

September 19, 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**

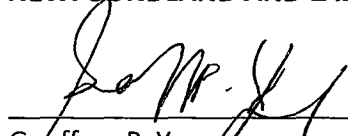
In accordance with the Board's Interim Report dated May 15, 2014 with respect to the above noted matter, please find enclosed the original plus 12 copies of Hydro's:

- Updated Integrated Action Plan as at the end of August, 2014.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



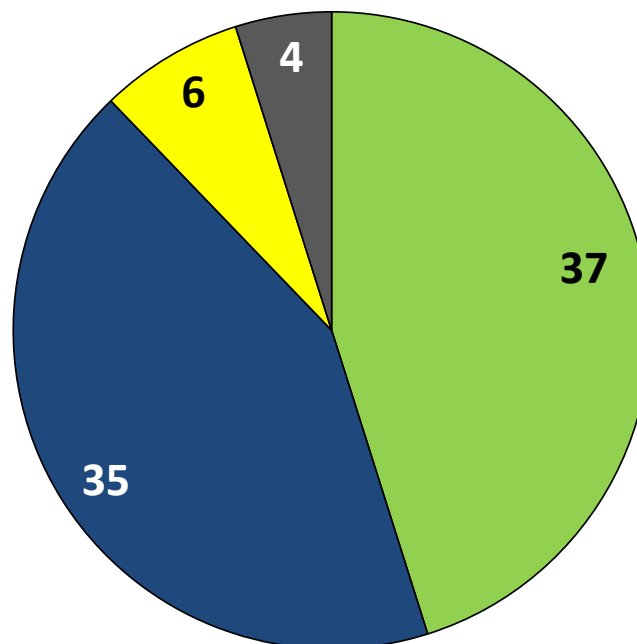
Geoffrey P. Young
Senior Legal Counsel

GPY/cp

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

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

NL Hydro's Full Integrated Action Plan* - Status Report - September 19, 2014



Data Table

Number of Actions per Status Group

Status				
In Progress and On Track	Complete	Caution Recovery Plan in Place	Not Yet Started 2015 Activity	Total
37	35	6	4	82

* Created to address issues identified in the PUB Interim Report dated May 15, 2014.

NL HYDRO INTEGRATED ACTION PLAN - 2014 SUPPLY DISRUPTIONS AND POWER OUTAGES



Ref	Action/Activity	IAP Reference(s)	Interim Report Ref(s)	Accountable Title	Due Date	Status	Notes / Comments
LOAD FORECASTING							
1	Implement enhancements to the short term 7 day forecasting model to ensure a better correlation in extreme cold weather conditions.	P2LF1, LF2, Liberty 1		VP System Operations and Planning	15-Nov-2014		In progress. Database and software additions to improve forecast accuracy have been identified and changes are being implemented. Ventyx was in St. John's in June to lead Nostradamus Training Workshop. At that time they installed a new version of Nostradamus, reviewed Hydro's models, and suggested changes to improve the accuracy of the model. Issues with the main database input/output have been resolved but there are areas that still require troubleshooting. Next steps: Continue to improve quality of historic data in model, fine tune the model profiles, and improve the data input and backup processes. All outstanding issues will be resolved prior to moving to the main platform and operations staff will gain experience with new version before the upcoming winter.
2	Refine the equations used for estimating major end-use of electric heat on the system through continued surveying of the customer base in terms of average energy use and saturation of electric heating	LF3		VP System Operations and Planning	15-Nov-2014		In progress. Load forecast model equations have been updated and other improvements have been completed in NLH's long term load forecast model. Timing and budgets for customer surveys need to be established.
GENERATION AND RESERVE PLANNING							
3	Incorporate any significant load changes, from system losses or otherwise, resulting from different system configurations in the short term load forecasting process.	Liberty 2	PUB 1	VP System Operations and Planning	15-Nov-2014		In progress. Analysis of winter 2013/14 losses based upon generation dispatch is underway. Outcome to be included in the peak load forecast to be generated in mid-November. Due date has been advanced from December 1.
4	Include sensitivity analysis for extreme weather, unit Equivalent Forced Outage Rate (EFOR) ranges, alternate scenarios and other factors in load forecasting processes.	P1GP1, LF1, GRP3, GRP5, Liberty 3 and 4	PUB 2	VP System Operations and Planning	1-Sep-2014		Complete. Completed weather sensitivity for input to CT proposal. Weather sensitivity analysis to be included in the Hydro 2014 Planning Load Forecast (PLF) and 2014 Generation Expansion Plan analysis. Hydro's PLF process will include sensitivity analysis with respect to weather and consider other key load variables. Completed review of historical weather data. Outline for inclusion in mid-Nov forecast has been completed.
5	Continue with the generation planning criterion of 2.8 LOLH, refine the forecasting model as necessary with increased sensitivity assumptions related to extreme cold weather and forced outage rates.	GRP1, Liberty 8		VP System Operations and Planning	30-May-2014		Complete. Hydro is expanding its analysis to include additional sensitivities to address concerns raised in the Liberty review.
6	Revisit the generation reserve planning criterion and the manner in which external markets are modeled after interconnection in 2017.	GRP2		VP System Operations and Planning	15-Nov-2015		Not yet started. To be initiated in 2015.

