

October 29, 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**

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.

This biweekly report provides an update on the in-service of the Labrador-Island Link ("LIL") and how it relates to Winter 2018-2019 supply adequacy, as well as details on Hydro's production facilities asset management.

The LIL In-Service Update

This report contains:

- an overview of the critical path tasks required for reliable operation of the LIL for Winter 2018-2019;
- an overview of the highest risks being monitored and mitigated for the LIL in-service in Winter 2018-2019;
- Hydro's updated modelled assumptions for Winter 2018-2019 supply adequacy planning; and,
- Hydro's proposed contingency plan to mitigate the consequences of unavailability or unreliability of the LIL for all or part of Winter 2018-2019.

This report also contains meeting minutes from biweekly meetings held between Hydro, Transition to Operations ("TTO"), and Power Supply in which expectations of supply and energy

Ms. C. Blundon
Public Utilities Board

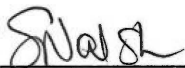
2

from the LIL in advance of Winter 2018-2019 are discussed. Minutes from these meetings will be provided with each biweekly update report to the Board.

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 Kler Townshend LLP

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

Benoît Pepin – Rio Tinto

Labrador-Island Link In-Service Update

October 29, 2018

A Report to the Board of Commissioners of Public Utilities



Table of Contents

1. Introduction	1
2. In-Service Activities Update	1
3. Key Risks.....	8
4. Modelled Assumptions	9
5. Contingency Plan	11
6. Conclusion.....	14

List of Appendices

Appendix A: Meeting Minutes

1 **1. Introduction**

2 Hydro closely monitors its supply-related assets and issues to ensure its ability to provide
3 reliable service to customers. The availability of power over the Labrador-Island Link (“LIL”) for
4 the upcoming winter was identified in previous reports to the Board by both Hydro and Liberty
5 as contributing to supply adequacy in advance of availability of the Muskrat Falls generation
6 supply to the Island. Hydro is working closely with Nalcor’s Power Supply leadership [Transition
7 to Operations (“TTO”), Power Supply Transmission Operations, and the Lower Churchill Project
8 (“LCP”) Transmission Project] to monitor and mitigate the risks associated with the timing of
9 the in-service of the LIL to supply off-Island capacity and energy to the Island Interconnected
10 System. In each biweekly report, Hydro will also provide an update on supply adequacy for the
11 coming winter with the most up-to-date in-service assumptions of the LIL, as required. The
12 information in this report is current as of October 26, 2018. Any developments after that date
13 will be included in the next bi-weekly report.

