



**Consumer Liaison Group
Coordinating Committee**

2014 Report of the Consumer Liaison Group

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

March 10, 2015

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Statement from the Consumer Liaison Group Coordinating Committee

Dear Reader,

Welcome to the *2014 Report of the Consumer Liaison Group* (CLG) prepared jointly by the Consumer Liaison Group Coordinating Committee (CLGCC) and ISO New England (ISO). This is the sixth 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 electricity markets, and regional power system planning.

The CLG bylaws, formulated by stakeholders and the ISO, require the organization to be governed by a Coordinating Committee of up to 12 members. These members represent various stakeholder groups, with not more than four members coming from any one New England state. In 2014, the CLGCC met its commitment to replace the retired Vermont and Rhode Island members and held the required biennial board elections to select the Coordinating Committee for the 2015–2016 timeframe.

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

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 the ISO and to each other regarding what is working well and what may need to be changed. Looking to the future, members of the CLGCC recognize that the CLG's full mandate cannot be fulfilled without greater participation from 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 2015–2016, the CLG has the following goals:

1. To attract more commercial and nonprofit end users to actively participate in the organization
2. To attract greater attendance from each New England state
3. To heighten efforts to provide the ISO with a greater "understanding of consumer issues, needs and concerns relative to the electric system and its costs" by further developing the flow of information, and 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. You are invited to review our webpage, part of the ISO New England website, including past issues of the CLG Newsletter.

Please feel free to contact any one of us for more information.

Sincerely,

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Purpose and Structure of the Consumer Liaison Group

The Consumer Liaison Group (CLG) is a forum for sharing information between ISO New England (ISO) and those who ultimately use and pay for electricity in New England. Through this forum, the ISO develops a better understanding of consumer issues, needs, and concerns relative to the electric power system and its costs. Similarly, consumers and their representatives gain a better understanding of regional electricity issues.

Objectives

The objectives of the CLG are as follows:

- Be generally informed of the operation of the power system and industry issues, which includes having access to ISO subject matter experts
- Be made aware of market changes, in advance of final consideration by the ISO when feasible, 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 important 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 wholesale 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

Participation and Meeting Format

The Consumer Liaison Group is open to the public. Participants generally include 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 CLG discussions.¹

The CLG meets quarterly and attracts a diverse group of approximately 75 attendees at each meeting, both in person and via teleconference. CLG meetings follow the same format:

- Opening remarks from a special guest speaker—typically, an industry or business executive, policymaker or regulator—who provides a unique perspective on a particular topic or issue
- A panel discussion facilitated by a moderator who guides the discussion, often representing industry, the ISO, regulators, and consumer perspectives
- A representative from the ISO, who provides an update on initiatives that have or will be taking place at NEPOOL and ISO stakeholder meetings that can have an impact on electricity prices, as well as other updates on ISO and regional energy issues

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. More information is available at www.nepool.com.

Governance

The Consumer Liaison Group Coordinating Committee (CLGCC) is the governing body that works closely with the ISO to identify issues of importance to the CLG membership, sets the agenda for CLG meetings, and generally guides the work of the CLG.²

The CLGCC can consist of up to 12 members (six members and six alternates) with no more than four members from any one of the New England states. Specific membership requirements 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 is considered when determining CLG priorities. The committee has at least one representative of residential ratepayers and one representative of commercial and industrial ratepayers, and members must be either a ratepayer (or directly represent ratepayers), a member of a consumer organization, or a government consumer or government ratepayer advocate.

CLGCC members are selected by vote of the CLG at one of its quarterly meetings in an even-numbered calendar year and serve for a term of two years or until successors are selected. The Coordinating Committee annually designates a chairperson from its membership. Should a vacancy occur on the committee, the chairperson fills the vacancy with the approval of a majority of the remaining members. Current CLG Coordinating Committee members are listed on page 2. The ISO designates a point-of-contact within its External Affairs Department to work with the CLGCC.

Information and Communications

ISO New England facilitates the meetings and communications among CLG participants. A dedicated section of the ISO's website has been established for all CLG materials, communications, annual reports, newsletters, and other valuable information for consumers.³ 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.

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.⁴

Additionally, in 2012, the ISO implemented *ISO to Go*, a free mobile application that provides smartphone access to the most frequently viewed real-time data on the ISO website and data portal, ISO Express.⁵ Through the "app," users can view current system conditions; the five-minute load graph, which compares forecasted demand and real-time consumer demand; the fuel mix by resource type currently providing electricity; and an array of real-time wholesale electricity price data.

² Governance of the Consumer Liaison Group is fully explained in the "CLG Purpose and Structure" document available at http://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/othr/clg/consum_lias_grp_gov/clg_structure_document_revised_12_29_09.pdf.

³ ISO New England's Consumer Liaison Group webpage is available at <http://www.iso-ne.com/committees/industry-collaborations/consumer-liaison>.

⁴ ISO New England's glossary of terms is available at <http://www.iso-ne.com/participate/support/glossary-acronyms>.

⁵ *ISO to Go* is available at <http://www.iso-ne.com/about/news-media/iso-to-go>. *ISO to Go* is available for free for the iPhone or iPad at the Apple App store or for Android devices at Google Play. ISO Express is available at <http://www.iso-ne.com/isoexpress/>.

CLG participants also are encouraged to view the ISO's news blog, ISO Newswire, and subscribe to a mailing list to receive a monthly email highlighting some of the most recent articles.⁶

2014 Consumer Liaison Group Meeting Summaries

In 2014, the Consumer Liaison Group (CLG) heard from energy industry representatives from across New England who provided their perspective on the region's most pressing issues for electricity consumers. Discussions centered around New England's reliance on natural gas for power generation and the impacts this can have on wholesale electricity prices and system reliability. The CLG discussed the region's high natural gas prices, particularly during the winter months when the demand for natural gas to heat homes and generate electricity is at its highest. During these peak demand periods, constraints on the natural gas pipeline system can cause the price of natural gas to spike and, in turn, the price of wholesale electricity to spike. In January 2014, frigid temperatures, coupled with high demand for natural gas and a constrained natural gas pipeline system, led to record-high prices for natural gas and wholesale electricity.⁷ At the end of 2014, CLG members discussed how these wholesale electricity price spikes can make their way into retail electricity rates and affect consumers across the region.

The topics chosen for discussion at the 2014 CLG meetings by the CLGCC highlighted many of these issues and gave CLG members the opportunity to discuss potential solutions with end users, representatives from state government, the New England States Committee on Electricity (NESCOE), and other interested stakeholders. CLG members also discussed recent and upcoming wholesale market design changes and the impacts they can have on consumers and retail electricity rates.

The four CLG meetings held in 2014 featured the following topics:

- March 5: High Natural Gas Prices—Impact on Your Business and Possible Solutions
 - Meeting location: Windsor Locks, Connecticut
- May 29: Coping with the Shortfall in Diverse Energy Resources
 - Meeting location: Ogunquit, Maine
- September 24: Coming Interactions between the New England States and ISO New England—Effects on Reliability and Price
 - Meeting location: Westborough, Massachusetts
- December 5: Wholesale Market Design and Resource Provisioning—Effects on Retail Rates
 - Meeting location: Boston, Massachusetts

The following summaries capture the discussions at CLG meetings in 2014, but do not necessarily reflect the views of the ISO or the CLGCC.

March 5: High Natural Gas Prices—Impact on Your Business and Possible Solutions

Meeting objective: Discuss New England's high natural gas prices, the impact they have on businesses, and possible solutions to the region's constrained natural gas pipeline system

⁶ The ISO Newswire is available at <http://isonewswire.com/>. To subscribe, send a blank email to isolist-isonewswire-subscribe@mail.iso-ne.com.

⁷ ISO Newswire, "Monthly wholesale electricity prices and demand in New England," (March 3, 2014), <http://isonewswire.com/updates/2014/3/3/monthly-wholesale-electricity-prices-and-demand-in-new-engla.html>.

Special Guest Speaker: Cindy Arcate, President and Chief Executive Officer, PowerOptions

In her remarks, Cindy Arcate focused on the growing demands placed on electricity distribution companies (EDCs) to carry out the public policy goals of the states. According to Arcate, New England cannot continue to place public policy obligations on the EDCs. With regard to natural gas pipeline development, she pointed out that, unlike the bulk power system, no central authority manages the natural gas distribution network, so it is unclear who decides how much pipeline should be built in the region. Despite environmental concerns, Arcate agreed that the region needs some pipeline expansion but that research should be done on how to store more natural gas. She also thought the region should explore additional imports of large-scale hydropower. Arcate was pleased with the New England governors' regional energy infrastructure initiative because, in her mind, the states are best suited to spearhead this type of energy planning, not the Federal Energy Regulatory Commission (FERC) or ISO New England.

