C. ENSURING SYSTEM RELIABILITY THROUGH 2017

C.1 Public Policy Context

C.1.1 Supply Planning for the Island Interconnected System

Hydro has historically held the exclusive right to develop hydro-electric generation on the Island of Newfoundland.[113] In addition, to enable it to plan generation requirements Hydro has had the ability to require customers to provide load forecasts for periods up to 20 years.[114] Hydro was granted the exclusive right to supply power on the island of Newfoundland in 2012.[115]

Responsibility for supply planning for the Island Interconnected System under the existing regulatory framework also rests with Hydro.[116] The degree, if any, to which this responsibility may be practically shared with Hydro's affiliates such as Nalcor is not entirely clear to Newfoundland Power. But Nalcor planning decisions which could clearly impact reliability on the Island Interconnected System may need to be revisited.[117]

In the mid-1990s, the Board was given the statutory responsibility to ensure that adequate electrical system planning occurs for the Province. This responsibility includes oversight of supply planning for the Island Interconnected System.[118] In addition, the Board has broad powers to conduct enquires, set priorities, and, if necessary, re-allocate existing supply when a

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113 See for example, section 14 of the *Hydro Corporations Act*, R.S.N. 1990 which provides "…exclusive right and franchise…" to "…all power developed after January 1, 1975 from new hydro-electric sites.".

114 See *Hydro Corporations Act*, R.S.N. 1990, s.13.

115 See *An Act to Amend the Electrical Power Control Act, 1994,* the *Energy Corporation Act* and the *Hydro Corporation Act, 2007,* S.N.L. 2012, c. 47, s. 3. This exclusive right of supply does not apply to either Newfoundland Power's existing generation resources or generation resources used exclusively in emergency circumstances.

116 This responsibility was affirmed in the Province's 2007 *Energy Plan* where it was indicated that Hydro would continue its lead role as the long-term planning entity for the electricity sector (see *Energy Plan*, page 47).

117 See, for example, Hydro's *Technical Note, Labrador-Island HVdc Link and Island Interconnected System Reliability, October 30, 2011* filed as Exhibit 106 in the Board's Muskrat Falls Review. This technical note concluded "While the impact of these outage events could be further mitigated with the application of additional combustion turbines on the Island Interconnected System, given the low probability of the event and minimal impact of unsupplied energy, Nalcor, in the interest of minimizing overall cost to the customer, has opted to apply load rotation and other means to minimize the impact to customers should an event occur." The events of January 2-8, 2014 appear to provide sufficient justification to reassess the appropriate application of additional combustion turbines on the Island Interconnected System.

118 See the *Electrical Power Control Act, 1994,* S.N.L. 1994, c. E-5.1, s.6, *et. seq.* This establishment of the Board's oversight of the supply planning in the *Electrical Power Control Act, 1994,* was part of a comprehensive change in the regulatory framework in the Province. One result of this change was that Hydro became a fully-regulated public utility within the meaning of the *Public Utilities Act.*

shortage in power supply exists or is anticipated.[119] The Board's responsibilities are subject to limitation in the form of Provincial Cabinet directives.[120] An appropriate process by which Hydro's responsibility for supply planning for the Island Interconnected System might be overseen has been the subject of Board consideration.[121]

There have been a series of Provincial Cabinet directives which have impacted supply planning on the Island Interconnected System. Since the mid-1990s, additions to Hydro's supply portfolio have typically been exempted from the Board's oversight by Provincial Cabinet directive. These exemptions have applied to new Hydro and Nalcor facilities, customer co-generation, and interruptible contracts.[122] One result of this is that the Board has not yet been required to approve a material addition to Hydro's supply portfolio for the Island Interconnected System. The Board has, however, recognized that such exemptions do not alter its responsibility to ensure that electricity supply for the Island Interconnected System is adequately planned and operated reliably.[123]

Since acquiring statutory oversight of supply planning, the Board has not yet fully considered a material addition to Hydro's transmission capacity for the Island Interconnected System. In 2011, Hydro proposed to add a 188 km, 230 kV transmission line from Bay d'Espoir to Western Avalon to satisfy "…an immediate need for enhancements to the transmission system east of Bay

[119] See the *Electrical Power Control Act, 1994*, S.N.L. 1994, c. E-5.1, s. 6 *et seq.*

[120] See, for example, the *Electrical Power Control Act, 1994,* S.N.L. 1994, c. E-5.1, ss. 5.1 and 5.2 and the references to these direct powers in Order No. P.U. 7 (2002-2003), page 25, Order No. P.U. 14 (2004), page 20, and Order No. P.U. 8 (2007), pages 5-6.

