Consumer Liaison Group
Coordinating Committee

2011 Report of the Consumer Liaison Group

Joint Report of the
Consumer Liaison Group Coordinating Committee and
ISO New England

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Statement from the Consumer Liaison Group Coordinating Committee

Dear Reader:

Welcome to the *2011 Report of the Consumer Liaison Group* (CLG) prepared jointly by the Consumer Liaison Group Coordinating Committee and ISO New England. This is the third annual CLG report, the first having been published in 2010 summarizing the 2009 activities, the year the CLG was established.

The CLG was formed to meet the need, as cited in the Federal Energy Regulatory Commission's (FERC) Order 719, for heightened communication between Regional Transmission Organizations (RTOs) and their stakeholders, with a particular focus on electricity consumers, consumer advocates, and state government regulators. Like other RTOs across the country, ISO New England is responsible for the reliable operation of the region's bulk power system, administration of the region's wholesale electric energy markets, and regional planning processes.

The CLG bylaws, formulated by stakeholders and ISO New England, require the organization to be governed by a Coordinating Committee of up to twelve members. These twelve members represent various stakeholder groups, with not more than four members coming from any one New England state.

The first Coordinating Committee consisted of eight members representing Massachusetts, Connecticut, Vermont, and Maine. As the organization developed and strengthened, so did the committee. The current committee, elected in March 2012, has 10 members, representing all six New England states.

During the CLG's first three years, members concentrated on developing the CLG program format, increasing participation and establishing a two-way information flow between ISO New England and stakeholders representing electricity consumers.

ISO New England's information flow to the CLG has been instrumental in fulfilling the mandate to afford stakeholders a greater understanding of ISO New England activities and its decision-making process and the potential cost impacts of ISO New England's decisions and initiatives on end users. The CLG and ISO New England have worked collaboratively to identify issues of importance to end-use consumers and have provided information at the quarterly CLG meetings on a range of cost implications for certain regional initiatives.

The goal of providing information is to allow all CLG members to better understand the opportunities as well as the risks of the region's current wholesale electricity market structure. Moreover, because New England's wholesale electricity markets are continually evolving, the CLG also serves as a forum for consumers to provide input and information to ISO New England and to each other regarding what is working well and what may need to be changed going forward. Looking to the future, we recognize our full mandate cannot be fulfilled without greater participation from our consumer members on the issues that concern them, including potential changes to the power system and the wholesale markets that might allow them to participate more profitably, purchase less expensively, or operate more efficiently.

For 2012–2013, the Coordinating Committee has set three goals:

1. To attract more commercial and nonprofit end users to actively participate in the organization
2. To augment the representation on the committee of states other than Massachusetts
3. To begin fulfilling CLG's twin mandate of "providing the ISO with a greater understanding of consumer issues and concerns," that is, establishing a reverse flow of information and even advocacy from consumers and other stakeholders to ISO New England.

We invite you to take an interest in the Consumer Liaison Group and to play a role in achieving these goals, which can lead to a better electricity industry in New England and an improved price structure for consumers. Please feel free to contact any one of us for more information.

Sincerely,

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Executive Summary

In 2011, the CLG welcomed a number of guest speakers, including direct end users and public officials whose remarks set the stage for lively panel discussions on relevant topics, such as:

- **Electricity Costs and Consumer Needs**. One reason for the formation of the Consumer Liaison Group was to provide a forum for consumers to express their concerns and receive feedback from the ISO and other electric industry representatives. The first meeting of 2011 provided this opportunity. Business consumers addressed their thoughts on electricity cost drivers beyond their control—such as transmission, state renewable energy requirements, and fixed costs that are bundled into retail rates. Electric industry representatives recognized these drivers but also noted that competitive markets have allowed for investment in new electricity supply and that new and upgraded transmission infrastructure has provided access to supply, reducing the need to run expensive out-of-merit generation. For future meetings, CLG members will seek the participation of state policymakers who often set the renewable energy policies and fixed costs that ultimately get funneled through retail rates.
- **Smart Grid**. Many of the region's utilities provide opportunities for consumers to manage their electricity consumption and costs, such as by utilizing smart grid technologies. These technologies can also help to create a more efficient power system for when a number of consumers use them in aggregate, electricity demand is reduced—a useful tool when the system is constrained. Ultimately, the lower the demand, the less capacity the region must buy, thereby reducing costs.
- **Meeting Diverse Energy Objectives**. New England's policymakers, industry stakeholders, and consumers have their own objectives regarding energy needs. The states have set various energy and environmental goals, yet achieving them comes at a cost. The ISO is required to maintain a reliable power system, relying on resources whose costs are driven by uncertain fuel prices and consumers want reliable electricity but at the lowest possible costs.

The report also summarizes ISO activities conducted throughout 2011 that have had, or could have, economic impacts on the marketplace and consumers:

- **Strategic Planning Initiative**. In 2010, the ISO launched a Strategic Planning Initiative that identified key risks to the future efficient and reliable operation of New England's wholesale electric markets and bulk power system. After comprehensive discussions and feedback from stakeholders, consensus was reached on five challenges that will likely affect the New England power grid. The next phase of the initiative is to identify and develop potential solutions to ensure that New England has a reliable supply of electricity.
- **Energy-Efficiency Initiative**. New England ratepayers are being required to fund significantly higher levels of energy-efficiency investment. As a result, the New England states want to ensure that the energy savings from these investments are fully reflected in the ISO's transmission planning processes to minimize the need for future generation, transmission, or both. After numerous discussions and input from stakeholders, the ISO recently released its first energy-efficiency forecast. The forecast shows that because of an expected increase in state energy-efficiency budgets over the next 10 years, both annual energy consumption and peak demand would decline.
- **FERC Order 1000**. In 2011, the Federal Energy Regulatory Commission (FERC) issued Order No. 1000, which addresses interregional planning processes and subsequent cost-

allocation strategies, as well as the incorporation of "public policy considerations" into the planning process. After numerous discussions with stakeholders, the ISO believes it is largely compliant with a significant portion of the order. The ISO and the states are considering possible processes to ensure that the states' priorities can be reflected in the regional planning process.

The report's appendices analyze and review the various drivers for wholesale costs and retail rates. When it was established in 2009, the CLG expressed interest in understanding how wholesale market outcomes affect retail rates paid by consumers. At the CLG's request, the ISO developed a wholesale cost and retail rate analysis. The general findings indicate that the wholesale markets and retail rates are not directly linked because retail policies blend wholesale market purchases from different time periods to create fixed rates for their customers. The 2012 update indicates that wholesale prices decreased since 2011, reflecting a decrease in demand and natural gas prices, while the range of residential retail power supply rates tightened —with some states seeing an increase and others a decrease. The appendices also detail other factors, including the region's fuel mix, electricity demand, and transmission investment.

In 2012, the Consumer Liaison Group will continue to discuss themes relating to the cost of electricity and the impacts that 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.

Objectives and Structure of the Consumer Liaison Group

The Consumer Liaison Group was established in 2009 by the region's stakeholders to be a forum for sharing 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 the issues that can affect them economically
- Be informed of and participate in the stakeholder process that determines power market rules and power system needs
- 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

The Consumer Liaison Group consists of consumers and consumer representatives (including state consumer and ratepayer advocates), state business and industry associations, chambers of commerce, individual businesses, trade groups, nonprofit organizations, and other end users. Because the CLG is an open forum, several New England Power Pool (NEPOOL) members and state regulators also are regular, active participants in the CLG discussions.[1] The CLG meets quarterly and attracts a diverse group of approximately 50 attendees at each meeting.

Governance

The Consumer Liaison Group's Coordinating Committee (CLGCC) is the governing body that serves 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.

The CLGCC was established with specific membership requirements to ensure that all consumers, including residential and commercial/industrial consumers, are represented from a majority of the New England states and that a range of consumer interests are considered when determining CLG priorities. No more than four CLGCC members can represent one New England state.

The CLG held its regular biennial election for Coordinating Committee members at its March 8, 2012 meeting, during which six of eight incumbents were reelected and four members were added. Below are the 2012–2014 Coordinating Committee members (* denotes a new CLGCC member):[2]

- Robert Espindola (MA), Energy Systems Program Manager for Acushnet Company
- William Ferguson (RI), Executive Director of The Energy Council of Rhode Island*
- August Fromuth (NH), Managing Director for Freedom Energy Logistics*
- Agnes Gormley (ME), Senior Counsel to the Maine Public Advocate
- Hans Mertens (VT), Director of Engineering Services/Chief Engineer for the Vermont Department of Public Service
- Robert Rio (MA), Senior Vice President Government Affairs for Associated Industries of Massachusetts
- Donald Sipe (ME), Partner in the law firm PretiFlaherty*
- Mary Smith (MA), Associate Director of Energy Supply and Utility Administration for Harvard University
- Richard Steeves (CT), Principal Utility Finance Specialist for the Connecticut Office of Consumer Counsel

[1] 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.

[2] Biographies of CLG Coordinating Committee members are available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/consum_lias_grp_gov/2012_2014_clg_coordinating_committee.pdf.

- Brooke Thomson (MA), Chief, Business, Technology & Economic Development Division in the Massachusetts Attorney General's Office*

Furthermore, on March 30, 2012, the CLGCC elected Brooke Thomson as Chair, Coordinating Committee of the Consumer Liaison Group, for a two-year term.

The full details of the governance structure of the CLG are detailed in its Purpose and Structure document.[3]

Access

A dedicated section of the ISO's website has been established for all CLG materials, meeting notes, communications, CLG annual reports, and other valuable information for consumers.[4] 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. Additionally, a glossary defining electricity market and power system terms is available on the ISO's website to assist CLG members in understanding frequently used electricity market or power system terms and acronyms.[5]

To provide opportunities for all New England consumers to participate in CLG meetings, the Coordinating Committee strives to host one meeting each year in a different state. In 2011, meetings were held in Westborough, Massachusetts (a central location for most members); Boston; and Essex, Vermont. CLG members also are welcome to participate via teleconference. Meetings are free and open to the public.

2011 Activities of the Consumer Liaison Group

The CLG held four meetings in 2011—in March, June, September, and December. This section summarizes discussions with special guest speakers and public officials and the CLG's consideration of major energy issues and electricity market developments.[6]

2011 Special Guest Speakers

Patricia Begrowicz, President, Onyx Specialty Papers, Inc.

Patricia Begrowicz addressed the March 3 meeting devoted to business needs in the electricity marketplace. Onyx is a small producer of specialty papers located in South Lee, MA. Over the past decade, Onyx experienced falling electric commodity prices but an overall increase in energy costs because of rising transmission and distribution costs and the cost of government mandates, see Figure 1.

[3] 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.

[4] The CLG website is available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/index.html. This section can be accessed through a link on the ISO's home page at www.iso-ne.com.

[5] The ISO New England Glossary and Acronyms is available at http://www.iso-ne.com/support/training/glossary/index.html.

[6] Comments made by speakers do not necessarily reflect the views of the ISO or the CLG.

