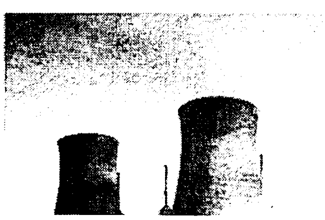
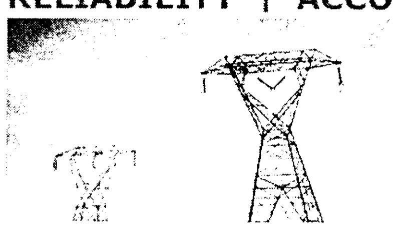
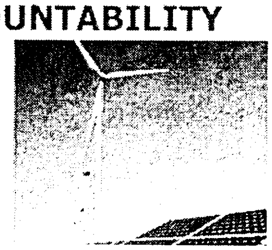
NERC

NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

2013 Long-Term Reliability Assessment

December 2013

RELIABILITY | ACCOUNTABILITY

information from each NERC Region is also collected and used to identify notable trends, emerging issues, and potential concerns. This bottom-up approach captures virtually all electricity supplied in the United States, Canada, and a portion of Baja California Norte, Mexico. NERC's reliability assessments are developed to inform industry, policy makers, and regulators and to aid NERC in achieving its mission—to ensure the reliability of the North American BPS.

Assessment Preparation and Design

The *2013 Long-Term Reliability Assessment* (*2013LTRA*) is published by NERC in accordance with Title 18, § 39.11[5] of the Code of Federal Regulations,[6] also referred to as Section 215 of the Federal Power Act, which instructs NERC to conduct periodic assessments of the BPS. Section 803 of NERC's Rules of Procedure[7] further describes NERC's obligation to develop annual long-term reports with a 10-year planning horizon.

This report provides an independent assessment of the 10-year[8] reliability outlook for the North American BPS[9] while identifying trends, emerging issues, and potential risks. Additional insight will be offered regarding resource adequacy, security, and operating reliability, as well as an overview of projected electricity demand growth for individual assessment areas.

NERC prepared the 2013 LTRA with support from the Reliability Assessment Subcommittee (RAS) under the direction of the *NERC Planning* Committee (PC). This report is based on data and information submitted by each of the eight Regional Entities, which are represented on the RAS. Initial data and information were submitted in June 2013, and periodic updates occurred throughout the development of the report. Any other data sources included by NERC staff are identified accordingly. Additional inquiries regarding the information, data, and analysis in this assessment may be directed to:

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NERC uses a RAS peer review process to prepare both seasonal and long-term reliability assessments. This process allows NERC to leverage the knowledge and experience of subject matter experts who represent NERC Regions and the electricity industry at large. It also provides an essential balance that ensures the validity of data and information provided by the Regional Entities. Each assessment area's section is assigned to subcommittee members from other Regions to encourage a comprehensive review that is discussed and verified by the RAS in open meetings. The review process gives all RAS members the opportunity to verify that each Regional Entity produces quality assessments that are accurate and complete. The Planning Committee (PC) members reviewed this assessment and fully vet all findings and conclusions. Prior to release, NERC submits the assessment to the Board of Trustees (Board) for final review and approval.

[5] Section 39.11(b) of the U.S. FERC's regulations provide: "The Electric Reliability Organization shall conduct assessments of the adequacy of the Bulk-Power System in North America and report its findings to the Commission, the Secretary of Energy, each Regional Entity, and each Regional Advisory Body annually or more frequently if so ordered by the Commission."

[6] Title 18, § 39.11 of the Code of Federal Regulations.

[7] NERC Rules of Procedure.

[8] The 10-year period observed in this assessment is from 2014 to 2023, with the 2014 summer as the initial season. Information and data for the 2013 summer and 2013–2014 winter seasons are provided in NERC's seasonal reliability assessments: NERC Seasonal Reliability Assessments.

[9] BPS reliability, as defined in the *How NERC Defines BPS Reliability* section of this report, does not include the reliability of the lower-voltage distribution systems, which systems use to account for 80 percent of all electricity supply interruptions to end-use customers.

and (5) reduction of low load operation flexibility due to low inertia response of wind generation coupled with must-run hydro generation.

Expected capacity purchases are planned as needed for the Québec internal demand by Hydro-Québec Distribution. These purchases are set at 1,100 MW throughout the assessment period and may be supplied by resources located in Québec or in neighboring markets. In this regard, Hydro-Québec Distribution has designated the Massena–Châteauguay (1,000 MW) and Dennison–Langlois (100 MW) interconnections' transfer capacity to meet its resource requirements during winter peak periods. These purchases are not backed by firm long-term contracts. However, on a yearly basis, Hydro-Québec Distribution proceeds with short-term capacity purchases (UCAP) in order to meet its capacity requirements, if needed. The Québec Area does not rely on any emergency capacity imports to meet its Reserve Margin Reference Level. The Québec Area will support firm capacity sales totaling 626 MW to New England and Ontario (Cornwall) during the 2014–2015 winter peak period, backed by firm contracts for both generation and transmission, declining to 145 MW in 2020.

Transmission and System Enhancements

Romaine River Hydro Complex Integration

Construction of the first phase of transmission for the Romaine River Hydro Complex project is presently underway. Total capacity will be 1,550 MW. The generating stations will be integrated on a 735-kV infrastructure initially operated at 315-kV. In 2014–2016, Romaine-2 (640 MW) and Romaine-1 (270 MW) will be integrated at Arnaud 735/315/161-kV substation. In 2017–2020, Romaine-3 (395 MW) and Romaine-4 (245 MW) will be integrated at Montagnais 735/315-kV substation.

For 2014, main system upgrades for this project will require construction of a new 735-kV switching station to be named "Aux Outardes" and located between existing Micoua and Manicouagan Transformer Stations. Two 735-kV lines will be redirected into the new station and one new 735-kV line (5 km or 3 miles) will be built between Aux Outardes and Micoua.

Bout-de-l'Île 735-kV Section

Hydro-Québec TransÉnergie (TransÉnergie) is adding a new 735-kV section at Bout-de-l'Île substation (located at east end of Montréal Island). This was originally a 315/120-kV station. The Boucherville – Duvernay line (line 7009), which passes by Bout-de-l'Île, will be looped into the new station. A new -300/+300-Mvar SVC will be integrated into the 735-kV section in 2013.

The project also includes the addition of two 735/315-kV 1,650-MVA transformers in 2014. This new 735-kV source will allow redistribution of load around the Greater Montréal area and absorb load growth in eastern Montréal. This project will enable future major modifications to the Montréal area regional subsystem. Many of the present 120-kV distribution stations will be rebuilt into 315-kV stations and the Montréal regional network will be converted to 315-kV. The addition of a second -300/+300-Mvar SVC at Bout-de-l'Île in 2014 is also projected.

Chamouchouane–Montréal 735-kV Line

Planning studies have shown the need to consolidate the transmission system with a new 735-kV line in the near future. Generation additions (such as the Romaine Complex and wind generation) and new transmission services are the reason the new line is warranted. The line will extend from the Chamouchouane substation on the eastern James Bay subsystem to the Duvernay substation just north of Montréal (about 400 km or 250 miles).

Planning, permitting, and construction delays are such that the line is scheduled for the 2018–2019 winter peak period. Public information meetings have begun on this project. The final line route has not completely been determined yet, and authorization processes are ongoing.

The new line will also reduce transfers on other parallel lines on the Southern Interface, thus optimizing operation flexibility and reducing losses.