

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 Board Orders No. P.U. 43(2017) and No. P.U. 9(2018) in relation to Newfoundland and Labrador Hydro’s 2018 Capital Budget Application; and

IN THE MATTER OF the Network Additions Policy Review, dated October 1, 2018; the Labrador Interconnected System Transmission Expansion Study dated October 31, 2018, revised November 5, 2018 and April 3, 2019, filed by Newfoundland and Labrador Hydro.

## **SUBMISSIONS OF THE LABRADOR INTERCONNECTED GROUP**

### **THE SUBMISSIONS OF THE LABRADOR INTERCONNECTED GROUP STATE:**

#### **Introduction**

1. The Labrador Interconnected Group (the “LIG”) represents the communities of Sheshatshiu, Happy Valley-Goose Bay, Wabush, and Labrador City. These communities are all part of the Labrador Interconnected System (“LIS”), to which Newfoundland and Labrador Hydro’s (“NLH” or “Hydro”) proposed Network Addition Policy (“NAP”) will apply, and to which the Transmission Expansion Study (“TES”) pertains.
2. In the LIG’s submission, the Board should adopt Hydro’s NAP provisionally and should order Hydro to continue work on the NAP, in collaboration with stakeholders, to address weaknesses laid out in these submissions. However, the LIG submits that the NAP should not apply to new rural load requests, but rather only to industrial and cryptocurrency

customers. The LIG also submits that while these refinements to the NAP are taking place, the temporary load restrictions set out in P.U. 36(2018), and extended in P.U. 18(2019), should remain in place.

### **Procedural History**

3. In its 2018 Capital Application, made pursuant to s. 41 of the *Public Utilities Act*,<sup>1</sup> Hydro proposed to construct a significant addition to the LIS, the Muskrat Falls to Happy Valley-Goose Bay Interconnection project.
4. The Board, in Order P.U. 43(2017) of December 22, 2017, declined to approve the project, finding that further information was required on the Project, and deferred consideration of it. Hydro filed revised information on January 29, 2018.
5. The LIG applied for intervener status on February 16, 2018. Although its application was opposed by Hydro, the Board granted the LIG intervener status on March 2, 2018.
6. The Board and the LIG posed certain questions to Hydro, which were answered and discussed at a meeting on March 6, 2018. Further Requests for Information were answered on March 13, 2018. The LIG filed its submissions to the Board on March 15, 2018. In its submissions, the LIG urged the Board to require Hydro to create a network addition policy in order to deal appropriately with load growth from new customers such as cryptocurrency customers, amongst other submissions.
7. In its Order P.U. 9(2018), the Board again declined to approve the Muskrat Falls to Happy Valley-Goose Bay Interconnection project, and instead ordered Hydro to provide the following further information, *inter alia*:
  - a. An expansion study for the LIS, addressing planning criteria and other factors; and

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<sup>1</sup> RSNL 1990, c P-47.

- b. A network addition policy setting out how new customers will be treated in regards to their impacts, and how costs caused by new customers will be allocated.<sup>2</sup>
8. Hydro filed the *Network Additions Policy Review* on October 1, 2018. It then filed a report entitled *Labrador Interconnected System Transmission Expansion Study* (referred to in these submissions as the “TES”) on October 31, 2018, and filed a revised version of the TES to the Board on November 5, 2018. Hydro filed a further revised version of the TES on April 3, 2019. On December 14, 2018, Hydro filed a report entitled *Labrador Interconnected System Network Additions Policy* (referred to in these submissions as the “NAP”).
9. The LIG and other parties submitted questions to Hydro concerning the NAP and Expansion Study on February 21, 2019. Hydro provided its answers on March 15, 2019.
10. The LIG filed an expert report prepared by Mr. Philip Raphals on April 25, 2019 (the “Raphals Report”), and an addendum to this report on May 6, 2019 (the “Raphals Report Addendum”).
11. NLH and the Board posed RFIs to the LIG with respect to the Raphals Report and Raphals Report Addendum on May 13, 2019, and the LIG responded to these RFIs on May 23, 2019.

## **Background**

12. Having reliable, affordable access to electricity for rural ratepayers in Labrador is a crucial concern for the LIG. While electricity rates in Labrador are currently low, the region’s climate and widespread electric heating means that electricity prices have a large impact on life in Labrador, and on prospects for economic development. Moreover, Labrador’s

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<sup>2</sup> Order P.U. 9(2018) at p. 9.

transmission systems (both East and West) are highly constrained,<sup>3</sup> meaning that even relatively modest load increases can result in significant capital cost expenditures to meet the increased demand. To this point, ratepayers may be expected to finance such capital costs.

13. Much of the recent and anticipated load growth in Labrador results from the increased presence of cryptocurrency customers.<sup>4</sup> The LIG made extensive submissions considered by the Board in its Order P.U. 9(2018) concerning the role of cryptocurrency customers in the increase in load in Labrador.<sup>5</sup> These submissions were considered by the Board and contributed to its decision to require the TES and NAP under consideration in this proceeding.<sup>6</sup> As the LIG raised in submissions leading to Order P.U. 9(2018), cryptocurrency customers' demands on Labrador's transmission system risk increasing rates to all ratepayers, as is the anticipated result of the Muskrat Falls to Happy Valley-Goose Bay Interconnection project, for example.