[121] See, for example, the commentary regarding integrated resource planning in Order No. P.U. 14 (2004), pages 147-149 and in Order No. P.U. 8 (2007), pages 58-60.

[122] See, for example, the *Granite Canal Hydroelectric Project Exemption Order,* which exempted Hydro's last commissioned hydroelectric facility on the Island Interconnected System. The *Newfoundland and Labrador Hydro-Corner Brook Pulp and Paper Limited Exemption Order*, (O.C. 2000-489/490) exempted a 15 MW cogeneration project of Corner Brook Pulp and Paper Limited. The *Newfoundland and Labrador Hydro-Abitibi Consolidated Inc. Stephenville Operations Exemption Order* (O.C. 2004-210) exempted an interruptible supply contract between Hydro and Abitibi-Consolidated's Stephenville facility.

[123] See *Reference to the Board Review of Two Generation Expansion Options, etc., Report to Government,* March 30, 2012 where the Board clearly recognized both the potential large societal costs related to outages and its responsibility to ensure the electricity supply for the Island Interconnected System is adequately planned and operated reliably at the lowest possible cost consistent with an acceptable level of reliability (at pages 99-100). The Board's review of the Muskrat Falls project was limited as the project was exempted from regulatory oversight by the *Muskrat Falls Exemption Order* (O.C. 2013-342).

d'Espoir."[124] Notwithstanding the indicated urgency, Hydro chose not to pursue this project citing the higher priority of the Muskrat Falls review.[125]

While material additions to Hydro's supply portfolio on the Island Interconnected System have typically not been subject to Board approval, the condition of Hydro's existing generating stations has. In particular, Hydro's thermal stations and the capital expenditures necessary to keep them reliable has been the subject of recurring Board review for well over a decade.[126]

All Newfoundland Power's capital additions are subject to prior approval by the Board.[127] While Newfoundland Power has made only modest additions to its generating capacity since the mid-1990s, they all required Board approval.[128] For planned replacement, refurbishment or construction of generation facilities, the Board has indicated that Newfoundland Power should consult with Hydro so as to avoid duplication of services.[129]

At Hydro's last 2 general rate applications, in 2003 and 2006 respectively, the issue of resource planning arose. In dealing with the 2003 general rate application, the Board observed:

> The Board has authority and responsibility to ensure that adequate planning occurs in the production, transmission and distribution of least cost reliable power in the Province. While the Board will make no order at this time with respect to Integrated Resource Planning, the utilities may be required by the Board, consistent with its mandate, to participate in a generic process to address issues and benefits associated with Integrated Resource Planning.[130]

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124 See Hydro's 2012 Capital Budget Application, *Upgrade Transmission Line Corridor- Bay d'Espoir to Western Avalon*, September 2011, page 16.
125 See Hydro's letter to the Board of December 7, 2011.
126 See, for example, *Prime Thermal Asset Remaining Life Assessment*, May 19, 1999 which assesses Hydro's 3 principal thermal generating plants, the 490 MW Holyrood facility, the 50 MW Hardwoods Gas Turbine and the 50 MW Stephenville Gas Turbine. Capital expenditures for each of these plants were considered, and approved, by the Board in 2013 (see **B.1: Chronology of Electrical System Events**, page 6*)*.
127 See s. 41 of the *Public Utilities Act.*
128 For example, see Order No. P.U. 17 (1997-98) which approved the Rose Blanche Brook hydroelectric plant or Order No. P.U. 36 (2002-2003) which approved a 2.5 MW portable diesel generating plant.
129 See Order No. P.U. 35 (2003), page 8.
130 See Order No. P.U. 14 (2004), page 149.

After Hydro's 2006 general rate hearing, the Board chose to defer an Integrated Resource Planning exercise pending release of the Province's *Energy Plan* and completion of various rate design reviews and conservation and demand management studies, then underway.[131]

Hydro has primary responsibility for supply planning on the Island Interconnected System. Since the mid-1990s, the Provincial cabinet has routinely exempted material additions to Hydro's supply portfolio from regulatory oversight. Proceedings before the Board such as annual utility capital budget applications do consider aspects of the reliability of supply. However, to date, a comprehensive public review of the reliability of the Island Interconnected System has not been undertaken.

