

June 2, 2014

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

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

Dear Ms. Blundon:

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

In accordance with the Board's Interim Report dated May 15, 2014 with respect to the above noted matter please find enclosed the original plus 12 copies of Hydro's:

- Updated Integrated Action Plan;
- June 2 report in relation to the work required to be done in 2014 with regard to terminal station transformers; and
- June 2 report in relation to the work required to be done in 2014 with regard to air blast circuit breakers.

With respect to the updated Integrated Action Plan, Hydro has incorporated the actions recommended by Liberty Consulting. These items have been given appropriate priority ranking and have been scheduled in accordance with the dates set out by the Board in its Interim Report. Hydro will align resources to ensure completion of the various items set out in the updated Integrated Action Plan in accordance with the priority and completion dates scheduled for these items.

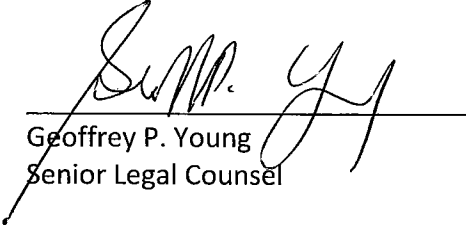
Hydro will continue to update the Integrated Action Plan to reflect any further findings of Hydro's internal investigation and/or further findings arising from the Board's review.

The reports on terminal station transformers and air blast circuit breakers set out in detail the specific information requested by the Board.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



Geoffrey P. Young
Senior Legal Counsel

GPY/jc

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey Stirling Scales
Sheryl Nisenbaum – Praxair Canada Inc.
Roberta Frampton Benefiel – Grand Riverkeeper Labrador

Thomas Johnson – Consumer Advocate
Thomas O' Reilly – Cox & Palmer
Danny Dumaresque

INTEGRATED ACTION PLAN - REVIEW OF SUPPLY DISRUPTIONS AND ROTATING OUTAGES: JANUARY 2-8, 2014

						A - Complete by end 2014 B - Complete beyond 2014			
Report	Report Action Item #	Action Item #	Date Due	Accountable Person(s)	Action Item Description	Priority	Status	Date Resolved	Comments
Review of Supply Issues and Power Outages	P1GP1	1	1-Apr-2014	VP Systems Oper. & Planning	Expand the level of sensitivity testing for alternate weather and generation availability scenarios into the generation expansion planning process.	A	Completed	April 10, 2014	Documented - Completed weather sensitivity for input to CT proposal. Weather sensitivity analysis to be included in NLH 2014 PLF and 2014 Generation Expansion Plan analysis.
Review of Supply Issues and Power Outages	P1GA2	2	30-May-2014	General Mgr, Gas Turbine & Diesel	Review gas turbine maintenance practices.	A	Completed	May 19, 2014	Maintenance strategy and plans have been reviewed. Next steps include implementing recommended changes as applicable.
Review of Supply Issues and Power Outages	P1GA2	3	30-May-2014	General Mgr, Gas Turbine & Diesel	Assess the effects of test starts and run-ups prior to severe weather (GTs).	A	In Progress		Review of test start frequency and protocol is complete. Evaluation of changes and preparation of revised protocol, if necessary, is next step.
Review of Supply Issues and Power Outages	P1GA2	4	30-Aug-2014	General Mgr, Gas Turbine & Diesel	Identify repeat failure events (on GTs) and address the root causes.	A	On schedule		List of known repeat failures has been generated. Original equipment manufacturers and service providers are being contacted to assist with finding solutions. Some information has been received and is under review.
Review of Supply Issues and Power Outages	P1GA2	5	15-Jun-2014	General Mgr, Gas Turbine & Diesel	Identify plan required for additional plant and equipment refurbishment not already completed (for GTs).	A	In Progress		This item is to identify what additional refurbishment work may be required which has not been completed to date. Review of work completed to date is finished. Further inspections are required to identify potential refurbishment additions. Inspections are scheduled for June.
Review of Supply Issues and Power Outages	P1GA2	6	30-Jun-2014	General Mgr, Gas Turbine & Diesel	Review GT fuel storage processes and procedures.	A	On schedule		Review of fuel storage capacity, fuel storage management practices and test protocols is ongoing. Draft fuel management procedure will be completed by end of July.
Review of Supply Issues and Power Outages	P1GA2	7	14-Apr-2014	VP Newfoundland and Labrador Hydro	Create a senior position reporting to the Vice President for Hydro whose accountability includes the oversight of asset management plans, maintenance standards, and capital submissions related to gas turbines.	A	Completed	April 14, 2014	General Manager Gas Turbines and Diesels established and filled.
Review of Supply Issues and Power Outages	P1TA 3	8	30-May-2014	Mgr, Long Term Asset Planning, G & T	Review the current 230 kV breaker replacement plan and revise for accelerated replacement, with a priority on identifying the activities and areas to be completed during the 2014 maintenance season.	A	Completed	May 30, 2014	The review has been completed and overhauls and replacements of air blast breakers will continue as planned for 2014. This reflects a planned replacement of seven breaker in 2014. The replacement plan of air blast circuit breakers has been accelerated with the acceleration planned to begin 2015. In the previous plan there was a target to have all air blast breakers replaced by the end of 2031. The new plan has all air blast breakers replaced by the end of 2021.
Review of Supply Issues and Power Outages	P1TA 3	9	30-May-2014	Mgr, Long Term Asset Planning, G & T	Review the existing preventative maintenance program for 230 kV breakers and identify any changes required, including the Preventative Maintenance (PM) cycle, and consider breaker seal risks associated with cold weather effects.	A	Completed	May 30, 2014	This review has been completed and the maintenance program updates will be implemented by July 31, 2014. The increase in frequency of PMs to 4 years is being reviewed for implementation following the current PM catch-up period in 2015.
Review of Supply Issues and Power Outages	P1TA 3	10	30-May-2014	Mgr, TRO Central	Revise the Work Methods pertaining to the repair of 230 kV breakers.	A	Completed	May 30, 2014	Work methods SWM-000317 (Insulating Column (Air Blast Breaker) - Replace) and SWM-000318 (Interrupter Head (Air Blast Breaker) - Replace) have been revised and are currently in the process of being reviewed and uploaded to the corporate work methods database. Any work carried out from this point forward will be as per the revised work method.

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Review of Supply Issues and Power Outages	P1AM 4	11	1-Dec-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, General Mgr, Gas Turbine & Diesel	Complete the planned initiatives in Hydro's Integrated Critical Spares Strategy as well as implement improvements identified by the Critical Spares Council in 2013. In the process revisit Hydro's critical spares philosophy for Holyrood and other generation assets within Hydro's system, and implement any changes in time for the 2014/15 winter season.	A	In Progress		A consultant has been engaged and is currently working on site at Holyrood with HTGS Staff as per the following schedule: 1. A Listing of all critical plant components - June 15; 2. The results of risk analysis of such critical components - June 15; 3. The decisions on which parts should have spares - September 30; 4. The action plan to procure any unsecured such parts where possible for the winter of 2014/15 by November 30. Other areas: Further detailed work is planned with critical issues addressed before the winter of 2014/15.
Review of Supply Issues and Power Outages	P2LF1	12	15-Nov-2014	VP Systems Oper. & Planning	Review the updated version of the short term seven day operating forecast to determine if it provides an improved correlation in extreme cold weather situations. If not, investigate alternative models and implement available enhancements prior to the 2014/15 winter season.	A	In Progress		Research with other utilities being conducted. NSPI advises they use cloud cover and windchill as inputs. Working with Ventyx to arrange training for Senior Hydrotechnical Engineer and others. (May 9) Bentyx arranged to come to site on June 9, 2014.
Review of Supply Issues and Power Outages	P2AM3	14	31-Dec-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, General Mgr, TRO, General Mgr, Gas Turbine & Diesel	Continue evaluation and implementation of work planning, scheduling and execution improvements.	B	In Progress		A committee with representation from PETS and the STWPS Council has been established to standardize the approach to planning, scheduling and executing the annual work plans, and in the metrics that are being used to track our performance. A process to integrate resources into the completion of the plan is being determined. The short and long-term plans going forward, with milestones identified and assigned accountability are being developed.
Review of Supply Issues and Power Outages	P2P&C4	15	30-May-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, General Mgr, TRO, General Mgr, Gas Turbine & Diesel	Finalize evaluation of high priority recommendations by Henville Consulting and the Root Cause Analysis Team.	A	Completed	May 26, 2014	Actions have been reviewed and assigned to P & C Engineering.
Review of Supply Issues and Power Outages	P2CC5	16	30-Sep-2014	General Mgr, TRO	Implement a formal protocol for notifying customers, end users and the general public in relation to pending supply issues and conservation requests.	A	Completed	June 2, 2014	Instruction developed by System Operations and revised with NP on May 29. It is being implemented starting on the first week of June, 2014.
Review of Supply Issues and Power Outages	P2TCI6	17	21-May-2014	VP Systems Oper. & Planning	Identify and address the factors which caused under-frequency/ synchronization and over-heating issues on the back up diesels at Hydro Place in early January.	A	Completed	May 14, 2014	Under Frequency was caused by a faulty rectifier in the generation unit. The part has been replaced, with no recurrence since (TCI 2). The shut down of the diesels was caused by a high temperature alarm, caused by malfunctioning ventilation louver controls, which has been completed. (TCI 4)

