

DELIVERED BY HAND

December 1, 2014

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

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

Ladies and Gentlemen:

**Re: The Board's Investigation and Hearing into Supply Issues and Power Outages on
the Island Interconnected System – Joint Utilities Coordination Report**

Please find enclosed the original and 12 copies of the Joint Utilities Coordination Report prepared by both Newfoundland Power and Newfoundland and Labrador Hydro.

If you have any questions regarding the enclosed, please feel free to contact the Company.

Yours very truly,



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Senior Counsel

Enclosures

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Joint Utilities Coordination
December 1st, 2014



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1 **1.0 Executive Summary**

2 Since the electrical system events of the January 2-8, 2014 period, Newfoundland Power and
3 Newfoundland and Labrador Hydro (“Hydro”) have improved operational and customer
4 information and communications coordination.¹ This coordination (i) has increased each utility’s
5 awareness of the other’s operations on the Island Interconnected System; and, (ii) has enabled
6 the development of joint protocols, plans, and procedures. These improvements will help reduce
7 the impact of unplanned outages on customers by enabling better information for customers in
8 the event of anticipated or actual generation shortfalls on the Island Interconnected System.

9
10 Hydro and Newfoundland Power have made a coordinated effort to improve the operation and
11 awareness of conditions on the Island Interconnected System. Hydro is providing Newfoundland
12 Power with additional real-time electrical system data that will improve the ability of
13 Newfoundland Power to confidently inform its customers of the status of their electricity supply.
14 The utilities have also developed procedures relating to electrical system generation reserves,
15 generation testing, generation dispatch, rotating power outages, and cold-load pickup. These
16 initiatives will improve the utilities’ response to any future generation shortfall events.

17
18 Newfoundland Power and Hydro have also developed measures that will improve customer
19 information and communications. These measures include (i) the *Customer and Stakeholder*
20 *Advance Notification Protocol* (the “Advance Notification Protocol”) which will trigger early
21 customer communications prior to any future generation shortfall; (ii) the *Joint Storm/Outage*
22 *Communications Plan* (the “Communications Plan”) that will guide the utilities’ customer
23 communications; (iii) improved customer service technologies; and, (iv) new customer education
24 materials that will inform customers about how to conserve electricity during a generation
25 shortfall and how customer conservation efforts contribute towards a more secure supply from
26 the Island Interconnected System during such events.

¹ In its May 15th, 2014 Interim Report on the Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System, the Newfoundland and Labrador Board of Commissioners of Public Utilities (the “Board”) requested Hydro and Newfoundland Power (i) make improvements to operational and customer information and communications coordination; and (ii) file a joint report on progress towards those enhancements and improvements by December 1st, 2014.

1 Hydro and Newfoundland Power’s coordination of operational and customer information and
2 communication improvements is jointly directed by a committee of the senior management of
3 the two utilities.² This committee provides overall coordination of the joint initiatives
4 undertaken since the January 2-8, 2014 electrical system events. The efforts of both utilities
5 have prepared Newfoundland Power and Hydro to provide customers with better service and
6 communications in the event of any future generation shortfall.

8 **2.0 Operational Coordination**

9 Hydro is the primary generation and bulk transmission utility and Newfoundland Power is the
10 primary distribution utility on the Island Interconnected System. The operation of the
11 generation, bulk transmission, and distribution assets on the Island Interconnected System is
12 interrelated and requires a high degree of coordination between the two utilities. The degree of
13 coordination between the two utilities contributes to (i) identifying and managing potential
14 electrical system issues before they arise or during an outage; (ii) timely restoration of power
15 following an outage event; and, (iii) properly informing customers of conditions on the Island
16 Interconnected System. Hydro and Newfoundland Power have increased the amount of real-time
17 electrical system information shared between the two utilities and have developed procedures to
18 better coordinate their operation of the Island Interconnected System.

