

Requests for Information

Q. What lessons and required changes has Newfoundland Power identified to date from its experience in December 2013 and January 2014 including those relating to system operations, equipment maintenance, emergency preparedness, coordination with Newfoundland and Labrador Hydro, communication with customers, required conservation initiatives, its planning process and its load forecasting process? Include in the answer whether Newfoundland Power has yet started to implement any initiative and the status of any identified lessons and required changes.

A. 1. Introduction

Newfoundland Power routinely undertakes assessment of its performance following significant system events.¹ The Company is currently reviewing its preparation for and response to the system events of January 2-8, 2014.²

The reviews which are underway have focused on three broad aspects of Newfoundland Power's performance. The first relates to lessons learned from the performance of the Company's transmission and distribution systems during the electrical system distress of January 2-8, 2014. A principal feature of this performance was the stress to the transmission and distribution systems caused by successive rotating power outages over a sustained period of time. Another related feature was system stress related to cold load pickup.³

The second aspect of Newfoundland Power's performance which is being reviewed is the Company's customer service and communications. The electrical system distress of January 2-8, 2014 created stresses for many Newfoundland Power customers. These stresses revealed limitations in some of the Company's key customer service delivery mechanisms.

The third aspect relates to Newfoundland Power's generation facilities. Newfoundland Power owns and operates 139 MW of generating facilities which are critical to the Island Interconnected System at times of supply shortfalls from Newfoundland and Labrador Hydro ("Hydro"). Changes in how Newfoundland Power operates these facilities may be warranted in light of the events of January 2-8, 2014.

¹ Such assessments followed previous significant system events such as the January 11th, 2013 system outage and Hurricane Igor. For a description of some of the improvements which resulted from the assessment following the January 11th, 2013 system event, see the response to Request for Information PUB-NP-025.

² Please see the response to Request for Information PUB-NP-006 regarding the Company's forecasting process; the response to Request for Information PUB-NP-015 regarding conservation initiatives; and the responses to Requests for Information PUB-NP-028 and PUB-NP-029 regarding Newfoundland Power's emergency operational preparedness.

³ The rotating power outages and cold load pickup are described in greater detail in the response to Request for Information PUB-NP-022.

The following identifies the three broad aspects of Newfoundland Power's performance which are under active consideration based upon Newfoundland Power's current assessment of the events of January 2-8, 2014.

2. Transmission and Distribution Systems

The system events of January 2-8, 2014, particularly the lengthy customer outages and the successive rotating power outages revealed capacity and control limitations on the Company's transmission and distribution systems. Cold load pickup following the sometimes lengthy successive customer outages during the period created equipment capacity overload conditions in a number of areas. These conditions tended to extend customer outages beyond what they would have been absent the overloads.⁴ A few of Newfoundland Power's distribution feeders were difficult to rotate due to their size.⁵ Approximately 40% of Newfoundland Power's distribution feeders currently are not controlled by automated switching at a substation breaker. Distribution feeder size and lack of automation limited Newfoundland Power's flexibility when undertaking rotating power outages.⁶

A number of potential changes have been identified which may improve future electrical system performance, such as the ability to deal with cold load pickup or improve efficiency of electrical system operations when undertaking rotating power outages. Newfoundland Power is currently assessing transmission and distribution system improvements which will address capacity and control limitations, possible sectionalizations and increased automation in response to the events of January 2-8, 2014.⁷

3. Customer Service

During the system events of January 2-8, 2014, the effectiveness of Newfoundland Power's customer service and communications was limited by (i) Newfoundland Power's awareness of the status of matters on the Island Interconnected System, and (ii) the performance of Newfoundland Power's customer service delivery mechanisms. To a degree, these matters are interrelated.

⁴ The overload conditions did not present material jeopardy to Newfoundland Power's transmission and distribution systems because protection and control mechanisms operated as designed to protect the systems. However, the operation of protective devices such as fuses and breakers required manual intervention by Company staff. The additional time required for manual intervention in circumstances of electrical system distress served to extend outages beyond what they otherwise would have been.

⁵ Because cold load pickup can be up to twice the diversified peak load, particularly large distribution feeders cannot be rotated with the same ease in system distress conditions as smaller feeders or feeder sections. Additional sectionalizing of larger distribution feeders will permit more effective rotation of power outages.

⁶ Practically, the lack of automation requires switching to be done by technologists or line crews. In electrical system distress conditions, the Company may not have the human resources available to permit switching to be done for some feeders at certain points in time.