14. The Board must ensure that any system expansions take place in an organized and well-planned fashion, and that the costs of such expansions are allocated fairly. As the Board stated in P.U. 9(2018), it is necessary for Hydro to “demonstrate that it has conducted appropriate planning for the system in a comprehensive manner which would include development of reasonable planning criteria, identification of needs on the system and assessment of reasonable alternatives.”<sup>7</sup> In addition, it is necessary for Hydro to protect

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<sup>3</sup> Expert Report of Philip Raphals, *Newfoundland and Labrador Hydro's Proposed Network Addition Policy and Transmission Expansion Study* dated April 25, 2019 at p. 2 [Raphals Report].

<sup>4</sup> Raphals Report, p 2-3.

<sup>5</sup> See e.g. Order P.U. 9(2018) at pp. 3-5.

<sup>6</sup> *Ibid.*, at pp. 8-9.

<sup>7</sup> *Ibid.*, at p. 8.

existing customers from the risks of significant stranded costs associated with new customers.<sup>8</sup>

## **Powers of the Board**

15. The powers of the Board in this matter are set out in the *Public Utilities Act*<sup>9</sup> and the *Electrical Power Control Act*.<sup>10</sup>

16. Section 6 of the *EPCA* states:

6. (1) The public utilities board has the authority and the responsibility to ensure that adequate planning occurs for the future production, transmission and distribution of power in the province.

(2) The public utilities board may direct a producer or retailer to perform such activities and provide such information as it considers necessary for such planning to the public utilities board or to any other producer or retailer on such terms and conditions as it may prescribe.

(3) For the purpose of this section, the public utilities board may adopt those rules and procedures that it considers necessary or advisable to give effect to the subsection.

17. It is notable that s.4 of the *EPCA* directs the Board, in its exercise of authority under the *EPCA* and the *PUA*, to implement the declared power policy of the Province. This policy is declared in s.3 of the *EPCA*, part of which states that:

3. It is declared to be the policy of the province that

(a) the rates to be charged, either generally or under specific contracts, for the supply of power within the province

(i) should be reasonable and not unjustly discriminatory, [...]

(v) should promote the development of industrial activity in Labrador [...]

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<sup>8</sup> *Ibid.*

<sup>9</sup> *Public Utilities Act*, RSNL 1990, c P-47 [*PUA*].

<sup>10</sup> *Electrical Power Control Act*, 1994, SNL 1994, c E-5.1 [*EPCA*]

(b) all sources and facilities for the production, transmission and distribution of power in the province should be managed and operated in a manner

(i) that would result in the most efficient production, transmission and distribution of power,

(ii) that would result in consumers in the province having equitable access to an adequate supply of power,

(iii) that would result in power being delivered to consumers in the province at the lowest possible cost consistent with reliable service

[...]

18. At the end of s.3(b) of the *EPCA*, the statute states that, where necessary, “all power, sources and facilities of the province are to be assessed and allocated and re-allocated in the manner that is necessary to give effect to this policy”.

19. The Board ordered Hydro to file a NAP in P.U. 9(2018), which was a proceeding arising out of NLH’s 2018 Capital Budget Application. The Capital Budget Application is a proceeding arising out of the requirement in s.41 of the *PUA* for Hydro to seek Board approval for capital expenditures in excess of \$50,000.

20. In Hydro’s NAP as filed, it proposes to charge certain fees to offset the cost of capital construction. Section 70(1) of the *PUA* sets out that:

70. (1) A public utility shall not charge, demand, collect or receive compensation for a service performed by it whether for the public or under contract until the public utility has first submitted for the approval of the board a schedule of rates, tolls and charges and has obtained the approval of the board and the schedule of rates, tolls and charges so approved shall be filed with the board and shall be the only lawful rates, tolls and charges of the public utility, until altered, reduced or modified as provided in this Act.

### **Network Addition Policy**

21. In Order P.U. 9(2018), the Board directed Hydro to develop:

A network addition policy setting out how new customers will be treated in regards to their impact on the system and how costs will be allocated among customers for reliability, economic, transmission, and load upgrades, either in the cost of service or through contributions in aid of construction.<sup>11</sup>

22. The NAP developed by Hydro and submitted to the Board for its approval has as its stated purpose to: “limit rate increases that can result from investment in new transmission assets to serve new load requests, and to achieve a reasonable balance in sharing of the benefits and the costs of new transmission investments between the Applicant [for service] and existing customers.”<sup>12</sup>

23. As the LIG understands it, the NAP submitted by Hydro proposes to operate as follows:

- a. for any new customer, the cost of the first 200 kW of capacity is exempted under the Basic Capacity Investment Credit (“BCIC”);
- b. for customers with projects less than 1500 kW in capacity, they are charged an Upstream Capacity Charge (“UCC”) based on the Unit Expansion Cost (\$465/kW), minus the BCIC.<sup>13</sup> This charge is central to the NAP and is meant to impose a charge on small load additions to contribute to the costs of the future expansions, the need for which they contributed to; and<sup>14</sup>
- c. for projects of 1500 kW or more, Hydro assesses whether the new customer would cause an “acceleration” to the Transmission Expansion Plan.<sup>15</sup> If not, then the UCC is charged the same way as for small projects. If there is acceleration, then the customer is charged an Expansion Advancement Cost.

