

May 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 Interconnected System

Please find enclosed the original and 12 copies of Hydro's Integrated Action Plan addressing the findings and recommendations from Hydro's review of Supply Disruption and Rotating Outages. It provides a summary of Hydro's plan in accordance with Hydro's Executive Summary and the eight focus areas addressed in Hydro's submission; each focus area had their own recommendations so there is some overlap between them. These findings and action items also overlap with many of the recommendations arising from the Liberty Consulting Group's review.

The following should be noted to bring perspective to the plan:

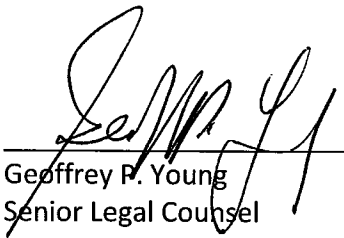
1. It is the starting point for developing more detailed actions by centralizing the recommendations, for reviewing them throughout the system with all staff, and for assigning accountable and responsible people to handle the action. Further, it provides prioritization and current status of the recommendations.
2. There is a lot of commonality between Hydro's and Liberty's recommendations and Hydro has not yet combined them, therefore, the overall number of actionable items has not been reduced at this point.
3. This does not yet indicate the broad spectrum of different effort required to address the different recommendations. Some will take much effort, some not that much.
4. This is a first cut at prioritizing the recommendations without it being overlaid by a full resource plan – this could cause a reality adjustment for priority, which is currently being worked on.

5. Many recommendations are actually to continue to do what Hydro already had identified and underway from our existing plan prior to the outage.
6. Some of the recommendations have been completed and many others are in progress.
7. The recommendations cover a broad array of topics with different degrees of seriousness: generation planning, customer communications, asset management execution, emergency response, interface with NP, etc.
8. The presentation of the plan and a formal tracking process will evolve further to be finalized very soon incorporating the Liberty findings. In the meantime, the actions are being addressed.

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
Roberta Frampton Benefiel – Grand Riverkeeper Labrador
Sheryl Nisenbaum – Praxair Canada Inc.

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

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

	Report Action Item #	Action Item #	Date Due	Accountable Person(s)	Action Item Description	A	Status	Date Resolved	Comments
						Complete by end of 2014			
						B			
						Priority			
Review of Supply Issues and Power Outages	P1GP1	1	April 1, 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			Documented
	P1GA2			Gen Mgr Gas Turbines & Diesel	Gas Turbines: (a) implement recommendations identified through the internal review relating to gas turbine availability, including:	A			
	P1GA2	2	May 30 2014	Gen Mgr Gas Turbines & Diesel	:- review of gas turbine maintenance practices	A			
	P1GA2	3	May 30 2014	Gen Mgr Gas Turbines & Diesel	:- assess the effects of test starts and run-ups prior to severe weather	A			
	P1GA2	4	Aug 30 2014	Gen Mgr Gas Turbines & Diesel	:- identify repeat failure events and address the root causes	A			
	P1GA2	5	May 30 2014	Gen Mgr Gas Turbines & Diesel	:- identify plan required for additional plant and equipment refurbishment not already completed	A			
	P1GA2	6		Gen Mgr Gas Turbines & Diesel	:- review fuel storage processes and procedures	A	Apr 30 2014		
	P1GA2	7		VP NLH	(b) 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 Mgr Gas Turbines and Diesels established and filled.
	P1TA 3			Mgr LT Asset Planning	230 kV Breakers:	A			
	P1TA 3	8	May 30, 2014	Mgr LT Asset Planning	(a) 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			Seven (7) breakers have been identified already for replacement in 2014 and acceleration will be evaluated to start in 2015
P1TA 3	9	May 30, 2014	Mgr LT Asset Planning	(b) 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	A	In Progress			

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P1TA 3	10	May 30, 2014	Mgr LT Asset Planning	(c) revise the Work Methods pertaining to the repair of 230 kV breakers	A	In Progress		
P1AM 4	11		Mgr, Thermal Gen, Mgr, Hydro Gen, Gen Mgr Gas Turbines & 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	B	In Progress		
P2LF1	12	November 15, 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		
P2AM2	13	April 30, 2014	Mgr Office of Asset Mgmt.	Review current winter readiness program in reference to industry best practices and formally implement/document for Hydro operations.	A	Completed	April 16, 2014	NERC Aligned self-assessment for winter readiness issued for use through the Asset Owners Council on April 16, 2014.
P2AM3	14	December 31, 2014	Mgr, Thermal Gen, Mgr, Hydro Gen, General Mgr TRO, Gen Mgr Gas Turbines & Diesel	Continue evaluation and implementation of work planning, scheduling and execution improvements.	B	In Progress		Short term solution by May 2014 for PM recovery with sustained solution in place by end of 2014
P2P&C4	15	May 30 2014	General Mgr TRO	Finalize evaluation of high priority recommendations by Henville Consulting and the Root Cause Analysis Team.	B	In Progress		
P2CC5	16	September 30, 2014	VP Systems Oper. & Planning	Implement a formal protocol for notifying customers, end users and the general public in relation to pending supply issues and conservation requests.	A	In Progress		

