Consumer Liaison Group
Coordinating Committee

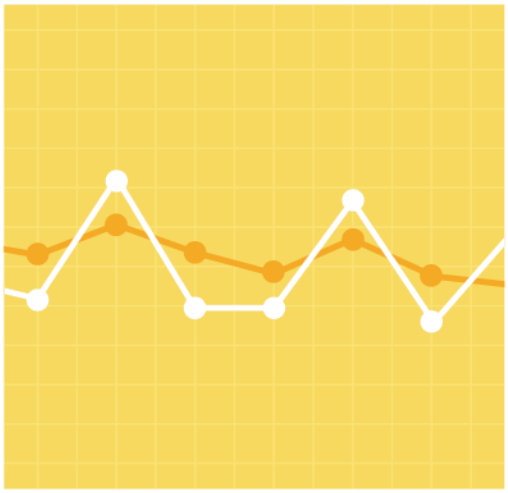
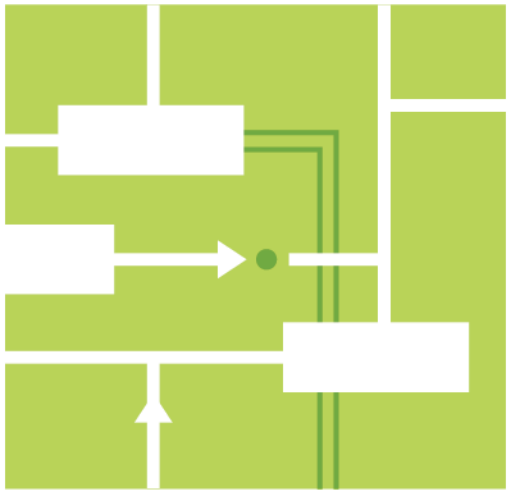
# 2022 Report of the Consumer Liaison Group



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

REVISED MAY 17, 2023




# Contents

# Tables

# Section 1
# Statement from the Consumer Liaison Group Coordinating Committee

Dear Reader,

Welcome to the *2022 Report of the Consumer Liaison Group* (CLG) prepared jointly by the Consumer Liaison Group Coordinating Committee (CLGCC) and ISO New England (ISO-NE). This is the thirteenth annual CLG report, the first published in 2010 summarizing 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 No. 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.

When FERC issued Order 719 in 2008, setting forth the agency's expectations for regional transmission organizations like ISO-NE, the regulators concluded that regional transmission organizations would be "obligated to demonstrate that they are responsive to the needs of customers and other stakeholders through a direct collaboration among the RTOs and "their constituencies." Order 719 embraced the objectives of "inclusiveness" and "responsiveness," ruling that an RTO's "business practices and procedures must provide for stakeholder input into the . . . regional transmission organization's decisions as well as mechanisms to provide feedback to stakeholders to ensure that information exchange and communication continue over time." The Consumer Liaison Group was ISO New England's response to these directives, which FERC approved in ISO-NE's Order 719 compliance filing.

ISO New England's information flow to the CLG is instrumental to fulfilling CLG's mandate to provide for greater understanding of the ISO's activities and decision-making processes and the potential cost impacts of its decisions and initiatives on consumers. 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.

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. Looking to the future, members of the CLGCC recognize that the CLG's full mandate cannot be fulfilled without greater participation from consumers on the issues that concern them, including potential changes to the power system and the wholesale markets.

The CLG bylaws, formulated by stakeholders and ISO New England, require the organization to be governed by a Coordinating Committee of 12 members. These members represent various stakeholder groups, with no more than four members coming from any one New England state. Elizabeth Mahony, assistant attorney general in the Energy and Telecommunications Division of the Massachusetts Attorney General's Office, replaced Rebecca Tepper as CLGCC chair prior to the June 2022 CLG Meeting.[1]

One of CLGCC's primary goals for 2022 was to increase dialogue and communication between ISO New England and CLG. The year culminated in a dramatic increase in CLG meeting attendance at the Boston meeting on November 30, 2022, signifying an important achievement of CLGCC's goal. Average total meeting

[1] In March 2023, Elizabeth Mahony left the Massachusetts Attorney General's Office ("AGO") to become commissioner of the Massachusetts Department of Energy Resources. Liz Anderson, deputy chief and assistant attorney general in the Energy and Telecommunications Division for the Massachusetts AGO, replaced Elizabeth Mahony as chair prior to the CLG Meeting held on March 30, 2023.

attendance from September 2021– November 2022 was 128 members, with a total of approximately 130 in-person and 115 on-line attendees at the November 2022 quarterly meeting in Boston. 2022 also represented a breakthrough year in increasing the number and diversity of CLG participants, as indicated by the number and diversity of attendees at the Boston CLG meeting. The big step forward toward the end of 2022 was brought about by an effective mobilizing and organizing campaign by the No Coal No Gas campaign, with support from the Fix the Grid campaign, and enabled and facilitated by the work of the CLGCC, particularly Chair Elizabeth Mahony, to open up the meeting and remove as many barriers as possible for in-person and remote attendance and voting. This very effectively capitalized on the remote participation opportunities that have been utilized during COVID-19 restrictions.

In the year ahead, there remains much more opportunity to further broaden the diversity of the panelists and attendees, as well as to achieve other important CLGCC goals and opportunities for 2023, as further detailed in Section 4 below.

Sincerely,

Liz Anderson (MA)
Chair
Consumer Liaison Group Coordinating Committee
Assistant Attorney General
Energy and Telecommunications Division
Massachusetts Attorney General's Office

William E. Dornbos (CT)
Legal Director
Connecticut Office of Consumer Counsel

Ian McDonald (CT)
Ratepayer

Nathan Phillips (MA)
Department of Earth and Environment
Boston University

Regine A. Spector (MA)
Ratepayer
Department of Political Science
University of Massachusetts, Amherst

Kendra Ford (NH)
350 New Hampshire

August Fromuth (NH)
Managing Director
Freedom Energy Logistics

Donald M. Kreis (NH)
Consumer Advocate
New Hampshire Office of Consumer Advocate

Andrew Landry (ME)
Deputy Public Advocate
State of Maine

Sonja Birthisel (ME)
Director of the Wilson Center at University of Maine

Jacob Powsner (VT)
Ratepayer

*Note: Coordinating Committee members' affiliations are listed for identification purposes only.*

# Section 2
# Purpose and Structure of the Consumer Liaison Group

The Consumer Liaison Group (CLG) is an open forum for sharing information between ISO New England (ISO-NE) and those who ultimately use and pay for electricity in New England. Through this forum, the ISO improves its 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.

The CLG is governed by a Coordinating Committee (CLGCC), which sets the agenda for four meetings each year, including featured topics and speakers. ISO New England facilitates the meetings and communications among CLG participants. CLG meetings provide a forum to share information on regional electricity issues among end-users, consumer advocates, and other interested stakeholders. The subject matter in CLG meetings is designed to be less technical than the information presented in regional discussions through the Planning Advisory Committee (PAC) and the New England Power Pool's (NEPOOL) technical committees.[2]

## 2.1 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-NE subject matter experts
- Be made aware of market changes that can have an impact on consumers, in advance of final consideration by the ISO when feasible
- 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

## 2.2 Participation and Meeting Format

The CLG is open to the public and there is no registration fee. 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

[2] The Planning Advisory Committee (PAC) is an open stakeholder forum that provides input and feedback to ISO New England on the regional system planning process. More information on the PAC is available at: http://www.iso-ne.com/committees/planning/planning-advisory. 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-NE stakeholders and market participants. More information on NEPOOL is available at: www.nepool.com.

end users. State regulators, including those who are NEPOOL members, are regular, active participants in CLG discussions.

