

September 7, 2016

Ms. G. Cheryl Blundon
Board of Commissioners of Public Utilities
120 Torbay Road, P.O. Box 12040
St. John's, NL A1A 5B2

Dear Ms. Blundon:

**Re: Investigation and Hearing into Supply Issues and Power Outages on the Island
Consumer Advocate's Requests for Information CA-PUB-034 to CA-PUB-051
(Liberty Consulting Report)**

In relation to the above noted application please find enclosed the original and twelve (12) copies of the Consumer Advocate's Requests for Information numbered CA-PUB-034 to CA-PUB-051 in relation to the Liberty Consulting Report.

A copy of the letter, together with enclosures, has been forwarded directly to the parties listed below.

If you have any questions regarding the filing, please contact the undersigned at your convenience.

Yours very truly,

O'DEA, EARLE



THOMAS JOHNSON, Q.C.

TJ/cel
Encl.

cc: Newfoundland and Labrador Hydro
Attention: Geoffrey P. Young

Newfoundland Power Inc.
Attention: Gerard Hayes

Stewart McKelvey Stirling Scales
Attention: Mr. Paul Coxworthy



Grand Riverkeeper Labrador Inc.
Attention: Ms. Roberta Frampton Benefiel

Mr. 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.

**CONSUMER ADVOCATE
REQUESTS FOR INFORMATION
CA-PUB-034 to CA-PUB-051
Issued: September 7, 2016**

1 CA-PUB-034

2 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
3 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
4 **Prior to and Post Muskrat Falls Final Report**

5

6 Both the LIL and ML will be ready for commissioning 1-2 years before Muskrat
7 Falls generation is available. Did Liberty investigate how the HVDC will be
8 commissioned prior to and/or after Muskrat Falls completion? If so, please
9 provide a summary as to how Hydro proposes to commission the HVDC.

10

11 CA-PUB-035

12 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
13 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
14 **Prior to and Post Muskrat Falls Final Report**

15

16 How will commercial operation of the HVDC at lower power levels impact the
17 performance warranties when commissioned at full power?

18

19 CA-PUB-036

20 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
21 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
22 **Prior to and Post Muskrat Falls Final Report**

23

24 *“New pre-Muskrat Falls supply would not necessarily take the form of new*
25 *investment in combustion turbines. Power can be imported on both the LIL and*
26 *ML when those lines are in-service. Hydro informs that it could import 110 MW*
27 *of firm recall power from Labrador and 300 MW from Nova Scotia” (p12).*

28

29 HVDC LCC type converters are typically restricted to a 10% minimum
30 power transfer when the converter is Deblocked (i.e., power electronics
31 are switching), this would be 45 MW for LIL monopole operation and 90

1 MW for LIL bipolar operation. Did Liberty consider these LIL operating
2 limits when considering the 110 MW recall power?

3
4 CA-PUB-037

5 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
6 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
7 **Prior to and Post Muskrat Falls Final Report**

8
9 *“Furthermore, the electrode line’s relatively long length (300km) and the higher*
10 *resistance resulting from operation with a single electrode conductor would result*
11 *in substantially less power being delivered to Soldiers Pond. Hydro considers*
12 *this scenario to be an N-1 failure, and therefore not one for which it has*
13 *designed.” (p20).*

14
15 For both the LIL and ML, did Liberty review the protection technology that will
16 be applied on the electrode lines? If yes, please provide a description of the
17 protection and estimate the annual availability of the protection.

18
19 CA-PUB-038

20 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
21 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
22 **Prior to and Post Muskrat Falls Final Report**

23
24 *“Hydro described the plans concerning annual technical support and service*
25 *agreements for the converter stations and HVdc cables in the response to CA-*
26 *NLH-048. The operations team will develop the asset management plans.” (p27).*

27
28 Did Liberty review Hydro’s schedule to complete and implement the asset
29 management plans? If yes, please provide the schedule.

1 CA-PUB-039

2 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
3 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
4 **Prior to and Post Muskrat Falls Final Report**

5
6 *“The HVdc converter station contractor’s studies will either confirm the numbers*
7 *and rating of the presently proposed synchronous condensers, or will determine*
8 *the requirements for additional synchronous condensers.” (p29).*

9
10 For both the LIL and ML did Liberty review the progress of the studies or the
11 actual studies? If yes, please provide the schedule for the studies to be completed.

