Progress of New England's Restructured Electric Industry and Competitive Markets

The Benefits of ISOs and RTOs
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Introduction

For a century, regulated electricity monopolies did everything to produce, transmit, and sell power to consumers, and utilities accepted reasonable returns on their investments. But this system, like those in other regulated industries, offered few incentives for innovation and efficiency and kept prices high.

In 1992, Congress passed the Energy Policy Act, the first step towards introducing competition to the electric power industry. The key to true competition was open and equal access to the transmission grid; without such access, new entrants would face costly and discriminatory barriers. The Federal Energy Regulatory Commission (FERC) implemented the Act by issuing orders that mandated fair access for all competitors and encouraged states to restructure their electric power systems.

In New England, where electric rates were among the country's highest, restructuring was most enthusiastically embraced—five of the six states required utilities to divest their power plants. Today, with 88 percent of its electricity generation unregulated, New England has the most disaggregated marketplace in the nation and a strong foundation for achieving successful competitive markets.

Creating Independent System Operators

FERC recognized that independent oversight was needed for the electric utility industry to transition from a system of regulation to one that provided open access to the transmission grid and a competitive marketplace. "Independent system operators"—ISOs—were created and given responsibility to ensure power grid reliability and fair transmission access and develop and run wholesale electricity markets. These independent entities would give competitive markets the ability to achieve their full potential in delivering benefits to consumers. ISO New England was formed to oversee New England's six-state region, a highly integrated, tight power pool with a tradition of regional cooperation.

ISO New England and the New England Electricity Marketplace

Created in 1997, ISO New England is a not-for-profit corporation that oversees a system with approximately 350 generating units, 8,000 miles of high-voltage transmission lines, and 12 interconnections to neighboring systems—all serving 6.5 million New England businesses and households. In 1999, ISO New England launched the wholesale markets. Today, more than 260 companies and entities participate in these markets and complete more than $7.25 billion of wholesale electricity transactions annually.

The markets quickly demonstrated real returns; New England wholesale electricity prices, after adjustment for fuel costs, have declined by 5.7 percent since the first full year of operations. A dramatic price decline of 11 percent was experienced in New England from 2001 to 2004. Moreover, the lights stayed on throughout most of New England during the massive Northeast Blackout of 2003.

The Promise of Markets Promotes Investment in New England

When ISO New England was created, formal wholesale electricity markets did not exist. Electricity was dispatched from generators based on longstanding power pool practices. Working with regulators, the industry, and other stakeholders, ISO New England developed "interim markets," and thus began the evolution from regulation to functioning markets.

Investors responded to the promise of competitive markets by financing a 30 percent increase in power supplies, building highly efficient and clean plants through a newly established merchant power sector. It is estimated that more than $9 billion was invested in new power plants in New England from 2000 to 2004. These investments significantly improved reliability and competition.

For the first time, New England consumers were not responsible for the cost of power plant development, in that state restructuring policy eliminated the guaranteed recovery of power plant investment that electric utilities had traditionally received through retail rates. This policy reduced exposure to stranded costs, the costs and losses of poor utility investment decisions that consumers had previously paid.

The introduction of markets also provided new and more transparent information about the performance of the power system, helping to identify needed infrastructure improvements, including transmission investment of up to $4 billion.

Market Forces Drive Efficiencies and Reduce Wholesale Market Costs

Competitive markets have created incentives to improve the operation, utilization, efficiency, and overall performance of existing generation and transmission facilities. For example, plant owners responding to wholesale prices are motivated to keep their plants well maintained, available in times of greatest need, and running when demand is highest. This increase in "generator availability" has reduced the need to build additional plants and lowered wholesale market costs.

In addition, the investment in new, efficient generation has resulted in a reduction in the use of older, less efficient and more polluting power plants, delivering environmental as well as economic benefits to consumers. Specifically, the move to more efficient gas-fired generators has decreased the use of the region's oil and older gas power plants and is estimated to have reduced annual carbon dioxide emissions by 6%, nitrogen oxide emissions by 32%, and sulfur oxide emissions by 48% from these units from 2000 to 2004.

The additional generation, along with the competitive market incentives to improve generator availability, enhance operation and make infrastructure investment more efficient, has led to a reduction in wholesale market costs of approximately $700 million annually (after adjustment for fuel costs). Progress such as this is evidence that markets are working to meet their objective of delivering significant value to consumers.

Building on the Success of the Markets

Despite these developments, the interim markets needed risk management tools, such as a day-ahead market, and mechanisms to enhance efficiency, such as pricing that accurately reflects power system needs.

Day-ahead markets protect against price volatility. Accurate pricing is based on the true cost of producing and supplying power at numerous locations on the system.