20 **2.1 Real-Time Information**

21 Daily coordination on the Island Interconnected System is primarily conducted by Hydro’s
22 Energy Control Centre (“ECC”) and Newfoundland Power’s System Control Centre (“SCC”).³
23 Real-time information relating to the operation of the Island Interconnected System is
24 continuously transmitted between the two utilities via the Inter-Control Centre Communications
25 Protocol (“ICCP”) data link between the ECC and SCC. This real-time information enables each

² In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 46, that Hydro and Newfoundland Power commit to a formal effort, sponsored at their most senior executive levels, to work together in formulating joint efforts to identify goals, protocols, programs, and activities that will improve operational and customer information and communications coordination.

³ See the response to Request for Information PUB-NLH-410 for a description of the coordination that occurs between Hydro’s ECC and Newfoundland Power’s SCC.

1 utility to observe the current status of generation, transmission, and distribution equipment on the
2 Island Interconnected System and to manage reliability.

3

4 During the January 2-8, 2014 electrical system events, the ECC provided 354 real-time status
5 and analog data points to the SCC. By July of 2014, to increase electrical system awareness on
6 the Island Interconnected System, Hydro and Newfoundland Power coordinated the transmission
7 of an additional 388 data points from the ECC to the SCC. These data points are actively used
8 by Newfoundland Power's SCC to better understand the status of lines, equipment, and
9 generation on the Island Interconnected System.⁴ In addition to facilitating operations on the
10 Island Interconnected System, the information (i) helps Newfoundland Power better understand
11 the system conditions when discussing them with Hydro, (ii) enables Newfoundland Power to
12 confidently inform customers of the status of their electricity supply; and, (iii) allows for timely
13 advice to customers regarding preparedness and conservation initiatives.

14

15 Hydro has implemented a modified approach to short-term load forecasting on the Island
16 Interconnected System.⁵ This new approach will provide improved short-term forecasting of the
17 total load on the entire Island Interconnected System, which will facilitate improved reporting
18 and understanding of the total Island Interconnected System reserve margins. Hydro will make
19 the short-term load and generation availability information accessible to Newfoundland Power
20 on a real-time basis. This information, as well as clear communication protocols between the
21 utilities, are key elements in triggering customer communications and informing customers if
22 there is a need to conserve electricity or prepare for rotating outages.

⁴ With the addition of these real-time data points, Newfoundland Power has visibility of the status and output of all of Hydro's generation plants on the Island Interconnected System. The additional data points also provide visibility of whether Hydro's transmission lines are in service or not. This newly available information improves coordination between the ECC and SCC during normal operations and electrical system events.

⁵ Improvements have been made to Hydro's short-term load forecasting model to provide more accurate results. These improvements include (i) revised model inputs including the addition of 2013-2014 winter weather conditions; and, (ii) allowing for adjustments to be made to the forecast to account for increased transmission line losses during dynamic generation dispatch situations.

1 **2.2 *Electrical System Procedures***

2 An annual test of Newfoundland Power’s generation demonstrates the capacity and availability
3 of its hydraulic and thermal generating plants. This generation test provides certainty to Hydro
4 that Newfoundland Power’s generation will be available during the peak winter season.

5 Historically, the annual generation test has been conducted between December 1st and March 31st
6 of each winter season. In 2014, the generation test was performed in advance of the winter
7 season.⁶ This demonstrated the capacity and availability of Newfoundland Power’s generation
8 earlier than what was previously experienced on the Island Interconnected System.⁷

9

10 Since the January 2-8, 2014 electrical system events, Hydro and Newfoundland Power have
11 jointly developed and improved operational procedures relating to the coordinated operation of
12 the Island Interconnected System.

13

14 Hydro developed the *T-093 Island Generation Supply – Gross Continuous Unit Ratings System*
15 Operating Instruction. This instruction specifies the requirement for capacity testing at various
16 time intervals to confirm generating unit capacities and is used to keep account of available
17 generating capacity on the Island Interconnected System. The instruction also requires
18 generation asset owners, including Newfoundland Power, to communicate the status and
19 capacity of their generating units. Hydro and Newfoundland Power agreed under this instruction
20 that Newfoundland Power will update Hydro on a daily basis of the status and capacity of
21 Newfoundland Power’s hydro and thermal generation units.