⁷ Based on further engineering review of the electrical system changes identified to date, the Company may propose capital projects to implement these changes through either supplementary 2014 capital budget applications or the Company's 2015 annual capital budget application.

At times during January 2-8, 2014, Newfoundland Power did not have reliable information concerning demand on the Island Interconnected System or the status of Hydro's generation.⁸ This limited the extent of meaningful communications that Newfoundland Power could have with its customers.

During the period January 2-8, 2014, Newfoundland Power's website was a critical customer service delivery platform, receiving approximately 947,000 visits. At times during the period, the Company's website was unavailable to some customers.⁹ In addition, the Company has received feedback that some outage status messages posted to the website were confusing to some customers.

Newfoundland Power reduced the number of times customers who called the Customer Contact Centre encountered busy signals by approximately ½ from January 2-8, 2014 compared to January 11-13, 2013. However, customers still encountered approximately 41,000 busy signals during the January 2-8, 2014 period.

A number of potential changes have been identified which may improve future customer service delivery in periods of electrical system distress. They include improved availability of data relating to operations on the Island Interconnected System.¹⁰ They also include improvements to Newfoundland Power's website reliability and customer communications content in outage situations. Finally, an assessment of the Company's telephonic capabilities during outages will be undertaken.

4. Newfoundland Power Generation

During December 2013 and January 2014, Newfoundland Power was required to run its generation plants more frequently.¹¹ This is an increase from historical experience.¹² This has potential implications for management of the water resources associated with Newfoundland Power's hydroelectric generating plants. It also

⁸ For greater detail on system operating information, and coordination and communication between Newfoundland Power and Hydro, see the response to Request for Information PUB-NP-002.

⁹ The website was unavailable to some customers for 44 minutes on January 2nd, 2014 and for 13 minutes on January 5th, 2014. In both instances, the website was working to maximum capacity and displayed a message to some customers indicating the website server was too busy.

¹⁰ This matter has already been identified by Newfoundland Power and Hydro as deserving the utilities' joint attention.

¹¹ Hydro requested Newfoundland Power to run its generation resources on 29 days in December 2013 and January 2014. Hydro typically requests Newfoundland Power to run its generation for a number of reasons. One is economic dispatch for the Island Interconnected System. Another is peak management. A third is to relieve short-term system limitations (i.e. voltage support).

¹² Historically, Newfoundland Power has run its 97.5 MW of hydroelectric generation to support peaks in the December-March winter period. Without a change in water management practices for these facilities, the additional demands upon this generation implies a reduced future capacity to support peak through the winter period. Newfoundland Power's 41.5 MW of thermal generation has historically been used very sparingly for supporting system peaks.

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1 potentially alters the system expectations for availability of some of the Company's
2 thermal generating plants.

3
4 Newfoundland Power's Greenhill gas turbine is a gas turbine generator on the Burin
5 Peninsula that provides 20 MW of capacity to support the Island Interconnected
6 System. For 39½ hours on January 3-5, 2014 the Greenhill gas turbine was shut
7 down because its fuel supply was exhausted.¹³

8
9 A number of potential changes have been identified which may improve the
10 reliability of Newfoundland Power's generation facilities. These include possible
11 changes to current water management practices including increased water storage for
12 some hydroelectric systems. They also include increased fuel storage facilities as
13 well as reliability assessments for some thermal generating plants.

14 **5. Implementation**

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16 All of the foregoing reviews are ongoing.

17
18 However, Newfoundland Power has concluded that no substantial modification to (i)
19 customer energy and demand forecasting, (ii) transmission and distribution standards
20 and maintenance, (iii) emergency preparedness planning, or (iv) current energy
21 conservation programming appear justified by the events of January 2-8, 2014.¹⁴

22
23 In addition, during rotating outages undertaken on January 2-8, 2014, Newfoundland
24 Power in consultation with Hydro implemented improvements to the coordination
25 process for rotating feeder outages which materially reduced average outage duration
26 experienced by customers.¹⁵

¹³ The Greenhill gas turbine is equipped with effective fuel oil capacity of 190,000 litres. This provides 24-32 hours of operation. A blizzard on January 3rd and 4th, 2014 closed the highway access to the Burin Peninsula where the turbine is located.

¹⁴ The Company's view that substantial modifications are not required in any of these areas does not preclude incremental changes which have been characteristic of Newfoundland Power's general management ethic of continuous improvement.

¹⁵ These improvements are described in response to Request for Information PUB-NP-020. The reduced customer outage duration is shown in the response to Request for Information PUB-NP-022.