In 2001, ISO New England and its market participants adopted the market system used by PJM, the RTO for the Mid-Atlantic States, to provide these features. This standardized market solution, "Standard Market Design" (SMD), created markets with an appropriate level of flexibility to preserve best practices and recognize the unique needs and characteristics of New England. It accomplishes these efforts while minimizing "seams" among the Northeast markets, which promotes broader trading of energy. ISO New England successfully inaugurated SMD in March 2003. SMD's leading-edge features, such as eight pricing zones for electricity and a day-ahead market, have brought further improvements and benefits to New England.

New England's Planning Process Ensures Continued Progress

Wholesale Markets Planning

While SMD offers a solid foundation for meeting the region's present and future electricity needs, ISO New England is spearheading necessary market improvements through the Wholesale Markets Plan (Plan). Created through an iterative process for the development of the markets, the Plan benefits consumers in two ways. One way is that it provides a guide for making improvements to the market, so that participants have the ability to make informed decisions about future purchases and investments. The Plan also puts in place improvements to the markets in an organized and cost-effective manner.

Leadership on Demand Response

Demand-response programs encourage customers to reduce their electricity consumption in response to either high wholesale prices or system reliability events in exchange for compensation based on wholesale market prices. It is an important part of a balanced wholesale market.

New England's demand-response programs have encouraged the reduction in consumption and the use of small, on-site generators to improve reliability. They have also led to lower prices, and reduced price volatility during periods of high demand and/or high wholesale electricity prices. Ongoing improvements include the ability for demand-response customers to directly bid into the markets and the greater use of demand-response programs to enhance system reliability.

Power System Planning

ISO New England's annual system planning process, initiated in 2001, is a national model that has been recognized by the U.S. Department of Energy. The process is led by ISO New England in collaboration with industry representatives, state regulators, and public officials. The process first encourages a marketplace response for solutions, funded by investors, to identified power system reliability and efficiency needs. In this regard, the planning process is resource-neutral, and all solutions, whether generation, merchant transmission, or demand response, are considered equally.

Regulated transmission projects are identified when market solutions do not fully respond to system needs. In the event that regulated transmission projects must go forward, the ISO ensures that the costs are reasonable and fair for all New England consumers. The system planning process has significantly enhanced the ability of states and consumer representatives to be involved in the policies and planning of electric system infrastructure. To date, New England states have successfully sited three major transmission projects that will reinforce New England's transmission system.

Strengthened Oversight and Governance Ensures Benefits Into the Future

Regional Transmission Organizations

In addition to the independent system operators launched mainly during the 1990s, FERC also advanced the concept of "regional transmission organizations" (RTOs). These entities are intended to oversee integrated, regional bulk power transmission service, broader regional system planning, and larger electricity trading markets—all while having clear authority to operate the grid, protect reliability, and promote efficiency.

An RTO for New England: Improved Independence and Enhanced Authority for Reliability

On February 1, 2005, ISO New England became a regional transmission organization.
As an RTO, ISO New England now has: clear operational control over the management of the region's transmission facilities; authority for the terms and conditions by which transmission customers receive non-discriminatory transmission service; and the ability to require transmission owners to pursue needed upgrades. ISO New England will continue to be the single point of control to maintain reliability, not only on a daily basis, but also in emergencies. Through these authorities, it has the increased ability to protect the region from system failures.

Evolution to an RTO structure has significantly strengthened ISO New England's independence from market participants. As an RTO, it now has the authority to develop and propose new market rules, replacing the financially interested market participants who previously had this responsibility.

Significant reliability and efficiency benefits can be realized by allowing access to the broadest set of resources without having to duplicate those resources. The New England region is particularly well situated to benefit from New York's fuel diversity and the availability of any surplus supplies from Canada during the summer months. As an RTO, ISO New England will also have greater authority for interregional planning and will implement initiatives and arrangements with neighboring control areas that effectively broaden the marketplace and its offerings for New England consumers.

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Cost-Effective Operations

ISO New England has taken on a variety of additional and significant tasks for the benefit of market participants and consumers, requiring growth in the small staff with which it began operations. These additional tasks were pursued with the consent of market participants and state regulators and under the direction and approval of FERC. The number of market participants ISO New England must oversee has also greatly expanded since ISO New England's inception. Nonetheless, ISO New England has focused on cost containment, consistent with quality performance of its expanded duties. As a result, the New England region is the beneficiary of a full-service system operator that provides a high level of electric service reliability, market efficiency and consumer protection with one of the lowest annual operating budgets of any ISO or RTO in North America. ISO New England services are estimated to cost the average retail consumer in New England only $.60 per month.

Into the Future

The innovation, responsiveness, and cost-effectiveness that ISO New England and other ISOs and RTOs are bringing to their operations is continuing the evolution of the electric power industry that began more than a decade ago. During the coming years, ISO New England and its peers will continue to refine the model of competitive markets that have revolutionized the industry.