C.1.2 Current Transparency of System Operations

It is an essential requirement of electrical system operation that the generation available in all points in time is sufficient to meet the total customer demand.[132] Whenever there is insufficient generation available to serve total customer demand, some customers will not be served. In cases where transmission capacity is constrained, some customers may be at increased risk of not being served.[133] The ability of a utility to understand, in both real-time and forecast terms, available generation and customer demand is essential to understanding (i) when future customer outages might reasonably be expected to occur and (ii) when existing customer outages might reasonably be expected to end.

Newfoundland Power has limited access, in real-time terms, to information respecting available generation and customer demand on the Island Interconnected System. The link between Hydro's ECC and Newfoundland Power's SCC provides Newfoundland Power with information on total Hydro supply online (with detail on thermal generation (Holyrood and gas turbines)). The link does not provide any information on Hydro's generation which is available but not

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131 See Order No. P.U. 8 (2007), page 60.

132 See the response to Request for Information PUB-NP-022, page 1, line 19 *et. seq.* for further information on this requirement and the consequences when it is not met.

133 Transmission capacity constraints effectively limit the amount of generation that is available on a locational basis to serve customers. For this reason, transmission constraints can have similar customer impacts to system wide insufficiency of generation.

serving demand. Newfoundland Power does not have real-time access to forecast reserve margins available on the Island Interconnected System.

Historically, Newfoundland Power has not had access to Hydro's short-term supply and demand forecast for the Island Interconnected System. While communication between Hydro's ECC and Newfoundland Power's SCC has provided the Company with information for daily operational coordination, planned outage coordination and electrical system response, this information has not been provided as a matter of daily routine.[134] This information has become available since January 2014.[135]

In circumstances where there is sufficient generation available to serve total customer demand, the fact that Newfoundland Power does not have real-time and short-term forecast information on the Island Interconnected System is typically of little consequence.[136] This is the case for the vast majority of hours in any given year.

In circumstances where there is insufficient generation or transmission capacity available to serve total customer demand, the primary result of this lack of information is the restriction it places on Newfoundland Power's ability to confidently inform its customers of the status of their electricity supply. There are also operational restrictions associated with this lack of information

[134] See the response to Request for Information PUB-NP-002 for details of coordination between Newfoundland Power and Hydro.

[135] This information became available following the Board's commencement of its inquiry into the supply issues and power outages on the Island Interconnected System in December 2013 and January 2014.

[136] Currently, Newfoundland Power's under frequency load shedding system automatically responds to sudden losses of supply on the Island Interconnected System. When such a response occurs, Newfoundland Power will not be aware of the specific incident on the Island Interconnected System which gave rise to the loss of supply (i.e., which Hydro generator went offline). However, the disruption in customer service from such responses typically affects relatively few customers for a relatively short period of time. Newfoundland Power will typically learn the details of the specific incident from Hydro as part of the restoration of service after the automatic load shed. See the response to Request for Information PUB-NP-022, page 1, lines 27 to 33 for further information on under frequency load shedding.

including the provision of advance notice to customers of rotating power outages.[137]

C.2 Near-Term Actions

C.2.1 General

Hydro is the *de facto* system operator for the Island Interconnected System.[138] Hydro's system operating instruction *T-001 Generation Loading Sequence And Generation Shortages* outlines the sequence of steps that Hydro will undertake in the operation of the Island Interconnected System to minimize outages to customers in the event of a system generation shortage. This operating instruction does not indicate (i) what information regarding the adequacy of generation resources to meet forecast load should be made available to Newfoundland Power or its customers or (ii) when or how customers served by the Island Interconnected System are to be notified of the adequacy of forecast generation supply.

Section 4 of the *Electrical Power Control Act, 1994* requires the Board in exercising its regulatory powers to have due regard for sound public utility practice. For this reason, the Board in its Investigation should consider regulatory protocols in other jurisdictions to assess what, if anything, regulatory experience indicates might be appropriate for adoption in operations on the Island Interconnected System.