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7	Complete a break-even EFOR for each class of Hydro's generation to determine the point at which a generator's EFOR results in the system exceeding the LOLH criterion of 2.8 hours/year.	GRP4		VP System Operations and Planning	1-Dec-2014		In progress. Documentation will be completed as part of the full review of the generation planning process. Currently working on determining appropriate Strategist case to use for analysis
8	Complete an evaluation of the instances where actual peak load exceeded the forecasted peak during the winter of 2014 and determine what common factors, if any, were responsible, and any implications for the forecasting process.	Liberty 5		VP System Operations and Planning	15-Nov-2014		In progress. NL Power 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. Data collection is complete, and data analysis is underway including a review of utility and industrial customers loads for winter monthly peaks.
9	Determine any opportunities for re-constructing the peak load when peaks have been significantly affected by artificial means such as those employed by the generation shortage protocol, and consider any improvements in the review of 2014 peak deviations.	Liberty 6		VP System Operations and Planning	1-Sep-2014		Complete. A transmission load-loss assessment has been completed, as has an assessment of using NLH-NP peak demand weather adjustment model for re-constructing NP load. Customer and system peak loads have been reconstructed for actual and historic normalised weather.
10	Use the Island Interconnected System as the reference point in future analyses of system reliability rather than just the Hydro interconnected system.	Liberty 7		VP System Operations and Planning	1-Nov-2014		In Progress. Progress being made on the addition of Deer Lake Power and Newfoundland Power generation to Hydro's automatic generation control applications. Winter peak model is being calibrated for total island load.
11	Evaluate a new supply reliability criterion for the longer term, with a logically associated level of reserves, based on stakeholder input.	Liberty 9		VP System Operations and Planning	2014/2015		Not Yet Started. To be initiated in 2015, subject to any review/discussion of this issue during the Province's overall review of the provincial electricity system.
GENERATION AVAILABILITY							
12	Implement a 2014 winter preparation and availability improvement program for all generating assets and a related maintenance program for the HTGS.	Liberty 10, 11, 12 and 13; AM5; GA2	PUB 3 PUB 4 PUB-8 ² PUB 11	Chief Operating Officer, General Manager, GT and Diesel	30-Nov-2014		In progress. The availability improvement actions outlined in the June 16 Generation Availability Report to the Board relative to the Holyrood, Hardwoods/Stephenville CTs, and hydro generation assets are being executed as planned and are being tracked through the Annual Work Plan and other mechanisms. A self-assessment of winter readiness processes was completed in July and improvement actions will be identified by September 30 and implemented no later than November 30. A severe weather preparedness protocol has been developed and is in use. A master generation winter availability plan update was supplied to the Board on August 29. Currently working on identifying winter readiness self assessment process improvements.

