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June 17, 2016

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Via Electronic Mail and Courier

Newfoundland and Labrador Board
of Commissioners of Public Utilities
120 Torbay Road
P.O. Box 21040
St. John's, NL A1A 5B2

Attention: Ms. G. Cheryl Blundon, Director of Corporate Services and Board Secretary

Dear Ms. Blundon:

Re: Supply Issues and Power Outages Investigation and Hearing - Phase Two - To NLH - Requests for Information

Please find enclosed the original and eight (8) copies of the Requests for Information IC–NLH–22 to IC-NLH-95 of the Island Industrial Customers in the above Application. IC-NLH-22 to 67 are in relation to the Energy Supply Risk Assessment (ESRA) Report, and IC-NLH-68 to 95 are in relation to the Teshmont Report.

We trust you will find the enclosed to be in order.

Yours truly,

Stewart McKelvey

Paul L. Coxworthy

PLC/kmcd

Enclosure
c. Geoffrey P. Young, Senior Legal Counsel, Newfoundland and Labrador Hydro
Thomas J. Johnson, Consumer Advocate
Gerard Hayes, Newfoundland Power
Denis J. Fleming, Cox & Palmer
Dean A. Porter, Poole, Althouse
Roberta Frampton Benefiel, Grand Riverkeeping Labrador Inc.
Danny Dumaresque

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 (the *"EPCA"*) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the "*Act*"), as amended; and

IN THE MATTER OF the Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System.

ISLAND INDUSTRIAL CUSTOMERS GROUP
REQUESTS FOR INFORMATION
IC–NLH–22 to IC-NLH-95

Issued: June 17, 2016

IN THE MATTER OF the *Electrical Power Control Act, 1994*, SNL 1994, Chapter E-5.1 (the *"EPCA"*) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the "*Act*"), as amended; and

IN THE MATTER OF the Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System.

REQUESTS FOR INFORMATION OF
THE ISLAND INDUSTRIAL CUSTOMERS GROUP
IC–NLH–22 to IC-NLH-95

RFIs on Hydro's Energy Supply Risk Assessment (ESRA) Report:

General:

IC–NLH–22 Please confirm that Hydro's Energy Supply Risk Assessment (ESRA) Report and the Probabilistic Based Transmission Reliability Report by Teshmont use the same assumptions regarding load forecasts, available capacity, unit ratings, reliability criteria, and any other key factors affecting reliability risk assessments. If not, please provide a list of all differences in the assumptions and explain the reasons for each difference.

IC–NLH–23 Please update the status of Hydro's actions on each recommendation in the December 17, 2014 report Executive Summary prepared by the Liberty Consulting Group with regard to Hydro's Isolated Island System (IIS).

IC–NLH–24 Please confirm that ESRA Report focused on a risk assessment of Hydro's ability to meet IIS energy and demand requirements, and measures to avoid reliability risks, during the period prior to completion of either the Labrador Island Transmission Link or the Maritime Link interconnection with the North American grid.

IC–NLH–25 Please confirm that the Maritime Link (ML) and the Labrador Island Transmission Link (LIL) could each be in-service prior to Muskrat Falls being in service, and indicate the earliest potential in-service dates for the ML and for the LIL.

Load Forecast:

IC–NLH–26 In reference to Table 2 on page 13 of the ESRA Report, please confirm that it is Hydro's intention to use the "Post Budget Sensitivity" load forecast in the system planning for 2016/17 winter.

IC–NLH–27 In reference to Table 2 on page 13 of the ESRA Report, please provide details of P50 and P90 load forecasts, including how Hydro estimates probability of actual peak being 50%/90% lower than forecast, conversely being higher than forecast 50%/10% of the time.

IC–NLH–28 In reference to Table 2 on page 13 of the ESRA Report, please provide the IIS Coincident Demand (MW) by customer class for the Base Case (April 4, 2016) and the Post Budget Sensitivity for the P50 and P90 peak demand forecasts for the winters of 2016/17 through 2019/20.

Reliability Analysis:

IC–NLH–29 In section 4.2, page 6 of the ESRA Report, Hydro notes that it is committed to maintaining a megawatt (MW) reserve of greater than 240 MW to provide the ability to withstand the most onerous single contingency (loss of Holyrood Unit 1 or 2) while maintaining a spinning reserve of 70 MW. Please detail how the 240 MW reserve will provide a spinning reserve of 70 MW with the loss of Holyrood Unit 1 or 2.