Information flow between utilities is critical to the reliable operation of electrical systems. Insufficient communication between utilities has been found in other assessments to have contributed to system failures. Similarly, limited real-time visibility of system operations on neighboring interconnected systems has been identified as a contributor to system failures.[139]

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[137] See the response to Request for Information PUB-NP-048 which indicates advance notice to customers of rotating power outages would practically require short-term forecasts of supply and demand. But such operational restrictions are varied. For example, diminished reserve margins provide an indication that active voltage management on the electrical system may be warranted or that curtailable customers should be taken offline. Lack of real-time or short-term forecast information makes Newfoundland Power completely dependent upon Hydro to inform the Company when management of voltage or curtailment of customers is likely to be required to support the Island Interconnected System.

[138] A *system operator* is the person or entity that is responsible to monitor and control an electrical system.

[139] See, for example, the Staff Report of the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation into *Arizona-Southern California Outages on September 8, 2011*, April 2012. In that report, staff found that utilities' failure to share analysis and coordinate seasonal planning contributed to the blackout. Similarly, transmission operators' limited real-time visibility outside their systems resulted in inadequacy of situational awareness of external contingencies that also contributed to the blackout.

Communications and information flow improvements between participants on an integrated electrical system are not uncommon following major system disruptions.[140]

Newfoundland Power has undertaken a preliminary assessment of regulatory protocols in other jurisdictions relating to information availability and customer notice in situations of possible system generation shortage. This assessment indicates that provision of industry standard forward-looking information regarding supply and demand on the Island Interconnected System will contribute to improved transparency in situations of possible system generation shortage. This assessment also indicates that the establishment of clear regulatory guidelines governing when and how customers will be advised of the adequacy of forecast generation supply would be consistent with sound public utility practice in North America.

By improving the availability of information and establishing clear regulatory guidelines governing customer communication, the Board will not improve the adequacy of generation supply on the Island Interconnected System. These steps will, however, help ensure that customers served by the Island Interconnected System receive timely information concerning the reliability of that service. These steps, which are outlined in section ***C.2.2: System Wide Actions*** below, are capable of implementation before the 2014-2015 winter season.

The supply issues and power outages, which are the subject matter of the Investigation, are largely related to Hydro's generation supply planning and bulk transmission operations. Newfoundland Power has assessed the performance of its electrical system during January 2-8, 2014 and identified certain changes which would improve system performance. These changes, which are outlined in section ***C.2.3: Newfoundland Power Actions*** below, are also capable of implementation before the 2014-2015 winter season.

[140] For example, following a system event in December 1994 on the Island Interconnected System, Newfoundland Power and Hydro ensured that 4 separate means of communication existed between the Company's SCC and Hydro's ECC (see *Update To The Report Board of Commissioners Of Public Utilities On The Status Of Remedial Actions Arising Out Of The December 1994 Outage*, January 1996, jointly prepared by Hydro and Newfoundland Power). In the Staff Report of the Federal Energy Regulatory Commission and the North American Electric Reliability Corporation into *Outages and Curtailments during the Southwest Cold Weather Event of February 1-5, 2011*, August 2011, it was found that improved communications amongst grid participants during extreme cold weather events was indicated (see page 210).

C.2.2 System Wide Actions

C.2.2.1 Improving Information Flow

The 1996 Orders 888 and 889 of the U.S. Federal Energy Regulatory Commission ("FERC") materially changed the standards for electrical utility system information disclosure.[141] The FERC established the basic electrical system information that must be made available to market participants via an open access same-time information system ("OASIS"). Initially, OASIS requirements reflected the requirements of a wholesale electricity market including available and forecast transmission capacity and generation availability and prices. Today, compliance with FERC information requirements is often done through independent system operators.[142]

FERC information requirements have altered information management regarding electric utility systems in North America. Now, it is common practice for utilities to assemble real-time and forecast information relating to supply and demand on their electrical systems as a matter of routine.[143] Virtually all Canadian utilities meet the FERC requirements.[144] The details of information that is publicly available varies.[145]

[141] FERC Orders 888 and 889 essentially provided for the introduction of wholesale electricity market competition in the United States. Order 888 established the requirement that transmission facilities and services be available on an open market basis. Order 889 established the information standards for utilities to support the open wholesale electricity market.

[142] Utilities involved in the generation and transmission of electricity in the U.S. established OASIS *nodes* which were secure web-based interfaces to each transmission system's data. In recent years, the number of OASIS nodes has declined as many jurisdictions have opted to establish independent system operators, or ISOs, which provide the required data for ISO participants. So, for example, Alberta system data is reported by the Alberta Electric System Operator ("AESO"); Ontario system data is reported by Ontario's Independent Electric System Operator ("IESO"). However, the essential data requirements of FERC Order 889 continue to be followed by all participants, including Canadian utilities, that are connected to the North America electricity grid.