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12a	- Availability improvement: Hardwoods and Stephenville	P1GA2(a), (b), (c), (d), and (e); GA1, GA3, GA4, GA5, GA6, GA7		General Manager, GT and Diesel	30-Nov-2014		In progress. Review of GT maintenance practices is complete and required changes are being finalized. Assessing the effects of test starts prior to severe weather is ongoing to optimize the number of starts with GT availability. Repeat failure events have been identified and OEMs consulted to assist in root cause analysis and identifying solutions. A Hardwoods site visit is planned for August 20 to investigate clutch and deflector ring issues. The implementation of snow door modifications is are being completed. The identification of additional plant and equipment refurbishment not already completed is being finalized. Fuel storage process and procedures have been reviewed, and a draft fuel management procedure has been prepared.
12b	- Availability improvement: Holyrood Start-Up Time	GA8		Chief Operating Officer	7-Nov-2014		In Progress: Balancing calculations and planned actions have been completed and will be implemented as part of Holyrood Unit 1's annual maintenance outage scheduled later in 2014.
12c	- Availability improvement: Hydro Generation / Granite Canal Availability	GA11		Chief Operating Officer	30-Sep-2014		In Progress: An investigation of the Granite Canal turbine vibration issue was to be completed during the annual unit inspection scheduled for August 4-15.
13	Develop a critical spares plan for HTGS, the Hardwoods and Stephenville gas turbines, Hydro Generation and TRO	Liberty 14, P1AM4, AM3, GA2, GA9	PUB 5 PUB-9 ²	Chief Operating Officer, General Manager, GT and Diesel	30-Nov-2014		In progress. The HTGS Critical Spares Review is progressing on schedule. A dedicated ongoing initiative, apart from the overall critical spares review, is to assess the spares requirements and identify a procurement plan for 4 kV FD fan motors. Discussions have been initiated with manufacturers and are ongoing with respect to cost, schedule, new vs used, fitment and performance. The GTs Critical Spares Review is progressing on schedule. An asset criticality workshop has been completed as well as consultant site visits. A preliminary spares list is being reviewed. A separate update on critical spares for all generation assets was provided to the Board on September 15.
14	Secure economically available interruptible loads.	Liberty 16	PUB 6 PUB-10 ²	VP NL Hydro	30-Nov-2014		In Progress: Hydro's larger industrial users have been actively engaged in discussions on interruptible load arrangements, and other activities are progressing in line with the plan presented to the Board on June 16. A separate update was provided to the Board on September 15.
15	Install and commission a new Combustion Turbine at Holyrood.	Liberty 15	PUB 7	VP Project Execution and Technical Services	7-Dec-2014		In Progress: Project progressing on schedule in accordance with the PETS Incremental Work Project Plan (IWPP). Separate bi-weekly progress reports are being submitted to the PUB.

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16	Create a senior position reporting to the VP with accountability for CTs and diesels	P1GA2		VP NL Hydro	14-Apr-2014		Complete: General Manager Gas Turbines and Diesels established and filled.
17	Document the Exploits Generation operational response to the severe frazil ice build-up for future reference as a best practice.	GA12		Chief Operating Officer	30-May-2014		Complete: 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.
TRANSMISSION AVAILABILITY							
Transformers and Terminal Stations							
18	Execute a 2014 plan for testing transformers with questionable levels of combustible gases.	Liberty 17	PUB 13 PUB 15 PUB-16 ¹	General Manager, TRO	31-Aug-2014		Complete: Transformer gas testing was implemented on schedule consistent with the plan submitted to the PUB on June 2. Testing planned for June, July and August has been completed (16 of 24 transformers) as planned.
19	Execute a 2014 plan for completing overdue testing and maintenance on critical transformers.	Liberty 18	PUB 12 PUB 14 PUB-17 ¹	General Manager, TRO	30-Nov-2014		In Progress: Testing and maintenance on critical transformers is progressing as planned. Two of 8 critical transformers were tested as of the end of July, three more in August and testing continues as planned in September.
20	Develop a plan for completing overdue testing and maintenance on remaining transformers.	Liberty 18	PUB-18 ¹	General Manager, TRO	15-Jun-2014		Complete: Plan submitted to the PUB on June 2, 2014.
21	Complete system studies in relation to the <u>relocation</u> of the repaired T5 transformer from Western Avalon to Sunnyside, including a plan to address potential further failures.	Liberty 19	PUB-19 ²	VP System Operations and Planning	15-Jun-2014		Complete: System study completed on June 13th. See IAP 24 and June 16th Report to the PUB.
22	Complete a study in relation to the availability and necessity of a <u>replacement</u> transformer for T5 at Western Avalon, addressing schedule, estimated costs, the resources required, and how these requirements will be met.	Liberty 19	PUB-20 ²	VP System Operations and Planning	15-Jun-2014		Complete: System study completed on June 13th. See IAP 25 and June 16th Report to the PUB.
23	Complete a study to determine if abnormal system disturbances may have caused the T5 failure at Western Avalon.	Liberty 29, RC5	PUB-21 ²	VP System Operations and Planning	15-Sep-2104		Caution. Trans Grid Solutions has completed an analysis/simulation of the January 4 event to determine if harmonics or system resonance may have been a contributing factor to either SSD T1 failure or WAV T5 OLTC failure. Their draft report is due Sep 26 and final report will be completed by Oct 10.
24	Install a replacement for T1 transformer at Sunnyside.	Liberty 19		VP Project Execution and Technical Services	21-Nov-2014		In Progress: Project is progressing on schedule in accordance with the PETS IWPP. Separate bi-weekly progress reports are being submitted to the PUB.
25	Complete refurbishment of T5 transformer at Western Avalon.	Liberty 30		VP Project Execution and Technical Services	5-Oct-2014		In progress: Project is progressing on schedule in accordance with the PETS IWPP. Separate bi-weekly progress reports are being submitted to the PUB.