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	P2TCI6	17		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	In Progress		
Load Forecasting	LF 1	1	October 15, 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	-	
	LF 2	12	November 15, 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		
	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. Continuing Activity		

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Generation and Reserve Planning	GRP 1	19		VP Systems Oper. & Planning	Hydro should continue with its generation planning reserve criterion		In Progress		
	GRP 2	20		VP Systems Oper. & Planning	After interconnection in 2017, Hydro should revisit its generation planning reserve criterion and its modelling of external markets.	B	In Progress. Initiate 2015		
	GRP 3	1	December 1, 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		
	GRP 4	21	December 1, 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		
	GRP 5	1		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		

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Asset Management Strategy	AM1	8		Mgr LT Asset 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	In Progress		
	AM2	14		Mgr, Thermal Gen/ Mgr, Hydro Gen/ General Mgr TRO/Gen Mgr Gas Turbines & Diesel	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		Q2 - Begin Implementation of Process. To improve resource utilization and effectiveness and outage management, it is currently planned to extend this to other Hydro facilities in 2014.
	AM3	11		Mgr, Thermal Gen/Mgr, Hydro Gen/ General Mgr TRO/Gen Mgr Gas Turbines & 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	In Progress		Q2 - Begin Implementation of Process. Further detailed work is planned to be initiated in 2014 with critical issues addressed before winter 2014-15.

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AM4		April 30, 2014	Mgr Office of Asset Mgmt.	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.
AM5	13	October 30, 2014	Mgr Office of Asset Mgmt.	A more rigorous winter readiness program should be introduced, largely driven by internal self-assessment with appropriate external support/review.	A	In Progress		The Manager, Office of Asset Management, 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.
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.		In Progress		

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Generation Availability	GA 1			LTAP Mgrs	Continue condition assessment and life management activities to identify timely refurbishment and replacement needs	B	In Progress		
	GA 2	11	June 30, 2014	Mgr Thermal Gen/Mgr Hydro Gen/Gen Mgr TRO/Gen Mgr Gas Turbines & 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	In Progress		Q2 - Begin Implementation of Process. Further detailed work is planned to be initiated in 2014 with critical issues addressed before winter 2014-15.
	GA 3	2		Gen Mgr Gas Turbines & Diesel	Review the maintenance tactics of the Hardwoods and Stephenville gas turbines	A	In Progress		
	GA 4	3		Gen Mgr Gas Turbines & 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		
	GA 5	4		Gen Mgr Gas Turbines & Diesel	Identify repeat failure events on the GT units and address the root causes	A	In Progress		
	GA 6	5		Gen Mgr Gas Turbines & Diesel	Continue to review actual work completed on recent overhauls. Identify and plan for additional GT balance of plant equipment refurbishment not completed.	A	In Progress		
	GA 7	6		Gen Mgr Gas Turbines & Diesel	Complete review of GT site fuel storage operating requirements, processes and procedures	A	In Progress		
	GA 8	22		Mgr, Thermal Gen	Investigate improvements to Holyrood Unit 1 steam turbine generator to prevent future vibration issues and reduce starting times	A	In Progress		Being addressed during the 2014 planned unit outage.

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GA 9	11		Mgr, Thermal Gen	Review in early 2014 the cost-benefit analysis of one or more spare 4 kV motors for Holyrood	A	In Progress		Holyrood has done considerable work in the area of assets criticality and critical spares and has issued a request for proposal for an experienced consultant to assist in completing the following work in 2014: 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 - November 30. In addition to this effort, a separate dedicated initiative is ongoing to procure spare 4kV motors in light of the recent failure of the forced draft fan motor on unit 3 on December 26, 2013.
GA 10								NUMBERING ISSUE
GA 11	23		Mgr, Hydro Gen	Investigate further Granite Canal turbine vibration issues as/when they occur and develop mitigation plans	A	In Progress		
GA 12	24	May 31, 2014	Mgr, Exploits & Menihok Generation	Document Exploits River operational response to severe frazil ice buildup for future use as a best practice	A	In Progress		Q2 - Prepare documentation

