newfoundland labrador hydro
a nalcor energy company

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October 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

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 the upcoming winter.

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

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.

Hydro's Asset Management Strategy Update

As requested by the Board, Hydro has developed a more robust response to Liberty's Recommendation 4 in its August 30, 2018 report.[1] This report contains a summary of Hydro's Asset Management Plan, outlining key tasks/activities accomplished during the 2016-2018 period and areas of focus identified for the 2019-2021 period. The information found within the report applies to Hydro's entire generation fleet (i.e., hydraulic, gas turbine, and the Holyrood thermal generating assets).

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

Shirley A. Walsh
Senior Legal Counsel
SAW/sk

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey
Denis J. Fleming – Cox & Palmer
Dennis Browne, Q.C. – Brown Fitzgerald Morgan & Avis
Dean Porter – Poole Althouse

ecc: Van Alexopoulos – Iron Ore Company
Senwung Luk – Olthuis Kleer Townshend LLP
Benoît Pepin – Rio Tinto

[1] *The Analysis of Newfoundland Island Interconnected System Power Supply Adequacy for the Winter 2018-19*

Labrador-Island Link In-Service Update

October 15, 2018

A Report to the Board of Commissioners of Public Utilities

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1. Introduction

Hydro closely monitors its supply-related assets and issues to ensure its ability to provide reliable service to customers. The availability of power over the Labrador-Island Link ("LIL") for the upcoming winter was identified in previous reports to the Board by both Hydro and Liberty as contributing to supply adequacy in advance of availability of the Muskrat Falls generation supply to the Island. Hydro is working closely with Nalcor's Power Supply leadership [Transition to Operations ("TTO"), Power Supply Transmission Operations, and the Lower Churchill Project ("LCP") Transmission Project] to monitor and mitigate the risks associated with the timing of the in-service of the LIL to supply off-Island capacity and energy to the Island Interconnected System. In each biweekly report, Hydro will also provide an update on supply adequacy for the coming winter with the most up-to-date in-service assumptions of the LIL, as required.

2. In-Service Activities Update

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

Appendix A contains minutes from the biweekly meeting held between Hydro and power Supply, which included discussions on expectations of supply and energy from the LIL for 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).

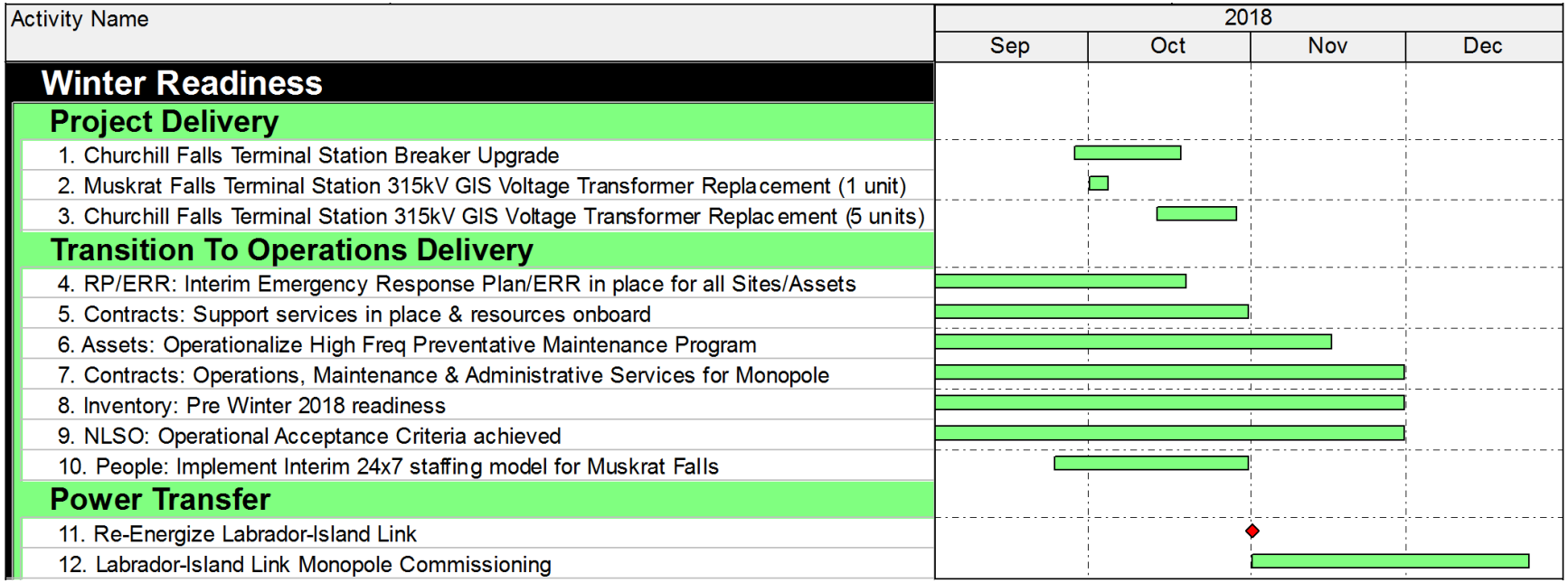

Figure 1: The LIL In-Service Critical Path Activities

Project Delivery

Activity 1 – Churchill Falls Breaker Upgrade

Status: Work has commenced, current expected completion by week of October 22, 2018

