Nova Scotia Utility and Review Board

IN THE MATTER OF The Public Utilities Act, R.S.N.S. 1989, c.380, as amended

Post-Tropical Storm Arthur

Progress Update

February 1, 2016
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1.0 INTRODUCTION

Nova Scotia Power Inc. (NS Power or the Company) is pleased to provide this update on Post-Tropical Storm Arthur (Arthur) Action Plans, covering the period from August 1 to December 31, 2015.

On October 10, 2014, the Nova Scotia Utility and Review Board (UARB or Board) issued its Order¹ concerning NS Power’s preparedness and response to Post-tropical Storm Arthur (PTS Arthur). The Board ordered that NS Power implement 32 directives from the Liberty Consulting Group’s (Liberty) September 9, 2014 Report,² and address and respond to 11 recommendations from other Intervenors.

NS Power has been implementing the recommendations and reporting regularly to the UARB. A summary of NS Power’s progress since the filing of the last report dated August 13, 2015 is provided in Section 2. Updates on specific open items are provided in Sections 3-6.

In a letter³ to NS Power dated January 7, 2015, the Board added three further directives, referencing pages 13-14 of the Liberty report dated December 15, 2014.⁴ An update on NS Power’s progress on these three directives from the Board is provided in Section 4 of this Report.

Subsequent to progress reports from NS Power⁵ with respect to these recommendations and directives, the Board issued a Supplemental Decision on September 21, 2015. In its Supplemental Decision, the Board directed NS Power to continue reporting on the status

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¹ M06321, Board Order October 10, 2014.
⁴ Liberty Consulting Group, Post-Tropical Storm Arthur, Comments on NS Power’s Storm Response Reports, M06321, Exhibit A-12, December 15, 2014.
⁵ NS Power filed reports on October 31 and November 17, 2014, and February 17, May 15, and August 13, 2015. All these reports are on the UARB website under Matter No. M06321.
of the remaining outstanding action items, and further directed that such reporting should be biannual or at any time NS Power wished to inform the Board of progress.

Since the last Progress Update of August 13, 2015, NS Power submitted a letter to the Board dated August 22, 2015 with respect to the Company’s Outage Map, a copy of which is included as Appendix A to this Report.
## SUMMARY

In this Report, NS Power submits updates on each of the following open items, and proposes closing Items 12, 13, 14, and 16 as well as Findings 57, 58, and 59 of the September 21, 2015 Supplemental Decision.

<table>
<thead>
<tr>
<th>Items</th>
<th>Topic</th>
<th>Update Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items 12, 13, 14 and 16</td>
<td>Damage Assessment</td>
<td>These four items are updated in Section 3 below. NS Power recommends that all four items now be closed.</td>
</tr>
<tr>
<td>Findings 57, 58, 59</td>
<td>Damage Assessment</td>
<td>Related to Items 12, 13, 14 and 16. NS Power recommends that these items now be closed.</td>
</tr>
<tr>
<td>Items 19, 22, 23, 24, 25, 26, 27</td>
<td>Outage Communications and Technology</td>
<td>Section 4 below describes the continuing implementation of these items.</td>
</tr>
<tr>
<td>Item 3.1</td>
<td>ETR Strategy</td>
<td>This item remains open. The update for this item is contained in Section 4.4.</td>
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<tr>
<td>Item 3.2</td>
<td>Stress Testing</td>
<td>This item remains open. The update for this item is contained in Section 4.3.</td>
</tr>
<tr>
<td>Items 29, 30</td>
<td>Vegetation Management and Storm Hardening</td>
<td>This item remains open. The update for these two items is contained in Section 5 below.</td>
</tr>
<tr>
<td>Item 42</td>
<td>Smart Grid</td>
<td>This item remains open. The update for this item is contained in Section 6 below.</td>
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</table>
3.0 DAMAGE ASSESSMENT

3.1 Update on outstanding Damage Assessment action items

NS Power provides the following update on PTS Arthur Review Items 12, 13, 14 and 16. With this report, NS Power submits that all the Damage Assessment (DA) improvements directed as part of this review have been completed.

