

Please accept the enclosed an application for intervener status and submissions in the above-noted application, served on behalf of the Labrador Interconnected Group.

Should you have any questions, please be sure to contact me.

Respectfully,
Olthuis, Kleer, Townshend LLP
PER:

A handwritten signature in black ink, appearing to read 'Senwung Luk'.

SENWUNG LUK
PARTNER

SL/tw

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 (the “EPCA”), *Public Utilities Act*, RSNL 1990, Chapter P-47 (the “Act”): and

IN THE MATTER OF an application by Newfoundland and Labrador Hydro (“Hydro”) for an Order approving, pursuant to Section 41 of the *Act*, based on revised information submitted pursuant to Board Order PU 43 (2017).

**APPLICATION OF THE LABRADOR INTERCONNECTED GROUP FOR
INTERVENER STATUS**

SUBMISSIONS OF THE LABRADOR INTERCONNECTED GROUP

THE APPLICATION OF the Labrador Interconnected Group states:

1. The Labrador Interconnected Group consists of the communities of Sheshatshiu, Happy Valley-Goose Bay, Wabush, and Labrador City. The businesses and residents of these communities are ratepayers in the Labrador Interconnected System.
2. By way of this application, the Labrador Interconnected Group seeks to be recognized as an intervener in the above-noted application, with specific reference to the Muskrat Falls to Happy Valley Interconnection Project. As communities of the system where this Project is proposed to be constructed, we have a clear interest in the Board’s decision in this proceeding.
3. Documents relating to this Application may be served on the Labrador Interconnected Group in care of:

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4. We ask that the Board accept the Labrador Interconnected Group as an intervener and accept the following submissions made on their behalf.

THE SUBMISSIONS OF the Labrador Interconnected Group state:

Introduction

5. The Labrador Interconnected Group is interested in reliable electricity services in the Labrador Interconnected communities at least cost. We are interested in capital developments to the Hydro system that promotes system reliability, but we are also keenly aware of the role that low-cost power and predictable system planning play in attracting economic development.
6. In PU 43 (2017), this Board found with respect to the Muskrat Falls to Happy Valley Interconnection Project that Hydro should return with “detailed evidence that demonstrates how the proposed project is consistent with the provision of least-cost reliable service, considering both short and long-term needs on this system”¹. The Labrador Interconnected Group submits that Hydro has yet to tender sufficient evidence to meet the onus set out in PU 43 (2017).

Load forecast and long term planning

7. In PU 43 (2017), the Board highlighted the lack of information regarding longer term needs of the power system. In our submission, Hydro still has not provided sufficient information

¹ PU 43 (2017), p12.

about these longer term needs, and the role of the proposed interconnection project in meeting those needs.

8. Hydro has included in its application a load forecast to 2042, but the revised version does not state what level of certainty can be attributed to the forecast.
9. The load forecast cited in the application actually shows three growth forecasts, one for Fall 2016, one for Spring 2017, and one for Summer 2017.² Over the course of less than a year, the near term forecast for 2020 has increased by 20.6 MW (from 73.3 MW to 93.9 MW), while the longer term forecast for 2040 has increased by 23.2 MW (from 79.9 MW to 103.1 MW). One factor affecting the load growth is the 12.5 MW attributed to the DND conversion. Another major reason for this drastic increase disclosed in the evidence is the 7.6 MW of load arising from the three data centres that applied for service in 2017.³
10. As stated in the original version of the application evaluated in PU 43 (2017), “This current load forecast is subject to a high degree of variability should a new customer demand for service materialize in the near future.”⁴ This text has been removed from the revised filing,⁵ but it is not clear that the load forecast in the revised filing is any more certain.
11. The revised application states that the recent load growth of 7.6 MW can be attributed to three data centres, and that an increase of approximately 12.5 MW is expected in 2020 due to the conversion of the Department of National Defense (“DND”) base to all-electric boilers.⁶ As discussed below, we submit that, given the lack of information in the file, there is no basis to conclude that the data centre loads that have recently been added will

² Appendix A (Revision 2 of January 25, 2018), p11 of 89.

³ Appendix A (Revision 2 of January 25, 2018), p10 of 89.

⁴ Appendix A, p9 of 74.

⁵ Appendix A (Revision 2 of January 25, 2018), p11 of 89.

⁶ Appendix A (Revision 2 of January 25, 2018), p10 of 89.

necessarily remain on the system over the long term. It is also unclear how much of the 12.5 MW demand from the DND base will materialize.