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26	Review the system disruptions in January, 2014 in terms of the performance of facilities, equipment and resources; document unexpected outcomes and lessons learned; implement changes to improve future performance; and communicate these changes to the entire Hydro organization.	TA2, TA7		Chief Operating Officer	1-Dec-2014		In progress: Review has been completed and documented in Hydro's Integrated Action Plan. Key lessons and priority actions will be implemented and communicated by Dec 1, 2014.
27	Complete a risk/reward review of the option of installing on-line continuous gas monitors on all GSU transformers not currently equipped with this equipment.	RC1		Chief Operating Officer	30-May-2014		Complete: An overall plan has been developed to install on-line continuous gas monitors on all 22 GSU transformers. Seven transformers will receive this upgrade in 2015, and the remaining GSUs as well as other 230 kV critical units will be upgraded in subsequent years. This has been added to the 2015 Capital Budget Proposal.
28	Complete a risk/reward review of the option of requiring that all 230 kV terminal station transformers are equipped with their own 230 kV breakers.	RC7		VP System Operations and Planning	14-Nov-2015		Not Yet Started: The risk/reward review will begin in 2015. However, the Sunnyside replacement transformer will be installed with the enhanced 230 kv breaker configuration.
29	Complete a formal life assessment of Hydro's power transformers and revise the long term plan for transformer upgrades and replacements as appropriate.	RC14		Chief Operating Officer	31-Oct-2014		In Progress: ABB engaged to assist with this review. Condition information has been provided to ABB for 30 of Hydro's most critical transformers. ABB site inspections have been completed, and they have submitted their draft report.
30	Complete a risk/reward review of the option of requiring additional station service redundancy at all 230 kV terminal stations, and to install back-up service supply in locations recommended by Hydro's Internal Review.	RC25, ERR4	PUB 49	Chief Operating Officer	30-Mar-2015		In Progress: Asset Specialist 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.
31	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 remote to the transformers.	RC29	PUB 49	Chief Operating Officer	30-May-2014		Complete: Standard added.
32	Review the current location of the station service transfer switches at terminal stations that do not have a control building to ensure their locations are optimal.	RC30	PUB 49	Chief Operating Officer	Q4 2015		Not Yet Started: To be initiated in 2015 as a joint task with PETS and TRO Operations.
Air Blast Breakers							
33	Execute the annual 2014 plan for exercising air blast (AB) circuit breakers.	Liberty 20	PUB 22 PUB 23 PUB-24 1	General Manager, TRO	30-Nov-2014		In Progress: Breaker exercise program progressing in accordance with the plan submitted to the PUB on June 2. Forty (40) of 63 AB circuit breakers were exercised as of the end of August.