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<sup>11</sup> Order P.U. 9(2018) at p. 9.

<sup>12</sup> Newfoundland and Labrador Hydro, *Labrador Interconnected System Network Additions Policy* dated December 14, 2018 at p. 1 [NAP].

<sup>13</sup> NAP at pp. 6-9.

<sup>14</sup> LIS NAP Summary Report, p. 4-5.

<sup>15</sup> NAP Article 5.2 at p. 8-9; Raphals Report at 10, 16-17.

24. The amount of the UCC depends on the projects included in the Transmission Expansion Plan, which is meant to be able to serve the baseline load forecast. The Expansion Advancement Cost is calculated according to the degree of acceleration from the Transmission Expansion Plan.
25. The LIG refers the Board to pages 8-40 of the Raphals Report, which summarize the NAP and TES in greater detail, and performs certain sample calculations with respect to the UCC and its derivation.
26. The LIG supports the broad purpose of the NAP – to ensure that large customers, such as industrial and cryptocurrency customers, pay their fair share of the infrastructure costs that must be incurred to serve them. At the same time, the LIG cautions against an approach that overly burdens ordinary rural customers and slows down economic growth. As laid out below, the LIG submits that the NAP should be approved by the Board with some modifications and on a provisional basis at this time, with further work to be done to explore refinements suggested in these submissions.
27. While these refinements are being fleshed out, the temporary load restrictions set out in P.U. 36(2018), and extended in P.U. 18(2019), should remain in place.

### **Application of the NAP**

28. The first modification to Hydro's NAP that the LIG submits should be ordered by the Board in the present proceeding is that the NAP should apply to industrial and cryptocurrency customer loads, but not to other rural loads.
29. The need for the NAP was made clear in Hydro's application regarding the Muskrat Falls to Happy Valley-Goose Bay Interconnection project, a significant capital investment for which new load requests, mainly from cryptocurrency customers, constituted an important part of



the project's justification.<sup>16</sup> In the absence of an NAP, those costs will be borne by all ratepayers; the new customers are assessed no additional charge.<sup>17</sup>

30. With new requests being made by other cryptocurrency customers, Hydro anticipates that load growth will continue in Labrador and will require further capital investment.<sup>18</sup>
31. As outlined in more detail below, cryptocurrency customers are unique in that they are highly mobile, consume great quantities of power, require relatively little capital investment and belong to a volatile sector with variable profitability.<sup>19</sup>
32. The volatility and unpredictability of these customers' needs creates great risks for existing ratepayers, who may not have caused the need for new infrastructure but who may be stuck with the costs associated with it if cryptocurrency customers are no longer in business. Furthermore, because of the "lumpiness" of transmission upgrade costs, even if the new customer who caused the upgrade remains in business, the upgrade will in many cases create substantial surplus transmission capacity, the costs of which would be borne by all customers. Having the NAP in place will prevent existing ratepayers from bearing the full cost of network additions required by load requests from these customers. Protecting existing ratepayers from these costs is appropriate and in keeping with the approaches to serving cryptocurrency customers being taken in other jurisdictions.<sup>20</sup>
33. It is further appropriate and in keeping with common transmission network addition policies in North America for industrial customers to bear the cost of network additions required by

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<sup>16</sup> NLH-LAB-2014.

<sup>17</sup> Raphals Report at p. 8.

<sup>18</sup> Newfoundland and Labrador Hydro, *Network Additions Policy Review* dated October 1, 2018 at p. 1 [NAP Review]; Raphals Report at pp. 45-46.

<sup>19</sup> Raphals Report at p. 2.

<sup>20</sup> Raphals Report at p. 42-54.

their load requests.<sup>21</sup> This approach can be seen as analogous to FERC transmission policy's emphasis on ensuring that costs created by transmission customers do not adversely affect native load.

34. However, the NAP ought not to capture regular rural load growth that is part of the ordinary course of growth in Labrador's communities.<sup>22</sup> Rural load growth associated with small-scale consumers and community growth is a different type of load growth from the growth associated with cryptocurrency customers and large-scale industrial developments. For one thing, the risk of stranded assets generally is not a concern when it comes to regular rural customers. If the NAP were to apply to regular rural load growth, there would be a risk that incremental community growth would be negatively impacted. In order to avoid this type of undesired consequence, the NAP ought not to apply to regular rural load growth.

35. As an example, we wish to draw the Board's attention to a 1377 kW wellness centre facility to be constructed in Happy Valley-Goose Bay. The wellness centre was made possible by a \$1 million donation from Nalcor Energy, but then would be charged a \$547,305 UCC according to Hydro's proposed NAP. The benefits to the community of the wellness centre are great and the risk of flight of this customer is nil. The wellness centre would pay for its impact on infrastructure in the system over its lifetime. A large upfront charge may make its operation impossible. In the LIG's submission, such an impact on community infrastructure is not in keeping with the intent of the NAP.

