

The New England electric grid is an 8,000-mile high-voltage transmission system that connects electric utilities, publicly-owned electric companies, power generators, suppliers, alternative resources and end users in the six-state wholesale electricity marketplace. This is a brief profile of the electric grid and wholesale markets serving Vermont based on information from New England's regional system planning process and wholesale market reports.

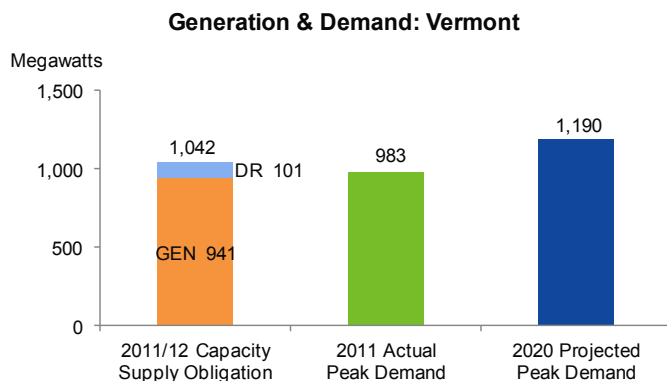
Introduction

Vermont represents approximately 4% of the population in New England and 5% of the region's total electricity consumption.

The state relies on both in-state resources and imports of power over the region's transmission system to serve electricity customers. Transmission, generation and demand resources are being added to ensure that the reliability of the system is maintained. ●●●

Growth in Demand

In the 2011 Regional System Plan, ISO New England (ISO) forecasted the state's overall electricity demand to grow at a rate of 0.8% annually over the next decade—below the 1.1% rate projected for New England. The ISO forecasted the state's peak (summer) demand to grow 1.2% annually over the next decade—slightly below the 1.4% rate projected for the region.



New England's 2011 peak demand for electricity, which occurred on July 22, was the second highest on record. New England's overall demand for electricity fell sharply from 2007–2009, primarily due to the recession, then climbed in 2010, but has remained below 2003–2008 levels. The ISO issues a new 10-year forecast each year in April based on updated economic data.

In 2011, the ISO created a methodology for a discrete energy efficiency (EE) forecast to estimate the long-term effects of state-sponsored EE programs. This methodology will look beyond the EE committed three years into the future through the Forward Capacity Market (FCM).

Vermont has been proactive in developing programs and initiatives to promote EE and reduce the growth in electricity use, including peak demand. ●●●

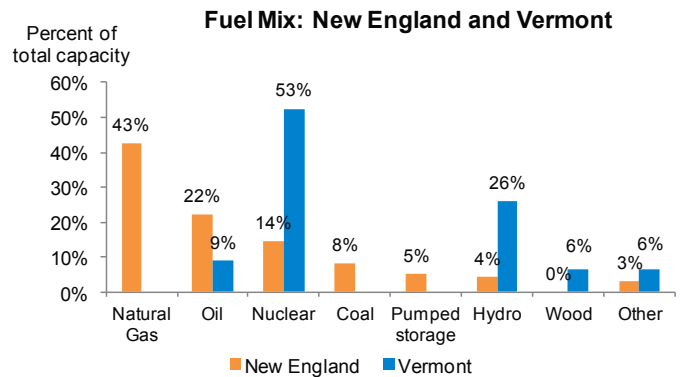
Generating Resources

The total capacity of existing generating plants located in Vermont is approximately 1,100 megawatts (MW). This is approximately 3% of the total capacity in New England. About 940 MW in Vermont cleared in the FCM with obligations to be available for the June 1, 2011–May 31, 2012 timeframe.

Generator availability has increased systemwide in New England since the start of competitive markets, from 81% in 1999 to 88% in 2010. At any given time, however, individual generators may not operate due to planned or unexpected outages, environmental restrictions, or other reasons. Some resources do not operate because their offers to sell electricity in the wholesale market are above the market-clearing price. In Vermont, generators are owned and operated by private generation companies and electric utilities, which include investor-owned utilities, municipal electric departments, and member-owned rural electric cooperatives. ●●●

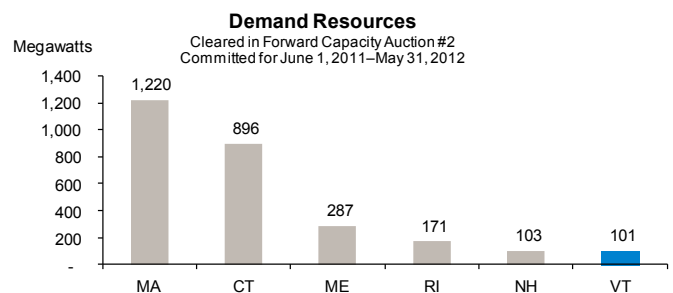
Fuel Mix

Natural gas and oil are the primary fuels for more than 60% of the existing generating capacity in New England. Nuclear power provides more than 50% of the capacity in Vermont. ●●●



Demand Resources

New England has about 2,800 MW of customer-side Demand Resources (DR), that can reduce demand on the power grid through both active measures, such as shifting to on-site distributed resources, and passive measures, such as EE. DR is growing with efforts to more fully integrate it into the wholesale electricity markets. Vermont has about 100 MW of DR with obligations in the FCM—equivalent to 10% of the state's peak demand. ●●●



Proposals for New Resources

In New England, the FCM provides opportunities for existing and new generation (supply), DR, and imports to compete to provide the capacity resources the region needs to meet future reliability requirements. Resources must qualify, clear (i.e., be selected) in the auction, and then perform when called upon by the ISO to be eligible for capacity payments.

