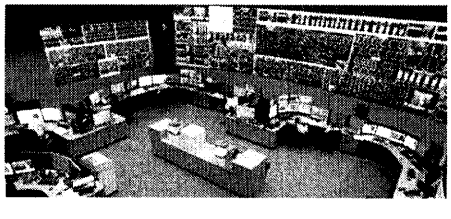
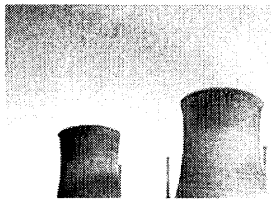
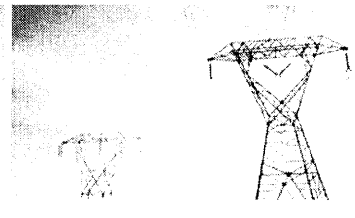
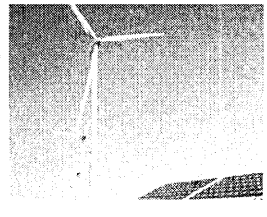
NERC

NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

2011 Long-Term Reliability Assessment

November 2011

RELIABILITY | ACCOUNTABILITY

to point transmission service by Hydro-Québec Production on the HQT-MASS and HQT-NE interconnections using the Châteauguay and Phase II interconnections. The project also includes Bergeronnes series compensation nominal current-carrying capacity upgrade in 2014. Finally, a third 345 MVAr 315 kV shunt capacitor bank is now under construction at Duvernay substation and will be in service by the end of 2011.

Chamouchouane – Montréal 735 kV Line

The large generation additions and transmission services coming up over the next years require, as shown above, a number of system additions to maintain reliability. Moreover, planning studies have shown that to optimize the different solutions and to significantly reduce marginal losses on the system due to this new generation, a new 735 kV line from Chamouchouane to Montréal (about 370 km or 230 miles) is required around 2017. This optimization will result in regrouping some of the above-mentioned projects and in other cases, will result in reducing additional equipment that was previously planned. The new line will also reduce transfers on other parallel lines on the Manicouagan – Québec Interface, thus optimizing operations flexibility.

Public information meetings have begun on this project. Final line route and destination in Montréal has not been determined yet and government authorization processes are ongoing.

Regional Projects

In 2013, the 735 kV section addition at Bout-de-l'Île (East end of Montréal Island) substation also includes the addition of two 735/315 kV, 1,650 MVA transformers. The new 735-kV source will permit redistribution of load around the Greater Montréal area and will absorb load growth in the eastern part of Montréal. This project will enable major modifications to the Montréal area regional sub-system. Many of the present 120 kV distribution stations will be rebuilt into 315 kV stations and the regional network will be converted to 315 kV (Vimont, Bélanger, Blainville, Fleury, de Lorimier substations).

Other regional projects will continue in the Québec City area (Limoilou, Lefrançois and Charlesbourg projects), in the Beauceville area, and in the Mauricie – Montréal 315 kV corridor (Pierre-Le Gardeur 315/120 kV, Lachenaie and Lanaudière projects).

Reliability-Related Projects

TransÉnergie's transmission planning studies and generation/load integration studies are conducted according to NPCC Regional Reliability Reference Directory #1 "Design and Operation of the Bulk Power System", and according to NERC TPL standards. Due to TransÉnergie's particular system configuration and to the fact that the system is a separate Interconnection in North America, system planning is conducted such that no transmission constraints or congestion are forecasted to appear on the system. Moreover, TransÉnergie has chosen to design its system to withstand other contingencies otherwise considered extreme by NPCC. The system's particular topology — long 735 kV branches connecting remote generation centers with load centers concentrated in the southern part — imposes a particular treatment for these contingencies. Even though their severity is comparable to that of extreme events, their probability of occurrence — because of the bus arrangement — is such that a performance level close to what is required for transmission design contingencies is required here. Thus, TransÉnergie