



## ISO New England's 2009 Report on the Consumer Liaison Group

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## Executive Summary

ISO New England (ISO) has an important and unique role in the New England electricity industry to reliably operate the transmission system, administer the region's multibillion dollar wholesale electricity markets, and conduct long-term planning to facilitate the development of needed transmission infrastructure. In this role, the ISO has decision-making authority on several matters that have an impact on the wholesale cost of power. ISO New England works extensively with its stakeholders, who include market participants, representatives from industry and government, consumer advocates, and other interested parties, to consider changes and proposals to improve the operation of the electric power system.

In early 2009, the ISO initiated a series of working group meetings to examine the ISO's responsiveness to its customers and stakeholders. Throughout these discussions, consumer representatives sought ways for the ISO to provide greater transparency about how it weighs costs when making decisions. In response, the ISO and stakeholders created the Consumer Liaison Group (CLG) to establish greater dialogue and information sharing among the ISO, consumers, and consumer advocates.

The goal of the CLG is to develop an information exchange between ISO New England and consumers. Consumers will gain a more in-depth understanding of ISO activities and the decision-making process regarding these activities, at the same time increasing their overall knowledge of the operation of the regional power system and wholesale electricity markets. In turn, the CLG will work with the ISO to determine how ISO New England's proposed initiatives could have an impact on regional consumers, while providing the ISO with a greater understanding of consumer issues and concerns in the wholesale electricity marketplace.

Over the course of three CLG meetings held in 2009, a governance process was adopted, which includes the creation of a CLG Coordinating Committee charged with guiding the work of the CLG and interacting with ISO New England staff. During these meetings, the CLG also discussed timely and important issues to consumers, including transmission investment and costs, the price-formation approach used in New England's wholesale electricity markets, and the magnitude of wholesale and retail costs. The following information was provided:

- **Transmission Development and Investment.** Transmission investment is taking place in New England. Projects are successfully being identified, studied, and constructed throughout the region, and the project cost estimation process has been improved. This investment is providing greater access to economic power supplies and lowering the costs associated with having to dispatch additional generation in high demand areas—as well as maintaining reliable system operations. With this progress, transmission costs are increasing in the region, and retail consumers could see transmission rates double from 2009 to 2013. CLG members discussed the opportunities that exist to participate in the regional transmission development process, the region's approach to allocating the cost of transmission to customers, and the factors that may reduce forecasted transmission rates.
- **Wholesale Electricity Price Formation.** An in-depth explanation of the mechanics and outcomes associated with the price-formation approach used in wholesale energy markets was provided. The ISO reviewed how and why this auction process, called the Uniform Clearing Price auction, results in the least expensive and most efficient set of resources being selected to run each day.
- **Wholesale Costs and Retail Rates.** ISO analysis found that wholesale costs and residential retail rates in 2009 and 2010 varied dramatically. The difference is due to a variety of retail market procurement policies designed to achieve stable prices for residential consumers. The amount and timing of power procurement is staggered, such that all the power needs of utility customers are not fully exposed to the market price at any given time. This practice protects consumers from price volatility in the wholesale market but also delays when consumers receive the benefit of low

wholesale market prices. Total wholesale market costs (including transmission and Regional Transmission Operator [RTO] costs) in 2009 were approximately \$9.1 billion. This equates to approximately 7.1¢/kWh for the average New England retail customer.

*ISO New England's 2009 Report on the Consumer Liaison Group* also summarizes ISO activities undertaken throughout the year that have, or describe, economic impacts for the marketplace and consumers. These activities include the following:

- **Stakeholder Initiatives to Improve Wholesale Markets.** The ISO initiated two major working groups for New England stakeholders to discuss wholesale market performance and possible improvements. These initiatives provided opportunities for stakeholders to consider Forward Capacity Market (FCM) revisions and options for price-responsive demand to participate in the energy market.
- **Study for New England Governors.** An economic study to evaluate potential wind integration scenarios in New England was conducted for the New England governors. It concluded that the region has significant on and offshore wind resources that can be developed and added to the grid, with investment in the current transmission system. The report also found that certain scenarios to integrate New England's offshore wind resources and opportunities to create greater integration with eastern Canada offer the region a more cost-effective alternative to achieving renewable goals than options to develop large-scale Midwest wind resources and long-delivery transmission lines to the Northeast.
- **Smart Grid Funding.** The U. S. Department of Energy (DOE) awarded funding to the ISO and the region's transmission companies for a project to add phasor measurement units (PMUs) to the New England transmission system, which will more accurately monitor the performance of the power grid and provide operators with the tools needed to enhance visibility and situational awareness. This project should yield efficiencies and improve reliability and will serve as the foundation for additional regional smart grid efforts. This funding enables smart grid technologies to be added to the grid at a lower cost and allows for the region to realize its benefits sooner.

In 2010, the Consumer Liaison Group will continue to discuss themes relating to the cost of electricity and the economic impacts that ISO decisions have on electricity costs. The CLG also seeks to evolve by expanding its membership and by increasing the awareness of consumer interests in all regional stakeholder discussions.

## Introduction and Purpose

ISO New England (ISO) and regional electricity market stakeholders created the Consumer Liaison Group (CLG) in 2009 to facilitate the consideration of consumer interests in determining the needs and solutions for the region's power system. Consumer understanding of and involvement in the decision-making process that governs power system development is valuable because consumers are the ones who benefit from a reliable power system—and ultimately pay its costs.

ISO New England staff prepared this first annual report summarizing the activities of the newly established CLG and other ISO activities of interest to consumers. It begins by describing the context and need for creation of the CLG, reviews the objectives of the CLG as they have evolved throughout 2009, explains the approved governance structure, and describes the membership and meeting format. Background information describing the regional stakeholder process is also provided including the many opportunities that exist for consumer representatives to participate in the process to consider proposals relative to market design and system planning.

One of the report's main sections describes the CLG's activities in 2009. It reviews three topics CLG members identified, including current and future regional transmission investment, the mechanics and implications of the price-formation methodology used in the wholesale energy market, and an analysis of wholesale and retail costs in the marketplace. These topics have economic impacts in the electricity marketplace and are important for consumers to understand.

Another section of the report provides a summary of some of the major ISO New England activities in 2009 that have had or may have an economic impact on the electricity marketplace. These include the major ISO activities that occur each year, such as the development of a comprehensive 10-year system plan and an annual report on the performance of the wholesale electricity markets. They also include activities that occurred in 2009, such as the development of an economic study for the New England governors that examined a variety of renewable energy development scenarios and their corresponding transmission cost estimates. Another specific activity was the ISO's annual budget-development process. Web site links to these detailed reports and analyses associated with all activities are provided.

The final section of this report discusses the progress of the CLG in 2009, some of its goals for 2010, and the importance and challenges associated with creating a CLG that effectively can meet the informational needs of consumers in New England.

An Appendix provides background on the various components of a reliable power system, the magnitude of the costs associated with these components, and some of the factors that drive their costs in the six-state New England region.

## Establishment of the Consumer Liaison Group

A growing sentiment in the New England electricity marketplace is that the impacts of market design and infrastructure development on the price of electricity should be given more attention and analysis. Also recognized is that consumers and consumer representatives calling for this action must become more closely involved in the stakeholder processes that lead to these design and infrastructure decisions—yet in some cases, they lack sufficient resources to do so. The U. S. Government Accountability Office (GAO) noted in its September 2008 report that “many stakeholders agreed that participating in stakeholder meetings and, in particular, participating in lower-level committees and working groups, provided the best opportunity to influence RTOs’ decisions that may affect electricity prices.”<sup>1</sup> The GAO report also indicated that nearly 200 stakeholder meetings were held in the New England electricity marketplace in 2007.<sup>2</sup>

In response to these sentiments and conclusions, FERC encouraged ISOs and RTOs in its Order 719 to commit to “responsiveness to customers and other stakeholders, and ultimately to the consumers who benefit from and pay for electric services.”<sup>3</sup> To fulfill the order’s requirements to examine its responsiveness and consider improvements, ISO New England established the RTO Responsiveness and Governance Working Group.<sup>4</sup> To ensure that all stakeholder groups had input into the process, an advisory committee with representatives from the ISO, the New England Conference of Public Utility Commissioners (NECPUC), the New England

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<sup>1</sup> Government Accountability Office, *FERC Could Take Additional Steps to Analyze Regional Transmission Organizations’ Benefits and Performance*, p. 35 (September 2008); <http://www.gao.gov/new.items/d08987.pdf>.

<sup>2</sup> This amount did not include the lower-level committees mentioned above.

<sup>3</sup> FERC Order No. 719, *Wholesale Competition in Regions with Organized Electric Markets* (October 17, 2008); <http://www.ferc.gov/whats-new/comm-meet/2008/101608/E-1.pdf>.

<sup>4</sup> Meeting notes and materials from the RTO Responsiveness and Governance Working Group meetings are available on the group’s web page, [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/rto/index.html](http://www.iso-ne.com/committees/comm_wkgrps/othr/rto/index.html).

Power Pool (NEPOOL), and regional consumer advocates was formed to guide the overall process and agenda.<sup>5</sup>

The ISO made a compliance filing in April 2009 to demonstrate its responsiveness with current practices and to report on proposed new activities consistent with the outcome of the stakeholder process.<sup>6</sup> Among other things, the ISO committed to provide consumers and other stakeholders, qualitative and quantitative information on the cost impacts of major new initiatives going through the regional stakeholder process and to enhance the transparency of the ISO board's decision-making process. The ISO is developing a framework for and directing resources to conducting such analysis in a consistent and transparent fashion. Additionally, the working group established the Consumer Liaison Group as a forum to allow for the bidirectional flow of information between ISO New England and consumer organizations, advocates, ratepayers, and consumers.

Given the magnitude of the energy and capacity market costs and the outlook for transmission investment in the region, consumers and consumer advocates are justified in wanting to understand and participate in the processes that influence New England's market and transmission system outcomes. The CLG is one avenue that consumers and consumer organizations have to further their knowledge of the power system, receive status reports of major issues being considered by the ISO and stakeholders, learn of the economic impacts of certain proposals, and prepare for direct participation in the decision-making process.

## **Objectives and Structure of the Consumer Liaison Group**

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The CLG is a forum for the sharing of information between ISO New England and those who ultimately use and pay for electricity in New England.