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34	Execute a 2014 plan for completing overdue testing and maintenance on critical AB circuit breakers.	Liberty 21, RC15	PUB 23 PUB 25 PUB-26 ¹	General Manager, TRO	30-Nov-2014		In Progress: Testing and maintenance on critical AB circuit breakers is progressing in line with the plan submitted to the PUB on June 2. Eight (8) of the 9 critical recovery AB circuit breakers have been completed to date.
35	Develop a plan for completing overdue testing and maintenance on remaining AB circuit breakers.		PUB 23 PUB-27 ¹	General Manager, TRO	15-Jun-2014		Complete: Plan submitted to the PUB on June 2, 2014.
36	Develop a plan for periodically operating AB circuit breakers from protective relays.	Liberty 23	PUB-28 ¹	General Manager, TRO	30-Nov-2014		Complete: A procedure was developed and placed into the Minatenance Manual effective August 1, 2014.
37	Complete an analysis of the DC system for B1L03 to determine the existence of any high impedance paths that may affect its operation.	RC2	PUB-29 ¹	General Manager, TRO	30-Sep-2014		Complete: A complete checkout for the DC circuit for breaker B1L03 at Sunnyside was completed on August 20. No requirements for follow-up work were identified.
38	Complete a review of the annual air system leak check PM to ensure adequacy.	RC20	PUB-30 ¹	General Manager, TRO	30-Sep-2014		In Progress: This review is ongoing and is on schedule. PMs and maintenace manual have been reviewed to identify improvements with a new maintenance procedure drafted, and will be finalized by Sept 30.
39	Complete a review of the current approach to AB circuit breaker re-lubrication, which addresses why the DOW 55 grease was not removed during the 2007 re-lubrication.	RC22, RC23	PUB-31 ¹	General Manager, TRO	30-Sep-2014		In Progress: This review is ongoing. Some internal interviews and external research have been completed, and opportunities for improving the documentation of Hydro's lubrication techniques and procedures have been identified. Remaining step is to document findings and recommendations in a summary report.
40	Develop a plan for implementing an accelerated/shortened PM cycle for AB circuit breakers.	Liberty 22, P1TA3(b)	PUB-32 ³	Manager LT Asset Planning	15-Jun-2014		Complete: Breaker PMs will be updated at the end of 2014 to reflect a reduction of the PM cycle to four years. With the accelerated replacement plan currently contemplated, only 21 of the 63 breakers will require their frequency changed from 6 to 4 years. See Hydro's August 1 report to the PUB.
41	Develop a program for the accelerated replacement of AB circuit breakers, with a priority on identifying the activities and areas to be completed during the 2014 maintenance season.	P1TA3(a), TA1, AM1, RC24	PUB-33 ³	Manager LT Asset Planning	1-Aug-2014		Complete: An external completed a report outlining a plan for the accelerated replacement of air blast circuit breakers starting in 2015 . This plan was submitted to the Board in the August 1 Air Blast Circuit Breakers Report.
42	Review and implement changes to internal procedures related to: a) the application of protective coatings to circuit breakers; b) ensuring that false indications of the open/close state cannot occur in any failure mode; and c) establishing a specific pass/fail criterion related to circuit breaker timing tests.	Liberty 33; P1TA3(c), RC10, 11, 13, and 21.	PUB-34 ³	General Manager, TRO	31-Oct-2014		Complete: Reviews of these internal procedures have been completed and the the necessary changes to internal procedures have been made. See the August 1 update report to the PUB.
Alarms and Recording Devices							
43	Develop a plan for updating event and data recording devices, systems and procedures to identify the key set of priority alarms, to provide for the monitoring of alarms, and to address staff training and equipment repair.	Liberty 27, 28, TA3, TA4, TA5, TA6	PUB-43 ³	General Manager, TRO	30-Nov-2014		Complete: Plans related to a review of DFR devices, identifying key priority alarms, monitoring of alarms, and related staff training have been developed and were indicated in a report to the PUB on August 1. All required activities will be competed by November 30, 2014.

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44	Complete an analysis of the implementation of a program to install modern digital relays for all major equipment such as 230 kV transformers.		PUB-44 ³	General Manager, TRO	17-Oct-2014		In Progress: The plan for completing this analysis has been developed and was indicated in report to the PUB on August 1. Implementation will follow in future years from this analysis.
ASSET MANAGEMENT & MAINTENANCE							
45	Implement process improvements related to the planning, scheduling and execution of work.	P2AM3, AM2, RC12		Chief Operating Officer, General Manager, GT and Diesel	30-Nov-2014		Complete: A committee with representation from PETS and the STWPS Council has established a standardized approach to planning, scheduling and executing the annual work plans, and the metrics used to track performance. A process to integrate resources into the completion of the plan is in place. Active management of execution is in place. Fully integrated resource plan has been developed and supporting resources have been procured, and this had been done as a combined effort involving PETS and Hydro operations.
PROTECTION AND CONTROL SYSTEMS							
46	Execute a 2014 plan to eliminate slow trip coils.	Liberty 32; P&C 1	PUB 35 PUB-39 ²	Manager Eng, P&C and Communications	30-Nov-2014		In Progress: An interim plan has been circulated for internal review and a final plan will be in place by October 1, 2014, to ensure improved winter readiness.
47	Develop a plan to: a) redesign existing breaker failure relay protection schemes to provide that breaker failure will be activated with either a 138kV or 230 kV breaker malfunction after a transformer failure; and b) install breaker failure relay protection for transformers in terminal stations where breaker failure relay protection is not in place.	Liberty 24 and 25; RC3, RC6, RC8; P&C 6	PUB-36 ² , PUB-37 ²	Manager Eng, P&C and Communications	30-Nov-2014		In Progress: Work is progressing on schedule in line with the plan reported to the PUB on June 16.
48	Develop a plan to include experienced P&C Technologists with response teams, where appropriate, starting in 2014.	Liberty 31, RC4, RC 19, P&C5	PUB-38 ²	General Manager, TRO	30-Sep-2014		In Progress: An interim plan has been circulated for internal review and a final plan will be in place by October 1, 2014, to ensure improved winter readiness.
49	Implement all other P&C and related Root Cause Analysis recommendations identified in Hydro's Integrated Action Plan.	Liberty 27; P2P&C4; P&C 2, 3, 4, and 7; TA8; RC9, 27 and 28.	PUB-36, 37, 42 ²	Manager Eng, P&C and Communications	15-Dec-2014		In Progress: Internal P&C resources assigned to coordinate the implementation of these 60 recommendations. Of these, 26 are complete, and another 27 (total 53) will be completed by Dec 15, 2014. The remaining 7 recommendations will be completed by Dec 15, 2015. TA8 and RC28 have been re-assigned to General Manager, TRO and Manager, Operations and Work Execution (G&T), TRO-C respectively.