CLG meetings typically attract a diverse group of approximately 80–125 attendees, both in person and via teleconference. CLG meetings generally follow the same format:

- Opening remarks from a keynote speaker—typically an industry or business executive, policymaker, or regulator—who provides a unique perspective on a particular topic or issue
- An update, by a representative from the ISO, on regional energy issues and initiatives that may have an impact on electricity prices, which have or will be taking place at NEPOOL and ISO-NE stakeholder meetings
- A panel discussion that provides different perspectives on a particular issue, facilitated by a moderator (panelists have included representatives from industry, the ISO, regulators, and consumer groups)

Time is reserved during each meeting for audience questions and answers. In 2022, the CLGCC extended an invitation to ISO New England Board of Directors Chair Cheryl LaFleur to have a discussion with the CLG at its November meeting. Additional details on the discussion are available in the meeting summaries below.

At the beginning of the COVID-19 pandemic, the ISO began using WebEx to hold the CLG quarterly meetings virtually. In 2022, upon the return to in-person meetings, the ISO continued using WebEx to host the CLG in a hybrid format, with teleconference and in-person attendance options.

The shift to a hybrid format has not significantly reduced attendance at the CLG meetings. In 2022, attendance at the quarterly meetings ranged from 90 to about 140. In 2021, attendance ranged from 87 to about 130.

## 2.3 Governance

The 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.[3]

The CLGCC consists of up to 12 members (six members and six alternates) with no more than four members from any one of the states. Specific membership requirements ensure that consumers (residential, commercial, and industrial) from a majority of the six New England states are represented 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 each member must be either a ratepayer (or directly represent ratepayers), a member of a consumer organization, or a government consumer or ratepayer advocate.

CLGCC members are selected by vote of the CLG at one of its quarterly meetings in even-numbered calendar years and serve for a term of two years or until successors are selected. The Coordinating Committee annually designates a chairperson from its membership. The chairperson fills any vacancies on the committee

[3] The "Purpose and Structure" document (December 29, 2009) fully explains CLG governance; see https://www.iso-ne.com/static-assets/documents/committees/comm_wkgrps/othr/clg/consum_lias_grp_gov/clg_structure_document_revised_12_29_09.pdf.

with the approval of a majority of the remaining members. Current CLGCC members are listed on page 2 of this report. The ISO designates a point of contact within its External Affairs department to support the CLGCC.

## 2.4 Information and Communications

ISO New England secures meeting space and funds the CLG's activities. A dedicated section of the ISO's website has been established for all CLG materials, communications, annual reports, and other valuable information.[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.

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]

CLG participants are also encouraged to follow the ISO's online newsletter, *ISO Newswire*, and subscribe to the mailing list to receive a monthly email highlighting some of the most recent articles.[6] Stakeholders also can follow the ISO on Twitter and LinkedIn.

Since 2012, ISO New England has provided a mobile app, *ISO to Go*, offering smartphone access to frequently viewed real-time data available on the ISO website and data portal, *ISO Express*.[7]

In October 2020, the ISO launched a new homepage, a new online document library, and a refreshed *ISO Newswire*. The ISO made these changes based on reviewing market participant feedback, monitoring frequently visited pages to gain a better understanding of how stakeholders use these pages, and studying the best practices of other data-driven websites. These updates built on changes made in 2018 when the ISO launched the latest version of the app, *ISO to Go 2.0,* with the following features:

- A map of pricing data, including day-ahead and real-time prices for each of the region's eight load zones
- Demand curves providing a simple visual of New England's actual consumer demand for electricity and how it tracks with the forecast
- An enhanced fuel-mix section detailing the energy sources powering New England at any given moment
- Customizable push notifications for users who want to be alerted when the power system is operating under abnormal or emergency conditions or when prices cross certain thresholds

In June 2021, the ISO added a new option to *ISO Express* that allows users to view actual, real-time grid demand coupled with estimated production from behind-the-meter resources. This new setting provides an

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

[5] ISO New England's glossary of terms is available at: http://www.iso-ne.com/participate/support/glossary-acronyms.

[6] *ISO Newswire* is available at: http://isonewswire.com/. To subscribe, send a blank email to; isolist-isonewswire-subscribe@mail.iso-ne.com.

[7] *ISO to Go 2.0* is available at: http://www.iso-ne.com/about/news-media/iso-to-go. The app is available 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/.

estimate of the region's total electricity use from both grid resources and about 283,000 solar installations capable of producing about 5,500 megawatts for New England.[8]

The ISO in 2022 upgraded *ISO Express* and the *ISO to Go* mobile app to include net imports on the fuel mix chart and graph. Net import values represent the electricity imported across the region's tie lines to neighboring grids, less that being exported. This change is intended to make it clearer how the region is meeting demand for grid electricity at any moment.[9]

Also in 2022, the ISO launched a new feature on *ISO Express* that allows users to view estimated real-time carbon dioxide emissions from New England's power plants. The estimates are based on a formula that multiplies power generation, in megawatts, from each fuel type by emissions factors developed by ISO New England and based on US Environmental Protection Agency data.[10]

ISO New England's annual *Regional Energy Outlook* is a valuable source of information on trends and issues affecting the regional electric power grid.[11] Each month, the ISO's External Affairs department issues a memo that provides timely updates on regional energy issues, stakeholder meetings, and other information that may be of interest to consumers.[12] These memos are available on the External Affairs and CLG pages of the ISO website, along with presentations and speeches delivered by ISO technical experts and senior management.

# Section 3
# Consumer Liaison Group Meeting Summaries

In 2022, the Consumer Liaison Group (CLG) held quarterly meetings on issues of importance to electricity consumers in New England. The members of the CLG Coordinating Committee (CLGCC) selected the topics, guest speakers, moderators, and panelists featured at these meetings.

Topics discussed in 2022 included the effects of the Biden administration's energy policy, privatization of the energy sector, consumer involvement in the regional energy grid, and the future of fossil fuel infrastructure, as follows:

- **March 10:** FERC Order No. 2222 and What it Means for Customers
  Meeting location: Held via WebEx
- **June 9:** Global Event, Regional Impacts: The Effects of World Events on New England's Energy Markets, Climate Goals, and Customer Costs
  Meeting location: Westborough, MA, and via WebEx

[8] "Let the sunshine in: View regional energy usage—including behind-the-meter solar—through ISO Express" *ISO Newswire* (June 22, 2021); https://isonewswire.com/2021/06/22/let-the-sunshine-in-view-regional-energy-usage-including-behind-the-meter-solar-through-iso-express/.