Panel Discussion

Joseph Rosenthal, Principal Attorney for the Connecticut Office of Consumer Counsel, moderated a panel of energy industry representatives, including Sara Wilmer, Executive Consultant for Levitan & Associates, Inc.; Ray McMullin, Plant Manager for Huhtamaki, Inc.; Katie Dykes, Deputy Commissioner for the Connecticut Department of Energy and Environmental Protection (DEEP); and Michael Morris, Principal for Beacon Strategies Group. Panelists discussed New England's high natural gas prices during winter 2013/2014, the impact they had on businesses, and possible solutions to the region's constrained natural gas pipeline system.

Sara Wilmer discussed gas and electricity price drivers in New England and offered a near-term and long-term outlook for gas prices in the region. She noted that, in the near term, reduced LNG imports and continued congestion on the Algonquin and Tennessee pipelines will lead to sustained volatility in natural gas prices. According to Wilmer, high and volatile natural gas prices will remain until pipeline expansions improve capacity constraints into the region.⁸

Ray McMullin, plant manager of a large manufacturing facility in Waterville, Maine, discussed the challenges his business faced during the 2013/2014 winter due to high natural gas and wholesale electricity prices. During this time, McMullin curtailed and, at times, shut down operations at his manufacturing facility to manage production costs. McMullin presented Figure 1, which shows the mean locational marginal price (LMP) of electricity from December 1, 2013 to February 28, 2014 and the corresponding mean mill load at the Huhtamaki manufacturing facility. Operations dropped off significantly during periods of high prices last winter.⁹

⁸ Sara Wilmer, "Gas and Electric Price Drivers in New England," CLG presentation (March 5, 2014), http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2014/mar52014/clg_wilmer_final.pdf.

⁹ Ray McMullin, "Consumer Liaison Group Meeting," CLG presentation (March 5, 2014), http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2014/mar52014/clg_mcmullin_final.pdf.

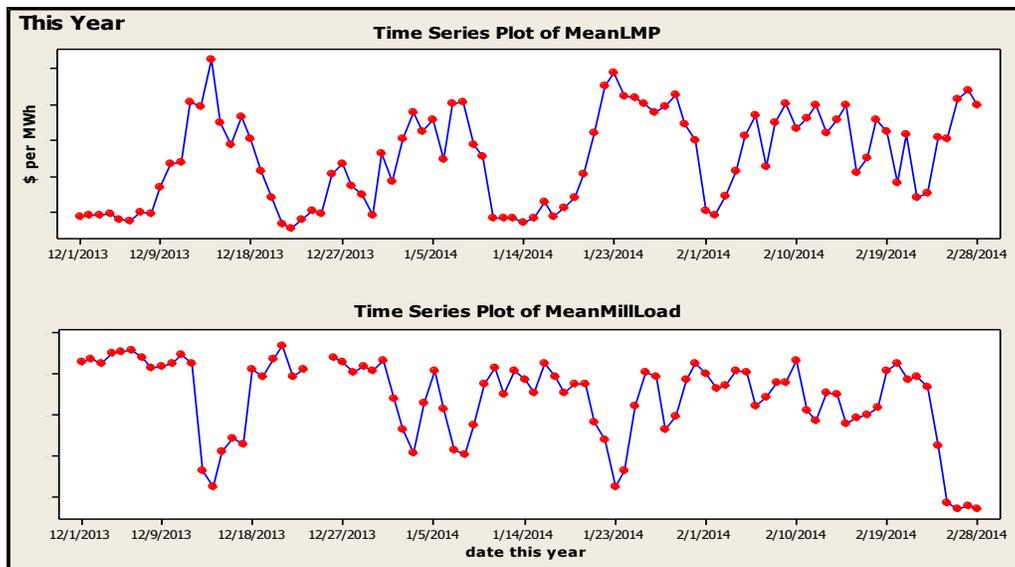


Figure 1: Time series plot of mean LMP and mean mill load at Huhtamaki, Inc. manufacturing facility from December 1, 2013 to February 28, 2014.

Deputy Commissioner Katie Dykes discussed the New England governors' regional energy infrastructure initiative, announced in December 2013. The initiative is designed to relieve natural gas pipeline constraints and bring greater amounts of clean energy into New England. She explained the states' goal of integrating new electric power transmission infrastructure to enable delivery of 1,200 to 3,600 MW of no- or low-carbon resources into the New England electric system. She also explained the states' request for ISO assistance with changes to the ISO's *Transmission, Markets, and Services Tariff* to allow the net cost of any procurement of firm pipeline capacity to be collected through the regional network services (RNS) rate shared among the New England states.¹⁰ Dykes made clear that the ISO would serve strictly as a billing agent in this arrangement. The states requested that all possible efforts be made to ensure that new pipeline capacity is available no later than the winter of 2017/2018.

Finally, the CLGCC asked Michael Morris from Beacon Strategies Group to provide insight into how consumers can make practical efforts to lobby government officials and affect public policy.¹¹

ISO Update

Anne George, Vice President of External Affairs & Corporate Communications for ISO New England, provided a recap of winter 2013/2014 operations, highlighting the significant gas and electricity price increases compared with winter 2012/2013. She noted that New England will continue to face high prices and reliability challenges over the next several winters until market enhancements are implemented and additional infrastructure is built in the region.¹²

¹⁰ ISO New England's *Transmission, Markets, and Services Tariff* is available at: <http://www.iso-ne.com/participate/rules-procedures/tariff>.

¹¹ Michael Morris, "Introduction to Grassroots Lobbying," CLG presentation (March 5, 2014), http://www.iso-ne.com/committees/comm_wkgrps/otr/clg/mtrls/2014/mar52014/morris_clg_03_05_14.pdf.

¹² Anne George, "ISO New England Update," CLG presentation (March 5, 2014), http://www.iso-ne.com/committees/comm_wkgrps/otr/clg/mtrls/2014/mar52014/clg_george_final.pdf.

May 29: Coping with the Shortfall in Diverse Energy Resources

Meeting objective: Discuss New England's heavy reliance on natural gas for power generation and ways to cope with the region's shortfall in diverse energy resources

Special Guest Speaker: Marianne Bonnard, Acting Head of Post at the Québec Government Office in Boston

Marianne Bonnard focused her remarks on Québec's vast hydroelectric resources and commitment to global climate change goals. She stated that with more than 400 major watersheds, Québec is the largest producer of hydropower in the world. In fact, she noted that hydro furnishes 90% of Québec's electricity at a retail price less than half that of Massachusetts. She characterized New England's decades-old energy partnership with Québec as "stable and transparent" and noted that, since the 1970s, New England and Québec have worked well together under the framework of various collaborative bodies. She explained that Hydro-Québec's first energy exports were sent to the State of Vermont in 1985, and that some New England states are taking their most serious look yet at the advantages of hydro. Bonnard made clear that Québec stands ready to cooperate and build on the already strong relationship it has with New England.

Panel Discussion

Donald Sipe, Partner at Preti Flaherty, moderated a panel of energy industry representatives, including Carolyn O'Connor, Director of External Affairs and Communications for Hydro-Québec; Michael Stoddard, Executive Director of Efficiency Maine; Thomas Welch, Chair of the Maine Public Utilities Commission; and Daniel Allegretti, Vice President of Energy Policy for Constellation Energy Group. Panelists discussed the region's lack of diverse energy resources and options for expanding New England's energy supplies.

Carolyn O'Connor discussed the benefits associated with importing additional large-scale hydropower from Québec to New England through new electric power transmission interconnections. She said these benefits include, among others, increased reliability, suppressed wholesale energy prices, greater fuel diversity, and reduced greenhouse gas emissions. From O'Connor's perspective, Québec's vast hydroelectric dams and New England's close proximity to the province are a key advantage over other parts of the United States. She noted that transmission infrastructure will be needed, however, to deliver additional megawatts of hydroelectricity from Québec to New England.¹³

Michael Stoddard of Efficiency Maine showcased energy efficiency as the lowest-cost energy resource in Maine, with the potential to meet 12 to 16% of the state's energy load by 2021. Stoddard said the suppression of wholesale energy prices and the advancement of pollution-reduction goals were among the many benefits that result from increased penetrations of energy efficiency. Stoddard also noted that energy efficiency can be used to meet or defer expanding transmission and distribution capacity needs.¹⁴ Figure 2 shows the impact of energy efficiency on the region's overall demand for electricity through 2023. With the energy efficiency that has cleared in the ISO's Forward Capacity Market (FCM) and the energy efficiency proposed by the states through state-sponsored programs, the growth rate for annual energy usage drops from 1.0% annually to 0.1% annually.¹⁵

¹³ Carolyn O'Connor, "Coping with the Shortfall in Diverse Energy Resources and the Role of Hydro-Québec," CLG presentation (May 29, 2014), http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2014/may292014/oconnor_clg_may29_final.pdf.