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<sup>21</sup> Expert Report of Philip Raphals, *Newfoundland and Labrador Hydro's Proposed Network Addition Policy and Transmission Expansion Study – Addendum* dated May 6, 2019 at p. 23 [Raphals Report Addendum]; NLH-LAB-005; NLH-LAB-011.

<sup>22</sup> Raphals Report at p. 26; NLH-LAB-005.

36. Moreover, as discussed in the Raphals Report, other jurisdictions, such as New York and Quebec, facing the same issue have not applied network expansion charges to regular retail loads, but only to industrial and cryptocurrency customers.<sup>23</sup>
37. There may be a threshold at which load requests from rural customers may appropriately attract the application of the NAP. As Mr. Raphals notes, such a “...value should be large enough to exclude most native load growth...” but may appropriately capture major projects.<sup>24</sup> However, there is currently no evidence before the Board to assist in determining where this threshold ought to lie.
38. As there is no evidence on which the Board may consider such a threshold, it is submitted that at present the NAP ought not to apply to any rural load requests, but only to industrial and cryptocurrency requests.
39. The definition of an industrial customer is already well established and set out in Hydro’s current schedule of rates and tolls. While no such definition currently exists for cryptocurrency customers, we suggest that the Board, on a provisional basis, adopt the definition as set out in the recent decision of the Régie de l’Energie of Quebec. This definition was discussed in the Raphals Report Addendum:
- The use of electricity for the purpose of operating computer equipment dedicated to cryptographic calculations which, in particular, serve to validate successive transactions made by users of a blockchain.<sup>25</sup>
40. We submit that the Board should order Hydro to provisionally employ this definition to identify cryptocurrency customers and that the NAP should be applied only to them, and the industrial customers.

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<sup>23</sup> Raphals Report at p. 26, 52.

<sup>24</sup> NLH-LAB-005.

<sup>25</sup> Raphals Report Addendum at p. 7.

41. If the definition of cryptocurrency customer needs further refinement, this can be addressed alongside the other refinements for which we make argument in the rest of these submissions.

### **Other Refinements to the NAP**

42. The LIG submits that the following other refinements to the NAP should be adopted:

- a. As the UCC and the Expansion Advancement Cost both depend directly on the accuracy of the baseline load forecast, as well as the reasonableness of any Transmission Expansion Plan as a least cost pathway to ensuring the adequate supply of electricity, both the load forecast and the Transmission Expansion Plan should be filed with the Board on a regular basis;
- b. The NAP as proposed is not adequate for dealing with the challenges and opportunities posed by cryptocurrency customers. A policy targeting cryptocurrency customers specifically will ensure least cost service by specifically providing for curtailment with respect to cryptocurrency customers. It will also ensure that cryptocurrency customers do not evade the NAP by engaging in practices such as fractionating into small accounts;
- c. Hydro's proposal for calculating reliability benefits and for allowing them to offset up to 50% of the UCC should not be retained, and Hydro should continue to work on a better way to take reliability benefits into account; and
- d. The NAP does not make clear when the Customer Contributions for load requests of less than 1500 kW will be paid. Hydro should revise the NAP to make clear that Customer Contributions for load requests of less than 1500 kW must be paid in full prior to any upgrade work being commenced, and to make clear that no commitments

from Hydro to provide service will be binding until payment of the Customer Contribution is made.

***Accuracy in Hydro's Capital Plans***

43. The NAP differs from existing Hydro policies in that Hydro is proposing to charge customers for capital costs for projects that are not yet constructed, and for which permission from the Board for construction under s.41 of the *PUA* may not yet have been given. While the LIG accepts that large new industrial and cryptocurrency customers should help pay for capital expansion, Hydro's application also highlights the importance of accuracy in Hydro's load forecasting and capital expansion plans.

44. The NAP proposes to charge an Expansion Cost based on its Transmission Expansion Plan ("TEP"). To date, Hydro has filed the TES but not a TEP, even though the NAP requires that both the Expansion Cost and Expansion Advancement Cost be calculated based on a TEP. The TEP will be based on a baseline load forecast. The TEP is also integral to the calculation of the Expansion Advancement Cost charged to customers.<sup>26</sup>

45. As outlined above, the UCC for projects between 200 and 1500 kW, and for projects above 1500 kW which do not require acceleration of the TEP, is derived from the Expansion Cost per kW.

46. The NAP states that the Expansion Cost per kW is:

... an estimate of the cost of potential transmission upgrades, as provided in the Transmission Expansion Plan, divided by the additional capacity provided by those transmission upgrades.<sup>27</sup>

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<sup>26</sup> NAP Article 2 at p. 3.