[143] For example, utilities in all Canadian provinces, except Newfoundland and Labrador, currently fulfill the data requirements of FERC Order 889 either through their own OASIS node, an ISO, or via a contractor such as Open Access Technology International, Inc. ("OATI").

[144] BC Hydro, NB Power and Nova Scotia Power Inc. all maintain their own OASIS nodes. Sask Power, Hydro Quebec and Maritime Electric report via OATI. Alberta, Manitoba and Ontario utility information is reported through their respective ISOs.

[145] For example, the AESO provides supply adequacy assessments by hour for a forecast 7 days and by week for a forecast 24 months. Nova Scotia Power provides current system supply and demand together with a 5-day load forecast and supply adequacy assessments by week for a fixed 18-month period (currently October 2013 to April 2015).

The North American Electric Reliability Corporation ("NERC") is the regulatory agency responsible for ensuring the reliability of the North American bulk power system.[146] NERC reliability standards provide guidance on the information required to maintain electrical system reliability which includes system reserves, capacity and energy adequacy, and planned outages.[147]

Since January 10th, 2014, the Board has required Hydro to file a 5-day forecast of its system supply and demand. The information provided by Hydro to the Board is also provided by Hydro directly to Newfoundland Power. On February 11th, 2014, Newfoundland Power requested real-time access at Newfoundland Power's SCC to an additional 454 data points that are monitored by Hydro's ECC.[148]

The benefits of improved information flow from the perspective of customer notice in situations of forecast or potential generation shortfall are obvious. On January 2nd, 2014, a public advisory for customers to conserve electricity was issued approximately 2 hours before a generation shortfall occurred on the Island Interconnected System. Hydro's March 2nd, 2014 5-day forecast of its system's supply and demand indicated that reserve margins on the Island Interconnected System would be approximately 5% commencing from the evening of March 4th. On the afternoon of March 3rd, more than 24 hours before the reduced 5% reserve margin was forecast to be experienced, Newfoundland Power issued a public advisory indicating that Hydro's forecast showed reduced generation availability that could result in power supply shortages.[149]

Improved information flow concerning the status of the Island Interconnected System would help ensure that more timely information regarding the reliability of service is available to Newfoundland Power. This, in turn, would enable Newfoundland Power to provide more timely

[146] NERC is subject to oversight by the U.S. Federal Energy Regulatory Commission and Canadian provincial electrical utility regulators. In Canada, NERC's reliability standards are typically approved and implemented by provincial regulators. (See, for example, NERC application to the Nova Scotia Utility and Review Board, *Fourth Quarter 2013 Application for Approval of Reliability Standards of the North American Electric Reliability Corporation*, February 28, 2014).

[147] See NERC *Standard IRO-005-3.1a – Reliability Coordination- Current Day Operations, Requirements R1*.

[148] Newfoundland Power is currently in discussions with Hydro concerning better access to additional information including Hydro's load forecast and assessment of generation availability for the Island Interconnected System.

[149] Hydro's March 2nd, 2014 5-day forecast indicated reserve margins of between 10%-15% prior to the evening of March 4th.

information to customers. At a minimum, this information would need to include the level of information that is currently provided in Hydro's 5-day forecast of system supply and demand together with real-time and forecast information on generation availability and demand for the Island Interconnected System. Such improved information flow would be consistent with current sound public utility practice.

C.2.2.2 Regulatory Protocols for System Shortages

NERC reliability standards are adhered to across the North American interconnected electrical system. The Island Interconnected System is not currently part of the North American interconnected electrical system.

NERC's reliability standards provide for 3 alerts in capacity and energy emergencies. The first alert indicates that all available resources are in use or are committed to meet firm load and reserve commitments. The second alert indicates that load management procedures are in effect. Such procedures include public appeals to reduce demand. The third alert indicates that firm load interruption is imminent or in progress.[150]

NERC's reliability standards do not specifically indicate when or how customers served by an electrical system should be notified of the adequacy of forecast generation supply.[151] Electrical systems which are subject to NERC reliability standards typically develop specific regulatory protocols for generation shortfalls that meet NERC's standards. Parts of these protocols will specify how and when customer communications are to be made when possible generation shortfalls are forecast.