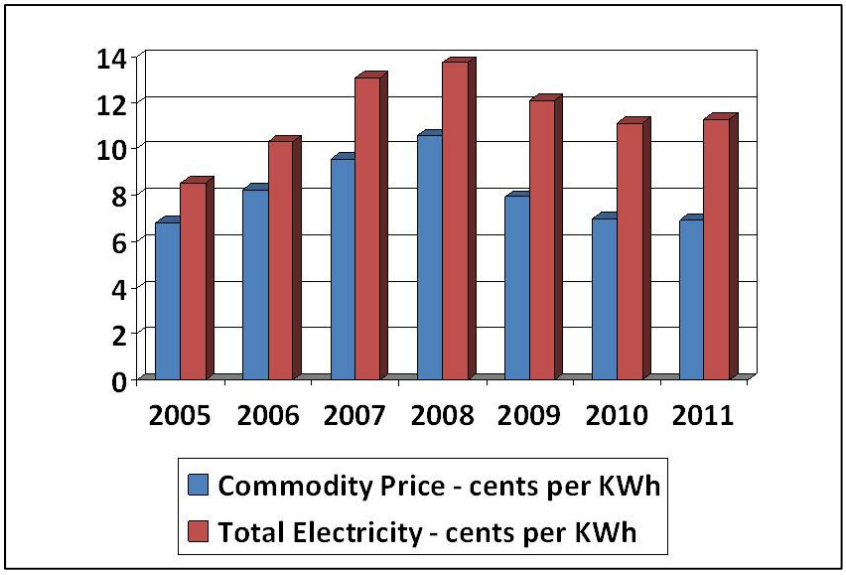

Figure 1: Commodity versus distribution costs of electricity, Onyx Specialty Papers, Inc.

The company tried to use hydroelectric power from the Housatonic River, but it lacked sufficient water flow. Onyx examined possibilities for onsite biomass, solar, and combined-heat-and-power generation, but the capital requirements were too large and the payback too long. The company's energy-efficiency steps, even with incentives, realized a net loss.

President Begrowicz recommended phase-in periods after rate increases to allow for end-user planning and adjustment. She also recommended allowing larger users to spend their government efficiency fees on initiatives of their own. Other suggestions were to apply revenue decoupling to businesses lost to demand response, not to any revenue decrease, and making sure, through strict cost-benefit analysis, that government mandates actually result in cost savings for commercial customers.

Elizabeth Miller, Commissioner, Vermont Department of Public Service

Commissioner Elizabeth Miller addressed the June 2 meeting of the CLG, much of which was devoted to smart grid developments and prognosis for the innovative technology. She discussed the initiative to place smart meters on the premises of 85-90% of Vermont consumers. One key to success, she offered, has been that, from the beginning, Vermont has been responsive to questions about consumer acceptance, particularly around health and privacy concerns. Despite a high level of public acceptance, her department also is considering a limited opt-out policy that addresses the costs of nonparticipation by a segment of the public.

Commissioner Miller discussed basic information needs associated with smart meters. Theoretically, a rate structure can be designed to lead consumers to manage their household load economically, although this depends on how well consumers understand the rate structure and how adept they become at gleaning relevant information from their meters. Vermont does not yet know how consumers will actually use the meters, something to be learned from experience. After gaining additional information, the Department of Public Service will be able to design public information campaigns to maximize desired consumer behavior.

Martha Coakley, Attorney General, Commonwealth of Massachusetts

Attorney General Martha Coakley addressed the September 28 meeting devoted to the compatibility of states' energy policies with consumer needs and with the wholesale market and planning process. Attorney General Coakley noted that, to an important degree, CLG was an outcome of her 2008 ratepayer summit that centered heavily on how customers and consumer advocates felt underrepresented in industry decision making. She believes the best results are obtained for the industry, customers, and advocates alike when the parties work with customers to understand the practical impact of policies on price levels and the economy. By "consumers," she means businesses and large institutional customers along with residential ratepayers.

Attorney General Coakley regards the high cost of energy in New England as a major economic challenge. She described her office's efforts to lower rates by ensuring that distribution utilities do not pass through inappropriate charges to consumers and that they make prudent investments in reliability. She wants to see a healthy balance between clean energy development and cost to ratepayers. Finally, the attorney general has advocated with the FERC for treating demand-response resources on par with traditional generators.

Cheryl LaFleur, Commissioner, Federal Energy Regulatory Commission

In December, the CLG continued its tradition of welcoming a member of the FERC to address the final meeting of the year. While much of the meeting focused on the Forward Capacity Market (FCM), Commissioner LaFleur discussed a number of other topics. One point was the need to achieve effective trade-offs, more than a simple balance among reliability and security of the electric power grid, costs to the industry and the consumer, and environmental concerns. She cited three important changes for both industry and consumers that are now under way: the advent of shale gas, the development of wind power as an alternative energy resource, and the use of demand response as a resource.

Commissioner LaFleur saw the retirement of fossil fuel plants as a key environmental development in the coming years. She noted that New England is ahead of the curve in the introduction of renewables, in regional planning, and in stakeholder involvement. She cited cybersecurity as essential to reliability and felt that the nation has not yet reached the necessary level of security. The commissioner urged that increased attention to cybersecurity be a priority for the next few years.

Meeting Consumers' Needs—Observations from End Users and the Electric Industry

The first meeting of 2011 focused on business consumers—their energy needs and concerns as observed by end users and electric industry representatives.[7]

End-User Observations

Panelists representing business interests in Connecticut, Maine, Rhode Island, and Vermont shared their views on the factors that contribute to rising electricity costs, namely transmission and state energy policies and initiatives. Panelists suggested that policymakers consider not only environmental issues when setting renewable energy goals and initiatives but also renewable energy's associated costs, such as transmission for accessing remote and offshore wind power.

[7] Presentations from this meeting are available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2011/mar32011/index.html.

As Bill Ferguson, Executive Director of the Energy Council in Rhode Island, noted, offshore wind projects under consideration in his state are expected to provide 15% of the state's power; however, the cost of that power will increase from approximately 7¢/kilowatt-hour (kWh) using traditional fossil-fueled resources to 24¢/kWh for using wind resources. According to Mr. Ferguson, these escalating costs will undoubtedly burden business consumers, and he questions whether these projects fit into the state's efforts for least-cost procurement or whether distributed generation could be an alternative to transmission.[8] Tom Torti, President of the Lake Champlain Regional Chamber of Commerce, also noted that renewable energy requirements have led to an increase of electricity costs for Vermont's business consumers.

Businesses throughout the region are managing their energy costs innovatively by implementing energy-efficiency measures and using distributed generation resources, for example. However, consumers can only control the usage components of their electricity bill and are charged other fixed costs due to state policy choices.

Kevin Hennessey, then Assistant Counsel, Connecticut Business and Industry Association, suggested that states should prioritize their energy policies. Policymakers advocate for such issues as lower electricity costs, increased economic development, more renewable resources, and improved reliability, but achieving them all is not feasible. Contradictory energy policies, such as advocating for lower electricity costs but promoting policies that ultimately increase the cost of electricity, often send mixed messages to consumers and can create a negative environment for businesses. Businesses need stable regulatory environments to make future investment decisions.

Finally, CLG members recommended that policymakers must be included in these discussions for consumers to fully understand the drivers behind rising retail electricity costs. The CLG Coordinating Committee will consider the participation of state policymakers in future meetings.

Industry Observations

Representatives from key sectors of the electric power industry also discussed their perspectives on electricity costs. Marshall Chapin, EnerNOC's Senior Director of Business Development, noted the various opportunities for businesses to simultaneously manage their electricity consumption and earn revenue. By participating in demand-response programs, for example, businesses can be compensated for reducing their energy consumption when the power system is constrained.

Angie O'Connor, then President, New England Power Generators Association, Inc. noted that competitive electricity markets have provided many benefits to consumers in that they have spurred investment in new, cleaner, more efficient and reliable generation—$6 billion in new generation investment has resulted in over 12,000 MW of new generation, reduced environmental emissions, and increased average plant availability from 78–88%, enough to power an additional 1.96 million homes. Additionally, competitive wholesale markets produce the lowest possible energy prices for consumers. Other components of retail rates, such as stranded costs, system benefit charges and renewable energy charges, are based on state policy decisions.

[8] *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.

Transmission costs are increasing because the region is playing catch up after years of underinvestment in New England's transmission infrastructure. But this investment is helping reduce reliability costs because it improves access to cheaper generation and reduces the need to run expensive out-of-merit generation, noted Carolyn O'Connor, ISO's then Director of External Affairs. In fact, in 2011, total payments made to out-of-merit generators for reliability needs dropped 23% from 2010 and 70% from 2007; see Table 1.[9]

Table 1
Total Reliability Payments
2007 to 2011 Costs in Millions

	2007	2008	2009	2010	2011
Daily Reliability Payments	$246.9	$255.8	$55.7	$95.3	$73.6

Kerrick Johnson, Vice President, External Affairs, VELCO, also noted that the process for estimating transmission project costs has improved the transparency and accuracy of cost estimates as projects progress through the regional stakeholder process. This is particularly important given that project costs are considered when determining the most cost-effective solution to meet regional needs.

Smart Grid Initiatives in New England

In June, a diverse panel discussed the benefits of smart grid technologies for both the power system and consumers.[10]

What is "Smart Grid"?

David O'Brien, Director, Bridge Consultants, defined the "Smart Grid" as the technologies and opportunities that not only provide consumers with tools to better manage their electricity consumption and costs, but those that also help optimize the efficient operation of the power system and improve reliability.

Smart grid technologies include distributed generation and other demand-side resources (smart meters and energy efficiency measures, for example) that allow consumers to better understand and control their energy use. The objective of these technologies is to provide customers with the necessary signals – such as high electricity prices or constraints on the power system – to reduce consumption.

[9] In order to meet reliability standards and maintain daily system reliability, the ISO may commit resources, in addition to those cleared in the Day-Ahead Energy Market, to ensure capacity balance in real time. Resources that operate at the ISO's instruction but do not recover their as-bid costs through energy market revenues are paid one of the following types of compensation, depending on the reason for commitment: economic/first-contingency Net Commitment-Period Compensation, local second-contingency Net Commitment-Period Compensation, voltage reliability payments, and distribution reliability payments.

[10] Presentations from this meeting are available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2011/jun22011/index.html.

Brian Otley, Vice President, Operations, Green Mountain Power, noted that smart grid technologies can help create a more efficient grid because it can flatten the load curve and help reduce peak demand—the main driver for determining capacity needs. Ultimately, the lower the demand, the less capacity the region must buy, thereby reducing costs. Smart grid technologies also can help achieve environmental goals because lower demand prevents the dispatch of fossil-fuel resources.

Smart Grid in Practice

John Carroll, Manager, Public Affairs, Central Maine Power (CMP), described the need for power and information delivery to be "in sync"; electricity is consumed instantaneously, but by the time customers receive their electricity bills, it is too late for them to alter their habits to make a meaningful difference. Smart meters are the key to linking usage and information as they allow customers to respond to high and low prices. He highlighted CMP's Advanced Metering Infrastructure project that deployed more than 600,000 smart meters to all its residential, commercial, and industrial customers. The project is twofold in that it (1) provides customers with electricity usage information to help them make more informed decisions regarding their electricity consumption, and (2) helps reduce operations and maintenance costs and service-restoration times for customers because operators have more accurate locations of faults and power outages.

