

November 15, 2018

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

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

Dear Ms. Blundon:

**Re: The Liberty Consulting Group Report – Analysis of Newfoundland Island Interconnected System Power Supply Adequacy for the Winter of 2018-2019 – Biweekly Update Report – Revision 1**

In its correspondence of September 19, 2018, the Board of Commissioners of Public Utilities ("Board") requested that Newfoundland and Labrador Hydro ("Hydro") provide a biweekly report on Hydro's supply adequacy for winter 2018-2019, commencing October 1, 2018.

During dynamic commissioning testing on November 7, 2018, the Labrador-Island Link tripped off due to a glycol leak. At the time, Hydro considered the issue one that is typical and expected at this stage of commissioning. As a result, it was not noted in Hydro's biweekly report filed on November 9, 2018. As the issue remains outstanding, Hydro has revised the November 9, 2018 filing to include additional detail and ensure full and complete information is provided. Hydro's next biweekly update, scheduled for November 26, 2018, will further discuss this event.

Please note that the update, with information available as of November 14, 2018, is to Activity 11 only.

Should you have any questions, please contact the undersigned.

Yours truly,

**NEWFOUNDLAND AND LABRADOR HYDRO**



Shirley A. Walsh  
Senior Legal Counsel – Regulatory  
SW/kd

cc: Gerard Hayes – Newfoundland Power  
Paul Coxworthy – Stewart McKelvey  
Denis J. Fleming – Cox & Palmer  
ecc: Van Alexopoulos – Iron Ore Company  
Senwung Luk – Olthuis Kleer Townshend LLP

Dennis Browne, Q.C. – Brown Fitzgerald Morgan & Avis  
Dean Porter – Poole Althouse

Benoît Pepin – Rio Tinto

# Labrador-Island Link In-Service Update

November 9, 2018

Revised November 15, 2018

*A Report to the Board of Commissioners of Public Utilities*



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## **List of Attachments**

Attachment 1: Meeting Minutes

1 **1. Introduction**

2 Newfoundland and Labrador Hydro (“Hydro”) closely monitors its supply-related assets and  
3 issues to ensure its ability to provide reliable service to customers. The availability of power  
4 over the Labrador-Island Link (“LIL”) for the upcoming winter was identified in previous reports  
5 to the Board by both Hydro and Liberty as contributing to supply adequacy in advance of  
6 availability of the Muskrat Falls generation supply to the Island. Hydro is working closely with  
7 Nalcor’s Power Supply leadership [Transition to Operations (“TTO”), Power Supply Transmission  
8 Operations, and the Lower Churchill Project (“LCP”) Transmission Project] to monitor and  
9 mitigate the risks associated with the timing of the in-service of the LIL to supply off-Island  
10 capacity and energy to the Island Interconnected System. In each biweekly report, Hydro will  
11 also provide an update on supply adequacy for the coming winter with the most up-to-date in-  
12 service assumptions of the LIL, as required. The information in this report is current as of  
13 November 9, 2018. Any developments after that date will be included in the next biweekly  
14 report.

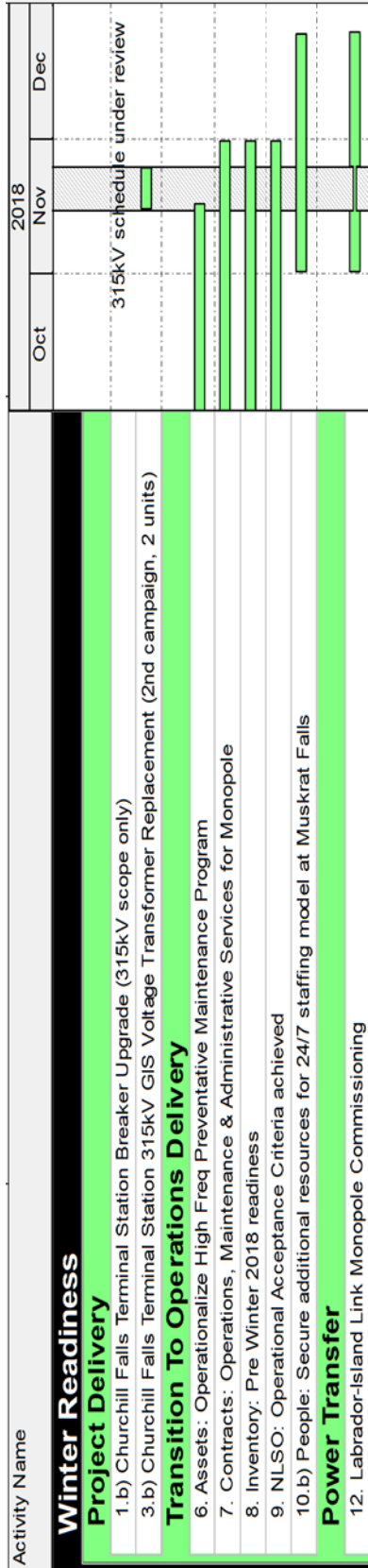
15  
16 **2. In-Service Activities Update**