12. Data centres compose an important part of the forecast load increase, with 7.6 MW being 10% of the entire Happy Valley load in 2017. It is unclear what the variability in the forecasted load of the data centres is, and what the price elasticity of the data centre clients are. Data centres are more mobile than traditional large loads like mines, because moving away computer servers and fans is relatively easy. It is quite likely that prices in the Labrador Interconnected communities will change in the near future. Hydro's current GRA calls for a rate increase of 12.96% by 2019.⁷ Without a longer term picture of what capital plans are in store for Labrador, it is impossible to project prices, all the more so when the projection stretches into 2042. Price increases can be expected to have an effect on the location decisions of data centres, but no information on the price elasticity of data centre demand is given in the original or revised Hydro application. As such, it is difficult to make an assessment with any reasonable degree of certainty about how many data centres there might be in Labrador in the future.

13. The Summer 2017 forecast calls for a load increase of 14.6 MW between 2017 and 2021. It seems to project the 7.6 MW increase from the data centres, and the 12.5 MW increase from DND, being put on line some time before 2021, then with relatively flat growth from 2021 through 2042. The unstated assumption in Hydro's forecast seems to be that the three – and only three – data centres are there to stay through 2042 and that no other data centres will apply for service, and that none of them would relocate from Labrador either. There is nothing in evidence to justify this assumption. In our submission this is an insufficient basis

⁷ NL Hydro 2018 General Rate Application, GRA, Vol. 1, page 5.33.

on which the Board can make a decision. More information is needed on the number of expected data centres before committing ratepayers to significant capital costs.

14. There also seems to be some uncertainty around the role of the DND conversion in the load forecast. As Hydro stated in NP-NLH-023:

Currently there is no signed agreement in place with the Department of National Defence for their potential demand increase. The Department of National Defence approached Hydro regarding the availability of additional power. This customer is working on a long term energy and cost efficient central heating plan for their 5 Wing Goose Bay Facilities and asked Hydro to provide a letter of intent regarding power supply to its facilities. Hydro is in consultation with the customer to understand its electricity requirements and schedule. The current expectation is an agreement will be established in accordance with the customer's schedule in 2020.⁸

As such, there is no reasonably reliable information about DND's load requirements as of yet. Although they currently need 12.5 MW, it is not clear what effect the "long term energy and cost efficient central heating plan" will result in in terms of their longer term demand.

15. It is also clear from this citation that DND has some flexibility in relation to this conversion. If that conversion were on its own to trigger an expensive transmission upgrade, DND might be open to modifying its plan, particularly if it were to be held responsible for covering some or all of the related investment costs. The conceptual issues related to the cost allocation for transmission upgrades caused by the new loads can be expected to be addressed in Hydro's General Rate Application and may also affect the amount of load that DND decides to put on to the system.

16. In our submission, a further analysis of the data centre market, including the factors driving the demand for data centres, as well as an analysis of the price elasticity of data centres, is required to meaningfully plan for the capital needs of the Labrador Interconnected system. Such an analysis should also consider the role of other large consumers, such as the DND

⁸ NP-NLH-023, Page 1 of 2.

base and mining operations in Labrador West, and what can be expected of their demand over the term of the forecast. The Labrador Interconnected communities should also be consulted regarding economic development initiatives and potential new loads that might materialize in the near and long term.

17. Hydro's proposal would result in a capacity for serving 104 MW of load in Happy Valley⁹, though this level of demand is not forecast until 2042. Indeed, on its face, the proposed system upgrade is large compared to the known need.
18. Hydro affirms that "load growth beyond the firm capacity of 104 MW could occur fairly quickly depending on industrial load growth, such as increased numbers of data centers in the area." Hydro's response, in such an eventuality, would be Phase 2 of the proposed Interconnection Project, but it is not immediately clear that an appropriately fleshed out load forecast would support this approach. A capacity of 104 MW is only a 24 MW buffer above the current set up, and data centre loads are sufficiently large and lumpy that capacity concerns might arise sooner rather than later. After all, between the Fall 2016 and Summer 2017 forecasts, Hydro's estimates of load in Labrador East grew by 20.6 MW. Demand could outstrip the 104 MW capacity much more quickly than in Hydro's current forecast. It is not clear if Hydro has made plans for this eventuality.
19. In our submission, Hydro has also failed to consider the possibility that loads could remain far below that level, if the forecast data center load does not materialize. Better information, especially in regard to data centres and the DND load, is required before committing to the project proposed by Hydro. The construction of major capital project should be done as part of a long-term plan in which Labrador communities are consulted with respect to the

⁹ Appendix A (Revision 2 of January 25, 2018), p15 of 89.

economic development initiatives that they each have been pursuing to achieve greater certainty in terms of expected demand.