- The breaker failure protection in the new Churchill Falls terminal station (CFTS2) is being modified to provide greater protection system redundancy. This protection will reduce the risk of a broader system impact if a breaker failed to operate as required. This modification will make the protection in the new Churchill Falls switchyard consistent with what is applied in the existing Churchill Falls switchyard. Risk in schedule is increasing on this activity and the project team is evaluating mitigation options.

Activities 2 and 3 – 315 kV GIS Voltage Transformer[2] Replacements[3]

Status: On track for completion by end of October

- Muskrat Falls replacement completed.
- Churchill Falls planned replacements will occur from October 14-30, 2018, 5 voltage transformers and required tooling have arrived on site. The commencement of the Churchill Falls replacements are related to the completion of Activity 1. Due to the ability to mitigate schedule risk in Activity 1, expected completion date for the Churchill Falls VT replacements remains end of October.

Transitions to Operations Delivery

Activity 4 – Emergency Response Plan (ERP)/Emergency Restoration and Recovery (ERR): Interim ERP/ERR in place as required at all sites/assets

Status: Completed

- The mock trial of the ERR for the overhead transmission line was successfully completed. The objectives were to test response times, constructability, contractor coordination,

[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.

logistics, materials, communications, and exercise corporate emergency operations. The completion of this activity concludes ERP/ERR readiness across the LTA/LIL sites for the 2018-2019 winter.

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

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

- The support services contracts are in place with ATCO, GE and Growler.
- The personnel under the GE Support Services[4] contract for operations have been confirmed and will be on site as part of the GE re-energization team. Following this work they will be released by GE from project team to meet the support services contract.

Activity 6 – Assets: Operationalize High Frequency Preventative Maintenance Program

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

- High frequency maintenance requirements have been finalized and operationalized for the HVdc transmission lines. All requirements are now in place for LTA/LIL assets with the exception of the converter stations. Work continued to progress with the high frequency maintenance requirements for the converters and remains on track to be completed by mid-November 2018.

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

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

- The remaining operations, maintenance, and administrative service contracts for the 2018-2019 winter are in progress. One additional requirement was recognized, bringing the outstanding number of contracts to four. One contract is under review for award, two are nearing completion of the technical scope and the remaining contract is pending confirmation of the asset turnover date from GE. All remain on track for completion November 30.

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

Activity 8 – Inventory: Pre-Winter 2018 Readiness

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

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

Activity 9 – Newfoundland and Labrador System Operator (NLSO): Operational Acceptance Criteria Received - updated

Status: On track for completion by November 30, 2018

- NLSO acceptance criteria, which are required in order for the LIL to be considered under NLSO control, continue to be addressed. NLSO requirements relating to critical SCADA controls were completed. The completion/testing of redundant telecom paths and documentation requirements continues and remains on track for completion by November 30, 2018.

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

Status: On track for November 1, 2018

- An interim 24/7 staffing rotation is now planned for the Muskrat Falls site to support reliable operations during initial startup/operations due to software control limitations. A staffing plan, complete with process for implementation, has started.

Power Transfer

Activity 11 – Re-Energize Labrador Island Link

Status: On track for November 1, 2018

- While protection and controls software development and testing are ongoing with GE, the current plan ensures that power transfer can proceed with the current version of software. In the event that a future revision of the software is delivered by GE by end of year, a decision point between Hydro and Power Supply will be required to determine whether the new software will be uploaded. A meeting has been scheduled for the week of October 15, 2018 in which Hydro and Power Supply will work together to review the process regarding the decision of whether to implement upgraded software, to ensure all parties understand and consider risks of upgrading software.

Activity 12 – Transmission Link Monopole Commissioning

Status: On track

- Power transfer is scheduled to recommence in November 2018 following the voltage transformer outage in Churchill Falls, and will be followed by further dynamic commissioning activity.
- Operating instructions are being established to define maximum LIL transfer limits for the upcoming winter. These limits are predicated on the following:
  - Prior to proven reliable operation, LIL power transfer shall be limited to ensure that there shall be no customer impact (i.e. UFLS) for a trip.
  - Once reliable operation has been proven, the LIL transmission path will be rated for 225 MW under all system conditions if the Maritime Link frequency controller is in service. While Hydro is conservatively planning for capacity of 110 MW to be delivered (which is the limit below which a LIL trip would not cause UFLS), up to 225 MW could therefore be transmitted over the HVdc link, if available in Labrador
  - Operating instructions will include specification of LIL transfer limits if the Maritime Link frequency controller is not in service.