Camilo Serna, Director, Strategic Planning at Northeast Utilities (NU), also discussed the results of NU's dynamic-pricing pilot programs for its commercial, industrial, and residential customers. NU found that customers responded well to pricing signals and, pending regulatory approval, the company plans to move forward with dynamic-pricing options for its customers.

The state of Vermont, in collaboration with its electric utilities, has worked to create a statewide smart grid infrastructure. Using smart grid funding from the US Department of Energy (DOE), Vermont will bring smart meters to more than 80% of Vermont consumers by 2015. DOE also provided funding for Sandia National Laboratories to work with the University of Vermont and other stakeholders to promote workforce development and advance change in the state's electric power sector. Representatives from Sandia and the University of Vermont discussed this unique partnership in making Vermont a "living laboratory" for education and workforce development, collaborative research, and engagement to encourage information sharing, technology transfer, and statewide job growth in the electric power sector.

Informing Consumers of Major Initiatives

Also at the June CLG meeting, panelists representing the ISO and the Massachusetts' Attorney General's office discussed and reviewed the ISO's procedures for keeping consumers informed of major new ISO initiatives that may affect the wholesale markets and transmission system performance and their associated costs.[11]

Background—*Framework for Evaluating Major Initiatives*

In April 2009, the ISO and NEPOOL jointly filed a compliance filing with FERC addressing the requirements set forth in FERC's Order 719, which proposed reforms to improve the operation of

[11] Presentations from this meeting are available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2011/jun22011/index.html.

organized wholesale electric power markets.[12] The ISO adopted the following language in its Mission Statement:

> In fulfilling this mission . . . the ISO shall strive to perform all its functions and services in a cost-effective manner, for the benefit of all those served by the ISO. To assist stakeholders in evaluating any major ISO initiative that affects market design, system planning, or operation of the New England bulk power system, the ISO will provide quantitative and qualitative information on the need for and the impacts, including costs, of the initiative.[13]

Throughout 2010, the ISO and stakeholders convened a comprehensive stakeholder process to consider what constitutes "major" ISO market design and system planning initiatives. In addition to identifying what constitutes a "major" ISO initiative, the ISO and stakeholders examined the types of information expected to be provided in the analyses and the process for developing and reviewing the analyses within the regional stakeholder process. The effort is an important first step in implementing the new Mission Statement language. This work culminated in the *Framework for Evaluating Major Initiatives*, which was adopted in January 2011.[14]

Chris Parent, Manager, ISO Market Development, explained the process by which major initiatives are determined and analyzed. Major initiatives are determined by a set of "necessary" and "additional" criteria to assess the potential impact, riskiness, and controversy associated with them. To be considered for impact analysis, the *Framework* specifically requires initiatives to substantially change the market design or planning criteria, fall outside of a prescriptive FERC or North American Electric Reliability Corporation (NERC) order, be of importance to more than one state, and have an impact on multiple participants. Initiatives also must be considered risky, have broad or deep market and system impacts, or require the ISO or market participants to accrue large implementation costs. A set of detailed questions have been developed to apply the criteria to individual initiatives.

The *Framework* also outlines the types of information to be provided in the analyses. Quantitative information will be provided on implementation costs for the ISO and participants and any direct impacts on affected resources, transmission assets, or load. Additionally, the analyses will attempt to quantify indirect impacts on markets, such as prices and customer costs. However, in cases where the development of this information is not practical, the ISO will explain the reasons for that determination. For most major initiatives, the ISO likely would provide illustrative analyses and a discussion of directional effects in the near and long terms. Qualitative information on the objective of the initiative; its implications on ISO functions, markets, and the *Open Access Transmission Tariff*; and descriptions of specific risks or unintended consequences also will be provided.[15]

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[12] *Filing of ISO-New England and New England Power Pool in Response to Order 719*, Docket No. ER09-1051-000 (April 28, 2009) (hereinafter called the "Compliance Filing"), http://www.iso-ne.com/regulatory/ferc/filings/2009/apr/er09-1051-000_4-28-09_order%20719.pdf.

[13] Order 719 filing, p. 117.

[14] ISO New England Inc. and the Brattle Group, *Framework for Evaluating Major Initiatives* (January 2011), http://www.iso-ne.com/pubs/spcl_rpts/2011/major_iso_initiatives_impact_analysis_final_report_1_28_11.pdf.

[15] The *Open Access Transmission Tariff* (OATT) is available at http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/index.html.

Informing Consumers of Important Initiatives—Within and Outside of the *Framework*

The process outlined for disseminating information on an impact analysis is designed to ensure that stakeholders (including the CLG) have, and understand, the relevant information about a major initiative before deciding whether they want to support, or are asked to take action on, the initiative. In this regard, ISO subject matter experts will be available to provide background information and describe initiatives and their associated analysis in an understandable way for consumers. As with other stakeholders, the ISO will inform the CLG of planned meetings where major initiatives will be discussed so that the CLG may follow and participate in the process for determining the initiative's objectives, making decisions to conduct quantitative and qualitative analysis, receiving feedback on assumptions, and allowing for the opportunity to discuss alternative proposals.

Outside this *Framework*, the ISO also has committed to inform the CLG of other initiatives important to consumers. Carolyn O'Connor described that the ISO will provide high-level information and wholesale market implications on issues and initiatives occurring at NEPOOL committee meetings. When possible and at the CLG's request, ISO experts will participate at meetings to describe initiatives in more detail. Additionally, the ISO also will consider requests from the CLG (with the consideration of the CLGCC) for additional information about initiatives that may affect wholesale costs and consumers.

Meeting Diverse Energy Objectives—Energy Policy Goals, Reliability, and Reasonable Electricity Rates

The September CLG meeting featured end users, electric industry and policymaker representatives debating the question, "Is it possible to simultaneously meet energy, environmental. and economic policy goals while maintaining reliability and reasonable electricity rates?"[16]

End-User Perspective

Christopher Schaper, representing the Western Massachusetts Industrial Group (WMIG), noted the necessity for states to promote energy and environmental goals; however, the means for meeting these goals, he stated, should not burden Massachusetts' businesses that contribute to the economy and employ its citizens. Utility costs (particularly the transmission and fixed components of rates, which consumers cannot control) have risen exponentially for WMIG's member companies, even as commodity prices have decreased. This trend, he believes, makes Massachusetts less competitive than other states, harming growth opportunities and forcing businesses to consider whether they should remain in the state.

WMIG member companies have sought opportunities for controlling utility costs, such as investing in energy-efficiency measures and distributed generation, even though the return-on-interest for these measures may not always be effective; shifting load from peak to off-peak periods, where and when possible; and using Mass Save programs for rebates, incentives, and technical assistance.[17] However, the savings from these opportunities do not always offset current and expected energy costs. Policymakers and regulators, WMIG argues, should design utility rates based on cost-to-

[16] Presentations from this meeting are available at http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2011/sep282011/index.html.

[17] Mass Save is an initiative sponsored by Massachusetts' gas and electric utilities and energy-efficiency service providers that work closely with the Massachusetts Department of Energy Resources to provide a wide range of services, incentives, trainings, and information promoting energy efficiency that help residents and businesses manage energy use and related costs. More information is available at www.masssave.com.

serve principles and should reflect efficient operations. Additionally, when approving rates, regulators should give priority to how they will affect ratepayers.

Industry Perspectives

James Daly, Director, Electric and Gas Energy Supply, NSTAR; Peter Fuller, Director, Regulatory Affairs, NRG Power Marketing; and Anne George, ISO New England Vice President, External Affairs and Corporate Communications discussed the major drivers for supply and transmission charges in utility rates. Environmental regulations and economic conditions have created a situation where the region is now primarily dependent on natural gas for capacity and for the production of electricity; see Figure 2. This is unlikely to change, as older coal and oil-fired units are expected to retire and with natural gas and wind making up the majority of the region's proposed resources in the ISO's Interconnection Queue, as shown in Figure 3.[18] Natural gas will likely continue to be a dominant resource in the future.

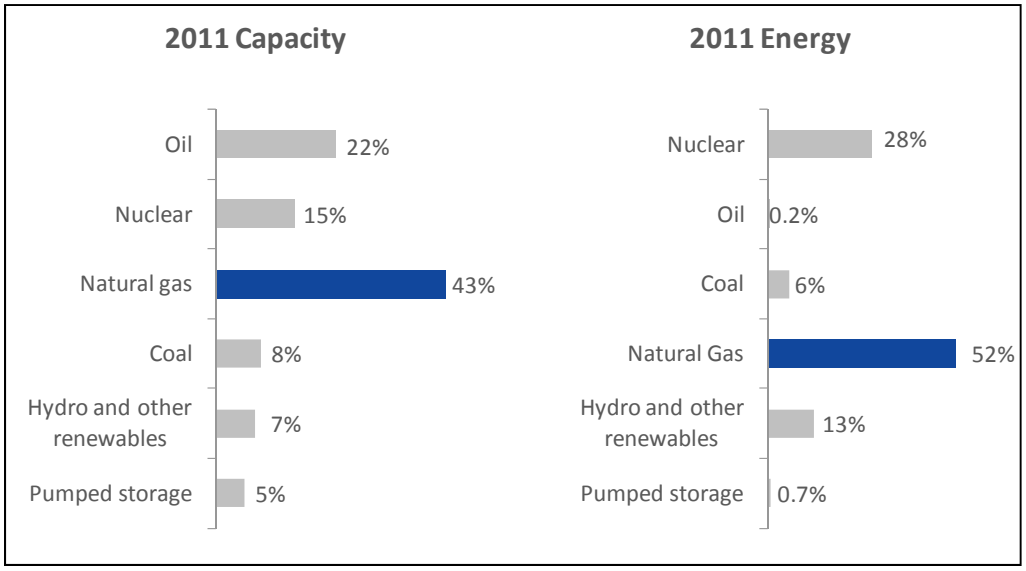

Figure 2: New England's generating capacity and electricity production, 2011

[18] ISO New England's Interconnection Queue includes the statuses of and information about requests for the interconnection of proposed generators and proposed Elective Transmission Upgrades. As of April 2012, there are approximately 6,500MW seeking to interconnect to New England's power grid. For more information please go to http://www.iso-ne.com/genrtion_resrcs/nwgen_inter/status/index.html.

