

December 1, 2014

The Board of Commissioners of Public Utilities
Prince Charles Building
120 Torbay Road, P.O. Box 21040
St. John's, Newfoundland & Labrador
A1A 5B2

Attention: Ms. Cheryl Blundon
Director Corporate Services & Board Secretary

Dear Ms. Blundon:

**Re: The Board's Investigation and Hearing into Supply Issues and Power Outages
on the Island Interconnection System**

In its Interim Report dated May 15, 2014 in relation to the above-noted matter, the Board requested that Hydro file the following reports by December 1, 2014.

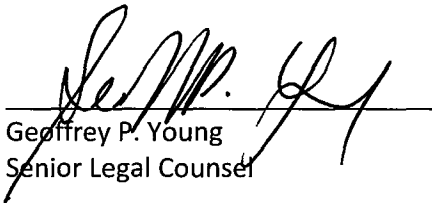
- a) A status report in relation to the winter readiness of its generation assets;
- b) A report in relation to transmission system and terminal station safety issues; and
- c) A joint report with Newfoundland Power on progress towards enhancements and improvements in operational and customer information and communications coordination.

Please find enclosed Hydro's reports in relation to a) and b) above. The joint report by Hydro and Newfoundland Power in relation to c) above was filed with the Board separately by Newfoundland Power on today's date.

We trust the foregoing is satisfactory. If you have any questions or comments, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



Geoffrey P. Young
Senior Legal Counsel

GPY/jc

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey Stirling Scales
ecc: Roberta Frampton Benefiel – Grand Riverkeeper Labrador

Thomas Johnson – Consumer Advocate
Danny Dumaresque

*Investigation and Hearing into Supply Issues and Power Outages on the
Island Interconnected System*

**An Update Report to the Board of Commissioners of Public Utilities
Indicating the Winter Readiness Status of Hydro's
Generation Assets**

Newfoundland and Labrador Hydro

December 1, 2014



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Appendix A Master Generation Plan for Winter Preparation: Updated to December 1, 2014

1 **1.0 INTRODUCTION**

2 In its Interim Report of May 15, 2014, and through additional correspondence, the Board of
3 Commissioners of Public Utilities (the Board) requested that Newfoundland and Labrador
4 Hydro (Hydro) submit various reports outlining the actions it is taking to improve generation
5 and transmission equipment reliability performance.

6 On June 16, 2014, Hydro submitted a Generation Availability Report to the Board which
7 outlined Hydro’s plans and schedules related to various actions to be implemented in 2014
8 to improve generation availability and to ensure winter readiness.

9 On August 29, 2014, Hydro submitted its Master Generation Plan for Winter Preparation. In
10 that Report, the Company presented a consolidated listing of the various actions and
11 projects it is undertaking in 2014 to ensure the winter readiness of its generation assets
12 leading into the 2014/15 winter season. An update to that Report was provided to the
13 Board on October 1, 2014.

14 This Report is in response to the Board’s request in its Interim Report that Hydro file a
15 further update on the winter readiness status of its generation assets by December 1, 2014.

1 **2.0 GENERATION WINTER READINESS**

2 **2.1 Maintenance and Capital Project Activities**

3 Hydro’s Master Generation Plan for Winter Preparation was presented to the Board on
4 August 29, 2014. The status of this Plan has been updated to December 1, 2014, and this
5 update is attached to this Report as Appendix A. This Plan itemizes the various actions and
6 projects that are in progress, and in most cases completed, to ensure generation availability
7 and winter preparation in advance of the 2014/15 winter season. Plans and schedules
8 related to these actions are included in various reports and updates that have been provided
9 to the Board on a monthly or bi-weekly basis.

10 In addition to the various operations and maintenance initiatives being actioned, Appendix A
11 also includes the 2014 capital projects that are directly relevant to generation reliability.
12 These are essentially a sub-set of the 2014 capital program reported to the Board on August
13 18, 2014, the status of which was most recently reported to the Board on November 18,
14 2014.