22

23 Hydro and Newfoundland Power have developed System Operating Instruction *T-043 Request*
24 *for Newfoundland Power Generation*. The instruction outlines the procedures to be followed
25 when Hydro requests Newfoundland Power to dispatch its generation units. This instruction
26 takes into account dispatching generation for either (i) economic purposes; or, (ii) to support the
27 Island Interconnected System generation reserve margin.

⁶ Newfoundland Power’s generation test was successfully conducted on November 27, 2014.

⁷ To the extent that natural water inflows permit, Newfoundland Power manages the operation of its hydro generation to maximize generation availability and capacity during winter peak loading periods.

1 Hydro, with input from Newfoundland Power, has modified its *T-001 Generation Reserves*
2 *System Operating Instruction*. This instruction details Hydro's requirements in assessing and
3 maintaining appropriate generation reserves on the Island Interconnected System. The
4 instruction triggers (i) actions to be taken to reduce load on the electrical system; and, (ii) the
5 Advance Notification Protocol to initiate customer and stakeholder communications.⁸ The *T-001*
6 *Generation Reserves System Operating Instruction* and the Advance Notification Protocol are
7 currently in use and will provide customers with coordinated and timely notification of an
8 anticipated generation shortfall on the Island Interconnected System.

9
10 Newfoundland Power developed its *SRP-001 Rotating Power Outages System Restoration Plan*
11 and *SRP-002 Cold Load Pickup System Restoration Plan* following its experience with
12 conducting rotating power outages and managing cold load pickup issues during the January 2-8,
13 2014 electrical system events on the Island Interconnected System. These plans documented the
14 lessons learned throughout the January 2-8, 2014 period and provide operations staff with
15 information on how to effectively manage the electrical system under similar circumstances.
16 Newfoundland Power provided these System Restoration Plans to Hydro, and Hydro has since
17 developed its own *T-042 Rotating Power Outages System Operating Instruction*.

18
19 **3.0 Customer Information and Communications Coordination**
20 Coordination efforts between the utilities since the January 2-8, 2014 events have resulted in
21 improvements to customer and stakeholder communications, customer service, and preparedness
22 for future system disturbances. These efforts include (i) a joint lessons learned exercise; (ii) the
23 Advance Notification Protocol and the Communications Plan; (iii) additions to customer service
24 technology; and, (iv) customer education initiatives

⁸ A description of the Advance Notification Protocol is provided in *Section 3.2 Advance Customer Notification* of this report.

1 **3.1 Joint Lessons Learned Session**

2 Hydro and Newfoundland Power conducted a joint lessons learned session following the January
3 2-8, 2014 electrical system events involving representatives from each utility's customer service,
4 communications, and conservation groups on May 20th, 2014.⁹ The purpose of the session was
5 for the utilities to review the corporate communications and customer relations performance that
6 occurred over the January 2-8, 2014 period and to identify improvements that can be made
7 should a similar situation occur in the future. The session identified improvements that could be
8 made to (i) the timing and understanding of customer conservation notice; (ii) contact centre
9 response; (iii) the utilities' approach to media relations; (iv) interaction with Government and
10 other stakeholders; (v) interaction with the business community; and, (vi) external
11 communications support. Both utilities agreed to conduct similar lessons learned sessions after
12 any future electrical system events that require a coordinated effort to communicate to customers
13 and stakeholders on the Island Interconnected System.

14
15 **3.2 Advance Customer Notification**

16 Newfoundland Power and Hydro have developed the Advance Notification Protocol. This
17 protocol guides communications when generation reserve margins on the Island Interconnected
18 System deteriorate beyond normal conditions. It ensures customers are provided with timely and
19 purposeful information on (i) the status of the Island Interconnected System generation reserves;
20 (ii) when to conserve electricity; and, (iii) when to prepare for power outages.¹⁰

21
22 The Advance Notification Protocol consists of five alert levels based on predetermined reserve
23 margin thresholds.¹¹ When each reserve margin threshold is breached, the Advance Notification
24 Protocol identifies the customers and stakeholders to be notified, the actions to be taken by each
25 utility, and the customer and stakeholder notifications that are required. Decreasing reserve

⁹ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 45, that Newfoundland Power and Hydro conduct a joint lessons learned exercise including both their Communications teams.