### **Objectives**

The general objectives of the CLG are as follows:

- Be generally informed of the operation of the power system and industry issues, including having access to ISO subject matter experts
- Be made aware of market changes, in advance of final consideration by the ISO, which can have an impact on consumers
- Work with the ISO to ensure that it provides timely quantitative and qualitative information on the cost impacts of proposed initiatives
- Have the ISO assist consumers in identifying issues that have economic impacts to consumers
- Be informed of and participate in the stakeholder process that determines power market rules and power system needs

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<sup>5</sup> Chairs of the RTO Responsiveness and Governance Working Group were Anne George, Vice President, Corporate Communications and External Affairs, on behalf of the ISO; Kevin Conroy, from the Massachusetts Attorney General's office, on behalf of consumer advocates; John Burke, from the Vermont Public Service Board (and past NECPUC President), on behalf of NECPUC; and Brian Forshaw, a NEPOOL Participants Committee member, on behalf of NEPOOL.

<sup>6</sup> ISO New England Inc. and NEPOOL, *Filing of ISO New England Inc. and New England Power Pool in Response to Order No. 719; Docket No. ER09-\_\_\_-000* (April 28, 2009); [http://www.iso-ne.com/regulatory/ferc/filings/2009/apr/er09-1051-000\\_4-28-09\\_order%20719.pdf](http://www.iso-ne.com/regulatory/ferc/filings/2009/apr/er09-1051-000_4-28-09_order%20719.pdf).

- Be informed of the results of any economic analysis conducted and presented to stakeholders in the regional stakeholder process
- Provide the ISO with a greater understanding of the specific issues of interest to consumers

### **Membership**

Current Consumer Liaison Group membership consists of consumers and consumer representatives, including state consumer and ratepayer advocates, state business and industry associations, chambers of commerce, and other end users, such as Solutia, Inc., Partners Health Care, Inc., Acushnet Company, and WGBH Educational Foundation, to name a few. The CLG is an open forum, and several NEPOOL members are also regular, active participants in the CLG discussions. In 2009, the CLG met three times, attracting a diverse group of approximately 50 attendees at each meeting.

Significant efforts were made to notify a wide range of consumers and consumer organizations throughout the region of the CLG initiative. ISO New England's External Affairs Department, in collaboration with the Massachusetts Attorney General's Office, conducted outreach and research to develop a list of well-suited consumer-focused organizations for CLG participation. ISO staff also visited some of the region's leading business and industry associations in Connecticut, New Hampshire, and Massachusetts to promote the importance of the CLG and seek additional avenues to disseminate CLG information.

A dedicated section of ISO New England's Web site has been established for all CLG materials and communications. This practice ensures that the body of information developed through the CLG is transparent, easily accessible, and available to all interested consumers and industry participants.<sup>7</sup>

### **Governance**

The CLG has established a Coordinating Committee (CLGCC) to act as an advisory group. It is charged with serving as the point of contact with ISO New England to identify issues of importance to the CLG membership, set the agenda for CLG meetings, and generally guide the work of the CLG.

To ensure that a range of consumer interests are considered when determining CLG priorities, the CLGCC was established with specific membership requirements, including the following:

- The CLGCC must have twelve members, with no more than four representing one New England state.
- At least one representative of residential ratepayers and one representative of commercial and industrial ratepayers must be a member of the committee.
- Members must be a ratepayer (or directly represent ratepayers), a member of a consumer organization, or a government consumer or government ratepayer advocate.

CLGCC members appointed to date include: Jed Nosal (Attorney General's Office, MA); Bob Espindola (Acushnet Group, MA); Robert Rio (Associated Industries of Massachusetts [AIM], MA); Richard Steeves (Office of Consumer Counsel, CT); Agnes Gormley (Public Advocate's Office, ME); Hans Mertens (Department of Public Service, VT); Mary Smith (Harvard Dedicated Energy Limited, MA); and Kevin Hennessy (Connecticut Business and Industry Association).<sup>8</sup> Additionally, Mr. Nosal and Mr. Steeves were selected to be Chair and Vice Chair of the CLG Coordinating Committee, respectively.

<sup>7</sup> The CLG Web site is available at [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/clg/index.html](http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/index.html).

<sup>8</sup> More information on the Consumer Liaison Group Coordinating Committee is available at [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/clg/consum\\_lias\\_grp\\_gov/clg\\_cc\\_2\\_2\\_2010.pdf](http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/consum_lias_grp_gov/clg_cc_2_2_2010.pdf).

The full details of the governance structure of the CLG are detailed in its Purpose and Structure document.<sup>9</sup>

## **Participating in the Regional Stakeholder Process**

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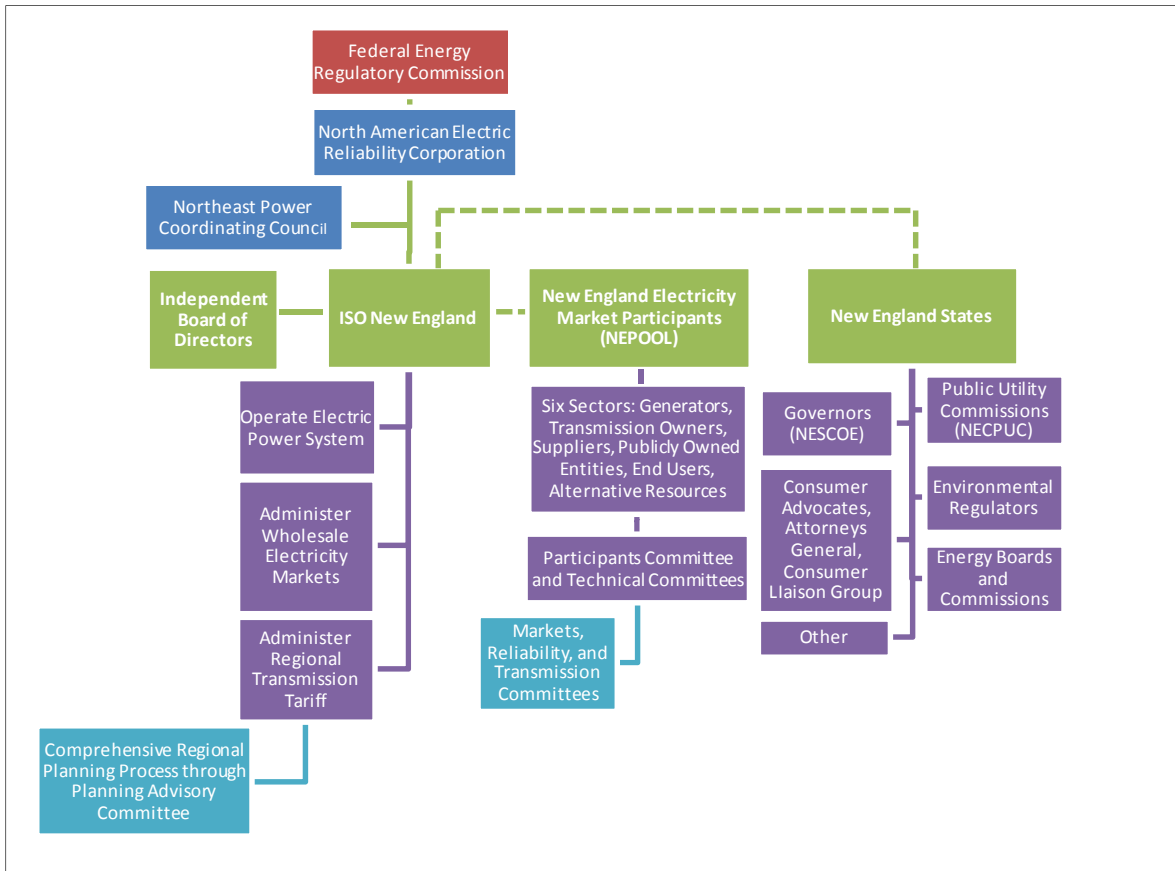
The Federal Energy Regulatory Commission (FERC) has delegated authority to ISO New England to operate the power system in accordance with mandatory reliability standards, to propose wholesale electricity market design changes, to determine the needs of the regional power system, and to develop annual transmission plans to meet these needs.<sup>10</sup> While these authorities have an impact on electricity market outcomes, the ISO has committed to consulting with numerous state and federal regulators, market participants, and consumer advocates to make these proposals and determinations and to develop the regional plans.<sup>11</sup> Consultations are formal and informal, iterative, and continuous. Figure 1 provides a high-level depiction of the ISO's three primary responsibilities and the numerous industry and government stakeholders it consults with to fulfill them.

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<sup>9</sup> The CLG Purpose and Structure document is available at [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/clg/consum\\_lias\\_grp\\_gov/clg\\_structure\\_document\\_revised\\_12\\_29\\_09.pdf](http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/consum_lias_grp_gov/clg_structure_document_revised_12_29_09.pdf).

<sup>10</sup> The ISO operates under several FERC tariffs, including the ISO New England *Transmission, Markets, and Services Tariff* (2009), of which Section II is the *Open Access Transmission Tariff* (OATT) and Section IV is the *Self-Funding Tariff*. The tariffs determine the rates, terms, and conditions for transmission, market, and other services the ISO provides within New England. The tariffs can be accessed at <http://www.iso-ne.com/regulatory/tariff/index.html>.

<sup>11</sup> NEPOOL is a group formed in 1971 by the region's private and municipal utilities to foster cooperation and coordination among the utilities in the six-state region for ensuring a dependable supply of electricity. Today, NEPOOL members are ISO stakeholders and market participants.



**Figure 1:** ISO New England’s primary responsibilities and industry and government stakeholders.

Members of NEPOOL review and vote on all changes to the market rules, tariff provisions, operating procedures, the information policy, the Installed Capacity Requirement, and reliability standards.<sup>12</sup> Within this review process, there are ample opportunities to become informed of proposed changes and gain an understanding of their impacts. The NEPOOL process requires each change to be reviewed and voted on first by lower-level technical committees, including the reliability, markets, and transmission committees.

Market design changes go through the NEPOOL process, which involves consideration by six sectors of the electric industry, including generators, transmission owners, suppliers, publically owned entities, end users, and alternative resources. This process also incorporates the active participation of NECPUC – the organization for the region’s economic regulators. The ISO manages the planning process, which involves assessing power system needs and developing the transmission system and is open to all electricity system stakeholders that wish to participate. Both NECPUC and the recently established New England States Committee on Electricity (NESCOE) are active participants. Both the market design and planning processes are extensive and ongoing; many technical committees and working groups focus on the details of the issues and associated analyses.

<sup>12</sup> The *Installed Capacity Requirement* is the amount of resources (level of capacity) a balancing authority area needs to meet its resource adequacy planning criterion and when it needs these resources, according to the Northeast Power Coordinating Council resource adequacy criterion, A-2, *Basic Criteria for Design and Operation of Interconnected Power Systems*. This criterion states that the probability of disconnecting any firm load due to resource deficiencies must be, on average, less than once in 10 years.