Some regulatory protocols governing customer communications in possible generation shortfall situations provide for multiple separate communications.

[150] NERC *Standard EOP-002-2 – Capacity and Energy Emergencies, Attachment 1-EOP-002-0 Energy Emergency Alerts.*

[151] NERC's *Standard EOP-00-2 – Capacity and Energy Emergencies*, makes reference to procedures such as public appeals, voltage reductions, curtailing interruptible loads and firm loads, but provides no guidance on communications with customers.

The New England Independent System Operator ("NE-ISO") has adopted an 11 step operating procedure for generation capacity shortfalls.[152] This procedure provides for 3 separate customer notices. The first is a *power caution* posted to the NE-ISO website at the point that full electrical reserves can be no longer maintained using normal procedures. The second is a *power watch* posted to the NE-ISO website when further steps to manage capacity could affect the public. The third is a *power warning* which includes radio and television appeals for voluntary load curtailment prior to implementing load shedding.

Similarly, the Electric Reliability Council of Texas ("ERCOT") has adopted an operating procedure for generation capacity shortfalls which provides for 3 separate customer notices.[153] The first is a *power watch* at the point that operating reserves are less than 2,300 MW to notify customers that conservation is needed.[154] Customer notice channels include (i) a news release, if appropriate; (ii) the Emergency Alerts list; and, (iii) social media.[155] The second is a *power warning* at the point that operating reserves are less than 1,750 MW to notify customers that conservation is critical. Customer notice is provided by the same channels as a *power watch*. The third is a *power emergency* at the point that operating reserves continue to trend downward to notify customers of rotating power outages. Customer notice channels include (i) a news release; (ii) the Emergency Alerts list; and, (iii) social media.

The California Independent System Operator ("CISO") has adopted a notification process for load interruptions which provides for 3 primary stages in electrical emergencies due to loss of generating equipment, transmission facilities, or unexpected load changes.[156] At each stage, customers are notified. The first stage includes an *alert notice*, which encourages conservation efforts over a specified period. The second stage includes a *warning notice*, which advises

[152] See *ISO New England Operating Procedure No. 4 – Action During A Capacity Deficiency.*
[153] See *ERCOT Energy Emergency Alert Communications* which is contained in Attachment D to the response to Request for Information PUB-NP-050.
[154] In normal operating conditions, operating reserves are greater than, or equal to, 3,000 MW.
[155] The Emergency Alert list is accessible by subscription. Social media includes Twitter and Facebook.
[156] See *California ISO Operating Procedure No. 4420 System Emergency* which is Attachment B to the response to Request for Information PUB-NP-050.

customers to conserve. The third stage includes a *1-hour notification* of *probable load interruption*.[157]

The Florida Public Service Commission has adopted a *Generating Capacity Shortage Plan* developed by the Florida Reliability Coordinating Council ("FRCC").[158] This plan provides for 3 customer advisories in response to generating capacity shortages which threaten to impact a significant number of customers. The first advisory is a *generating capacity advisory* which is precautionary and does not necessarily indicate an imminent threat or emergency. The second advisory is a *generating capacity alert* which is issued when the FRCC operating margin is such that the loss of the largest generating unit will require interruption of loss of firm load. This advisory is circulated through media, encourages conservation and warns of potential power interruptions. The third advisory is a *generating capacity emergency* which is an emergency declaration indicating a threat to overall reliability of the FRCC system. This advisory also specifies the time period of the emergency and firm load reductions.

Not all regulatory protocols governing customer communications in possible generation shortfall situations provide for multiple separate communications. A number of protocols provide only for a single public appeal for load reduction.