IC–NLH–30 In section 4.2, page 6 of the ESRA Report, please confirm if the referenced N-1 generation contingency for loss of Holyrood Units 1 or 2 considers de-rated capacity of the Holyrood units as assumed by Hydro in Table 4 [page 18] of the ESRA Report.

IC–NLH–31 Please explain why the nameplate rating for Holyrood Units 1 and 2 are shown at 175 MW in Table 4 [page 18] of the ESRA Report compared to 170 MW in the table in Appendix A of that Report.

IC–NLH–32 Please provide details on how the Island Interconnected System customers would be impacted by generation and transmission N-1 events, and describe each step that Hydro would take to reduce impact to the customers.

IC–NLH–33 In reference to sections 4.2 and 4.3 of the ESRA Report, please provide details of the N-1 generation and transmission contingencies required to be reviewed after TL267 is in service. Please provide the most onerous single generation contingency and transmission contingency after TL267 is in service.

IC–NLH–34 In reference to sections 4.2 and 4.3 of the ESRA Report, please provide details of the N-1 generation and transmission contingencies required to be reviewed for the IIS after the Labrador Island Transmission Link (LIL) is in service (assuming that neither Muskrat Falls nor the Maritime Link (ML) are yet in service). Please provide the most onerous single generation contingency and transmission contingency after the LIL is in service.

IC–NLH–35 In reference to sections 4.2 and 4.3 of the ESRA Report, please provide details of the N-1 generation and transmission contingencies required to be reviewed for the IIS afterthe Maritime Link (ML) is in service (assuming the LIL is not yet in service). Please provide the most onerous single generation contingency and transmission contingency after the ML is in service.

IC–NLH–36 In reference to sections 4.2 and 4.3 of the ESRA Report, please provide details of the N-1 generation and transmission contingencies required to be reviewed for the IIS after Muskrat Falls and the LIL are in service (assuming that the ML is not yet in service). Please provide the most onerous single generation contingency and transmission contingency after Muskrat Falls and the LIL are in service.

IC–NLH–37 The January 2014 outages showed that in addition to the Holyrood issues, system disruptions occurred due to issues with the other power supply equipment [Sunnyside and Western Avalon transformers, Sunnyside Bus protection failure]. Please explain how reliability risks relating to such other power supply equipment issues are addressed in Hydro's report, and the potential for such other reliability risks to once again aggravate IIS disruptions.

IC–NLH–38 In reference to section 4.2 of the ESRA Report, please compare the importance of the reliability of the power supply equipment versus generation units, including comparison of recovery periods [based on historical data].

IC–NLH–39 Please confirm that the historical dry sequence assumed in the hydrology analysis for Figures 3 and 4 on page 16 of the ESRA Report is the period in the late 1950s and early 1960s, and that this period is the lowest inflows in Hydro's hydrological record. Please provide Figures 3 and 4 in a table format.

IC–NLH–40 Please explain why the increase in Holyrood DAFOR results in increases hydraulic generation for 2016 and 2017 as illustrated in Table 3 on page 17 of the ESRA Report.

IC–NLH–41 Table 4 [page 18] of the ESRA Report assumes all three Holyrood units were de-rated based on Hydro's Asset Management team recommendations. What is the Hydro's expectation of any future de-ratings of these units prior to 2021?

IC–NLH–42 Please describe the assumed role, for the purposes of the ESRA Report, that Holyrood oil-fired, gas-fired and diesel units each would play after the LIL is in service (assuming that neither Muskrat Falls nor the ML is yet in service).

IC–NLH–43 Please describe the assumed role, for the purposes of the ESRA Report, that Holyrood oil-fired, gas-fired and diesel units each would play after the ML is in service (assuming that the LIL is not yet in service).

IC–NLH–44 Please describe the assumed role, for the purposes of the ESRA Report, that Holyrood oil-fired, gas-fired and diesel units each would play after the LIL, ML and Muskrat Falls are all in-service. Describe any expected changes over the period from current conditions through to 2030.

IC–NLH–45 On pages 18-19 of the ESRA Report, Hydro notes that under P90 peak loading conditions there is a risk of an overload in the TL202-TL206 transmission corridor where the gross Avalon load exceeds approximately 935 MW. Does the purchase of the 12 MW "black start" diesel units change this assessment? If the assessment does change, please provide revised analysis with these diesel units included.