<sup>27</sup> *Ibid.*

47. It is important to scrutinize which potential upgrades are being included in the calculation, in order to ensure that an accurate reflection of expansion costs is arrived at and is paid for customer load requests under the NAP.
48. A review of Hydro's Expansion Cost per kW derivation shows that Hydro has incorporated some but not all of the capital projects it outlines in the TES as being preferred alternatives for provision of additional capacity, beyond what is needed to serve the baseline forecast.<sup>28</sup>
49. Specifically, Hydro's current Expansion Cost per kW does not incorporate the cost of Alternative 17. This Alternative is identified in the TES as the least cost solution for increasing transmission capacity in Labrador West once the capacity made available by the Wabush TS upgrades and uprating (which are included in the Expansion Cost per kW derivation) is exceeded.<sup>29</sup> Alternative 17 will involve construction of new transmission lines and terminal stations, amongst other items, and its projected cost is \$153.15 million.<sup>30</sup>
50. If Alternative 17 is not included in the calculation of the Expansion Cost per kW, the number derived in Hydro's calculation is \$465/kW.<sup>31</sup> If Alternative 17 were to be included, the number increases to \$836/kW.<sup>32</sup>
51. Hydro has stated that it has not included Alternative 17 in the Expansion Cost per kW derivation because the project will only be required in the event of a large new load.<sup>33</sup>
52. However, Alternative 17 is Hydro's recommended option in the TES for loads above 434 MW in Labrador West, and loads above this level are envisaged in Hydro's sensitivity forecast.<sup>34</sup>

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<sup>28</sup> Raphals Report at p. 11-12.

<sup>29</sup> TES at p. 31.

<sup>30</sup> *Ibid.*

<sup>31</sup> NAP Appendix A.

<sup>32</sup> Raphals Report at pp. 13-14.

<sup>33</sup> Raphals Report at p. 12.

53. Based on Hydro's recommendation of Alternative 17, the Raphals Report recommended including it in the Expansion Cost per kW derivation.<sup>35</sup> In the LIG's submission, this example illustrates the importance of the load forecast and the content of the TEP in the derivation of the Expansion Cost per kW. What capital projects are included in the TEP has a material effect on the Expansion Cost per kW and the question of what is reasonably included in that plan should be a decision of the Board after Hydro's evidence is properly tested.

54. With respect to the Expansion Advancement Cost, this is calculated by reference to how much a customer accelerates the implementation of the TEP beyond the "natural" growth set out in the baseline forecast. The accuracy of the Expansion Advancement Cost as a measure of the acceleration of capital cost incurred by the electrical system therefore depends not only on the accuracy of the TEP, but also of the baseline load forecast.

55. The NAP defines the Transmission Expansion Plan as:

... the most recent transmission system expansion plan for the Labrador Interconnected System filed with the Board. The Transmission Expansion Plan identifies Transmission Upgrades required to serve various load growth scenarios and the estimated costs to implement each upgrade.<sup>36</sup>

56. Hydro filed the TES with the Board on October 31, 2018, a revised version on November 5, 2018, and a further revised version on April 3, 2019. It appears that Hydro intends for the TES to stand in for a TEP for the present.<sup>37</sup> However, the TES lacks certain information that the NAP states will be included in the TEP, and which the LIG submits is crucial to the accurate and appropriate calculation of the UCC. Specifically, the TES does not clearly set

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<sup>34</sup> Raphals Report at p. 13.

<sup>35</sup> Raphals Report at pp. 12-13.

<sup>36</sup> NAP Article 2 at p. 6 [emphasis added].

<sup>37</sup> See NAP, Appendix B at p. 18.

out “various load growth scenarios,” nor does it outline the Transmission Upgrades and associated costs required to serve such various load growth scenarios.<sup>38</sup>

57. As outlined above, the expansion and advancement approaches proposed by Hydro to calculate the UCC are very sensitive to assumptions, making it important that the forecasts and plans underlying the NAP are as accurate as possible.

58. The TEP should outline various load growth scenarios, as the NAP states it will. These should include low, medium and high forecasts, which should be incorporated into Hydro’s baseline forecast. This approach will reflect the uncertainty around the underlying forecast of energy needs over the next 20 years.<sup>39</sup>

59. In addition, the TEP should present P50 and P90 baseline load forecasts for both Labrador East and Labrador West regularly and in a consistent format. Sensitivity forecasts for each region should also be clearly identified and broken down by type of incremental load.<sup>40</sup> Such forecasts should specifically consider and outline anticipated cryptocurrency customer loads, and should outline the bases for the anticipated amounts.<sup>41</sup>

60. This information will assist the Board and other stakeholders in understanding the assumptions underlying the NAP’s UCC calculations, and in evaluating the appropriateness of these assumptions. It will also assist the Board and other stakeholders to identify and understand changes to the baseline forecasts over time.

61. The NAP contemplates that Hydro will perform an annual assessment of the TEP.<sup>42</sup>

62. Given the variability of the UCC depending on the assumptions found in the TEP, an annual assessment is important to ensuring that the assumptions are as up to date and accurate as

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<sup>38</sup> Raphals Report at p. 55.

<sup>39</sup> Raphals Report at pp. 27-28; NLH-LAB-013.

<sup>40</sup> Raphals Report at p. 29; NLH-LAB-013.

<sup>41</sup> Raphals Report at pp. 29-32.

<sup>42</sup> NAP, Appendix B at p. 18.



possible. It is also appropriate that the TEP receive Board approval, given its impact on the calculation of the UCC.