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Load Forecasting	LF 1	1	15-Oct-2014	VP Systems Oper. & Planning	The load forecasting process should include sensitivity analysis, including sensitivity to extreme weather conditions, particularly in making near term investment decisions. The sensitivity analysis should be used to provide more detailed information on the variability of the forecast to the stakeholders. Newfoundland Power should be asked to provide sensitivity analysis on forecast information it provides to Hydro.	A	In Progress		Newfoundland Power requested to provide statistical bound on demand forecast in conjunction with their Spring 2014 load forecast. NLH PLF process will include sensitivity analysis with respect to weather and consider other key load variables.
Load Forecasting	LF 2	12	15-Nov-2014	VP Systems Oper. & Planning	Hydro's short term forecasting program does not perform well in unusually low temperatures and improvements are required.	A	In Progress		Please refer to P2LF1
Load Forecasting	LF 3	18		VP Systems Oper. & Planning	Refinements in the equations for the major end-use on the system, electric heat, should continue and be enhanced through continued surveying of the customer base in terms of both average energy use, and saturation of electric heating.	B	In Progress		Some improvements already completed in NLH's long term load forecast model. Timing and budgets for customer surveys need to be established.
Generation and Reserve Planning	GRP 1	19	1-Sep-2014	VP Systems Oper. & Planning	Hydro should continue with its generation planning reserve criterion.	A	Completed	May 30, 2014	This requires no action. However, Hydro is expanding its analysis to include additional sensitivities to address concerns raised in the Liberty review.
Generation and Reserve Planning	GRP 2	20	31-Dec-2015	VP Systems Oper. & Planning	After interconnection in 2017, Hydro should revisit its generation planning reserve criterion and its modelling of external markets.	B	Not yet started.		Initiate in 2015
Generation and Reserve Planning	GRP 3	1	1-Sep-2014	VP Systems Oper. & Planning	Since Holyrood is scheduled to be retired in the next 4 to 5 years, Hydro should model its Equivalent Forced Outage Rate (EFOR) close to the actuals currently being experienced with sensitivities on either side of the expected value. With respect to all other thermal units in the Strategist model (existing and future) Hydro should continue its practice of modelling with a more conservative estimate of EFOR for the units.	A	In Progress		This was applied in recent Combustion Turbine application and will be documented for future application in the generation planning process.
Generation and Reserve Planning	GRP 4	21	1-Dec-2014	VP Systems Oper. & Planning	Hydro should compute a break even EFOR for each class of its generation to determine the point at which a generator's EFOR will result in the system exceeding the LOLH criteria of 2.8 hours per year.	A	In Progress		Documentation will be completed as part of the full review of the planning process

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Generation and Reserve Planning	GRP 5	1	1-Sep-2014	VP Systems Oper. & Planning	Hydro should develop a formal risk analysis process that utilizes scenarios and sensitivities to test the robustness of resource plans.	A	In Progress		Documentation will be completed as part of the full review of the planning process
Asset Management Strategy	AM1	8	30-May-2014	VP Systems Oper. & Planning	Hydro's asset replacement/refurbishment activities for older breakers, disconnects, transformers have been ongoing for several years and extend for many more. Given some issues with older breakers during the January 2014 outage incident, the scope and timing of the program should be reviewed in early 2014.	A	Completed	May 30, 2014	Please refer to P1TA3
Asset Management Strategy	AM2	14	31-Dec-2014	Mgr, Long Term Asset Planning, G & T	Hydro's new Execution Work Plan program has been well demonstrated in 2013 in other business lines. To improve resource utilization and effectiveness and outage management, its planned extension to replace existing Execution Work Plan processes at other Hydro facilities in 2014 is recommended.	B	In Progress		Please refer to P2AM3
Asset Management Strategy	AM3	11	30-Dec-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, General Mgr, TRO, General Mgr, Gas Turbine & Diesel	Hydro critical spares tracking/management until 2011 has been done primarily on a local facility basis reflecting experience, condition assessments, and vendor recommendations, constantly evolving over past years and decades, and continues to do so. After an initial three year development and assessment period beginning in 2011, a comprehensive pilot to the equipment level at Holyrood in 2013 of Hydro's asset criticality and critical spares tracking / management plans provided valuable feedback at an initial "Lessons Learned" assessment that was undertaken January 30, 2014. This should be followed up on, as is Hydro's plan, in early 2014 following the work on the January 2014 incident. This will move the process towards a more comprehensive and cost effective approach consistent with industry practice and addressing critical issues before winter 2014-15 as a part of the overall asset management program for the winter of 2014/15.	B	On Schedule		Please refer to P1AM4

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Asset Management Strategy	AM4		30-Apr-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, Mgr, Gas Turbine & Diesel, Mgr, Project Execution Regulated	Hydro has significant technical capability and staff, and has introduced a "Council of Experts" concept to enhance its best technology/technical practices adoption capabilities.. It plans to continue these in 2014 to cost effectively enhance its technical capabilities and to look for additional opportunities to enhance its best technology/technical practices capabilities.	A	Completed	April 30, 2014	Councils are continued in 2014, each having key focus area identified. This is established as normal ongoing process. These councils will continue into the future in alignment with and support of business needs and priorities. Development of councils is identified as a strategic initiative for Hydro.
Asset Management Strategy	AM5	13	30-Oct-2014	Mgr, Office of Asset Management	A more rigorous winter readiness program should be introduced, largely driven by internal self-assessment with appropriate external support/review.	A	On schedule		The Asset Owners Council has been assigned accountability for development of a more rigorous winter readiness program in 2014. 2014 winter readiness self-assessments to be completed through Asset Owners by June 30, 2014. Asset Owners Council meeting scheduled on June 11, 2014 includes agenda item to update associated progress and action plans for upcoming winter season, review the severe weather readiness checklist, and confirm facilities readiness assessments. Winter readiness oversight is a standing agenda item for this council, established as normal process. Winter readiness self-assessments completed. Severe weather preparedness protocol draft prepared.
Asset Management Strategy	AM6			Mgr, Thermal Gen	Hydro's O&M at Holyrood has not been impacted since the sanction of Muskrat Falls. Condition assessments on critical systems (i.e. re: safety, reliability) have continued. Capital and major operations projects in Holyrood's long term asset management plan consistent with the station's end of life plans and required to ensure safe, reliable and environmentally sustainable operation have not been impacted. Those not critical for the period to end of generation service in about 2020 have not been approved, and won't impact availability to then.		No Action Required		
Generation Availability	GA 1		30-Dec-2014	LTAP Managers	Continue condition assessment and life management activities to identify timely refurbishment and replacement needs.	B	In Progress		A PO was issued on May 23, 2014 to ABB and a NLH engineer assigned to work with them to gather data.
Generation Availability	GA 2	11	30-Jun-2014	Mgr, Thermal Gen, Mgr, Hydro Generation, General Mgr, TRO, General Mgr, Gas Turbine & Diesel	Through the existing Critical Spares Council, follow up on the critical spares program as is currently in Hydro's plan in early 2014.	B	On Schedule		Please refer to P1AM4
Generation Availability	GA 3	2	30-May-2014	General Mgr, Gas Turbine & Diesel	Review the maintenance tactics of the Hardwoods and Stephenville gas turbines.	A	Completed	May 19, 2014	Please refer to P1GA2