IC–NLH–46 Table 7 on page 22 of the ESRA Report shows that a violation of the 240 MW criteria occurs in only one case, for the fully stressed reference case with P90 forecast in Winter 2017-18 where reserve margin is 238 MW, 2 MW less than the 240 MW threshold. Please confirm that with the acquisition of the 12 MW "black start" diesel units this "violation" would not exist. Please provide updated version of Table 7 with these diesel units included.

IC–NLH–47 Section 7.3.1 of the ESRA Report, indicates that a firm recall power from Labrador at 110 MW at Soldiers Pond would be available over the LIL for the duration of the study period. Please explain any conditions assumed for the import of this power beyond the LIL being in-service, i.e., does this assume that Muskrat Falls and/or the Labrador Transmission Assets are in service?

IC–NLH–48 Is Hydro planning to work with Emera or other utilities after the Maritime Link is in service to consider a power support at times of peaks and outages, including using spring/summer freshetpower purchases from third party power suppliers in the IIS system?

IC–NLH–49 In the Executive Summary of the ESRA Report, Hydro notes that *"from an energy perspective, based on Hydro's asset reliability and in consideration of the critical dry sequence, Hydro is confident in its ability to meet IIS energy requirements for all scenarios considered" and "that until interconnection to the North American grid is achieved, there is a risk of expected unserved energy (EUE) in excess of planning criteria for Holyrood plant DAFORs greater than 14%."* However, Tables 8-10 on pages 23-24 of the ESRA Report show EUE in excess of Planning Criteria in 2016/17 and 2017/18 even with 14% DAFOR. Please reconcile Hydro's above-noted statements to Table 7 and Tables 8-10 analysis.

IC–NLH–50 Please explain why Appendix A of the ESRA Report lists capacity assistance capacity for Vale, but does not show Newfoundland Power curtailable load and CBPP capacity assistance capacity.

IC–NLH–51 Please explain why Appendix A of the ESRA Report lists capacity assistance capacity for Vale, but does not show Newfoundland Power curtailable load and CBPP capacity assistance capacity.

Measures:

IC–NLH–52 On page 31 of the ESRA Report, Hydro notes that the "*preliminary analysis indicates that the advancement of TL267 will likely result in a shifting of cash flows between years and is not, at this point, expected to have a material increase in cost.*" In Hydro's opinion what additional cost may arise and what is the magnitude of the increase in the costs from the advancement of the in-service date for TL267 to be available for Winter 2017/18?

IC–NLH–53 In reference to sections 8.1 and 8.3 of the ESRA Report, please show the extent to which the acquisition of the 12 MW "black start" diesel units helps to avoid the requirement for advancement of the in-service date for TL267.

IC–NLH–54 In reference to sections 7.4 and 8.3 of the ESRA Report, please update Tables 7-10 to show the impact only of the acquisition of 12 MW "black start" diesel units.

IC–NLH–55 In reference to the statement at lines 4-7 on page 9 of the ESRA Report, please provide breakdown of $186 million capital projects expected to be completed in 2016, showing how much of this expenditure is expected to be for reliability, system improvements, legal/regulatory compliance, safety, regular maintenance, and other requirements.

IC–NLH–56 In reference to the statement at lines 4-7 on page 9 of the ESRA Report, please confirm that all projects for the $186 million capital expenditures were part of the capital budget or supplemental capital filings before the Board.

IC–NLH–57 In reference to the statements at lines 9-16 on page 9 of the ESRA Report, Hydro notes that it implemented an integrated equipment outage management tracker, annual winter readiness targets and improved severe weather preparedness checklists. Please provide details of any reviews that Hydro has done with regard to procedures in other jurisdictions when implementing these trackers, targets, guidelines and checklists.

IC–NLH–58 In reference to the statements at lines 9-16 on page 9 of the ESRA Report, please indicate how, and how often, Hydro intends to review and refine these trackers, targets, guidelines, and checklists over time, and what presently foreseeable or anticipated developments will trigger such review.

IC–NLH–59 In reference to the measures for improve reliability described on page 9 of the ESRA Report, please provide details of any training programs that Hydro has established since January 2014 for its employees to follow procedures/ protocols/ guidelines for improved reliability performance.

IC–NLH–60 On page 10 of the ESRA Report, Hydro notes that it developed and implemented three levels of alerts to advise customers on the status of the power supply so customers can better prepare for any potential impacts. Please provide details how these communications are expected to be handled with the major customers, particularly with the industrial customers.

IC–NLH–61 In reference to section 8.2 of the ESRA Report, please confirm if the addition of 60 MW gas turbine has been approved by the Board, and if not when it is anticipated application will be made to the Board seeking such approval. Please provide details of the project, including expected costs and time required to bring into service.