¹⁴ Michael Stoddard, "The Role of Energy Efficiency as a Resource in New England," CLG presentation (May 29, 2014), http://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/othr/clg/mtrls/2014/may292014/stoddard_clg_5_29_2014.pdf.

¹⁵ More information on the ISO's Energy-Efficiency Forecast is available at http://www.iso-ne.com/committees/comm_wkgrps/othr/energy_effncy_frctst/index.html.

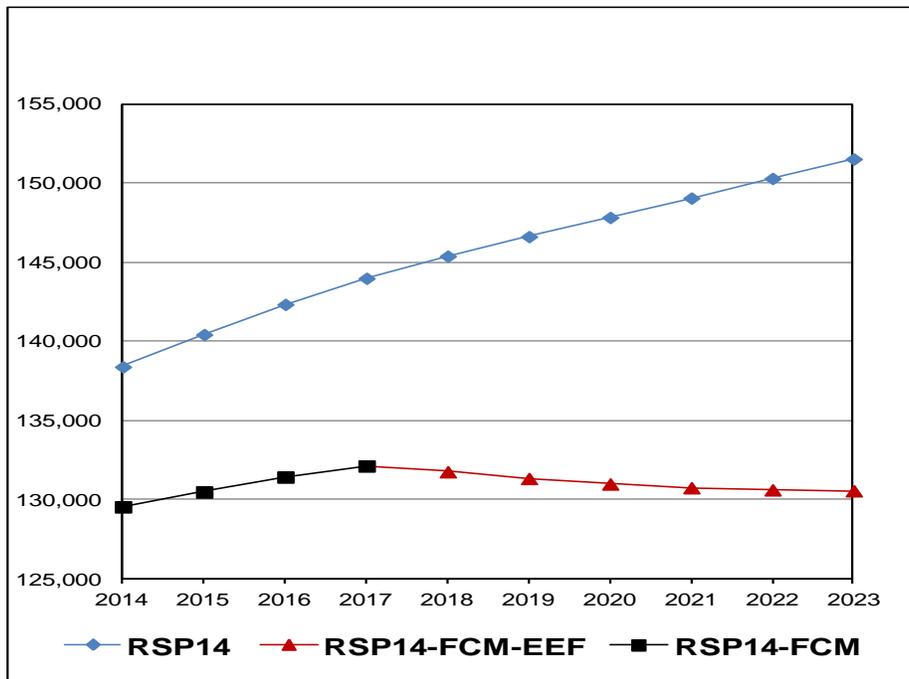


Figure 2: Impact of energy efficiency on annual energy use (GWh) through 2023.

Source: ISO New England, Final 2014 Energy-Efficiency Forecast, 2018-2023, http://www.iso-ne.com/committees/comm_wkgrps/othr/enrgy_effncy_frcst/2014frcst/iso_ne_final_2014_ee_forecast_2018_2023.pdf.

Chairman Thomas Welch provided insight into the value of fuel diversity and the New England governors' regional energy infrastructure initiative being spearheaded by NESCOE. Welch discussed the region's reliance on natural gas for power generation and the impact it can have on wholesale electricity prices, particularly during the winter months when natural gas pipelines are highly utilized to serve heating demand and have limited flexibility to serve interruptible power generation needs. He presented Figure 3 from NESCOE's Gas-Electric Study (prepared by Black & Veatch), which shows the estimated impact of additional natural gas infrastructure on the price differential between natural gas traded at the Algonquin City-Gates Hub in Boston and natural gas traded at the Henry Hub in Louisiana.¹⁶ This figure illustrates the potential price-suppressing impact of additional natural gas supplies through the Algonquin Incremental Market (AIM) project plus another 1.2 billion cubic feet (bcf) of natural gas capacity through a cross-regional pipeline.¹⁷

¹⁶ Thomas Welch, "The Value and Cost of Diversity," CLG presentation (May 29, 2014), http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2014/may292014/clg_welch_final.pdf.

¹⁷ Black & Veatch, *Natural Gas Infrastructure and Electric Generation: Proposed Solutions for New England* (August 26, 2013), http://www.nescoe.com/uploads/Phase_III_Gas-Elec_Report_Sept._2013.pdf (prepared for the New England States Committee on Electricity).

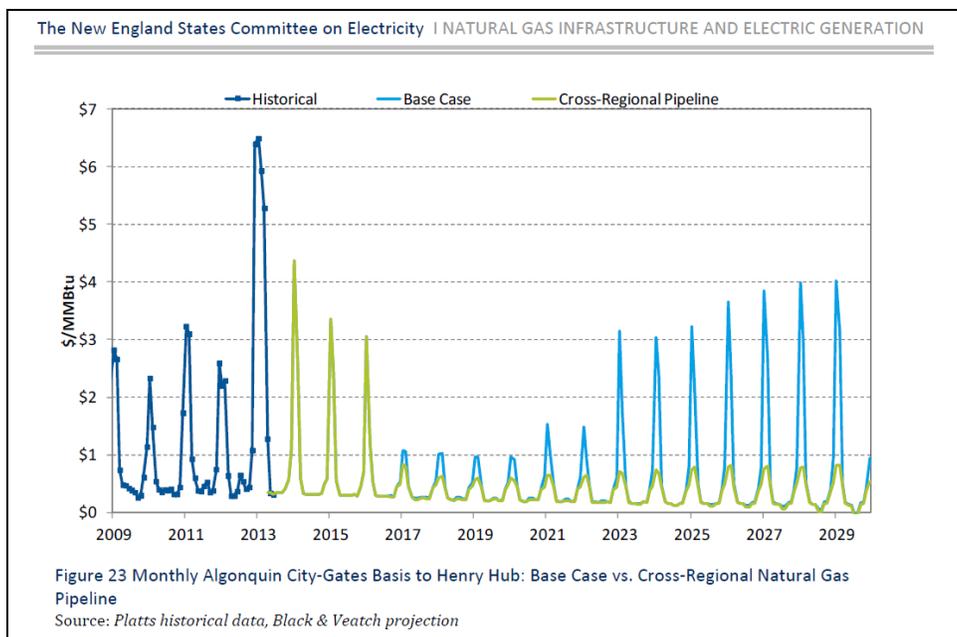


Figure 3: Impact of AIM project plus 1.2 bcf of additional natural gas capacity on monthly Algonquin City-Gates basis to Henry Hub (\$/MMBtu).

Daniel Allegretti, Vice President of Energy Policy for Constellation Energy Group, argued for market-based ways to achieve the reliability, carbon-reduction, and cost-containment goals associated with the New England governors’ regional energy infrastructure initiative. Allegretti maintained that NESCOE’s approach, which utilizes government intervention and integrated resource planning, is inherently at odds with New England’s competitive wholesale electricity market.

ISO Update

Anne George, Vice President of External Affairs & Corporate Communications for ISO New England, provided an update on the ISO’s pay-for-performance (PFP) and demand curve proposals filed with FERC earlier in the year. George also addressed a ruling by the US Court of Appeals for the DC Circuit which vacated FERC Order 745 relating to compensation for demand-response resources.¹⁸ She clarified that the ruling is aimed at FERC’s order and that the demand-response rules in the ISO’s *Transmission, Markets, and Services Tariff* will continue to apply until FERC takes further action. Finally, George provided an update on the ISO’s 2014/2015 Winter Reliability Program.¹⁹ For more information on the ISO’s PFP and demand curve proposals and 2014/2015 Winter Reliability Program, see Appendix A: ISO New England Activities and Initiatives.

September 24: Coming Interactions between the New England States and ISO New England—Effect on Reliability and Price

Meeting objective: Discuss the potential interactions between the New England states and ISO New England to address energy infrastructure needs in the region

¹⁸ *Electric Power Supply Association v. Federal Energy Regulatory Commission*, decided May 23, 2014, can be found here: [http://www.cadc.uscourts.gov/internet/opinions.nsf/DE531DBFA7DE1ABE85257CE1004F4C53/\\$file/11-1486-1494281.pdf](http://www.cadc.uscourts.gov/internet/opinions.nsf/DE531DBFA7DE1ABE85257CE1004F4C53/$file/11-1486-1494281.pdf). FERC Order 745 can be found here: <http://www.ferc.gov/EventCalendar/Files/20110315105757-RM10-17-000.pdf>.

¹⁹ Anne George, “ISO New England Update,” CLG presentation (May 29, 2014), http://www.iso-ne.com/committees/comm_wkgrps/othr/clg/mtrls/2014/may292014/george_clg_may29.pdf.

Special Guest Speaker: Paul Hibbard, Vice President, Analysis Group, Inc.