14

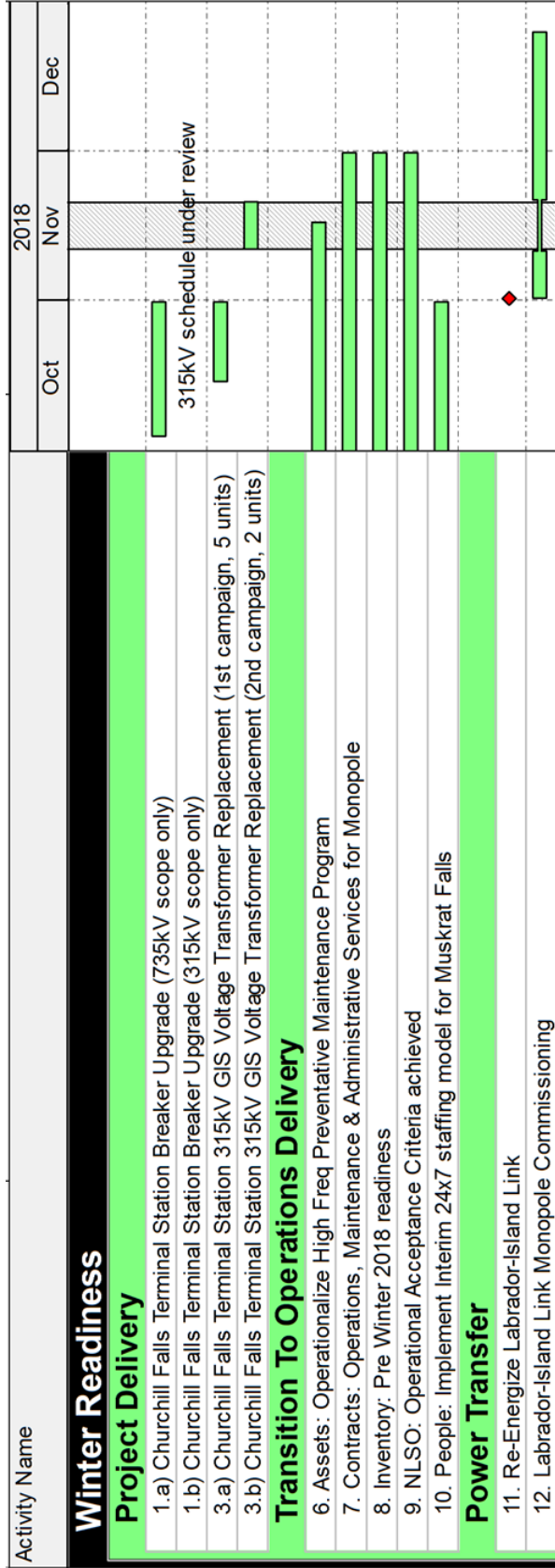
15 **2. In-Service Activities Update**

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

21

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

¹ 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 Transition to Operations (TTO).



Please note:

- 1) The following activities are complete:
 - a. Item 2. Muskrat Falls Terminal Station 315kV GIS Voltage Transformer Replacement (1 unit)
 - b. Item 3.a) 2 of 5 units complete for CF Terminal Station 315kV GIS VT Replacement (1st campaign)
 - c. Item 4. ERP/ERR: Interim Emergency Response Plan/ERR in place for all Sites/Assets
 - d. Item 5. Contracts: Support services in place & resources onboard

- 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, current expected completion of 735 kV Breaker Upgrade work***
4 ***by end of October***

- 5 • The breaker failure protection in the new Churchill Falls terminal station (CFTS2) is being
6 modified to provide greater protection system redundancy. This protection will reduce
7 the risk of a broader system impact if a breaker failed to operate as required. The
8 modification will also make the protection in the new Churchill Falls switchyard consistent
9 with what is applied in the existing Churchill Falls switchyard. The overall Breaker Upgrade
10 Project consists of work to install new panels, pull and terminate electrical cables and
11 complete tie-ins to existing 735 kV and 315 kV systems. The current plan is to complete
12 only the Breaker Upgrade work associated with the 735 kV system by the end of October.
13 The schedule associated with completion of work on the 315 kV system is under review,
14 and this work may be deferred to Q2 or Q3 2019. Deferral of this portion of the scope will
15 not have any impact on the date for re-energization of the LIL.

16

17 **Activities 2 and 3 – 315 kV GIS Voltage Transformer² Replacements³**

18 ***Status: On track for completion by end of October***

- 19 • Replacement at Muskrat Falls completed.
- 20 • Replacement of two Voltage Transformers in Churchill Falls completed.
- 21 • Replacement of additional three units in Churchill Falls is ongoing with completion on
22 track for end October 2018. Expected completion date for the Churchill Falls Voltage
23 Transformer replacements remains end of October 2018.
- 24 • Given that the full Breaker Upgrade scope will not be completed in October, there is less
25 flexibility to install additional Voltage Transformers during simultaneous Power Transfer

² 315 kV instrument transformers.

³ 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 activities. As a result, a notional ten day outage is now required in November to install two
2 additional Voltage Transformers in Churchill Falls. These Voltage Transformers were not
3 included in the previous report as intent was to replace them while the LIL was energized.