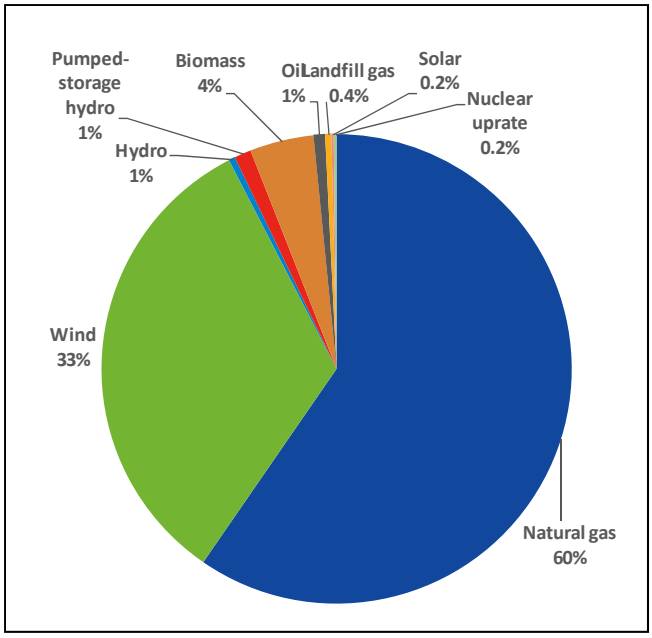

Figure 3: Generator proposals in the Interconnection Queue (as of April 2012).

Supply charges are based on actual wholesale electricity market conditions at the time utilities procure energy to deliver to their customers. Considering that natural gas comprises nearly 50% of the region's capacity mix and typically is lower priced than other resources, natural gas often sets the price in the wholesale electric energy market. However, low energy prices do not typically translate into retail bills in a timely manner because utilities contract energy supply in advance. Additionally, state policies that require utilities to procure long-term contracts for renewable resources can result in higher electricity rates, depending on the type and location of the resource.

Drivers for transmission charges include projects to improve the region's transmission infrastructure. Merchant transmission projects, such as Northeast Utilities/NSTAR's "Northern Pass" project to access hydro resources in Canada, are funded solely by participants with the expectation that the cost of transmission will be included in the delivered cost of power. Ratepayer projects include reliability projects that enhance the reliability of the entire New England power grid; costs for reliability projects are allocated to all New England ratepayers. New England is essentially playing catch up after decades of underinvestment in transmission, and while costly, it provides consumers with greater access to the least-expensive supply of electric energy available on the power system, while helping ensure a reliable supply of electricity. Reliability-based transmission projects have helped reduce the need to commit expensive, out-of-merit generation to meet local reliability needs as detailed in Table 1.

Policymaker Perspective

Representative James Garrity, Chairman, New Hampshire House Science, Technology, and Energy Committee, voiced concern with recent policies that have an impact on consumer electricity costs. He expressed appreciation to the CLG for bringing these concerns and issues to light and suggested that he and his committee will make a concerted effort to stem legislation that would increase rates to consumers and will explore ways to remove costly policies that increase consumer costs.

Review of New England's Electricity Markets

New England's electricity markets, specifically the Forward Capacity Market and stakeholder concerns with current FCM developments, were discussed at the December meeting.[19]

FCM Overview

The FCM was developed by the ISO, the New England states, and industry stakeholders to ensure that New England has enough resources to meet future demand (or the "Installed Capacity Requirement").[20] The ISO manages an annual Forward Capacity Auction (FCA) to procure the resources needed to meet system capacity needs and regional reliability requirements.

Eligible resources that can participate in the FCM include traditional generating resources (e.g., natural gas, oil, coal), variable resources (i.e., wind and solar), imports, and demand resources. Eligible demand resources include energy-efficiency measures, load management, distributed generation, and active demand response (e.g., dispatchable resources that respond to ISO instructions to reduce load to support system reliability). Before competing in the auction, resources must undergo a stringent qualification process that assesses their availability, or in the case of a new resource, assesses whether the project will be built and able to generate power by the respective capacity commitment period. Demand resources also must submit a measurement and verification plan, which outlines the project and its development and how the demand reduction is to be achieved.

Resources compete in the FCM in a descending-clock auction. At the start of the FCA, when prices are high, more than enough resources are available to meet the capacity requirements for the system and local capacity zones. Throughout the auction, prices drop, and resources can withdraw (or "delist") from the auction when the price falls below the level at which they are willing to offer their capacity. Prices continue to drop until the point at which lowering the price any further would cause supply to no longer meet the Installed Capacity Requirement. Resources remaining at the end of the auction receive a capacity supply obligation to provide capacity and are paid based on their performance during the respective capacity commitment period.

Since commencement of the first auction in February 2008, the region has seen growth in new generation; over 1,900 MW of new generation is expected to come on line between June 2012 and June 2016. Demand-resource participation also has grown significantly since these resources have begun participating in the marketplace. More than 2,600 MW of demand resources now participate in New England's wholesale markets; see Figure 4. The ISO held the sixth FCA in April 2011 for resources needed June 2015 to May 2016.

[19] Presentations from this meeting are available at www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2011/dec82011/index.html.

[20] 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 resulting from resource deficiencies must be, on average, less than once in 10 years.

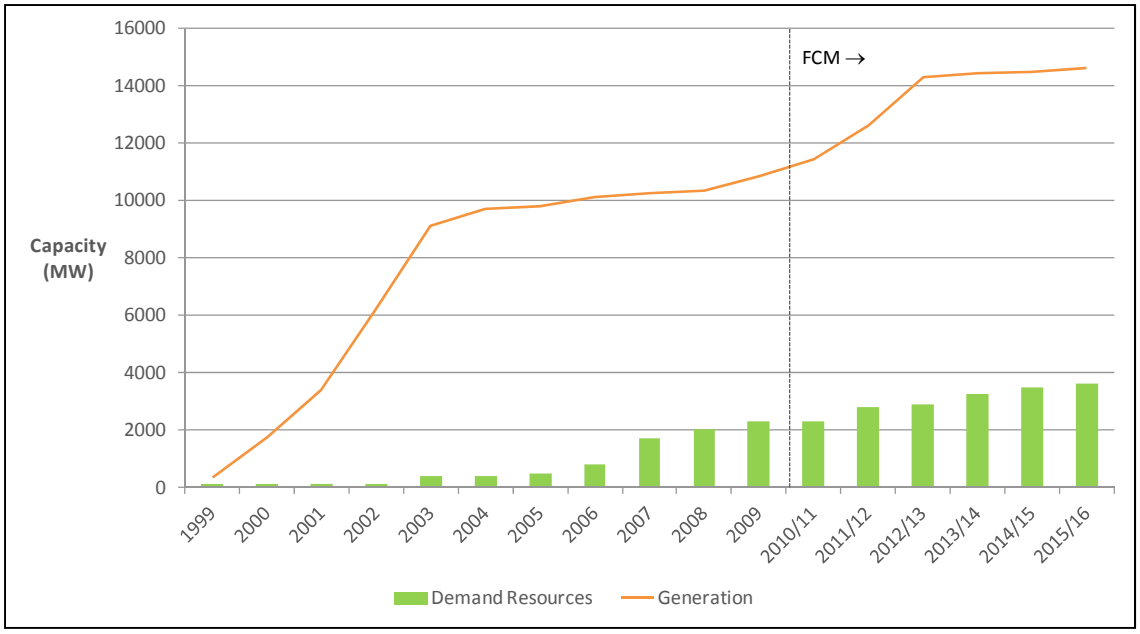

Figure 4: New England's growth in generation (cumulative) and demand resources, 1999 to 2016.

Stakeholder Review of the Forward Capacity Market

Over the past three years, the ISO and New England stakeholders have spent significant time reviewing the FCM to consider what changes, if any, might be needed to enhance its effectiveness and to ensure that the region is not paying more than needed to ensure capacity. Robert Ethier, ISO New England Vice President of Market Development, detailed some of the issues regarding the FCM and the steps being taken to address them.

An April 2011 FERC Order noted that the issue of excess capacity is the backdrop for reviewing proposed changes to the Forward Capacity Market.[21] The order states that every FCM auction has cleared at the price floor, and even at such levels, significantly more resources offer to provide capacity than is needed. New capacity also has been constructed as a result of state-funded initiatives, and because such capacity resources receive revenue from outside the ISO's markets, they are able to offer into the FCM at below-market rates, or make so-called "out-of-market" (OOM) offers. FERC notes that such OOM capacity creates significant design issues for the FCM, suppressing the clearing price below competitive levels. For these reasons, FERC directed the ISO to work with stakeholders to develop and implement specific changes to the FCM, including a buyer-side mitigation mechanism, changes to zonal modeling, and other mitigation revisions. Mr. Ethier explained the ISO's proposed compliance plan, which was scheduled to be filed with FERC later in December.

Following the December CLG meeting, the ISO's proposed compliance plan was tabled to allow stakeholders to engage in further discussions. In a January 2012 FERC filing, the states, NEPOOL participants, and the ISO agreed on the continuation of the rules in place for the sixth auction through the seventh auction with a modified capacity clearing price floor of $3.15/kilowatt (kW)-

[21] *Order on Paper Hearing and Rehearing*, Docket Nos. ER10-787, EL10-50, and EL10-57 (April 13, 2011), http://www.iso-ne.com/regulatory/ferc/orders/2011/apr/err10-787-000_4-13-11_fcm_redesign_order.pdf.

month, and the modeling of four zones (Connecticut, Northeast Massachusetts [NEMA]/Boston, Maine and Rest of Pool) for FCA#7 and future auctions.[22]

In a March 2012 order, FERC accepted the January proposals but stressed the need to comply with its original April 2011 order. The FERC decision requires the ISO to file tariff changes that would, among other things, model eight zones all the time and remove the price floor in time for FCA #8.[23] A compliance filing with these rule changes is due by December 3, 2012. Additionally, the ISO and stakeholders are looking at longer-term enhancements to the Forward Capacity Market through the Strategic Planning Initiative (see section below).

Opportunities for Consumers to Participate in the Wholesale Markets

August Fromuth, Managing Director, Freedom Energy Logistics LLC, provided insights on ways for consumers to save money. Specifically, he noted that commercial and industrial users of electricity have the opportunity to buy power directly from the wholesale market. The wholesale market provides the consumer with price signals, and responding to price signals can potentially allow a consumer to realize significant savings. He also suggested that certain customers, through energy efficiency and demand-response load curtailment, can reduce energy costs during peak demand hours, receive capacity revenues based on these load curtailments, and mitigate future capacity payments.

Consumer Liaison Group Future Initiatives

The ISO, working with the CLG Coordinating Committee and CLG members, will continue to conduct outreach in the states to inform consumers and consumer advocates of the existence, role, and information provided by the Consumer Liaison Group. Additionally the CLGCC will strive to meet its goals for attracting more end-user participation, to increase participation from all New England states, and increase the consumer's presence in ISO stakeholder discussions and initiatives.

ISO New England Activities and Initiatives

The ISO and regional electricity market stakeholders were involved in numerous activities in 2011 that will shape future market design and the scope of transmission planning, which ultimately will have an impact on the cost of electricity to consumers. Below is a description of the ISO's major activities in 2011.

Annual Activities

The ISO provides significant information to stakeholders each year to aid decision making and participation in the stakeholder process.