[9] "ISO-NE adds net imports to renamed resource mix chart, graph on ISO Express," *ISO Newswire* (August 11, 2022); *https://isonewswire.com/2022/08/11/iso-ne-adds-net-imports-to-renamed-resource-mix-chart-graph-on-iso-express/*.

[10] "View real-time estimated carbon dioxide emissions on ISO Express," *ISO Newswire* (April 29, 2022); https://isonewswire.com/2022/04/29/view-real-time-estimated-carbon-dioxide-emissions-on-iso-express/.

[11] *2022 Regional Electricity Outlook* (June 2022); https://www.iso-ne.com/static-assets/documents/2022/06/2022_reo.pdf.

[12] The ISO's Government and Industry Affairs webpage is available at: https://www.iso-ne.com/about/government-industry-affairs.

- **September 15:** Winter Electricity: How Supply Procurements and Energy Efficiency Programs Impact Your Bill
  Meeting location: Providence, RI, and via WebEx
- **November 30:** Discussions with FERC Commissioner James Danly and ISO-NE Board of Directors Chair Cheryl LaFleur
  Meeting location: Boston, MA, and via WebEx

The following sections summarize the general discussions that took place at CLG meetings in 2022. These summaries are posted to the CLG webpage shortly after each quarterly meeting. They are not intended to capture every discussion and do not necessarily reflect the views of the ISO or the CLGCC. Individual meeting summaries include information that was current at the time of each meeting and may not reflect developments that have since transpired. Section 5 contains further information about the ISO New England updates presented at each meeting.

## 3.1 March 10: FERC Order No. 2222 and What It Means for Consumers

A recording of the meeting is available on the CLG webpage.

**Meeting objective:** Discuss the implications of FERC Order No. 2222 and what it means for consumers in New England.

### 3.1.1 *Opening Remarks*

**Rebecca Tepper**, CLGCC chair and chief of the Energy and Environmental Bureau at the Massachusetts Office of the Attorney General, offered welcoming remarks and provided background on the CLG. She encouraged attendees to ask questions of the speakers and welcomed suggestions for topics that the CLG should cover in future meetings. Additionally, Tepper announced that she would be stepping down after seven years as chair of the CLGCC. **Elizabeth Mahony**, assistant attorney general in the Energy and Telecommunications Division of the attorney general's office, was elected as chair by the CLGCC.

**Robert Rio**, CLGCC member, speaking on behalf of the Coordinating Committee, thanked Tepper for her service and commitment to the CLG during her term.

### 3.1.2 *ISO New England Update*

**Anne George**, ISO-NE vice president of External Affairs and Corporate Communications, provided an update focusing on information resources for the CLG; grid performance during the 2021–2022 winter; the most recent forward capacity auction; and the Transition to the Future Grid project.

George stated that the *2021 Report of the Consumer Liaison Group* was posted to the CLG webpage on March 10. The report includes analysis of retail rates and wholesale electricity prices in New England. She also pointed out that the 2021 *Net Energy and Peak Load Report* was recently released and breaks down the amount of electricity produced by generators in New England and imported from other regions to satisfy all customer demand in 2021.

George reminded the group that ISO-NE's CEO has been writing a four-part series in CommonWealth magazine on the evolution of the region's power system, and that the ISO's External Affairs page is often updated with presentations and speeches delivered by technical experts, senior management, and External Affairs team members at public events around the region. She shared that the New England power grid profile and state profiles fact sheets have undergone their annual update and have been posted to the ISO's website. The former provides key grid and market statistics, while the latter provides specific facts and

figures relating to supply and demand resources tied into the New England electric grid and state policies transforming the resource mix in the region.

George also shared information about market outcomes during the winter of 2021–2022. She noted that January 2022 set near-record electricity prices and saw increased emissions, largely due to cold weather and higher electricity demand. Specifically, wholesale electricity prices rose to their highest levels since February 2014, with real-time prices averaging $148.66 per megawatt-hour (MWh) and the day-ahead price averaging $149.46/MWh. She said electricity demand peaked for the winter on January 11 at 19,729 megawatts (MW). The all-time winter peak is 22,818 MW, set on January 15, 2004.

New England power plants generated an estimated 4.18 million metric tons of carbon dioxide ($CO_2$), up from 2.77 million metric tons in January 2021. A heavier reliance on oil accounted for the majority of the increase, with oil-fired resources producing an estimated 1.71 million metric tons of $CO_2$, compared to 32,914 metric tons in January 2021.

George explained that the ISO conducted its 16th Forward Capacity Auction (FCA 16) on February 7, as scheduled and in accordance with the ISO's tariff. Because of litigation, the ISO delayed the release of auction results until March 9.

George noted that FCA 16 secured 32,810 MW of resources to be available during the 2025–2026 capacity commitment period (CCP). There were three preliminary clearing prices across the New England capacity zones: $2.639 per kilowatt-month (kW-month) in Southeast New England; $2.591/kW-month in Rest of Pool; and $2.531/kW-month in Northern New England and Maine. The preliminary value of the capacity market during 2025–2026 CCP is estimated at approximately $1.04 billion. George also underscored that nearly 5,000 MW, or approximately 15% of all cleared capacity, was made up of solar, wind, energy storage, and demand resources.

The litigation has delayed the start of preparations for FCA 17, and George said the ISO would post a revised schedule following stakeholder discussions.

George provided an overview of a series of ongoing studies supporting the region's transition to a cleaner, more distributed grid. Those studies attempt to identify: the likelihood and operational impacts of extreme weather events; the transmission needed to support renewable development in the future; the operational characteristics of a renewable-heavy grid; the cost and feasibility of implementing different market designs to support decarbonization of the electricity grid; and how near-term needs assessments must evolve to accommodate a higher penetration of renewables.

A brief question-and-answer period followed in which George discussed delist bids in the capacity auction.

**3.1.3** *Keynote Address*
**Philip L. Bartlett**, chairman of the Maine Public Utilities Commission, gave the keynote address.

Bartlett began his address by underscoring the importance of ratepayer and consumer advocate participation in proceedings across the region. He commended advocates for ensuring that the cost to ratepayers is a key consideration in policymaking across the region.

He then discussed the need for significant investment in renewables, distributed energy resources, storage, electrification, grid modernization, and transmission in order to achieve clean energy and carbon reduction goals.

The chairman stressed the importance of regional collaboration, as the clean energy transition will have cost implications for ratepayers across the region. He noted that educating consumers and developing a comprehensive strategy to minimize costs are important.

He pointed out the continuing challenges associated with transmission development in New England. The importance of transmission development as a means to achieving policy goals, he said, must be communicated effectively to the public. Further, he discussed the importance of regional system planning.

Bartlett then discussed the need for regional market reforms to consider climate objectives and better incorporate renewables. He discussed the need for a holistic approach that reevaluates the capacity, energy, and ancillary services markets based on current and future needs. Bartlett emphasized that efficient, competitive market design can help minimize decarbonization costs.

Lastly, Bartlett discussed changes to ISO-NE governance that have been advocated through the New England States Committee on Electricity (NESCOE). He highlighted NESCOE's belief that greater state involvement is critical, that consumer costs deserve greater consideration, and that transparency is essential.