The AESO ensures the Alberta Interconnected Electric System is planned and operated in compliance with NERC and Western Electricity Coordinating Council ("WECC") standards.[159] AESO's reliability standards provide for 3 alerts in capacity and energy emergencies.[160] As part

[157] See *California ISO Operating Procedure No. 4420C System Emergency Notice Templates*.
[158] See *FRCC Generating Capacity Shortage Plan*, adopted by the Florida Public Service Commission, April 2008. The FRCC is a regional entity responsible for coordinating and providing bulk electric system reliability in Florida. The FRCC has delegated authority from NERC.
[159] WECC is the regional entity responsible for coordinating and promoting bulk electric system reliability on the Western Interconnected System. WECC has delegated authority from NERC.
[160] See *ISO Rules, Part 300 System Reliability and Operations, Division 305 Contingency and Emergency Section, 305.1 Energy Emergency Alerts.* Further to the 3 energy emergency alerts declared during the capacity and energy emergency, the ISO must, when a supply shortfall event ends, declare an Energy Emergency Alert 0 (a fourth alert), which is issued to terminate all previous energy alerts.

of *energy emergency alert 2*, reducing load through procedures such as public appeals is indicated.[161]

In Atlantic Canada, Nova Scotia and New Brunswick follow the Northeast Power Coordinating Council's ("NPCC") 12-step Emergency Operation Procedure in a developing or sudden capacity shortage.[162] The customer communication requirements of this procedure are similar to those in Alberta and Ontario.[163]

Establishing a regulatory protocol which indicates when and how customers are to be notified of possible generation shortfall situations would ensure a greater degree of certainty that customers would receive timely information regarding the reliability of the service they receive. Existing notification protocols for possible generation shortfalls appear to vary in the number of notifications required. However, establishment of such a protocol would be consistent with current sound public utility practice.

C.2.3 Newfoundland Power Actions

Newfoundland Power is already implementing changes as a result of the events of January 2-8, 2014. For example, changes to the Company's website to increase speed, capacity and redundancy have been implemented. Increased telephone capacity has been arranged.[164] Further changes to improve outage communications are underway and will be implemented prior to the 2014-2015 winter season.[165]

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161 See *Alberta Reliability Standards, Emergency Preparedness and Operations, EOP-002-AB1-2 Capacity and Energy Emergencies, Effective January 1, 2014.* This model is substantially similar to that adopted by Ontario's IESO and the Midcontinent Independent System Operator ("MISO") which regulates electricity in all, or parts of, 15 U.S. states and the province of Manitoba. For Ontario, see *Market Manual 7: System Operations, Part 7.1: System Operating Procedure, Section 4.5.3 Customer Appeals.* For MISO, see *MISO Market Capacity Emergency Procedure RTO-EOP-002-r16.*

162 The NPCC is a regional entity responsible for coordination and promoting bulk electric system reliability in northeast North America which includes New York, New England, Ontario, Quebec and the Maritime provinces. The NPCC has delegated authority from NERC.

163 Step 11 of the procedure requires an appeal to the public for voluntary customer load reduction. See *NPCC 2013 Maritimes Area Comprehensive Review of Resource Adequacy, Approved by the RCC December 3, 2013*.

164 These types of changes are routine following major system events. See the responses to Requests for Information PUB-NP-036 and PUB-NP-053.

165 See *B.3.2.4: Customer Communications Feedback*, page 36, line 21, *et. seq.*

During the rotating power outages undertaken by Newfoundland Power in the January 2-8, 2014 period, system control limitations on transmission and distribution systems reduced the Company's flexibility. In addition, system control limitations on transmission and distribution systems limited the Company's ability to restore service quickly to customers following major system disruptions in cold weather conditions.

Cold load pickup on a number of distribution feeders served to extend outages to customers served by those feeders. A lack of automation on some distribution feeders limited the ability of Newfoundland Power to include them in the rotating power outages. Finally, the absence of transmission line breakers on certain systems required additional substations to be taken out of service which exposed customers to additional outages during a time of electrical system distress.

Newfoundland Power proposes to address some of these capacity and system control limitations prior to the 2014-2015 winter season. On its distribution systems, the Company proposes to install 14 downline reclosers and upgrade approximately 4.5 km of conductor. In its substations, the Company proposes to install an additional 7 reclosers and 2 transmission line breakers.[166]

These additions to Newfoundland Power's electrical system will improve the system's capability and flexibility to respond to both major disturbances and local system events on the Island Interconnected System. This includes improved flexibility in the implementation of rotating power outages to respond to forecast generation shortfalls.

Newfoundland Power will file a 2014 Capital Budget Supplemental Application describing these proposed electrical system additions and seeking the Board's approval of them in time to enable the additions to be completed prior to the 2014-2015 winter season. The additions are expected to have a cost of approximately $3 million.

[166] The 7 reclosers proposed to be installed in substations are fully automated and will replace existing reclosers or breakers that are not automated. The replaced equipment will be reconditioned and retained as spares as appropriate.