17 The following outlines the specific critical path activities required for operation of the LIL for  
18 winter 2018-2019,<sup>1</sup> as well as schedule or constraint information for those tasks. As this report  
19 is updated on a biweekly basis, Hydro will provide information on the key activities and the  
20 associated schedule to inform the Board if any potential supply issues arise from the delivery of  
21 those activities.

22  
23 Attachment 1 contains minutes from the biweekly meeting held between Hydro and Power  
24 Supply, which included discussions on expectations of supply and energy from the LIL for winter  
25 2018-2019, and specific issues that may affect risks of supply over the LIL for the winter.

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<sup>1</sup> This report discusses operational readiness for winter 2018-2019. The final in-service review of the LIL is undertaken separately with the Board’s consultant, Liberty, on a quarterly basis with TTO.



**Please note:**

- 1) The following activities are complete:
  - a. Item 1.a) Churchill Falls Terminal Station Breaker Upgrade (735kV scope only)
  - b. Item 2. Muskrat Falls Terminal Station 315kV GIS Voltage Transformer Replacement (1 unit)
  - c. Item 3.a) Churchill Falls Terminal Station 315kV GIS Voltage Transformer Replacement (1<sup>st</sup> campaign, 5 units)
  - d. Item 4. ERP/ERR: Interim Emergency Response Plan/ERR in place for all Sites/Assets
  - e. Item 5. Contracts: Support services in place & resources onboard
  - f. Item 10.a) People: Implement Interim 24x7 staffing model for Muskrat Falls
  - g. Item 11. Re-Energize Labrador-Island Link
  
- 2) Outage required (~10d) mid-November for additional CHFTS2 315kV GIS VT replacement (3.b) to improve system reliability

**Figure 1: The LIL In-Service Critical Path Activities**

1 **Project Delivery**

2 **Activity 1 – Churchill Falls Breaker Upgrade**

3 **Status: Work has commenced**

- 4 • The 735 kV breaker upgrade has been successfully completed.
- 5

- 6 • With respect to the 315 kV breaker upgrades the work is being divided into a series of  
7 smaller work packages. This approach will enable some of the 315 kV breaker upgrades  
8 to be completed during the planned ten-day outage in November. As previously  
9 indicated, the remaining work may be deferred to Q2 or Q3 of 2019.
- 10

- 11 • Additional background on the breaker failure upgrades: In the summer of 2017, prior to  
12 the energization of the new 735 kV Churchill Falls Terminal Station (“CHFTS”) extension  
13 breakers in the Churchill Falls switchyard, Hydro Quebec (“HQ”) reviewed the protection  
14 design of CHFTS extension as well as the new Churchill Falls switchyard (“CHFTS2”).  
15 Their review identified that there was vulnerability in the bus protection design as a  
16 result of the “system A” and “system B” dc circuits coming together in one panel. The  
17 concern is that both “A” and “B” dc protection circuits, that are meant to be fully  
18 redundant, could be subject to a common failure within a single panel resulting in the  
19 bus protection inability to satisfy HQ’s critical clearing time as dictated in their system  
20 studies. This could result in a broader impact on the 735 kV system connecting the  
21 Churchill Falls and HQ system as it responds to a slow clearing fault. The “system A” and  
22 “system B” voltages were both in the bus protection “A” panel in the design as the bus  
23 protection also incorporated the breaker failure protection.
- 24

25 Changes were made in the fall of 2017 to the breaker failure protection for the new 735  
26 kV breakers in the existing Churchill Falls switchyard to remove this vulnerability. Similar  
27 changes were identified by HQ for the bus protection for the 735 kV breakers and the  
28 315 kV breakers in the CHFTS2. There was insufficient time to design and implement the  
29 changes for CHFTS2 prior to the 2017-2018 winter. This was mitigated by the