Following his remarks, the chairman fielded a number of questions from attendees. Topics discussed included regional renewable development and penetration; consumer costs associated with the clean energy transition; regional market reforms; transparency in the ISO-NE decision-making process; the role of the distribution system and flexible demand in the future; and potential adoption of real-time and time-of-use rates.

**3.1.4** *Panel Discussion*
**Andrew Landry**, deputy Maine public advocate and CLGCC member, moderated a panel of energy leaders to discuss the FERC Order No. 2222 and what it mean for consumers.

Panelists included: **Henry Yoshimura**, director of Demand Resource Strategy, ISO New England; **Jeff Dennis**, managing director and general counsel, Advanced Energy Economy (AEE); and **Ian Burnes**, director of strategic initiatives, Efficiency Maine Trust.

Yoshimura provided an overview of ISO-NE's Order No. 2222 compliance approach. He discussed how state policies are driving changes to the grid, and how these changes are expected to affect future generation and pricing dynamics. He said these dynamics are likely to create a need for flexible balancing resources to ensure system reliability.

Further, Yoshimura pointed out that volatility in the future will create opportunities for resources and consumers to benefit from their flexibility, including through participation in a Distributed Energy Resource Aggregation (DERA). These opportunities can also have environmental benefits and help advance state policy goals. Lastly, Yoshimura highlighted the Order No. 2222 resources available on the ISO-NE website. (On March 1, FERC issued an order accepting in part and rejecting in part the ISO's Order 2222 proposal to further integrate DERs and DER Aggregations into the regional markets. The ISO will be making a series of filings to comply with the order.)

Dennis provided a brief overview of AEE and its goals. He then underscored the expected rapid growth of Distributed Energy Resources (DERs) in New England.

Further, Dennis highlighted the benefits to consumers that FERC identified in Order No. 2222. He discussed the findings of a 2019 AEE report that detailed benefits of DER participation in wholesale markets such as additional revenues, increased utilization to help lower system costs, and improved local reliability and resiliency.

Dennis then discussed potential use cases for DERs and DERAs in the markets, including demand response, flexible load, generation, and other services. Lastly, he stated some of the concerns that AEE has identified with ISO-NE's Order No. 2222 compliance proposal.

Burnes discussed the efforts of Efficiency Maine Trust to deploy low-cost, high-impact resources at customer homes in Maine. Burnes underscored some of the challenges the organization has experienced in Maine and the successes it has had in achieving its goals.

He stated that reducing the cost of decarbonization measures by enabling aggregations could be a powerful tool in decarbonization efforts. Further, he emphasized that how benefits for consumers can be achieved is still a work in progress and potential technologies continue to evolve.

Further, Burnes discussed the possibility that certain DERs could offer flexibility to the grid, providing these resources with additional revenues and helping achieve cost-parity with more mature technologies. However, Burnes stressed that the details are important to achieving the region's shared goals and ensuring effective implementation.

A brief question-and-answer period followed the panelists' remarks. Panelists discussed the ISO's role in dispatching DERs; DERs' role in increasing local reliability and resiliency; the cost of achieving a fully decarbonized grid; lessons learned from global energy policies; potential market rule changes; and the role of price signals in maintaining reliability.

#### **3.1.5** *Closing remarks*

Tepper thanked the panelists, attendees, and ISO staff for their participation in the event. She encouraged attendees to fill out the online survey they would receive via email and encouraged attendees to take part in the next CLG meeting, scheduled for June 9.

## 3.2 June 9: Global Events, Regional Impacts: The Effects of World Events on New England's Energy Markets, Climate Goals, and Customer Costs

A recording of the meeting is available on the CLG webpage.

**Meeting objective:** Discuss the regional energy and climate impacts of recent world events.

#### **3.2.1** *Opening Remarks*

**Elizabeth Mahony**, CLGCC chair and assistant attorney general in the Energy and Telecommunications Division of the Massachusetts Office of the Attorney General, offered welcoming remarks and provided background on the CLG. She encouraged attendees to ask questions of the speakers and welcomed suggestions for topics that the CLG should cover in future meetings.

#### **3.2.2** *ISO New England Update*

**Anne George,** ISO-NE vice president of External Affairs and Corporate Communications, provided an update focusing on information resources available to the CLG; new External Affairs team members; final results of FCA 16; the Resource Capacity Accreditation (RCA) initiative; the release of the ISO's 2022 Forecast Report of Capacity, Energy, Loads, and Transmission (CELT Report); and the Transition to the Future Grid project.

George noted that ISO's CEO has been featured in CommonWealth magazine and on its podcast discussing the evolution of the region's power system, and that the ISO's External Affairs page is updated frequently with presentations delivered by technical experts, senior management, and External Affairs team members at public events around the region.

A new feature on the *ISO Express* dashboard allows users to view estimated real-time $CO_2$ emissions, in metric tons, from generators in New England. *ISO Newswire* also now features estimated $CO_2$ emissions as part of monthly reports on wholesale energy prices and consumer demand in the region.

George highlighted the Internal Market Monitor's 2021 Annual Markets Report (AMR), released on May 26. The AMR assesses the state of competition in the wholesale electricity markets administered by the ISO. Highlights included a 38% (or $3.1 billion) increase in the total cost of wholesale electricity compared to 2020, driven predominantly by high natural gas prices in the energy market. Meanwhile, capacity costs were down 16% ($2.2 billion) from 2020.

Key takeaways from ISO New England's summer outlook show the region has sufficient capacity (more than 31,000 MW) to meet peak demand of 24,686 MW expected under typical summer temperatures and 26,416 MW expected under above-average temperatures. Energy efficiency (EE) measures and behind-the-meter solar are forecasted to reduce the 2022 summer peaks by 2,100 MW and 900 MW, respectively.

The ISO report covered the results of FCA 16, which the ISO filed with FERC after the last CLG meeting. (The ISO provided an initial update on the auction at the March 10 CLG meeting, but the results had not been filed with FERC at that time.) The ISO conducted FCA 16 on February 7, as scheduled and in accordance with the ISO's tariff. However, because of litigation, the ISO had delayed the release of auction results until March. FCA 16 secured 32,810 MW of resources to be available during the 2025–2026 CCP. The auction concluded with three preliminary clearing prices across the New England capacity zones: $2.639/kW-month in Southeast New England; $2.591/kW-month in Rest of Pool; and $2.531/kW-month in Northern New England and Maine. The preliminary value of the capacity market during the 2025–2026 CCP is estimated at $1.04 billion. Approximately 15% of all cleared capacity was made up of solar, wind, energy storage, and demand resources. Litigation delayed the start of preparations for FCA 17, and the ISO plans to hold the auction in March 2023.

The ISO is kicking off the Resource Capacity Accreditation in the Forward Capacity Market Key Project, which aims to support a reliable clean energy transition by implementing methodologies that will more appropriately accredit contributions to resource adequacy as the region's generator mix changes. The ISO has made a commitment to FERC to propose improvements in time for FCA 19.

The ISO released the 2022 CELT Report on April 29. The CELT is the primary source for assumptions used in ISO system planning studies. Overall electricity use is expected to increase by 1.4% annually through 2031. George noted that summer peak demand is forecasted to increase by 0.3% annually while winter peak demand is expected to increase by 1.5% annually. George also provided an overview of forecasts of heating and transportation electrification and photovoltaic growth that are included in the 2022 CELT.