- 4 • Spares have been ordered, one for each of the Churchill Falls (CF2) and Muskrat Falls'
5 substations. They will arrive with the Voltage Transformers that are being replaced during
6 the second campaign (see Figure 1, activity 3b).

7

8 **Transitions to Operations Delivery**

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

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

11 ***Status: Completed***

- 12 • The mock trial of the ERR for the overhead transmission line was successfully completed.
13 The objectives were to test response times, constructability, contractor coordination,
14 logistics, materials, communications, and exercise corporate emergency operations. The
15 completion of this activity concludes ERP/ERR readiness across the LTA/LIL sites for the
16 2018-2019 winter.

17

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

19 ***Status: On track for November 1, 2018 start-up***

- 20 • The support services contracts are in place with ATCO, GE and Growler.
- 21 • The personnel under the GE Support Services⁴ will be used for start-up as part of the GE
22 re-energization team. They will move into their operations and maintenance positions
23 under the GE Support Services contract once steady state operations has been achieved.

24

25 **Activity 6 – Assets: Operationalize High Frequency Preventative Maintenance Program**

26 ***Status: On track for November 15, 2018 implementation for remaining scope***

- 27 • High frequency maintenance requirements have been finalized and operationalized for
28 the HVdc transmission lines. All requirements are now in place for LTA/LIL assets with the

⁴ The GE Support contract is independent of the contract for supply, install and construction of the HVdc facilities.

1 exception of the converter stations. Delays in the completion of converter asset
2 management scopes were attributable to early resource constraints and dependencies on
3 third party HVdc specialists to support the work. Although HVdc specialists had been
4 engaged in the first quarter of 2018, higher priority project requirements resulted in
5 slower progression of the converter asset scope. In recognition of this, over the last
6 quarter, additional resources have been leveraged to support the outcomes and the
7 scopes have been substantially advanced since this time. As of the end of September
8 2018, 75% of the high frequency PM's and check sheets for the converter stations had
9 been completed. Work continued to progress with the high frequency maintenance
10 requirements for the converters and remains on track to be completed by mid-November
11 2018.

12
13 **Activity 7 – Contracts: Operations, Maintenance, and Administrative Services for Monopole**
14 ***Status: On track to have required contracts in place for November 30, 2018.***

- 15 • The four remaining operations, maintenance, and administrative service contracts for the
16 2018-2019 are in progress and are for:
 - 17 ○ Diesel Generators: This encompasses two services contracts for OEM Maintenance
18 of the diesel generators at the LTA and LIL Terminal Stations & Repeater Sites as well
19 as OEM Emergency Coverage. Since much of the preventative maintenance and
20 corrective maintenance can be performed by existing operations staff, these two
21 contracts are deemed to be added protections for emergency issues requiring OEM
22 supports. As of October 26, 2018 both contracts have been signed and services
23 secured. As the equipment is new, the diesels are smaller models, and the units are
24 only expected to be used under adverse scenarios this is considered to be of
25 intermediate criticality.
 - 26 ○ Crane and Hoists: This is a services contract for the maintenance of cranes located in
27 the GIS buildings at Churchill Falls and Muskrat Falls, and hoists at the Muskrat Falls
28 and Soldiers Pond converter stations. The project team is currently defining contract
29 specifications. It is unlikely we would need to use the high-capacity cranes during
30 the winter (i.e., maintenance activities) and alternatives would exist to secure a local

1 crane if needed. The criticality of the securing these contracts is therefore not as
2 important as the others (low criticality).

3 ○ Soldiers Pond Snow Clearing 2018-2019: This is a services contract for snow removal
4 and ice control for the Soldiers Pond Terminal Station, including the access road for
5 the 2018-2019 winter season. The project team is currently defining contract
6 specifications. Snow clearing is deemed critical to safe operations.

