ISO New England: Delivering Value to the Region

Introduction

ISO New England is an independent, not-for-profit corporation created in 1997 to oversee New England's bulk electric power system, which serves the power supply needs of the region's 6.5 million businesses and households around the clock, 365 days a year. ISO New England (the ISO) is responsible for the day-to-day management of the bulk power system serving all six New England states and the region's competitive wholesale electricity markets. The ISO also is responsible for long-term planning and coordination of the regional transmission grid and has the important role of ensuring open, nondiscriminatory access to the transmission system for all market participants and for all types of resources, including demand-response resources.

Each of these responsibilities plays a significant role in enhancing the reliability and efficiency of the region's bulk electric power system. Additionally, with these roles and responsibilities, the ISO can assist policymakers in achieving the region's desired environmental goals by enabling the interconnection of low- and zero-carbon-emitting resources. Because the ISO functions as a not-for-profit company that is financially independent of companies doing business in the electricity market, the region's consumers are the direct beneficiaries of the ISO's work.

Building a Power System to Meet the Region's Electricity Needs

Since its inception, ISO New England has worked collaboratively with its stakeholders across the region, including market participants, state regulators, and other public officials, to ensure that New England's restructured electric power system is reliable and meets the needs of the region's residents and growing economy.

Infrastructure Ensures Reliability

Through its 10-year regional planning process, the ISO forecasts consumer power usage and identifies future power system needs so that timely solutions can be achieved. In the seven-year period from 2000 to 2006, the ISO, as regional planner, system operator, and market administrator, has facilitated numerous cost-effective, critically important infrastructure improvements for staying ahead of New England's increasing demand for electricity:

- A 34% increase (10,000 MW) in new, modern, and more efficient supply
- A 700% increase in demand response, or temporary customer-reduction capability, which has contributed to system reliability during peak periods and generally lowers wholesale prices for all consumers throughout the region[1]

[1] ISO New England activated real-time demand-response programs six times in the seven-year period from 2000 through 2006, including the day after the August 2003 blackout and on August 2, 2006—the day of New England's all-time highest demand.

- The reduction of harmful air pollutants, including a 7.5% reduction of carbon dioxide emissions, a 44% reduction of nitrogen oxide emissions, and a 65% reduction of sulfur dioxide emissions
- The implementation of three major transmission projects needed to serve important New England demand centers and the construction of three additional projects presently underway. To date, more than $1 billion in total transmission investment has occurred since 2002, and more than $4 billion of additional investment is expected over the next decade. These projects will make significant progress in addressing transmission bottlenecks that have existed for several decades.

Competitive Markets Ensure System Efficiencies; Promotes Supply and Demand Resources

Beginning in 1999, ISO New England launched competitive wholesale markets for power in New England. The implementation of New England's Standard Market Design (SMD) in 2003 initiated a number of improvements to promote the efficient use and operation of generation and transmission facilities. These improvements included new electricity markets, risk-management tools, and a forward market for procuring operating reserves. The risk-management tools include a multi-settlement energy market and auctions for Financial Transmission Rights. The latter provide participants responsible for serving retail customers with a financial hedge against differences in locational marginal prices due to transmission congestion. All these improvements have contributed to increased generator-availability rates, improved system performance, and stable fuel-adjusted wholesale prices. [2] Factoring out the increases in natural gas and oil prices, wholesale electricity prices have dropped by 7.2% since 2000.[3]

The ISO, in partnership with the six New England states and numerous market participants, has designed an innovative and effective capacity market solution for attracting new resources and maintaining existing resources necessary to meet the region's growing need for power. This Forward Capacity Market (FCM) has the ability to recognize, for the first time, energy-efficiency measures as resources for meeting supply needs and to allow these resources to compete with traditional power plants in the marketplace. The new FCM market already is showing promising results—over 6,000 megawatts (MW) of supply and demand resources have been qualified to compete in the auction process to serve the region's future electricity needs.

Transparency and Open Access Enable Renewable Power Sources

New England's competitive electricity marketplace is guided by policies that require open and equal access to the transmission system for all resources and transparent pricing for buyers and sellers. These policies enable the development of renewable power resources by providing: (a) transparent market prices at which suppliers can calculate the value of their product, (b) clear rules governing the physical interconnection of resources, and (c) defined performance requirements to assist resource owners in fully understanding their obligations in the market.

The six New England states have taken aggressive action in recent years to limit electricity generators' carbon dioxide emissions and to significantly increase renewable power requirements to

[2] Generator availability has increased from 81% to 89% since the beginning of New England's markets, indicating that the markets are working as designed—plant owners are responding to economic incentives to keep their plants running when demand is highest, and owners are scheduling planned maintenance during off-peak periods.