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Generation Availability	GA 4	3	30-May-2014	General Mgr, Gas Turbine & Diesel	Assess the impacts of increasing the frequency of starting and running the GT's prior to severe weather to allow time to identify and correct issues.	A	In Progress		Please refer to P1GA2
Generation Availability	GA 5	4	30-Aug-2014	General Mgr, Gas Turbine & Diesel	Identify repeat failure events on the GT units and address the root causes.	A	On schedule		Please refer to P1GA2
Generation Availability	GA 6	5	15-Jun-2014	General Mgr, Gas Turbine & Diesel	Continue to review actual work completed on recent overhauls. Identify and plan for additional GT balance of plant equipment refurbishment not completed.	A	On schedule		Please refer to P1GA2
Generation Availability	GA 7	6	30-Jun-2014	General Mgr, Gas Turbine & Diesel	Complete review of GT site fuel storage operating requirements, processes and procedures.	A	On Schedule		Please refer to P1GA2
Generation Availability	GA 8	22	1-Nov-2014	Mgr, Thermal Gen	Investigate improvements to Holyrood Unit 1 steam turbine generator to prevent future vibration issues and reduce starting times.	A	In Progress		Balancing calculations and planned actions have been completed and will be implemented as part of the unit's annual maintenance outage scheduled later in 2014.
Generation Availability	GA 9	11	15-Jun-2014	Mgr, Thermal Gen	Review in early 2014 the cost-benefit analysis of one or more spare 4 kV motors for Holyrood.	A	In Progress		A dedicated initiative, apart from the overall critical spares review, is ongoing to procure spare 4 kV motors in light of the recent failure of the forced draft fan motor on unit 3 on Dec. 26, 2013. Discussions have been initiated with manufacturers and are ongoing with respect to cost, schedule, new vs used, fitment and performance.
NUMBERING ISSUE	GA 10								
	GA 11	23	30-Sep-2014	Mgr, Hydro Generation	Investigate further Granite Canal turbine vibration issues as/when they occur and develop mitigation plans.	A	In Progress		Will be investigated during this summer's annual inspection and followed up as required.
	GA 12	24	31-May-2014	Mgr, Exploits & Menihok Generation	Document Exploits River operational response to severe frazil ice buildup for future use as a best practice.	A	Completed	May 29, 2014	Exploits Generation has developed a written procedure for dealing with frazil ice production and movement for the Grand Falls and Bishop's Falls generating facilities. This document outlined conditions experienced this past December which resulted in reduced generating levels at Grand Falls. The procedures outlined in this document will be used to raise the awareness of the operators to more effectively deal with these conditions.
Transmission Availability	TA1	8	30-May-2014	Mgr, Long Term Asset Planning, G & T	A thorough review is recommended to assess the acceleration and modification of the existing ABCB refurbishment/replacement program, particularly the continued use of these breakers in critical areas on the bulk power system.	A	Completed		Please refer to AM1
Transmission Availability	TA2	25	30-Dec-2014	General Mgr, TRO	A more extensive review of the outage event as it relates to the performance of equipment and use of resources is recommended to capture unexpected outcomes and use these as lessons for future improvements.	A	In Progress		The review will be carried out in Q4 of 2014 and actions coming out of the review will be implemented on a prioritized basis for the 2104/15 winter season.

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Transmission Availability	TA3	26	31-May-2014	VP Newfoundland and Labrador Hydro	"Protection" alarms and "fault traces" need to be reviewed as soon as possible on an on-going basis during such an event. It is recommended that staff be readily available prior to anticipated extreme weather or potential system emergency conditions and be dedicated to this task during events of this nature.	A	Completed	May 24, 2014	Experienced P&C System Performance Engineers will be placed on standby for forecast severe weather events beginning on June 1, 2014. These will supplement the current System Plant and Regional on-call staff currently available 24 hours per day.
Transmission Availability	TA4	27	30-Dec-2014	General Mgr, TRO	Identify the key set of priority alarms that must be available and reviewed by the operator even during events of this magnitude.	A	In Progress		Work on the alarm prioritizations can start immediately but it is expected that they will take several months to implement. Q3- Begin Review. 2015 - Begin Implementation.
Transmission Availability	TA5	28	30-Sep-2014	VP Systems Oper. & Planning	Provide additional training as necessary to operators on the importance of alarms.	A	In Progress		This will be performed during the upcoming operator training session, scheduled for June.
Transmission Availability	TA6	29	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Implement a program to install modern digital relays that are able to store time-synchronized fault data. An installation plan should be developed to gain/increase visibility of all major equipment such as 230 kV transformers.	B	In Progress		Another meeting was held with P&C on May 29, 2014 and a target date of November 30, 2014 was agreed to have information to support a budget proposal for a program with implementation starting in 2016.
Transmission Availability	TA7	30		VP Newfoundland and Labrador Hydro	A major event such as this provides very useful information on facilities, equipment and resources, both in terms of what worked well and what needs improvement. Hydro should consider how it can best transfer the knowledge and experience gained both during the event and in the investigation that followed to the entire organization in a deliberate manner.	B	In Progress		Sharing lessons learned will be discussed with managers with direct operational responsibility and a plan for sharing with all staff will be considered.
Transmission Availability	TA8	31	30-Dec-2014	General Mgr, TRO	Enhancements should be made to ensure that processes and facilities that are in place to deal with events of this nature work as designed, personnel training encompasses similar extreme events and plans for resource allocation are focused on key issues. A more extensive review of the event is recommended to determine what enhancements should be made in addition to on-going continuous improvement initiatives.	B	In Progress		No action is recommended on this until the investigation is complete. It would be helpful to have a plan in place prior to the next winter season.
Root Cause Investigation	RC1	32	May 30 2014	Mgr, Long Term Asset Planning, G & T	Conduct a formal risk / reward review on expanding the current program for the installation of on-line continuous gas monitor on GSU transformers to include other transformers installed on the Hydro System.	A	Completed	May 30, 2014	Due to the risk of transformer failure and benefit of possibly preventing a transformer failure through the use of on line DGA, the on line DGA program has been expanded to include other transformers. An overall plan has been developed to start implementation for GSU's in 2015 and then continue with remaining GSU's and other 230 kV critical units in years following 2015. This has been added to the 2015 Capital Budget Proposal.

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Root Cause Investigation	RC2	33	30-Sep-2014	Mgr, TRO Central	When system conditions allow, conduct an in-depth analysis of the DC system for Breaker B1L03 to determine if any high impedance paths exist that may affect its operation.	A	In Progress		A complete checkout for the DC circuit for breaker B1L03 at Sunnyside will be completed in June or when system conditions allow. A work order has been generated to have this work completed. A plan to complete this testing has been documented and supplied to the PUB as part of the June 2, 2014 submission (Air-Blast Circuit Breakers - 1 vi).
Root Cause Investigation	RC3	34	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Consider implementing transformer protection initiation of breaker fail protection at all stations that have breaker fail protection.	A	In Progress		Another meeting was held with P&C on May 29, 2014. A target date of November 30, 2014 was agreed to have this review completed. SSD T1 will be used as the test case for this review. Also an internal P&C resource has been assigned.
Root Cause Investigation	RC4	35	15-Jun-2014	General Mgr, TRO	When time and circumstances permit, consider having effective resources (P&C Technologists and Engineers) available on site to support the restoration of power in emergency situations.	A	In Progress		An interim plan will be prepared by June 15, 2014 and final plan in place by October 1, 2014 to ensure improved winter readiness.
Root Cause Investigation	RC5	36	15-Jun-2014	VP Systems Oper. & Planning	Conduct an analysis of the Island Interconnected System to determine if a transient overvoltage due to system harmonics is a cause of the Western Avalon T5 Failure.	A	In Progress		Have entered into discussions with Trans Grid Solutions on the possibility of completing a PSCAD analysis/simulation of the event to determine if harmonics or system resonance may have been a contributing factor to either SSD T1 failure or WAV T5 OLTC failure. TGS has been provided the data required to provide a timeline and estimate for the work. June 15 - not achievable to be updated in June.
Root Cause Investigation	RC6	37	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Consider conducting a formal risk / reward review of the 230 kV breaker failure protection philosophy for transformers at stations that currently do not have breaker fail protection.	B	In Progress		Another meeting was held with P&C on May 29, 2014. A target date of November 30, 2014 was agreed to have this review completed. Also an internal P&C resource has been assigned.
Root Cause Investigation	RC7	38		VP Systems Oper. & Planning	Consider conducting a formal risk / reward review of system design to determine whether 230 kV transformers require their own 230 kV breaker in all terminal stations, as this would reduce complexity and increase reliability.	B	In Planning Stage		Initiate 2015. Have requested a proposal from Teshmont Inc for completion of this analysis.
Root Cause Investigation	RC8	39	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Review application of lockout protection on all transformers to ensure that the proper isolation of the transformer automatically blocks the initiation of 138 kV breaker failure protection on the associated breakers.	B	In Progress		Another meeting was held with P&C on May 29, 2014. A target date of November 30, 2014 was agreed to have this review completed. Also an internal P&C resource has been assigned.