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[22] *Revisions to the ISO New England Transmission, Markets and Services Tariff Related to Forward Capacity Market*, Docket No. ER12- -000 (January 31, 2012), http://www.iso-ne.com/regulatory/ferc/filings/2012/jan/er12-953-000_fcm_redesign_1-31-2012.pdf.
[23] *Order on Tariff Revisions to the Forward Capacity Market*, Docket No. ER12-953-000 (March 30, 2012), http://www.iso-ne.com/regulatory/ferc/orders/2012/mar/er12-953-000_3-30-12_order_fcm_redesign_ext.pdf.

Market Reports

The ISO 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 (IMM) prepares a comprehensive report on the development, operation, and performance of the markets each year.[24]

ISO New England's *2011 Annual Markets Report* (AMR), published in May 2012 concluded that low natural gas prices, high hydroelectric production, and lower demand for electricity in New England contributed to lower electricity prices in 2011 compared to 2010 prices.[25] Highlights of the *2011 Annual Markets Report* are as follows:

- The average real-time price for wholesale electric energy fell 6% from $49.56/megawatt-hour (MWh) in 2010 to $46.68 MWh.
- The average price of natural gas, which generated more than half of the electricity and set the wholesale clearing price 74% of the time in 2011, fell 4.5% from 2010.
- Demand for electricity was 1.2% lower than in 2010.
- To meet the requirements for ensuring the reliability of New England's bulk power system, the ISO may commit resources in addition to those cleared in the day-ahead energy market. Reliability costs declined 23% to $73.6 million in 2011 (see Table 1)
- Capacity payments made to resources in 2011 totaled $1.35 billion, an 18% drop from 2010.
- Demand-side resources participating in FCM grew 14%, to 1,960 MW, in 2011. Payments to demand-response resources totaled $104.3 million in 2011 compared with $143.2 million in 2010.

Regional System Planning

Each year, the ISO publishes a regional system plan (RSP) that summarizes the long-term reliability needs of New England's transmission system. The ISO conducts comprehensive regional system planning pursuant to a FERC-approved tariff.[26] The ISO published the *2011 Regional System Plan* in October 2011.[27] Highlights of the *2011 Regional System Plan* are as follows:

- The region is expected to have adequate capacity resources through 2020, assuming that the resources that have cleared in the Forward Capacity Auction remain in commercial operation. However, some generating plants could permanently shut down in the 10-year timeframe of the RSP because of the large capital investments required for older fossil plants to comply with environmental regulations and because of licensing issues with some nuclear plants.

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[24] 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.

[25] ISO New England, Inc., *2011 Annual Markets Report* (May 15, 2012); http://www.iso-ne.com/markets/mkt_anlys_rpts/annl_mkt_rpts/index.html.

[26] The Open Access Transmission Tariff (OATT) is available at http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/index.html.

[27] ISO New England, Inc., *2011 Regional System Plan* (October 21, 2011), http://www.iso-ne.com/trans/rsp/2011/index.html.

- New England will continue to remain dependent on natural gas as the dominant fuel, which provides nearly half of the region's electric energy.
- The ISO will continue to monitor environmental initiatives, their effects on generating plant operations, and their effects on the overall planning and operation of the power system.
- The marginal emission rates have declined as natural gas has become the dominant fuel used for generation. Compared with 1999, the 2009 average emission rate for sulfur dioxide has declined by 71%; the nitrogen oxide rate, by 66%; and the carbon dioxide rate, by 18%.
- Renewable Portfolio Standards (RPS) and other related goals would result in the total demand for renewable resources and energy efficiency reaching approximately 30% of New England's total projected electric energy use by 2020.[28]

Stakeholders (including consumer advocates) provide input to the regional planning process and the RSP through the Planning Advisory Committee (PAC). Some CLG representatives are actively involved in RSP discussions throughout the year at regular PAC meetings and at the annual RSP public meeting with the ISO's senior management and board of directors.

Economic Studies

Conducting economic studies is another part of the regional planning process. Required under Attachment K of the ISO's tariff, economic studies evaluate alternative system expansion scenarios.[29]

In 2011, the ISO began a study to evaluate transmission constraints that could restrict the development of renewable-energy projects in New England, particularly wind-powered resources.[30] The study objective is to determine the level of transmission constraints that would need to be relieved to avoid wind-generation being "bottled in" behind these constraints. The study is assessing wind resources and transmission constraints in the 2016 timeframe.[31]

In some areas that are distant from the system's load centers, the transmission system reliably serves customer demand for power but may not be sufficient to allow new locally installed generating resources—particularly renewable-energy resources—to export all their energy to the grid. These "export-constrained" areas are the focus of the study.

Developers are proposing renewable-energy projects in response to government policies favoring low-emission and renewable-energy resources. However, the areas where these projects are proposed often require transmission upgrades because renewable-energy potential tends to be in relatively remote areas of northern New England, while the major demands for electricity are in

[28] Renewable Portfolio Standards (RPSs) require electric utilities and other retail electric providers to supply a specified minimum amount of customer load with electricity from eligible renewable energy sources.

[29] Attachment K of the *Open Access Transmission Tariff* can be found at http://www.iso-ne.com/regulatory/tariff/sect_2/oatt/sect_ii.pdf.

[30] Transmission constraints are physical limitations on the amount of power that can flow across the transmission system.

[31] The study effort is ongoing and ISO presented regular updates to regional stakeholders through the PAC – specifically in September and November 2011, February 2012 and in three conference calls held to discuss the results on March 8th, March 12th and April 5th; additional updates are planned in Q2 2012.

the southern part of the region. The proposed resources are not intended to serve local demands for power because the affected areas typically have adequate power supplies, but instead are intended to export renewable energy to rest of the region.

Analyses performed for the New England States Committee on Electricity (NESCOE) and Central Maine Power have identified more than 1,100 MW of renewable generation "trapped" in western Maine because of transmission constraints.[32] These analyses have suggested that evaluating (and potentially developing) transmission to integrate multiple wind-energy projects in an area would be more efficient than having developers pursue transmission upgrades for each individual project.

The study focused initially on western Maine but then also looked at transmission constraints for proposed wind energy projects in northern New Hampshire, northern Maine, and offshore southern Massachusetts and Rhode Island.

Representatives of renewable-energy developers and local and merchant transmission companies requested the study to determine the amount of wind-energy resources that can be added to the system and the level of transmission constraints that need to be relieved to allow new, renewable energy to be exported to the region. Developers have said that significant transmission congestion is affecting near-term wind development, and they requested that the study evaluate nearer-term conditions (i.e., 2016) than previous ISO economic studies that evaluated longer-term (2020–2030) wind scenarios.

The study identified approximately 13,000 MW of wind resources in New England:

- 300 MW of existing resources
- 600 MW of resources committed in the near term through the FCM
- 3,000+ MW of projects active in the ISO Generator Interconnection Queue (the queue) as of June 2011
- 9,000+ MW of projects that have withdrawn from the queue

All the projects active in the queue are expected to be in service by 2016, according to plans submitted by developers. The resources in the queue could be expected to produce 12,000 GWh of electric energy per year, which is nearly 9% of New England's total load in 2016. This is sufficient to satisfy the states' RPS goals for 2016. The study also includes resources that have withdrawn from the queue assumedly, in part, because of the effects of transmission constraints. Resources in the queue identify specific interconnection points on the system, which reduces speculation about where projects might be located. The ISO grouped the wind projects into geographic areas to facilitate the identification of export constraints between wind development areas and the bulk-power grid.

The ISO's economic study will provide results for several metrics: economic (e.g., production costs, cost to load-serving entities for energy), energy by fuel type (i.e., gigawatt-hours by fuel type),

[32] NESCOE issued a Request for Information (RFI) in December 2010, which sought to identify "renewable energy resources within New England and neighboring regions that have the greatest potential for helping New England meet its renewable energy goals at the lowest overall, or "all-in", delivered cost of electricity." NESCOE issued results in 2011; www.nescoe.com. Separately, CMP commissioned RLC Engineering to conduct a *Western Maine Renewable Integration Study,* which was filed with the Maine Public Utilities Commission in February 2011 and introduced to the PAC in April 2011; http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2011/apr142011/index.html.

congestion dollars, and environmental emissions (e.g., CO_2, SO_2, and NO_x). The study does not provide specific results for any individual wind projects, and detailed transmission planning studies would be required to interconnect the types of resources evaluated for this economic study.

Preliminary results show that existing wind resources generally would not be bottled in during the 2016 timeframe, but some wind energy in western Maine would be bottled in if all projects active in the queue were developed. The 13,000 MW, all-wind scenario would result in all four study areas experiencing some bottled-in wind energy, most notably western Maine, northern Maine, and northern New Hampshire where 27%, 12% and 29%, respectively, of the wind energy could be affected. However, the results also show that *increasing* export limits effectively reduces the amount of bottled-in wind and also reduces New England's production costs and average clearing prices in the wholesale electricity market.

PAC has been actively involved in reviewing the scope, assumptions, and preliminary results.

Budget Review Process

The ISO 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.[33] In the August timeframe, the ISO presents a draft operating budget for stakeholder review and comment. Finally, at the end of October, the ISO submits its annual budget to FERC for approval by December 30.

The 2012 budget addresses new initiatives planned for the region, such as issues identified through the Strategic Planning Initiative (see below) and addresses ongoing priorities including the FCM, increasing FERC/NERC reliability regulations, transmission planning and economic studies, the integration of wind and demand resources, price-responsive demand, and cost-impact analysis. Before incorporating the true up of previous years' over collections, the 2012 revenue requirement is $151 million, which is $7.6 million more than in 2011. When previous years' over collections are included, the total 2012 revenue requirement is reduced to $143.6 million. In comparison, the 2011 total was $133.8 million after adjustment. The budget was filed and approved by the FERC in November 2011.[34]

The impact on consumers of ISO operations to operate the bulk power system, conduct long-term regional planning, and administer the multibillion-dollar wholesale electricity markets is approximately 1% of a customer's bill, or approximately 73¢ per month for the average residential customer in New England.

Special Initiatives in 2011

The ISO also was involved in other projects and initiatives that will have an impact on wholesale markets and the transmission planning process.

[33] ISO New England, Inc., *Draft 2012-2016 Business Plan* (May 23, 2011), http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/budgfin_comm/budgfin/mtrls/2011/aug262011/2_2012_oper_capital_budg.pdf (plan begins on slide 98).

[34] *Letter Order Accepting 2012 Administrative Cost Budget* (November 22, 2011), http://www.iso-ne.com/regulatory/ferc/orders/2011/nov/er12-191-000_11-22-11_ltr_ord_accept_act_budget.pdf.

