

Q. Please describe the system(s) supporting the Outage Management/ Restoration process, detailing user roles (including second-role), functionality, system interfaces, and use of the system in blue-sky, weather, and equipment-related events. Also specify vendor, version, recent enhancements, and any plans to replace, upgrade and enhance.

A. Newfoundland Power uses 4 key systems to support the Outage Management / Restoration process: the Supervisory Control and Data Acquisition (“SCADA”) system, the Outage Management System, ClickSoftware, and the Informer application. During large storms or major electrical system events, Newfoundland Power’s Communications Hub provides a human interface for managing and coordinating the communication of outage information both internally and externally.

SCADA System

The SCADA system is used to remotely monitor and control the Company’s electricity system. It is used by the System Control Centre (“SCC”) Power System Operators and remotely monitors and controls 71 substations, 25 hydro generators, 2 gas turbines, 187 distribution feeders and 78 power transformers. Engineering and Operations employees also use real-time and historical data from the SCADA system for system assessment, analysis and planning purposes. In total there are approximately 40,000 individual data points monitored and controlled through the SCADA system.

The current SCADA system is a Schneider/Telvent OASyS™ system originally installed in 1999. A significant upgrade of the operating system and the real-time server hardware was completed in 2004. The server hardware platform for the SCADA system is the Hewlett Packard (“HP”) Alpha. The SCADA system’s operating system is Tru64, a Unix-based operating system developed by HP.

The Company plans to replace the SCADA system as a multi-year capital project in 2015/2016.¹

Outage Management System

The Outage Management System is used to create, process, dispatch, and close outage reports from customers. The system also maintains records of outage calls and response times and records interruption reports for managing reliability statistics. During normal business hours the Customer Contact Centre (“CCC”) will answer and record outage reports and the SCC Power System Operators will dispatch customer outage reports or trouble calls to Powerline Technician crews using the system. After normal business hours, the SCC Power System Operators will assume responsibility to answer and record

¹ See Report 6.4 *SCADA System Replacement* of Newfoundland Power’s 2015 Capital Budget Application for details regarding the Company’s plans to replace its SCADA system.

1 outage reports, with the exception of large scale weather and electrical system events
2 where the CCC will remain in operation.

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4 During large scale weather and electrical system events responsibility for dispatching
5 customer trouble calls will move to the local area office or to the Central Dispatch team².
6 This allows SCC Power System Operators to focus on operation and restoration of the
7 electrical system.

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9 The Outage Management System is an internally developed application originally
10 installed in 2003. The system currently uses the .Net Framework 4.0.³ The most recent
11 enhancements to the Outage Management System were completed in 2012. These
12 enhancements included: (i) allowing customers to report outage tickets via the
13 Company's website or mobile devices; (ii) improved functionality for grouping and
14 assignment of related outage tickets; and (iii) integration with the Company's scheduling
15 and dispatch software providing the ability to electronically dispatch and complete outage
16 tickets in the field via a mobile computing application.

17
18 Newfoundland Power is expecting to replace its existing Outage Management System
19 with a commercial Outage Management System within the 5 year horizon.⁴ Modern
20 outage management systems provide more advanced functionality through integrations
21 with SCADA systems and geographic information systems ("GIS"). This functionality
22 includes predictive analysis and automatic grouping of related outage calls, as well as
23 automatic customer outage notifications.

24 *ClickSoftware*

25
26 The Company uses two commercial ClickSoftware applications for outage management
27 and restoration; ClickSchedule and ClickMobile. ClickSchedule is used by the
28 Company's Central Dispatch group to automatically schedule work to Powerline
29 Technician crews. During weather and system events with a high volume of outage calls,
30 a schedule optimizer is used to automatically create a work schedule based on outage
31 location and reported time to reduce driving time and increase efficiency during
32 restoration.

33
34 ClickMobile is a mobile application that allows work orders to be electronically
35 dispatched and completed in the field using laptops in Newfoundland Power vehicles.
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² Over the past few years, Newfoundland Power has deployed mobile computing in all of its line trucks, implemented a computerized operations dispatch system, and expanded its use of geographic information systems for its vehicles and electrical system assets. To leverage this technology and to improve line crew scheduling and efficiency, Newfoundland Power has established a Central Dispatch team to manage scheduling of planned work during regular working hours.

³ .Net Framework is a software framework developed by Microsoft that runs on Microsoft Windows.

⁴ See Report 6.5 *GIS Improvements* of Newfoundland Power's 2015 Capital Budget Application for details regarding the Company's Geographic Information Systems Improvement initiative.

1 Using this software, Powerline Technician crews have access to the outage information
2 and can update estimated restoration times and job status.
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4 Newfoundland Power is currently using version 8.1 of the ClickSoftware applications.
5 ClickSchedule and ClickMobile were installed in 2010 and 2011, respectively. The
6 Company is currently completing a project in 2014 to allow for larger jobs requiring
7 multiple days and/or multiple vehicles to be scheduled using the system.
8

9 ***Informer***

10
11 Newfoundland Power's Informer application provides the Company with the ability to
12 communicate outage information to customers. Outages are recorded in the Informer
13 system with details such as the locations affected, estimated restoration time ("ETR"),
14 reason for the outage, and other relevant information. Customers can view this
15 information on the Company's website in a list or map format. Customers can also listen
16 to a recorded message with the same outage information by calling the CCC.
17

18 During normal system operations, the Informer system is typically updated by staff at the
19 SCC. This responsibility is transferred to the Communications Hub during large storms
20 or system events, such as those on January 2-8, 2014. Further information about the
21 process for updating ETRs using the Informer system can be found in Newfoundland
22 Power's response to request for information PUB-NP-103.
23

24 Informer is an internally developed application and was designed and implemented by
25 Newfoundland Power in 2012 to replace its legacy outage notification platform. The
26 system currently uses the .Net Framework 4.0. There are currently no plans to upgrade or
27 enhance the Informer application. Further information about the design and user
28 operation of the Informer system can be found in Newfoundland Power's response to
29 request for information PUB-NP-124.