IN THE MATTER OF the *Public Utilities Act*, RSN 1990, Chapter P-47 (the “Act”): and

IN THE MATTER OF a General Rate Application (the Application) by Newfoundland and Labrador Hydro for approvals of, under Section 70 of the Act, changes in the rates to be charged for the supply of power and energy to Newfoundland Power, Rural Customers and Industrial Customers; and under Section 71 of the Act, changes in the Rules and Regulations applicable to the supply of electricity to Rural Customers.

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 An Investigation And Hearing Into Supply Issues And Power Outages On The Island Interconnected System.

REQUESTS FOR INFORMATION

THE NEWFOUNDLAND AND LABRADOR PUBLIC UTILITIES BOARD

GRK-PUB-21 to GRK-PUB-30

GRAND RIVERKEEPER LABRADOR INC. (GRK)

Issued September 6, 2016

GRK-PUB-21

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"),

Citation 1:

> In Liberty's opinion, Hydro must seriously consider the need for new supply prior to the interconnection with Muskrat Falls and should develop plans accordingly. In addition, Hydro should also undertake as soon as possible an in depth review of its current supply planning practices, processes and capabilities in order to develop stronger enhanced skills and capabilities. (Liberty report #2, p. 5)

Citation 2:

> From a supply perspective, Hydro's asset management program has a critical role as it is one of the three solutions to the near-term supply issues. The three are: (a) more generation, (b) less load and (c) higher availability of the generating units. (p. 97)

Citation 3 (P.U. 8 (2007), page 60):

> The Board is not prepared to proceed with an IRP exercise given the pending release of the Energy Plan and completion of the various rate design reviews and conservation and demand management studies currently underway. In the Board's view the Province's future policy direction respecting energy supply will be a key ingredient in formulating an IRP. As well these various studies/reviews would also comprise important inputs needed to stimulate informed discussion and debate contributing to a comprehensive IRP acceptable to all stakeholders.
>
> In terms of the Board's ongoing role with respect to ensuring adequate planning Hydro prepares an annual system planning report, which reviews the latest long-term load forecast, generation expansion requirements, options, costs and other important issues. The 2005 report was filed on November 27, 2006 (Schedule JRH-Supplementary 1) and the 2006 report was filed on December 8, 2006. This report provides fundamental information regarding future supply issues in the Province and is valuable to the Board in meeting its responsibilities under s. 4 of the *EPCA*. The Board remains convinced that an IRP undertaken as part of a generic process as described in Order No. P. U 14(2004) is an important planning tool and would enhance the information available to the Board and other parties regarding future generation and supply options in the Province. The Board will convene a meeting of stakeholders including Hydro and the parties to this proceeding to discuss the scope of an IRP process with the timing of such an exercise to be determined by the Board.
>
> **The Board will not establish at this time a process with respect to the commencement of an IRP exercise.**

Should Hydro's review of planning practices, processes and capabilities be limited to supply planning, or should it also consider demand-side options as well? What is Liberty's point of view concerning the long-

delayed recommendation to proceed with an Integrated Resource Planning process in Newfoundland and Labrador?

GRK-PUB-22

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 32

Preamble:

> Table III.5 indicates that, under certain contingencies, ML Exports would be curtailed to 250 MW, and that, under other contingencies, they would be curtailed to 0 MW.

Citation 1:

> Any power on the Maritime Link in excess of 250 MW is not Firm Power.

Given that, under certain circumstances, Maritime Link Exports can be curtailed to 0 MW, is it appropriate to regard any ML exports as Firm Power?

If so, please explain the criteria used to distinguish between Firm and Non-Firm Power.

GRK-PUB-23

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 43

Citation 1:

> It must be recognized that repairing significant OHL damage in extreme weather and in the harsh terrain that some of the OHL line is situated will be challenging. Recognizing the magnitude of this challenge, it is hard to have confidence that two-weeks is the upper limit for repair for an OHL-related bi-pole outage.

Did Hydro ever affirm that two weeks is the upper limit for repair for an OHL-related bi-pole outage, or did it simply indicate that it had chosen a two-week target? Please provide a citation in support of your response.

GRK-PUB-24

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 49.

Citation 1:

> We understand that the HVdc cables may be installed in the summer of 2016, but that the LIL may not be fully operational until 2019. Should this timing occur, the HVdc cable warranty may have expired by the time the scheme is in operation.

Please elaborate on the implications of a situation where the HVdc cable warranty has expired before the cable is operational.

GRK-PUB-25

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 52.

Citation 1:

IV. Reliability of Muskrat Falls
A. Component Reliability and Availability

…

In addition to faults within the LIL, outages may result from problems at Muskrat Falls or in the IIS, operator errors, and long term outages of critical transmission lines and system infrastructure, such as synchronous condensers. Such outages will be outlined, but not quantified in this part.

Citation 2:

Other causes of outages of the LIL or interruptions of power infeed to the IIS from Muskrat Falls, which have not been discussed in section two through seven above include:

1) Tripping of some or all ac lines leading to the Muskrat Falls converter station

2) Tripping of some or all ac lines leading to the Soldiers Pond converter station

3) Delayed clearing of faults in close proximity to the Muskrat Falls or Soldiers Pond converter stations, *e.g.*, because of protection or breaker failure (stuck breaker)

4) Major faults, *e.g.*, fire or extensive insulation damage to 2 or more high inertia synchronous condensers, requiring major repair at times of high loading on the LIL

5) Operator errors

6) Major fires in the converter stations.