Strategic Planning Initiative

Since 2010, the ISO, New England states and electricity market participants have engaged in a Strategic Planning Initiative focused on the future of the wholesale electricity sector in New England.[35] The ISO launched this Initiative to highlight key risks to the reliable and efficient operation of the wholesale electric markets and bulk power system. After many discussions and feedback from stakeholders, broad consensus was reached and five challenges were identified that will likely affect the New England power grid:

- *Resource performance and flexibility,* associated with the uncertain performance or constrained operational accessibility of demand resources and aging supply resources and the need to increase system flexibility.
- *Increased reliance on natural-gas-fired capacity,* associated with the risk to the New England electric power system owing to its reliance on natural-gas-only resources because sufficient gas many not be available to meet power system needs during periods of very high seasonal demand, under other stressed system conditions, or when facing contingencies associated with natural gas supply and transportation system infrastructure.
- *Retirement of generators,* associated with the risk that economic and policy factors will result in the potential exit of a substantial portion of existing, older fossil-fuel capacity.
- *Integration of variable resources,* associated with the need of a steady increase in system flexibility as more variable resources, primarily renewable energy resources, are added to the system over the next several years.
- *Alignment of planning and markets*, associated with the need to better align the timing and analytic processes of wholesale market procurements and transmission planning to allow reliability needs to be met through either market resources or backstop transmission solutions.

Last year, the ISO shifted from understanding and defining the risks and issues to beginning the process of identifying and developing potential solutions. A series of reports are underway:

- Study of the region's generator units expected to face significant capital investment to comply with regulatory requirements to understand the magnitude to those facing retirement
- Study of the long-term transmission system needs for two future resource scenarios—generator retirements and wind expansion
- Whitepaper proposing how to incorporate identified local and system reliability requirements into resource adequacy markets[36]
- Study of the amount of natural-gas-fired generation that can be served by the natural gas system after all firm and priority natural gas customers are served and to look at a future

[35] More information on the Strategic Planning Initiative is available at http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/index.html.

[36] The "Aligning Markets and Planning" whitepaper is available at http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/alignment_of_markets_and_planning_white_paper.pdf.

case when oil and coal resources may be retired and repowered with new, natural gas resources[37]

- "Roadmap for New England" whitepaper that puts forth near-term solutions and presents longer-term "vision" for the region[38]
- Whitepaper that seeks to outline changes to the Forward Capacity Market[39]

In 2012, the ISO will continue to share its strategic planning efforts and outcomes of its studies and begin to implement near-term—and identify possible long-term—solutions to ensure that New England has a reliable supply of electricity.

Energy-Efficiency Initiative

Regional stakeholders, particularly the states, want to ensure that increased investments in energy efficiency (EE) are appropriately reflected in ISO's planning and forecasting activities. Over the last year and a half, the ISO explored potential improvements to its forecasting and planning practices to account for energy-efficiency investments, and on April 12, 2012, the ISO released its first energy-efficiency forecast.[40] The forecast shows that state energy-efficiency budgets are expected to grow through 2021, resulting in both annual energy and peak savings.

The forecast is the culmination of a research, data collection, and analysis process involving the region's energy-efficiency stakeholders, resulting in the nation's first regional EE forecast. The goal of the EE forecast is to equip transmission planners with information about the long-term impacts of state-sponsored EE investments - the ISO has determined that the region spent about $500 million on EE programs in 2010 alone - and to use it in long-term planning studies beyond the FCM timeframe (it will not be used to identify short-term needs, such as those for FCM auctions, the ICR, and other FCM-related studies and analysis).

After discussions with stakeholders and a survey of the other ISOs, ISO New England developed an energy-efficiency forecast methodology. In concept, it is similar to the energy-efficiency forecast used by the New York ISO (NYISO) in that it is based primarily on EE budgets and spending inputs as a means to calculate future energy and peak demand savings. One of the differences between ISO NE's methodology and NY's is the fact that New England's accounts for six separate state EE programs and budgets.

For the methodology, the calculation of future EE budgets is based on projections of current EE revenue sources (including system benefits charges, revenues from Regional Greenhouse Gas Initiative auctions, the FCM, and other sources).[41] From the projected budgets, the ISO can estimate

[37] Preliminary results of this study are available at http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2011/dec142011/gas_study_public.pdf.

[38] The "Strategic Planning Roadmap" can be accessed at http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/strategic_plan_initiative_roadmap_march_2012.pdf.

[39] The "Using the Forward Capacity Market to Meet Strategic Challenges" whitepaper is available at http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/fcm_whitepaper_final_may_11_2012.pdf.

[40] See http://www.iso-ne.com/committees/comm_wkgrps/othr/enrgy_effncy_frcst/frcst/index.html.

[41] The Regional Greenhouse Gas Initiative (RGGI) is a cap-and-trade program designed to reduce CO_2 emissions in 10 states throughout the Northeast by 2018. For more information, see www.rggi.org.

future energy savings. To the largest extent possible, this approach is based on current data supplied directly from the states' program administrators (PAs) responsible for implementing state-sponsored EE initiatives. State regulators, who are responsible for overseeing EE programs, provide input to the ISO to ensure data accuracy. A proof-of-concept EE forecast methodology was presented to the PAC in 2011.

Data collection for the EE forecast began in January 2012. The ISO created an EE data-gathering tool for collecting information on each state's EE programs, especially the production cost of these programs (i.e., the cost per megawatt-hour savings).

The results of this effort show approximately 130 unique EE programs aimed at commercial/industrial, residential, and low-income customers across the region. Of these programs, lighting measures constitute a majority of the energy and demand savings, and the bulk of the savings are in the commercial and industrial sectors.

Energy-Efficiency Forecast Results

Using the data submitted by the PAs, the ISO forecasts future EE budgets for 2015 to 2021. Using these budget projections, the ISO then forecasts both peak and annual energy savings for the region and each state over this time period. Results show that regional EE budgets currently are expected to increase from approximately $792 million in 2015 to about $828 million in 2021. The expected average annual energy savings from 2015 to 2021 amount to 1,343 gigawatt-hours (GWh), and the average annual peak savings equals 206 MW.

Figures 5 and 6 show the projected energy and peak savings, respectively. The blue line is the traditional load forecast. The red line below the blue line shows the impact of the EE resources from the FCM held constant at 2014 levels. The black line at the bottom of the figure shows the impacts of newly forecasted incremental increases of New England's EE programs.

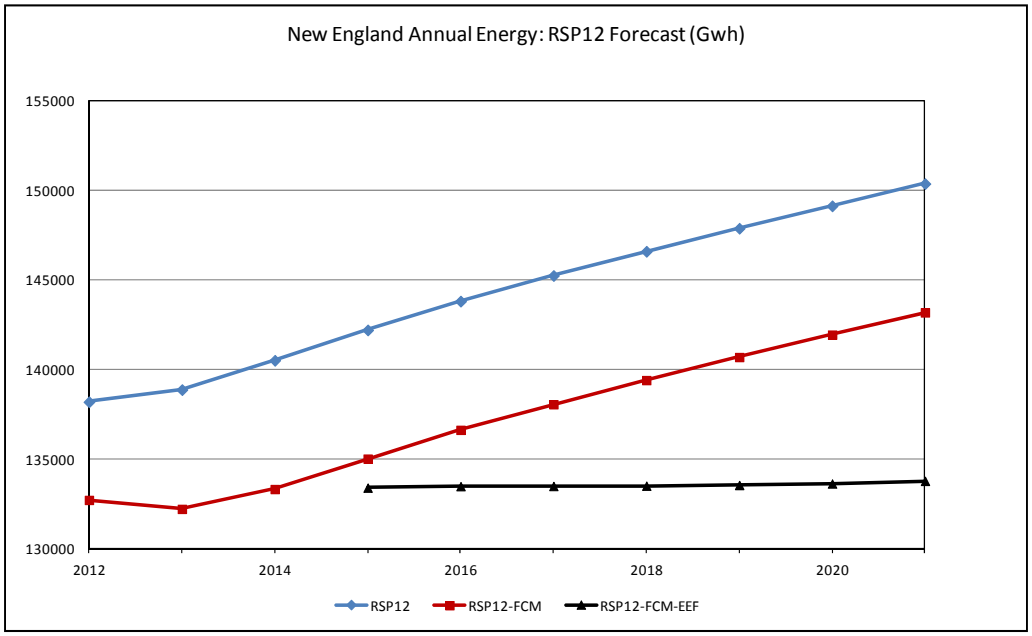

Figure 5: Projected energy savings from energy-efficiency programs

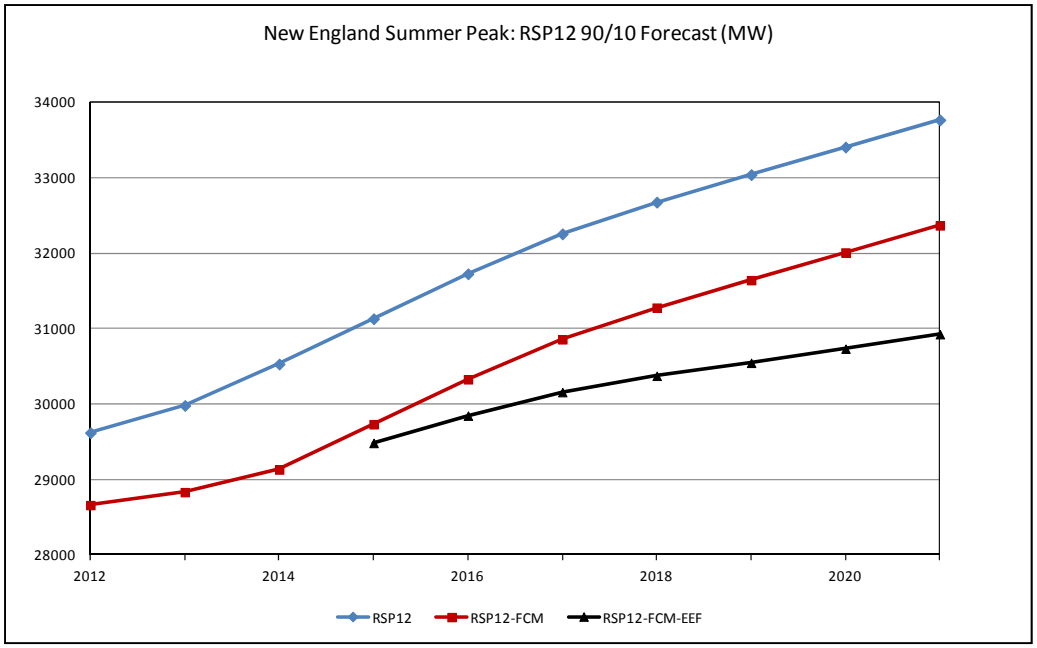

Figure 6: Projected peak savings from energy-efficiency programs.

Stakeholder Process

The ISO worked with stakeholders during the development of the EE forecast, regularly updating the PAC on EE forecast activities since 2010. Moreover, the ISO established the Energy-Efficiency Forecast Working Group (EEFWG) in 2012 to provide ongoing input into the EE forecast process.[42] Specifically, the working group provides guidance on EE forecast assumptions, methodologies, and data inputs. The stakeholder group consists of state representatives with expertise in energy-efficiency programs, PAs, and other interested parties. The EEFWG is chaired by the ISO and is not a formal NEPOOL committee or subcommittee.