Because of the potential economic impacts of changes to the market rules and outcomes from the regional planning process, this report primarily focuses on the actions of the NEPOOL Planning Advisory Committee (PAC) and the Markets Committee (MC).<sup>13</sup> Numerous other committees and working groups exist to provide information and expertise to the PAC and MC process.

### **Planning Advisory Committee**

Stakeholders have the opportunity through the Planning Advisory Committee to review and comment on the scope of needs assessments, study results, and potential transmission solutions in a process outlined in Attachment K of the ISO's *Open Access Transmission Tariff* (OATT). As part of this process, each year the ISO reviews and updates the forecast of future electric energy demand, a major driver of the needs analyses.

The PAC is a stakeholder group that is open to any interested entity, including but not limited to transmission customers, market participants, and representatives of the New England states, including regulators and consumer advocates. Its process is designed to solicit stakeholder input at the earliest stages of system planning and, particularly, in advance of the timeframe for considering specific transmission solutions.<sup>14</sup> In developing needs assessments, the ISO frequently conducts additional analysis to address stakeholder requests for additional information. For example, the PAC may request that the ISO evaluate a 345 kV upgrade where a 115 kV upgrade was initially identified as a solution.

The states are active participants in the regional planning process, and some states actually require certain agencies to participate in the PAC by statute. Furthermore, state actions, such as Connecticut's request for proposals for resources, can alter needs assessments and may defer the need for transmission projects. To ensure that the ISO receives the full benefit of input from all interested stakeholders, the ISO convenes numerous planning meetings with the PAC over the course of a year.

### **Markets Committee**

The Markets Committee is a committee of the NEPOOL stakeholder process that develops and implements market design changes. It is considered to be a lower, technical committee in the process, but it can have a major impact on the mechanics of New England's markets for energy and capacity as well as the smaller markets for reserve capacity and regulation. Proposals to change the market design can be advanced by the ISO, market participants, or state regulators and agencies through participants within their state. As a general matter, the MC must discuss these proposals at a minimum of three meetings before they can be voted on and advanced to the full NEPOOL Participants Committee (PC). Through these discussions, stakeholders, including consumer advocates, can become educated on the justification for and impacts associated with a particular market-design change. These discussions also provide the first opportunity for consumer advocates to state their viewpoints on certain change proposals.

Major market design changes, such as modifications to the electric energy and capacity markets, can take several months and even years to complete. Recently, the ISO and stakeholders have established special working groups and committees to work on the higher-level policies and design elements associated with major market changes and other important issues. This structure allows time for all stakeholders to develop a common understanding of the need for changes, objectives being pursued, and market impacts.

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<sup>13</sup> An in-depth description of the Planning Advisory Committee is included in Attachment N of the *Open Access Transmission Tariff*, [http://www.iso-ne.com/regulatory/tariff/sect\\_2/oatt/1-23-10\\_sect\\_ii.pdf](http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/1-23-10_sect_ii.pdf). An in-depth description of the Markets Committee is included in Section 8.2.2 of the Participants Agreement, [http://www.iso-ne.com/regulatory/part\\_agree/participants\\_agreement.pdf](http://www.iso-ne.com/regulatory/part_agree/participants_agreement.pdf).

<sup>14</sup> Stakeholders can provide comments on needs assessments at PAC meetings or can submit written comments to [HPACMatters@iso-ne.com](mailto:HPACMatters@iso-ne.com).

Representatives of the ISO, NEPOOL, NECPUC, and consumer advocate groups have chaired these special working groups to ensure that all stakeholder viewpoints are considered when deciding the agenda for the process. Generally, after consensus has been achieved on the policy and design elements, the MC will begin the detailed work of developing rules to achieve the agreed-upon market design changes.

## 2009 Activities of the Consumer Liaison Group

The CLG began operation in July 2009 and held subsequent meetings in October and December. During these meetings, CLG members refined CLG objectives to ensure that the group meets the informational needs of consumers; established a governance structure to guide the group; and identified important consumer issues to be pursued. The CLG also welcomed FERC Commissioner Philip Moeller as a special guest at the December meeting. The next section summarizes the CLG discussions of three major consumer issues in the wholesale electricity markets.

### Transmission Investment

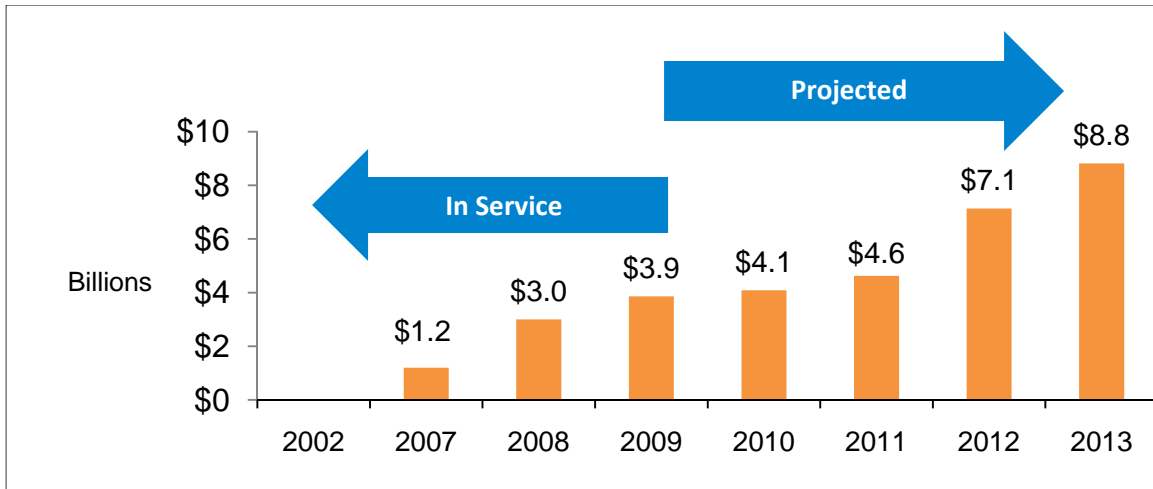
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Consumers and state regulators in the region have expressed concern about the cost, cost controls, and necessity of current and future regional transmission investment. To facilitate an understanding of the magnitude, timing, and impact of the cost to consumers, the ISO's Vice President of System Planning, Stephen Rourke, reviewed the aspects of New England's 10-year system planning process, including the process for determining system needs and assessing the adequacy of market responses to these identified needs. He also reviewed the process for developing transmission projects to meet mandatory reliability standards, including consideration and advancement of the most cost-effective alternatives. Transmission investment that has occurred to date and needed transmission projects on the horizon also were discussed. Additionally Mr. Rourke discussed the region's methodology for allocating the costs of regional reliability-based transmission projects. These costs are allocated across the region to all transmission customers through transmission rates.

CLG members were provided with the estimated changes to transmission rates for retail consumers from 2009 through 2013 as forecasted by the region's transmission utilities. According to these estimates, if *all* the projects scheduled to be put into service are implemented *on time*, the Regional Network Service rate will double from 2009 to 2013.<sup>15</sup> Although this is a significant increase, it represents a period of time in which the region was catching up on decades of underinvestment in the transmission system. Additionally, Mr. Rourke noted that lower forecasted demand in the region, along with the entry of new market resources, may defer some of these projects and reduce the estimated rate impacts. Figure 2 shows the costs and projected costs for in-service and planned transmission projects in the region from 2002 to 2013.

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<sup>15</sup> Additional details on the rate information included in the ISO's presentation is available at [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/clg/mtrls/2009/dec102009/iso\\_transmission\\_planning\\_final.pdf](http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2009/dec102009/iso_transmission_planning_final.pdf).



**Figure 2:** Cumulative transmission investment in New England, 2002 to 2013.

FERC Commissioner Philip Moeller’s meeting with the CLG in December also focused on issues associated with transmission costs, including transmission incentives provided by the *Energy Policy Act of 2005* and escalating costs for transmission construction and development. Commissioner Moeller agreed with concerns that consumers should not be required to pay more for transmission than it costs but also emphasized the role that transmission plays in reducing the consumer cost of power by providing access to economic power supplies. As an example, out-of-market costs have dropped significantly in New England, from \$256 million in 2008 to \$55 million in 2009, mainly due to significant upgrades to the transmission system that were completed in 2009.<sup>16</sup>

## Wholesale Electricity Market Pricing

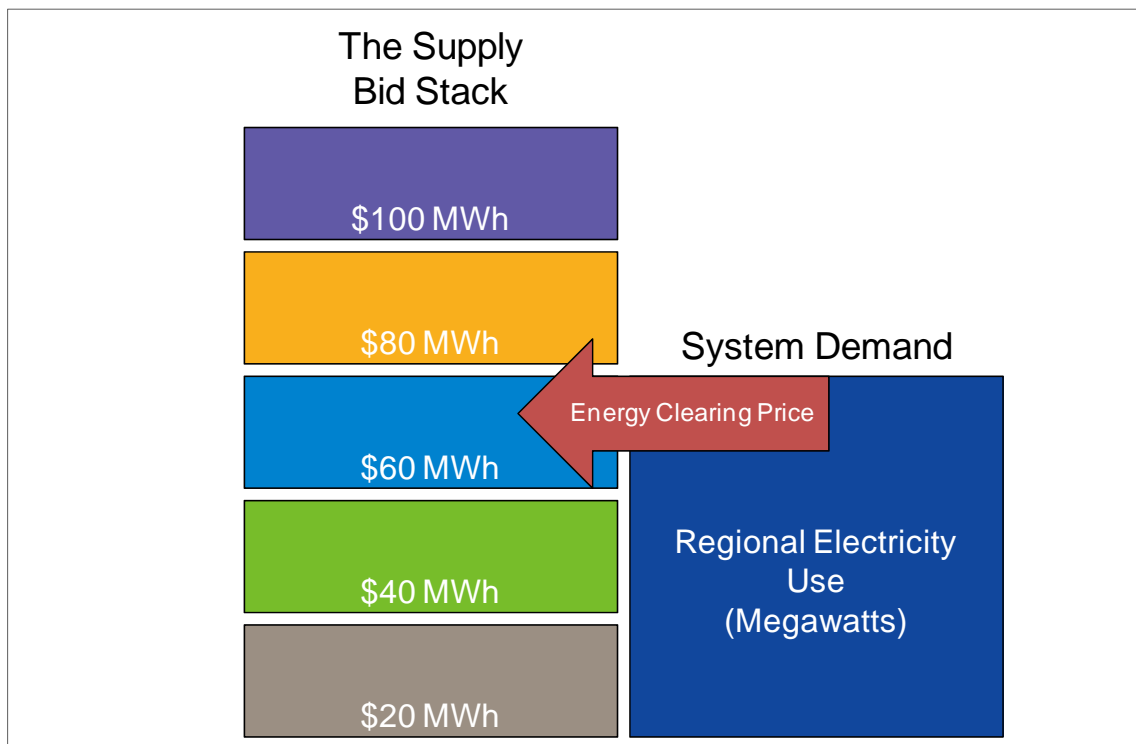
One of the first issues raised by CLG members concerned the method used to clear the region’s multibillion dollar electric energy marketplace. Specifically, the CLG wanted to understand the rationale and impacts of a market that pays certain suppliers a price that may be *higher* than the price they bid into the market’s auction process. Marc Montalvo, Director, Assessment and Investigation in the ISO’s Market Monitoring Unit explained that New England’s Uniform Clearing Price (UCP) auction provides a structure for all consumers to benefit from competition among resources on the basis of operating cost. In making this conclusion, Mr. Montalvo provided an in-depth presentation of the theory, mechanics, and outcomes associated with the UCP auction, noting that it is the same process used to clear all the electric energy markets operating in the United States. He also described how this compares to alternative auction-clearing approaches.<sup>17</sup>

