

## **CEA Backgrounder**

### **Mandatory Reliability Standards**

#### **Introduction**

The August 14, 2003 blackout in Ontario and much of the U.S. Mid West and North East has heightened awareness of the electricity system, as 50 million citizens simultaneously experienced first hand how vital electricity is in our day-to-day lives. The blackout has added a sense of urgency to the discussion already underway on the need for measures to ensure reliability in the electricity industry – one of which is mandatory reliability standards. In the U.S., action on such standards may be taken as soon as the summer of 2004. In Canada, enforcement frameworks are well-developed and continue to evolve throughout the country.

CEA is offering this document as a contribution to the ongoing discussion on mandatory reliability standards. It provides a snapshot of the current regulatory situation in Canadian provinces and supports the creation of a bi-national Electric Reliability Organization (ERO).

#### **A Reliable System**

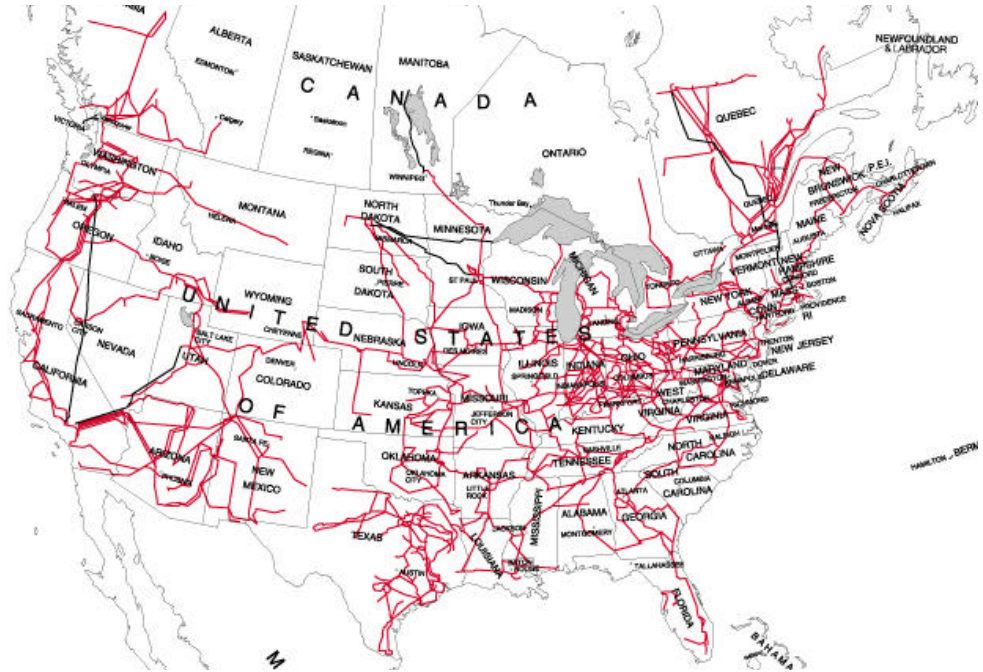
The irony of the 2003 blackout is that it took this extraordinary incident to make us realize just how reliable the system actually is. The interconnected network that exists across Canada and the U.S. is so reliable that:

- An event of this scale rarely occurs, despite remarkable economic and population growth, and relatively little grid expansion.
- In less than 12 hours, over 2/3 of power generation was restored to service and within 48 hours, virtually all of those who lost power were once again connected.
- The many equipment outages that occur in cities and regions across North America each year – due to weather, scheduled maintenance, or for safety reasons – are rarely even noticed by citizens, as other points on the integrated system supply power to meet customers' needs.

Some suggested that the scope of the blackout could have been significantly lessened if the Canadian and American grids were not so highly integrated. Such comments fail to recognize the fact that the North American grid allows interconnected systems to absorb perturbations which occur routinely, such as the loss of a transmission line or generator, with no impact to customers. The maps on page 2 indicate the extent of integration between Canada and the U.S.

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### North American Transmission Grid



Map copyright CEA. Lines shown are 345kV and above. There are numerous interconnections between Canada and the U.S. under 345kV that do not appear on this map.

### Major Transmission Interconnections between Canada and the U.S.



Note: The numbers indicate the voltage of the power lines from each province to the states. If there is more than one line with a given voltage, the number of lines is indicated in parentheses.