FERC Order 1000

In July 2011, FERC issued Order No. 1000, addressing transmission planning and cost allocation practices within and between various regions.[43]

Order 1000 stresses regional planning practices by ensuring that public utility transmission providers participate in a regional transmission planning process that produces a regional transmission plan. In addition, these processes must consider transmission needs (and potential solutions) driven by public policy requirements established by state or federal laws or regulations (e.g., Renewable Portfolio Standards). Beyond the importance of intraregional planning, FERC also requires coordination between public utility transmission providers in neighboring transmission planning regions potentially to identify more efficient or cost-effective solutions to common needs.

[42] More information about the EEFWG is available at http://www.iso-ne.com/committees/comm_wkgrps/othr/enrgy_effncy_frcst/index.html.

[43] Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities, 18 CFR Part 35 (136 FERC ¶ 61,051, Docket No. RM10-23-000, Order 1000) (July 21, 2011), http://www.ferc.gov/industries/electric/indus-act/trans-plan.asp and http://www.ferc.gov/whats-new/comm-meet/2011/072111/E-6.pdf.

In addressing how to pay for transmission, Order 1000 calls for public utility transmission providers to participate in a regional transmission planning process that includes a regional cost-allocation method for building new transmission. Public utility transmission providers in neighboring transmission planning regions must have a common interregional cost-allocation method for new interregional transmission (satisfying six detailed principles) that the regions jointly determine to be efficient or cost effective.

Finally, FERC requires the removal of existing federal right-of-first-refusal provisions in FERC-approved tariffs and agreements for a transmission facility selected in a regional transmission plan for purposes of cost allocation. This particular reform is subject to several specified limitations.

After careful analysis with regional stakeholders, the ISO believes the region already complies with a significant portion of Order 1000. ISO already engages in a rigorous and transparent stakeholder process for transmission planning and annually releases a comprehensive Regional System Plan. The region's cost-allocation mechanism for reliability-based transmission has been approved by FERC and has resulted in the building of over $4 billion in transmission over ten years.

However, Order 1000's direction to begin considering various enacted public policy initiatives has resulted in substantial dialogue between regional stakeholders. NESCOE has drafted possible strategies for the identification of public policy-based projects, and NEPOOL, the ISO and other stakeholders are working to find common ground before the compliance filing deadline. Regions are expected to submit compliance filings by October 2012; however FERC extended an additional six months beyond that for filings addressing the interregional planning and cost-allocation provisions.

Price-Responsive Demand

In March 2011, FERC released Order No. 745, *Demand-Response Compensation in Organized Wholesale Energy Markets.*[44] This order effectively requires all regional transmission organizations and independent system operators, including ISO New England, to allow demand response to participate in their energy market by reducing consumption of electric energy from their expected levels in response to price signals.

Order 745 states that demand-response resources can participate in the electric energy market and receive the market price for energy for reductions when these demand-response resources have the capability to balance supply and demand and when payment of the market price for energy to these resources is cost-effective.

The costs associated with demand-response compensation will be allocated proportionally to all entities that purchase from the relevant energy market where the demand response reduces the market price for energy when the demand-response resource is committed or dispatched.

In 2011, the ISO and regional stakeholders developed rules to better integrate demand response into the regional energy market.[45] The rules allow demand-response providers to express a price

[44] *Demand Response Compensation in Organized Wholesale Energy Markets*, Final Rule, 134 FERC ¶ 61,187, Order No. 745, Docket No. RM10-17-000, March 15, 2011 ("Order No. 745"), http://www.iso-ne.com/regulatory/ferc/orders/2011/mar/rm10-17-000_3-15-000_demand_resp_order.pdf.

[45] Transition and fully integrated rules have been developed. The transition rules are based on the present Day-Ahead Load Response Program (DALRP), which is a bid-based program in which a market participant with a real-time demand-response asset can submit demand-reduction offers into the energy market. The existing DALRP is set to expire on June 1, 2012. The transition rules will begin when this DALRP expires. See

at which they are willing and able to reduce demand, which effectively allows the ISO to commit and dispatch demand resources as an alternative to committing and dispatching generation resources in balancing energy supply and demand. This effectively provides the ISO with side-by-side comparisons of resources and better ensures that the most cost-effective resources available at each moment are committed and dispatched to serve regional energy consumption.

ISO Express

In 2011, the ISO launched "ISO Express," the newly redesigned neData Portal.[46] ISO Express offers a quick, customizable, one-stop-shop for graphical views of real-time market and power system data and provides better web-based alerting features in emergency situations.

In 2002, the ISO created the neData Portal—a subsection of its public website where market participants and other electricity-industry stakeholders could access and monitor real-time market and power system data. The design and function of the portal remained largely untouched since that time, whereas, technology advanced significantly.

With the new site, users can monitor the New England power system while watching graphs of data set up by the user—all in a simple, clean, easy-to-read interface. Users can create unique "dashboards" of information. Available data include charts and graphs of five-minute real-time locational marginal prices (LMPs), hourly real-time LMPs, weekly and monthly day-ahead and real-time LMPs, reserve prices, load forecast, system load, external interfaces, an hourly day-ahead and real-time LMP price ticker, and more.

In addition, users can easily expand and minimize a newly redesigned system monitor that enables instantaneous viewing of power system conditions (including ISO Operating Procedure No. 4 alerts), an interactive LMP map that includes binding constraints, and a graph that shows forecasted and actual system load.

ISO New England on Twitter

In December 2011, the ISO launched its Twitter page at www.twitter.com/isonewengland. The ISO's Twitter account seeks to connect with market participants, consumers, and others interested in learning more about the New England power system and wholesale electricity markets. "Tweets" cover topics such as the following:

- System conditions, as necessary
- Events, trainings, and other calendar announcements
- Information about and links to the ISO's reports and other publications
- Statistics and facts about the power grid and wholesale markets

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ISO New England's August 19, 2011, Order 745 Compliance Filing, http://www.iso-ne.com/regulatory/ferc/filings/2011/aug/er11_4336-001_prd_filing.pdf, and subsequent December 2011 filing, http://www.iso-ne.com/regulatory/ferc/filings/2011/dec/er11-4336-003_12-22-11_req_chg_eff_date_.pdf.

[46] ISO Express can be accessed at www.isonewswire.com.

Appendix A: Analysis of Wholesale Costs and Retail Rates

In the beginning of the CLG's discussions, members sought clarification for how wholesale market costs are manifested in a typical retail consumer's bill and asked the ISO to conduct an analysis of wholesale costs and retail rates. The first analysis was completed in 2009 and subsequently updated annually in March. The results determined that wholesale costs and residential retail power supply rates can vary fairly dramatically.[47] Table 2 shows the range of wholesale power costs for the 12 months ending August 2009, March 2010, March 2011, and March 2012 among the New England states and the range of residential retail supply rates in effect on each of these dates.[48]

Table 2
Wholesale Market Costs
and Residential Retail Power Supply Rates[(a)]

	Wholesale Market Costs (¢/kWh)	Residential Retail Power Supply Rates[(b)] (¢/kWh)
August 2009	4.84 – 5.14	8.79 – 12.41
March 2010	5.66 – 6.38	8.77 – 11.15
March 2011	6.59 – 7.16	6.93 – 9.71
March 2012	5.31 – 5.70	7.39 –8.37

(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 electricity 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 March of 2011 to March 2012, wholesale market costs declined 19-20%, largely as a result of lower demand and lower natural gas prices. At the same time, the gap between the ranges in retail power supply rates narrowed since March 2011. Some states saw an increase in their rates, while others decreased—an indication of the dynamic nature of utility power supply contracts.
- Most of the New England states saw a decrease in total residential retail bills, which include costs for power supply, distribution, and transmission.[49]

[47] Wholesale and retail electricity markets are used to obtain different products (e.g., short-term spot-market energy compared with long-term, laddered, fixed-price contracts). Understanding these differences is essential when comparing prices in the two markets.

[48] For the 2011 data, some of the utility rates were effective as of April 1, 2011.

[49] The range of total residential retail rates ranged from 15.12¢/kWh to 20.60¢/kWh in 2009; from 15.59¢/kWh to 19.76¢/kWh in 2010; 13.10¢/kWh to 18.56¢/kWh in 2011; and 14.43¢/kWh to 17.08¢/kWh in 2012.

- The estimated *regional* transmission rate decreased by approximately 4% (from 1.04¢/kWh in March of 2011 to 1.00¢/kWh in March of 2012) and is equivalent to only 6–7% of total residential retail rates, which range from 14.43-17.08¢/kWh.[50]
- A review of *actual* transmission rates for residential retail consumers in Connecticut, Massachusetts, Maine, New Hampshire, and Rhode Island in 2012 shows that transmission represents 7–12% of the total residential retail rate. The ISO understands the difference between these *actual* transmission rates for residential consumers and the *regional* transmission rate to be the inclusion of local transmission costs and projects in the residential transmission rates.[51]

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 and preventing all the power needs of utility customers from being 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 3 shows the timing of residential retail rate changes for the region's major utilities.

[50] The regional transmission rate reflects the costs of reliability projects that have been identified through the regional transmission planning process as providing a regional benefit. These costs are considered part of the Regional Network Service. The regional transmission rate is calculated as the sum of all Regional Network Service charges for the specific period, divided by the total net energy for load for the same period. For 2012, the period is based is on the 12 months ending March 31, 2012. For this reason, the regional transmission rates reflected here are different from those in Table 2, which is based on the 12-month calendar year. The net energy for load is detailed at http://www.iso-ne.com/markets/hstdata/rpts/net_energy/index.html.

[51] Additionally, methodologies to allocate transmission costs to residential customers are likely to vary by state and utility.

Table 3
New England Residential Rate Schedule, 2012

State	% of Regional Load	Utility	Effective Date of Current Residential Rates	Next Anticipated Residential Rate Change
MA	46.1%	NGRID Unitil NSTAR WMECO	May 1, 2012 December 1, 2011 January 1, 2012 January 1, 2012	November 1, 2012 June 1, 2012 June 1, 2012 June 1, 2012
CT	25.4%	UI CL&P	January 1, 2012 January 1, 2012	January 1, 2013 January 1, 2013
NH	9.0%	NGRID Unitil PSNH	April 1, 2011 May 1, 2011 January 1, 2012	November 1, 2012 November 1, 2012 August 1, 2012
ME	8.2%	BHE CMP	March 1, 2012 March 1, 2012	March 1, 2013 March 1, 2013
RI	7.3%	NGRID	January 1, 2012	June 1, 2012
VT	4.0%	GMP CVPS	April 1, 2012 April 1, 2012	January 1, 2013 Janurary 1, 2013

Appendix B: Electricity System Costs and Cost Drivers

Electricity System Costs and Cost Drivers

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 2007 and 2011, total annual costs have ranged from a low of $9 billion in 2009 to a high of $14.9 billion in 2008 (see Table 4).