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Root Cause Investigation	RC9	40	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Review breaker failure protection applications of all transformer protection designs at stations using the same breaker failure relay (Schweitzer Engineering Laboratories type SEL-501). This review is intended to check whether the breaker failure protection retrip function (if applied in the SEL-501) is being used in a similar non-conventional application to that at Sunnyside. If it is, modify the scheme to prevent undesirable or unexpected response from the non-conventional application.	B	In Progress		Another meeting was held with P&C on May 29, 2014. A target date of November 30, 2014 was agreed to have this review completed. Also an internal P&C resource has been assigned.
Root Cause Investigation	RC10	10	31-May-2014	Mgr, TRO Central	Revise work method SWM-000318 to include: i. Correct procedure to seal the breaker air receiver tanks to prevent moisture ingress while the interrupters are removed. ii. Visual inspection of the breaker air receiver tanks prior to the reinstallation of the interrupters.	A	Completed	May 30, 2014	Please refer to P1TA3
Root Cause Investigation	RC11	42	30-Dec-2014	General Mgr, TRO	Conduct a risk/reward review of the current practice for the application of the RTV coating with consideration given to the following alternatives that would reduce the amount of time the interrupters are removed from the main receiver tank: i. Materials that can be applied without having to disassemble the breaker, ii. Installing spare interrupters that have the RTV coating applied. iii. Applying RTV in a nearer controlled environment (Holyrood has some facilities)	B	In Progress		The 2 unit breakers remaining on HRD Unit 2 - one will be replaced in 2014 and the other will have RTV parts from B1L17 installed in 2014. Decision to be made if any other breakers would benefit from coating or if breaker replacement program will be the path forward.
Root Cause Investigation	RC12	14	31-Dec-2014	Mgr, TRO Central	Conduct a review of the TRO Central Annual Work Plan to identify opportunities for improvement as it relates to the prioritization and timely execution of work. The review should include but not be limited to factors affecting the priority and execution of work such as the availability of resources (staff, tools and equipment) to effectively execute the Annual Work Plan.	A	In Progress		Please refer to P2AM3

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Root Cause Investigation	RC13	43	30-Jun-2014	Mgr, Long Term Asset Planning, G & T	Consider adding the following clause to Terminals Engineering Standard TS09-001 entitled "Outdoor Power Circuit Breaker": "the breaker shall not give false indication of the open/close state of any of its phases under any failure mode".	B	In Progress		Electrical Engineering will review with LTAP and add to specification if in agreement.
Root Cause Investigation - Additional Findings	RC14	44	31-Oct-2014	Mgr, Long Term Asset Planning, G & T	Commission an engineering consultant to conduct a formal life assessment of Hydro's power transformers and use the results to revise the long term plans for power transformer upgrades & replacements.	A	In Progress		A PO was issued on May 23, 2014 to ABB and a NLH engineer assigned to work with them to gather data.
Root Cause Investigation - Additional Findings	RC15	14	31-May-2014	Mgr, TRO Central	When practicable, complete PMs in accordance to normal scheduling.	A	Completed	May 30, 2014	Plan submitted to the PUB on June 2, 2014.
Root Cause Investigation - Additional Findings	RC16	45	30-Sep-2014	General Mgr, TRO	Correct all incorrect relay cards at terminal stations.	A	In Progress		Q2 - Begin review. Q3- Begin updating / replacing cards as required - work orders generated.
Root Cause Investigation - Additional Findings	RC17	46	30-Sep-2014	General Mgr, TRO	Replace all missing cards at terminal stations.	A	In Progress		Q2 - Begin replacing missing cards -work orders generated.
Root Cause Investigation - Additional Findings	RC18	47	30-Sep-2014	General Mgr, TRO	Review and update "Operating Instruction 002" as required to ensure relay target cards are completed in a timely manner for all system events and ensure the process for resetting devices is documented. Review the updated operating instruction with all P&C Technologists and Electricians.	A	In Progress		Q2 - Begin updating operating instruction . Q3 - Begin training.
Root Cause Investigation - Additional Findings	RC19	48	30-Sep-2014	General Mgr, TRO	Development of a plan for Transmission & Rural Operations (TRO) and Project Execution & Technical Services (PETS) personnel availability during emergency situations. This should include but not be limited to the following resources; P&C Technologists, Electrical Maintenance A, Terminal Maintenance A, Mechanical Maintenance A, Lineworker A and PCC Engineering.	A	In Progress		Q2 - Begin Review. Q3 - Implement recommendations from review. The plan is to review in July/ August with a plan for implementation of any changes by Sept 30, 2014.
Root Cause Investigation - Additional Findings	RC20	9	30-Sep-2014	Mgr, Long Term Asset Planning, G & T	Conduct a review of the annual air system leak check PM to ensure that it is adequate in both scope and timing of execution to accurately identify leaks at the Sunnyside Terminal Station.	A	In Progress		Q2 - Begin Review. Q3 - Implement recommendations from review. The plan is to review in July/ August with a plan for implementation of any changes by Sept 30, 2014.
Root Cause Investigation - Additional Findings	RC21	9	30-Jun-2014	Mgr, Long Term Asset Planning, G & T	State a specific pass/fail criteria for the timing test on the air blast breaker PM check sheet.	A	In Progress		Q2 - Update PM check sheet. Currently Working with ABB and have received data for DCVF breakers but still require the info for DLF breakers. This item is planned to be completed by June 30, 2014.