15 A key element of Hydro’s overall planning process for winter generation availability is the
16 Company’s master outage schedule. Many of the actions and projects being executed by
17 Hydro require planned, short duration local outages so that the necessary work on or around
18 energized equipment can be completed safely and effectively. This requires extensive
19 coordination between the System Operations and Planning Department and both project
20 managers and operations personnel in the field, with an underlying requirement that
21 interruptions in service to customers are minimized as much as possible.

22 This master outage schedule has been revised from time to time to adjust to changing
23 circumstances. However, all 2014 outages required to accommodate planned maintenance
24 and overhaul activities on generation units have been completed as of December 1, 2014.
25 The status of Hydro’s generation units on the Island Interconnected System as of December
26 1, 2014 is indicated in Table 2.1 below.

TABLE 2.1 Status of Generation Availability – Island Interconnected System As of December 1, 2014		
Generation Source	Capacity (MW)	Status
Hydraulic Generation		
Bay d’Espoir	604	Available
Cat Arm	127	Available
Upper Salmon	84	Available
Hinds Lake	75	Available
Granite Canal	40	Available
Paradise River	8	Available
Exploits Generation	63	Available
Thermal Generation		
Unit 1, Holyrood	490	Available
Unit 2		Available
Unit 3		Available
Thermal Standby Generation		
Hardwoods CT	50	Undergoing assessment for fuel control
Stephenville CT	50	Available
Hawke’s Bay and St. Anthony Diesels	15	Available
Holyrood Black Start Diesels	10	Available

1

2 **2.2 New Generation Supply**

3 Hydro has procured, and is presently installing, a new combustion turbine at the Holyrood
 4 site. This unit has a capacity rating of approximately 120 MW. The unit is four years old, but
 5 is unused, and it has been verified by both Hydro and external experts as being fit for
 6 purpose.

7 The original schedule for this project contemplated that this unit would be in-service and
 8 available to Hydro’s system in December 2014. While the overall schedule is currently
 9 reflecting slippage on certain work fronts, function testing and initial commissioning of the
 10 combustion turbine unit are still planned for the month of December. Further details are
 11 provided in Hydro’s most recent bi-weekly update to the Board dated November 21, 2014.

1 **2.3 Securing Economically Available Interruptible Loads**

2 Hydro has been providing regular updates to the Board on its progress in securing
3 economically available capacity assistance¹. The most recent update was filed as part of the
4 Generation Availability Report on November 14, 2014. Based on discussions with its Island
5 Industrial Customers (IC), Hydro determined that Corner Brook Pulp and Paper (CBPP) and
6 Vale Newfoundland and Labrador (Vale) are the only IC capable of providing a material
7 quantity of winter capacity assistance. An application for approval of an agreement
8 between Hydro and CBPP for 60 MW of winter capacity assistance was filed with the Board
9 on October 28, 2014. The Board approved this agreement on November 28, 2014. Hydro is
10 also in the process of finalizing an agreement with Vale for additional capacity assistance.

11 **2.4 Emergency Preparedness and Response**

12 Hydro prepares for severe weather events by maintaining effective tools and equipment in
13 key locations; maintaining critical spare parts; locating shops and depots in strategically
14 accessible areas throughout the Province; maintaining a supervisory on-call rotation; and
15 ensuring clear and open communications between the operating areas and the Energy
16 Control Centre (ECC). In March 2014, Hydro completed a review of these procedures and
17 developed a draft “Severe Weather Preparedness” plan and checklist to ensure that lessons
18 learned from the system outages in 2013 and 2014 were incorporated into Hydro’s
19 emergency preparedness and response protocol. In that process Hydro also reviewed
20 documentation from the North American Electric Reliability Corporation (NERC)² to ensure
21 that best practices from other utilities were incorporated into the preparedness plan.

22 Hydro’s draft preparedness plan was finalized by the Company’s Asset Owners Technical
23 Council in late September and has since been formally documented. A copy of Hydro’s
24 *Severe Weather Preparedness Protocol* was provided to the Board as part of Hydro’s

¹ Hydro did not limit its scope to interruptible loads and considered all types of capacity assistance, including that which can be provided through a customer transferring load to its own backup generation and/or having customers add their generation capacity to Hydro’s system.