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50	Execute a 2014 plan to repair and update terminal station relay cards.	RC16, RC17, RC18	PUB-40 2	Manager LT Asset Planning	30-Nov-2014		In Progress: Work is progressing on schedule and in line with the plan reported to the PUB on June 16. Fifty percent of all terminal station relay cards have been audited, and the remaining are being scheduled for auditing.
51	Document a protection philosophy and P&C engineering standard in 2014.	RC26; P&C 8	PUB-41 ²	Manager Eng, P&C and Communications	15-Dec-2014		In Progress: Work is progressing in line with the plan reported to the PUB on June 16, addressing 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) develop a plan by December 15 for completing all other standards at a later time.
52	Develop a plan for meeting the Company's substation and protection and control system resource requirements beginning in 2014.	Liberty 34, 35	PUB-48 2	General Manager, TRO	31-Jul-2014		Complete: A longer-term P&C resourcing plan to ensure base needs are met has been developed and included as part of the 2015 operating budget submission. Resource requirements for 2016 and beyond will be driven by the annual work planning process. The approach for meeting 2014 resource requirements was outlined in a report to the PUB on June 16.
53	Implement all outstanding recommendations from the 2010/11 P&C studies.	P&C3	PUB-27 1	General Manager, TRO	15-Dec-2014		In progress: Work is progressing in line with the plan reported to the PUB on June 16. To date, approximately 50% of the 2010 and 2013 P&C recommendations have been completed.
54	Implement all outstanding P&C recommendations from the 2013 winter events study.	P&C3	PUB-27 1	General Manager, TRO	31-Dec-2014		In progress: Work is progressing in line with the plan reported to the PUB on June 16. To date, approximately 50% of the 2010 and 2013 P&C recommendations have been completed.