3.2 Item 12: Conduct a thorough review of Damage Assessment performance and identify action plans

NS Power has conducted a thorough review of DA performance through:

- Review of UARB PTS Arthur Report (Items 12, 13, 14 and 16)
- PTS Arthur Post-Event Critique
- Internal stakeholder interviews
- External industry interviews

A comprehensive DA action plan that included all of the findings and actions from these reviews was developed and a DA Improvement project was initiated to address the list of actions. The DA Action Plan consists of 45 actions, for which the action statuses are as follows:

- Completed 40
- Cancelled 5
- Total 45

NS Power considers the review of DA performance and the subsequent development of an action plan complete, and recommends Item 12 now be closed.
3.3 Item 13: Develop expertise in using a projection tool such as statistical damage projection

NS Power engaged a software consulting and development firm to assist in the development of statistical damage projection tools. The completed deliverables are summarized in the following table.

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Assessment Application</td>
<td>Capture early damage information on a sample of feeder sections outlining travel conditions and damage to plant. Results will be used to predict magnitude of damage by feeder, substation, operating depot, territory, etc.</td>
<td>Complete</td>
</tr>
</tbody>
</table>
| Enhancements to Damage Collection Application | Redeveloped data collection application offering the following enhancements:  
  - Improved navigation  
  - Asset searching and locate  
  - Simplified collection form with predefined checklists  
  - Automated repair hours calculation based on collected damage  
  - Crew Feeder Assignments  
  - Crew Status Tracking: % Complete | Complete   |
| Upgrade Collection Hardware      | Update damage collection hardware to ensure Damage Assessors have appropriate damage collection tools.                                                                                                      | Complete   |
| Damage Assessment Operations Dashboard | Near-real-time geographical and tabular view of assessment information, including: projected damage forecasted by Early Assessment, summarized view of damage by operational depot, percentage of feeder assessed for damage, and recommended Estimated Time to Restore (ETR) based on forecasted assessment damage. | Complete   |

These new tools will contribute to NS Power’s ability to make more informed initial ETRs, make resource plans for the most effective restoration, and make better area-
specific ETRs. NS Power expects the statistical projection tools implemented in 2015 will evolve and mature with operational storm experience.

NS Power recommends Item 13 now be closed.

3.4 Item 14: Correct the problems in determining damage level and the resources needed

NS Power is effectively deploying DA teams when required. The current DA roster includes expanded internal NS Power teams and teams from contracted DA service providers. NS Power’s current DA readiness is outlined below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA Organizational Readiness</td>
<td>Organization structure reviewed and augmented.</td>
</tr>
<tr>
<td></td>
<td>Activation checklists updated.</td>
</tr>
<tr>
<td></td>
<td>DA Kits inventoried and replenished.</td>
</tr>
<tr>
<td>DA Tools</td>
<td>Damage collection application software upgraded, tested and available for DA resources.</td>
</tr>
<tr>
<td></td>
<td>Supplemental damage collection hardware has been procured.</td>
</tr>
<tr>
<td>DA Roster</td>
<td>Internal DA roster recruitment complete. 131 Internal resources available.</td>
</tr>
<tr>
<td></td>
<td>Two DA contracts in place with service providers. Additional 34 resources available.</td>
</tr>
<tr>
<td>DA Roster Training</td>
<td>Quarterly training program developed</td>
</tr>
<tr>
<td></td>
<td>On-line training modules designed, approved and deployed to DA resources.</td>
</tr>
</tbody>
</table>

NS Power is well positioned to effectively deploy DA. NS Power recommends that Item 14 now be closed.
3.5 Item 16: Address the issue of DA quality and timeliness

NS Power is committed to improving DA quality and timeliness. As demonstrated above, a comprehensive project was carried out to address the opportunities for improvement. NS Power has successfully completed the actions and is confident that these actions will improve the quality and timeliness of DA information. NS Power recommends that Item 16 now be closed.