Mr. Montalvo explained that the ISO dispatches generators in the region starting from the lowest-priced bids (this includes generators that bid \$0, such as hydro units and nuclear units) and progressing to higher-priced bids (i.e., natural-gas-fired generating units), until the region has enough generation to meet consumers’ demand for electricity. Under the UCP auction, each generator receives the same (uniform) price based on the price of the last unit needed to meet the overall demand for electricity, regardless of the generator’s bid. The

<sup>16</sup> Out-of-market costs typically are the result of operating some resources out of economic-merit order, which occurs to protect the overall resource adequacy and transmission security of the system. ISO New England, Inc., *2009 Annual Markets Report* (May 18, 2010), Section 7.1; [http://www.iso-ne.com/markets/mktmonmit/rpts/other/amr09\\_final\\_051810.pdf](http://www.iso-ne.com/markets/mktmonmit/rpts/other/amr09_final_051810.pdf).

<sup>17</sup> Mr. Montalvo’s presentation is available at [http://www.iso-ne.com/committees/comm\\_wkgrps/otr/clg/mtrls/2009/oct192009/clg\\_10\\_19\\_09\\_montalvo.pdf](http://www.iso-ne.com/committees/comm_wkgrps/otr/clg/mtrls/2009/oct192009/clg_10_19_09_montalvo.pdf).

bid price of the last generator used to satisfy the total demand for electricity therefore determines the wholesale price of electricity. Figure 3 depicts an example of a supply bid stack.



**Figure 3:** Example of a supply bid stack.

The price from an UCP auction is a signal for investing in resources that can produce electric energy for less than the “price setting” resources. Thus, the auction provides an opportunity for existing generators to recover capital costs and creates incentives for new resources with low operating costs to invest in the market. ISO New England’s Internal Market Monitor (IMM) has the authority to monitor participant bidding behavior to ensure that offers are competitive.<sup>18</sup>

If generators were paid what they bid, the price of electric energy would not go down because they would bid in a completely different way. In a pay-as-bid auction, (another method suggested by some stakeholders), generators would submit bids that reflect their best guess at what the price will be for the most expensive resource needed at the time, instead of bidding their actual cost as they do in a UCP auction. In the absence of market power, a pay-as-bid model and an UCP auction generally are revenue equivalent. With the expected costs of the two approaches being equal, the UCP auction is preferred because it provides operating cost transparency and ensures that the least expensive, most efficient set of resources are selected to run each day.<sup>19</sup>

<sup>18</sup>Section III, *Market Rule I*, Appendix A; [http://www.iso-ne.com/regulatory/tariff/sect\\_3/6-1-10\\_mr\\_1\\_appendix\\_a.pdf](http://www.iso-ne.com/regulatory/tariff/sect_3/6-1-10_mr_1_appendix_a.pdf).

<sup>19</sup> ISO New England Inc., *The Benefits of Uniform Clearing-Price Auctions for Pricing Electricity: Why Pay-As-Bid Auctions Do Not Cost Less* (March 2006); [http://www.iso-ne.com/committees/comm\\_wkgrps/otr/clg/mtrls/2009/jul292009/uniform\\_clearing\\_price\\_auctions\\_whitepaper.pdf](http://www.iso-ne.com/committees/comm_wkgrps/otr/clg/mtrls/2009/jul292009/uniform_clearing_price_auctions_whitepaper.pdf).

## Analysis of Wholesale Costs and Retail Rates

CLG members do not have a common understanding of how wholesale market costs are manifested in a typical retail consumer's bill. Also, based on an historical analysis discussed at the CLG's initial meeting in July, members are uncertain about and have differing opinions on the magnitude of the impact of wholesale cost components on a typical residential consumer's monthly bill. As a result, the CLG asked the ISO to update the prior analysis it had conducted of wholesale costs and retail rates.

The ISO's Chief Financial Officer, Robert Ludlow directed the analysis, which was based on costs and rates as of August 2009, and presented its conclusions to the CLG. He emphasized that the relationship between wholesale market costs and residential retail rates varies based on state retail procurement policies. In particular, prices from the short-term wholesale markets are very different from the fixed prices of the supplier services utilities provide to residential consumers, which tend to have fixed prices over a longer period. Mr. Ludlow also noted that the retail markets have several different customer classes, such as industrial and commercial customers, and that market pricing for these customers may be very different from residential customer pricing.

To better understand the dynamic nature of wholesale and retail power costs and the changing cost components of both, the CLG and representatives of the New England states requested ongoing updates to the analysis to reflect these changes. The analysis was subsequently updated in March 2010, the results of which confirmed that wholesale costs and residential retail power supply rates can vary dramatically over time. Table 1 shows the range of wholesale power costs for the 12 months ending August 2009 and March 2010 among the New England states and the range of residential retail supply rates in effect on each of those dates.

**Table 1**  
**2009 and 2010 Wholesale Market Costs**  
**and Residential Retail Power Supply Rates <sup>(a)</sup>**

	Wholesale Market Costs (¢/kWh)	Residential Retail Power Supply Rates <sup>(b)</sup> (¢/kWh)
<b>August 2009</b>	4.84 – 5.14	8.79 – 12.41
<b>March 2010</b>	5.66 – 6.38	8.77 – 11.15

(a) The analysis is based on an average residential consumer that uses 750 kWh per month. The values indicate a range of lowest to highest costs among the states.

(b) The range of residential retail power supply rates includes the states that have unbundled retail electric markets. Vermont has not unbundled its retail electricity market, and therefore its rates are not included as part of this analysis.

Additional results of the analysis are as follows:

- From 2009 to 2010, wholesale market costs increased, reflecting increased fuel costs. At the same time, residential retail power rates declined, reflecting the expiration of older, more expensive, supply contracts.

- From 2009 to 2010, total residential retail bills (including costs for power supply, distribution, and transmission charges) changed, with some states seeing a decrease and others experiencing an increase.<sup>20</sup>
- The regional transmission rate increased from 0.75¢/kWh in 2009 to 0.88¢/kWh in 2010, representing a fraction of the total residential retail rates.

The ISO's External Affairs Department also conducted an analysis of the retail procurement policies in the six New England states to help CLG members understand why retail and wholesale power costs are not likely to be aligned. Specifically, these policies are designed to achieve stable prices for retail consumers by staggering the amount and timing of power procurement such that all the power needs of utility customers are not fully exposed to the market price at any given time. This practice protects consumers from price volatility in the wholesale market but also delays when consumers receive the benefit of low wholesale market prices. Table 2 shows the timing of residential retail rate changes for the region's major utilities.<sup>21</sup>

**Table 2**  
**New England Residential Rate Schedule, 2010**

State	% of Regional Load <sup>(a)</sup>	Utility	Effective Date of Current Residential Rates	Next Anticipated Residential Rate Change
MA	43%	NGRID	May 1, 2010	November 1, 2010
		Unitil	June 1, 2010	December 1, 2010
		NSTAR	July 1, 2010	January 1, 2011
		WMECO	July 1, 2010	January 1, 2011
CT	28%	UI	July 1, 2010	January 1, 2011
		CL&P	July 1, 2010	January 1, 2011
NH	10%	NGRID	May 1, 2010	November 1, 2010
		Unitil	May 1, 2010	November 1, 2010
		PSNH	January 1, 2010	August 1, 2010
ME	8%	BHE	March 1, 2010	March 1, 2011
		CMP	March 1, 2010	March 1, 2011
RI	7%	NGRID	March 1, 2010	October 1, 2010
VT	4%	GMP	April 1, 2010	January 1, 2011
		CVPS	April 1, 2010	January 1, 2011

(a) According to FERC Form No. 715, *Annual Transmission Planning and Evaluation Report* (18 CFR 141.300) (2008).

<sup>20</sup> The range of total residential retail rates ranged from 15.12¢/kWh to 20.60¢/kWh in 2009 and from 15.59¢/kWh to 19.76¢/kWh in 2010.

<sup>21</sup> The assumptions included in the ISO's analysis are available at [http://www.iso-ne.com/committees/comm\\_wkgrps/othr/clg/mtrls/2009/oct192009/clg\\_10\\_19\\_09\\_ludlow%20\(2\).pdf](http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2009/oct192009/clg_10_19_09_ludlow%20(2).pdf).

## ISO New England Activities and Initiatives

ISO New England and regional electricity market stakeholders were involved in numerous activities in 2009 that will shape future market design and the scope of transmission planning—and that ultimately will have an impact on the consumer cost of electricity. Below is a listing of ISO's major activities in 2009.

### Annual Activities

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The ISO provides significant information to stakeholders each year to aid decision making and participation in the stakeholder process. This includes annually reporting on market results and conditions and a comprehensive 10-year power system needs assessments.

### Market Reports

ISO New England regularly reports on the performance of the wholesale electricity markets. In addition to detailed quarterly, monthly and weekly reports, the ISO's Internal Market Monitor develops a comprehensive report on the performance, operation, and development of the markets each year.<sup>22</sup>

ISO New England's *2009 Annual Markets Report* (AMR) was published in May 2010 and reported the following results:<sup>23</sup>

- The average wholesale cost of electric energy in New England fell 50% in 2009, reflecting lower fuel prices and lower demand. Fuel costs also fell about 50%, and this direct correlation is an indicator of competitive markets.
- Demand for electricity was 3.7% lower than in 2008; when the year-to-year variations in weather are factored out, demand was down by 2.2%. This suggests that broader declines in economic activity have affected electric energy consumption.
- The first three Forward Capacity Auctions (FCAs) procured surplus capacity for the years ahead, including new supply-side resources and demand resources, such as energy efficiency. These results reduce the need for Reliability Agreements.<sup>24</sup> In 2009, costs for Reliability Agreements were \$71 million, down from \$127 million in 2008.