George ended the update highlighting a series of ongoing studies supporting the region's transition to a cleaner, more distributed grid. Those studies attempt to identify: the likelihood and operational impacts of extreme weather events; the transmission needed to support renewable development in the future; the operational characteristics of a renewable-heavy grid; the cost and feasibility of implementing different market designs to support decarbonization of the electricity grid; and how near-term needs assessments must evolve to accommodate a higher penetration of renewables. Specifically, George gave an overview of a probabilistic energy-security study for New England under extreme weather events that the ISO is conducting with the Electric Power Research Institute (EPRI), as well as the *2050 Transmission Study*, *Future Grid Reliability Study*, and *Pathways Study*.

The EPRI study will develop a framework for the ISO to assess operational energy-security risks associated with extreme weather events. The *2050 Transmission Study* will identify transmission system deficiencies and

suggest potential upgrades for the years 2035, 2040, and 2050. The *Future Grid Reliability Study* examines the implications of a New England grid where clean, intermittent resources make up a majority of the generation mix. (Subsequent to the CLG meeting, the ISO posted a draft report in June 2022.) Under the *Pathways Study* scope, the ISO modeled four potential market designs that could help the region decarbonize its electric system. ISO-NE has solicited feedback from states that may help inform next steps. On June 1, the ISO held a public, virtual meeting to discuss the findings of the *Pathways Study*. A recording is available online.

A brief question-and-answer period followed in which George discussed the ISO's RCA efforts, offshore wind and solar resources, seasonal outlooks, Minimum Generation Emergencies, and winter reliability concerns.

### **3.2.3** *Panel Discussion*

**Robert Rio,** senior vice president and counsel for government affairs at Associated Industries of Massachusetts and a CLGCC member, moderated a panel of energy leaders on the impact of world events on New England energy markets.

Panelists included: **Heather Takle**, president and CEO of PowerOptions, Inc.; **Melissa Birchard**, director of clean energy and grid reform at Acadia Center; **Dana Fischer**, manager of utilities and electrification at Mitsubishi Electric Trane HVAC US; and **Cammy Peterson**, director of clean energy at the Metropolitan Area Planning Council.

Takle provided an overview of PowerOptions and its views on the changes facing the energy market. She discussed the volatility of natural gas, stating that customers will continue to face higher prices and volatility due to the region's dependence on natural gas and global market pressures. She highlighted how markets and demand impact off-site renewables development, and expressed that renewable energy can act as a hedge against risk of higher fuel prices. Takle concluded her remarks by underscoring that already-high energy costs in the region are exacerbated by significant increases to transmission costs in recent years. She stated that further transmission investments will be required to support the clean energy transition, and the region should consider how we make this transition affordable and equitable.

Birchard introduced the Acadia Center and described the rise in LNG exports to Europe in recent months. Birchard used ISO data to underscore the region's reliance on natural gas, and how the region's resource mix changes drastically during cold weather. She provided an overview of ISO-NE planning efforts for the upcoming winter, and a number of opportunities for stakeholders to provide feedback, including at the New England Winter Gas-Electric Forum to be held September 8 in Burlington, VT. Birchard finished by proposing a number of potential solutions to reliability concerns, including increased resource diversity, implementation of more energy storage and demand management technologies, and potential market reforms.

Fischer discussed where the marketplace is going as the region moves toward electrification. He acknowledged a variety of heat pump technologies, provided a high-level overview of how the technology works, and pointed to the history of heat pump installations across Europe as a possible case study for New England. He opined that the region will likely see a large outcry at elevated home heating costs this winter, and underscored that no other energy source fluctuated as little as electricity this past winter. Fischer wrapped up by expressing that if the region can hasten the transition to heat pumps, carbon emissions and customer costs will both likely be reduced.

Peterson described the Metropolitan Area Planning Council (MAPC) and the communities it serves. Peterson emphasized MAPC regional clean energy and climate initiatives and praised ambitious municipal efforts toward climate goals, and the leadership from cities and towns on policies and renewable deployment over the past several years. She gave an overview of MAPC's Net Zero Playbook, specifically Net Zero Buildings and

Clean Energy Supply strategies. MAPC has been supporting communities with green municipal aggregation programs and with deploying energy storage at critical facilities to bolster resilience. Finally, Peterson explained MAPC's Peak Demand Notification Program and how the organization has been working with many communities on load reducing technologies.

A question-and-answer period followed the panelists' remarks. Panelists discussed the nexus between environmental and economic motivations for customers to adopt cleaner technologies; green municipal aggregation; the pros and cons of maintaining hybrid heating systems (and consequentially existing natural gas infrastructure); the cost implications of increased demand associated with electrification of the building and transportation sectors; heat pump incentives; reliability concerns surrounding electrifying home heating with regard to a long-duration outage event; and supply chain issues that may slow the clean energy transition.

#### **3.2.4** *Closing remarks*

Mahony thanked the panelists, attendees, and ISO staff for their participation in the event. She encouraged attendees to fill out the online survey they would receive via email and encouraged attendees to take part in the next CLG meeting, scheduled for September 15.

## 3.3 September 15: Winter Electricity: How Supply Procurements and Energy Efficiency Programs Impact Your Bill

A recording of the meeting can be found on the CLG webpage.

**Meeting objective:** Discuss the impact of supply procurements and energy efficiency programs on electricity bills.

#### **3.3.1** *Opening Remarks*

**Elizabeth Mahony**, CLGCC chair and assistant attorney general in the Energy and Telecommunications Division of the Massachusetts Office of the Attorney General, offered welcoming remarks and provided background on the CLG. Mahony announced that there will be an election for CLGCC members at the November 30 CLG meeting and that nominations will be due in early November. She encouraged attendees to ask questions of the speakers and to complete the survey that was sent to participants via email after the meeting.

#### **3.3.2** *ISO New England Update*

**Eric Johnson,** director of External Affairs, provided ISO New England' (ISO-NE) regional update.

The ISO participated in the FERC New England Winter Gas-Electric Forum on September 8. In addition, prior to the forum, the ISO submitted a *Draft Problem Statement and Call to Action on LNG and Energy Adequacy* on behalf of itself and several utilities. The ISO shared the statement in a letter to US Department of Energy Secretary Jennifer Granholm as a follow-up to a letter from the New England governors to the secretary. Johnson noted that FERC will be seeking public comment following the forum.

ISO-NE recently published *On the Horizon: 2022 Regional Electricity Outlook* (REO). The REO provides an overview of New England's biggest challenges to power system reliability, the solutions the region is pursuing, and other ISO New England efforts to improve services and performance.

In August, the ISO launched a new feature on the *ISO Express* dashboard that allows users to view the real-time contribution of net imports in meeting demand for electricity on the grid. Net import values represent the electricity imported across the region's tie lines to neighboring control areas, less that being exported.

This update follows a number of other updates to *ISO Express* that include displaying estimated behind-the-meter solar generation and carbon dioxide emissions.

