Q. GENERAL PROPERTY

STANDBY DIESEL GENERATORS – DUFFY PLACE & CLARENVILLE (POOLED), p. 57 of 81, $665,000

PUB 24.0
In previous widespread power outages involving NP buildings, what was the Company's experience with regard to a continuation of service? Please provide relevant excerpts of any relevant reports that were produced as a result of these outages.

A. ***Historical Experience – 1984 and 1994***

The most recent storm that resulted in widespread power outages involving Company buildings over a period of days occurred in December 1994. At that time, a severe winter storm caused widespread damage to the transmission and distribution systems on the Avalon, Burin and Bonavista Peninsulas, and resulted in widespread power outages lasting several days. Prior to that event, the most recent power outage of similar magnitude occurred as a result of a 1984 sleet storm.

The major outages of 1984 and 1994 were largely confined to the eastern portion of the island. At the time of the 1994 outage, the backup generator at the Company's Kenmount Road building provided sufficient power for the building to be fully operational. The backup power supply at the Duffy Place building did not have sufficient capacity to provide full power. However, there was sufficient capacity to provide power to a call centre, some offices, and operations areas.

During the outages of 1984 and 1994, the Company's power restoration efforts would undoubtedly have been affected to some extent as a result of power interruptions affecting its buildings. However, the report entitled *Blackout '94: Storm Report January, 1995*, which was filed with the Board following the 1994 outage does not include any specific reference to the impact of power supply problems at Company buildings. The Company was unable to locate a copy of any report on the 1984 outage.

Then and Now – A Comparison

Then
In those Company buildings affected by the power interruptions of 1984 and 1994, lighting and heating systems, and electrical equipment such as building cranes, would not have been functional, creating challenges for employees working there. In that regard, the first order of business would have been to acquire an emergency generator to provide sufficient power to enable people to work productively and effectively.

At the time of the 1994 outage, the organization and management of Newfoundland Power's power restoration efforts was still paper-based, and executed with minimal

support from information technology. Once a heated and lighted workspace had been secured, these activities could be pursued in a normal manner.

In addition to the system information provided by the SCADA System, the Company relies on information obtained via trouble calls from individual customers to gauge the scope and nature of storm damage sustained by the electrical distribution system. In 1984 and 1994, information from trouble calls was recorded on paper and sorted manually. The paper reports were then reviewed by an outage management team who would assess the scope and nature of individual problems based on their experience and knowledge of the system, and dispatch line crews as required to address identified problems.

Due to the paper-based process, the Company's ability to update customers on the ongoing progress of power restoration efforts was limited. To begin with, it would have been impractical to track and assess progress on an ongoing basis given the large volume of paper. Secondly, system repair and power restoration was the priority, given the large numbers of customers without power in winter conditions. As a result, information that could be made immediately available to customers was limited.

Now

In the more than 10 years that have passed since the last major extended power interruption, there have been many changes in the way Newfoundland Power's operations are managed. Advances in information technology have facilitated changes in the manner in which power restoration efforts are conducted, and in the Company's ability to communicate with its customers during major outages.

These changes have enabled the Company, since 1994, to reduce the size of its regular workforce from more than 800 to fewer than 600 employees. While these changes have made the Company more efficient and helped to control costs, they have also greatly increased the Company's reliance on information technology.

In 2005, power restoration efforts for distribution system outages are coordinated by the regional offices and supported by the System Control Centre and the centralized Customer Contact Centre. Customer trouble calls are received at the Customer Contact Centre, where employees use personal computers to enter relevant information into an outage management database. The latest information on power restoration efforts is made available to customers through the TVD automated outage information system.

The outage management database serves as the central control hub for interactions between the regional offices, the System Control Centre and the Customer Contact Centre. Coordination of power restoration efforts is led by employees in the regional offices, whose ability to respond quickly and effectively to customer requirements and power system problems is dependent on the availability and accuracy of the information contained in the database.

When a major storm causes widespread damage to the electrical system, customers begin calling immediately to report the loss of their electrical service. Customer trouble calls are still an important source of information for pinpointing specific damage and assessing the scope and nature of the outage.

The computer-based outage management system now provides power restoration teams with ready access to information and the ability to sort through and analyze large quantities of information. This allows those directing power restoration efforts to efficiently identify and prioritize problems on the electrical system, and to plan and track the dispatch of crews and equipment in the most effective manner. These benefits are of particular importance when the outage is a lengthy one affecting large numbers of customers and large portions of the electrical system.

All of the buildings housing Newfoundland Power's operations are equipped with battery-powered emergency lighting. However, with the exception of the St. John's buildings (Kenmount Road, Duffy Place and the System Control Centre) and the Carbonear building, none of the buildings have standby generators that would allow operations housed in the buildings to function normally. In particular, they would not have enough power to run the Company's computer systems or provide for basic needs such as heat and light. If a major extended outage, such as one caused by a major winter snow or ice storm, were to affect the Newfoundland Power's Corner Brook or Gander buildings, for example, the Company's ability to fully utilize its technological resources to restore power in those areas would be hampered.

As a result, power restoration would take more time, and information on the Company's progress in restoring service would not be available to customers on a timely basis.

Concluding

Newfoundland Power's reliance on computer systems, personal computers, shared servers, and network infrastructure is much greater today than it was in 1994. Critical systems include computer systems to support the Customer Contact Centre technology used to handle customer inquiries; a customer outage reporting system; a switching application for the safe restoration of power; and electrical distribution system control via the SCADA application.

These technological tools facilitate more efficient operations, and are the tools that Newfoundland Power personnel are accustomed to using in the performance of their duties. Organizing and directing a major power restoration effort without the ability to sort, analyze and display the large volume of electrical system and customer trouble information would require the staff of a regional office to rely on inefficient paper-based methods, lengthening the time required to restore electrical service.

Without back-up generation at its regional operations centres, the Company would be unable to employ its information technology resources to provide those managing and carrying out power restoration efforts with the necessary information and electrical system control to ensure efficient and timely restoration of electrical service.

Other Canadian Utilities

During the last two years, Nova Scotia Power Inc.'s (NSPI) electrical system has been affected by several lengthy and widespread power outages caused by weather. Following the latest storm, in November 2004, the Nova Scotia Utility and Review Board (UARB), at the request of the Province of Nova Scotia, commenced a review of NSPI's storm response. A report submitted by an independent consultant selected by the UARB included the following recommendation in relation to NSPI's preparedness for extended service interruptions:

> "NSPI should make sure it has the appropriate contingencies in place to deal with the implications of power failures in its storm response and call centers, network downtime, and failures of any of the systems or technologies supporting storm response and communication. **This includes establishing back-up power**, redundant systems and databases, spare parts and equipment, on-call or on-site support, as well as manual business continuity plans." (emphasis added) [1]

Newfoundland Power is of the view that the consultant's recommendations for NSPI are equally applicable to its own emergency preparedness. Adequate back-up generation in the Company's regional offices will ensure that Newfoundland Power is able to provide an effective and efficient power restoration response in the event of a major outage affecting Company buildings.

[1] Liberty Consulting Group, *Report on Nova Scotia Power Company's Transmission System and Outage Communications*, March 4, 2005, p. 61.