						A - Complete by end 2014 B - Complete beyond 2014			
Report	Report Action Item #	Action Item #	Date Due	Accountable Person(s)	Action Item Description	Priority	Status	Date Resolved	Comments
Root Cause Investigation - Additional Findings	RC22	9	30-Aug-2014	Mgr, Long Term Asset Planning, G & T	Review the current approach to DCF/DCVF air blast breaker re-lubrication. The review should consider the environment that the lubrication is being performed in and the effects it may have on work comfort and quality control.	A	In Progress		Q2 - Begin Review. Q3 - Implement recommendations from review. The plan is to review in July with a plan for implementation by Aug 30, 2014 for lubrications following that date.
Root Cause Investigation - Additional Findings	RC23	49	30-Sep-2014	Mgr, Long Term Asset Planning, G & T	Determine why the DOW 55 grease was not removed during the 2007 re-lubrication and implement the appropriate corrective action.	A	In Progress		Q2 - Begin Review. Q3 - Implement recommendations from review. The plan is to review in July/ August with a plan for implementation of any changes by Sept 30, 2014.
Root Cause Investigation - Additional Findings	RC24	8	30-May-2014	Mgr, Long Term Asset Planning, G & T	Consider accelerating the replacement of air blast circuit breakers in the existing circuit breaker replacement program. Prioritization criteria of the air blast breakers should include but not be limited to condition assessment and system criticality.	A	Completed	May 30, 2014	Please refer to AM1
Root Cause Investigation - Additional Findings	RC25	50	30-Mar-2015	General Mgr, TRO	Conduct a risk/reward review of the requirements for additional station service redundancy supply at all 230 kV terminal stations and install back-up station service supply where recommended by the review.	B	In Progress		Asset Specialist has been assigned to work on this for Q4 2014 with an expected completion date of the review by March 30, 2015. Back up station service supplies will be identified for future year capital budget proposals if required.
Root Cause Investigation - Additional Findings	RC26	51	30-Jun-2014	Mgr, Office of Asset Management	Document protection philosophy as a Protection & Control Engineering Standard	B	On Schedule		A meeting was held on May 8 to start planning and identifying next steps. A plan is being prepared and will be available by June 30, 2014 to address the following elements: (a) establish the process for creating, reviewing, approving and managing the standards across time; (b) develop a prioritized list of protection philosophy standards to be developed; (c) two standards to be prepared by November 30, 2014 - breaker fail and transformer protection; and (d) members to participate in creating the standards.
Root Cause Investigation - Additional Findings	RC27	52	30-Mar-2015	General Mgr, TRO	Conduct a review of the alarms that are generated from the various stations and, where practicable, ensure that alarms from the various stations are consistent in their naming and in what triggers the alarm.	B	In Progress		Meeting was held with P&C on May 29, 2014. A P&C resource will need to be assigned to this task. This work is planned for Q4 in 2014 and expected to be completed by March 30, 2015.
Root Cause Investigation - Additional Findings	RC28	53	30-Nov-2014	Mgr, TRO Central	Relocate the Sunnyside Terminal Station station service transfer switch to the control building.	B	In Progress		Design work to be completed by PETS in 2014. Field work to be completed by November 30, 2014.
Root Cause Investigation - Additional Findings	RC29	54	30-May-2014	Mgr, Office of Asset Management	Specify in a Terminals Engineering Standard that the location of the station service transfer switch shall be the control building in stations that have a control building or in a location remote to the transformers.	B	Completed	May 30, 2014	Standard added. Complete.
Root Cause Investigation - Additional Findings	RC30	55	Q4 - 2015	Mgr, TRO Central	Review the current location of the station service transfer switches at other terminal station sites similar to Sunnyside to ensure there location is optimal.	B	Not yet started		Joint review with PETS and TRO Operations recommended. Review can be completed in 2015. Depending on what the review reveals, it could take several years to change transfer switch locations.

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Protection System Impact	P&C1	56	30-Dec-2014	Mgr, TRO Central	Check and if necessary, modify protection connections to all ABB type DCVF 245 MC6 breakers.	B	In Progress		Q2 - Begin Field Investigation & Engineering Design Q4 - Begin Field Implementation. (Note that this work is very much outage dependent)
Protection System Impact	P&C2	57	20-Feb-2014	Mgr, TRO Central	Adjust the zone 2 time delays on Bay D'Espoir TL202 and 206 to 0.6 seconds.	A	Completed	Feb. 20, 2014	
Protection System Impact	P&C3	58	15-Jun-2014	Mgr, Office of Asset Management	Review status of implementation of recommendations in previous 230 kV transmission line protection studies and develop an action plan to implement as many of the recommendations as practical.	A	On schedule		Update meeting held on May 29, 2014. Tracking in compliance to plan. The recommendations provided in the 2010 and 2011 East Coast Protection Reviews by Henville Consulting have been assessed and scheduled for engineering and field installation. A schedule has been created to track the progress of these recommendations. All setting changes will be completed by September 30, 2014. The recommendations requiring assessments or reviews will be completed by Dec. 15, 2014. Those recommendations tied to the replacement of the Optimho relays on the 230 KV transmission lines will be done during the Optimho relay replacement program which began in 2014.
Protection System Impact	P&C4	59	30-May-2014	Mgr, Long Term Asset Planning, G & T	Consider replacing Sunnyside T1 protection at the same time as T1 is replaced. The decision should be made to allow sufficient time to be in service with the replacement T1.	B	Completed	May 30, 2014	A decision has been made to replace T1 protection, and this has been included in the Supplementary Capital Budget Proposal to replace SSD T1.
Protection System Impact	P&C5	35	30-Dec-2014	General Mgr, TRO	Consider including a protection technician in emergency response personnel. This recommendation should be implemented in coordination with other emergency response plans.	B	In Progress		Please refer to RC4
Protection System Impact	P&C6	37	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Review applications of breaker failure protection to ensure all transformer protection systems initiate breaker failure protection for breakers tripped by the transformer protection. Modify where necessary.	B	In Progress		Please refer to RC6
Protection System Impact	P&C7	40	30-Nov-2014	General Mgr, TRO	Review breaker failure protection applications of all transformer protection designs at stations using the Schweitzer Engineering Laboratories type SEL-501 relay. Modify the scheme if necessary. This review should be completed within one year and any necessary modifications should be completed in within two years.	B	In Planning Stage		Please refer to RC9
Protection System Impact	P&C8	60		General Mgr, TRO	Develop company specific guidelines as to the basic philosophies in the application and design of breaker failure protection systems. This recommendation should be completed before protection design work for the Muskrat Falls interconnection project starts.	B	In Planning Stage		Met with P&C Eng on May 8, 2014 and they will review all P&C items and assign a resource to this item.

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Emergency Response and Restoration	ERR 1	61	15-May-2014	General Mgr, TRO	Update Severe Weather Preparedness protocol and checklist to capture lessons learned from previous responses and best practices from other utilities.	B	In Progress		A draft is prepared which incorporates lessons learned and best practices and is circulated for internal review and going through implementation process.
Emergency Response and Restoration	ERR 2	62	30-Sep-2014	General Mgr, TRO	Update emergency response plans with lessons learned from the January 4, 2014 transformer fire and emergency response, including specified methods for dealing with transformer fires.	B	In Planning Stage		To be implemented by TRO S,H and E group.
Emergency Response and Restoration	ERR 3	63	30-Sep-2014	General Mgr, TRO	PCB contents of all oil-filled transformers and equipment should be available in hard copy locally and an alternate location.	B	In Planning Stage		To be implemented by TRO S,H and E group.
Emergency Response and Restoration	ERR 4	50	30-Nov-2014	Mgr, Long Term Asset Planning, G & T	Assess the need and options for additional station service supply for terminal stations in the event of loss of normal supply.	B	In Planning Stage		Please refer to RC25
Emergency Response and Restoration	ERR 5	64	1-Sep-2014	Mgr, Thermal Gen	Complete lighting improvement plan at the Holyrood plant in 2014.	A	In Progress		Desing completed and equipment being procured. On schedule for installation by September 30, 2014
Coordination and Communication with Customers	CCC 1	16	14-Sep-2014	VP Systems Oper. & Planning	Review rotating outage process used during the period of Jan 2-8, 2014, internally and with Newfoundland Power.	A	In Progress		Draft procedure started. A meeting with NP to conduct a lessons-learned exercise was held. TRO, Customer Service and Sys Ops working to develop a list of feeders with associated customer service priority.
Coordination and Communication with Customers	CCC 2	65	a) May 15 & b) Sept 30	VP Systems Oper. & Planning	(a) Review protocol for Hydro's use of Newfoundland Power's hydroelectric and standby generation resources and (b) Newfoundland Power's request for real-time data concerning the status of the Island Interconnected System.	A	In Progress		(a) Protocol has been discussed and agreed between the two utilities. It has been implemented whereby NP is providing regular status updates to NLH for meeting system reliability criteria. Formal documentation is being developed; (b) The real-time data list is in the process of being finalized and is targeted by the end of June 30, 2014.
Coordination and Communication with Customers	CCC 3	66		VP Corporate Relations	Review outage protocol and add a Daily Communications Summary coordinated with Newfoundland Power and the mutual sharing of notices and advisories prior to release.	A	In Progress		In progress - revised outage protocol process flow has been drafted and training sessions have been held with TRO staff. Full process, including addition of daily comms summary, being added to revised outage protocol overview document.
Coordination and Communication with Customers	CCC 4	67	30-Apr-2014	VP Corporate Relations	Prepare public advisories templates in advance of potential events to assist with rapid response and customer queries.	A	Completed	April 1, 2014	Complete - advisory templates completed for conservation requests, outage advisories, and storm advisories.
Coordination and Communication with Customers	CCC 5	68	15-May-2014	VP Systems Oper. & Planning	Streamline internal process for distribution of information from the ECC to Corporate Communications to ensure accurate and timely communication.	A	Completed	May 28, 2014	System Operations Manager participated in an Issues Analysis exercise with internal stakeholders to develop a streamlined process associated with communications during outages. Participated in the facilitation of training to key field personnel. ECC Supervisor has trained ECC staff - complete May 28, 2014.
Coordination and Communication with Customers	CCC 6	69	15-May-2014	VP Corporate Relations	Develop key customer and power outage stakeholder list	A	In Progress		In progress. Key customer lists received from Regions. Customer Service Techs identifying customers and feeders and formatting for consistency. Expected completion by June 15, 2014.
Coordination and Communication with Customers	CCC 7	70	30-Apr-2014	VP Corporate Relations	Investigate alternatives for Customer Service calls, including overflow call options and the IVR programming at high volume times, to ensure customer calls are answered in a more timely manner.	A	Completed	May 30, 2014	An alternative has been identified. Plan to have in-service before the fall season.