² NERC is a not-for-profit international regulatory authority whose mission is to ensure the reliability of the bulk power system in North America, and is subject to oversight by the Federal Energy Regulatory Commission and governmental authorities in Canada. NERC develops and enforces reliability standards as part of its mandate.

1 previous generation winter readiness update on October 1, 2014. This protocol and the
2 associated checklist were subsequently used on October 16, 2014 in preparation for
3 Hurricane Gonzalo. Copies of the checklists and other documentation that were completed
4 by Thermal Generation, Hydro Generation, and Transmission and Rural Operations in
5 preparation for that weather event were provided as attachments to Hydro’s response to
6 PUB-NLH-456.

7 **2.5 Generation Critical Spares**

8 Hydro has completed comprehensive reviews of its critical spares requirements and the
9 status of inventory availability for all three generation areas – thermal generation, hydraulic
10 generation, and combustion turbines. These reviews built on critical spares work which has
11 been ongoing at Hydro since 2011 through its Critical Spares Council and otherwise, and
12 critical spares will continue to be an area of ongoing monitoring and adjustment in line with
13 changes to Hydro’s asset base and asset performance.

14 A particular area of focus through 2014 has been those critical spares which are the highest
15 priority in terms of ensuring equipment readiness and availability for the 2014/15 winter
16 season. These have been identified by Hydro, and in most cases adequate spares already
17 exist in inventory. In cases where spares are not currently in stock, procurement action has
18 been initiated or is planned to ensure that they will be.

19 Recent updates were provided to the Board on November 21, 2014 in the form of detailed
20 responses to Board Requests for Information (RFIs) related to critical spares. Hydro plans to
21 provide a further update to the Board by no later than December 8, 2014, with a focus on
22 critical spares in a winter readiness context, which will include additional detail on inventory
23 status and expected delivery dates for spares which have been ordered.

APPENDIX A

2014 Generation Master Plan for Winter Preparation
Updated to December 1, 2014

2014 GENERATION MASTER PLAN FOR WINTER PREPARATION - NEWFOUNDLAND & LABRADOR HYDRO

REF		Expected Completion Date	Generation Availability Report	Integrated Action Plan	Annual Work Plan	2014 Capital Plan	Incremental Capital Plan	Critical Spares Plan	Plan for Securing Interruptible Loads
THERMAL GENERATION - HOLYROOD									
Operations and Maintenance Activities									
1	Review of breaker maintenance tactics + refresher training	Complete	■						
2	Increased maintenance on Forced Draft (FD) fan motors	Complete	■		■				
3	Procurement decision on spare parts for additional FD fan motors	Complete	■					■	
4	Updated plan and inventory for other critical spares	Complete	■					■	
5	Major overhaul, inspection of control valve spindles - Unit #2	Complete	■		■				
6	Investigate and address vibration issues on Unit #1	15-Dec-14	■	■	■				
7	Corrective actions for turbine generator lube oil systems	Complete	■		■				
8	Expansion of Inspection Test Program on high pressure components	Complete	■		■				
Reliability Related Capital Projects									
9	Replacement of an Air Compressor	19-Dec-14			■	■			
10	Install Fire Protection Upgrades	19-Dec-14			■	■			
11	Replace DC Distribution Panels and Breakers	See note			■	■			
12	Upgrade Vibration Monitoring System	See note			■	■			
13	Upgrade Hydrogen System	Complete			■	■			
14	Replace Condensate Polisher Annunciator Panels	19-Dec-14			■	■			
15	Install Black Start 16 MW Diesel	Complete			■				
16	Overhaul Turbine/Generator Unit 2	Complete							
17	Overhaul Boiler Feed Pump East Unit 3	Complete							
18	Overhaul Cooling Water Pump East Unit 1	Complete							
19	Overhaul Extraction Pump South Unit 1	Complete							
HYDRAULIC GENERATION									
Operations and Maintenance Activities									
20	Processes for planning, scheduling and executing work	8-Dec-14	■						
21	Analysis of generator vibration issues at Granite Canal	Complete	■	■					
22	Updated plan and inventory for critical spares	Complete	■					■	
Reliability Related Capital Projects									
23	Rewind Stator Unit 3 – Bay d’Espoir	Complete			■	■			
24	Upgrade Generator Bearings Unit 2 – Bay d’Espoir	Complete			■	■			
25	Replace Automatic Greasing Systems Two Units– Bay d’Espoir	Complete			■	■			
26	Replace Automatic Greasing Systems Two Units – Bay d’Espoir	Complete			■	■			
27	Replace Spherical Valve Bypass Valve Assemblies – Bay d’Espoir	See note			■	■			
28	Excitation Transformer Replacement Unit 6 – Bay d’Espoir (Unforeseen)	Complete			■				
29	Replacement of Excitation Transformers – Bay d’Espoir	Complete			■				
30	Automate Generator Deluge Systems Two Units – Bay d’Espoir	Complete			■	■			
31	Automate Generator Deluge Systems Two Units – Bay d’Espoir	Complete			■	■			
32	Upgrade Intake Gate Controls – Bay d’Espoir	Complete			■	■			
33	Replace Cooling Water Pumps – Bay d’Espoir	Complete			■	■			
34	Purchase Low Pressure Screw Compressor Set – Bay d’Espoir	19-Dec-14			■	■			
35	Replace Automatic Transfer Switch – Hinds Lake	Complete			■	■			