63. The Expansion Cost and Expansion Advancement Cost within the NAP, for which Hydro is seeking approval, are “rates, tolls, and charges” within the meaning of s.70(1) of the *PUA*. These charges are based on underlying plans contained within the TEP and the load forecasts built into those plans. These charges result in specific dollar amounts per kW that are charged to customers and are based on assumptions about the least cost capital construction options available, as well as forecasts about when the load requests which would justify such projects are likely to materialize. To ensure that the Expansion Cost and the Expansion Advancement Cost are reasonable, the underlying assumptions – the TEP and associated load forecasts – on which these charges are based must be put before the Board and tested. Moreover, such testing should take place on an annual basis to ensure that the assumptions reflect current developments.
64. Such measures are also justified by ss 6(1) and 6(2) of the *EPCA*, which mandate this Board to “ensure that adequate planning occurs” and permits the Board to require Hydro to provide “such information as [the Board] considers necessary for such planning to the public utilities board”.
65. Since Hydro has not filed a TEP meeting the criteria outlined in the NAP for the Board’s approval to date, and since the LIG urges the Board to require that the TEP also include the information outlined above, the LIG takes the position that temporary load restrictions set out in P.U. 36(2018), and extended in P.U. 18(2019), should remain in place until such time as the Board is satisfied that the TEP and any associated load forecasts are reasonable and reflect least cost options to supply adequate power.

### *Cryptocurrency Customers*

66. The driving force behind the development of the NAP has been the arrival of cryptocurrency mining activities in Labrador.<sup>43</sup> Hydro's forecasts show that as of 2022 cryptocurrency customer consumption will make up 40% of rural peak loads in Labrador.<sup>44</sup>
67. As outlined in the Raphals Report, these cryptocurrency customers pose unique demands and concerns in Labrador. These customers:
- a. are highly mobile and seek out jurisdictions with low cost electricity;
  - b. consume a great deal of power, with load factors approaching 100%;
  - c. require little capital investment; and
  - d. have a business model whose viability depends on the worldwide price of the relevant cryptocurrency, which is highly volatile.<sup>45</sup>
68. There are therefore risks in developing infrastructure for these customers, since they may not remain ratepayers for any significant future period.<sup>46</sup>
69. In light of these risks and characteristics, other jurisdictions in North America, including Quebec and New York, have put in place policies applying specifically to cryptocurrency customers.<sup>47</sup>
70. The Régie recently released a decision following a lengthy hearing concerning a proposal by Hydro-Quebec Distribution to create a block of energy to be reserved for cryptocurrency use and to be auctioned off to the highest bidder.<sup>48</sup> In its decisions, the Régie accepted Hydro-Quebec Distribution proposal, and:

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<sup>43</sup> Raphals Report at p. 66; NAP Review at p. 1.

<sup>44</sup> Raphals Report at p. 46; LAB-NLH-074, Tables 1 and 2.

<sup>45</sup> Raphals Report at p. 2; see also Raphals Report Addendum at pp. 9-10; D-2019-052 at para. 72.

<sup>46</sup> See e.g. D-2019-052 at para. 76; Raphals Report Addendum at p. 10.

<sup>47</sup> Raphals Report at p. 51; see e.g. D-2019-052.

<sup>48</sup> Raphals Report at p. 49.

- a. established a new rate class for cryptocurrency customers;<sup>49</sup>
- b. set aside a block of power reserved for the new class;<sup>50</sup> and
- c. established a requirement that cryptocurrency customers curtail their energy usage for up to 300 hours a year, at the regulator's discretion.<sup>51</sup>

71. The importance of creating policies specific to cryptocurrency customers is clear when one considers the potential impact a curtailment policy, like the one ordered by the Régie, would have on peak demand in Labrador.

72. Cryptocurrency customers normally operate at full capacity, and their loads are therefore normally fully present at regional and system peak.<sup>52</sup>

73. As an example, Hydro's forecast for Labrador East shows that if cryptocurrency customer loads are excluded from the forecast, the transmission capacity available without the Muskrat Falls to Happy Valley-Goose Bay Interconnection project would not have been exceeded by more than 10 hours until 2036, and in 2043 would only be exceeded during 83 hours.<sup>53</sup>

74. It is reasonable to think that such minimal demands could have been met by CDM or other load management programs.<sup>54</sup>

75. This example demonstrates that if cryptocurrency customer loads were not present at system peak, the pressure on the Labrador transmission system would be largely or completely eliminated. It is therefore advisable for the Board to consider the implementation of a curtailment policy, such as the one the Régie has ordered in Quebec. The evidence in that

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<sup>49</sup> Raphals Report Addendum at p. 11; D-2019-052 at paras. 78-83.

<sup>50</sup> Raphals Report Addendum at pp. 13-14; D-2019-052 at paras. 166-171.

<sup>51</sup> Raphals Report Addendum at pp. 15-16; D-2019-052 at paras. 173-177.

<sup>52</sup> Raphals Report at p. 50.

<sup>53</sup> Raphals Report at p. 50; LAB-NLH-080; NLH-LAB-012.

<sup>54</sup> Raphals Report at p. 19.

proceeding was that such a curtailment policy would not constitute a serious impediment for these customers.<sup>55</sup>

76. Because curtailment has minimal effects on cryptocurrency customers, and because cryptocurrency customers make up such a significant portion of the coincident peak load in Labrador, there are significant savings in capital infrastructure that can be obtained by pursuing a curtailment program targeted at cryptocurrency customers. Indeed, a curtailment program is an essential part of a least cost TEP.