1 implementation of an operating restriction<sup>2</sup> to the CHFTS2 switchyard until the  
2 modifications could be designed and implemented. The plan is to  
3 remove the operating restriction in CHFTS2 for this coming winter by implementing the  
4 revised design which removes both “A” and “B” dc protection circuits from the bus  
5 protection “A” panels.  
6

### 7 **Activities 2 and 3 – 315 kV GIS Voltage Transformer<sup>3</sup> Replacements<sup>4</sup>**

8 ***Status: Five of Seven at Churchill Falls completed. Remaining to be completed by November***  
9 ***25, 2018***

- 10 • The remaining Voltage Transformer (“VT”) replacements for Churchill Falls identified in the  
11 schedule under Activity 3a were successfully installed. All VT replacements under Activity  
12 3a have now been completed.  
13
- 14 • The two VT replacements for Churchill Falls (under Activity 3b) are now scheduled to be  
15 installed during a planned ten-day outage in November (November 15 to 24, 2018).  
16

### 17 **Transitions to Operations Delivery**

18 **Activity 4: Emergency Response Plan (ERP)/Emergency Restoration and Recovery (ERR):**

19 **Interim ERP/ERR in place as required at all sites/assets**

20 ***Status: Completed, no further updates.***

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<sup>2</sup> The operating restriction is the implementation of procedures which results in the Labrador Transmission Assets (“LTA”) two, 735/315 kV transformers and two, 315 kV transmission lines being operated as radial feeders out of the existing Churchill Falls switchyard. This operating restriction results in a less reliable operation of CFTS2 because the failure of a single element in the station or one of the two, 315 kV transmission lines will result in the removal from service of other elements in its radial line-up.

<sup>3</sup> 315 kV instrument transformers.

<sup>4</sup> During initial energization activities, some VT’s failed. A Root Cause Analysis (“RCA”) identified poor quality control during assembly, resulting in new VT’s manufactured under warranty. Existing VT’s are being replaced with new ones to mitigate identified risk of failure. The spare to be utilized at Muskrat has been checked and confirmed to not have the same quality control issue. The quality control issue that required new Voltage Transformers to be manufactured has been addressed.

1 **Activity 5 – Contracts: Support Services in Place and Resources on Board**

2 **Status: Completed, no further updates**

3

4 **Activity 6 – Assets: Operationalize High Frequency Preventive Maintenance Program**

5 **Status: On track for November 15, 2018 completion**

- 6 • All requirements are in place for the LIL/LTA assets with the exception of the converter  
7 stations. The development of high frequency maintenance requirements for the  
8 converters is continuing and is close to completion.

9

10 **Activity 7 – Contracts: Operations, Maintenance, and Administrative Services for Monopole**

11 **Status: On track to have required contracts in place for November 30, 2018.**

- 12 • With respect to the four remaining contracts, two are secured (diesel generators and  
13 Soldiers Pond snow clearing), one has been released for competition (HVAC) and the  
14 scope definition for the remaining requirement (Cranes and Hoists) continued. Note the  
15 Soldiers Pond snow clearing contract has been secured with an interim (one month)  
16 arrangement, effective immediately, while the terms and conditions for the full Winter  
17 2018-2019 contract are negotiated.

18

19 **Activity 8 – Inventory: Pre-Winter 2018 Readiness**

20 **Status: Completion of inventory on track for November 30, 2018**

- 21 • Vendor supplied spares, quantities, and their location to service both Nalcor’s Labrador  
22 and Island asset needs for the coming winter season have been identified, inspected,  
23 and transferred to operations for the overhead transmission lines and submarine cables.  
24 The delivery, inspection, and transfer of required HVac station spares to operations  
25 continued with some items identified for procurement. For HVdc assets, all spares will  
26 remain in contractors care, custody and control until they are transferred to the  
27 project/operations upon completion of bipole low power trial operation.



1 **Activity 9 – Newfoundland and Labrador System Operator (“NLSO”): Operational Acceptance**

2 **Criteria Received**

3 ***Status: On track for completion by November 30, 2018***

- 4 • NLSO acceptance criteria, which are required in order for the LIL to be considered under  
5 NLSO control, continue to be addressed. NLSO requirements relating to the identification  
6 of asset owner contact details for 24/7 operations were completed. Three of the five  
7 NLSO requirements have now been met. The completion/testing of redundant telecom  
8 paths and documentation requirements continued and remain on track for completion by  
9 November 30, 2018.