Preamble:

Sections 1 ("Definitions") and 2 ("Impacts of Outages") of section IV.A. include three categories of outages (Bipole Outages, Monopolar Outages and Temporary Interruption), but do not explicitly address scenarios involving long-term or permanent interruption of deliveries from Muskrat Falls.

Please indicate whether or not Liberty has studied the implications with respect to the reliability of power infeed to the IIS over the LITL of a permanent long-term total forced outage caused by physical damage to the Muskrat Falls facility caused by instability of the North Spur soils.

If so, please indicate if the recommendations in the Liberty Report #2 would be adequate to maintain IIS reliability in the event of long-term loss of all power from the Muskrat Falls facility.

If not, please indicate if review of this eventuality was excluded by virtue of the mandate given to the Liberty Consulting Group.

GRK-PUB-26

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2")

Citation:

> This report also presents the results of our assessment of the integration of the LIL and the Maritime Link into the IIS. As directed by the Board for the scope of the phase two investigation, we did not address detailed technical information or project engineering and construction issues, except as necessary to understand the reliability risks associated with the interconnection to the IIS. Neither were the design of the generating facility and the cost and schedule of the project reviewed, except as necessary to understand the power supply risks of delays.

Please provide the mandate and any other instructions issued to the Liberty Group concerning the scope of the phase two investigation.

GRK-PUB-27

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 52.

Has Liberty taken cognizance of the decision of the Quebec Superior Court in file 500-17-078217-133, issued on August 8, 2016, in which a declaratory judgement is issued concerning the renewal provisions (Annex III) of the Power Contract between Hydro-Québec and Churchill Falls (Labrador) Corporation Ltd.?

If so, please indicate a) whether or not Liberty has studied the implications of this decision with respect to the reliability of power infeed to the IIS from Muskrat Falls, and b) if the recommendations in the Liberty Report #2 would be adequate to maintain IIS reliability in the event of substantial reduction in the power available to NLH under its Water Management Agreement.

If not, please indicate if it intends to do so, and if review of this eventuality was excluded by virtue of the mandate given to the Liberty Consulting Group.

GRK-PUB-28

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 85.

Citation:

> The key to avoidance of extended outages when the LIL is lost is the availability of adequate backup supply to the IIS. This supply can take the form of new on-island generation and/or imports via the Maritime Link. In this regard, the Maritime Link becomes all-important. Hydro is relying on the Maritime Link to provide 300 MW when necessary. Needless to say, this is a very large reserve, especially considering that Hydro's current reserve requirement on the IIS is 240 MW. Liberty does not believe, however, that the credibility or practicality of this source of capacity has been demonstrated. Until the Maritime Link source is validated, or new CTs provided, the threat of extended outages will be present.

> One must recall, however, that when the Maritime Link was added to the project, it was intended as a supply *to* Nova Scotia and beyond, not *from* Nova Scotia. During normal operations, several hundred MW may flow to Nova Scotia. With a bipole trip of the LIL, that flow will be interrupted, and Nova Scotia's operators must call on their reserves to cover that loss of supply from the Maritime Link. The Hydro analyses assume that Nova Scotia will be able to provide those reserves to satisfy Nova Scotia's own needs and, at the same time, provide several hundred MW for the IIS.[193] This result requires perhaps 300-600 MW of available firm, dependable capacity on the Nova Scotia side. Whether that level is practical remains to be seen as Hydro negotiates with Nova Scotia to determine what it would take for Nova Scotia to make such a commitment. Such a large amount of backup will come at a cost, which has to be balanced against the risk of an LIL trip, as well as the competing cost of new CTs.

Was Liberty provided with any data concerning the supply-demand balance in Nova Scotia in the 2020s, and the likelihood of there being 600 MW of available, firm dependable capacity on the Nova Scotia side?

Was Liberty provided with any information concerning the possibility of sourcing such reserves beyond Nova Scotia, whether in New Brunswick, Quebec or New England?

Did Liberty seek or obtain any information concerning the potential cost of such a reserve?

GRK-PUB-29

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 86.

Citation:

> We explained our opinion on the acceptability of UFLS earlier. Ordinarily, we would not consider UFLS to the extent contemplated by Hydro to be acceptable. We must acknowledge, however, that the decision to accept interruptions upon the loss of the LIL was made knowingly years ago, when the consequences were envisioned to be far greater than today. That decision was embodied in the choice of the size of Muskrat Falls and the LIL in comparison to the load on the IIS. We are unaware of a practical way to change that circumstance at this time; hence, a frequency of UFLS consistent with bipole trips at least every three years should be, and in fact must be, considered acceptable.

When was the decision made to accept such interruptions upon the loss of the LIL, and by whom?

GRK-PUB-30

Re: Review of Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability Prior to and Post Muskrat Falls ("the Liberty Report #2"), p. 99.

Citation:

> The transition of Holyrood people to Muskrat Falls has been and continues to be a major challenge. Hydro took steps several years ago to assure it could retain a viable workforce at Holyrood for its remaining years. The reality that Holyrood cannot close the day that Muskrat Falls starts up creates a phasing problem and Hydro is planning that now. While this issue,

including the desire to retain and protect people, is difficult it appears to have been well-managed so far.

Please provide references for the information provided to Liberty concerning the transition of Holyrood people to Muskrat Falls.

DATED at Montreal, in the Province of Quebec, this 6th day of September, 2016.

Charles O'Brien

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