77. As the NAP is currently drafted, it applies to all new load requests over 200 kW without taking into account the type of customer making the request. However, should a new cryptocurrency business fractionate into a number of smaller customers (say, of 199 kW) then the charges arising from the NAP would not apply to them at all. Similarly, if they simply assume the accounts of existing customers, they would not be caught by the NAP.

78. In order to ensure that cryptocurrency customers' demands are being appropriately managed and addressed, including through the application of the NAP, it is necessary that a cryptocurrency rate class be created.

79. With the recent Régie decision, there is now regulatory precedent for a targeted cryptocurrency rate in Canada – one based on the ordinary ratemaking powers of a public utilities regulator.<sup>56</sup> Moreover, the Régie has also taken steps to limit the growth of the cryptocurrency industry in Quebec.<sup>57</sup> It can be expected that significant amounts of cryptocurrency demand could shift across the border into Labrador, making the task of a targeted cryptocurrency policy in this Province all the more urgent.

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<sup>55</sup> Raphals Report at p. 50.

<sup>56</sup> See e.g. Raphals Report Addendum at pp. 2-6, 12-14, 17, 22-23; NLH-LAB-008.

<sup>57</sup> See e.g. Raphals Report Addendum at pp. 11; 12-14.

80. As outlined above, it is the LIG's position that the NAP as it is currently drafted applies too broadly, and that it should be revised so that it applies only to industrial and cryptocurrency customers.

81. We submit that the Board should, on a provisional basis, order the use of the definition in the Régie decision of cryptocurrency customer, as set out earlier in these submissions and as discussed in the Raphals Report Addendum.<sup>58</sup> Hydro should also be ordered to pursue a curtailment program with this class of customer and to incorporate a curtailment program into its load forecasting as well as in a TEP to be submitted to the Board for approval.

82. This class should be created as soon as possible, and concerned parties should be provided with the opportunity to make submissions to the Board on:

- a. the class' composition;
- b. what constraints, obligations and curtailment obligations should apply to this class;  
and
- c. whether these constraints, obligations and curtailment obligations should apply to existing cryptocurrency customers who fall into the class' definition.<sup>59</sup>

83. Until this occurs, the LIG takes the position that the temporary load restrictions set out in P.U. 36(2018), and extended in P.U. 18(2019), should remain in place, and the provisional definition of the cryptocurrency class as set out above should be used.<sup>60</sup>

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<sup>58</sup> Raphals Report Addendum at p. 7.

<sup>59</sup> NLH-LAB-009.

<sup>60</sup> P.U. 36(2018); P.U. 18(2019).

***Reliability Benefits***

84. The LIG submits that Hydro's proposed method for integrating reliability benefits in the Upstream Capital Charge should not be accepted by the Board.

85. The Expansion Advancement Cost's calculation involves the deduction of reliability benefits.<sup>61</sup> Hydro's NAP states that the Expansion Advancement Cost:

...reflects the difference between the cost of acceleration of the Transmission Expansion Plan and the value to existing Customers from plan acceleration. The value to existing Customers will be determined based [on] the forecast reduction in Expected Unserved Energy resulting from the capital advancement. However, the credit provided based on the Expected Unserved Energy value to Customers will not exceed 50% of the cost of acceleration of the Transmission Expansion Plan.<sup>62</sup>

86. While it may be appropriate for the Expansion Advancement Cost to take into account the reliability benefits to existing customers from transmission upgrades, the use of Expected Unserved Energy to calculate these reliability benefits is problematic.

87. Expected Unserved Energy is defined in the NAP as "a measure of the amount of customer demand not served due to generation shortfalls."<sup>63</sup> Based on information provided by Hydro, it appears that it proposes to calculate EUE based on the approximate cost of backup generation based on the projected costs of gas turbine fuel.<sup>64</sup>

88. This method of valuation is problematic since:

- a. EUE is, by its very nature, *unserved* energy needs, meaning that costs to meet the need are not incurred;<sup>65</sup>

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<sup>61</sup> NAP at p. 9; Raphals Report at p. 17.

<sup>62</sup> NAP at p. 9.

<sup>63</sup> NAP at p. 3.

<sup>64</sup> PUB-LAB-002; Raphals Report p. 23. However, the value used by Hydro in its calculations appears rather to be derived from export sales (PUB-LAB-002).