Source: NEB, Canadian Electricity Association and Natural Resources Canada.

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### **International Solutions**

By its very nature, the bulk power system is an international concern, and any effort to address its continued efficient and reliable operation requires the full engagement of and cooperation between the U.S. and Canada. CEA recently released a policy paper on the topic entitled "The Integrated North American Electricity Market: A Bi-national Model for Securing A reliable Supply of Electricity." In the paper CEA identifies 7 measures for all stakeholders in the market to consider:

- Support an open debate on all of the supply options available to meet the growing demand for electricity.
- Encourage bi-national cooperation on the construction of new transmission capacity to ensure a reliable continental electricity system.
- Explore opportunities for bi-national cooperation for both investment in advanced transmission technologies and transmission R&D.
- Promote new generation technology and demand-side measures to relieve existing transmission constraints and reduce the need for new transmission facilities.
- Coordinate measures to promote critical infrastructure protection.
- Harmonize U.S. and Canadian efforts to streamline or clarify regulation of electricity markets.
- Endorse a self-governing international organization for developing and enforcing mandatory reliability standards for the evolving electricity industry.

These measures reach beyond mandatory reliability standards because addressing reliability means doing more than establishing mandatory standards – it requires a thorough effort in respect to all aspects of electricity supply in North America. There is a need for stakeholders in government and industry in Canada and the U.S. to come together to pursue these measures in a manner that is of benefit to all of us.

### **The Canadian Reliability Picture**

The following points summarize the current Canadian provincial reliability situation<sup>1</sup>:

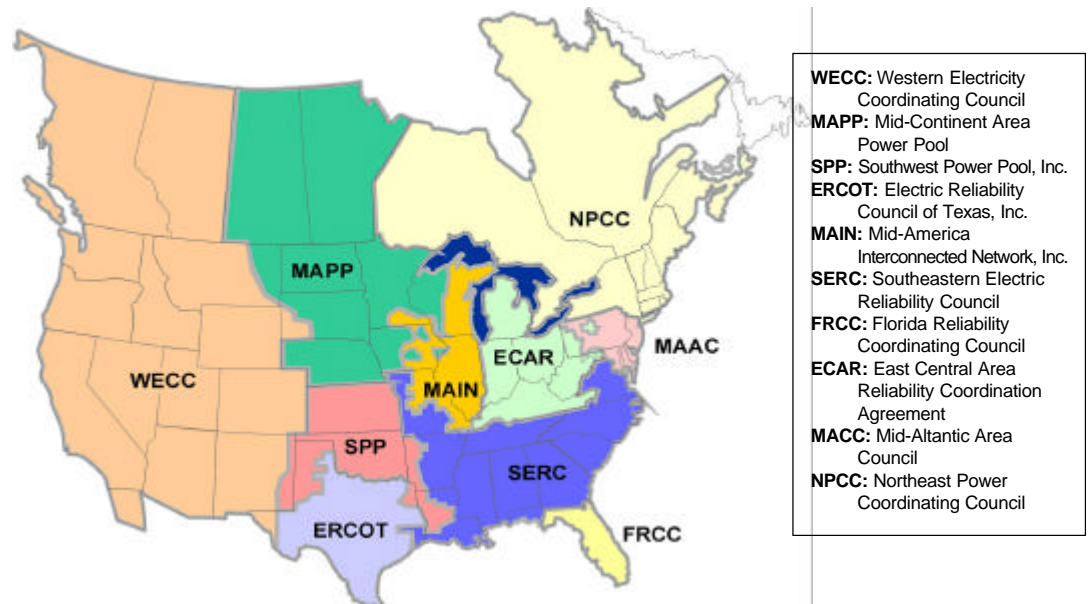
- All provinces have legislation in force that grants authority to one or more provincial entities for reliability.
- A majority of provinces either have market rules, codes and licences, or tariffs, or intend to develop them.
- In all provinces, with the exception of Saskatchewan and PEI, one or more organizations have signed a membership agreement with a North American Electric Reliability Council (NERC) Regional Council.<sup>2</sup>
- All provinces having interconnections with the U.S. participate in standards development within NERC and its Regional Councils.<sup>3</sup>

The Canadian Control Areas and their Regional Council memberships are given in the following table and can be seen on the map on page 4.