Paul Hibbard focused his remarks on the need for additional energy infrastructure in New England and the potential consequences facing the region and consumers for failing to act. He noted that New England will require some mix of new generation, transmission, and gas pipeline capacity to compensate for retiring assets and respond to state policy goals and fuel-certainty issues in the region. He made clear that inadequate gas pipeline capacity not only jeopardizes reliable power system operations, it also carries a huge price tag for consumers when pipeline constraints cause natural gas prices to spike. He reviewed alternatives to new infrastructure, such as relaxed reliability standards and greater distributed generation, but noted that gas infrastructure problems are real, large, and unavoidable. According to Hibbard, the greatest consumer risks in the power sector are driven by forces impeding energy infrastructure development in the region.

Panel Discussion

Sandra Merrick, Chair of the Consumer Liaison Group Coordinating Committee and Deputy Chief of the Energy & Telecommunications Division of the Massachusetts Attorney General's Office, moderated a roundtable of energy industry representatives, including State Senator John Cleveland, Chair of Maine's Energy, Utilities & Technology Committee; Heather Hunt, Executive Director of the New England States Committee on Electricity (NESCOE); Donald Santa, Jr., President and CEO of the Interstate Natural Gas Association of America (INGAA); Janet Besser, Vice President of Policy and Government Affairs for the New England Clean Energy Council; and Peter Fuller, Director of Market and Regulatory Affairs for NRG Energy. The focus of the discussion was the energy infrastructure needs in New England and the solutions available to the region to alleviate natural gas pipeline constraints and deliver more renewable energy to New England load centers.

Senator John Cleveland discussed legislation passed in Maine last year to address natural gas pipeline constraints and alleviate price spikes in the wholesale electricity market. The legislation gives the Maine Public Utilities Commission the authority to enter into contracts to procure natural gas pipeline capacity to increase the flow of natural gas into New England by up to 2 billion cubic feet per day. Senator Cleveland discussed the region's high electricity costs during the 2013/2014 winter, noting that many middle- and lower-income families were unable to pay their electricity bills during the winter months. Industrial facilities in Maine, he noted, curtailed and even shut down operations due to high energy prices. He expressed his support for the New England governors' regional energy infrastructure initiative and urged the region to act to alleviate natural gas pipeline constraints.

Heather Hunt provided background on the New England governors' regional energy infrastructure initiative and the efforts made by NESCOE to advance a solution through the NEPOOL stakeholder process. She described the initiative as an opportunity for the region to come together and do collectively what no state could do individually in the way of energy infrastructure investment. She stated that the markets, alone, have not produced a solution to the region's constrained natural gas pipeline system, and that while natural gas pipeline proposals are emerging throughout the region, no gas-fired generators are signing up for firm natural gas capacity.

Donald Santa, Jr. of INGAA expressed his support for the governors' energy infrastructure initiative, noting that New England pays more for energy than any other region in the country, in part because of a constrained natural gas pipeline system. He discussed the challenge that has emerged for building pipeline infrastructure since the restructuring of the electric power industry. Unlike electric power transmission, gas pipelines will not be built without customers signing long-term contracts for firm capacity. In a competitive wholesale electricity market, natural gas-fired generators have chosen less expensive options for securing their fuel arrangements than entering into long-term commitments for firm natural gas pipeline capacity.

Janet Besser from the New England Clean Energy Council focused her remarks on the electric power transmission piece of the governors' energy infrastructure initiative, underscoring the need to unlock additional clean energy resources in northern New England and eastern Canada. She likened the constraints felt on the natural gas pipeline system to the bottlenecks encountered on the electric power transmission system for renewable energy in northern New England. She explained that as more renewable energy projects are sited in Maine and other remote areas of the system, more electric power transmission will be needed to deliver that energy to New England load centers. She also noted that natural gas can be used to balance the increasing amount of renewable energy brought onto the system.

Finally, Peter Fuller of NRG provided his perspective on the governors' energy infrastructure initiative, noting that the region has reached an inflection point where investment of private capital will be needed to build additional energy infrastructure. He cautioned that investments made by the New England states may create uncertainty in the marketplace, causing a chilling effect on investments made by private investors. He noted that last winter's fuel-availability issues provided clear incentives for generators to perform when needed.

ISO Update

Anne George, Vice President of External Affairs & Corporate Communications for ISO New England, provided an update on the ISO's pay-for-performance (PFP) proposal approved by FERC on May 30, 2014.²⁰ In its order, FERC accepted, in large part, the ISO's proposal to tie capacity payments to resources' performance during stressed system conditions. It also directed the ISO to increase the cap on rates paid to resources that provide additional operating reserves when resources are scarce, known as Reserve Constraint Penalty Factors (RCPFs). Increased RCPFs were a part of NEPOOL's alternative proposal, which FERC accepted as a means to improve resource performance in the near term, before the ISO's PFP design changes take effect in 2018.²¹

In her presentation, George provided information that showed, directionally, the cost impacts of PFP and the increased RCPFs, referencing the Analysis Group's Impact Assessment of the PFP proposal. The assessment found that PFP would likely raise Forward Capacity Auction (FCA) prices in the near term, but would likely lower offers from new entry in the long term due to the incremental revenues provided under the new design, particularly as these new resources are likely to be (and have the incentive to be) high-performing resources.²² George also provided information on wholesale electricity costs from 2008 to 2013 and the impact these costs, on a cents per kilowatt-hour (¢/kWh) basis, can have on consumers.

December 4: Wholesale Market Design and Resource Provisioning—Effects on Retail Rates

Meeting objective: Discuss recent design changes and costs associated with the wholesale electricity markets and their impact on retail electricity rates

²⁰ FERC, *Order on Tariff Filing and Instituting Section 206 Proceeding* (147 FERC ¶ 61,172, Docket Nos. ER14-1050-000, ER14-1050-001, ER14-52-000) (May 30, 2014), http://www.iso-ne.com/static-assets/documents/regulatory/ferc/orders/2014/may/er14_1050_000_5_30_14_pay_for_performance_order.pdf.

²¹ The ISO's PFP design changes were in place for the ninth Forward Capacity Auction (FCA #9), which was held on February 2, 2015, and will affect resource performance beginning June 1, 2018. The increased RCPFs went into effect on December 3, 2014.

²² Analysis Group, *Assessment of the Impact of ISO-NE's Proposed Forward Capacity Market Performance Incentives* (September 2013), http://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/mrks comm/mrks/mtrls/2013/sep202013/a3b_analysis_group_fcm_pi_impact_assessment_report_09_2013.pdf.

Special Guest Speaker

In lieu of a special guest speaker, the CLGCC organized a “Meet and Greet” with Leanne Khammal and Kris FitzPatrick from FERC’s Office of Energy Market Regulation, giving attendees the opportunity to meet directly with and ask questions of FERC staff.

Panel Discussion

Sandra Merrick, Chair of the Consumer Liaison Group Coordinating Committee and Deputy Chief of the Energy & Telecommunications Division of the Massachusetts Attorney General’s Office, moderated a panel of energy industry representatives, including Mary Smith, Associate Director of Energy Supply & Utility Administration for Harvard University; Donald Sipe, Partner at PretiFlaherty; John Meeske, President of Energy Market Decisions, Inc.; James Daly, Vice President of Energy Supply for Northeast Utilities; and Robert Rio, Senior Vice President of Government Affairs for Associated Industries of Massachusetts.

Mary Smith discussed recent increases in wholesale electricity costs and corresponding increases in retail electricity rates across New England, due in large part to the constrained natural gas pipeline system feeding the region. She attributed high retail costs to the increasing generation charge and the multiple charges associated with promoting state policy goals such as energy efficiency, net metering, and renewable energy. She also pointed to the billions of dollars spent on transmission since 2001, which translates into increasing transmission charges each year.²³

Donald Sipe discussed wholesale market design and its impact on retail electricity rates. He noted that every market design can lead to externalities or results the region does not necessarily desire. With the ISO’s pay-for-performance (PFP) design changes, for example, he stated that the region will most likely see more oil burned as generators determine that dual-fuel capability is one of the most cost-effective ways to ensure performance. He noted, however, that this may not be the best result from an environmental perspective.

John Meeske summarized the many pipeline infrastructure projects proposed for the region, among them:

- Algonquin Incremental Market (AIM) project proposed by Spectra Energy
- Atlantic Bridge project proposed by Spectra Energy
- Access Northeast project proposed by Spectra Energy and Northeast Utilities, shown in Figure 4²⁴
- Tennessee Gas Pipeline Northeast Direct project proposed by Kinder Morgan

He stated that no one pipeline will meet all of New England’s natural gas demands and warned that without new incremental pipeline capacity, the region will have insufficient capacity to deliver supply to meet peak period needs.²⁵

²³ Mary Smith, “Costs,” CLG presentation (December 4, 2014), http://www.iso-ne.com/static-assets/documents/2014/12/smith_clg_12_4_14_final.pdf.

²⁴ Since the December 4, 2014 CLG meeting, Northeast Utilities has changed its name to Eversource Energy. In addition, National Grid has joined the Access Northeast project.

