



Regional System Planning Spurs Major Investment in New England's Transmission System

ISO-NE to Conduct Studies that Evaluate the Economics of Additional Transmission Expansion

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Introduction

New England has a long history of regional planning and coordination. The region boasts a tightly integrated bulk power system that is designed to provide reliable wholesale electricity service to customers from Connecticut to Maine under a variety of conditions. The region shares in the cost of upgrading the bulk transmission system, and its market design promotes development of demand and supply resources in locations where they are needed most.

The six New England States have been leaders and innovators on energy policy individually and through the New England Conference of Public Utilities Commissioners (NECPUC). In addition, the Federal Energy Regulatory Commission (FERC) recently approved the states' proposal to form the New England States Committee on Electricity (NESCOE), which will enable enhanced coordination on developing the region's energy policy. New England also has a tradition of close collaboration with its neighboring power systems to the North in Canada.

All of this provides a solid foundation from which the region can meet its new energy challenges—particularly, the need to meet environmental policy goals and address electricity price concerns while maintaining efficient and reliable electricity service to all New England customers.

This document describes the existing process for regional system planning in New England, the transmission investment that has occurred as a result, and enhancements to the transmission planning process recently ordered by the FERC. It also highlights emerging discussions regarding development of transmission to enable the construction of renewable electricity resources within remote areas of the region and to increase imports of non-carbon emitting resources from Canada.

Existing Planning Process in New England

FERC granted ISO New England responsibility for system planning for the six-state region in 2000.¹ Since this time, the ISO has developed an annual Regional System Plan (RSP) that serves as the comprehensive needs assessment of New England's bulk power system.

¹ Regional coordination of transmission planning and operation of New England's bulk power system has existed for more than 30 years. However, the establishment of the ISO shifted planning for transmission and generation *from* vertically integrated utilities in a process largely regulated by state commissions *to* an independent entity (the ISO) in a process regulated by the FERC.

New England stakeholders provide input to the RSP throughout the year through the Planning Advisory Committee (PAC). The PAC is made up of representatives from the New England States, environmental organizations, transmission owners, generators, suppliers, public power, and other interested parties.

The RSP develops a ten-year forecast of electricity use for New England, the states, and multiple sub-areas and analyzes the adequacy of the region's bulk power system to reliably serve this forecast use. It also describes the fuel mix for generation and reviews the region's ability to meet state and federal environmental regulations, including the renewable portfolio standards and carbon emission reductions targeted in the Regional Greenhouse Gas Initiative (RGGI). Finally, the RSP defines a transmission expansion plan to meet system needs.

Results of the RSP needs assessments are presented to the PAC to encourage the marketplace to develop solutions to system needs. While ISO New England's planning authority is limited to the development of regulated transmission solutions, the ISO accounts for responses from the marketplace (i.e. the development of demand resources, generation, and merchant transmission) in performing the RSP needs assessments. If the ISO determines that a market response addresses a system need, it may defer or eliminate the need for a regulated transmission solution.

Improvements to the Transmission Planning Process

In February 2007, FERC issued Order 890 of the Open Access Transmission Tariff (OATT), which led to a review of the system planning process in New England. The ISO worked with the New England Power Pool (NEPOOL) and NECPUC to identify improvements to the RSP process and incorporated these improvements into the ISO OATT at the end of 2007.

Key improvements to the process include further defining the process for incorporating market responses into the needs assessments and establishing an evaluation framework to determine—through economic studies—whether transmission solutions or other projects could result in economic benefits to the region.

Interregional Planning

ISO New England closely coordinates its planning activities among six New England States, as well as with the federal government and with neighboring systems in the U.S. and Canada. The ISO participates in interregional planning initiatives with the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council (NPCC), the U. S. Department of Energy, the ISO-RTO Council (IRC), and the Inter-Area Planning Stakeholder Advisory Committee (IPSAC).

Transmission Expansion Progress to Date

Since 2000, ISO New England's regional system planning process has identified the need for approximately \$8 billion in transmission investment, prompting significant transmission development in each of the New England States. More than \$1 billion in transmission investment has occurred over the past eight years, and projects estimated at approximately \$7 billion in investment are in various stages of development, planning, or construction.² Four major 345-kilovolt (kV) transmission projects have been successfully constructed and put into service in four states, and another two major 345-kV transmission projects are under construction in two states. Additionally numerous smaller projects are being planned.