Through a series of annual auctions, ISO has procured resources to meet reliability needs for the five-year period June 1, 2010–May 31, 2015. In this period these auctions cleared:

- 70 MW of *new* generation resources from Vermont, representing 2% of the new generation cleared in New England, and
- 170 MW of *new* DR from Vermont, representing 6% of the new DR cleared in New England.

The ISO will conduct the sixth auction (FCA-6) in April 2012, for resources needed in the 2015–2016 timeframe.

Connecting New Generating Resources

In order to connect to the grid, a proposed generator must be studied and approved under the ISO's Generator Interconnection Procedures to ensure the project will not adversely impact the reliability of the electric grid. This is known as the "queue" process.

Approximately 225 MW of proposals in Vermont have entered the queue (primarily wind) as of December 2011. This represents about 5% of the proposals in New England. Historically, not all of the proposals in the queue have been developed, but it is an indication of the potential for new resources. ●●●

Renewable Resources

Vermont has established programs and set longer-term goals to promote development of renewable resources in the state.

Vermont is unique among the New England states in that it does not have a renewable portfolio standard (RPS). Instead, the state relies on a program, known as Sustainably Priced Energy Enterprise Development (SPEED), to create incentives for both in-state construction of renewable resources and long-term power contracts between utilities and developers of renewable resources. The SPEED program is currently under review by the legislature and regulatory agencies.

In 2008, the Vermont legislature passed the *Energy Efficiency and Affordability Act* establishing longer-term renewable goals for the state:

- **20% by 2017 Goal:** The legislature set a goal to have 20% of the total statewide electric retail sales generated by SPEED resources by July 1, 2017.
- **25% by 25 Goal:** The legislature set a goal to produce 25% of the energy consumed within the state through use of renewable energy sources, particularly from the state's farms and forests, by 2025.

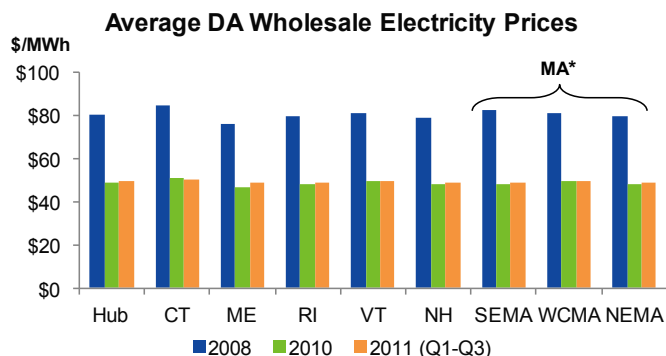
In 2009, Vermont established a feed-in tariff program to provide a predictable revenue stream for certain SPEED resources. Local electric distribution companies are required to buy the electricity supplied by these resources at fixed rates, which vary by resource type. Individual resources up to 2.2 MW are eligible and the program is capped at 50 MW.

In 2010, Vermont changed its definition of renewable resources to include all hydroelectric resources, regardless of size. In 2011, the 40 MW Sheffield wind farm in Caledonia County began commercial operation. ●●●

Wholesale Market Prices

Locational pricing is a key feature of New England's wholesale electricity markets. The ISO administers Day-Ahead (DA) and Real-Time (RT) Energy Markets and calculates prices for eight zones in New England. Each state is one zone, except for Massachusetts.

Average wholesale prices have dropped with lower demand and fuel prices. Prices remain well below 2008 levels. ●●●



* Massachusetts has three zones: Southeastern Mass. (SEMA), Western/Central Mass. (WCMA), and Northeastern Mass./Boston (NEMA/Boston).

Transmission

The ISO is developing potential transmission solutions to address reliability needs in the Vermont-New Hampshire area identified in an assessment of the region's transmission system. The solutions likely would upgrade 115 kilovolt (kV) and 345 kV lines in the area. The assessment considered the potential retirement of the Vermont Yankee nuclear plant. As part of the effort, the ISO also conducted a first-in-the-region pilot study that provided stakeholders and market participants with information about the effectiveness of market-resource alternatives, e.g., generation and demand resources, to address the transmission reliability needs.

Changes in the forecast of electricity demand or development of market-based responses to system needs can affect the need for transmission projects, and the ISO re-evaluates these needs as part of the planning process. ●●●

Strategic Planning Initiative

ISO and stakeholders are evaluating several key risks that will impact the region's power system and wholesale electricity markets. Near-term risks include resource performance and flexibility, and increased reliance on natural gas-fired capacity. Long-term risks include potential retirement of generators, integration of a greater level of variable resources (e.g., wind and solar), and alignment of markets with planning. ●●●

About ISO New England

ISO New England is the Independent System Operator responsible for ensuring the reliable operation of the New England electric grid, administration of the region's wholesale electricity markets, and administration of the regional Open Access Transmission Tariff, including regional system planning. The ISO is a not-for-profit corporation governed by an independent Board of Directors. The ISO does not own transmission or generation assets and has no financial interest in any companies participating in the region's wholesale electricity markets. ●●●

Sources and Additional Information

U.S. Census Bureau, *2011 Regional System Plan, 2010 Annual Markets Report*, FCA results, and other public ISO information.

ISO New England: www.iso-ne.com

VT Public Service Board: www.psb.vermont.gov

VT Department of Public Service: <http://publicservice.vermont.gov/>