TECHNOLOGY & COMMUNICATIONS INFRASTRUCTURE

NL HYDRO INTEGRATED ACTION PLAN - 2014 SUPPLY DISRUPTIONS AND POWER OUTAGES



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55	Complete all outstanding work in relation to the Hydro Place emergency generation system, and report to the PUB outlining availability risks and revised maintenance procedures.	Liberty 26, P2TCI6, TCI1, TCI2, TCI3, TCI4, TCI5	PUB 45 PUB-46 ²	General Manager Finance (NLH)	31-Aug-2014		Complete: NL Power now has Hydro Place on priority feed not to be dropped, and if interrupted, HP is considered a priority for reconnection. All Hydro Place emergency generation system components are fully operational. Replacement of the louver control system is complete, including design redundancy. Review of PM program for Diesel Generation System is complete. A second contractor has been added to specialize in the generator section, and engine maintenance checks have been adjusted from once to twice per year, regardless of hours. A critical spares list for all components has been developed. The PM program, including critical spares, has been reviewed by PETS.
56	Execute a 2014 plan for ensuring there is adequate emergency lighting in Hydro Place.	TCI6	PUB 45 PUB-47 ²	General Manager Finance (NLH)	30-Jun-2014		Complete: Emergency lighting has been installed May 26 in Hydro Place stairwells, as well as improvements implemented to the Hydro Place generator room emergency lighting.
57	Ensure that documents related to system restoration, including cold start procedures, are readily available in the IS office and in the Hydro Place ECC in hard copy format.	TCI7		General Manager Finance (NLH)	15-Apr-2014		Complete: Work completed by IS personnel in April, 2014.
58	Implement a process for the monitoring of critical alarms from the Hydro Place UPS on a real-time 24/7 basis.	TCI8		General Manager Finance (NLH)	30-Jun-2014		Complete: Critical alarms are now monitored, and appropriate personnel notified.
COORDINATION & COMMUNICATION WITH CUSTOMERS							
59	Implement a formal protocol for notifying customers, users and the general public in relation to pending supply issues and conservation requests.	P2CC5, CCC9, Liberty 42	PUB 50	VP Corporate Relations	30-Sep-2014		In Progress: Hydro and NF Power have developed a terms of reference and action plan for the development of a process for advanced notification.
60	Review the process used in January, 2014 for planning and coordinating rotating outages, both internally and with Newfoundland Power, and implement any changes necessary to improve and streamline this joint process.	CCC1	PUB 50 PUB 51	VP System Operations and Planning	14-Sep-2014		Caution: A meeting with NL Power to conduct a lessons-learned exercise was held. The draft procedure has been advanced, and a list of feeders with associated customer service priority has been integrated into the procedure. The completion date has been delayed to September 26. Next steps: Finalize the protocol and share with stakeholders.
61	Review the protocol for Hydro's use of NLP's hydroelectric and standby generation resources; and address NLP's request for real-time data related to the status of the island interconnected system.	CCC2 (a) and (b)	PUB 50 PUB 51	VP System Operations and Planning	30-Sep-2014		In Progress: Protocol has been discussed and agreed between the two utilities. A procedure has been drafted and will be finalized in the last week of September. The real-time data list is finalized, and EMS datapoints requested over the ICCP data link have been implemented. Next Steps: Finalize protocol and share with stakeholders.

NL HYDRO INTEGRATED ACTION PLAN - 2014 SUPPLY DISRUPTIONS AND POWER OUTAGES



Ref	Action/Activity	IAP Reference(s)	Interim Report Ref(s)	Accountable Title	Due Date	Status	Notes / Comments
62	Revise Hydro's Outage Communication Protocol to add a Daily Communications Summary coordinated with NLP, and to ensure the mutual sharing of notices and advisories prior to public release.	CCC3	PUB 50 PUB 51	VP Corporate Relations	30-Sep-2014		In Progress: A 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, is being added to revised outage protocol overview document. Monthly monitoring of compliance with the revised outage communication protocol is occurring with TRO, ECC, Customer Service Centre and Corporate Relations.
63	Develop templates that will be available in advance of potential supply/outage events to enable the preparation of public advisories and to ensure rapid response to public inquiries.	CCC4	PUB 50	VP Corporate Relations	30-Apr-2014		Complete: Advisory templates completed April 1 for conservation requests, outage advisories, and storm advisories.
64	Document and streamline the internal processes used for sharing and distributing information between System Operations and Corporate Relations in a potential supply disruption/outage situation.	CCC5	PUB 50	VP Corporate Relations	30-Sep-2014		Complete: System Operations Manager participated in an Issues Analysis exercise with internal stakeholders to develop a streamlined process associated with communications during outages. TRO, CCC and ECC staff trained on new protocol. Completed in May.
65	Develop a list of key customers and power outage stakeholders.	CCC6	PUB 50	VP Corporate Relations	15-May-2014		Complete: Key customer/feeder lists received from the regions were formatted for consistency and completed and sorted as of July 24.
66	Investigate alternatives for managing customer calls in a supply disruption/outage situation, including overflow call options and IVR programming at high volume levels, and implement changes to ensure customer calls are answered in a more timely manner.	CCC7	PUB 50	VP Corporate Relations	30-Apr-2014		Caution: An alternative has been identified with a plan to be in-service in advance of the coming winter season. Necessary changes will be implemented by November 15th.
67	Update Hydro's list of priority feeders in its service territory, determine which feeders cover sensitive customers, and develop a feeder rotation list.	CCC8	PUB 50	Chief Operating Officer	30-May-2014		Complete: 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.
68	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	CCC9	PUB 50	VP Corporate Relations	30-Apr-2014		Complete: Instruction developed by System Operations and revised with NL Power. It is being implemented starting on the first week of June, 2014.
69	Develop with NLP a joint Outage Communications Strategy to guide near and longer-term improvements to customer contact technologies and telephony, including multi-channel communication options such as SMS text messaging or other broadcasting options.	Liberty 37 and 41	PUB 50 PUB 51	VP Corporate Relations	15-Jun-2014		Complete: Terms of reference, activities and action plan have been defined. NL Power and Hydro are collaborating to identify synergies and plan near and longer term strategies for customer contact and outage technologies. Hydro and NL Power will be assessing technical details in September.
70	Complete joint customer research with NLP to better understand customer outage-related informational needs and expectations, including requests for conservation.	Liberty 38	PUB 50 PUB 51	VP Corporate Relations	31-Aug-2014		Complete: Joint research was carried out with NLP and concluded with a better understanding of customers' informational expectations, including requests for energy conservation.