¹⁰ Reserve margin refers to the difference between the electrical generation available on the Island Interconnected System and the electrical load on the Island Interconnected System.

¹¹ The Alert Levels include Alert 0 - Normal Conditions; Alert 1 - Power Advisory; Alert 2 - Power Watch; Alert 3 - Power Warning; and Alert 4 - Power Emergency.

1 margins call for increased customer communications, the eventual request for customers to
2 conserve energy, and ultimately, preparation for rotating power outages should electrical load be
3 expected to meet or exceed available generation.
4

5 Newfoundland Power and Hydro have also developed a Joint Storm/Outage Communications
6 Plan.¹² The Communications Plan provides communications teams from both utilities with
7 coordinated strategies, tools and templates to assist the utilities in determining the appropriate
8 customer communications response during anticipated or actual electrical system events. The
9 type and amount of information communicated with customers will vary depending on the
10 severity of the event.
11

12 The goal of the Communications Plan is to ensure coordinated and consistent information is
13 communicated from the utilities to customers so that customers are well prepared in the event of
14 an outage. The Communications Plan also ensures the utilities remain the best source of
15 information for customers during a system event that affects the utilities' operations on the Island
16 Interconnected System.
17

18 Given the importance of providing customers with advance notice of anticipated generation
19 shortfalls on the Island Interconnected System, Newfoundland Power and Hydro undertook a
20 joint supply shortage exercise.¹³ The exercise simulated the utilities' joint customer
21 communications response during a significant loss of electrical power to customers on the Island
22 Interconnected System.
23

24 The objective of the supply shortage exercise was to demonstrate how the utilities coordinate and
25 initiate the appropriate customer communications response leading up to and during a power

¹² In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 44, that Hydro and Newfoundland Power jointly develop a coordinated, robust, well-tested and up-to-date Storm/Outage Communications Plan documenting protocols, plans, and templates to guide communications during major events.

¹³ The exercise was held on Tuesday, October 21st, 2014 at the offices of Newfoundland Power and Hydro in St. John's. Participants included personnel from the communications teams, Newfoundland Power's SCC and Hydro's ECC. Management of each utility was represented at both an operational and at an executive level.

1 outage using the Advance Notification Protocol and the Communications Plan. An evaluation of
2 the exercise concluded the Advance Notification Protocol and Communications Plan result in the
3 timely development and updating of messaging to customers.¹⁴
4

5 **3.3 Outage Communication Technology**

6 Hydro and Newfoundland Power have each developed outage communications technology
7 strategies since the January 2-8, 2014 electrical system events.¹⁵ The customer service
8 technologies currently in use by each utility differ in size and complexity. Because of this, in the
9 short-term, Newfoundland Power will lead in the implementation of customer service technology
10 initiatives. Information concerning technology choices and implementation will be provided by
11 Newfoundland Power to assist Hydro in assessing its customer service technology alternatives.¹⁶
12 Hydro has identified the requirement for technology assessments and upgrades across a number
13 of platforms in its Customer Service Strategic Roadmap 2015-2017.¹⁷
14

15 The customer service technology enhancements initiated by Newfoundland Power in 2014
16 include (i) an additional web server; (ii) an SMS texting platform; (iii) additional telephone lines
17 for its Customer Contact Centre; and, (iv) load balancing technology to share website traffic
18 between the web servers.¹⁸ Newfoundland Power has also conducted stress testing on new

¹⁴ The Exercise Report detailing the joint supply shortage exercise is filed as Attachment 1 to the Response to Request for Information PUB-NLH-460.

¹⁵ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 37, that Newfoundland Power and Hydro develop a joint Outage Communications Strategy to prioritize opportunities and guide near and longer term improvements to customer contact technologies and telephony.

¹⁶ Newfoundland Power has already provided vendor information and requests for proposals to Hydro as Newfoundland Power's customer service technology initiatives have progressed. It is possible that sharing of customer service technology platforms by Newfoundland Power and Hydro could occur; however, this is not seen as likely in the near term.