3.6 Supplemental Decision Findings of September 21, 2015

The Board’s directions with respect to DA items were outlined in paragraphs 57-59 of the Supplemental Decision:

[57] Regarding the Damage Assessment ("DA") items, in NSPI's report of May 15, 2015, it stated:

Findings indicate that reliance on sourcing DA from a traditional contractor is not a viable option for NS Power due to a lack of commercial DA contractors with a presence in the province. NS Power will continue to engage its third party line inspection contractor for transmission line DA and will explore opportunities to engage them on distribution DA. The working group is now investigating non-traditional DA utilizing social media data.

[58] Although NSPI lists this task as completed, no further information has been provided regarding engaging external transmission line assessors for distribution assessments or on the status of utilizing social media data. The Board considers this task of exploring use of third-party damage assessors as still outstanding pending final review of all the damage assessment action items.

[59] In addition, a number of tasks (Items 12, 13, 14, and 16) have been deferred to a later implementation date (Q4 of 2015) than originally identified, which raises concerns about preparedness during the current hurricane season and upcoming winter storms. NSPI is directed to provide a firm completion date for these items and to report on actions and measures taken to ensure the effectiveness of its solutions.6

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6 M06321, Supplemental Decision 2015 NSUARB 221, September 21, 2015.
Findings 57 and 58

With regards to Supplemental Decision Findings 57 and 58, NS Power provides the following response.

NS Power has contracted with two service providers for DA resources. Both service providers are experienced in transmission and distribution line inspection and maintenance, and will supplement NS Power’s internal DA roster. Service agreements are in place with these providers and resources are available for immediate deployment.

During the DA Review, NS Power considered how social media streams might be integrated into the DA process. Integrating social media data into the DA process has proven impractical at this time. Upon further exploration the following challenges were identified:

- There would be potential safety hazards associated with customers collecting damage information near potentially energized primary/secondary lines.

- The practicality of converting user-submitted photos into meaningful DA data is limited.

- The reliability of the data would be uncertain.

Although it may hold some future promise, with third party DA service providers in place, NS Power is not actively pursuing social media data as a DA action.

NS Power recommends that Findings 57 and 58 now be closed.
Finding 59

The final reports on Items 12, 13, 14, and 16 are provided in Section 3.1 above.

NS Power recommends that Finding 59 now be closed.
4.0 OUTAGE COMMUNICATIONS AND TECHNOLOGY

4.1 Item 19: Redesign the automated Outage Line to provide individualized outage restoration status to all callers.

The Board’s direction with respect to this item was provided in the Supplemental Decision as follows:

[60] Regarding Item 19, listed as completed under the Communications and Technology Project, the Board requires confirmation that the automated Outage Line that has been redesigned to provide individualized outage restoration status to all callers, is fully functional and has been appropriately stress tested. Also, since this task appears dependent upon completion of the expanded ETR strategy (Item 25), it seems that Item 19 should still be considered as incomplete and outstanding.7

On November 2, 2015 the redesigned NS Power Outage line was implemented to provide individual restoration status to all callers. This has been in production and working as designed since its release. NS Power is in agreement that Item 25 is still open pending the full implementation of the ETR strategy to the Outage Map, and Item 19 remains open until the end-to-end outage communications load test is successfully completed, currently planned for Q1 2016.

4.2 Item 22: Fortify the website so that high demand does not render the site unusable.

The Board’s direction with respect to this item was provided in the Supplemental Decision as follows:

[61] Regarding Item 22, also listed as completed, NSPI has stated that it engaged a third-party vendor, iFactor, to develop a new customer preference portal and outage map, with some website enhancements being targeted for completion by October 31, 2015. This suggests that Item 22 is

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7 M06321, Supplemental Decision 2015 NSUARB 221, September 21, 2015.
still not fully completed. Stress testing to confirm satisfactory functionality and performance in high volume situations is also needed.