2014 GENERATION MASTER PLAN FOR WINTER PREPARATION - NEWFOUNDLAND & LABRADOR HYDRO									
REF		Expected Completion Date	Generation Availability Report	Integrated Action Plan	Annual Work Plan	2014 Capital Plan	Incremental Capital Plan	Critical Spares Plan	Plan for Securing Interruptible Loads
36	Replace Turbine/Generator Cooling Water Flow Meters – Upper Salmon	Complete			■	■			
37	Replace Generator Bearing Coolers Two Units – Bay d’Espoir	Complete			■				
38	Overhaul Turbine/Generator Units – Bay d’Espoir and Hinds Lake	Complete			■				
GAS TURBINES - HARDWOODS AND STEPHENVILLE									
Operations and Maintenance Activities									
39	Review of maintenance strategy and update of PM/CM plans	Complete	■	■					
40	Identify new/additional capital work required	Complete	■	■					
41	Root cause analysis of repeat failures and identify solutions	Complete	■	■					
42	Review of fuel storage capacity and fuel management procedures	Complete	■	■					
43	Protocol for performing test starts and run-ups	Complete	■	■					
44	Updated plan and inventory for critical spares	Complete	■	■					
45	Evaluate vendor service agreements for after-hours support	15-Dec-14	■	■					
Reliability Related Capital Projects									
46	Upgrade Gas Turbine Plant Life Extension - Stephenville	10-Dec-14			■	■			
OTHER ACTIONS/PROJECTS									
47	Installation and commissioning of a new Gas Turbine at Holyrood	December		■			■		
48	Securing economically available interruptible loads	see note							
49	Generation winter readiness assessment action plan	Complete	■	■	■	■	■	■	■
50	Emergency preparedness and response	Complete	■						

NOTES**Ref**

For capital projects generally, the "Expected Completion Date" is the date that the equipment is released for service, and not project close-out.

11 DC Panel replacement deferred to next Stage 1 outage in 2015.

12 The scope for Units 1&2 is complete. The scope for Unit 3 is deferred to 2015. Existing vibration monitoring equipment on Unit 3 will remain in place with adequate spare parts to ensure reliable operation until full replacement in 2015.

27 A portion of the work is constructed and in service. Some components require modifications by the manufacturer. These modifications are ongoing and the components will be installed during a planned outage in 2015. There is no impact on winter readiness.

29 The planned scope for 2014 is complete. The 2015 planned scope is tracking ahead of plan.

47 See update to the Board on November 21, 2014. Some schedule slippage, but function testing and initial commissioning are still planned for December.

48 Agreement with CBPP for up to 60 MW of capacity assistance approved by the Board on November 28. An agreement with Vale is in the process of being finalized.