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Transmission Availability	TA1	8		Mgr LT Asset Planning	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	In Progress		This should be evaluated in two parts. The first would be to assess and modify the program for the upcoming maintenance period. This would be constrained by availability of new equipment, outage plans and other factors. The second would be to evaluate the multi-year plan for the remaining breakers which should coincide with the next budget cycle.
	TA2	25		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		This should be evaluated in two parts. The first would be to assess and modify the program for the upcoming maintenance period. This would be constrained by availability of new equipment, outage plans and other factors. Q3 - Begin Implementation - The second would be to evaluate the multi-year plan for the remaining breakers which should coincide with the next budget cycle.
	TA3	26		VP NLH	“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	In Progress		Q2- Begin Review, Q4 - Begin Implementation. Must ensure resources are trained and in place before the next severe weather event occurs.
	TA4	27		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
	TA5	28		VP Systems Oper. & Planning	Provide additional training as necessary to operators on the importance of alarms.	A	In Progress		Q3 - Begin Training. Operator training on alarms can be done as part of the normal training.

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	TA6	29		Mgr LT Asset Planning	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		A plan for installation of digital relays should be completed prior to the budget cycle.
	TA7	30		VP NLH	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.
	TA8	31		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		Mgr LT Asset Planning	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.		In Progress		Q2 - Begin Engineering Design 2015 - Begin Implementation
	RC2	33		Manager 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.		In Progress		Q3 - Conduct field investigation
	RC3	34		Mgr LT Asset Planning	Consider implementing transformer protection initiation of breaker fail protection at all stations that have breaker fail protection.		In Progress		Q2 - Begin Engineering Design 2015 - Begin Implementation

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RC4	35		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		Q2 - Begin Review - Implement recommendations from review	Q3
RC5	36		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		Q2 - Begin analysis.	
RC6	37		Mgr LT Asset Planning	Consider conducting a formal risk / reward review of the 230kV breaker failure protection philosophy for transformers at stations that currently do not have breaker fail protection.	B	In Progress			
RC7	38		VP Systems Oper. & Planning	Consider conducting a formal risk / reward review of system design to determine whether 230kV transformers require their own 230kV breaker in all terminal stations, as this would reduce complexity and increase reliability.	B	In Progress		Initiate 2015	
RC8	39		Mgr LT Asset Planning	Review application of lockout protection on all transformers to ensure that the proper isolation of the transformer automatically blocks the initiation of 138kV breaker failure protection on the associated breakers.	B	In Progress			
RC9	40			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			
RC10	10			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	B	In Progress			

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				interrupters.				
RC11	42			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		
RC12	14		Manager 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.	B	In Progress		
RC13	43		Mgr LT Asset Planning	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		

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Root Cause Investigation - Additional Findings	RC14	44		Mgr LT Asset Planning	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		Q2 - Begin
	RC15	14		Manager TRO Central	When practicable, complete PMs in accordance to normal scheduling.	A	In Progress		Q2 - Begin
	RC16	45		General Mgr TRO	Correct all incorrect relay cards at terminal stations	A	In Progress		Q2 - Begin review. Q3- Begin updating/replacing cards as required
	RC17	46		General Mgr TRO	Replace all missing cards at terminal stations.	A	In Progress		Q2 - Begin replacing missing cards
	RC18	47		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
	RC19	48		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
	RC20	9		Mgr LT Asset Planning	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
	RC21	9		Mgr LT Asset Planning	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

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RC22	9		Mgr LT Asset Planning	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 - Implement recommendations from review	Q3
RC23	49		Mgr LT Asset Planning	Determine why the DOW 55 grease was not removed during the 2007 re-lubrication and implement the appropriate corrective action.	A			Q2 - Begin Review. Q3 - Implement recommendations from review	
RC24	8		Mgr LT Asset Planning	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			Q2 - Begin Review	
RC25	50		General Mgr TRO	Conduct a risk/reward review of the requirements for additional station service redundancy supply at all 230kV terminal stations and install back-up station service supply where recommended by the review.	B				
RC26	51	June 30, 2014	Mgr Office of Asset Mgmt.	Document protection philosophy as a Protection & Control Engineering Standard	B	Initiated		Meeting scheduled May 12, 2014, to develop framework for document and establish a time bound action plan for next steps.	
RC27	52		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				
RC28	53		Manager TRO Central	Relocate the Sunnyside Terminal Station station service transfer switch to the control building.	B			Design to be completed in 2014. Work Execution in 2015.	
RC29	54	May 30, 2014	Mgr Office of Asset Mgmt.	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	In progress		Meeting scheduled on May 1, 2014 to review draft standard. Standard has been applied to Sunnyside restoration scope of work.	
RC30	55		Manager 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				