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71	Ensure that pre-winter season stress testing of any enhancements to customer-facing outage support systems is incorporated into the implementation process.	Liberty 39		VP Corporate Relations	30-Sep-2014		In Progress: Significant enhancements to customer-facing outage support systems may be minimal in 2014 given NL Hydro's intention to replace these systems within 12-24 months. Any stress-testing requirements for 2014 will be determined by the end of Q3.
72	With respect to the Hydro Place building and its facilities, review Hydro's business continuity plans and contingencies and update as necessary to ensure continued operations and the availability of critical outage response support systems in the event of a supply disruption to the Hydro Place building.	Liberty 40		General Manager Finance (NLH)	31-Aug-2014		Caution: Several actions have been completed to ensure continued operations and the availability of critical outage response support systems in the event of a supply disruption. See IAP 55 (in progress) and IAP 56, 57 and 58 (complete) for details. NL Hydro has also engaged a consultant to complete a business impacts analysis related to the loss of Hydro Place services or facilities. Recommendations stemming from the analysis will be implemented at a later point but before November 30. Next step is to update PMs per recommendations and final review by Engineer.
73	Develop a coordinated and robust Storm/Outage Communication Plan with NLP which documents protocols, plans and templates to guide communications during major events.	Liberty 44	PUB 50 PUB 51	VP Corporate Relations	15-Jun-2014		Complete: Hydro and NL Power have completed the terms of reference and action plan. A draft joint storm and outage communications plan is now complete.
74	Complete a joint "lessons learned" exercise with NLP.	Liberty 45	PUB 50 PUB 51	VP Corporate Relations	15-Jun-2014		Complete: Joint lessons learned conducted on May 20th.
75	Commit to a formal effort, sponsored by the senior executives of both Hydro and NL Power, to work together jointly in formulating goals, protocols, programs, and other activities that will improve operational and customer information and communications coordination, leading to the development of identified membership on joint teams, operating under senior executive direction and according to clear objectives, plans, and schedules.	Liberty 46	PUB 50 PUB 51	VP NL Hydro	15-Jun-2014		Complete: NL Power and Hydro executives have met in May, June and July 2014 and will be meeting monthly to oversee the actions and improvements being undertaken by both utilities to enhance customer service and inter-utility coordination.
EMERGENCY RESPONSE AND RESTORATION							
76	Update Hydro's Severe Weather Preparedness Protocol and checklist to incorporate lessons learned from the 2013 and 2014 outages as well as best practices from other utilities.	ERR1		Chief Operating Officer	15-May-2014		In Progress: Hydro has implemented a draft Severe Weather Protocol Preparedness Protocol, incorporating best practices from other utilities. A review of the protocol occurred on September 17 and final amendments will be circulated for implementation by October 1, 2014
77	Update the TRO emergency response plans to reflect lessons learned from the January, 2014 transformer failures, including specified methods for dealing with transformer fires.	ERR2		Chief Operating Officer	30-Sep-2014		Complete: Section 4.19 of the emergency response plan for fires in terminal stations has been revised.

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78	Ensure that records indicating the PCB contents of all oil-filled transformers and equipment are available in hard copy both locally and at an alternate location.	ERR3	PUB 49	Chief Operating Officer	30-Sep-2014		In Progress: To be implemented by TRO's Safety, Health and Environment department.
79	Complete a lighting improvement plan at the Holyrood plant in 2014.	ERR5		Chief Operating Officer	1-Sep-2014		Caution: Design completed and equipment being procured. On schedule for installation by September 30, 2014

NOTE:

- 1 Color-Shaded References refer to Key Priority Actions in the PUB Interim Report dated May 15, 2014, page 57.
- 2 Updated NL Hydro Integrated Action Plan submitted to the PUB on June 2 and July 23 in accordance with PUB recommendation 52.

FOOTNOTES:

- 1 Plan outlined in a Report to the PUB on June 2nd
- 2 Plan outlined in a Report to the PUB on June 16th
- 3 Plan outlined in a Report to the PUB on August 1st