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2003/2004 WINTER ASSESSMENT

Reliability of the Bulk Electricity Supply in North America

North American Electric Reliability Council

November 2003

Assessment Summary

Supply Adequacy

Generating resources will be adequate to meet the demand for electricity throughout North America this winter. New generating resources have been added in several NERC Regions since last winter, and generating capacity margins are greater than those projected for last winter in most Regions.

In spite of this favorable outlook, there is always the chance that unanticipated equipment problems and high demand caused by extreme weather could combine to create supply problems.

Transmission Adequacy

Transmission systems are expected to perform reliably this winter. However, operating experience shows that market conditions can, at times, cause large and widely varying flows. If these conditions occur this winter, local operating procedures, congestion management procedures, as well as the NERC Transmission Loading Relief (TLR) procedure will need to be invoked in order to maintain transmission system security. Reliability coordinators, transmission planners, and system operators need to regularly communicate and coordinate their actions to preserve the reliability of the bulk electric transmission system. Adequate system reliability will be maintained if identified transmission limitations are adhered to and operating procedures are implemented as required.

Coincident failures of critical equipment, while highly improbable, may result in the degradation of bulk electric system reliability. However, emergency action plans and procedures to safeguard the system under emergency conditions should minimize this possibility by defining actions system operators should take to arrest disturbances and prevent cascading events.

Peak Demands

Peak demand in North America is projected to be 1.1% higher than that projected for last winter, but 1.1% lower than last year's actual. Demand projections are based upon weather-normalized data, while actual demand figures include weather impacts. Details are addressed in the individual regional assessments.

Fuel Supply

Fuel supplies, inventories, and deliveries are expected to be adequate this winter. Recent fluctuations in wholesale gas prices may result in variations in generation dispatch patterns that will change transmission-loading patterns. The potential for curtailment of natural gas supplies during periods of cold weather could present problems in some regions, particularly in ERCOT and ISO-New England. The potential impacts of these curtailments are discussed in the individual regional assessments.

Areas of Interest

ECAR/MAIN/SERC

A number of transfer capabilities between the ECAR, MAIN and SERC Regions are expected to be limited by the Bull Run-Volunteer-Phipps Bend 500 kV Corridor in east Tennessee, because this corridor is used for both north-south and east-west transfers. Transfer capabilities from SERC to MAIN, SERC to ECAR, MAIN to ECAR, and between some MAIN and SERC subregions are expected to be lower than historical levels for this winter due to this limit.

NPCC

Ontario — If generation additions occur as scheduled, available resources are forecast to be adequate throughout Ontario this winter. If this is not the case, some planned generator outages may be deferred, and additional imports will likely be required to meet peak demands. A combination of high demand levels under extreme weather conditions and lower than forecast levels of available generation could lead to significant reliance on imports.

Québec — For the month of January, the capacity margin is expected to be 550 MW below the planning reserve requirement. If the return of the 660 MW Gentilly 2 nuclear plant is delayed beyond late December 2003, that shortage could be further increased. The shortage would be dealt with through various possible actions, including purchases from neighboring systems, implementation of a new load management program for large industrial customers, or advancing the commissioning date for the second generating unit at Sainte-Marguerite 3 hydro plant to January 2004.

Transfer capability from Michigan to Ontario is expected to be reduced on occasion by about 150 MW until the end of February 2004 due to the forced outage of the B3N interconnection as the result of a tower failure. Transfers from Ontario to Michigan are not expected to be affected.

Interregional transmission transfer capability studies have been conducted to determine levels of external assistance that can be imported during the forecast 2003/2004 winter peak demand period. The study results are reflected in the FCITCs reported in Figure 2.

There are no unusual operating conditions, environmental constraints, or regulatory restrictions that are expected to affect the capacity availability anticipated for this winter. All known planned generator outages have been included in the adequacy assessment of the Independent Electricity Market Operator (IMO).

Hydro-Québec

Assuming typical winter peak conditions, Hydro-Québec's internal peak demand for winter 2003/2004 is expected to reach 34,550 MW. This forecast represents an increase of 5.3% as compared to the 2002/2003 winter forecast of 32,809 MW but is 439 MW less than the Québec all-time winter peak demand of 34, 989 MW, which occurred on January 22, 2003. This all-time peak demand occurred after several consecutive days of extreme cold accompanied by high winds.

Hydro-Québec's energy requirements are largely met by hydro generating stations located on different river systems scattered over a large geographical territory, with the major plants backed by multi-year reservoirs. To cope with inflow variations, Hydro-Québec's system can rely on those multi-year reservoirs together with some other non-hydraulic sources, including fossil generation. Based on the level of current water reserves in Hydro-Québec's reservoirs and the availability of other non-hydraulic sources, Hydro-Québec generation availability will meet the energy reliability criterion throughout this winter operating period.

The new generating capacity to be added to the system for the winter operating season will come from the refurbishment of a unit at Outardes 3 hydro plant, for a 64 MW addition, and from the first unit, to be operated at 280 MW, of the Sainte-Marguerite 3 hydro plant. The second unit of the Sainte-Marguerite 3 hydro plant is expected to be commissioned later in the spring of 2004. Those two Sainte-Marguerite 3 generators were announced in the 2003 Summer Assessment, but their in-service dates have since been delayed.

The planning reserve requirement for the Québec control area for the winter 2003/2004 period is 3,475 MW. For the month of January, the capacity margin is expected to be only 2,926 MW, a shortfall of 550 MW. If the return of the 660 MW Gentilly 2 nuclear plant is delayed beyond late December 2003, that shortage could be further increased. The shortage would be dealt with through various possible actions, including purchases from neighboring systems, implementation of a new load management program for large industrial customers, or advancing the commissioning date for the second generating unit at Sainte-Marguerite 3 hydro plant to January of 2004.

The transmission reinforcement program that was initiated following the January 1998 ice storm is still progressing. The eastern 735 kV loop Des Cantons/Montérégie/Hertel will be in service by the end of December 2003. With this new line, transfer capability and voltage support in the Montréal-Québec area will be enhanced. In addition, the implementation of a new centralized load shedding scheme based on the voltage behavior of the main grid will be implemented on the system, thus improving system reliability for extreme events with a low probability of occurrence.