² RSP07 estimates projects totaling approximately \$4.4 billion. Since approval of RSP07, additional information about transmission projects and transmission needs have increased this estimate to approximately \$7 billion. Note that all estimates are preliminary and are subject to change. Also, some elements of the transmission needs may be satisfied through market responses, thus lowering the estimates.

This is the first significant transmission development in the region in decades and the active participation of the states in the planning process has been instrumental in achieving this success.

System Planning Challenge: Meeting State Goals to Increase Electricity Generated from Renewable Fuel Sources and to Reduce Carbon Emissions

Five of the six New England States have adopted renewable portfolio standards (RPSs), which require utilities and other suppliers of retail service to obtain specified percentages of their electricity from power plants that run on renewable fuels. The ISO projects that these state-mandated RPS requirements will more than double the amount of electricity that needs to be produced by renewable resources in the next decade. This will require the addition of many more of these resources than what is currently proposed in the ISO Generator Interconnection Queue in New England.

Each of the New England States has signed on to RGGI, which sets a 10% reduction in carbon emissions by 2018. The ISO has analyzed several future resource scenarios and found that New England will face challenges meeting these targets unless the region invests heavily in resources with low or zero emissions, including energy efficiency, large-scale renewables, and nuclear power located in New England or imports of hydro, wind, or nuclear power from Canada.

The New England States and Eastern Canadian provinces requested the system operators in New England, New Brunswick, and Quebec to map the most likely sites for the development of new renewable resources in the broader region. The first phase of this activity was completed earlier this year and provides some interesting directional information. Typically, the best sites for renewable resources are either off shore or in remote areas that are not served by a robust transmission infrastructure. It is already evident that the majority of the potential for new large-scale renewable resources will exist in Northern Maine, Northern New Hampshire, Quebec, New Brunswick, Newfoundland, and Labrador.

System Planning Solution: Developing Economic Studies of Transmission Needed to Enable the Development of Renewable Electricity Resources

A starting point to address the region's renewable energy requirements is to assess the magnitude of the need. Following the determination of need, the costs and benefits of expanding the New England transmission system to the locations that have the potential for renewable-resource development to address the need must be analyzed. This will require the ISO and New England stakeholders to develop an evaluation framework that identifies the return on transmission investment towards meeting reliability, economic, and environmental goals.

The How

The development of economic studies for transmission investment will move forward in two parallel processes. First, the ISO will convene a working group to determine *how* to conduct—that is, the methodology for—the economic studies envisioned in FERC Order 890. Because this methodology must be developed with consensus among regional policymakers and market participants, the working group will be led by a steering team with representatives from ISO New England, NECPUC, and NEPOOL. This process will also help further develop the factors that should be considered in determining *Market Efficiency Transmission Upgrades* that are eligible for regional cost sharing.³ This type of upgrade has been part of the ISO's tariff for some time but to date has not been utilized by the region. The more common type of transmission upgrade that is eligible for regional cost sharing in New England is the *Reliability Transmission Upgrade*. These are projects that address identified reliability needs.

³ http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/index.html

The What

Second, the ISO and PAC will prioritize the economic studies the ISO must conduct. The PAC has the ability to request the ISO to conduct up to three studies each year. These studies are funded through the regional tariff. Stakeholders requesting additional studies would be responsible for paying for the costs of those studies.

To date we have discussed at least three different cases to be studied for the development of new renewable resources on the system with representatives of the New England States. The ISO also needs to consider seven new transmission projects to move electricity from Canada to customers in New England that were proposed at an ISO-led forum in December 2007 plus any other projects that may be proposed in the future.

It is evident that not all of the proposed projects will need to be built. Thus, the evaluation framework must determine *what* transmission investment is best for the region.

Sticking to a Long-Term Transmission Plan for New England

New England must continue to make progress to site and construct the transmission projects already approved by the RSP planning process. These projects are needed to maintain reliability of the bulk transmission system and amount to the region “catching up” after decades in which there was little or no investment. These upgrades also improve the efficiency of the system and provide economic benefits to the region by increasing the network capability to move large quantities of electricity throughout the region. Also, many of the older, less efficient, and environmentally-challenged power plants in New England are located in the middle of the largest demand centers. Clearly, the existing RSP expansion plan must be completed to enable the retirement and/or repowering of these plants. Enhancing the transmission network backbone will offer the foundation from which the region can move forward and pursue achievement of environmental and economic policy objectives.

New England faces many challenges in terms of meeting its energy goals; however, the ISO is optimistic that the region can meet these challenges through a spirit of collaboration and innovation. ISO New England looks forward to working with state policymakers and our market participants to pursue the most cost effective solutions for the region.