Furthermore, the apparent failure of NSPI's outage map on Saturday August 22, 2015, as noted in the Board's letter of August 25th, also suggests that Item 22 does require further consideration before being deemed completed.8

The updated www.nspower.ca is in production, as reported in the February 17, 2015 Action Plan Update and NS Power's letter to the UARB dated March 16, 2015.9

NS Power fortified the existing Outage Map, deploying a new server with increased capacity to host the outage page. The internet bandwidth has increased from 100 Mbits per second to 1 Gbit per second from both internet service providers. Load testing of the web page concluded on January 30, 2015 and the updated Outage Map was successfully deployed to production on February 10, 2015. This work was approved by the UARB under NS Power's Capital Work Order 46739.10

A summary of the August 22, 2015 event was reported in NS Power's September 4, 2015 letter to the UARB. Working with NS Power's outage management system vendor, the Company immediately commenced an investigation to determine the root cause of the error. The root cause was confirmed to be an error in the outage management system software from a recent upgrade made after the April 18, 2015 launch, which was not detected in load testing. The vendor has corrected the error and NS Power has successfully tested the updated software under multiple load tests. This event was specifically related to a software error in the outage management system and was not usage related.

8 M06321, Supplemental Decision 2015 NSUARB 221, September 21, 2015.
9 Provided as Appendix B.
10 M07100, Letter UARB to NS Power, approving CI# 46739.
4.3 Item 3.2: Stress Testing - NS Power should stress test the new high-volume outage communications solutions prior to go-live.

The new Outage Map went into use on November 19, 2015 (for a subset of customers) and provides outage details, ETRs, and causes to all individual customers. This map provides detailed information on all outage events in contrast to the existing/previous outage map that showed outage details for events with greater than 100 customers. To mitigate risk, NS Power is planning a phased implementation approach that includes customer usability testing, functional testing and customer focus groups. Launch of the new Outage Map to all remaining customers is planned to take place in May 2016, after successful completion of load testing of the full end-to-end outage communication systems.

To date, NS Power has received positive feedback on the new Outage Map from over 1000 customers.

4.4 Item 3.1: ETR Strategy - The Project created to revise the ETR strategy and high-volume outage communications should be closely monitored until completion.

As the updates below indicate, significant progress has been made on this project, though some items remain targeted for completion over the remainder of 2016. NS Power continues to keep Liberty Consulting Group updated on its progress, which updates included on-site project reviews held on May 13 and November 19, 2015.

4.5 Item 23: Enhance the website to let customers report outages, and get individualized outage restoration status.

Web reporting of power outages will be part of the new Outage Map functionality. On November 19, 2015 the new Outage Map was launched to a subset of our customers and employees in a dual production mode along with the existing outage map. The plan is to launch the new Outage Map to all customers in May 2016. The “Report an Outage”
feature implementation will follow shortly thereafter with a planned launch to customers for this functionality to customers in June 2016.

4.6 Item 24: Enhance the website to provide the same individualized outage information to customers logging-in as the automated outage line.

On November 19, 2015, a new Outage Map was launched to a subset of customers and employees in a dual production mode. This map provides all outage details to each individual customer, similar to the outage line. As part of the phased implementation approach, this map is planned to fully replace the existing map in May 2016. In June, additional functionality will be enabled, allowing any customer to report and get information about specific individual addresses. This will provide the same level of information as provided to customers who call the outage line.

4.7 Item 25: Revise the ETR Strategy and expand it to provide ETRs for all customers affected.

The Estimated Time to Restore (ETR) strategy was updated to provide ETRs to all customers in January 2015 (formerly provided to customers who were on outage events affecting customers greater than 100). This methodology has been incorporated into all planning and future deliverables of the Outage Communication Project and all ETR strategies in storm planning. Customers who call the toll-free outage line are now able to hear their detailed updates for each individual power outage.