²⁵ John Meeske, “The Role of Natural Gas Infrastructure in Integrated Network Reliability,” CLG presentation (December 4, 2014), http://www.iso-ne.com/static-assets/documents/2014/12/meeske_clg_12_4_14_final.pdf.

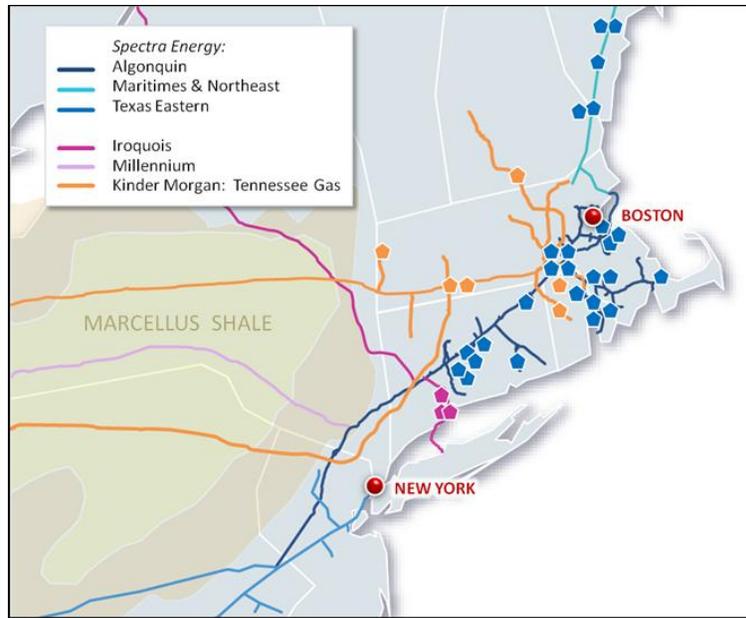


Figure 4: Spectra and Northeast Utilities Northeast Access Project

James Daly highlighted the \$3 billion increase in wholesale electricity costs in New England from winter 2012/2013 to winter 2013/2014, shown in Figure 5, due to natural gas pipeline constraints. He explained that these costs are translating into significantly higher retail power costs going into the winter of 2014/2015. He also noted that the incremental costs of clean energy policies (e.g., Renewable Portfolio Standards) are growing and make up a material portion of retail electricity rates. He expressed his support for the New England governors’ energy infrastructure initiative and the use of regional tariffs to expedite construction of electricity and gas infrastructure.²⁶

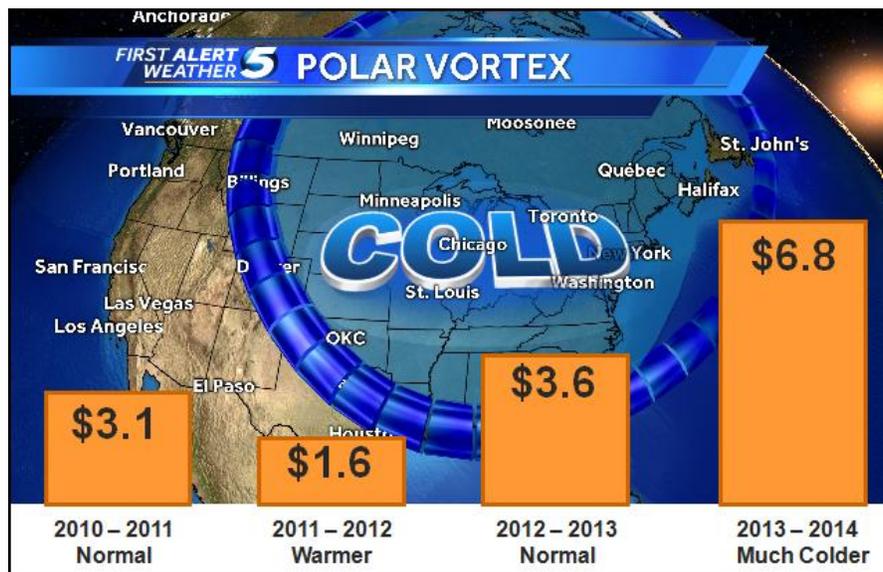


Figure 5: Winter Wholesale Electricity Costs (December to March) in Billions (\$) for New England Region

²⁶ James Daly, “Electric Rates and Market Drivers,” CLG Presentation (December 4, 2014), http://www.iso-ne.com/static-assets/documents/2014/12/daly_presentation_clg_meeting_december_4_2014_final.pdf.

Robert Rio focused on the many costs flowing to electricity ratepayers and the harm this can do to the region's economic competitiveness. These costs, he explained, stem from the many programs put in place to support public policy goals, such as net metering and renewable energy development. He also pointed to a number of towns in Massachusetts that have a moratorium on new gas hookups due to the lack of spare gas capacity in the region to serve new customers and businesses. This, he noted, can be a major deterrent for businesses locating in these areas and can stifle economic growth.

The panel presentations were followed by a robust Question & Answer session, including questions from the climate community, and a floor discussion that included the panelists and audience.

ISO Update

Anne George, Vice President of External Affairs & Corporate Communications for ISO New England, provided an update on the winter outlook for 2014/2015 and the winter reliability program in place to address fuel-availability issues. She noted that while sufficient power supplies are expected, natural gas pipeline constraints are an ongoing concern. The purpose of the 2014/2015 Winter Reliability Program, she explained, is to augment scarce pipeline gas during the winter period with other fuel sources to improve the region's overall fuel security and system reliability. George also commented on recent market enhancements that were implemented in time for the winter, including the Energy Market Offer Flexibility project, which allows market participants to update their supply offers in real time to reflect changing fuel costs, and the increased Reserve Constraint Penalty Factors, which improve scarcity pricing in the Real-Time Energy Market. Both changes, she explained, improve market pricing and resources' incentives to perform.²⁷ See Appendix A for more information on the ISO's 2014/2015 Winter Reliability Program and the Energy Market Offer Flexibility project.

Consumer Liaison Group Future Initiatives

ISO New England, 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 continue striving to attract more end-user participation, to increase participation from all New England states, and to increase the consumers' presence in ISO New England stakeholder discussions and initiatives. The CLGCC will also explore more ways to educate end users about industry institutions, such as NEPOOL and FERC, and about how consumers can advocate before industry institutions, government bodies, and elected officials. Additional efforts will be made to pinpoint and explain to end users the basic policy dilemmas and choices currently facing the energy industry, the public, and government.

²⁷ Anne George, "ISO New England Update," CLG presentation (December 4, 2014), http://www.iso-ne.com/static-assets/documents/2014/12/iso_new_england_clg_meeting_george_presentation_12_4_2014.pdf.

Appendix A: ISO New England Activities and Initiatives

This section highlights the major topics presented by the ISO at CLG meetings in 2014. In addition to these presentations, the ISO's External Affairs Department issues a memo each month that provides timely updates on regional energy issues, stakeholder meetings, and other information that may be relevant to consumers. The memos are posted on the CLG webpage.²⁸

Strategic Planning Initiative to Address Regional Challenges

In 2010, the ISO, in coordination with regional stakeholders, launched the Strategic Planning Initiative, a comprehensive effort to identify and resolve challenges facing the power system and wholesale electricity markets. After extensive discussions and feedback from stakeholders, broad consensus was reached and five challenges were identified that will likely affect the New England power grid:

- Increased reliance on natural-gas-fired capacity
- Resource performance and flexibility
- Retirement of generators
- Integration of variable (i.e., intermittent) resources
- Lack of alignment of the system planning process with market mechanics

Since 2012, the ISO has shifted from understanding and defining the risks to developing and implementing solutions. A number of studies and whitepapers have been released that outline the challenges and proposed solutions to these market, resource, and reliability issues.²⁹

The ISO's *2015 Regional Electricity Outlook* provides an easy-to-understand summary of the issues identified through the Strategic Planning Initiative and presents the immediate-, short-, and long-term solutions the ISO and stakeholders are pursuing to solve these challenges.³⁰

"Pay-for-Performance" Design Changes

Through its Strategic Planning Initiative, the ISO identified resource performance as one of the top five challenges facing the region with respect to reliability. Resource performance refers to a resource's ability to provide power or other services to the grid when called on by the ISO. Studies of resource performance have indicated that at times of high system stress, a significant share of the region's generating capacity fails to respond to ISO dispatch instructions according to their offered capabilities.³¹ Many of these concerns could be resolved if resources undertook additional operational investments, whether in dual-fuel capability, non-interruptible gas-supply contracts, or other fuel arrangements, to ensure adequate resource performance when called on by the ISO.

²⁸ The monthly memos are posted at <http://www.iso-ne.com/committees/industry-collaborations/consumer-liaison>.

²⁹ A complete index of Strategic Planning Initiative materials, including studies, whitepapers, and proposals is available at the ISO's Strategic Planning Initiative webpage: <http://www.iso-ne.com/committees/key-projects/strategic-planning-initiative>.