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Province	Regional Council	Control Area
British Columbia	WECC	BC Hydro & Power Authority <sup>4</sup>
Alberta	WECC	Alberta Electricity System Operator
Saskatchewan	MAPP	SaskPower <sup>5</sup>
Manitoba	MAPP	Manitoba Hydro
Ontario	NPCC	Independent Electricity Market Operator
Quebec	NPCC	Hydro-Québec TransÉnergie
New Brunswick, Nova Scotia, PEI	NPCC	Maritime Control Area

### NERC Regional Reliability Councils



Source: NERC, 2004

- <sup>1</sup> Newfoundland and Labrador are not considered in this review. The island of Newfoundland has a completely independent transmission system. Labrador serves principally as a source of supply for the integrated Hydro-Québec system, which must be operated in compliance with NERC and regional reliability standards.
- <sup>2</sup> SaskPower is currently in membership discussions with the Midwest Reliability Organization, and PEI meets obligations through contract under its supply agreement from New Brunswick Power.
- <sup>3</sup> Canadian transmission utilities and system operators are members of three NERC Regional Councils, and have thereby agreed to adhere to the reliability standards of NERC and its Regional Councils.
- <sup>4</sup> The BC Transmission Corporation will assume full responsibility for the Control Area in 2004.
- <sup>5</sup> SaskPower participates in the MAPP compliance program and some other activities, but has not formally joined the organization.

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- Some provinces have automatic adoption of NERC/regional standards for use in the province. All provinces provide authority for province-specific standards, but there are few such standards applicable to bulk power systems.<sup>6</sup>
- All NERC and Regional Council standards are in use in all provinces except Saskatchewan, which uses NERC and Regional criteria except for some local situations that are currently under review for compliance.
- Provincial entities are subject to the NERC and/or Regional Council compliance programs by virtue of their membership agreements in the Regional Councils. Saskatchewan does not currently have such membership and is not subject to such authority (although it reports on NERC compliance to MAPP). PEI, while not a member of NPCC, is obligated to follow applicable NERC/NPCC standards through an agreement with NB Power.
- The WECC agreements with BC and Alberta parties mean that these provinces are reasonably well aligned with the new U.S. legislation, in that there is provision for financial penalties. A positive feature is the provision for appeal to provincial regulators. Provinces belonging to NPCC, i.e. Ontario and points east, have strong compliance programs through NPCC, without having the financial penalty aspect and comprehensive legal contracts that are found in some other regions. They do have provision for appeal to provincial authority. In MAPP, Manitoba Hydro's situation is similar to that of the Canadian NPCC member entities in that they have comprehensive legal contracts in place, however, they do not have financial penalties. PEI is involved in monitoring but has no sanction provision. Saskatchewan is voluntarily involved in monitoring, but without enforcement provisions.

### **Enhancing Reliability for the Future – the Role of a North American ERO**

The seventh and final measure identified by CEA above is the creation of an "Electricity Reliability Organization" (an ERO) to establish North American reliability standards. CEA believes a self-governing international ERO is essential to assure long-term continued reliability. CEA is currently developing specific suggestions for the operation of an ERO to ensure that it is truly international in nature. The exact nature of enforcement will vary from province to province.

CEA member companies are committed to ensuring that their customers continue to receive affordable, environmentally sound, reliable power to meet their needs day in and day out. Effective enforcement of reliability standards is increasingly seen as a necessary prerequisite for that commitment to be fulfilled, and authorities across Canada have been acting on them for some time. The U.S. Congress has, in draft legislation, recognized the need for effective engagement with Canada. As we move towards an international mandate-based regime, Canadian entities are well-prepared to participate in a manner that will ensure the continued provision of reliable electricity supply across the continent.

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<sup>6</sup> In B.C., NERC and regional standards (WECC) are approved unless specified otherwise by the BCUC. Alberta allows for public comment as part of the adoption process. In Saskatchewan judgment is exercised by SaskPower on a case-by-case basis. In Manitoba, Ontario, Nova Scotia and PEI (where applicable), approval of NERC and regional standards is essentially automatic, unless there is conflict with provincial law. Standards are incorporated under contract in Manitoba (through MAPP) and in market rules in Ontario. In Quebec, Hydro-Québec TransÉnergie has the obligation to file its standards for approval to the Régie de l'énergie. In New Brunswick there is a need for stakeholder review in some cases.