12
13 CA-PUB-040

14 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
15 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
16 **Prior to and Post Muskrat Falls Final Report**

17
18 *“It is estimated that this process for the more detailed PSCAD converter model*
19 *will be complete Q2 2016.”(p30).*

20
21 Did Liberty review the progress of the PSCAD models? If yes, please provide the
22 schedule for the PSCAD models to be completed.

23
24 CA-PUB-041

25 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
26 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
27 **Prior to and Post Muskrat Falls Final Report**

28
29 *“It is estimated that this process for the more detailed PSCAD converter model*
30 *will be complete Q2 2016.”(p30).*

1 Further to CA-PUB-040, for both the LIL and ML did Liberty review the
2 schedule to complete the dynamic studies once the PSCAD models are provided?
3 If yes, please provide the schedule to complete the studies.
4

5 CA-PUB-042

6 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
7 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
8 **Prior to and Post Muskrat Falls Final Report**

9
10 *“Distributed Temperature Sensing (DTS) will be employed on the HVdc cables.*
11 *This measure will ensure that in the event of overheating of the HVdc cables (e.g.,*
12 *in the event of deposits of low thermal capacity around the cable), detection will*
13 *occur prior to significant damage from overheating.” (p 46).*

14
15 Does the DTS cover a portion or 100% of the LIL cable length and is the DTS
16 redundant?
17

18 CA-PUB-043

19 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
20 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
21 **Prior to and Post Muskrat Falls Final Report**

22
23 *“Distributed Temperature Sensing (DTS) will be employed on the HVdc cables.*
24 *This measure will ensure that in the event of overheating of the HVdc cables (e.g.,*
25 *in the event of deposits of low thermal capacity around the cable), detection will*
26 *occur prior to significant damage from overheating.” (p 46).*

27
28 Further to CA-PUB-042, what is the accuracy of the DTS to detect temperature
29 and distance to the temperature of interest?
30
31

1 CA-PUB-044

2 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
3 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
4 **Prior to and Post Muskrat Falls Final Report**

5
6 *“With its connection to the North American grid via Nova Scotia, Hydro faces*
7 *potential new standards for its system and its interfaces with others” (p101).*

8
9 Liberty notes how the ML will be important to provide support before and after
10 Muskrat Falls is completed. This means the ML must be tested and
11 commissioned in 2017. Did Liberty investigate the NERC compliance that Hydro
12 and Emera will need in place to begin commissioning in 2017? If yes, please
13 provide a brief description of the NERC compliance actions and the schedule for
14 completion.

15
16 CA-PUB-045

17 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
18 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
19 **Prior to and Post Muskrat Falls Final Report**

20
21 On page 81 it is stated:

22 *“When the detailed analyses are done, however, the remaining questions of*
23 *customers and other stakeholders are very simple: How often will the lights go*
24 *out from system-related failures? Is that frequency of outages acceptable?”*

25
26 On page 88 it is stated:

27 *“The high construction costs of Muskrat Falls and its associated transmission will*
28 *influence Hydro’s financial structure for decades, with the large increase in rate*
29 *base causing a substantial impact on what customers pay. This factor also has the*
30 *potential to limit Hydro’s financial flexibility in the future to an as-yet*
31 *undetermined extent. These questions are crucial to future operation and of*

1 *paramount interest to stakeholders. They are, however, outside the scope of this*
2 *report.”*

3
4 Were costs and benefits a consideration in Liberty’s study of reliability on the Island
5 Interconnected System both pre- and post-Muskrat Falls?
6

7 CA-PUB-046

8 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
9 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
10 **Prior to and Post Muskrat Falls Final Report**

11
12 On page 88 it is stated:

13 *“...the location of the new units some 1,100 km from the province’s major load*
14 *center, introduces unique technical and operating challenges. In summary, Muskrat*
15 *Falls will change considerably the company’s generation profile, its financial and*
16 *rate profile, and its operating practices.”*