[3] Most recently, from 2005 to 2006, fuel-adjusted wholesale electric energy prices dropped by 5%, and absolute prices decreased by 21%.

reach certain air quality objectives. The ISO's competitive market policies—and the information and rules they create—have become an essential element of the region's strategy for achieving overall environmental policy objectives.[4, 5]

In addition to these attributes offered by a competitive marketplace, state Renewable Portfolio Standards and federal tax policies provide financial incentives to further encourage the development of renewable resources. The combination of state and federal policies and the open access provided by the ISO markets has resulted in 35 renewable projects totaling almost 2,500 MW of capacity being proposed for the New England region.[6]

A Single Point of Control Ensures Reliability and Efficiency

As the transmission provider for the region, ISO New England has full operational control of the bulk power transmission system within its footprint. This control provides the ISO with the decision-making authority to operate the power system to maintain reliability throughout the region and to schedule maintenance outages in a way that reduces system costs. Through this broad oversight and visibility of the transmission system, the ISO has reduced inefficiencies and bottlenecks on the power system and their related congestion costs.

Managed Investment Brings Sizable Returns

Assuring bulk power system reliability and open access to the transmission system are clearly associated with significant benefits. In addition, ISO New England's management of the transmission system and wholesale markets has resulted in significant investment in new power plants, demand resources, market systems, information technology, and progress in needed transmission projects. These results have real, quantifiable benefits for consumers. The ISO roughly estimates that an average annual wholesale market savings of approximately $850 million can be attributed to these improvements in markets and infrastructure over the seven-year period from 2000 to 2006. This is equivalent to an approximate net monthly savings of $4.00 for the average New England ratepayer.[7] By comparison, the establishment of the ISO and the creation of wholesale markets have resulted in an increase of roughly $0.50 cents per month (relative to the cost of significantly fewer services provided before restructuring and the operation of the wholesale electricity markets).

Achieving Lasting Value

ISO New England's total 2008 budget, including capital and operating expenses, is approximately $116 million. With the exception of 2002, when the SMD market foundation was being put in place, thus requiring capital and operating cost increases, ISO New England's budget has remained steady. Most recently in the 2007 budget, the ISO funded additional responsibilities by implementing efficiencies in existing operations. The additional services include compliance with mandatory reliability standards as required by the Energy Policy Act of 2005, the implementation of additional

[4] Beginning in 2009, carbon emissions for all New England electric power generators with at least 25 MW in capacity will be capped at certain levels until 2014. By 2018, these caps must be reduced by 10% in accordance with the Regional Greenhouse Gas Initiative (RGGI).

[5] New England's overall requirement for renewables to generate electricity will increase from nearly 6% in 2007 to 14% by 2016.

[6] Wind accounts for nearly 2,000 MW, or 80% of the total amount of renewable power under development.

[7] The average retail ratepayer is estimated to use 750 kilowatt-hours (kWh) of electricity each month.

ancillary services, the provision of enhanced Web site services, and the development and early implementation stages of the Forward Capacity Market.

Each year, stakeholders that previously had little or no market access or say in the development of the regional power grid become market participants. Since the market opened in 1999, the number of market participants has doubled and continues to grow.[8] Moreover, the ISO has taken on the responsibility for providing services, such as outage coordination and scheduling, once performed by each of the region's seven transmission companies in a decentralized, less efficient manner. Although the number and breadth of services offered continues to grow each year, stringent financial management has yielded level operating and capital costs.

In 2008, the ISO will maintain a steady budget and strive for operational efficiencies. The company will carry out its mission while again providing significantly expanded services through the full implementation of the Forward Capacity Market and additional transmission planning services. The ISO estimates it will achieve nearly $11 million dollars in operational efficiencies to fund these added services.

Well Positioned for the Future

In 1999, wholesale electricity markets opened in New England and set the region on a path for wholesale competition to supply the region's power needs. These markets were enhanced in 2003 with the implementation of SMD and, in combination with 10-year regional system planning, led to the identification of infrastructure needs and the development of necessary transmission improvements. In 2005, ISO New England became New England's RTO, which gave the ISO its broader authority over the day-to-day operation of the region's transmission system and ensured greater independence to effectively manage the region's bulk electric power system and competitive wholesale electricity markets.

These early investments and structural changes have provided significant reliability and economic benefits to the region and a solid foundation from which the region can continue to evolve and manage its future power system. This strategy already is proving effective: in 2006, the region was able to design a new capacity market that could directly respond to New England's unique challenges, which include enabling demand-side resources and energy efficiency to compete more directly in the electricity markets. Early in 2007, the ISO conducted a stakeholder process to identify and assess the performance of seven different resource scenarios on the basis of a series of reliability, economic, and environmental metrics. Valuable information about the costs and benefits of a variety of renewable power technologies and sources was made available to policymakers and stakeholders. The aim of the scenario analysis has been to inform the marketplace of the impacts of resource choices today so that policymakers and participants can be cognizant of the tradeoffs when creating policies to encourage the desired power system of the future.

New England policymakers and market participants will face tremendous challenges in the future in trying to maintain reliability and achieve environmental goals while providing electricity at reasonable cost. The ISO has established a valuable foundation of highly skilled human resources and sophisticated information technology systems, and it seeks to work with policymakers and market participants to meet these future challenges.

[8] Over 150 entities participated in the markets in 1999, and over 340 participate today.