10

11 **Activity 10 – People: Implement Interim 24/7 Staffing Model for Muskrat Falls**

12 ***Status: 24/7 staffing model in place and additional resources being recruited to support the***  
13 ***staffing rotation beyond January 1, 2019***

- 14 • An interim staffing rotation (between November 1, 2018 and December 31, 2018) for  
15 Muskrat Falls is now in place to support the 24/7 requirement for reliable operations  
16 during initial start-up/operations due to software control limitations. Note, additional  
17 resources (2) are also in the process of being recruited in order to support the 24/7  
18 rotation on a longer term basis with the goal of these resources being in place by  
19 January 1, 2019. We have added an additional activity (10b) to the Gantt chart to report  
20 on the progress of this recruitment effort.

21

22 **Power Transfer**

23 **Activity 11 – Re-Energize Labrador Island Link**

24 ***Status: Completed as planned on November 1, 2018***

- 25 • The LIL was successfully re-energized on November 1, 2018 at 45 MW using the existing  
26 version of GE software (version 15). Version 16a of GE software has also been delivered  
27 (to site) and factory acceptance testing (“FAT”) of the next release is ongoing in Stafford.  
28 A decision regarding whether the new software (version 16a) will be uploaded during the

1 planned outage in November is being assessed, with a decision to be made during the  
2 week of November 12, 2018. On November 7, 2018 at approximately 1100 hours, the LIL  
3 tripped on the first day of 24/7 operations with a power transfer of 60 MW. Upon  
4 investigation, it was determined that the cause of the trip was a glycol leak in the valve  
5 hall. A valve expert from GE is currently on site conducting further testing. The LIL will not  
6 likely be back in service before the commencement of the November 15-24, 2018 outage  
7 and effects of this outage on the schedule are currently being evaluated. Hydro will  
8 provide a further update on the coolant leak in its next biweekly report.

## 10 **Activity 12 – Transmission Link Monopole Commissioning**

### 11 ***Status: Re-started and in progress as of November 1, 2018***

- 12 • The Monopole Commissioning of the Transmission Link commenced as planned on  
13 November 1, 2018 and will continue into late December 2018.
- 14
- 15 • Punch list items are continually being addressed and closed by the project team. While  
16 punch list resolution shall continue in an effort to improve system reliability, this effort is  
17 not considered critical for power transfer.

## 19 **3. Key Risks**

20 There has been no change in the key risks since the October 1, 2018 report. In addition to the  
21 activities described in Section 2, Hydro acknowledges that the as-yet-to-be-demonstrated  
22 reliability of the current GE software implementation remains a risk to the reliable in-service of  
23 the LIL. Reliability of the existing software is discussed below. The Power Supply LCP  
24 transmission project team has full-time representation in Stafford, England where the upgraded  
25 software is being developed and tested and daily status meetings are being held. Power Supply  
26 leadership also continues to work with GE leadership in an effort to establish an agreed path  
27 forward for completing the upgraded software for consideration for installation.

1 Dynamic commissioning with power transfer activities recommenced as scheduled on  
2 November 1, 2018 with existing software while testing continued on the upgraded version on  
3 the system simulator in Stafford. If the existing software is proven reliable through November  
4 2018, Hydro and Power Supply will evaluate proceeding with a software upgrade or maintaining  
5 the existing software version. The upgraded software would be considered only after  
6 demonstrated reliable results from the system simulator work. Hydro and Power Supply are  
7 now reviewing the early November LIL operational results to understand current software  
8 version reliability as the existing software may be the most appropriate solution for the pending  
9 winter. The results of this review will be further informed by a comparison of what potential  
10 benefits would result from software upgrade. It is anticipated the decision on software for this  
11 pending winter will be final in mid-November 2018.

12  
13 An additional risk being monitored is the Maritime Link (“ML”) frequency response to the LIL  
14 initiated disturbances once the LIL is in service. Should the LIL trip at a rate that causes frequent  
15 disturbances on neighbouring utilities (Nova Scotia Power and New Brunswick Power), the  
16 request may be made by neighbouring utilities to take frequency response out of service. If that  
17 were to occur, Hydro would consider limiting the LIL to 50 MW deliveries to avoid under-  
18 frequency load shed (“UFLS”) in the event of a LIL trip.<sup>5</sup> If the ML frequency response was  
19 turned off, the LIL contribution to the Island’s power supply would be similar to a generator,  
20 and the reliability of the LIL will be the major factor in the decision on loading level. The NLSO  
21 will work with Nova Scotia Power and New Brunswick Power Service Operators to keep them  
22 informed of testing plans so as to understand and mitigate the risk from their perspective.

