

Federal Energy Regulatory Commission  
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Panel II: International Perspectives, June 22, 2017

Remarks of Brian Hewson  
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Good morning Commissioners, staff and fellow panelists. My name is Brian Hewson and I am Vice President of Consumer Protection and Industry Performance at the Ontario Energy Board (OEB), the energy regulator of the Province of Ontario, Canada. I am speaking with you this morning as a representative of the OEB. My remarks will focus primarily on Ontario. However, I will touch briefly on experience in other Canadian provinces and territories.

Canada and the U.S. share a highly integrated electrical transmission network. There are 34 major transmission inter-connections between U.S. states and Canadian provinces. There are also 33 major inter-provincial connections.<sup>1</sup> Ontario's interties connect with Manitoba, Quebec, New York, Michigan and Minnesota.

Unlike the U.S. where FERC has authority over reliability of the U.S. portion of the bulk electric system (BES), regulatory oversight of reliability rests primarily within each province and territory in Canada. Shortly after the 2003 Blackout, the Council of Energy Ministers established a Federal-Provincial-Territorial Electricity Working Group to work to address emerging challenges like the changing supply situation. Each Canadian jurisdiction connected to BES has measures to enforce compliance with NERC standards. Examples of provinces, in which NERC standards are mandatory and financial penalties can be levied for non-compliance, are Ontario, Alberta, British Columbia (B.C.) and Quebec.<sup>2</sup>

In relation to your question on the changes to the supply situation related to retirements of coal generation and the addition of renewable and distributed generation (DG), Canada is managing this evolutionary change quite well.

Provinces at the forefront in terms of integrating new renewable generation include New Brunswick, Nova Scotia, Alberta and Ontario. Other provinces and territories, such as

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<sup>1</sup> [Canada's Electric Reliability Framework](#), Natural Resources Canada (NRCan).

<sup>2</sup> [After the Blackout: Implementation of Mandatory Electric Reliability Standards in Canada Energy and Mines Ministers' Conference, July 2015.](#)

Newfoundland, Quebec, B.C., Manitoba and the Yukon, are able to rely almost exclusively on renewable hydro-electric generation, ranging from just under 90% to 97% of their electricity supply (in 2015).<sup>3</sup> In 2015 approximately 2/3 of Canada's electricity was produced from renewable resources.

Ontario has undergone a significant change in its supply mix. By 2025, Ontario's Independent Electricity System Operator (IESO) is forecasting renewable resources connected at both the transmission and distribution level (including hydro-electric) will make up nearly 50% of installed generating capacity.<sup>4</sup> This has been achieved within the context of Ontario becoming the first jurisdiction in North America to fully eliminate coal – the most flexible form of generation – from its supply mix in order to help achieve the province's climate change goals. In 2005, coal generation accounted for about 20% of the supply mix (30 TWh).

Eliminating coal, while adding intermittent renewables, has been possible by making investments in new flexible generation resources (mainly natural gas), in transmission system upgrades, and by changing the rules of Ontario's electricity market to require intermittent resources connected to transmission – mainly wind – to be dispatched. This was important because intermittent wind presently accounts for 20% of total transmission-connected generation capacity (about 5,500 MW).<sup>5</sup>

Much of Ontario's transition to more distributed energy resources involves renewable generation. At the end of 2015, the amount of DG embedded within the distribution system has grown to approximately 3,600 MW of installed capacity from only a few 100 MW in the mid-2000s.<sup>6</sup> Today storage projects are being developed across the Province to support integration of DG. The increase in DG has been facilitated by rules requiring non-discriminatory connection processes and new approaches to funding infrastructure. The OEB implemented changes to the rules to facilitate public policy objectives and to support customer choice. During this time we have also greatly increased oversight of reliability and planning by local distributors.

With the increased reliance on gas-fired generation, the safe and reliable expansion of natural gas infrastructure is critical. In 2005 the OEB implemented changes to its regulatory approach for gas storage and transmission to facilitate greater integration with the power system, including forbearing from regulation of new gas storage developments as a result of the increase in competition.

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<sup>3</sup> 2015 - Electricity Generation and Capacity, by Province, NRCan.

<sup>4</sup> [IESO President and CEO, 2016 APPrO Conference.](#)

<sup>5</sup> [A Progress Report on Contracted Electricity Supply, Fourth Quarter 2016](#), IESO.

<sup>6</sup> [A Progress Report on Contracted Electricity Supply, Fourth Quarter 2016](#), IESO.

As the system operator responsible for balancing supply and demand, the IESO is also taking steps in three key areas to maintain and improve the operability of the transmission grid as Ontario's electricity system evolves.

- *Frequency Regulation* capability is being enhanced to ensure the ability to balance supply and demand, on a second-by-second basis.
- *Voltage Control* enhancements through reactive control to ensure stable voltage levels.
- *Flexibility* of resources to respond to short-term supply and demand imbalances.<sup>7</sup>

In closing, I would like to quote a report prepared for a relatively recent Energy and Mines Ministers' Conference entitled *After the Blackout: Implementation of Mandatory Electric Reliability Standards in Canada*.

Balancing the supply and demand of electricity will always be a challenge given the complex, variable and instantaneous interaction of numerous generators and loads in different locations. ... Qualitatively, it can be said that the specific and systemic issues that contributed to the 2003 blackout have been addressed by NERC standards and are being monitored and enforced. Indeed, one measure of success is the fact that there has not been an event of similar scale on the [bulk electricity system] since 2003.<sup>8</sup>

The provinces and territories in Canada will maintain our collaborative efforts to ensure that successful outcome continues to be achieved as the supply situation continues its evolution. As the first jurisdiction in North America to implement the mandatory NERC standards following the 2003 Blackout, Ontario plans to continue to play a key and leading role in that collaborative effort.

I thank the Commission for this opportunity and look forward to any questions you might have.

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<sup>7</sup> [IESO - 2016 Annual Report: Reliability in a Changing Sector](#).

<sup>8</sup> [After the Blackout: Implementation of Mandatory Electric Reliability Standards in Canada Energy and Mines Ministers' Conference, July 2015](#).