IC–NLH–62 In reference to section 8.2 of the ESRA Report, please explain what, if any, benefit occurs with the addition of 60 MW gas turbine if TL267 in service date is advanced by one year.

IC–NLH–63 In reference to section 8.3 of the ESRA Report,pPlease confirm the status of Hydro's activities with customers, including industrial customers, to secure an additional curtailable load for 2016/17 winter, and the likelihood today of any specific added curtailable load being secured prior to that winter.

IC–NLH-64 Please confirm that an additional curtailable load for 2016/17 winter is the only option to avoid EUE in excess of planning criteria and potential outages when Holyrood DAFOR is 14% and higher in 2016/17. If not, please provide other options available for 2016/17.

IC–NLH–65 In reference to section 8.4 of the ESRA Report, please provide capital expenditures for Holyrood for the last 10 years and the impact of those expenditures to the reliability of the units.

IC–NLH-66 In reference to section 8.4 of the ESRA Report, please provide a list of capital projects and associated costs required for Holyrood to "*ensure continued delivery of safe, reliable power to its customers through interconnection*".

IC–NLH–67 Please provide the cost and customer impact for each option/alternative that Hydro considered in the ESRA Report, including impact to reliability analysis [LOLH, EUE] for 2016/17 through 2019/20.

RFIs on Teshmont Report – Probabilistic Based Transmission Reliability Report:

General questions:

IC–NLH–68 In reference to section 2.3, page 9 of the Teshmont Report, please confirm that the reason for using 2011-2013 average load shape was the timing of study, i.e. the study was started in 2014. What is Hydro's expectation of the impact of 2014 and 2015 load shapes to the analysis in the report?

IC–NLH–69 Please confirm that Figure 7 on page 10 of the Teshmont Report starts with January 1st, i.e. 0 hour is January 1st 12 am.

IC–NLH–70 Please comment on the statement on page 10 of the Teshmont Report regarding transmission line failure rates, which states that "*five years of data was considered insufficient to provide statistically meaningful data for individual lines*". What would be impact of using five year data compared to the data based on a longer historical period?

IC–NLH–71 In reference to Table 23 at page 43 of the Teshmont Report, "Major Hydro Owned or Power Purchase Generating Units in Pre-HVDC and Post-HVDC Cases", please confirm that the table includes all Power Purchase Generating Units. If not, please explain.

Post-Muskrat Falls, LIL and ML reliability:

IC–NLH–72 Please confirm that the table on page 5 of Hydro's Summary Report (relating to the Teshmont Report) shows that even with the Post-HVdc condition the addition of Muskrat Falls capacity is not sufficient to meet the total demand and this results 2.72 GW.h/year EUE in excess of planning criteria.

IC–NLH–73 Please explain why the addition of 834 MW load to the IIS system through Labrador Island Link [LIL], as per Figure 6 on page 8 of the Teshmont Report, still would result in a 2.72 GW.h/year EUE [without Maritime Link].

IC–NLH–74 In reference to the table on page 5 of Hydro's Summary Report, please confirm that 2.72 GW.h/year EUE is estimated taking into account of Hydro's power purchases, including purchases under capacity assistance agreements, Newfoundland Power thermal units. If not, please explain.

IC–NLH–75 In reference to the table on page 5 of Hydro's Summary Report,, please confirm that 2.72 GW.h/year EUE is estimated based on an assumption that Holyrood units would be off line.

IC–NLH–76 On page 6 of Hydro's Summary Report, Hydro notes that "*[t]he material repair time requirement for the submarine cable justifies the spare cable, which is being constructed and will be maintained in service.*" Section 5.2.1.3 of the Teshmont Report notes that "*the loss of a pole would require the loss of two cables*". Please provide rationale for Hydro's statement considering the statement in the Teshmont Report.

IC–NLH–77 Please provide Figure 3 on page 4 of the Teshmont Report using 2018 peak case.

IC–NLH–78 Page 1 of the Teshmont Report references "*two 315 kV ac transmission lines between Churchill Falls and Muskrat Falls*". Please provide the main purpose of these transmission lines and cost impact to the Hydro customers on the IIS.

IC–NLH–79 Please confirm if corrective actions in the Tables 13 through 16 of the Teshmont Report are based on Teshmont's independent analysis. If not, please explain.