23

#### 24 **4. Modelled Assumptions**

25 There has been no change in the modelled assumptions since the October 1, 2018 report. The  
26 following analysis, conducted in the same format as that provided in Hydro’s previous response

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<sup>5</sup> Since mono-pole commissioning recommenced on November 1, 2018, there has been a number of Maritime Link frequency controller activations. The NLSO has placed a temporary restriction of 45 MW maximum delivered over the LIL while commissioning continues. This temporary restriction will be lifted after ongoing commissioning results are proven reliable.

1 and Near-Term Generation Adequacy Report, provides insight into the expected loss of load  
 2 and unserved energy for this assumption, as compared to the Conservative Supply Case from  
 3 Hydro’s Near-Term Generation Adequacy Report. These results with the updated 30 percent  
 4 forced outage rate are presented in Table 1. Since the October 1, 2018 report, Hydro has load  
 5 tested the Holyrood’s Unit 2 following its upgrades this maintenance season. Unit 2 was  
 6 successfully tested to its capacity of 175 MW.<sup>6</sup>

**Table 1: Supply Adequacy Modelling Results for Updated Assumptions**

		<b>EUE<sup>7,8</sup></b>					
HRD <sup>11</sup> DAFOR <sup>12</sup>	Conservative Supply Case <sup>13</sup>	Holyrood Full Capability <sup>9</sup>			Holyrood Declining Capability <sup>10</sup>		
		LIL = 110 MW	LIL = 55 MW	No LIL <sup>14</sup>	LIL = 110 MW	LIL = 55 MW	No LIL
15%	37	97	139	242	142	204	364
18%	57	146	209	359	202	290	511
20%	74	185	265	453	250	359	626

		<b>LOLH<sup>15</sup></b>					
HRD DAFOR	Conservative Supply Case <sup>13</sup>	Holyrood Full Capability <sup>9</sup>			Holyrood Declining Capability <sup>10</sup>		
		LIL = 110 MW	LIL = 55 MW	No LIL <sup>14</sup>	LIL = 110 MW	LIL = 55 MW	No LIL
15%	0.69	1.64	2.36	3.95	2.55	3.66	6.33
18%	1.05	2.40	3.44	5.67	3.52	5.06	8.60
20%	1.34	3.01	4.30	7.04	4.28	6.15	10.35

<sup>6</sup> While under certain operating conditions the unit is capable of producing 175 MW (+5 MW as compared to its gross continuous unit rating), the 170 MW rating continues to be used from a planning perspective.

<sup>7</sup> Expected Unserved Energy (“EUE”).

<sup>8</sup> The LIL FOR is 1% for the Conservative Supply Case only, all other cases include the LIL FOR of 30%. EUE criteria is 170 MWh and LOLH criteria is 2.8.

<sup>9</sup> Holyrood Full Capacity: Unit 1 – 170 MW; Unit 2 – 170 MW; and Unit 3 150 MW.

<sup>10</sup> Holyrood declining capacity starts at full capacity in December, declining through the operating season, consistent with behaviour observed during the winter 2017-2018 Operating Season. Holyrood Unit 2 was load tested on October 11, 2018, and achieved a capacity of 175 MW. No air flow issues were observed.

<sup>11</sup> Holyrood (“HRD”).

<sup>12</sup> Derated Adjusted Forced Outage Rate (“DAFOR”).

<sup>13</sup> Conservative Supply Case results are consistent with those filed in Hydro's Near-Term Generation Adequacy Assessment, filed May 22, 2018.

<sup>14</sup> The variance of results for the no-LIL case as compared to Hydro’s Conservative Supply Case with the LIL delay, as filed in the Near-Term Generation Adequacy Report, results from seasonal reporting in this instance versus annual reporting in the previous filing.

<sup>15</sup> Loss of Load Hours (“LOLH”).

## 1 5. Contingency Plan

2 In light of the new LIL winter 2018-2019 transfer assumptions, Hydro has developed a two-  
 3 phased contingency plan for the coming winter that includes incremental internal and external  
 4 system support. Phase I of Hydro’s contingency plan contains items that can be secured and  
 5 incorporated into Hydro’s base planning assumptions for the upcoming winter operating season.  
 6 Details and the status of items in Phase I of Hydro’s contingency plan are contained in Table 2.