³⁰ ISO New England, *2015 Regional Electricity Outlook* (February 2015), http://www.iso-ne.com/static-assets/documents/2015/02/2015_reo.pdf.

³¹ Analysis Group, *Analysis of Reserve Resources: Activation Response following Contingency Events* (May 29, 2012), http://www.iso-ne.com/committees/comm_wkgrps/strategic_planning_discussion/materials/analysis_group_reserve_resource_analyses_5_29_2012.pdf.

To address this issue, the ISO developed market rule changes, called “pay-for-performance” (PFP), to enhance investment incentives in the Forward Capacity Market (FCM) and make each resource’s capacity revenue contingent, in part, on its actual performance during stressed system conditions. The new performance incentive design allows for transfers of revenue from under-performing resources to over-performing resources, providing strong incentives for resources to perform when needed and in accordance with ISO dispatch instructions.

The ISO’s PFP proposal was filed with the Federal Energy Regulatory Commission (FERC) in January 2014, along with an alternative proposal by the New England Power Pool (NEPOOL).³² In May 2014, FERC issued an order that accepted, in large part, the ISO’s proposal to tie capacity payments to resource performance in the FCM.³³ These market rule changes were in place for the ninth Forward Capacity Auction (FCA #9), held on February 2, 2015, and will impact resource performance beginning June 1, 2018.

In its May 2014 order, FERC also directed the ISO to increase the Reserve Constraint Penalty Factors (RCPFs) in the Real-Time Energy Market, as proposed by NEPOOL, to address resource performance in the near term. RCPFs are rates, in dollars per megawatt-hour (\$/MWh), that act as a cap on the price the ISO may pay to procure additional operating reserves when resources are scarce. FERC ordered the ISO to raise the RCPFs for 10-minute non-spinning reserves, from \$850/MWh to \$1,500/MWh, and 30-minute operating reserves, from \$500/MWh to \$1,000/MWh. Raising these caps gives the ISO the ability to send stronger price signals to supply-side and demand-side resources to perform when needed. These market rule changes were put in place on December 3, 2014 to incent improved resource performance in the near term, filling the gap between now and when the ISO’s PFP design changes will take effect in 2018.

2014/2015 Winter Reliability Program

On September 9, 2014, FERC issued an order accepting the region’s proposed 2014/2015 Winter Reliability Program, which ran from December 1, 2014 to February 28, 2015.³⁴ The program augmented scarce natural gas supplies to improve the region’s overall fuel security and system reliability. The program was modeled after the 2013/2014 Winter Reliability Program, which proved to be critical to maintaining reliability that winter. While similar to the first program, the 2014/2015 program contained several key differences, including improved fuel neutrality, achieved by adding a liquefied natural gas (LNG) component, and compensation for fuel based on unused inventory at the end of the winter rather than upfront inventory.

The 2014/2015 Winter Reliability Program contained four core components:

1. **Compensation for unused oil inventory:** Participating generators that had a minimum level of oil inventory in place before the start of the winter received a payment to offset some of the carrying costs of unused oil after the winter was over.
2. **Compensation for unused LNG contract volume:** As with participating oil and dual-fuel generators, generators that contracted for LNG received an end-of-season payment to offset the risk

³² ISO New England Inc. and New England Power Pool, *Filings of Performance Incentives Market Rule Changes*, Docket No. ER14-1050-0000 (January 17, 2014), http://www.iso-ne.com/regulatory/ferc/filings/2014/jan/er14-1050_000_1-17-14_pay_for_performance_part_1.pdf.

³³ FERC, *Order on Tariff Filing and Instituting Section 206 Proceeding*, (147 FERC ¶ 61,172, Docket Nos. ER14-1050-000, ER14-1050-001, ER14-52-000) (May 30, 2014), http://www.iso-ne.com/static-assets/documents/regulatory/ferc/orders/2014/may/er14_1050_000_5_30_14_pay_for_performance_order.pdf.

³⁴ FERC, *Order Accepting Tariff Revisions*, (148 FERC ¶ 61,179, Docket Nos. ER14-2407-000, ER14-2407-001, ER14-2407-003) (September 9, 2014), http://www.iso-ne.com/static-assets/documents/2014/09/er14-2407-000_9-9-14_order_accept_winter_reliability.pdf.

of unused contract volumes. This portion of the program was intended to create incentives for generators to contract for LNG as a peaking fuel to augment the use of pipeline gas.

3. **Demand response:** Like the first winter reliability program, the 2014/2015 program was open to new demand-response (DR) resources not currently participating in the wholesale electricity markets and existing DR resources currently participating in the Forward Capacity Market but with additional capacity beyond what they needed to meet their capacity supply obligations. DR participants received monthly payments to be available.
4. **Incentives for commissioning dual-fuel capacity:** This facet of the program was intended to provide incentives for gas-fired generators to invest in dual-fuel capability—that is, the ability to run on either oil or gas. Generators that had not operated on oil since at least December 1, 2011, and that demonstrated a plan for commissioning, or recommissioning a mothballed dual-fuel unit, by December 1, 2016, were eligible for compensation to offset some of the associated costs.

On January 20, 2015, FERC issued an order clarifying that if a winter reliability solution is needed for the 2015/2016 winter, and future winters, then the ISO must develop a market-based solution.³⁵ The ISO filed a request for rehearing in response to the clarification order, and is in discussions with regional stakeholders about potential future winter reliability solutions.³⁶

New England Governors' Regional Energy Infrastructure Initiative

In December 2013, New England's governors announced plans for a regional energy infrastructure initiative designed to bring affordable, cleaner, and more reliable energy to homes and businesses across the region. In a joint statement, the governors agreed to work together, in coordination with ISO New England and through the New England States Committee on Electricity (NESCOE), to advance a regional energy infrastructure initiative that diversifies the region's energy supply portfolio through investment in new electric power transmission and natural gas pipeline capacity in New England.³⁷ These investments are intended to bring greater amounts of clean energy into the region and ensure adequate supplies of natural gas for power generation.

In January 2014, the New England governors, through NESCOE, requested ISO technical support and tariff filings at FERC to support their objectives to expand energy infrastructure. The ISO agreed to provide technical support to facilitate the identification, planning and integration of new transmission facilities, as it currently does under its FERC-approved tariff. The ISO stated that it would review the request regarding a tariff change to facilitate the construction of new or expansion of existing pipelines, and made clear that any new mechanism in the ISO tariff to collect revenues for the procurement of additional natural gas capacity would need to be reviewed and discussed with the states and NEPOOL participants through the regional stakeholder process.³⁸

³⁵ FERC, *Order on Clarification*, (150 FERC ¶ 61,029, Docket No. ER14-2407-003) (January 20, 2015), http://www.iso-ne.com/static-assets/documents/2015/01/er14-2407-003_1-20-15_order_winter_rel_clarification.pdf.

³⁶ ISO New England, *Rehearing Request of ISO New England Inc.* Docket No. ER14-2407-003 (February 19, 2015), http://www.iso-ne.com/static-assets/documents/2015/02/er14-2407-003_2-19-15_req_for_rehearing_clarification_order.pdf.

³⁷ *New England Governors' Commitment to Regional Cooperation on Energy Infrastructure Issues* (December 5, 2013), http://www.governor.ct.gov/malloy/lib/malloy/2013.12.05_new_england_governors_statement-energy.pdf.

³⁸ NESCOE's letter to the ISO requesting technical support is available at http://www.iso-ne.com/static-assets/documents/pubs/pubcomm/corr/2014/nescoe_letterrequest_1_14.pdf and the ISO's response is available at http://www.iso-ne.com/static-assets/documents/pubs/pubcomm/corr/2014/2014_01_28_response_to_nescoe.pdf.

In August 2014, NESCOE announced plans to put the regional energy infrastructure initiative on hold. However, currently, the states and new governors are considering further action. On February 25, 2015, state agencies and electric distribution companies in Connecticut, Massachusetts, and Rhode Island issued a draft Request for Proposals (RFP) from private developers for clean energy and transmission to deliver clean energy. Comments on the draft RFP are due on March 27, 2015.³⁹

System Planning

Regional System Planning

The ISO conducts comprehensive regional system planning pursuant to a FERC-approved tariff and publishes a regional system plan (RSP) each year that summarizes the long-term (10-year) reliability needs of New England's transmission system.⁴⁰ Stakeholders, including state consumer advocates, provide input to the planning process and the RSP through the Planning Advisory Committee.⁴¹

Beginning in 2012, the ISO has developed an energy-efficiency (EE) forecast to equip system planners with information about the long-term impacts of state-sponsored EE investments on the region's overall and peak demand for energy. The ISO uses this information in long-term planning studies beyond the three-year FCM timeframe. The 2012 EE forecast was the nation's first regional EE forecast. A final 2014 EE forecast was released in April 2014.⁴²

After the success of the EE forecast, the ISO launched an initiative to develop a new distributed generation (DG) forecast to estimate how much DG exists in the region today and how much DG is on the horizon through state-sponsored programs.⁴³ For purposes of this forecast, DG resources are 5 MW or less in nameplate capacity and are interconnected to the distribution system. Currently, solar photovoltaic (PV) energy represents the largest share of future DG resources throughout New England. To assist the ISO in developing a DG forecast and to provide a forum to discuss issues surrounding the integration of DG resources to the power grid, the ISO formed the Distributed Generation Forecast Working Group (DGFWG). After consultation with the DGFWG, the ISO released a final interim solar PV forecast in May 2014. The solar PV forecast shows steady growth in solar PV through 2023, with roughly 500 MW of AC nameplate capacity installed through 2013 and over 1,800 MW of AC nameplate capacity anticipated by 2023.⁴⁴

³⁹ The draft Request for Proposals (RFP) developed by state agencies and electric distribution companies in Connecticut, Massachusetts, and Rhode Island is available at <http://cleanenergyrfp.com/documents/>.