7 ○ HVAC: This contract was pending an asset turnover date. Scopes of work had been
8 defined for the tender but a date for commencement of the services had to be
9 established. This date was recently set as January 1, 2019 and the tenders are now
10 being prepared for release for competition.

- 11 • All outstanding contracts remain on track for completion November 30.

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

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

- 15 • Vendor supplied spares, quantities, and their location to service both Nalcor’s Labrador
16 and Island asset needs for the coming winter season have been identified, inspected and
17 transferred to operations for the overhead transmission lines and submarine cables. The
18 delivery, inspection, and transfer of required HVac station spares to operations continues.
19 For HVdc assets, all spares will remain in contractors care, custody, and control until they
20 are transferred to the project/operations upon completion of bi-pole low power trial
21 operation. Activities to identify spares to be procured for HVac stations are ongoing. Lead
22 times have yet to be determined and will be confirmed once required spares are known.

24 **Activity 9 – Newfoundland and Labrador System Operator (NLSO): Operational Acceptance**

25 **Criteria Received**

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

- 27 • NLSO acceptance criteria, which are required in order for the LIL to be considered under
28 NLSO control, continue to be addressed. NLSO requirements relating to critical SCADA
29 controls were completed. Requirements relating to the identification of a technical
30 resource for the Energy Control Centre (ECC) have been completed. This resource will

1 provide support for the NLSO during the initial period of start-up and thereafter as
2 determined by the NLSO. The completion/testing of redundant telecom paths and
3 documentation requirements continues and remains on track for completion by
4 November 30, 2018.

5
6 **Activity 10 – People: Implement Interim 24/7 Staffing Model for Muskrat Falls**

7 **Status: On track for November 1, 2018**

- 8 • An interim 24/7 staffing rotation is now planned for the Muskrat Falls site to support
9 reliable operations during initial startup/operations due to software control limitations.
10 Automatic lane changeover is not possible with present version of software. Work to
11 secure interim contract resources is progressing. A parallel stream of activities is also
12 being pursued to secure and leverage power supply staff positions. It is expected that staff
13 positions will replace the contract resources once ready and able.

14
15 **Power Transfer**

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

17 **Status: On track for November 1, 2018**

- 18 • While protection and controls software development and testing are ongoing with GE, the
19 current plan ensures that power transfer can proceed with the current version of
20 software. In the event that a future revision of the software is delivered by GE by end of
21 year, a decision point between Hydro and Power Supply will be required to determine
22 whether the new software will be uploaded.⁵ An internal risk review meeting was held on
23 October 19, 2018, attended by key stakeholders in Hydro and Power Supply, in which the
24 risks and decision of whether to implement upgraded software was reviewed. A follow up
25 meeting is scheduled for November 2 to continue the discussion.

⁵ GE agrees that the software upgrade outage is a minimum of 2 weeks.

1 **Activity 12 – Transmission Link Monopole Commissioning**

2 **Status: On track to start November 1 with requirement for additional outage in November**

- 3 • Power transfer is scheduled to recommence in November 2018 following the voltage
4 transformer outage in Churchill Falls, and will be followed by further dynamic
5 commissioning activity. Since the last update, it has been determined that an outage will
6 be required in November to allow for replacement of an additional two voltage
7 transformers in Churchill Falls. Given that the full breaker upgrade scope will not be
8 completed before the end of October, and given current LIL operating parameters, it has
9 been determined that a notional ten day outage will be required in November to replace
10 two additional voltage transformers. This outage will be completed prior to December 1.
- 11 • Operating instructions are being established to define maximum LIL transfer limits for the
12 upcoming winter. These limits are predicated on the following:
- 13 ○ Prior to proven reliable operation, LIL power transfer shall be limited to ensure that
14 there shall be no customer impact (i.e. UFLS) for a trip.
 - 15 ○ Once reliable operation has been proven, the LIL transmission path will be rated for
16 225 MW under all system conditions if the Maritime Link frequency controller is in
17 service. While Hydro is conservatively planning for capacity of 110 MW to be
18 delivered (which is the limit below which a LIL trip would not cause UFLS), up to 225
19 MW could therefore be transmitted over the HVdc link, if available in Labrador
 - 20 ○ Operating instructions will include specification of LIL transfer limits if the Maritime
21 Link frequency controller is not in service.