**Table 2: Phase I of Hydro’s Contingency Plan**

Item	Description	Incremental System Benefit	Parties Involved	Status	Notes
1	Increase of Capacity Assistance from 90 MW to 105 MW <sup>16</sup>	+15 MW	Hydro, Corner Brook Pulp and Paper (“CBPP”)	Ongoing	CBPP has indicated that up to 105 MW is available.  The proposed agreement was filed with the Board on November 2, 2018. Currently in process.
2	Re-instatement of Capacity Assistance Program	+7.6 MW	Hydro, Vale	Ongoing	Vale has indicated they are in agreement with Hydro’s proposed Capacity Assistance Agreements; one for their diesel generation (8 MW) and one for load curtailment (6 MW).
3	Re-instatement of Load Curtailment Program	+6 MW	Hydro, Vale	Ongoing	Hydro intends to file the proposed agreements with the Board in November.
4	Voltage Reduction	+20 MW	Hydro, Newfoundland Power	Complete	Hydro has confirmed that it is reasonable to assume availability of 20 MW of Peak Voltage Reduction for the coming winter season. Voltage reduction is forecast on a week-ahead basis by the NLSO.
<b>Potential Incremental System Benefit on peak</b>		<b>48.6 MW</b>			

<sup>16</sup> Hydro has now confirmed there is 105 MW available as compared to the 110 MW reported in the previous Biweekly Report. Given the relatively small change in magnitude of the available assistance, Hydro has not run the model for this 5 MW difference. Hydro will present the full analysis of its supply adequacy for winter 2018-2019 in the November 15, 2018 filing to the Board regarding supply adequacy.

1 Hydro notes that voltage reduction is not what is publically known as "brown out". Voltage  
 2 reduction is a measured and controlled process whereby there is minimal reduction in the  
 3 delivery point voltages to customers. This process, utilized by utilities across North America as a  
 4 typical system management tool, has been used for peak demand management in almost every  
 5 year on the Island system. Customers see no impact to their service during a period of voltage  
 6 reduction (typically up to four hours) and equipment is not harmed.

7  
 8 In addition to the items listed in Phase I of Hydro’s contingency plan, Hydro has also identified  
 9 elements that can provide additional system benefit, but will only be enacted if absolutely  
 10 required. These items form Phase II of Hydro’s contingency plan and are detailed in Table 3.

**Table 3: Phase II of Hydro’s Contingency Plan**

<b>Item</b>	<b>Description</b>	<b>Incremental System Benefit</b>	<b>Parties Involved</b>	<b>Status</b>	<b>Notes</b>
5	Increased output of Holyrood Gas Turbine (“GT”) beyond current base assumption	+10 MW	Hydro	Complete	The ability to increase the capability of the unit is available on a temporary basis subject to atmospheric and system conditions. The GT has been previously safely demonstrated to operate to 134 MW.
6	Temporary increased output of Holyrood Diesels	+1.5 MW	Hydro, Department of Environment	Complete	Hydro met with the Department of Municipal Affairs and Environment and provided an overview of the potential upgrading requirements.
<b>Potential Incremental System Benefit on peak</b>		<b>+11.5 MW</b>			

11 Table 4 provides the overall impact of implementation of those Items in Table 3, in addition to  
 12 the items implemented as part of Phase I, as compared to the base case (provided in Table 1).

**Table 4: Update of Winter 2018-2019 Supply Adequacy with Hydro’s Contingency Plan Implemented**

<b>EUE<sup>17</sup></b>						
HRD DAFOR	Holyrood Full Capability <sup>18</sup>			Holyrood Declining Capability <sup>19</sup>		
	LIL = 110	LIL = 55	No LIL	LIL = 110	LIL = 55	No LIL
	MW	MW		MW	MW	
15%	33	68	121	46	97	176
18%	51	104	182	67	140	251
20%	66	133	232	85	175	311

<b>LOLH</b>						
HRD DAFOR	Holyrood Full Capability <sup>18</sup>			Holyrood Declining Capability <sup>19</sup>		
	LIL = 110	LIL = 55	No LIL	LIL = 110	LIL = 55	No LIL
	MW	MW		MW	MW	
15%	0.60	1.21	2.09	0.88	1.80	3.19
18%	0.91	1.80	3.06	1.25	2.54	4.43
20%	1.15	2.27	3.84	1.55	3.12	5.40

1 As evident from the results, implementation of the aspects noted in Hydro’s contingency plan  
 2 result in a material reduction of risk for the coming winter operating season. Hydro continues  
 3 to conclude all six noted options and will provide updates on status of each as part of its  
 4 biweekly updates to the Board.