17
18 In Liberty’s opinion, would Hydro benefit from contacting other utilities that have
19 faced such challenges (e.g., Manitoba Hydro) to understand lessons learned and how
20 other utilities managed such challenges? During the conduct of its study, did Liberty
21 contact other utilities that have faced such challenges, and if so, what were the
22 lessons learned?
23

24 CA-PUB-047

25 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
26 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
27 **Prior to and Post Muskrat Falls Final Report**

28
29 On pages 101 and 102 it is stated:

30 *“In addition, Hydro’s desire to engage in market transactions with others in*
31 *North America brings the requirement of granting others access to the IIS. These*
32 *needs have been known for some time, and Hydro has been taking steps to*

1 *address them.”*

2

3 What sources is Liberty relying on to support the statement that it is a “*requirement*”
4 that Hydro grant others access to the IIS, and specifically, what “*others*”? Further,
5 what steps is Liberty aware of that Hydro has taken to address the issue of
6 granting others access to the IIS?

7

8 CA-PUB-048

9 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
10 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
11 **Prior to and Post Muskrat Falls Final Report**

12

13 On pages 101 and 102 it is stated:

14 *“In addition, Hydro’s desire to engage in market transactions with others in*
15 *North America brings the requirement of granting others access to the IIS.”*

16

17 Is the purpose of third party access to ensure open and equal access to the
18 transmission system in an unbundled electricity sector with multiple buyers and
19 sellers? In Liberty’s opinion, what value is there in granting others access to the IIS
20 when Hydro is the only entity in the Province with the right to purchase and sell
21 power on the IIS while controlling all transmission on the IIS?

22

23

24 CA-PUB-049

25 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
26 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
27 **Prior to and Post Muskrat Falls Final Report**

28

29 On page ES-1, it is stated:

30 *“Our review concludes that the interconnection of the IIS with Muskrat Falls and*
31 *the Maritime Link can represent a state-of-the-art electrical system whose*
32 *reliability is improved over today’s circumstances.”*

1 In Liberty’s experience, are there other jurisdictions in Canada that have a large
2 generation source located away from the primary load center that rely on support
3 from outside sources such as the United States for emergency power in the event
4 they lose the transmission between the major source of generation and the primary
5 load center? If so, is the reliability in these jurisdictions comparable to reliability
6 in jurisdictions with more integrated system configurations where the generation
7 is located more closely to the demand centers?
8

9 CA-PUB-050

10 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
11 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
12 **Prior to and Post Muskrat Falls Final Report**
13

14 On page 12 it is stated:

15 *“Hydro informs that it could import 110 MW of firm recall power from Labrador*
16 *and 300 MW from Nova Scotia. This would likely solve the pre-Muskrat Falls*
17 *supply issue, but we note that neither the technical feasibility of the LIL/recall*
18 *power solution nor the availability of Nova Scotia capacity have been validated at*
19 *this time.”*
20

21 What does Liberty propose that Hydro do to establish the “technical feasibility” of
22 the LIL/recall power solution?
23

24 CA-PUB-051

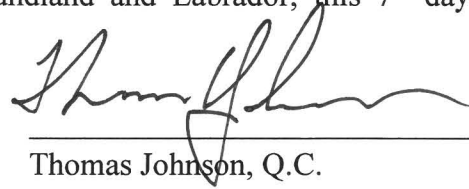
25 **Reference: Liberty Consulting Report, August 19, 2016, Review of**
26 **Newfoundland and Labrador Hydro Power Supply Adequacy and Reliability**
27 **Prior to and Post Muskrat Falls Final Report**
28

29 On page 75 it is stated:

30 *“This shows the importance of the Maritime Link (and its yet-to-be demonstrated*
31 *supply capability) to the reliable operation of the IIS.”*

- 1 What does Liberty recommend that Hydro do to demonstrate the supply capability of
2 the Maritime Link?

Dated at St. John's in the Province of Newfoundland and Labrador, this 7th day of
September, 2016.



Thomas Johnson, Q.C.
Consumer Advocate
323 Duckworth Street
St. John's, NL A1C 5X4
Telephone: (709) 726-3524
Facsimile: (709) 726-9600
Email: tjohnson@odeaearle.ca