22

23 Punch list items are continually being addressed and closed by the project team. While punch
24 list resolution shall continue in an effort to improve system reliability, this effort is not
25 considered critical for power transfer.

26

27 **3. Key Risks**

28 There has been no change in the key risks since the October 1, 2018 report. In addition to the
29 activities described in Section 2, Hydro acknowledges that the as-yet-to-be-demonstrated

1 reliability of the current GE software implementation remains the highest risk to the in-service
2 of the LIL. The Power Supply LCP transmission project team has full-time representation in
3 Stafford, England where the software is being developed and tested and daily status meetings
4 are being held. Power Supply leadership also continues to work with GE leadership in an effort
5 to establish an agreed path forward for implementing the required software upgrades for
6 sustained reliable operation.

7

8 Dynamic commissioning with power transfer activities are scheduled to re-commence on
9 November 1, 2018 with existing software while testing continues on the upgraded version on
10 the system simulator in Stafford. If the existing software is proven reliable through November
11 2018, Hydro and Power Supply will evaluate proceeding with a software upgrade or maintaining
12 the existing software version. The upgraded software would be considered only after
13 demonstrated reliable results from the system simulator work.

14

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

25

26 **4. Modelled Assumptions**

27 There has been no change in the modelled assumptions since the October 1, 2018 report. The
28 following analysis, conducted in the same format as that provided in Hydro's previous response
29 and Near-Term Generation Adequacy Report, provides insight into the expected loss of load

1 and unserved energy for this assumption, as compared to the Conservative Supply Case from
 2 Hydro’s Near-Term Generation Adequacy Report. These results with the updated 30% forced
 3 outage rate are presented in Table 1. Since the October 1, 2018 report, Hydro has load tested
 4 the Holyrood’s Unit 2 following its upgrades this maintenance season. Unit 2 was successfully
 5 tested to its capacity of 175 MW⁶.

Table 1: Supply Adequacy Modelling Results for Updated Assumptions

EUE⁷							
HRD DAFOR	Conservative Supply Case ¹⁰	Holyrood Full Capability ⁸			Holyrood Declining Capability ⁹		
		LIL = 110 MW	LIL = 55 MW	No LIL ¹¹	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

LOLH							
HRD DAFOR	Conservative Supply Case ⁹	Holyrood Full Capability ⁷			Holyrood Declining Capability ⁸		
		LIL = 110 MW	LIL = 55 MW	No LIL ¹⁰	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

⁶ 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.

⁷ LIL FOR is 1% for the Conservative Supply Case only, all other cases include LIL FOR of 30%. EUE criteria is 170 MWh and LOLH criteria is 2.8.

⁸ Holyrood Full Capacity 170, 170, 150.

⁹ 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.

¹⁰ Conservative Supply Case results are consistent with those filed in Hydro's Near-Term Generation Adequacy Assessment, filed May 22, 2018.

¹¹ 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.

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 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 ¹²	+15 MW	Hydro, Corner Brook Pulp and Paper (“CBPP”)	Ongoing	CBPP has indicated that up to 105 MW is available. Draft contracts are near finalization. Hydro intends to file the proposed agreement with the Board prior to the end of October.
2	Re-instatement of Capacity Assistance Program	+7.6 MW	Hydro, Vale	Ongoing	Hydro is exchanging draft agreements with Vale for two Capacity Assistance Arrangements; one for their diesel generation (7.6 MW) and one for load curtailment (6 MW). I Hydro intends to file the proposed agreement with the Board prior to the end of October.
3	Re-instatement of Load Curtailment Program	+6 MW	Hydro, Vale	Ongoing	

¹² 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.