5  
 6 **6. Conclusion**

7 Hydro is actively monitoring the availability of supply as it relates to the LIL and associated  
 8 impact on reliability of the Island Interconnected System for this coming winter. Hydro’s  
 9 existing and newly developed contingency plans described above are progressing in the event  
 10 that the LIL does not meet the current assumed capacity and reliability parameters.  
 11  
 12 Hydro will keep the Board informed on developments related to the anticipated LIL in-service  
 13 date and any material changes impacting supply adequacy for the Island Interconnected System  
 14 in its biweekly report.

<sup>17</sup> Includes the LIL FOR of 30%.

<sup>18</sup> Holyrood Full Capacity: Unit 1 – 170 MW; Unit 2 – 170 MW; and Unit 3 150 MW.

<sup>19</sup> Holyrood declining capacity starts at full capacity in December, declining through the operating season, consistent with behaviour observed during the Winter 2017-2018 Operating Season.

**Attachment 1**  
Meeting Minutes



# Meeting Minutes

<b>Purpose</b>	<b>Discuss the LIL In-Service</b>	<b>Date</b>	<b>November 2, 2018</b>
<b>Chair</b>	Jennifer Williams	<b>Time</b>	9:30-10:00 am
<b>Location</b>	Hydro Place	<b>Minutes Taker</b>	Jan-Peter DeSouza
<b>Attendees</b>	Jennifer Williams (Hydro), Josh DeCoste (Hydro), Rob Henderson (TTO), Jan-Peter DeSouza (TTO), Shawn Hurley (Power Supply), Chad Wiseman (Power Supply)		

Schedule of key activities included in the biweekly report as well as minutes from previous meeting were reviewed and discussed for any changes. At the time of the meeting, there were no known material risks to schedule that would change in service assumptions.

For the October 5, 2018 Meeting and future, any changes to action items will be captured in action item register below, and any new items will have new actions/items added.

If new information arises post biweekly meeting, and in time for the report to the Board, it will be captured in the subsequent biweekly report to the Board and before the next biweekly joint meeting.

Action Plan			
No.	Action Item(s)	Owner	Target Date (DD-MMM-YYYY)
1.	<b>21-Sep/24-Sep Meeting, item 1</b> S. Follett and S. Hurley (Project Execution) and P. DeSouza and R. Henderson (TTO) to draft key critical path activities required to reach reliable operation for winter for inclusion in Board reporting. Format to be confirmed.	S. Follett S. Hurley P. DeSouza R. Henderson	Complete
2.	<b>21-Sep/24-Sep Meeting, item 2</b> Compile minimum required Newfoundland and Labrador System Operator (“NLSO”) operational needs for inclusion in critical path activities.	J. DeCoste K. Goulding NLSO	Complete
3.	<b>21-Sep/24-Sep Meeting, item 3</b> Discussion regarding software and associated reliable operation efforts. Currently commencing power transfer on 1-Nov-2018, with existing software, and continuing testing. If existing software is proven to be reliable through November 2018, Hydro and Power Supply will evaluate proceeding with software upgrade or maintaining existing software version. Upgraded software would be considered only after demonstrated reliable results from the system simulator work (RTDS). Power Supply leadership continues to work with GE leadership for continued path forward and	Hydro Power Supply	23-Nov-2018

*Please note: If there are any comments or amendments to be made to these meeting minutes, they must be brought to the notice of the Meeting Chair within 24 hours of issue and confirmed in writing.*