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						Complete by end of 2014			
						B			
						Complete beyond 2014			
						Priority			
Protection System Impact	P& C1	56		Manager TRO Central	Check and if necessary, modify protection connections to all ABB type DCVF 245 MC6 breakers.	B			Q2 - Begin Field Investigation & Engineering Design Q4 - Begin Field Implementation
	P& C2	57	February 20, 2014	Manager TRO Central	Adjust the zone 2 time delays on Bay D’Espoir TL202 and 206 to 0.6 seconds.	A	Completed	February 20, 2014	
	P& C3	58		Mgr Office of Asset Mgmt.	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	In progress		Review of recommendations status completed in April 2014, meeting scheduled on May 16, 2014 to review status of action plan.
	P& C4	59		Mgr LT Asset Planning	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			
	P& C5	35		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		
	P& C6	37		Mgr LT Asset Planning	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			This review should be completed within one year (2014) and any necessary modifications should be completed within two years (2015)
	P& C7	40		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			
	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			

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Emergency Response and Restoration	ERR 1	61	May 15 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 -		
	ERR 2	62	Sep-14	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			
	ERR 3	63	May-14	General Mgr TRO	PCB contents of all oil-filled transformers and equipment should be available in hard copy locally and an alternate location	B			
	ERR 4	50	Jun-14	Mgr LT Asset Planning	Assess the need and options for additional station service supply for terminal stations in the event of loss of normal supply	B	In planning		
	ERR 5	64	Sep-14	Mgr, Thermal Gen	Complete lighting improvement plan at the Holyrood plant in 2014	A	In progress		
Coordination and Communication with Customers	CCC 1	16	14-Sep	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		
	CCC 2	65	a) May 15 & b) Sept 30	VP Systems Oper. & Planning	Review protocol for Hydro's use of Newfoundland Power's hydroelectric and standby generation resources and Newfoundland Power's request for real-time data concerning the status of the Island Interconnected System	A	In Progress		
	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			
	CCC 4	67		VP Corporate Relations	Prepare public advisories templates in advance of potential events to assist with rapid response and customer queries	A			

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	CCC 5	68	May 15 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	In Progress		
	CCC 6	69	May 15 2014	VP Corporate Relations	Develop key customer and power outage stakeholder list	A	In Progress		
	CCC 7	70	Apr 30 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	In Progress		
	CCC 8	71	Apr 30 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	In Progress		
	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	In Progress		
	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	In Progress		
Technology and Communications	TCI 1	74		VP Systems Oper. & Planning	Establish a protocol with NP to have Hydro Place power feeder restored as soon as possible if interrupted	A	Completed		NP now has us on a priority feed not to be dropped, and if interrupted, priority reconnection.
	TCI 2	17		VP Systems Oper. & Planning	Investigate the cause of the under frequency and synchronization alarms experienced on January 3 and 4, 2014	A	Completed		Investigate cause of the underfrequency and synchronization issues January 3 & 4 - both issues have been investigated and repaired. Neither problem has recurred since.

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TCI 3	75	May 30, 2014	VP Systems Oper. & Planning	Identify documents related to system restoration including cold start procedures, which must be available in hard copy format.	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 be documented to conform with CSA recommendations, and will be vetted by Mechanical Engineer for completeness. Check lists being updated to reflect the revised program. Target completion date is May 30. Events log is also reviewed daily and issues addressed as required.
TCI 4	76	May 30, 2014	VP Systems Oper. & Planning	Investigate and rectify problems with ventilation louver control.	A	In Progress		Ventilation Louvre Controls - parts are in St. John's and available to be installed. Work is significant and will require an outage during weather suitable for removing exterior Louvre's. Target date May 30, but weather dependent. The defective air drier on the existing pneumatic system has been replaced.
TCI 5	77	May 30, 2014	VP Systems Oper. & Planning	Investigate options to provide redundant operation of the Hydro Place diesel generation room cooling system.	A	In Progress		Redundancy for the ventilation Louvre's is included in the new equipment being installed. Priority A May 30
TCI 6	78	Planned - Jun 30 2014	Gen Mgr, Finance-NLH	Review design of emergency lighting at Hydro Place.	B	Planned		Review of Emergency Lighting in stairwells. Initial review indicates lighting is not necessary, as building design dictates there is always power. Another review is underway to determine cost of having this as one more level of redundancy in the event of future system failures.

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TCI 7	79	April 15, 2014	VP Systems Oper. & Planning	Identify documents related to system restoration including cold start procedures, which must be available in hard copy format.	A	Complete		Documentation of system reboot - were in progress, to be completed by April 15
TCI 8	80		VP Systems Oper. & Planning / Gen Mgr TR O	Establish a process for monitoring critical alarms from the Hydro Place UPS on a 24/7 basis	B	Complete		