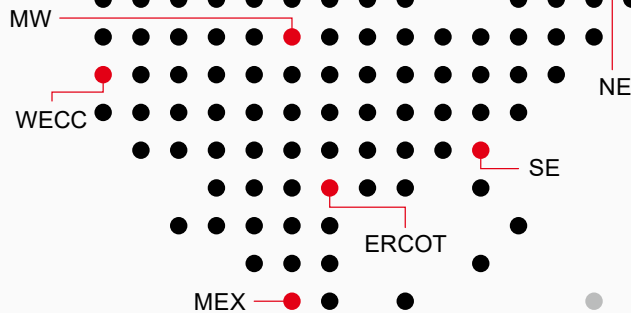


ENERGY MARKETS GROUP

North American Power Reference Case

A comprehensive energy market intelligence and forecasting solution



Independent and unbiased analysis for your strategic investment & operational decisions

Whether building a new generation asset, providing financing for new generation, considering entry into a new market or any other major capital decision, the need for comprehensive market intelligence and accurate forecasts is critical. But energy is a complex industry, with volatile fuel and energy prices, ever-changing regulations, environmental pressures and varying demand forecasts.

The data gathering, forecasting and analysis required to make strategic investment and operational decisions requires significant resources and expertise. Often, this analysis needs to be independent and unbiased. Market participants, financial institutions and regulators require an integrated forecast model to help them value assets, evaluate market opportunities and increase confidence in investments.

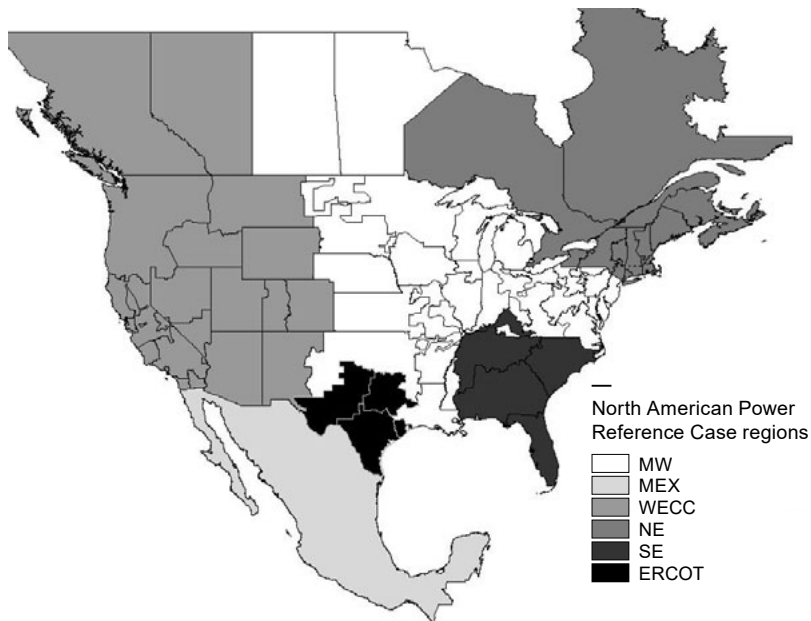
Hitachi ABB Power Grids produces a fundamental analysis of the North American electric market twice a year using the PROMOD® electric market simulation tool, Velocity Suite data and our proprietary Integrated Model. This provides a market-based, fundamental view of North American power, gas, coal and environmental markets, which accounts for the interdependency of these markets and provides forecasts based on consistent economic assumptions.

This analysis, called the North American Power Reference Case, considers current and projected new resources; transmission limits and losses; operations and seam issues in neighboring markets; and hourly loads. It includes a fundamental base forecast of market clearing prices, which are comprised of hourly, monthly and annual prices for the 25-year study period.

North American Power Reference Case includes:

- Fall and spring long-term forecast summary reports and detailed databases for the six regions shown below, now including Mexico
- Monthly, short-term power and gas price updates
- Fall and spring webcasts summarizing methodology, inputs and results
- Three scenarios: CO2 tax, high natural gas price and low natural gas price

Reference Cases and market databases are also available for Europe, the Middle East and Asia-Pacific.



The North American Power Reference Case provides an in-depth, comprehensive, integrated fundamental analysis of:

Gas prices

Considers power and non-power sector demand, production cost by basins, transportation network to liquid market centres, and tariffs to the market areas



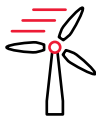
Coal prices

Considers demand, production cost curves by mine, transportation network to the plants on heat input and SO₂ content



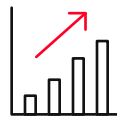
Emissions prices

Considers current regulations on CO₂, SO₂ and NO_x, existing unit emission rates and environmental controls, and options for retrofits or retirement



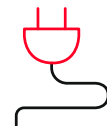
Penetration of renewable energy

Considers national and EU targets, existing renewable generation, regional potentials, deployment history and characteristics of new renewable capacity



Capacity prices

Considers cost curves for new generation, reserve margin requirements, technical-life / economic retirement options, and capacity market areas



Energy prices

Considers detailed unit characteristics incorporating all forecasts presented above, hourly dispatch of units versus demand, scarcity adders at tighter reserve margins, and electricity transmission network



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