# Meeting Minutes

Action Plan			
No.	Action Item(s)	Owner	Target Date (DD-MMM-YYYY)
	<p>Power Supply still has full-time representation in Stafford</p> <p><b>2-Nov Meeting Update</b> Stakeholders discussed the successful re-energization of the Labrador-Island Link (“LIL”) which had occurred as planned on 1-Nov-2018 at a power order of 45MW using the current release of GE software (version 15). The project team indicated that GE had also completed testing of the next iteration of the software (version 16A) and this had been received at site. In addition the project team indicated that the factory acceptance testing for version 1.0 was also in progress in Stafford, with current activities focused on regression testing.</p> <p>A discussion was held regarding release 16A and that it may be possible to implement the new version during the planned ten-day outage in Nov 2018. Continued review of the associated benefits, potential risks and available implementation timelines is ongoing and recommendations are to be developed if software should be upgraded over the next two to three weeks.</p>		
4.	<p><b>21-Sep/24-Sep Meeting, item 4</b> Power Supply and Hydro working together to operationalize TransGrid (“TGS”) studies on the LIL loading. These efforts will take modelled findings and test findings during commissioning for determining actual operational parameters for winter. Operational limits for the LIL from the TGS reports have been provided to the Project Delivery team.</p> <p><b>2-Nov Meeting Update</b> Stakeholders noted that the work with TGS was continuing.</p>	Power Supply and Hydro (combined group)	First meeting 25-Sep-2018 and continuing
5.	<p><b>21-Sep/24-Sep Meeting, item 5</b> Compile assessment of risks of changing to upgraded software package in advance of decision whether to implement new software or not as described above. Will be used in evaluation discussion.</p>	S. Hurley	Complete

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# Meeting Minutes

Action Plan			
No.	Action Item(s)	Owner	Target Date (DD-MMM-YYYY)
6.	<p><b>21-Sep/24-Sep Meeting, item 6</b></p> <p>Additional risk item for winter was noted. Hydro is currently planning to utilize the LIL at 110 MW and with frequency response in service. Should the LIL trip at a rate that causes frequent disturbances on neighbouring utilities, the request may be made by neighbouring utilities to take frequency response out of service. If that were to occur, Hydro would likely then decide to limit the LIL to 50 MW deliveries to avoid Under-Frequency Load Shedding (“UFLS”). No action required at this time.</p> <p><b>2-Nov Meeting Update</b></p> <p>No further discussion held on this decision.</p>	N/A	
7.	<p><b>21-Sep/24-Sep Meeting, item 7</b></p> <p>NLSO will work with Nova Scotia Power Inc. System Operator (“NSPI SO”) and New Brunswick System Operator (“NBSO”) to keep them informed of testing plans so as to mitigate and understand the risk from their perspective.</p> <p><b>2-Nov Meeting Update</b></p> <p>No further discussion held.</p>	K. Goulding	Ongoing
8.	<p><b>21-Sep/24-Sep Meeting, item 8</b></p> <p>No additional high-level risks other than software implementation and frequency response item were noted. Critical path activities compiled per Item 1 will be documented and considered for discussion at next meeting if required.</p> <p><b>12-Oct Meeting Update</b></p> <p>Group confirmed that there are no additional high-level risks other than software implementation and frequency response.</p> <p><b>2-Nov Meeting Update</b></p> <p>No further risks identified.</p>	N/A	

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# Meeting Minutes

Action Plan			
No.	Action Item(s)	Owner	Target Date (DD-MMM-YYYY)
9.	<p><b>21-Sep/24-Sep Meeting, item 9</b></p> <p>Current conservative supply assumptions of the LIL delivery for winter 110 MW at a 30% forced outage rate. Impact of this set of assumptions to be communicated to the Board in first biweekly report. No change in assumptions required based on this risk discussion.</p> <p><b>19-Oct Meeting Update</b></p> <p>Group confirmed that there is no information at this time to indicate a change in modelled availability.</p> <p><b>2-Nov Meeting Update</b></p> <p>Group re-confirmed that the current expectation is to deliver 110 MW at fixed outage rate of 30%.</p>	R. Smith	Ongoing
10.	<p><b>21-Sep/24-Sep Meeting</b></p> <p>Undergo a risk assessment workshop with key stakeholders from Hydro, TTO, and Project Execution to evaluate software risks and subsequent required mitigation strategies.</p> <p><b>19-Oct Meeting Update</b></p> <p>Group discussed that to change to upgraded software would be a minimum of a two-week outage. Further discussion to be had at risk workshop being held on the afternoon of 19-Oct-2018.</p> <p><b>2-Nov Meeting Update</b></p> <p>Further discussion to be held prior to the Nov 2018 outage to evaluate viability of implementing version 16A of the GE software.</p>	S. Hurley	14-Nov-2018
11.	<p><b>19-Oct Meeting Update</b></p> <p>Group confirmed that issues regarding Astaldi have no impact on this winter's planned deliveries of the LIL.</p> <p><b>2-Nov Meeting Update</b></p> <p>No further discussion held.</p>	N/A	

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