ISO New England's External Market Monitor (EMM), David Patton of Potomac Economics, also reports on the performance of the markets each year. Dr. Patton reported similar results as the IMM and also highlights that significant transmission upgrades in Connecticut and Southeastern Massachusetts completed in 2009 led to sharply reduced congestion in those areas and reductions in uplift charges from reliability agreements and supplemental commitment for local reliability.<sup>25</sup>

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<sup>22</sup> See *Market Rule I*, Appendix A, for additional information on the functions of the Internal Market Monitor and External Market Monitor (EMM); [http://www.iso-ne.com/regulatory/tariff/sect\\_3/1-24-10\\_mr\\_1\\_appendix\\_a.pdf](http://www.iso-ne.com/regulatory/tariff/sect_3/1-24-10_mr_1_appendix_a.pdf).

<sup>23</sup> ISO New England, Inc., *2009 Annual Markets Report* (May 18, 2010); [http://www.iso-ne.com/markets/mktmonmit/rpts/other/amr09\\_final\\_051810.pdf](http://www.iso-ne.com/markets/mktmonmit/rpts/other/amr09_final_051810.pdf).

<sup>24</sup> A *Reliability Agreement* is an agreement made between the ISO and a generation owner whereby an approved generator continues to operate, even when it is not economical to do so, to ensure system reliability, and whereby the generation owner recovers the fixed costs for this operation.

<sup>25</sup> David B. Patton, Ph.D., Pallas LeeVanSchaick, Ph.D, and Jie Chen, Ph.D., Potomac Economics, Ltd., *2009 Assessment of the Electricity Markets in New England* (June 2010); [http://www.iso-ne.com/markets/mktmonmit/rpts/ind\\_mkt\\_advrs/2009\\_immu\\_report\\_final.pdf](http://www.iso-ne.com/markets/mktmonmit/rpts/ind_mkt_advrs/2009_immu_report_final.pdf).

On May 17, 2010, the IMM, EMM, and representatives of ISO management met with state and federal regulators and consumer advocates in Brewster, Massachusetts, in a nonpublic meeting to review and discuss the results of the 2009 AMR.

### **Regional System Planning**

A diverse set of stakeholders, including consumer advocates, actively participate in the ISO's open regional planning process. As in prior years, the process in 2009 included regular meetings to discuss numerous detailed issues associated with the development of a comprehensive regional needs assessment and transmission project plan. Several factors, including the national economic recession, resulted in a significant revision to the ISO's annual load forecast in 2009. Because the load forecast is a key input in determining the future need for new resources and transmission, this revision resulted in a review of all the major transmission projects in the plan to determine whether the date of need should be modified. These ongoing reviews will continue to be part of stakeholder consideration in the planning process.

Given the emphasis on the development of a smart grid in national policy and legislation, a special feature of the planning process in 2009 included a day-long forum to explore smart grid technologies and applications with national and regional experts and policymakers.<sup>26</sup>

Highlights from the ISO's 2009 regional system planning process and the *2009 Regional System Plan (RSP)* are as follows:

- The region has made numerous improvements required for power system reliability. In total, over 300 transmission upgrades—representing an investment of approximately \$4 billion—have been put in service in all six states between 2002 and 2009.
- Competitive wholesale markets have encouraged the construction of approximately 14,000 MW of new generation in the region.
- To prepare for the grid of the future, the ISO is conducting two major studies addressing the challenges of integrating large amounts of wind and demand resources into system operations and markets.

RSP09 also offers the following recommendations for the ISO, policymakers, and stakeholders:

- Increase coordination and joint planning with neighboring systems, including exploring the ability to import power from and export power to the eastern Canadian provinces and New York.
- Monitor regional environmental goals and advise regulatory agencies of the potential impacts of environmental regulations on electric power system reliability.
- Work with stakeholders to support research and development activities and the establishment of industry standards for integrating smart grid technologies.
- Improve the understanding of state-sponsored energy-efficiency programs and their potential for growth.

### **Economic Study for the New England Governors**

Conducting economic studies is another part of the regional planning process. In 2009, ISO New England conducted an economic study of potential wind-integration scenarios in New England.<sup>27</sup> The analysis was

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<sup>26</sup> Meeting materials are available at [http://www.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/mtrls/2009/may202009/index.html](http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2009/may202009/index.html).

<sup>27</sup> ISO New England Inc., *New England 2030 Power System Study* (February 2010); [http://www.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/reports/2010/economicstudyreportfinal\\_022610.pdf](http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/reports/2010/economicstudyreportfinal_022610.pdf).

designed to aid the states in their development of the *New England Governors' Renewable Energy Blueprint*, a document that analyzes the regulatory frameworks available to pursue the development of large-scale wind and transmission resources.<sup>28</sup>

New England has significant onshore and offshore wind resources that could be developed and added to the grid with appropriate transmission expansion. Analysis of the conceptual transmission required to support the integration of New England wind resources indicates that connecting certain offshore wind results in the most cost-effective use of new and existing transmission—because it also allows for the integration of some near-shore inland wind. Renewable and low-carbon-emitting resources located nearby in eastern Canada could be available to New England with relatively modest transmission expansions to the Québec and New Brunswick power systems. The report found that a combination of in-region and nearby Canadian wind resources would meet approximately 15% of the region's energy needs with clean resources and require approximately \$10 billion in new transmission infrastructure investment

The economic study also found that the development of large amounts of Midwest wind and long-distance transmission to deliver it to the Northeast would likely be more expensive for New England consumers. They would have to pay a share of the transmission development from the Midwest in addition to paying new internal infrastructure that would be needed to move the energy into and throughout the region. The study observed that a project of this magnitude could result in New England consumers having an estimated cost of \$20–\$47 billion.

ISO participated in a forum on Capitol Hill to present the findings of the 2009 economic study to the New England congressional delegation. At the same meeting, NESCOE presented the findings of the Governors' Blueprint and urged for a federal/regional partnership, such as those included in the federal stimulus legislation, to assist New England in developing its full renewable energy potential.<sup>29</sup>

The New England states, working through NESCOE, have requested a second economic study, looking twenty years into the future.<sup>30</sup> The 2010 study will examine replacing the region's older coal and oil-fired generation with renewable resources delivered through additional transmission or repowering the existing sites with natural gas resources.

## **Special Initiatives in 2009**

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The ISO also was involved in projects that promoted smart grid technologies, reviewed the FCM, examined price-responsive demand (PRD), and advanced its annual budget development process.<sup>31</sup>

### **Smart Grid Funding**

The ISO and the region's transmission companies secured funding from the Department of Energy under the *American Recovery and Reinvestment Act (ARRA) of 2009* for a smart grid investment grant to implement synchrophasor infrastructure and data utilization (SIDU) in New England.<sup>32</sup> The ISO and DOE finalized the

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<sup>28</sup> New England States Committee on Electricity, *New England Governors' Renewable Energy Blueprint* (September 15, 2009); [http://nescoe.com/uploads/September\\_Blueprint\\_9.14.09\\_for\\_release.pdf](http://nescoe.com/uploads/September_Blueprint_9.14.09_for_release.pdf).

<sup>29</sup> *American Recovery and Reinvestment Act of 2009* (February 13, 2009); [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111\\_cong\\_bills&docid=f:h1enr.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h1enr.pdf).

<sup>30</sup> New England States Committee on Electricity Request for Economic Study; [http://www.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/mtrls/2010/apr272010/nescoe.pdf](http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2010/apr272010/nescoe.pdf).

<sup>31</sup> *Price response* is the reduction of electricity consumption in response to a price signal in exchange for compensation based on wholesale electricity prices.

<sup>32</sup> See footnote 29.

grant agreement on June 3, 2010, which will fund approximately 50% of the total project cost of \$18 million. This funding will enable the ISO's smart grid efforts to be completed at a lower cost to the region and allow the region to realize the benefits of smart grid technology much sooner than without federal funding. The ISO and the region's transmission companies will provide approximately \$10 million over a three-year period to fund and implement the project. The ISO's total share of the project costs are approximately \$2.5 million and will be paid through the capital budget.

This project will serve as a backbone for regional smart grid efforts. The goal of the SIDU project is to provide the ISO and associated transmission owners a significantly expanded base of phasor measurement units (PMUs), phasor data concentrators, and greatly enhanced phasor data analytical tools. The implementation of this project should yield efficiencies that will result in lower grid operation costs. The deployment of this technology was one of DOE's key recommendations following the Northeast Blackout of 2003.

### **Forward Capacity Market Review to Improve New England's Electricity Markets**

ISO New England, the states, and NEPOOL spent significant time in 2009 reviewing the Forward Capacity Market and considering what changes, if any, might be needed to enhance its effectiveness. With two Forward Capacity Auctions completed, stakeholders set out to consider a number of changes suggested by the Internal Market Monitor in a major report on the operation and effectiveness of the first two auctions published in June 2009.<sup>33</sup>

In this report, the IMM made several recommendations. One recommendation was to set electric energy prices in the FCA competitively and at a level that enables the region to procure sufficient capacity to meet its needs. This would prevent consumers from paying more than necessary for capacity. Another was to align the reliability criteria used in determining FCM capacity zones with the reliability criteria the ISO uses to review delist bids in the auction.<sup>34</sup> This change would help minimize out-of-market payments and ensure that the resource adequacy needs are met for each capacity zone.

The IMM's recommendations address rules that affect the following aspects of the market:

- The creation of capacity zones
- Price setting when out-of-market capacity exceeds new capacity
- Comparability of demand resources
- The determination of the auction starting price

The Forward Capacity Market Working Group (FCMWG) was established to consider the many important FCM-related issues facing the region and to maximize regional participation so that interested parties from

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<sup>33</sup> See ISO New England Inc., *Information Filing of the Internal Market Monitoring Units Report Analyzing the Operations and Effectiveness of the Forward Capacity Market* (June 5, 2009); [http://www.iso-ne.com/regulatory/ferc/filings/2009/jun/er09-1282-000\\_06-05-09\\_market\\_monitor\\_report\\_for\\_fcm.pdf](http://www.iso-ne.com/regulatory/ferc/filings/2009/jun/er09-1282-000_06-05-09_market_monitor_report_for_fcm.pdf). FCA #1 was held February 4–6, 2008, for the commitment period June 1, 2010, to May 31, 2011; FCA #2 was held December 8–10, 2008, for the commitment period June 1, 2011, to May 31, 2012.