Table 4
New England Wholesale Electricity Costs, 2007 to 2011,
in Millions and ¢/kWh[a]

	2007		2008		2009		2010		2011	
	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh
Wholesale market costs										
Energy (LMPs)[b]	$10,173	7.6	$12,085	9.1	$5,884	4.6	$7,284	5.6	$6,696	4.9
Ancillaries[c]	$319	0.2	$366	0.3	$190	0.1	$164	0.1	$38	-
Capacity[d]	$1,280	1.0	$1,505	1.1	$1,768	1.4	$1,647	1.3	1,345	1.0
Subtotal	*$11,772*	*8.8*	*$13,956*	*10.5*	*$7,842*	*6.1*	*$9,095*	*7.0*	*$8,079*	*5.9*
Transmission charges[e]	$697	0.5	$869	0.7	$1,155	0.9	$1,417	1.1	$1,379	1.0
RTO costs[f]	$114	0.1	$125	0.1	$123	0.1	$137	0.1	$130	0.1
Total	**$12,583**	**9.4**	**$14,951**	**11.3**	**$9,080**	**7.1**	**$10,649**	**8.2**	**$9,587**	**7.0**

(a) Average annual costs are 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, including black-start capability and voltage support. In 2011, the cost of payments made to these generators for reliability services under ISO's tariff was $39.8 million.

(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 and the annual cost of transmission investment to serve all the region's power needs. 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 the 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 2007 and 2011, the ISO's annual costs have ranged from $114 million to $137 million.

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 according to the retail market structures and requirements of the six New England states. Utilities charge retail customers for power supply through their monthly bills using the rates approved by the state or local public utilities commissions. Retail customers share in the cost of regional transmission investment and generally pay for it over a 35- to 40-year period through the transmission rates in their retail bill. In 2011, the total cost of all wholesale electricity costs, including the cost of regional transmission and ISO operations, was approximately $9.6 billion. Allocating this cost across the load served at a wholesale level in 2011 yields a rate of 7.0¢/kWh. The estimated regional transmission rate represents 14% of this rate for 2011.[52]

[52] This analysis is based on the transmission charges as a percentage of total wholesale electricity costs in 2011, noted in Table 4.

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 such as demand-response programs reduce electricity use during the summer and can serve to lower wholesale prices.

Generation Mix

The total capacity of generating plants located in New England is approximately 32,000 MW. 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 predominant generating capacity on the system, representing over 60% of the region's total capacity.[53] Because wholesale electricity prices are 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 heavily concentrated on the power system.

As Figure 7 indicates, New England's wholesale electricity prices track closely to 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. Prices spiked up again in 2010 due to higher fuel prices and increased energy use. In 2011, natural gas and wholesale electricity prices dropped 4.5% and 6% respectively, from 2010 levels.

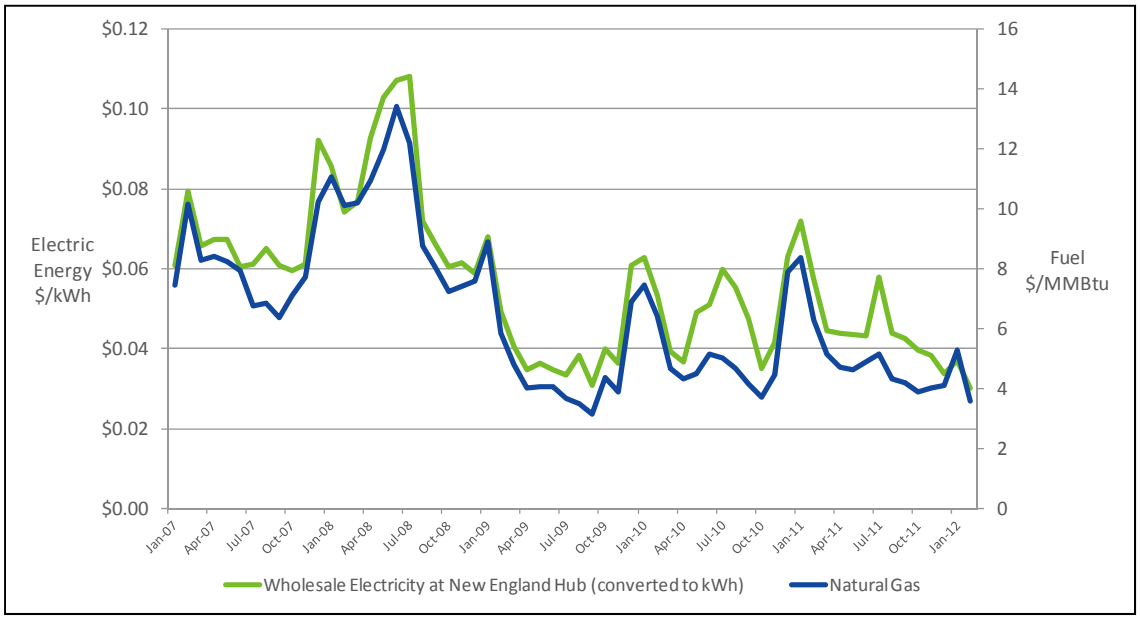

Figure 7: New England natural gas and actual wholesale electricity prices, January 2007 to February 2012.

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

More than 12,000 MW of new generation has come on line in New England since the introduction of competitive electricity markets in 1999. 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

[53] ISO New England, Inc., *2011 Regional System Plan* (October 21, 2011), http://www.iso-ne.com/trans/rsp/2011/index.html.

electric energy for the foreseeable future. It is expected that some of the region's older oil-fired capacity will retire and be replaced by gas capacity in the next several years because of the growing economic pressure of new federal emissions regulations and increased oil prices.

In addition, the New England states have made significant efforts to promote the development of renewable generation in the region, and many state-level incentives are 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 (see Figure 3). In addition to being lower-emitting sources of supply, wind and solar technologies have no fuel costs.[54] 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 2012, the ISO forecasts that New England's overall electricity demand will grow at a rate of 0.9% over the next decade, and peak demand will grow 1.5% over the same period.[55] This means the region must continue to invest in infrastructure to serve peak demand, despite the occurrence of these peaks on only 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.

In 2011, New England's peak demand was set at 27,702 MW on July 22; this was the region's second-highest demand day of all time. New England set a 28,130 MW record for peak demand on August 2, 20016 during a heat wave.

Figure 8 shows the amount of capacity purchased annually from 2007 to 2016 and illustrates the magnitude and trends for the region's capacity requirements.[56]

[54] 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 (January 21, 2010), http://www.iso-ne.com/committees/comm_wkgrps/prtcpnts_comm/pac/mtrls/2010/jan212010/index.html.

[55] *2012-2021 Forecast Report of Capacity, Energy, Loads, and Transmission* (May 1, 2012), http://www.iso-ne.com/trans/celt/report/index.html.

[56] Pre-FCM values are from the representative month in each of the annual reports on the Installed Capacity Requirements for their respective year. The reports are posted under "Installed Capacity Requirements" at http://www.iso-ne.com/genrtion_resrcs/reports/nepool_oc_review/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.

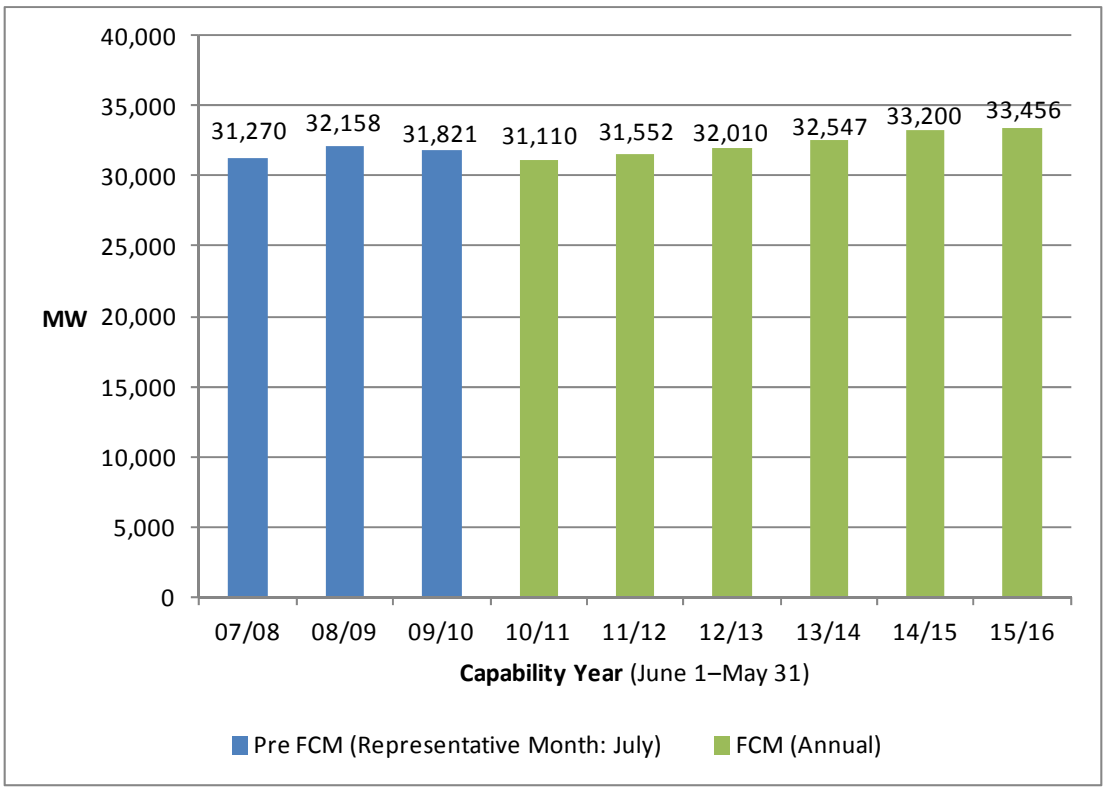

Figure 8: Amount of capacity purchased annually in New England, 2007 to 2016.

The annual and peak use of electric energy vary from year to year, reflecting changes in the weather and the economy. 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.

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.

From April through June 2011, the ISO's demand-response programs reduced wholesale prices by approximately $3.75/MWh across the entire wholesale market in New England; from July through September 2011, these programs reduced prices by approximately $4.32/MWh. Over $3 million was paid for interruptions throughout the region over this six-month period. Of all the megawatt-hours interrupted, almost half were in Maine. [57]

[57] *Semi-Annual Status Report on Load Response Programs of ISO New England, Inc.,* Docket No. ER03-345-000, (December 30, 2011), http://www.iso-ne.com/regulatory/ferc/filings/2011/dec/er03-345-000_-12-30-11_semi-annual_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).

Given these important benefits, the ISO 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 almost 2,700 MW. Since the start of the Forward Capacity Market in June 1, 2010, demand resources have been able to compete with traditional generation resources to provide capacity services.

Transmission

Regional transmission infrastructure represents a growing cost in the wholesale marketplace. New England has over 8,000 miles of high-voltage transmission lines, approximately 90% of which are 345 kilovolt (kV) and 115 kV transmission lines, which serve to move large amounts of power throughout the region. The ISO's planning process has resulted in approximately $4.7 billion in transmission investment since 2002 and has identified the need for an additional $5.7 billion in transmission infrastructure. While costly, sufficient transmission provides consumers with greater access to the least expensive supply of electric energy available on the power system, while helping ensure a reliable supply of electricity. In this regard, transmission investment helps reduce the largest cost component of wholesale and retail electric service.