The new Outage Map described above, (presently in production for a subset of customers), offers outage details, ETRs, and causes to all customers. This map provides detailed outage information on all outage events. The full launch of the new

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11 The new Outage Map portrays all outages down to the individual customer, with the smallest category being differentiated at “less than 5 customers affected” to ensure customer privacy.
Outage Map is planned to take place in May 2016, after completion of stress testing of the full end-to-end outage communication systems.

4.8 Item 26: Pursue other multi-channel communication options.

Two-way text message and outbound email notifications are being designed as the final phase. Individual customers will be able to select which communications channels they prefer that NS Power use to send them information updates. This is called a “preference portal.” Design of these new multi-channel communication offerings is underway, with a target date to offer them to customers as the final phase of this project by end of 2016.

NS Power currently uses Facebook and Twitter to communicate pre-storm preparations, for example, posting messages that crews are positioned throughout the province and ready to respond when conditions are safe. This pre-storm messaging also directs customers to preparedness and safety sections on the “Outage Centre” page at nspower.ca. Social media is also used in severe storms to provide updates on when and how many customers have been restored by location. When customers ask about their individual ETRs on Twitter and Facebook, they are directed to the Outage Map. The NS Power outage communications web series (on YouTube and Facebook) provides general storm safety preparation and restoration information.

4.9 Item 27: Educate customers and other key constituents on the new outage communication options.

In December 2015 a three-part series of web videos were launched to the public focusing on storm preparedness, education and storm planning. These videos educate customers on how to be prepared, and show how NS Power prepares and engages during large weather events across multiple departments.

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As of January 27, 2016, the videos have received more than 22,800 views on Facebook and YouTube. They have generated positive conversation and engagement on social channels with 125 Facebook shares and 15,410 Twitter impressions. They also earned positive media coverage on CBC and in the Chronicle-Herald, which together were shared 1,195 times on Facebook. In only a few weeks, the series exceeded expectations and both public and internal employee reaction to the series has been resoundingly positive. They will continue to be used as a communication tool for our customers during outages.

In addition to this new method of education, a tutorial video will also be delivered in June 2016 to support all the new outage communication portal tools being offered and made available on nspower.ca.
5.0 VEGETATION MANAGEMENT AND STORM HARDENING

With the submission of the 2016 Annual Capital Expenditure (ACE) Plan, NS Power has proposed the method and pace of addressing the following items. NS Power awaits the 2016 ACE Decision.

5.1 Item 29: Develop a comprehensive plan for widening 69 kV line corridors.

In its September 21, 2015 Supplemental Decision, the Board conveyed these findings:

[46] The Board has considered the information filed by various parties in this proceeding. NSPI has provided detailed information on the improvements to the 69 kV ROW to increase reliability. The Board accepts NSPI's proposed improvements to the 69 kV ROW as outlined in its letter and memorandum dated July 31, 2015. NSPI is proposing to carry out these improvements at a capital cost of approximately $36 million over 8 years starting in 2016. This expenditure would normally be approved as part of a general rate application or submitted as a capital expenditure application. The Board is prepared to entertain an application from NSPI.

[47] NSPI, in its 2015 ACE Plan, included an expenditure of $600,000 for 2015 for this project, but deferred it pending the outcome of this proceeding. The Board approves this expenditure.14

NS Power has submitted the first year of the eight-year 69kV Right-of-Way Widening Plan as part of the T010 Transmission Right-of-Way Widening routine in the 2016 ACE Plan. With administrative overhead (AO) included, the 2016 expenditure will be $5.4 million, which means that the total amount will be $43.2 million over the 8 year period. All 69kV rights-of-way in the province will be widened to a new standard of either 30 metres or 40 metres depending on the criticality of the transmission line. If this expenditure is approved, NS Power is ready to start the program following the Board’s Decision on the Company’s 2016 ACE Plan.