<sup>34</sup> Determined before each Forward Capacity Auction, a capacity zone is a geographic subregion of the New England Balancing Authority Area that may represent a load zone that is export constrained (having a *maximum capacity limit*), import constrained (having a *local sourcing requirement*), or contiguous—neither export nor import constrained. These limits and requirements are based on network models using transmission lines that will be in service no later than the first day of the relevant *capacity commitment period*, which is the one-year period from June 1 through May 31 of the following year for which FCM obligations are assumed and payments are made. Existing capacity resources are required to participate in the FCA and are automatically entered into the capacity auction. However, these resources may indicate a desire to be removed from the FCA by submitting a *delist bid* before the deadline for qualification of existing capacity.

throughout the region can collaboratively work to refine the FCM.<sup>35</sup> Representatives of NECPUC, NEPOOL, consumer advocates, and the ISO met over a dozen times from July to November to consider potential FCM changes.

Though the group was unable to reach complete agreement, they placed particular attention on balancing the need to limit consumer cost with the need to ensure adequate capacity. For example, one of the recommended FCM changes supported by a majority of NEPOOL was the inclusion of both an auction starting price and a floor price for capacity. The purpose of the auction starting price is to put an upper limit on the capacity payments consumers would have to pay. The purpose of the floor price is to provide an incentive for generation and demand resources to continue participation in the market.

As a result of the stakeholder process, ISO New England and NEPOOL proposed changes to the FCM with FERC. In April 2010, FERC approved the changes for the fourth FCA only, and ordered a paper hearing on some of the issues related to capacity market design. The ISO will inform stakeholders as it complies with FERC requirements for the paper hearing.

### **Energy Market Review of Incorporating Price-Responsive Demand**

Starting in 2008 and continuing through all of 2009, the ISO was in discussions with NECPUC and NEPOOL about potential changes to the region's multibillion dollar energy market. Over the course of 25 NEPOOL Markets Committee meetings during 2009, regional stakeholders, including state regulators, examined how price-responsive demand might participate and be treated in the wholesale energy market. Though this issue has not been resolved, the ISO has developed two significant proposals with respect to PRD—a demand-side approach and a supply-side approach.

The demand-side approach developed by the ISO provides a means for market participants, including providers of demand resources, to purchase energy from the wholesale market at a real-time price. Real-time pricing will provide individuals with demand resources the ability to purchase wholesale power when wholesale costs are low and to voluntarily implement demand-response strategies to avoid the cost of energy when wholesale costs are high. Analysis conducted by the ISO shows that this approach should result in cost savings for demand-response participants.

The ISO's supply-side approach is an alternative to the ISO's demand-side approach and is ideal for customers who do not want real-time prices but are willing and able to respond when wholesale prices are highest. The ISO's supply-side approach would allow demand resources to offer, and if cleared, be paid for load reductions in the wholesale energy market.

The future treatment of price-responsive demand is a major issue for the region's economic regulators. NECPUC has developed a specific approach, which will provide payments to demand-response providers that submit load reductions into the energy market (at limited times) when wholesale energy costs are highest. NECPUC believes that payment for load reductions are needed to sustain demand resources and help them overcome existing market barriers.

Both the ISO and NECPUC's supply-side approaches represent significant changes to the current wholesale energy market. These approaches allow demand-response participants to participate in the wholesale energy market, which can help reduce wholesale energy costs to the extent that demand resources can displace higher-cost generators.

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<sup>35</sup> Issues discussed by the FCMWG include Alternative Price Rules and out-of-market resources; local sourcing requirements (LSR)/transmission security analysis (TSA); and the implications associated with the capacity clearing price reaching zero.

On March 18, 2010, FERC issued a Notice of Proposed Rulemaking (NOPR), *Demand Response Compensation in Organized Wholesale Energy Markets*.<sup>36</sup> The NOPR proposes that ISOs and RTOs be required to pay demand-response providers the full locational marginal price for demand reductions in all hours when demand-response resources reduce energy consumption. The ISO believes that the proposed rule can be implemented while maintaining an economically efficient market.

### **Enhancing Participation in Wholesale Markets**

Since 2009, a team of ISO staff has been examining a variety of ways to promote end-user participation in wholesale markets, which in turn can enhance the performance of the markets and benefit consumers. This occurs because consumers become more responsive to prices, and the cost-saving benefit of wholesale markets is extended to more businesses and consumers. A variety of activities have been identified, including the creation of a guide describing how to become a customer and participate in the markets. Additionally, the ISO's existing wholesale load cost report will be enhanced to include an interactive tool in which consumers can develop estimates of their costs to purchase electric energy directly from the wholesale market based on usage information.<sup>37</sup>

### **ISO New England's 2010 Operating Budget**

ISO New England uses a highly transparent process to develop its annual operating budget. Each year, the ISO begins the process by discussing its detailed priorities in planning, operations, and capital projects with stakeholders. The ISO then presents a five-year strategic plan to aid stakeholders' understanding of the longer-term, multiyear objectives. In the August timeframe, the ISO presents a draft operating budget for stakeholder review and comment. Finally, at the end of October, ISO submits its annual budget to FERC for approval by January 1 of the following year.

In 2009, the ISO took an additional step to consider the appropriate level of resources that should be requested for the region in 2010. Because of major changes in the economy, the ISO developed a flat budget to allow for an assessment of the impact of the economy on ongoing projects and new stakeholder initiatives.

After reviewing this initial budget and receiving feedback from stakeholders that a flat budget would constrain the ISO's ability to continue to advance important projects and broader initiatives at a time when energy is a top priority nationally and regionally, the ISO eventually proposed a budget of approximately \$108 million for 2010. This amount represents a 6% increase over the 2009 budget and is needed to maintain existing activities and take on important new initiatives. The business and strategic planning process that precedes the annual budget development process is currently underway for 2011. Similar to the development of the 2010 budget, the ISO will again use an approach that illustrates the impacts of stable budget levels on its ability to meet certain objectives and stakeholder service requests.

The impact on consumers of ISO operations to operate the bulk power system, conduct long-term regional planning, and administer multibillion electricity markets is less than 1%, or approximately \$0.79 per month for the average residential consumer.<sup>38</sup>

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<sup>36</sup> *Demand Response Compensation in Organized Wholesale Energy Markets*, NOPR, FERC Docket No. RM10-17-000, 130 FERC ¶ 61,213 (March 18, 2010); [http://www.iso-ne.com/committees/comm\\_wkgrps/mrktts\\_comm/mrktts/mtrls/2010/mar232010/a2\\_ferc\\_nopr\\_03\\_18\\_10.pdf](http://www.iso-ne.com/committees/comm_wkgrps/mrktts_comm/mrktts/mtrls/2010/mar232010/a2_ferc_nopr_03_18_10.pdf).

<sup>37</sup> The *Monthly Wholesale Load Cost Report* is available at [http://www.iso-ne.com/markets/mkt\\_anlys\\_rpts/whlse\\_load/index.html](http://www.iso-ne.com/markets/mkt_anlys_rpts/whlse_load/index.html).

<sup>38</sup> "ISO New England Proposed 2010 Operating and Capital Budgets" presentation, p. 3 (August 27, 2009); <http://www.iso->

## Consumer Liaison Group Progress and Future Initiatives

In addition to the major issues and activities mentioned above, the CLG was introduced to representatives of NEPOOL and the ISO Board of Directors during NEPOOL's annual meeting held on November 19, 2009. CLG members, Jed Nosal (Massachusetts Attorney General's Office) and Bob Espindola (Acushnet Company) summarized the first two CLG meetings, stating that the CLG's purpose is to develop a solid understanding of the cost drivers in the wholesale markets; to be informed of market and system developments and change proposals, including the cost impacts of such developments and proposals; and to provide input to ISO management and the board on consumer interests in these developments. They emphasized that for the CLG to effectively contribute to the decision-making process, consumers must understand important wholesale market issues and developments in advance of any decision making.

CLG members also participated in a smaller focus group meeting of the NEPOOL end-user sector and representatives of the ISO board. This exchange allowed CLG members the opportunity to interact directly with members of the ISO board. CLG members underscored the importance of consumer knowledge of, and participation in, major market and system decisions.

The meeting between the CLG and FERC Commissioner Philip Moeller was important because it allowed for a dialogue between the CLG and FERC on the important consumer issues in New England. It also demonstrated how consumers are enhancing their knowledge about industry and policy issues, offering input, and participating more in the decision-making process.

In early 2010, Connecticut Consumer Counsel and current President of the National Association of State Utility Consumer Advocates, Mary Healey, and former Massachusetts Department of Public Utilities Chairman, Paul Hibbard, met with the CLG for a similar dialogue focusing on the consumer aspects of proposed federal transmission legislation and state renewable energy requirements. These discussions attracted the participation of new and existing CLG members, including the involvement of state legislators.

The CLG will continue to meet with regional and national energy officials, policymakers, and consumer advocates throughout the year as it considers cost drivers in the New England power system. The additional CLG meetings in 2010 are scheduled for August 5 and November 3. The CLG also is committed to holding its meetings at locations throughout the region to provide the opportunity for consumers and consumer organizations to participate in person. In addition to continued discussion and updates on issues concerning transmission development, the evolution of the energy and capacity markets, and the impacts of these changes, the CLGCC has identified demand response, tie benefits, and performance metrics as issues that should be presented by the ISO and discussed among CLG members.<sup>39</sup>

ISO New England, working with the CLGCC and CLG members, also will conduct outreach in the states to inform consumers and consumer advocates of the existence, role, and information provided by the Consumer Liaison Group.

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[ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/budgfin\\_comm/budgfin/mtrls/2009/aug272009/isone\\_propos\\_2010.pdf](http://ne.com/committees/comm_wkgrps/prtcpnts_comm/budgfin_comm/budgfin/mtrls/2009/aug272009/isone_propos_2010.pdf).

<sup>39</sup> *Tie-line benefits* account for both the transmission-transfer capability of the tie lines and the emergency capacity assistance that may be available from neighboring systems when and if New England would need it.

## Appendix: ISO New England Background

Reliable electricity service is essential to the quality of life of New England's 14 million residents and is the lifeblood of the region's nearly \$700 billion economy.<sup>40</sup> New England's power system comprises power plants, transmission lines, associated equipment, and demand resources, which work as an integrated network to continuously provide this essential service.<sup>41</sup> Because of the need to maintain reliable electricity service to consumers 24 hours per day under a variety of conditions, this system is expensive to construct and operate, and significant efforts are made by electricity industry stakeholders to plan for its future investment and understand the comparative costs associated with different infrastructure options.