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

3. Key Risks

There has been no change in the key risks since the October 1, 2018 report. In addition to the activities described in Section 2, Hydro acknowledges that the as-yet-to-be-demonstrated reliability of the current GE software implementation remains the highest risk to the in-service of the LIL. The Power Supply LCP transmission project team has full-time representation in Stafford, England where the software is being developed and tested and daily status meetings are being held. Power Supply leadership also continues to work with GE leadership in an effort to establish an agreed path forward for implementing the required software upgrades for sustained reliable operation.

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

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

4. Modelled Assumptions

There has been no change in the modelled assumptions since the October 1, 2018 report. The following analysis, conducted in the same format as that provided in Hydro's previous response and Near-Term Generation Adequacy Report, provides insight into the expected loss of load and unserved energy for this assumption, as compared to the Conservative Supply Case from Hydro's Near-Term Generation Adequacy Report. These results with the updated 30% forced outage rate are presented in Table 1. Since the October 1, 2018 report, Hydro has load tested the Holyrood's Unit 2 following its upgrades this maintenance season. Unit 2 was successfully tested to its capacity of 175 MW.

Table 1: Supply Adequacy Modelling Results for Updated Assumptions

EUE[5]

HRD DAFOR	Conservative Supply Case[8]	Holyrood Full Capability[6]			Holyrood Declining Capability[7]		
		LIL = 110 MW	LIL = 55 MW	No LIL[9]	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

[5] 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.

[6] Holyrood Full Capacity 170, 170, 150.

[7] 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.

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

[9] 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.

5. Contingency Plan

In light of the new LIL Winter 2018-2019 transfer assumptions, Hydro has developed a two-phased contingency plan for the coming winter that includes incremental internal and external system support. Phase I of Hydro's contingency plan contains items that can be secured and incorporated into Hydro's base planning assumptions for the upcoming winter operating season. 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 110 MW	+20 MW	Hydro, Corner Brook Pulp and Paper ("CBPP")	Ongoing	Hydro is in active discussions with CBPP to amend the existing capacity assistance agreement to increase the amount of assistance available by 15 MW. Draft contracts have been exchanged between the parties and negotiations are ongoing. It is Hydro's intention 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 has sent term sheets to Vale for two Capacity Assistance Arrangements; one for their diesel generation (7.6 MW) and one for load curtailment (6 MW). Draft agreements have been sent to Vale for review. It is Hydro's intention 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	

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		**53.6 MW**			

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

In addition to the items listed in Phase I of Hydro's contingency plan, Hydro has also identified elements that can provide additional system benefit, but will only be enacted if absolutely 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	Ongoing	Hydro has provided information to the Department of Municipal Affairs and Environment and is anticipating meeting with representatives this week.
Potential Incremental System Benefit on peak		**+11.5 MW**			

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

EUE[10]

HRD DAFOR	Holyrood Full Capability[11] LIL = 110 MW	LIL = 55 MW	No LIL	Holyrood Declining Capability[12] LIL = 110 MW	LIL = 55 MW	No LIL
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] LIL = 110 MW	LIL = 55 MW	No LIL	Holyrood Declining Capability[13] LIL = 110 MW	LIL = 55 MW	No LIL
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

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

6. Conclusion

Hydro is actively monitoring the availability of supply as it relates to the LIL, and how this impacts reliability of the Island Interconnected System for this coming winter. Hydro's existing and newly developed contingency plans described above are progressing in the event that the LIL does not meet the current assumed capacity and reliability parameters.

[10] Includes the LIL FOR of 30%.
[11] Holyrood Full Capacity 170, 170, 150.
[12] 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.

Hydro will keep the Board informed on developments related to the anticipated LIL in-service date and any material changes impacting supply adequacy for the Island Interconnected System in its biweekly report.

Appendix A

Meeting Minutes

Meeting Minutes

Purpose	**Discuss the LIL In-Service**	**Date**	**October 5, 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), Kevin Goulding (NLSO), 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 Nov 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)**
9.	**21-Sep/24-Sep Meeting, item 9** 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. **5-Oct Meeting Update** Group confirmed that there is no information at this time to indicate a change in modelled availability.	R. Smith	Ongoing
10.	**21-Sep/24-Sep Meeting** Undergo a risk assessment workshop with key stakeholders from Hydro, TTO, and Project Execution to evaluate software risks and subsequent required mitigation strategies. **5-Oct Meeting Update** Group discussed that to change to upgraded software would be a minimum of a 2 week outage. This will be discussed further in risk workshop.	S. Hurley	19-Oct-2018
11.	**5-Oct Meeting Update** Group confirmed that issues regarding Astaldi have no impact on this winter's planned deliveries of the LIL.	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.