¹⁷ Hydro's Customer Service Strategic Roadmap was filed in the Response to Request for Information PUB-NLH-202.

¹⁸ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 41, that Newfoundland Power and Hydro pursue (primarily on a joint basis) other multi-channel communications options, such as two-way SMS Text messaging or Broadcasting options, for delivering Outage Status Updates.

1 customer service technology additions to ensure functionality during major electrical system
2 events.¹⁹

3
4 Hydro and Newfoundland Power recognize the potential for medium and long-term joint utility
5 customer service technology solutions. This includes implementation of a joint third party
6 Interactive Voice Response (“IVR”) system and the possibility for Hydro and Newfoundland
7 Power to share high-volume call answering technology.²⁰ These opportunities will be pursued
8 further in the 2015-2017 period.

9
10 **3.4 Customer Education**

11 Newfoundland Power and Hydro have developed an education and awareness plan for
12 customers. The plan (i) informs customers of the Advance Notification Protocol; (ii) educates
13 customers on how best to conserve electricity; and, (iii) provides information to customers on the
14 impact of conservation on the Island Interconnected System.

15
16 The utilities used customer research to tailor the educational materials and initiatives.²¹ These
17 initiatives include (i) a new web page; (ii) a bill insert to be circulated to customers in December;
18 and, (iii) infographics for use on social media channels. The utilities will also conduct outreach
19 through the local media, speaking engagements, and trade publications to educate customers and
20 raise awareness of conservation and outage preparedness throughout the winter season.

21
22 To ensure customers understand the positive impacts their conservation efforts have on the
23 electrical system, the utilities will provide practical feedback after a conservation request has

¹⁹ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 39, that as Newfoundland Power and Hydro move forward with enhancements to any customer facing outage support systems, each should stress test the technologies well prior to the winter season.

²⁰ The utilities’ high-volume call answering systems are currently independent. Future opportunities include expanding Newfoundland Power’s Automatic Call Distributor (“ACD”) and IVR systems to include messaging for Hydro’s customers.

²¹ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 38, that Hydro and Newfoundland Power conduct customer research (primarily on a joint basis), in order to better understand customer outage-related informational needs and expectations, including requests for conservation, and incorporate results into the Outage Communications Strategies.

1 been issued.²² This feedback will (i) inform customers of whether or not their conservation
2 efforts were enough to minimize or eliminate the need for rotating power outages²³; and, (ii)
3 encourage additional customer conservation efforts to help reduce the possibility of further
4 rotating power outages.^{24,25}

5
6 These customer education and awareness initiatives are coordinated jointly by the utilities'
7 corporate communications and conservation teams to ensure customers of both utilities receive
8 consistent information and understand how their efforts impact the Island Interconnected System.
9 Coordinated customer education and awareness efforts will continue throughout the 2014-2015
10 winter season.

²² Newfoundland Power and Hydro are not able to measure the actual amounts of electricity conserved after a call for customer conservation has been requested. However, the utilities will use practical information based on customer conservation education materials to provide customers with high-level feedback on the impact of their actions following a conservation request.

²³ In the event of an anticipated electricity supply shortfall where Hydro and Newfoundland Power initiate a request for conservation to customers, the utilities will inform customers of whether or not the actual customer conservation was enough to eliminate anticipated rotating power outages. This will encourage customers to conserve in the future and demonstrate the impacts that conservation has on minimizing outages to customers.

²⁴ Should Hydro and Newfoundland Power request customer conservation, and rotating power outages are subsequently required, Hydro's ECC and Newfoundland Power's SCC will determine the amount of additional conservation that would have been required on the system (i.e. the amount of load rotated) to prevent rotating power outages. This information will be communicated to customers in a practical way to encourage additional conservation and to demonstrate the impact that conservation can have.

²⁵ In its April 24th, 2014 Interim Report, The Liberty Consulting Group recommended, in Recommendation 43, that Newfoundland Power should communicate better with stakeholders in the aftermath of outages. If conservation requests have been made of the public, Newfoundland Power should provide feedback following the event to indicate the amount of conservation achieved, and encourage future conservation.