In June, the ISO launched "Batteries as Energy Storage in New England," an online primer about the role batteries play in an evolving power system. Batteries are a growing portion of the ISO's Interconnection Request Queue, making up 25% of proposed capacity.

In July, the ISO released the *2021 Economic Study: Future Grid Reliability Study Phase 1*. The study, requested by New England Power Pool (NEPOOL) stakeholders, evaluates how a 2040 grid could perform when the system has significantly more renewables and a greater amount of electrification of the transportation and heating sectors. The ISO will host a webinar on October 7 to discuss the findings of the study. The webinar will be free and open to the public. Registration is required.

On June 10, the ISO released the revised *2020 Economic Study: Interregional Storage's Capability to Facilitate the Effective Use of Clean Energy Resources*. The study models the bi-directional use of existing and new tie lines to neighboring regions in order to optimize the use of renewable generation by leveraging transmission and interregional storage.

Johnson provided an overview of recent announcements from the ISO New England Board of Directors, including the following:

- In June, the board adopted a resolution on cost-consciousness and committed to providing information regarding its consideration of those cost impacts in future public communications. The resolution is a continuance of governance enhancements that the ISO adopted in response to the New England States Vision Statement issued by the New England States Committee on Electricity (NESCOE).
- The board of directors will hold an open meeting on November 1 in Providence, RI. Registration for this meeting will open shortly. The board has committed to holding an annual open meeting as part of recent governance reforms.

During the first heat wave of 2022, the region saw six straight days of above-average temperatures. New England's electric grid operated reliably during this heat wave. Behind-the-meter solar tempered mid-day demand for electricity throughout this period. Without it, system demand would have approached levels forecasted for weather much hotter and more humid than average.

In July, the Emerging Technologies Working Group (ETWG) held its kick-off meeting. The ETWG replaces the Demand Resource Working Group and Variable Resources Working Group, and will meet on a quarterly basis, with the next meeting scheduled for October 27.

Discussions of the Resource Capacity Accreditation in the Forward Capacity Market Key Project began at the June 7 Markets Committee meeting. The project proposes improvements to ISO-NE's resource capacity accreditation (RCA) process to further support a reliable clean energy transition by implementing methodologies that will more appropriately assess contributions to resource adequacy as the generator mix transforms.

The 2050 Transmission Study has been progressing with stakeholder engagement through the Planning Advisory Committee and NESCOE. The ISO is beginning to develop possible transmission solutions through this process. Johnson also highlighted other developments in transmission planning, including a notice of proposed rulemaking by FERC, recently approved tariff changes to allow for longer-term planning studies, and ongoing stakeholder discussions of storage as a transmission-only asset (SATOA).

In September, Connecticut, Massachusetts, Maine, New Hampshire, and Rhode Island released a request for information seeking comments on an initiative to integrate offshore wind and other resources in a cost-effective, reliable, and efficient manner—including opportunities to leverage federal funding for New England transmission investments. Johnson shared this update to ensure CLG attendees were aware of the opportunity to provide comments to the states by October 14.

Johnson ended the regional update highlighting a series of ongoing studies supporting the region's transition to a cleaner, more distributed grid. Specifically, Johnson gave an overview of the *Pathways Study*, providing a summary of the various "market pathways" analyzed and noting that the ISO will look to states for direction on next steps.

A brief question-and-answer period followed in which Johnson discussed oil-fired generation during the summer peak; ISO-NE study timelines; the ISO's interconnection queue; and demand response.

**3.3.3** *Keynote Address*

**Dawn Euer**, chair of the Rhode Island Senate Environment and Agriculture Committee, gave the keynote address. **Hank Webster**, member of the CLGCC as well as senior policy advocate and Rhode Island director of Acadia Center, introduced Euer and moderated the audience Q&A.

Euer began by recognizing that the Toronto Conference in 1988 sounded the alarm on climate action and many are still trying to address climate change today. Issues related to climate change remain urgent, she said, and a transition to a clean energy future is possible and critical. The senator expressed her personal interest in energy policy and environmental justice, and recognized the interconnectedness of climate and energy with consumer impact, particularly related to energy costs.

The senator highlighted her sponsorship of a number of energy and climate bills this past session, specifically noting the *2021 Act on Climate* legislation that creates mandatory, enforceable emissions reduction goals for the state and directs the development of plans due in 2022 and 2025. Euer highlighted 2022 legislation that directs procurements of offshore wind with consideration of environmental and environmental justice impacts; plans for energy storage; and sets a target of 100% renewable energy by 2033. She also mentioned her engagement in the national caucus for environmental legislators and her takeaways from this work.

Following her remarks, the senator fielded a number of questions from attendees. Topics included the ISO-NE interconnection queue; energy adequacy; the ISO governance structure; Rhode Island efforts related to energy efficiency; demand-side management and time-of-use rates in Rhode Island; the role of nuclear energy; and relevant current dockets at the Rhode Island Public Utilities Commission (RIPUC).

**3.3.4** *Panel Discussion*

Webster then moderated a panel of energy and community leaders discussing the price of electricity for this coming winter and the impacts of supply procurements and energy efficiency.

Panelists included Mahony; **Arah Schuur**, executive director of Northeast Energy Efficiency Partnerships (NEEP); **Jennifer Wood**, executive director of the Rhode Island Center for Justice; and **Kate Grant**, senior manager for regulatory affairs at Rhode Island Energy.

Mahony began the discussion with an overview of default service procurement practices in the New England states that allow retail choice. She highlighted that states have different procurement timelines, percentages of load procured, and duration of contracts. Mahony also explained that these different procurement processes have helped moderate price increases for some consumers. However, the region is already seeing

price increases due to disruptions in the global markets, causing concerns about consumer impacts in the coming months.

Grant discussed Rhode Island's approach for procuring supply for last-resort service customers (those without a third-party competitive supplier). She explained that 93% of residential customers are on last-resort service compared to 17% of large commercial entities. The approach for procuring supply is described in a procurement plan filed with regulators. Laddered and layered procurements at different times for different amounts are used to secure 90% of load for residential and commercial customers, with the intention to reduce the impacts of price volatility. For example, recently 55% of load was procured prior to the Russian invasion of Ukraine, which helped to secure lower prices. The remaining 10% of load is procured through the spot market, resulting in a more direct connection to real-time market prices. The costs of both procurements are averaged and turned into a fixed rate. This structure results in a change of rates twice per year for residential and commercial customers.

A filing before RIPUC proposes new rates for residential and commercial customers. Grant highlighted efforts the state is pursuing to help consumers manage the likely high costs of energy this winter.

Schuur introduced NEEP and provided an overview of carbon-emission-reduction targets in the Northeast. She explained that NEEP works on deep energy efficiency, advanced low-carbon technologies, and grid integration. In particular, energy efficiency is a primary strategy pursued by NEEP. Schuur highlighted that energy efficiency is the lowest-cost source of energy in New England and offers bill reductions to both participants and nonparticipants by lowering overall demand and moderating peak demand, which benefits everyone. Schuur also discussed the economic, workforce and health benefits that energy efficiency can provide, in addition to being cost-effective. Schuur concluded by reiterating that energy efficiency is central to an affordable, equitable, low-carbon, clean energy future.