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Coordination and Communication with Customers	CCC 8	71	30-May-2014	General Mgr, TRO	Identify priority feeders in Hydro's service territory and determine which feeders contain sensitive customers to assist in developing a feeder rotation list.	B	Completed	May 30, 2014	Priority feeders and sensitive customers are identified and single point of accountability assigned in TRO to work with Customer Services and System Operations to develop the feeder rotation standard.
Coordination and Communication with Customers	CCC 9	72	Apr 30 2014	VP Corporate Relations	Develop protocol for advising internal and external stakeholders when Hydro's system reserves are within the threshold of the loss of the largest generating unit, and when an energy conservation call is required.	A	Completed	June 2, 2014	Please refer to P2CC5
Coordination and Communication with Customers	CCC 10	73	Apr 30 2014	VP Corporate Relations	Ensure conservation information directed at commercial businesses is prepared and released in addition to conservation information for residents.	A	Completed	March 3, 2014	Energy conservation information for commercial customers has been prepared. It was distributed during March 2014 conservation request and will be used in any future conservation requests.
Technology and Communications Infrastructure	TCI 1	74	31-Mar-2014	VP Systems Oper. & Planning	Establish a protocol with NP to have Hydro Place power feeder restored as soon as possible if interrupted.	A	Completed	March 1, 2014	NP now has us on priority feed not to be dropped, and if interrupted, priority reconnection.
Technology and Communications Infrastructure	TCI 2	17	31-Mar-2014	General Mgr, Finance	Investigate the cause of the under frequency and synchronization alarms experienced on January 3 and 4, 2014.	A	Completed	March 1, 2014	Please refer to P2TCI6
Technology and Communications Infrastructure	TCI 3	75	15-Jun-2014	General Mgr, Finance	Review and enhance as required the Hydro Place Emergency Power System Preventative Maintenance Program.	A	In Progress		Review of PM Program for Diesel Generation System - Review is complete. We have added a second contractor to specialize in the generator section, and increased the existing engine maintenance checks from once to twice per year, regardless of hours. Program is currently being documented to conform with CSA recommendations, and under review by Engineering for completeness. Events log is also reviewed daily and issues addressed as required.
Technology and Communications Infrastructure	TCI 4	76	30-May-2014	General Mgr, Finance	Investigate and rectify problems with ventilation louver control.	A	Completed	May 14, 2014	The defective air dryer for the Hydro Place pneumatic control system has been replaced. The controls for the generator room ventilation louvers have been replaced. The new system design defaults to open, allowing for continued cooling in case of system failure.
Technology and Communications Infrastructure	TCI 5	77	30-May-2014	General Mgr, Finance	Investigate options to provide redundant operation of the Hydro Place diesel generation room cooling system.	A	Completed	May 14, 2014	Redundancy for the ventilation Louvre's was included in the new equipment installed.
Technology and Communications Infrastructure	TCI 6	78	30-Jun-2014	General Mgr, Finance	Review design of emergency lighting at Hydro Place.	A	In Progress		Review of Emergency Lighting in stairwells. Initial review indicates lighting is not necessary by code, as building design dictates there is always power. As an additional safety measure, emergency lighting will be placed in stairwells, scheduled to be complete by June 30.
Technology and Communications Infrastructure	TCI 7	79	15-Apr-2014	General Mgr, Finance	Identify documents related to system restoration including cold start procedures, which must be available in hard copy format.	A	Completed	April 30, 2014	Work completed by IS personnel in April, 2014.
Technology and Communications Infrastructure	TCI 8	80	30-Jun-2014	General Mgr, TRO	Establish a process for monitoring critical alarms from the Hydro Place UPS on a 24/7 basis.	B	In Progress		Process to Monitor Critical Alarms - there were under review. Need to check with IS/NWS for update.
Liberty Interim Report	Liberty 1	12	15-Nov-2014	VP Systems Oper. & Planning	Hydro should complete the modifications or replacement of Nostradamus by Dec. 1, 2014 in order to enable improvements in the accuracy of short-term forecasts under extreme weather conditions.	A	In Progress		Please refer to P2LF1

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Liberty Interim Report	Liberty 2	81	1-Dec-2014	VP Systems Oper. & Planning	By Dec. 1, 2014, Hydro should incorporate into its short-term forecasting process any significant load changes, from losses or otherwise, resulting from varying system configurations.	A	In Progress		Review of winter 2013/14 losses completed and will be included in next Operating Load Forecasts.
Liberty Interim Report	Liberty 3	1	1-Oct-2014	VP Systems Oper. & Planning	In the interim, Hydro should implement the Ventyx recommendation to consider weather extremes via sensitivity analysis in all forecasting and supply planning evaluations and decisions.	A	In Progress		Please refer to P1GP1
Liberty Interim Report	Liberty 4	82	1-Sep-2014	VP Systems Oper. & Planning	By Sept 1, 2014, Hydro should: (a) evaluate and reach resolution on a formal change to the planning process to use a greater than 50 percent probability weather variable, (b) propose that criterion to the Board for use in future capacity decisions, and (c) continue to conduct sensitivity analysis for extreme weather, but around the new weather variable.	A	In Progress		Much of this has already been implemented as part of the Combustion Turbine application process however formal documentation will be completed by Sept 1.
Liberty Interim Report	Liberty 5	83	15-Nov-2014	VP Systems Oper. & Planning	Before Dec. 1, 2014, Hydro should: (a) re-evaluate the deviations between its forecasted winter peak and the multiple times it was exceeded during the winter of 2014, and (b) determine what, if any, common factors were responsible and what changes, if any, they suggest for the forecasting process.	A	In Progress		NP monthly winter peak assessed. Need to complete detailed review of winter 2013/14 weather, utility loads vs weather vs 1 year ago, and industrial loads.
Liberty Interim Report	Liberty 6	84	15-Aug-2014	VP Systems Oper. & Planning	Before Sept 1, 2014, Hydro should: (a) strengthen its ability to reconstruct the peak load when peaks have been significantly affected by artificial means such as those employed by the generation shortage protocol, and (b) use those improved techniques in the recommended evaluation of 2014 forecast deviations.	A	Not yet started		Discussions have been held with Corner Brook Pulp and Paper and are continuing. Newfoundland Power are reviewing their large customer curtailable rate customers for potential enhancements. A meeting is planned with Vale to explore opportunities within their operation.
Liberty Interim Report	Liberty 7	85	November 1, 2014	VP Systems Oper. & Planning	Hydro should follow through on its plans to assure consistency in future reliability analyses by focusing on the IIS, as opposed to the Hydro system alone.	B	In Planning Stage		Will work on this throughout this year as other action items are addressed. Suggested target completion Nov. 1, 2014.
Liberty Interim Report	Liberty 8	86		VP Systems Oper. & Planning	For the near-term, Hydro should abandon the LOLH of 2.8 criterion, and the associated low reserve requirements, in favor of an "as low as practical" objective.	A	In Progress		Hydro does not agree with totally abandoning the 2.8 LOLH target. Please refer to LF1, LF3, GRP1, GRP3, GRP4 and GRP5 for actions being undertaken by Hydro to address Liberty's concerns.