5.2 Item 30: Develop a comprehensive plan for reclaiming and/or widening the overgrown ROW corridors.

In its September 21, 2015 Supplemental Decision, the Board conveyed these findings:

[36] A circumstance where it will take 32 years for the distribution vegetation management program to become sustainable causes the Board significant concern.

[37] At the same time, the Board understands the desire of stakeholders to not increase rate pressures. In any event, a formal increase in the annual right-of-way budget would be done during the course of a general rate proceeding where all of NSPI's expenses and revenues are examined. It would be inappropriate for the Board to unilaterally increase one expense item without seeing the impact on others.

[38] The Board is intrigued by the stakeholder discussion concerning innovative financing options and directs NSPI to pursue that issue and report back to the Board the results of those discussions. NSPI should report the results of those discussions in one of its semi-annual reports.\(^\text{15}\)

During the four-month NS Power-led Vegetation Management Stakeholder Engagement process, the stakeholders involved made it clear that affordability was a critical item for them when it came to options for increasing the rate of the NS Power vegetation management program. As noted in paragraph 38 quoted above, innovative financial options such as deferring or capitalizing vegetation management costs were discussed with stakeholders.

In the 2016 ACE Plan, NS Power submitted an increase to the D010 Distribution Right-of-Way Widening routine, in order to increase the rate of managing all of the distribution rights-of-way in the province to a sustainable vegetation state. The standard width for distribution rights-of-way is 6 metres. For those rights-of-way that do not meet the standard width, the right-of-way would be widened by removing all vegetation and

\(^{15}\text{M06321, Supplemental Decision 2015 NSUARB 221, September 21, 2015.}\)
managing it to a sustainable state. As mentioned in the Final Stakeholder Report on
February 6, 2015 there are approximately 10,875 kilometres of distribution right-of-way
that needs to be managed to a sustainable state at an average rate of $8,500 per kilometre.
By increasing the Distribution Widening routine to $3 million (which includes $0.5
million of AO) in 2016, approximately 290 kilometres will be widened this year.
However, in order to significantly increase the rate of managing the remaining 10,585
kilometres to a sustainable state, the Distribution Right-of-Way capital routine would
need to be increased to $11.4 million (which includes $1.9 million of AO) per year for a
period of 10 years starting in 2017 (as shown in the table below). After the ten-year
period all distribution rights-of-way would be managed to a sustainable state and the on-
going vegetation management operating costs could be significantly reduced.

Please refer to Figure 1 for the planned 10-Year Vegetation Management Funding.

Starting with the 2017 ACE Plan program, NS Power will be requesting to spend $11.4
million annually in the D010 Distribution Right-of-Way Widening capital routine.
**Figure 1: 10-Year Vegetation Management Funding**

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<tr>
<td>Reactive Tree Trimming</td>
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<td>Sustainable</td>
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<td>Customer Requested</td>
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<tr>
<td><strong>Distribution Subtotal</strong></td>
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<tr>
<td>Transmission Preventative</td>
<td>2.8</td>
<td>2.8</td>
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<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>T&amp;D Subtotal (Operating)</strong></td>
<td><strong>7.5</strong></td>
<td><strong>7.5</strong></td>
<td><strong>7.5</strong></td>
<td><strong>7.5</strong></td>
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<td><strong>Distribution Widening Subtotal (Capital)</strong></td>
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<td><strong>T&amp;D Grand Total</strong></td>
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6.0 SMART GRID TECHNOLOGY

Item 42: Further assessment of broader application of smart-grid technology.