Wood provided an overview of the Rhode Island Center for Justice, explaining that it is a nonprofit law center that coordinates with other grassroots organizations to assist and advocate for low-income consumers across various topic areas, including energy. She explained that increased energy costs can have intensified impacts on those the organization serves, as it is more challenging for low-income consumers to absorb rate increases. The Rhode Island Center for Justice monitors and engages in a number of dockets at RIPUC. Wood explained the correlation between energy and the housing challenges in the state, specifically noting that 60% to 70% of renters are severely rent-burdened. Wood additionally illustrated that much of the housing stock in the state is old, demonstrating opportunities for improvements through energy efficiency efforts.

A question-and-answer period followed the panelists' remarks. Panelists discussed actions that can be taken to accelerate energy efficiency benefits for this winter and beyond; the future of geothermal energy; details of the bill credit for Rhode Island consumers; specific measures that can be explored as the regional electricity system becomes winter-peaking; opportunities for natural gas demand response programs; the transmission and distribution cost component of electricity bills; and the role of energy efficiency in ISO-NE's markets.

### **3.3.5** *Closing remarks*

Mahony thanked the panelists, attendees, and ISO staff for their participation in the event. She encouraged attendees to fill out the online survey they would receive via email and encouraged attendees to take part in the next CLG meeting, scheduled for November 30 in Boston, Massachusetts. Finally, Mahony encouraged attendees to follow the CLG on Twitter.

## 3.4 November 30: Discussions with FERC Commissioner James Danly and ISO New England Board Chair Cheryl LaFleur

A recording of the meeting can be found on the CLG webpage.

**Meeting objective:** To hear from FERC Commissioner James Danly, invite a discussion with Cheryl LaFleur, chair of the ISO New England (ISO-NE) Board of Directors, receive a regional update from the ISO, and to elect CLGCC members for the next two-year term.

**3.4.1** *Opening Remarks*
**Elizabeth Mahony,** CLGCC chair and assistant attorney general in the Energy and Telecommunications Division of the Massachusetts Office of the Attorney General, offered welcoming remarks and provided background on the CLG. Mahony reminded attendees that there will be a biennial election for CLGCC members at the meeting. She encouraged attendees to ask questions of the speakers and to complete the survey that was sent to participants via email after the meeting.

**3.4.2** *Keynote*
FERC Commissioner **James Danly** gave the keynote address, providing an overview of the authority granted to FERC over the sale of interstate electricity, and noted specifically the responsibility to ensure rates are just and reasonable. Danly then moved on to provide an overview of the challenges he observes in the ISO-NE markets, including those related to resource adequacy and cost. Danly highlighted the specific difficulties related to lack of transmission and natural gas pipeline infrastructure development, particularly during a potential long stretch of cold weather.

Danly then provided his perspective on the history that brought the ISO New England wholesale energy markets to their current state. Some key components that he highlighted included the challenges in infrastructure siting in the region; a lack of energy storage; and the regional reliance on natural gas, which is subject to global energy market fluctuations. Danly explained that these factors have contributed to high energy prices and reliability challenges in the region.

Furthering the discussion of the New England regional markets, Danly discussed principles of competitive markets and regulated utilities in relation to public policy decisions of the states and the impact on electricity rates.

Following his remarks, Danly fielded a number of questions from attendees. Topics included public power utilities; how municipal and behind-the-meter renewable energy generation impact the grid; FERC's role in regard to the impacts of climate change; and the roles of FERC and the North American Electric Reliability Corporation in setting reliability standards.

**3.4.3** CLGCC Elections
Mahony provided an overview of the process for the seventh election of CLGCC members for the 2023–2024 term. Both in-person and virtual attendees were able to vote, through paper and online ballots, respectively. Mahony explained the process, including reference to the CLGCC bylaws, and instructions were shared with registrants via email prior to the meeting. Mahony recognized members of the CLGCC who are stepping down and not running for reelection, including Eric Annes and Dave Thompson of Connecticut. Mahony confirmed the list of nominees prior to opening the vote.

Mahony later announced the election results. The following twelve individuals were elected to serve a two-year term (2023-2024) on the CLGCC:

1. Sonja K. Birthisel (ME)
2. Bill Dornbos (CT)

3. Kendra Ford (NH)
4. August Fromuth (NH)
5. Donald Kreis (NH)
6. Andrew Landry (ME)
7. Elizabeth Mahony (MA)
8. Ian McDonald (CT)
9. Nathan G. Phillips (MA)
10. Jacob Powsner (VT)
11. Regine A. Spector (MA)
12. Hank Webster (RI)

In addition, Mahony thanked outgoing CLGCC members Robert Rio and Mary Smith for their dedicated service on the committee.

**3.4.4** *Discussion with ISO New England's Board Chair*
**Cheryl LaFleur**, chair of the ISO-NE board of directors, provided remarks prior to a Q&A discussion with attendees. She began by discussing ISO-NE's vision statement, adopted by the board, and explained that through this vision statement the board acknowledges the role of the ISO in the states' transition to clean energy, noting the need for both ongoing regional collaboration and the development of more resources. LaFleur highlighted the concept of the "four pillars," as presented in the REO, that are necessary for a successful clean energy transition. LaFleur mentioned the open meeting of the board, held on November 1, and recognized the public comments specifically urging continued action on climate. LaFleur highlighted the board's efforts around diversity, equity, and inclusion (DEI), including work to finalize a DEI mission for the board (The ISO board subsequently released the DEI statement in January 2023, the statement and other board materials are posted to the ISO board webpage).

LaFleur continued her remarks with a discussion of energy adequacy in the region, including in the forthcoming winter outlook (subsequently released on December 5). She explained the challenges for this winter related to liquefied natural gas (LNG) global market demand and supplies. LaFleur highlighted a number of the ISO's preparations for the winter. She noted that the ISO takes seriously the current high electricity rates, and expanded on the need for building additional resources and transmission infrastructure to help alleviate the region's reliance on natural gas. LaFleur also explained the cost-of-service agreement with Mystic Generating Station.

LaFleur concluded with an overview of the ISO's ongoing Operational Impacts of Extreme Weather Events project to assess future energy-security risks.

A question-and-answer period followed LaFleur's remarks. Topics included barriers to renewable energy generation; the future role of hydrogen; the minimum offer price rule (MOPR); energy efficiency and demand response; ISO-NE's role in climate change action; tidal energy; natural gas prices; and system reliability.

**3.4.5** *ISO New England Update*
**Anne George,** ISO-NE vice president of External Affairs and Corporate Communications, provided the ISO's regional update.

George began with a review of the mission and three critical roles of the ISO, and noted specifically that FERC regulates the ISO and that it is required to operate within a FERC-approved tariff. She also underscored that the ISO works closely with the New England states to ensure that the markets and operation of the grid take into account the public policy decisions of the states.

The ISO participated in FERC's October 6 Technical Conference on Transmission Planning and Cost Management which was convened to explore measures to ensure sufficient transparency into the cost-effectiveness of local and regional transmission management and design. The ISO submitted comments in advance of the conference.