### Ensuring Reliable Electricity Service

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Ensuring reliable operations in real time, and over the long term, is a major challenge that requires the availability of adequate levels of resources when and where they are needed.<sup>42</sup> Ensuring reliability also has important economic implications that would be useful for consumers to understand. In real time, the power system must have appropriate resources to withstand unexpected outages or the sudden increases in consumer demand due to changes in the weather. Over the longer term, the power system must keep pace with the growing and changing consumer demand for electric energy.

In New England, comprehensive, transparent regional planning is a critical element of successfully and cost-effectively constructing the appropriate amount of electric energy infrastructure when and where it is needed. Although the planning process is continuous, each year a 10-year system plan is developed through a forum that determines the needs of the power system—the forecasted needs for electric energy and the physical needs for transmission. The year-long process consists of regular meetings that are open to all interested parties, including consumer advocates.

The planning process culminates with a comprehensive report and transmission project plan that informs market participants of potential investment opportunities. Market participants that choose to develop responses to identified needs (such as by building a new power plant to provide additional system capacity or by participating in ISO programs to reduce the amount of electric energy used) have a variety of established market incentives to recover their investment. To the extent that market responses are not forthcoming or adequate to meet system needs, ISO New England is required to conduct transmission planning through the open stakeholder process for determining transmission infrastructure that can meet the identified needs. The comprehensive regional planning process, combined with effective wholesale market incentives, ensure that the region's power system remains reliable and cost effective for consumers over the long term.

The power system is studied on a regional basis to ensure cost effective operations. For example, a local-area transmission solution to a reliability problem may ignore a regional solution that would be more cost effective than building multiple, more local, separate projects. Because building transmission is expensive

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<sup>40</sup> U.S. Department of Commerce, Bureau of Economic Analysis, "Gross Domestic Product by State" (Washington, DC: June 2, 2009); [Hhttp://www.bea.gov/regional/gsp/H](http://www.bea.gov/regional/gsp/H) (select NAICS, Gross Domestic Product by State, New England, Private Industries, 2008).

<sup>41</sup> A *demand-side resource* is a source of capacity whereby a consumer reduces the demand for electricity from the power system, such as by using energy-efficient equipment, conserving energy in other ways, and using electricity generated on site (i.e., distributed generation). Some demand-side resources, called *demand-response resources* reduce load in response to a request from the ISO to do so for system reliability reasons or in response to a price signal.

<sup>42</sup> A *resource* refers to any source of electric energy that increases the availability of capacity (in megawatts), such as a generator, a demand-response resource, or an electricity import or external transaction.

(see below), and its development and construction require long lead times, effective planning is essential for developing the most cost-effective infrastructure solutions in time to meet consumer needs.

Conversely, inadequate transmission and resource levels create reliability issues and problems that increase the cost of providing electricity service in different ways. The inability to physically transmit power from its source to end users because of inadequate transmission capacity may prevent consumers from accessing the lowest-cost supplies available and cause them to pay for using resources that are closer but more expensive. Inadequate resource levels can cause stakeholders to resort to the implementation of “quick-fix” emergency solutions that tend to be more expensive and short term. In more extreme circumstances, unaddressed needs on the power system can lead to service interruptions. As was evidenced with the Northeast Blackout of 2003, underinvestment in the power system and resulting unreliable operations can lead to widespread outages and cause serious economic disruption and damage.<sup>43</sup>

The U.S. Congress responded to this event by enacting mandatory standards for planning and operating the power systems around the country. The role of the North American Electric Reliability Corporation (NERC) is to develop and ensure compliance with the reliability and operating standards. This is achieved through eight regional entities that share NERC’s mission for their respective geographies within North America. New England’s power system is under the authority of the Northeast Power Coordinating Council (NPCC), which develops, implements, and enforces regionally specific reliability criteria for the six states as well as New York, Ontario, Québec, and the Canadian Maritimes. ISO New England’s responsibilities for planning and operation of the New England transmission system must comply with NERC and NPCC criteria and standards.

## **New England’s Electricity System**

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New England’s electric power system has over 8,000-miles of high-voltage transmission lines that connect electric utilities, publicly-owned electric companies, power generators, alternative resources, and end users in the six-state region. Along with electric energy imports from neighboring power systems in New York and Canada, supply and demand resources provide the electricity capacity the power system needs to maintain reliable operations and ensure electricity service to consumers.

ISO New England plays a key role in the region to independently administer the wholesale electricity markets and system planning process for ensuring needed investment in resources and transmission infrastructure.<sup>44</sup> Since the cost of this infrastructure ultimately has an impact on consumers, either directly through their retail electricity bill or indirectly through the wholesale price of power, it is essential for consumers to understand the magnitude of electric power system costs—and the factors that potentially can increase and decrease these costs.

## **Electricity System Costs and Cost Drivers**

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The annual wholesale cost of providing electric energy supply, capacity, and transmission needed to meet consumer demand in New England can vary significantly. In the five years between 2005 and 2009, total annual costs have ranged from a low of \$9.1 billion in 2009 to a high of \$14.9 billion in 2008 (see Table 3).

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<sup>43</sup> ISO New England Inc., *Blackout 2003: Performance of the New England and Maritimes Power Systems during the August 14, 2003 Blackout* (February 2004); [http://www.iso-ne.com/pubs/spcl\\_rpts/2004/iso\\_august\\_blackout\\_report.pdf](http://www.iso-ne.com/pubs/spcl_rpts/2004/iso_august_blackout_report.pdf).

<sup>44</sup> Additional information about ISO New England is available at [http://www.iso-ne.com/aboutiso/co\\_profile/overview/index.html](http://www.iso-ne.com/aboutiso/co_profile/overview/index.html).

**Table 3**  
**New England Wholesale Electricity Costs, 2005 to 2009**  
**Costs in Millions and ¢/kWh<sup>(a)</sup>**

	2005		2006		2007		2008		2009	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
<b>Wholesale market costs</b>										
Energy (LMPs) <sup>(b)</sup>	\$11,486	8.5	\$8,922	6.8	\$10,173	7.6	\$12,085	9.1	\$5,884	4.6
Ancillaries <sup>(c)</sup>	\$207	0.2	\$265	0.2	\$319	0.2	\$366	0.3	\$189	0.1
Capacity <sup>(d)</sup>	\$9	0.0	\$144	0.1	\$1,280	1.0	\$1,505	1.1	\$1,766	1.4
<i>Subtotal</i>	<i>\$11,702</i>	<i>8.7</i>	<i>\$9,331</i>	<i>7.1</i>	<i>\$11,772</i>	<i>8.8</i>	<i>\$13,956</i>	<i>10.5</i>	<i>\$7,839</i>	<i>6.1</i>
<b>Transmission charges<sup>(e)</sup></b>	\$512	0.4	\$557	0.4	\$697	0.5	\$909	0.7	\$1,155	0.9
<b>RTO costs<sup>(f)</sup></b>	\$110	0.1	\$109	0.1	\$114	0.1	\$125	0.1	\$123	0.1
<b>Total</b>	<b>\$12,324</b>	<b>9.2</b>	<b>\$9,997</b>	<b>7.6</b>	<b>\$12,583</b>	<b>9.4</b>	<b>\$14,990</b>	<b>11.3</b>	<b>\$9,117</b>	<b>7.1</b>

(a) Annual costs are averaged based on the 12 months beginning January 1 and ending December 31. Costs in millions = the dollar value of the costs to New England wholesale market load servers for ISO-administered services. Cents/kWh = the value derived by dividing the dollar value (indicated above) by the real-time load obligation. These values are presented for illustrative purposes only.

(b) Energy values are derived from wholesale market pricing.

(c) Ancillaries include first- and second-contingency Net Commitment-Period Compensation (NCPC), forward reserves, real-time reserves, regulation service, and a reduction for the Marginal Loss Revenue Fund.

(d) Capacity charges are those associated with market mechanisms in effect at the time.

(e) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services.

(f) RTO costs are the costs to run and operate ISO New England Inc.

The wholesale costs include the cost of traditional supply resources and demand resources, such as distributed resources and efficiency measures, and the annual cost of transmission investment to serve all the region's power needs.<sup>45</sup> These costs also include the cost of all ISO functions to operate the power grid; administer the markets; implement the 10-year system planning process, including the interconnection of new generators and qualification of new demand resources; and provide market monitoring oversight of participant behavior and in-depth market analysis and reporting. In the five years between 2005 and 2009, ISO New England's annual costs have ranged from \$109 million to \$125 million.

The wholesale electricity costs are paid for by market participants that purchase electricity from the wholesale market for their own use or because they are a supplier to retail customers. In turn, suppliers and utilities provide electricity to retail customers based on the retail market structures and requirements of the six New England states. Utilities charge retail customers for power supply through their monthly bills based on rates approved by the state, or local, public utility commissions. Retail customers also share in the cost of transmission investment in the region and generally pay for it over a 35- to 40-year period through the transmission rates in their retail bill. In 2009, the total cost of all wholesale electricity costs was

<sup>45</sup> *Distributed resources* typically are smaller-sized resources that use load-reduction technologies or on-site generators, are often located at or near load centers, and generally are installed and owned by a commercial or industrial facility. Distributed resources are used to help maintain the reliability of the electricity supply during grid emergencies. This does not include those "distributed resources" that customers install behind the meter with their own funding outside of the wholesale market.

approximately \$9.1 billion. In a retail context, this amounts to 7.1¢/kWh for the average New England retail customer.<sup>46</sup>

Other factors that affect the cost of supplying and transmitting electric power include the type of fuel the region's power plants use to generate electricity and the way consumers use electric power, such as their usage patterns during the summer months. Programs that reduce electricity use during the summer can serve to lower wholesale prices.