NS Power continues its long-term project on developing a Smart Grid Strategy. At this early point no specific opportunities concerning cost-effective benefits for outage monitoring have been identified.
7.0  CONCLUSION

NS Power is pleased to update the Board on the Company’s recent progress on the outstanding action items. The Company’s next scheduled report is due on August 2, 2016.
September 4, 2015

Doreen Friis  
Regulatory Affairs Officer/Clerk  
Nova Scotia Utility and Review Board  
1601 Lower Water Street, 3rd Floor  
P.O. Box 1692, Unit “M”  
Halifax, NS  B3J 3S3

Re:  Review of Nova Scotia Power Incorporated's ("NSPI") State of Preparedness and Response to Post-Tropical Storm Arthur (M06321/P-401.38)

Dear Ms. Friis:

Nova Scotia Power Inc. (NS Power) is in receipt of the Utility and Review Board’s (Board) letter dated August 25, 2015.

Please accept this letter as NS Power’s response.

On August 22, 2015, at approximately 17:05, lightning struck the Tufts Cove Generating Station sub-station resulting in the loss of power to approximately 75,000 customers in Dartmouth, Porter’s Lake, Musquodoboit Harbour and Halifax. Following safe operating procedures, power was restored promptly to all customers. Approximately 60% of affected customers, primarily in Halifax, had their power restored within 50 minutes of the start of the outage event. The remaining customers, located primarily in Dartmouth, had power restored within 85 minutes of the event or by approximately 18:30.

As noted in the Board’s letter, customers were able to access the outage map during the outage from NS Power’s website; however, power outage information was not being shown. Although all core systems were functioning, an error was experienced in the transfer of information from the outage management system to the outage map and telephone system. The error was immediately detected and, utilizing back-up plans, the interface was back in-service within two hours, by which time the power outage had been restored.

Working with NS Power’s outage management system vendor, the Company immediately commenced an investigation to determine the root cause of the error. The root cause was confirmed as an error in the software from a recent upgrade made after the April 18, 2015 launch which was not detected in the testing. The vendor has corrected the error and NS Power has successfully tested the updated software under high load conditions.
As a result of this incident, NS Power has delayed the planned changes to our telephone outage line to speak ETRs and restoration details for outage events affecting less than 100 customers. This change was scheduled to take place on August 31, 2015. Although originally on track for an August 30th roll-out, NS Power has been conducting further quality assurance testing and will update the Board when this change is implemented. We are working with the vendor to have this quality assurance testing completed as soon as possible.

NS Power’s Data Centre did experience a power interruption as a result of this outage event. However, as a result of the back-up generator, all core systems that enable outage information for our customers were in-service and operating throughout the outage. There was no technology down-time and customers were able to report outages via telephone throughout the event.

If the Board requires any further clarification with respect to this matter, do not hesitate to contact the undersigned.

Yours truly,

Brian Curry
Regulatory Counsel
March 16, 2015

Doreen Friis
Regulatory Affairs Officer/Clerk
Nova Scotia Utility and Review Board
1601 Lower Water Street, 3rd Floor
P.O. Box 1692, Unit “M”
Halifax, NS B3J 3S3

and Response to Post-Tropical Storm Arthur – July 5, 2014 – M06321/P-401.38

Dear Ms. Friis:

Nova Scotia Power Inc. (“NS Power”) is in receipt of the Utility and Review Board’s (“Board”) letter dated February 20, 2015 confirming the Board reviewed NS Power’s Progress Update on Post-Tropical Storm Arthur, filed on February 17, 2015. In its letter, the Board included the following statement with respect to the Common Outage Information Implementation Project:

The Board notes the Update on Item #27 respecting the development of a new outage communication option. This issue had been previously identified by the Liberty Consulting Group ("Liberty") as a concern, given the timeline for its implementation. Nevertheless, it is noted that the Project Charter attached as Appendix B maintains NSPI original timeline, with no comment, or amendment, to address Liberty's concern. The Board notes that the Province could receive its first hurricane of the 2015 season before the work is implemented. In that event, this could leave NSPI exposed to further communication problems.