IC–NLH–80 Please explain why EUE for TL208, the line supplying Vale and Praxair, is slightly higher [41.94 MW.h/year compared to 41.43 MW.h/year] under Post-HVDC compared to Pre-HVDC in Teshmont Report, page 39.

IC–NLH–81 Please confirm that the table provided in the executive summary [page i], and Tables 17 [page 34] and 21 [page 39] of the Teshmont Report assume two contingency events for the Pre-HVDC cases: namely, unavailability of the Holyrood units G1 and G2, and unavailability of all three Holyrood oil

fired units at the same time. Please confirm that the EUE under the event with all three units unavailable is lower than the EUE with only two units unavailable, as shown in these tables, due to the lower probability of all three units versus only the G1 and G2 units being unavailable at the same time.

IC–NLH–82 In reference to Table 23 in Appendix A [page 43] of the Teshmont Report, and Figures 3 and 4 [page 4] of the Teshmont Report please provide details why output from Bay d'Espoir is reduced by about 122 MW under Post-HVDC compared to Pre-HVDC.

IC–NLH–83 Further to the above, please update table on page ii of the executive summary of Teshmont Report by including all Bay d'Espoir units currently in service.

IC–NLH–84 In reference to Table 23 in Appendix A [page 43] of the Teshmont Report, please confirm that Holyrood units are assumed to be in standby mode only up until 2020. If this is not the case, please explain and provide the time period that these units will continue to remain in standby mode.

IC–NLH–85 In reference to Table 23 in Appendix A [page 43] of the Teshmont Report please confirm that gas turbines [Holyrood, Stephenville, Hardwoods] are assumed to be in standby mode after Holyrood TGS is retired? If not, please explain.

Commercial Contract:

IC–NLH–86 Emera Newfoundland and Labrador in its website notes "The Maritime Link Project is a 35-year investment equal to 20 percent of the total cost of Phase I of the Lower Churchill Project and the Maritime Link, in exchange for 20 percent of the electricity from Muskrat Falls" [source: http://www.emeranl.com/en/home/themaritimelink/overview.aspx, accessed on June 9, 2016]. Please confirm that 20 percent of the electricity from Muskrat Falls is expected to be supplied to Nova Scotia and will not be available to supply Hydro load on the IIS.

IC–NLH–87 Page 1 of the Teshmont Report notes that up to 300 MW can be exported from Nova Scotia to Newfoundland and Labrador using proposed Maritime Link transmission line under a LIL contingency. Please provide details if Hydro, or if Hydro is aware any other party, has entered into any

agreement with Emera or other providers regarding such power purchases using the proposed Maritime Link transmission line.

IC–NLH–88 Please confirm that imports to the IIS through the Maritime Link would occur under LIL outages and Holyrood units out of service.

IC–NLH–89 What is the earliest expected in-service date for the Maritime Link? To what extent can this in-service occur prior to the in-service of Muskrat Falls and the LIL?

IC–NLH–90 Please explain the changes in load transfers Pre and Post HVDC in Figures 3 and 4 [page 4] of the Teshmont Report, including the reasons for the increase in load transfers to the east of the IIS and further to the Maritime Link.

IC–NLH–91 Please confirm that on Figure 4 [page 4] of the Teshmont Report a new transmission line between Granite Canal and Bottom Brook (TL269) shows load transfer of 103 MW from Granite Canal to Bottom Brook and further to the proposed Maritime Link.

IC–NLH–92 Please provide the main purpose of the TL269 transmission line, all costs related to development of Maritime Link, and any expected cost impacts to the Hydro IIS customers.

Power Purchase Agreements:

IC–NLH–93 Please provide Hydro's assessments regarding the future of the power purchase agreements from third parties after Muskrat Falls and Labrador link.

Cost of Service Impacts:

IC–NLH–94 In reference to the statements on page 1 of the Teshmont Report in relation to the Maritime Link, please confirm that all costs related to proposed Maritime Link transmission line, whether considered direct or indirect costs, and including without limiting the foregoing the required modifications to the Bottom Brook Terminal Station, are covered by third parties and there is no cost impact to Hydro customers.

IC–NLH–95 In reference to section 5.1.2 of the Teshmont Report, please provide details of any modifications/ upgrades that may be required to IIS transmission or terminal stations due to the Maritime Link. Please provide cost estimates for those modifications/upgrades.

DATED at St. John's, in the Province of Newfoundland and Labrador, this _____ day of June, 2016.

POOLE ALTHOUSE

Per: _____
Dean A. Porter

STEWART MCKELVEY

Per: _____
Paul L. Coxworthy

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