### **Generation Fuel Mix**

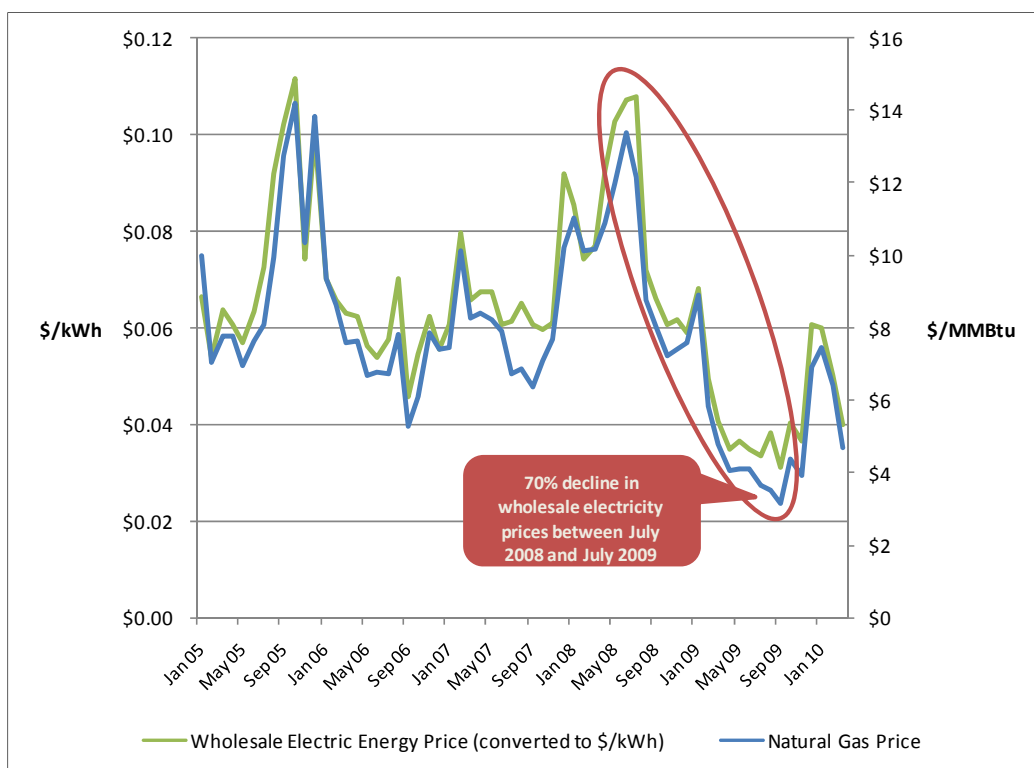
New England has more than 30,000 MW of capacity from generating plants. These plants generate electric energy using a range of different fuel supplies, including natural gas, nuclear, coal, oil, and water. Natural gas and oil-fueled plants are the most dominant types of supply on the system, representing over 60% of the region's total capacity.<sup>47</sup> Because wholesale electricity prices are set based on the cost of operating the last, or marginal, unit needed to meet consumer demand, wholesale prices correlate directly with the price of input fuels for those technologies that are heavily concentrated on the power system. Refer to the section below on the electric energy market for an overview of the price-setting approach for the wholesale energy market.

As Figure 4 indicates, New England's wholesale electricity prices track closely with the cost of natural gas. As a result, annual electricity market costs can vary widely. In 2009, natural gas prices were down significantly—and the region saw a 70% decline in actual wholesale electricity prices from summer 2008 to summer 2009. In other time periods, such as during summer 2005, when hurricanes devastated natural gas delivery systems in the Gulf of Mexico, increases in natural gas prices drove dramatic increases in wholesale electric prices.

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<sup>46</sup> An average New England retail customer is one who uses 750 kWh per month.

<sup>47</sup> ISO New England Inc., *2009 Regional System Plan* (October 15, 2009); [http://www.iso-ne.com/trans/rsp/2009/rsp09\\_final.pdf](http://www.iso-ne.com/trans/rsp/2009/rsp09_final.pdf).



**Figure 4:** New England natural gas and actual wholesale electricity prices, 2005 to March 2010.

**Note:** MMBtu stands for millions of British thermal units, and kWh stands for kilowatt-hours.

More than 10,800 MW of new generation has come on line in New England since the introduction of competitive electricity markets in 1999. Under the Forward Capacity Market (FCM), new generation representing more than 3,500 MW is expected to come forward over the next three years. This includes new natural-gas-fueled plants, making it likely that New England will remain dependent on natural gas as a primary fuel for generating electric energy for the foreseeable future.

However, the New England states have made significant efforts to promote the development of renewable generation in the region, and many state-level incentives are now available for wind and solar resources. New England’s interconnection queue study process also reflects that significant wind projects are being proposed for the region. In addition to being cleaner sources of supply, wind and solar technologies have no fuel costs.<sup>48</sup> The addition of significant amounts of resources with no fuel costs can break the direct linkage between natural gas and electricity prices and create a fuel-price hedge for the region, mitigating fuel-related price swings at the wholesale level.

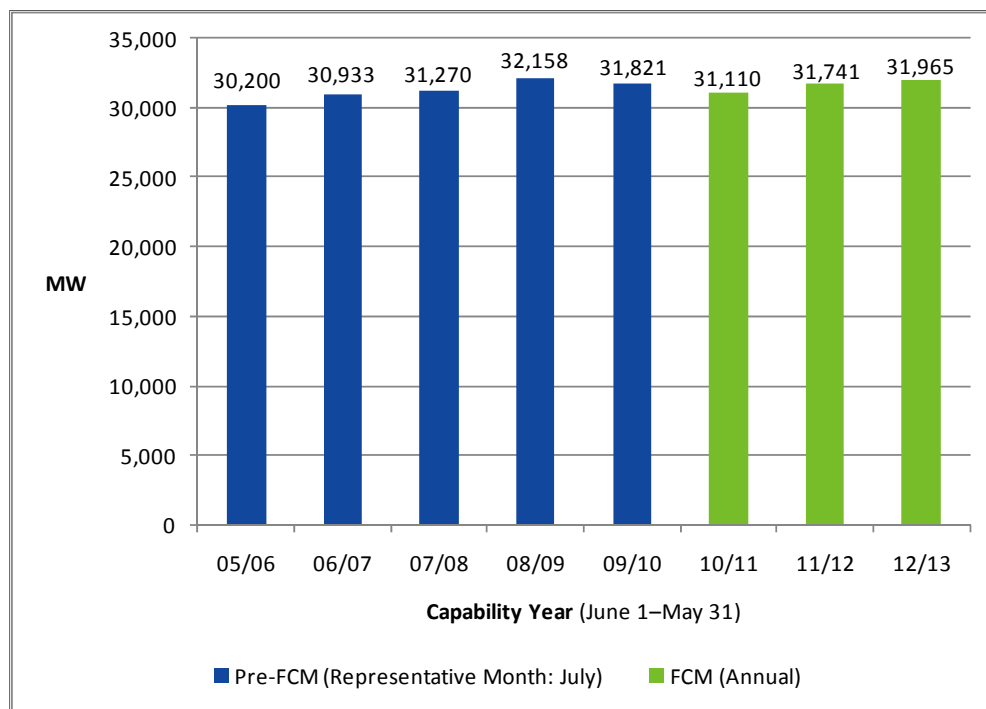
### Growth in Demand

As peak demand grows, more capacity must be purchased to meet the higher peaks. In New England, the overall use of electric energy has grown 1.2% over the past decade, and peak demand has grown 17% over the same period.<sup>49</sup> This means the region must continue to invest in infrastructure to serve peak demand

<sup>48</sup> Although renewable generators have no fuel costs, they often have higher upfront construction costs than traditional generators, such as natural gas power plants. See the “Update on Generic Capital Costs of New Resources” presentation to the PAC Committee, (January 21, 2010); [http://www.iso-ne.com/committees/comm\\_wkgrps/prtcpnts\\_comm/pac/mtrls/2010/jan212010/generic\\_resource\\_costs.pdf](http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2010/jan212010/generic_resource_costs.pdf).

<sup>49</sup> 2010 CELT Forecast Details; <http://www.iso-ne.com/trans/celt/index.html>.

despite needing to meet peak demand only for a few days of the year. In New England, peak demand for electricity is driven primarily by the use of air conditioning in the summer months. Figure 5 shows the amount of capacity purchased annually from 2005 to 2013 and illustrates the magnitude and trends for the region’s capacity requirements.<sup>50</sup>



**Figure 5:** Amount of capacity purchased annually in New England, 2005 to 2013.

The change in the annual and peak use of electric energy varies year-to-year based on the weather. Conservation and load-management programs, including state-sponsored programs, can slow the growth in electric energy use, but the trend of actual experience and the ISO’s long-range forecast continue to show that both the annual and peak use of electric energy will grow.

New England set a 28,130 MW record for peak demand during an August 2006 heat wave.

### Demand-Response Resources

Demand-response resources receive compensation for reducing electricity demand at times when the reliability of the system is at risk and during periods when wholesale electricity prices are high. Reducing electricity use during periods of high prices serves to preserve reliable operations and mitigate wholesale prices.

<sup>50</sup> Pre-FCM values are from the representative month in each of the annual *Reports on the IC Requirements* for their respective year. The reports are posted under “Installed Capacity Requirements” at [http://www.iso-ne.com/genrtnn\\_resrcs/reports/index.html](http://www.iso-ne.com/genrtnn_resrcs/reports/index.html). FCM values are from the “Summary of ICR Values” file posted at: [http://www.iso-ne.com/markets/othrmkts\\_data/fcm/doc/index.html](http://www.iso-ne.com/markets/othrmkts_data/fcm/doc/index.html).

From July 2009 through September 2009, the ISO's demand-response programs reduced wholesale prices by approximately \$1.06/MWh across the entire market, with the largest average decrease of approximately \$1.08/MWh in Maine, Vermont, Rhode Island, and Western Central Massachusetts.<sup>51</sup>

Given these important benefits, ISO New England and stakeholders have worked actively in the last several years to increase the amount of demand-response resources in the marketplace. The amount of demand resources in the region has grown over tenfold since 2003 and is now up to more than 2,000 MW. Through the Forward Capacity Market that commenced June 1, 2010, demand resources are now able to compete with traditional generation resources to provide capacity services. Because of this market, demand resources are projected to account for nearly 10% of capacity in 2011.

### **Transmission**

Transmission infrastructure represents a significant and growing cost in the wholesale marketplace. New England has over 8,000 miles of high-voltage transmission lines, approximately 90% of which are 345 kV and 115 kV transmission lines, which serve to move large amounts of power throughout the region. ISO New England's planning process has resulted in \$4 billion in transmission investment to date and has identified the need for an *additional* \$5 billion in transmission infrastructure in the next 10 years. While costly, sufficient transmission provides consumers with greater access to the least expensive supply of electric energy available on the power system. In this regard, transmission investment serves to reduce the largest cost component of electricity—regional electric energy costs.

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<sup>51</sup> *Semi-Annual Status Report on Load Response Programs of ISO New England, Inc.*, Docket No. ER03-345-014, (December 30, 2009); [http://www.iso-ne.com/regulatory/ferc/filings/2009/dec/er03-345-014\\_12-30-09\\_14th\\_load\\_resp\\_rprt.pdf](http://www.iso-ne.com/regulatory/ferc/filings/2009/dec/er03-345-014_12-30-09_14th_load_resp_rprt.pdf). New England is divided into the following eight *load zones* used for the locational pricing of electric energy in the wholesale markets: Maine (ME), New Hampshire (NH), Vermont (VT), Rhode Island (RI), Connecticut (CT), Western/Central Massachusetts (WCMA), Northeast Massachusetts and Boston (NEMA), and Southeast Massachusetts (SEMA).