Please accept this correspondence as a further update on this matter.

On page 10 of its report on its review of NS Power’s Storm Response to Post-Tropical Storm Arthur dated December 14, 2014, Liberty Consulting Group made the following
comments on the milestones for the Common Outage Information Implementation Project (“Project”):

The fact that NS Power has chosen to sequence this new solution after OMS implementation could prove problematic. The hurricane season begins in early July. Until these changes are made, a storm could result in continuing customer experience problems. If either of these solution implementations is delayed for any reason, NS Power also runs the risk of heading into the winter season and continued customer experience challenges. Liberty recommends that the Board pay particular attention to ensuring that the implementation is appropriately prioritized and NS Power is held accountable for expediting progress. Since this solution is dependent upon the replacement of the OMS, that process merits close attention as well.

The implementation date for the Project is still scheduled for August 31, 2015. However, NS Power regularly reviews the progress of the Project and is looking at opportunities to advance the schedule, including opportunities to implement functionality in phases in advance of the full solution implementation.

The replacement Outage Management System (“OMS”) is the source of outage information communicated to customers. The ability to provide individual outage information is dependent on the implementation of the OMS Replacement Project which remains on schedule to go live in April, 2015.

NS Power is working with vendors and industry experts to look at possible options for advancing the Project schedule including the use of pre-built hosted solutions and solutions currently in production at other utilities. The Company is also reviewing risk mitigation options in the event of any delay in the implementation of the OMS Replacement Project.

In parallel with execution of the Common Outage Information Implementation Project, the Company has also taken a number of other steps that will improve customer information in advance of the 2015 hurricane season. Specifically, the Company has made the following changes:
1. **Updated NS Power Website**

The updated [www.nspower.ca](http://www.nspower.ca) is in production (Item 22), as reported in the February 17, 2015 Action Plan Update. NS Power has deployed a new server with increased capacity to host the outage page. The internet bandwidth has increased from 100 Mbits per second to 1 Gbit per second from both internet service providers, Bell Aliant and Eastlink. Load testing of the web page concluded on January 30, and the updated outage map was successfully deployed to production on February 10, 2015.

2. **Customer Communications During Outage Events**

(a) The Customer Care ESRP sub-plan has been updated with a new specific “storm role” called a Global Message Coordinator, responsible for implementing and monitoring global and area specific messages regularly throughout a Level 3 or 4 storm until all customers are restored.

(b) Normal Customer Service business hours have been suspended during major outage events, and will be suspended during future events as appropriate (Item 21).

(c) A revised Estimated Time to Restore (“ETR”) strategy (Items 19, 25) was used during NS Power’s response to the storm event on January 27, 2015. In storm events, preliminary ETRs are now determined when 95 percent of customers on a feeder will be restored. Public messaging speaks to these ETR’s and also communicates when the “last customer restored” is expected. Customers are advised that as a damage assessment is completed, we will field validate ETRs, which may revise ETRs that were initially provided, based on updated information as it is received.

(d) In advance of approaching storms, the Customer Care Center, the Key Account Managers and the NS Power website now provide updates to customers for storm preparation and planning. NS Power also uses social media to provide key messages on preparedness prior to the storm arrival.
(e) A Critical Customer Outage Line has been established and communicated to all customers in the program. This allows critical customers calling NS Power to bypass queues or automated telephone menu options in order to speak directly with our Customer Care Representatives. During Level 3/4 storm events, details of critical customer requirements are shared with the Provincial Emergency Management Office (“EMO”) Emergency Operations Centre. (Item 35)

(f) The homepage NSPower.ca was used during the last storm to provide a storm message “banner” to customers with a link to our online Outage Center Page.

NS Power understands the importance of improving the outage communication experience for customers and remains committed to making improvements in a cost effective and timely manner. NS Power will provide status reports on this matter in future updates to the Board.

Yours truly,

Brian Curry
Regulatory Counsel