⁴⁰ ISO New England, *2014 Regional System Plan* (November 6, 2014), http://www.iso-ne.com/static-assets/documents/2014/11/rsp14_110614_final_read_only.docx.

⁴¹ More information on the Planning Advisory Committee is available at <http://www.iso-ne.com/committees/planning/planning-advisory>. ISO New England's *Open Access Transmission Tariff* (OATT) is available at <http://www.iso-ne.com/participate/rules-procedures/tariff/oatt>.

⁴² More information on the ISO's Energy-Efficiency Forecast is available at <http://www.iso-ne.com/committees/planning/energy-efficiency-forecast>.

⁴³ DG resources are on-site, "behind-the-meter" sources of electric energy.

⁴⁴ More information on the ISO's Distributed Generation Forecast is available at <http://www.iso-ne.com/committees/planning/distributed-generation>.

Wholesale Electricity Markets

Reports on Market Performance

The ISO regularly reports on the performance of the region's wholesale electricity markets.⁴⁵ In addition to detailed quarterly, monthly, and weekly reports, the ISO's internal and external market monitors prepare comprehensive annual reports on the development, operation, and performance of the markets.⁴⁶

Energy Market Offer Flexibility Enhancements

On December 3, 2014, ISO New England completed a multi-year transition to a new market system that allows generators to submit supply offers on an hourly basis, an enhancement that will help improve power system reliability and wholesale power pricing. The Energy Market Offer Flexibility project, which received broad support from industry stakeholders, was approved by FERC on October 3, 2013.⁴⁷

The new market system allows resource owners to submit separate offers for each hour of the following day and to update their offers during the operating day to account for changes in fuel costs. Before these market rule changes were put in place, resource owners were limited to one offer for all hours of the following day and had only one opportunity to revise their offer before the operating day. During the operating day, they could not revise their supply offer, no matter how dramatically fuel prices had changed since they submitted it. Giving resource owners the flexibility to change their supply offers in real time will result in more accurate power pricing and provide incentives for resources to perform when needed, particularly given the volatile nature of natural gas prices in recent years.

The Energy Market Offer Flexibility project also allows resource owners to submit negative supply offers as low as -\$150 per megawatt-hour (MWh). Lowering the "energy offer floor" below the previous minimum of \$0/MWh helps improve price signals to resources to reduce output or shut down when consumer demand is low and there is a risk of excess generation. Allowing resources to submit negative offers also accommodates resources that can operate economically at very low energy prices, such as wind and other renewable energy facilities.

These market enhancements represent another step toward improving resource performance and mitigating natural gas dependency risks.

Forward Capacity Market

Under the Forward Capacity Market, the ISO projects the capacity needs of the power system three years in advance and then holds an annual auction to purchase the resources that will satisfy the regional requirements. The resources that clear in the auction are obligated to provide power or curtail demand when the ISO calls on them during the one-year commitment period that correlates with each auction.

⁴⁵ The ISO's various market reports are posted at <http://www.iso-ne.com/markets-operations/market-performance/performance-reports>.

⁴⁶ The Internal Market Monitor's annual report is posted at <http://www.iso-ne.com/markets-operations/market-monitoring-mitigation/internal-monitor>. The External Market Monitor's annual report is posted at <http://www.iso-ne.com/markets-operations/market-monitoring-mitigation/external-monitor>.

⁴⁷ FERC, *Order Conditionally Accepting Tariff Revisions*, (145 FERC ¶ 61,014, Docket No. ER13-1877-000) (October 3, 2013), http://www.iso-ne.com/regulatory/ferc/orders/2013/oct/er13-1877-000_10-3-13_order_condition_accept_flex_rev.pdf.

Demand Curve

On May 30, 2014, FERC issued an order accepting the ISO New England and NEPOOL proposal to implement a downward-sloping demand curve in the Forward Capacity Market.⁴⁸ A sloped demand curve will help moderate price volatility over time and eliminate several administrative pricing rules that were necessary under certain market conditions using the vertical demand curve.

These market rule changes include several elements. First, the changes define the shape of the system wide sloped demand curve in which the key points are based on the estimated cost of entry for a new capacity resource (referred to as CONE in the rules) and well-established system planning design criteria used to ensure resource adequacy. Second, the changes extend the period during which a market participant may “lock-in” the capacity price for a new resource from five to seven years to ensure that the overall market design provides sufficient certainty to attract new investment when needed. Third, the changes establish a limited exemption from the buyer-side capacity market mitigation rules for certain renewable resources that are built to advance state environmental policy objectives.

The system wide sloped demand curve was in place for the ninth Forward Capacity Auction. Stakeholder discussions are still underway on the use of zonal sloped demand curves.

Forward Capacity Auction #9

The ninth Forward Capacity Auction (FCA #9) was held on February 2, 2015 to procure the capacity resources needed to meet demand for electricity in New England for the 2018/2019 capacity commitment period. The ISO modeled four capacity zones in FCA #9: (1) Southeastern Massachusetts/Rhode Island (SEMA/RI), (2) Connecticut, (3) Northeastern Massachusetts/Boston (NEMA/Boston), and (4) Rest of pool (included Maine, Western/Central Massachusetts, New Hampshire and Vermont). SEMA/RI, Connecticut, and NEMA/Boston were modeled as import-constrained zones. Import-constrained zones are areas within New England that may not have adequate local resources and transmission import capability to reliably serve local demand. The ISO determined that there were no export-constrained capacity zones for the 2018/2019 capacity commitment period.

Finalized results indicate that the auction concluded with 34,695 MW of capacity acquired region wide, including more than 1,400 MW of new resources.⁴⁹ The installed capacity requirement (ICR) for the 2018-2019 period is 34,189 MW; however, with the sloped demand curve now in place, the region can acquire more or less than the ICR, depending on reliability requirements and price.

This year’s descending-clock auction opened at a starting price of \$17.73/kW-month. The auction concluded system wide after three rounds of competitive bidding with a clearing price of \$9.55/kW-month, at the point on the demand curve where resources were still sufficient to meet demand.

Even before the auction started, there were not enough new and existing resources, combined, to provide the capacity needed in the SEMA/RI zone in 2018/2019. Because of SEMA/RI’s inadequate supply, administrative pricing rules were triggered. Under these rules, the 353 MW of new resources in the zone will receive the auction starting price of \$17.73/kW-month, while 6,632 MW of existing resources in the zone will receive \$11.08/kW-month, which is based on the net cost to build a new resource. While the SEMA/RI zone is short

⁴⁸ FERC, *Order Accepting Tariff Revisions*, (147 FERC ¶ 61,173, Docket No. ER14-1639-000) (May 30, 2014), http://www.iso-ne.com/regulatory/ferc/orders/2014/may/er14-1639-000_5-30-14_sloped_demand_curve_order.pdf.

⁴⁹ ISO New England, *Forward Capacity Auction Results Filing*, Docket ER15-____-000 (February 27, 2015), http://www.iso-ne.com/static-assets/documents/2015/02/er15-____-000_2-27-15_fca_9_results_filing.pdf.

about 238 MW of the 7,479 MW needed in 2018/2019, such resource shortfalls may be filled through periodic reconfiguration auctions held over the next three years.

The administrative pricing rules balance the interests of consumers paying for capacity by building in price protections under conditions of scarcity, and the interests of resources providing capacity by paying a price that reflects the need to attract new resources and retain existing capacity.⁵⁰

The ISO's Budget Review Process

The ISO's budget development process begins in January of each year with stakeholder discussions on priorities in planning, operations, and capital projects. The ISO then presents a five-year strategic plan to give stakeholders a better understanding of its longer-term, multi-year objectives. In the June and August timeframe, the ISO presents proposed operating and capital budgets to its stakeholders for review. By the end of October, the ISO submits its final operating and capital budgets to FERC for review.