<sup>65</sup> *Ibid.*

- b. Crediting new customers for reductions in EUE is akin to requiring existing customers to reimburse new customers for saving them costs that the existing customers did not in fact incur;<sup>66</sup>
- c. In the event of load curtailment due to insufficient transmission capacity, it may be the case that some consumers with access to their own backup generation would incur fuel usage costs. However, for other consumers, the cost of such a shortfall would be entirely divorced from any fuel usage costs, and would instead reflect their particular circumstances at the time of the outage. EUE would not accurately reflect the cost of energy shortfalls to those consumers;<sup>67</sup>
- d. Hydro has not provided examples of any jurisdictions that deduct the value of reliability to existing customers from the cost of transmission upgrades;<sup>68</sup> and
- e. Hydro has not provided a detailed justification for crediting new customers for avoided EUE up to 50% of the acceleration costs incurred.<sup>69</sup>

89. Moreover, in situations where a new customer causes load growth but does not require a transmission upgrade, reliability is degraded and EUE is increased for consumers. This degradation is not taken into account in the NAP.<sup>70</sup>

90. Measuring and valuing reliability is a complex undertaking and significant work has been done in other jurisdictions in this regard.<sup>71</sup>

91. If the Board accepts Hydro's position that reliability benefits should be credited against the Expansion Advancement Cost and reflected in the UCC, it is the LIG's submission that a

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<sup>66</sup> *Ibid.*

<sup>67</sup> NLH-LAB-004.

<sup>68</sup> *Ibid.*; PUB-LAB-004.

<sup>69</sup> NLH-LAB-004.

<sup>70</sup> Raphals Report at p. 24.

<sup>71</sup> NLH-LAB-004.

thorough, methodologically sound effort will be required in order to place a monetary value on reliability benefits in the LIS. The EUE reliability metric proposed by Hydro is not an adequate measure of reliability benefits. Until an appropriate measure can be determined, the LIG submits that the Board should reject Hydro's proposed method for integrating reliability benefits in the UCC.

*Expansion and Advancement Costs*

92. While the LIG submits that Hydro's proposed expansion and advancement cost approaches should be adopted provisionally, subject to the conditions outlined above, the LIG further submits that Hydro should be required to consider whether adopting a policy whereby new customers under the NAP must take full responsibility for the network additions required to provide service, and must pay the costs of capital upgrades upfront, is preferable.
93. A measure that can and should be put in place immediately is to require that the Customer Contribution for load requests of less than 1500 kW be paid in full prior to any upgrade work being commenced. No commitments from Hydro to provide service should be binding until payment of the Customer Contribution is made.
94. As outlined in the Raphals Report and the Responses to Information Requests, other jurisdictions in North America have adopted network upgrade policies that require new customers covered by the policies to pay the full cost for network additions.<sup>72</sup>
95. Such an approach should be considered by Hydro going forward. As the foregoing sections have demonstrated, the expansion and advancement approaches proposed by Hydro are

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<sup>72</sup> Raphals Report at pp. 52-54; NLH-LAB-011.



sensitive to assumptions (e.g. the inclusion or exclusion of Alternative 17 to the Expansion Cost per kW) and are not robust.

96. Moreover, it is possible under Hydro's proposed NAP structure for a load request under 1500 kW (to which the Expansion Advancement Cost does not apply) to trigger construction of transmission assets whose cost would be primarily borne by existing ratepayers, rather than the requesting party.<sup>73</sup>

97. FERC's network upgrade policy offers an example of a robust and well-developed approach in which the scenario above would not occur. The FERC policy ensures that existing customers are not adversely affected by transmission upgrades undertaken to provide service to new customers by requiring that new customers pay for such upgrades.<sup>74</sup> A modified version of this policy has been adopted in Quebec.<sup>75</sup>

98. In light of the weaknesses inherent in the NAP's current approach, the Board should require that Hydro consider modifying the NAP so that it accords with the policies adopted by FERC and in Quebec, which ensure that costs created by transmission customers do not adversely affect native load.

## **Conclusion**

99. In summary, the LIG requests that the Board:

- a. Provisionally accept the NAP as proposed by Hydro, provided that it only applies to industrial and cryptocurrency customers;

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<sup>73</sup> Raphals Report at pp. 14-15, 53; LAB-NLH-085(a) and (b).

<sup>74</sup> Raphals Report at p. 52; NLH-LAB-011.

<sup>75</sup> Raphals Report at p. 26; Raphals Report Addendum at p. 20; NLH-LAB-011.

- b. Provisionally use the definition of cryptocurrency customer as set out in the Régie decision and described on page 7 of the Raphals Report Addendum;
- c. Require that Hydro's Transmission Expansion Study be modified to meet the requirements for a Transmission Expansion Plan, outlined above; that it be updated annually; and that it, along with associated load forecasts be submitted to the Board for its approval;
- d. Maintain the temporary load restrictions set out in P.U. 36(2018), and extended in P.U. 18(2019), until a Transmission Expansion Plan has been filed with and approved by the Board;
- e. Reject the NAP's reliability benefits calculation until further evidence has been presented to the Board on such valuation;
- f. Order Hydro to consider modifications to the expansion and advancement approaches it proposes in the NAP, and to consider whether adopting a policy whereby new customers under the NAP must take full responsibility for the network additions required to provide service, and must pay the costs of capital upgrades upfront, is preferable; and
- g. Order Hydro to revise the NAP to make clear that Customer Contributions for load requests of less than 1500 kW must be paid in full prior to any upgrade work being commenced, and to make clear that no commitments from Hydro to provide service will be binding until payment of the Customer Contribution is made.

**ALL OF WHICH IS RESPECTFULLY SUBMITTED.**

DATED at Toronto, Ontario, this 28<sup>th</sup> day of May, 2019.

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