Item	Description	Incremental System Benefit	Parties Involved	Status	Notes
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.
Potential Incremental System Benefit on peak		48.6 MW			

- 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

Item	Description	Incremental System Benefit	Parties Involved	Status	Notes
5	Increased output of Holyrood Gas Turbine 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.
Potential Incremental System Benefit on peak		+11.5 MW			

- 1 Table 4 provides the overall impact of implementation of those Items in Table 3, in addition to
- 2 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

EUE¹³						
HRD DAFOR	Holyrood Full Capability ¹⁴			Holyrood Declining Capability ¹⁵		
	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

LOLH						
HRD DAFOR	Holyrood Full Capability ¹²			Holyrood Declining Capability ¹³		
	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 how this
 8 impacts reliability of the Island Interconnected System for this coming winter. Hydro's existing
 9 and newly developed contingency plans described above are progressing in the event that the
 10 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.

¹³ Includes the LIL FOR of 30%.

¹⁴ Holyrood Full Capacity 170, 170, 150.

¹⁵ 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.

Appendix A
Meeting Minutes

Meeting Minutes

Purpose	Discuss the LIL In-Service	Date	October 19, 2018,
Chair	Jennifer Williams	Time	9:30-10:15 am
Location	Hydro Place	Minutes Taker	Meghan Couves
Attendees	Renee Smith (Hydro), Jennifer Williams (Hydro), Meghan Couves (Hydro), Walter Parsons (Power Supply), Josh DeCoste (Hydro), Rob Henderson (TTO), Peter DeSouza (TTO), Shawn Hurley (Power Supply), Chad Wiseman (Power Supply), Ron LeBlanc (Hydro)		

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.	21-Sep/24-Sep Meeting, item 1 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.	21-Sep/24-Sep Meeting, item 2 Compile minimum required Newfoundland and Labrador System Operator ("NLSO") operational needs for inclusion in critical path activities.	J. DeCoste K. Goulding NLSO	Complete
3.	21-Sep/24-Sep Meeting, item 3 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 proven 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	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)
	work (RTDS). Power Supply leadership continues to work with GE leadership for continued path forward and Power Supply still has full-time representation in Stafford.		
4.	21-Sep/24-Sep Meeting, item 4 Power Supply and Hydro working together to operationalize TransGrid (“TGS”) studies on the Labrador-Island Link (“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.	Power Supply and Hydro (combined group)	First meeting 25-Sep-2018 and continuing
5.	21-Sep/24-Sep Meeting, item 5 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.	S. Hurley	Complete
6.	21-Sep/24-Sep Meeting, item 6 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 neighboring utilities, the request may be made by neighboring 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 Underfrequency Load Shedding (“UFLS”). No action required at this time.	N/A	
7.	21-Sep/24-Sep Meeting, item 7 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.	K. Goulding	Ongoing
8.	21-Sep/24-Sep Meeting, item 8 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.	N/A	

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>12-Oct Meeting Update</p> <p>Group confirmed that there are no additional high-level risks other than software implementation and frequency response.</p>		
9.	<p>21-Sep/24-Sep Meeting, item 9</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>19-Oct Meeting Update</p> <p>Group confirmed that there is no information at this time to indicate a change in modelled availability.</p>	R. Smith	Ongoing
10.	<p>21-Sep/24-Sep Meeting</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>19-Oct Meeting Update</p> <p>Group discussed that to change to upgraded software would be a minimum of a 2 week outage. Further discussion to be had at risk workshop being held on the afternoon of October 19, 2018.</p>	S. Hurley	19-Oct-2018
11.	<p>19-Oct Meeting Update</p> <p>Group confirmed that issues regarding Astaldi have no impact on this winter's planned deliveries of the LIL.</p>	N/A	

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.