Alternatives

20. According to Hydro's evidence, there is currently insufficient capacity with which to serve loads in Labrador East, and the system is approaching voltage collapse.¹⁰ Such an eventuality is obviously not in the interests of Labrador customers, but there may be a number of alternatives to the Muskrat Falls to Happy Valley Interconnection that Hydro has not considered in its revised application.
21. Hydro's documentation indicates that it can deliver 79 MW to the Happy Valley 25 kV bus,¹¹ though elsewhere it describes the maximum as 77 MW.¹² We know there to be at least four customers with high demand: the DND base with 12.5 MW, and the three data centres that add up to 7.6 MW.¹³ There is however no indication in Hydro's evidence that it has studied the load profiles of these customers, to determine whether their peak loads are coincident with each other and/or with the system peak. While these companies may have power contracts allowing them to take 7.6 MW at any time, if their power needs in the winter are even slightly lower than this amount, the perceived need for an urgent transmission upgrade may not be well founded.
22. Data centres are known to use a great deal of power for cooling their servers. Their load profile is thus likely to be different from a typical customer whose peak occurs in winter, and that they would require their contractual capacities primarily in the summer months. If

¹⁰ Appendix A (Revision 2 of January 25, 2018), p15 of 89.

¹¹ Appendix A (Revision 2 of January 25, 2018), p15 of 89.

¹² Appendix A (Revision 2 of January 25, 2018), p20 of 89.

¹³ Appendix A (Revision 2 of January 25, 2018), p10 of 89.

this is the case, the actual coincident peak may be substantially less than that presented by Hydro, reducing or eliminating the need for these new capital works.

23. As for the DND boiler conversion, there is no indication whether Hydro has explored with them the possibility of keeping their fuel boilers available, in order to allow curtailment during system peaks. Depending on the detailed load profile of the Labrador East system, which was not presented in this file and to the best of our knowledge has never been made public, it is possible that relying on the fuel boilers for even a relatively small number of hours each winter could dramatically reduce the impacts of this conversion on the need for capital upgrades to the Labrador East transmission system.
24. There would no doubt be a cost associated with keeping the existing boilers in operating condition. However, if DND were required to support a portion of the capital cost of the transmission upgrade, it might well be economically attractive to maintain those boilers in order to avoid that cost. Once again, this depends on the result of the Board's deliberations on a policy regarding transmission upgrades, which is a matter currently before it in the GRA.
25. There may well be other demand-side measures that could be employed in the Lake Melville region in the coming years to reduce peak demand. To the best of our knowledge, Hydro has not yet explored the potential for demand response in Labrador.
26. Energy storage represents yet another unexplored option for increasing system capacity. From Hydro's application, it does not appear that Hydro has considered utility-scale energy storage projects which may be able to meet the needs of the system but at a lower cost.

27. On Hydro's forecast, peak demand will reach 80.6 MW in 2018, and 81.4 MW in 2019.

These exceed existing 77 MW capacity (described in the evidence as either 77 or 79 MW) by just between 1.6 to 4.4 MW¹⁴.

28. In an initial stage, Hydro reviewed the option of meeting this short-term demand with mobile diesel units (2 MW each). It found that they could be sufficient to meet this demand in the interim while longer term system planning is undertaken alongside a more detailed load growth study.

The ultimate requirement for a transmission solution with improved reliability of supply to Happy Valley would result in the removal of the mobile diesels at a future date as they would no longer be required. Given that a transmission solution can be constructed in time to meet the winter 2018-2019 peak, the application of mobile diesels was ruled out as being inappropriate in this situation.¹⁵

29. In our submission, the decision to rule out this option was premature. Given the many uncertainties that remain unresolved, we submit that it might be wiser to incur an additional cost in the short-term in order to avoid unnecessarily incurring a much larger cost.

30. Unfortunately, the detailed costs of mobile diesel units were not included in the evidence. Clearly, however, their cost will depend greatly on how many hours a year they are needed, which will in turn depend on the need for a careful analysis of the effect of the new data centers on the coincident peak.

31. Based on the very limited evidence before the Board at this time, there can be no certainty that there will in fact be any need for additional power during the system peak hours next winter.

32. Given the many questions that remain unanswered, it is our submission that the Board should not approve this capital project at this time. Instead, the Board could require:

¹⁴ Appendix A (Revision 2 of January 25, 2018), p30 of 89

¹⁵ Appendix A (Revision 2 of January 25, 2018), p30 of 89.

- a. That Hydro undertake an accelerating planning and consultation process with the concerned stakeholders, and
- b. That it prepare to meet the capacity shortfall that might occur in the winter of 2018-2019 using mobile diesel units.

Costs

33. The Labrador Interconnected Group, if accepted as an intervener, would be the only party representing the interests of Labrador consumers in this proceeding. We have restricted our participation to the Muskrat Falls – Happy Valley Interconnection, the only project that directly affects Labrador consumers. This project, if approved, would have a drastic impact on Labrador rates, and would represent a crucial piece of the planning for the Labrador power system. Given the importance of this project and that we have participated responsibly in this proceeding, we ask for the opportunity to make submissions as to costs.

ALL OF WHICH IS RESPECTFULLY SUBMITTED.

DATED at Toronto, Ontario, this 16th day of February, 2018.

OLTHUIS KLEER TOWNSHEND LLP



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