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Liberty Interim Report	Liberty 9	87	2015/2016	VP Systems Oper. & Planning	For the long-term, Hydro should evaluate, taking account of stakeholder input a new supply reliability criterion with a logically associated level of reserves, and seek Board concurrence to use that criterion as a basis for long-term supply planning.	B	In Planning Stage		To be initiated in 2015.
Liberty Interim Report	Liberty 10	88	15-Jun-2014	Mgr, Thermal Gen, General Mgr, Gas Turbine & Diesel	By June 15, 2014, Hydro should formalize its established plan to implement an aggressive availability improvement program focused on all generating assets, especially focusing on the Holyrood units and the two CTs.	A	On schedule		Availability Improvements being undertaken by the Holyrood Thermal Generating Station include: (1) Emergency Preparedness - initiatives have been introduced due to January 2013 and 2014 outage events and cover such topics as resource availability, critical planned maintenance checks, review of black start procedures, transportation of critical personnel to site and spares for winter availability; (2) 600 V Breaker Maintenance - the services of an electrical consultant will be enlisted to accelerate a concerted maintenance effort on 600 volt breakers. In particular, this includes critical power feeder breakers. The consultant will assist mainly with technical direction and the procurement of repair components; (3) Fuel Enhancements – the station is pursuing fuel system enhancements to mitigate cost and reliability risks stemming from poor quality fuel shipments in 2013 (W. Rice). These initiatives include improvements with respect to tank farm drainage, the replacement of main storage tank suction heaters, annual inspections of fuel oil heat exchangers on pumping and heating sets, the planned purchase of two (2) spare fuel oil heat exchangers, a review of suction strainer design and the review and potential replacement of burner front equipment; and, (4) Forced Draft (FD) Fan Motors – maintenance of these large 4160 Volt motors will be increased. A comprehensive inspection and repair, through a third party service provider, is planned for one (1) motor per generating, as a minimum. This maintenance work will coincide with the 2014 Capital project to install Variable Speed Drives (VSD) on the FD fans of each generating unit. This is an energy conservation project to achieve a relatively short economic payback on No. 6 fuel consumption at the station. Additional improvements for the GTs will be provided by June 15, 2014.

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Liberty Interim Report	Liberty 11	89	15-Jun-2014	Mgr, Thermal Gen, General Mgr, Gas Turbine & Diesel	Hydro should formalize its maintenance program for Holyrood generating station and the CTs in a submittal to the Board by June 15, 2014, covering the period through Nov 30, 2014, with the submittal to include, at least: (a) a listing of all key maintenance activities planned for each unit, (b) a critical path schedule for each planned outage of a unit including major work items, (c) a sequencing plan for planned outages showing the relationships among planned outages and how, if at all, an outage at one unit restrains an outage at another, and (d) bulk production curves for maintenance activities at each unit by number of work orders or whatever measure Hydro finds preferable.	A	On schedule		Hydro will provide Holyrood's formalized Maintenance Plans for the 2014 outage season. It will show an overview and also a more formalized version of the complete plan. The Plan shows all three (3) generating units available for service in the fall of 2014. The Plan includes (a) a listing of all key activities planned for each unit; (b) separate critical path diagrams are not included; critical path is typically dictated by a combination of larger outage windows required for primary asset maintenance and higher level Capital Projects and, unit availability which is approved in consultation with System Operations. System Operations coordinates an overall generation outage master plan and outages outside of the Holyrood Generating Station directly impact the duration, timing, sequencing and order of unit outages within Holyrood; (c) as noted, the sequencing of individual generating unit outage varies from year to year and is dictated by System Operating requirements, with a view to winter availability targets and environmental operating criteria; and, (d) maintenance activities at each unit by number of work orders can be viewed through the expanded version of the attached formalized maintenance plan. The response will include the maintenance work plan for the GTs for 2014.
Liberty Interim Report	Liberty 12	13	15-Jun-2014	Mgr, Office of Asset Management	Hydro should formalize by June 15, 2014, a generation master plan for winter preparation, including the above availability improvement activities and tasks addressing emergency preparedness.	A	In Progress		A generation master plan is completed annually through System Operations and encompasses system-wide Capital and Operating/Maintenance activities, for the main generating units. Confirmed plan is available and maintained by System Operations.
Liberty Interim Report	Liberty 13	90	30-Jun-2014	VP Newfoundland and Labrador Hydro	Hydro should, on a monthly basis, and starting no later than June 30, 2014, formally provide updates of the plans under the three preceding recommendations [10, 11, 12], and meet with the Board Staff to review and observe progress.	A	In Progress		Hydro agrees and will provide regular update on progress against its plan.
Liberty Interim Report	Liberty 14	11	15-Jun-2014	Mgr, Thermal Gen, General Mgr, Gas Turbine & Diesel	No later than June 15, 2014, Hydro should provide to the Board a detailed report on decisions and pending actions regarding spare parts for Holyrood generating station and the CTs, including: (a) a listing of all critical plant components, (b) the results of risk analyses of such critical components, (c) the decisions on which parts should have spares, either on site or at a vendor, and (d) the action plan to procure any unsecured such parts before Nov 30, 2014.	A	On schedule		Please refer to P1AM4
Liberty Interim Report	Liberty 15	91	10-Apr-2014	VP Systems Oper. & Planning	Hydro should treat the securing of new generation as a first priority; reach a prompt decision on a preferred option and proceed expeditiously towards an in-service date of Dec. 1, 2014 or, if not possible, by Dec. 1, 2015 at the latest.	A	Completed	April 10, 2014	Project approved, contract has been awarded with anticipated Dec, 2014 in service.

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Liberty Interim Report	Liberty 16	92	30-Nov-2014	VP Newfoundland and Labrador Hydro	Hydro should continue discussions with appropriate industrial customers who might make a material contribution to interruptible load with a goal of securing economically available interruptible loads.	A	In Progress		Discussions underway with Large Industrial Users.
Liberty Interim Report	Liberty 17	93	15-Jun-2014	Mgr, Long Term Asset Planning, G & T	Hydro should intensify DGA testing of its critical transformers exhibiting questionable levels of combustible gases, and take actions necessary to minimize failures, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	This has been completed and will be submitted in the June 2 report to PUB relating to transformers.
Liberty Interim Report	Liberty 18	14	15-Jun-2014	General Mgr, TRO	Hydro should catch up on overdue testing and maintenance on its critical transformers, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	Plan submitted to the PUB on June 2, 2014.
Liberty Interim Report	Liberty 19	94	15-Jun-2014	VP Systems Oper. & Planning	Hydro should complete system studies to verify that its plan to relocate the repaired T5 transformer from Western Avalon terminal station to replace the failed Sunnyside T1 transformer will not unduly reduce the reliability of the Western Avalon terminal station and of the transmission system as a whole, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Capital Budget applications being prepared.
Liberty Interim Report	Liberty 20	95	15-Jun-2014	Mgr, Long Term Asset Planning, G & T	Hydro should conduct operation tests (exercise) all air-blast circuit breakers in 2014, preferably in cold weather, and continue exercising them on an annual basis, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	The plan has been completed and will be submitted in the June 2 report to PUB relating to air blast circuit breakers.
Liberty Interim Report	Liberty 21	14	15-Jun-2014	General Mgr, TRO	Hydro should catch up on overdue testing and maintenance on its critical air-blast circuit breakers, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	Plan submitted to the PUB on June 2, 2014
Liberty Interim Report	Liberty 22	9	15-Jun-2014	Mgr, Long Term Asset Planning, G & T	Hydro should change its air-blast circuit breaker proactive maintenance program cycle from six to four years, until retirement of these breakers, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Agree with reviewing existing cycle and will also have to evaluate resource impacts. Plan will be prepared by June 15, 2014.