In May 2013, the ISO filed a settlement agreement with FERC on the ISO's 2013 budget, formalizing the budget review process with state regulators.⁵¹ This process includes a preliminary budget presentation at the annual New England Conference of Public Utilities Commissioners (NECPUC) Symposium in June and an additional budget presentation with the New England states in August. After the budget presentation in August, the New England states have the opportunity to submit questions and comments on the proposed budget, which are followed by formal responses by the ISO. The comments submitted by the New England states and the responses provided by the ISO are then filed with FERC alongside the proposed budget. The ISO's Board of Directors play an active role throughout the budget review process, taking into account feedback from the New England states before voting on the proposed budget in October.

After an extensive budget review process with state regulators, the ISO filed its proposed 2015 budget with FERC on October 16, 2014.⁵² On December 10, 2014, FERC issued a letter order approving the ISO's budget for 2015.⁵³

The ISO's budget review process is open and transparent. All materials are posted on the NEPOOL Budget & Finance Subcommittee page of the ISO New England website.⁵⁴ The ISO has also developed a new webpage for budget information and materials going forward.⁵⁵

⁵⁰ A press release detailing the results of the auction is available at http://www.iso-ne.com/static-assets/documents/2015/02/fca9_finalresults_final_02272015.pdf.

⁵¹ ISO New England, *Settlement Agreement*, Docket Nos. ER13-185, ER13-192 (May 13, 2013), http://www.iso-ne.com/regulatory/ferc/filings/2013/may/er13-185-000_5-9-13_settlement_agreement.pdf.

⁵² ISO New England, *Filing of 2015 Capital Budget and Revised Tariff Sheets for Recovery of 2015 Administrative Costs*, Docket No. ER15-112-000 (October 16, 2014), http://www.iso-ne.com/static-assets/documents/2014/10/2015_adm_budget_and_capital_budget_er15-112-000_10-16-2014.pdf.

⁵³ FERC, *Letter Order Accepting 2015 Capital Budget and Revised Tariff Sheets for Recovery of 2015 Administrative Costs* (Docket No. ER15-112-000) (December 10, 2014), http://www.iso-ne.com/static-assets/documents/2014/12/er15-112-000_12-10-15_ltr_order_accept_2015_cap_and_admin_bdgt.pdf.

⁵⁴ The NEPOOL Budget & Finance Subcommittee webpage is available at <http://www.iso-ne.com/committees/participants/budget-finance>.

⁵⁵ The ISO's new budget webpage is available at <http://www.iso-ne.com/about/corporate-governance/budget>.

Appendix B: Analysis of Wholesale Costs and Retail Rates

One of the first goals among CLG participants when the group first formed was to better understand how a typical retail consumer's bill reflects market costs. The ISO first conducted this analysis in 2009 and has subsequently updated it each year for the CLG's Annual Report.

The analysis concluded that wholesale costs and the rates for residential retail power supply can vary dramatically among the states and from year to year, mainly because wholesale electricity markets and retail electricity markets are used to obtain different products. Wholesale markets reflect the short-term spot market for electric energy, whereas retail rates reflect longer-term, fixed-price contracts. The relationship between wholesale costs and retail rates will vary with the retail power procurement policies of each utility and state. Understanding these differences is essential when comparing the two markets.

Table 1 shows the range of wholesale market costs for the 12 months ending December 2012, 2013, and 2014 (calendar years 2012, 2013, and 2014) among the New England states and the range of residential retail power supply rates in effect immediately following those time periods (January 1, 2013, January 1, 2014, and January 1, 2015) for each of the states with unbundled retail electricity markets.

Table 1: Wholesale Market Costs and Residential Retail Power Supply Rates^(a)

	Wholesale Market Costs (¢/kWh)	Effective Date of Residential Retail Power Supply Rates	Residential Retail Power Supply Rates ^(b) (¢/kWh)
January – December 2012	4.82 – 5.10	January 1, 2013	7.19 – 9.08
January – December 2013	6.75 – 7.23	January 1, 2014	6.81 – 9.56
January – December 2014	7.53 – 8.27	January 1, 2015	7.56 – 15.56

(a) The analysis is based on a hypothetical residential consumer that uses 750 kWh/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 2013 to 2014, wholesale market costs increased 12 to 14% in the New England states, largely because of increases in wholesale energy costs during the winter months of 2014. All of the New England states experienced an increase in power supply rates effective January 1, 2015 compared to power supply rates effective January 1, 2014.
- All of the New England states saw an increase in total residential retail electricity rates from January 1, 2014 to January 1, 2015, which include costs for power supply, distribution, and transmission.⁵⁶

⁵⁶ Total residential retail rates ranged from 14.51 ¢/kWh to 18.87 ¢/kWh for January 1, 2014 and from 15.29 ¢/kWh to 24.20 ¢/kWh for January 1, 2015 among the New England states.

- The estimated *regional* transmission rate increased by approximately 4% from 2013 to 2014 (from 1.3162 ¢/kWh in 2013 to 1.3685 ¢/kWh in 2014) and is equivalent to 6 to 9% of total residential retail rates effective January 1, 2015, which ranged from 15.29 ¢/kWh to 24.20 ¢/kWh.⁵⁷
- A review of *actual* transmission rates for residential retail consumers in Connecticut, Massachusetts, Maine, New Hampshire, and Rhode Island effective January 1, 2015 shows that transmission represents 9 to 16% of the total residential retail rate.⁵⁸

⁵⁷ The regional transmission rate reflects the costs of reliability projects identified through the regional transmission planning process as providing a regional benefit. These costs are considered part of the regional network service (RNS). The regional transmission rate is calculated as the sum of all RNS charges for the specific period, divided by the total net energy for load for the same period. For 2014, the period is based on the 12 months ending December 31, 2014. The net energy for load is detailed at http://www.iso-ne.com/markets/hstdata/rpts/net_energy/index.html.

⁵⁸ The difference between these actual transmission rates for residential consumers and the regional transmission rates is the inclusion of local transmission costs and projects in the residential transmission rates. Additionally, methodologies to allocate transmission costs to residential customers are likely to vary by state and utility.

Appendix C: Wholesale Electricity Costs

The annual wholesale costs of meeting consumer demand for electricity in New England can vary significantly. Total annual costs have ranged from a low of \$8 billion in 2012 to a high of nearly \$15 billion in 2008 over the past seven years (see Table 2: New England Wholesale Electricity Costs, 2008 to 2014 (in Millions and ¢/kWh)^{(a)2}).

Table 2: New England Wholesale Electricity Costs, 2008 to 2014
(in Millions and ¢/kWh)^(a)

	2008		2009		2010		2011		2012		2013		2014 ^(g)	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
Wholesale market costs														
Energy (LMPs)^(b)	\$12,085	9.1	\$5,884	4.6	\$7,284	5.6	\$6,695	4.9	\$5,193	3.9	\$8,009	6.0	\$9,079	6.9
Ancillaries^(c)	\$366	0.3	\$190	0.1	\$164	0.1	\$39	0	\$56	0.0	\$155	0.1	\$326	0.2
Capacity^(d)	\$1,505	1.1	\$1,768	1.4	\$1,647	1.3	\$1,345	1	\$1,195	0.9	\$1,057	0.8	\$1,063	0.8
Subtotal	\$13,956	10.5	\$7,842	6.1	\$9,095	7	\$8,079	5.9	\$6,444	4.8	\$9,220	6.9	\$10,468	8
Transmission charges^(e)	\$869	0.7	\$1,155	0.9	\$1,417	1.1	\$1,378	1	\$1,532	1.1	\$1,806	1.3	\$1,820	1.4
RTO costs^(f)	\$125	0.1	\$123	0.1	\$137	0.1	\$130	0.1	\$139	0.1	\$167	0.1	\$165	0.1
Total	\$14,951	11.3	\$9,080	7.1	\$10,649	8.2	\$9,588	7	\$8,115	6.0	\$11,193	8.3	\$12,453	9.5

(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 the Forward Capacity Market.

(e) Transmission charges reflect the collection for transmission owners' revenue requirements and tariff-based reliability services, including black-start capability and voltage support. In 2014, the cost of payments made to these generators for reliability services under the ISO's tariff was \$41.8 million.

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

(g) 2014 values are preliminary and subject to reconciliation.

The wholesale costs include the cost of traditional supply resources and demand resources and the annual cost of transmission investment to serve all of 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 seven years between 2008 and 2014, the ISO's annual costs have ranged from \$123 million to \$167 million.

Wholesale electricity costs are paid for by market participants that purchase electricity from the wholesale market for their own use or to supply 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 2014, the total value of all wholesale electricity costs, including the cost of regional transmission and ISO operations, was approximately \$12.5 billion. Allocating this cost across the load served at a wholesale level in 2014 yields a rate of 9.5 ¢/kWh.