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Report	Report Action Item #	Action Item #	Date Due	Accountable Person(s)	Action Item Description	Priority	Status	Date Resolved	Comments
Liberty Interim Report	Liberty 23	96	15-Jun-2014	Mgr, Long Term Asset Planning, G & T	Hydro should periodically operate each of its circuit breakers from protective relays, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	After further review, the plan will be to include this with the breaker PM. The plan has been completed and will be submitted in the June 2nd report to the PUB relating to air blast circuit breakers.
Liberty Interim Report	Liberty 24	34	15-Jun-2014	General Mgr, TRO	Hydro should redesign its existing breaker failure relay protection schemes to provide that breaker failure will be activated whenever a transformer fails coincidentally with either a 138 kV or a 230 kV breaker malfunction, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Please refer to RC3
Liberty Interim Report	Liberty 25	37	15-Jun-2014	General Mgr, TRO	Hydro should formally examine the installation of breaker failure relay protection for transformers in terminal stations where breaker failure relay protection is not in place, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Please refer to RC6
Liberty Interim Report	Liberty 26	97	15-Jun-2014	General Mgr, Finance	Hydro should prepare on a high priority basis a documented analysis of ECC emergency generator availability risk, and maintenance procedures that address regular inspection and repair commensurate with the risks identified, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Please refer to TCI3
Liberty Interim Report	Liberty 27	98	15-Jun-2014	General Mgr, TRO	Hydro should update its event and data recording devices and systems to give each type of transformer alarm its own alarm point, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Agree and plan will be prepared by June 15, 2014.
Liberty Interim Report	Liberty 28	99	15-Jun-2014	General Mgr, TRO	Hydro should develop a priority procedure to repair immediately a malfunctioning digital fault recorder (DFR), beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Agree and plan will be prepared by June 15, 2014.

						A - Complete by end 2014 B - Complete beyond 2014			
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Liberty Interim Report	Liberty 29	36	15-Jun-2014	VP Systems Oper. & Planning	Hydro should complete the studies being conducted to determine whether abnormal system disturbances could have caused the T5 transformer failure at Western Avalon terminal station, and report whether any changes need to be made in systems operations or configuration as a result of these studies, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Please refer to RC5
Liberty Interim Report	Liberty 30	100	15-Jun-2014	General Mgr, TRO	Hydro should seek to locate for Western Avalon T5 a replacement transformer that can be purchased in case: (a) the field repairs are not successful, (b) the repaired transformer fails again later, or (c) the transformer is moved to Sunnyside terminal station, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Supplemental capital proposals will be submitted to the PUB to replace SSD T1 and replace the tap changer on WAV T5.
Liberty Interim Report	Liberty 31	35	15-Jun-2014	General Mgr, TRO	Hydro should include experienced protection and control technologists with its response teams when addressing Hydro termination station events involving investigating and modifying complicated protective relay schemes, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	B	In Progress		Please refer to RC4
Liberty Interim Report	Liberty 32	56	15-Jun-2014	Mgr, Long Term Asset Planning, G & T	Hydro should not employ any "slow trip" coils, where used by backup relay tripping in its air blast circuit breakers, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	B	In Progress		A meeting was held with P&C on May 29, 2014. Based upon the recommendation outlined in the May 15, 2014 Interim Report to have all slow trip coils removed by Dec. 1, 2014, an external resource will need to be hired to complete this work. A resource will be secured to complete the engineering in an effort to meet the required completion date of Dec. 1, 2014.
Liberty Interim Report	Liberty 33	10	31-Oct-2014	General Mgr, TRO	Hydro should prepare a maintenance practices document addressing the new procedure for applying the protective coating to its air-blast circuit breakers and describing how the new procedure will prevent moisture contamination, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	B	Completed	May 30, 2014	Please refer to P1TA3

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Liberty Interim Report	Liberty 34	14	15-Jun-2014	General Mgr, TRO	Hydro should review its substation and protection and control (P&C) staffing needs for the future, in light of the more intense maintenance needs on its aged transformers and circuit breakers, its protective relay replacement and modification work, and upcoming construction work on the new DC lines, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Plan being prepared by June 15, 2014.
Liberty Interim Report	Liberty 35	101	15-Jun-2014	General Mgr, TRO	Hydro should use qualified substation contractor personnel, specializing in substation equipment testing and maintenance, to provide the skilled manpower required to assist with the transformer projects and to catch up with regular scheduled maintenance on transformers and circuit breakers, while crews conduct the air-blast circuit breaker operational tests (exercising), beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 30, 2014	Submitted to the PUB June 2, 2014.
Liberty Interim Report	Liberty 37	102	2-Jun-2014	VP Corporate Relations	As a first step, Newfoundland Power and Hydro should develop a joint Outage Communications Strategy to prioritize opportunities and guide near- and longer-term improvements to customer contact technologies and telephony, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		In progress - Terms of reference, activities and action plan have been defined. Newfoundland Power and Newfoundland and Labrador Hydro will develop a collaborative approach to identifying and planning near and longer term strategies for customer contact and outage technologies. The focus will be to improve customer outage communications and identify possible synergies in approach, integration, and implementation.
Liberty Interim Report	Liberty 38	103	15-Jun-2014	VP Corporate Relations	Hydro and Newfoundland Power should conduct customer research (primarily on a joint basis), in order better to understand customer outage-related informational needs and expectations, including requests for conservation, and incorporate results into the Outage Communications Strategies, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		A number of discussions have been had between NLH and NP. A research agency has been identified and a plan for residential focus group work to begin on June 4, 2014. The utilities are reaching out to the business community through business associations and advocacy groups seeking participation of commercial customers. This research will be achieved by on-line survey. Expect to be launching the survey by June 15, 2014.

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Liberty Interim Report	Liberty 39	104		VP Corporate Relations	As Newfoundland Power and Hydro move forward with enhancements to any customerfacing outage support systems, each should stress test the technologies well prior to the winter season; this element should comprise a key component of their implementation processes.		In Progress		NP are identifying agencies that perform stress testing of customer facing systems, particularly the customer contact centre telephone and IVR system. Hydro has and will continue to meet with NP on this item to partner on this action to incorporate testing of Hydro's system by the same agency.
Liberty Interim Report	Liberty 40	105	15-Jun-2014	VP Corporate Relations	Hydro should review and refresh business continuity plans and contingencies to ensure continual operation and availability of critical outage response support systems, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Hydro has retained Resilient Business Continuity Planning to complete a Business Impact Analysis on various business units of Nalcor. Customer Service is part of this analysis and met with the consultant on May 22. The consultant anticipates a first draft of the assessment by June 30, 2014.
Liberty Interim Report	Liberty 41	106	15-Jun-2014	VP Corporate Relations	Newfoundland Power and Hydro should pursue (primarily on a joint basis) other multichannel communication options, such as two-way SMS Text messaging or Broadcasting options, for delivering Outage Status Updates, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		Hydro is assessing options to replace its customer facing systems within the next 18 to 24 months, which includes the customer telephone/IVR and web applications. Multichannel communication options will be included in assessment of any replacement system.
Liberty Interim Report	Liberty 42	16		VP Corporate Relations	Newfoundland Power and Hydro should aggressively pursue a joint process for delivering advance notification for planned rotating outages, in order to facilitate good initial communications with customers during an outage event, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		In Progress - Hydro and NF Power have developed a terms of reference and action plan for the development of a process for advance notification. Working with Hydro System Operations.
Liberty Interim Report	Liberty 44	107	15-Jun-2014	VP Corporate Relations	Hydro and Newfoundland Power should jointly develop a coordinated, robust, well-tested and up-to-date Storm/Outage Communications Plan documenting protocols, plans, and templates to guide communications during major events, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	In Progress		In Progress - Hydro and NF Power have developed a terms of reference and action plan for the development of a detailed joint storm and outage communications plan.
Liberty Interim Report	Liberty 45	108	15-Jun-2014	VP Corporate Relations	Newfoundland Power and Hydro should conduct a joint "lessons learned" exercise including both their Communications Teams, beginning with preparation by June 15, 2014 of a detailed plan and schedule for doing so.	A	Completed	May 20, 2014	Complete - Joint lessons learned conducted on May 20th.

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Liberty Interim Report	Liberty 46	109	31-May-2014	VP Newfoundland and Labrador Hydro	Hydro and Newfoundland Power should commit to a formal effort, sponsored at their most senior executive levels, to work together in formulating joint efforts to identify goals, protocols, programs, and activities that will improve operational and customer information and communications coordination, leading to the development, by June 15, 2014, of identified membership on joint teams, operating under senior executive direction and according to clear objectives, plans, and schedules.	A	Completed	May 1, 2014	Executives of NP and NLH have met twice and will be meeting monthly to oversee the actions and improvements being undertaken by both utilities to enhance customer service and inter-utility coordination. Formal documentation of this commitment is being finalized.