Also in October, the ISO hosted an exercise designed to demonstrate the region's ability to anticipate, mitigate, and respond to an energy shortfall event. Representatives from the region's utilities joined ISO-NE operations and communications staff. Officials from all six New England states, as well as federal and regional agencies, observed the exercise.

The ISO recently released *Vision in Action: ISO New England's Strategic Plan,* which provides insight into how the ISO intends to fulfill its three critical roles during the clean energy transition. In addition to discussing the ISO's key goals and initiatives, the plan offers perspectives on trends shaping the power industry.

The ISO hosted a webinar on October 21 to discuss the findings of the *2021 Economic Study: Future Grid Reliability Study Phase 1*, which was released on July 29, 2022. A recording of the webinar is available on the ISO website. The study, requested by New England Power Pool (NEPOOL) stakeholders, evaluates how a 2040 grid could perform when the system has significantly more renewables and a greater amount of electrification of the transportation and heating sectors.

FERC issued its 2022–2023 Winter Assessment on October 25. The ISO will release its own 2022–2023 winter outlook in early December (subsequently released on December 5). George provided a preview of various scenarios analyzed by the ISO and their impact on system reliability. She also highlighted the actions the ISO takes to prepare for and respond to winter weather and changing system conditions.

The ISO hosted its annual winter generator readiness seminar on November 14 to give generators an outlook on the coming winter season. The ISO's system operations and market administration team reviewed changes to programs, procedures, and preparations that are in place to strengthen readiness for operations during cold weather. Additionally, on November 29, the ISO hosted its annual training for emergency contacts to preview the winter outlook and review the ISO's emergency procedures and communications processes.

The ISO is working with the Electric Power Research Institute (EPRI) to conduct a probabilistic energy security study for New England under extreme weather events. The ISO expects to continue discussion of this study in 2023.

Finally, George briefly discussed several recent filings the ISO has made to FERC, including: a compliance filing in response to FERC's order regarding the Inventoried Energy Program (IEP); a report to FERC on modernizing wholesale electricity market design; and the ISO's proposed 2023 operating and capital budgets, which were presented to the states for review and comment earlier in the year. She also noted that the ISO is separately proposing changes to the IEP to ensure it better reflects current market conditions. (Subsequently, FERC issued an order accepting the ISO's 2023 operating and capital budgets in December of 2022. In addition, on February 14, 2023, FERC issued an order accepting certain Financial Assurance and Billing Policy changes related to the IEP. FERC has not yet issued orders related to the ISO's IEP compliance filing.)

A brief question-and-answer period followed in which George discussed energy conservation measures for reliability; clean energy; and demand response.

**3.4.6** Closing *remarks*
Mahony thanked the speakers, attendees, and ISO staff for their participation in the event. In addition, Mahony encouraged attendees to fill out the online survey they would receive via email and encouraged attendees to take part in the 2023 CLG meetings, which are tentatively scheduled to take place on March 30th, June 8th, September 21st, and December 6th. Finally, Mahony encouraged attendees to follow the CLG on Twitter.

# Section 4
# Consumer Liaison Group Future Initiatives

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

In 2023, the CLGCC will devote the CLG's quarterly public meetings and other efforts throughout the year to make strides in four issue areas:

1) **Expand CLG Outreach**: We endeavor to create new information channels to reach ratepayers and enable their participation, including building relationships in different corners of New England. We will explore the best mechanisms for creating these channels and how to best reach and engage with communities.

2) **Foster ISO-NE Engagement**: We aim to forge more frequent direct communication between the CLG and the ISO-NE Board, and between the CLG and the region's statutorily designated ratepayer advocates. We will evaluate how the CLG can become a more effective channel for communicating the concerns and interests of ratepayers to the Board. We will explore opportunities for consumer advocates to report on their regional activities and to share observations about ISO New England and New England Power Pool ("NEPOOL") from a ratepayer perspective.

3) **Explore Best Practices for Grid Decarbonization**: We seek to build on what ISO-NE is already doing to support state decarbonization goals by learning more about what other ISOs and RTOs are doing around the country.

4) **Refine CLG Governance**: We will undertake analysis and deliberation about how the CLG can become an even more effective vehicle for ratepayer input into the work of ISO New England. We will amend the bylaws of the CLG to make it more reflective of the constituency it represents by, for example, clarifying existing ambiguities surrounding the biennial Coordinating Council election (presently scheduled to occur in late 2024). We will also consider how CLG resources can be best utilized to fulfill the mandate and goals of the organization.

To identify and select topics of interest to address at future CLG meetings for fully engaging consumers and consumer advocates, the members of the CLGCC meet at least quarterly, around the time of the CLG meetings. In particular, the CLGCC attempts to identify market or policy issues likely to have a direct impact on consumers. The objective is to provide information and perspectives on a topic that consumers and consumer advocates may not otherwise acquire in the course of their other professional responsibilities. When choosing a topic for discussion, the CLGCC relies on conversations with and recommendations from the CLG membership, as well as the participant survey conducted after each quarterly CLG meeting. The CLGCC encourages all interested participants to recommend potential topics, via either the participant survey or direct communication with the CLGCC.

Typically, the locations of the CLG quarterly meetings rotate among the New England states and Coordinating Committee members from the host state typically recommend people who might deliver the keynote address and others who might contribute to the panel discussion. The remaining CLGCC members provide additional assistance and approvals, when necessary. Before the CLG meeting, confirmed panelists participate in a planning call with the panel moderator (a CLGCC member) and ISO New England to plan for a robust, diverse, and well-organized discussion.

In 2023, CLG meetings will continue to be "hybrid," allowing for both in-person and remote participation. Locations for the 2023 meetings will include Portsmouth, NH (March 2023); Peabody, MA (June 2023); Vermont (September 2023) and Massachusetts (December 2023).

# Section 5
# ISO New England Activities and Initiatives

ISO New England (ISO-NE) provides educational and informational materials to the Consumer Liaison Group (CLG) throughout the year. This section highlights the major topics presented by ISO-NE at CLG meetings in 2022. 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.[13] More information about ISO's role in the energy industry can be found on the ISO website.

## 5.1 Transition to the Future Grid

ISO New England's vision is to use the tools under our authority to "harness the power of competition and advanced technologies to reliably plan and operate the grid as the region transitions to clean energy." As the New England states have been moving to reduce greenhouse gas emissions to nearly zero by 2050, by reducing carbon emissions from the electric, heating, and transportation sectors and increasing the number of renewable energy resources on the grid, the ISO has been working on the studies, designs and mechanisms that will support the states' policies and provide for a reliable future grid.

The future grid will require the support of four interconnected pillars: significant amounts of clean energy, sufficient balancing resources, energy adequacy and investment in additional transmission. This grid will also need to support increasing demand from the electrification of the heating and transportation sectors. Ensuring the reliability of a decarbonized grid will require adequate supplies of reserve energy, flexible resources, and new ways of assessing and mitigating risk. The ISO has been engaging with market participants and state entities to modernize our markets to ensure that clean technologies can fully compete and provide the reliability services needed for the future. In addition, we have been working with stakeholders to consider how balancing resources will be compensated for their reliability value in a future system where they are running less often, but are necessary to meet demand in certain periods.

This is particularly critical as older, fuel-secure resources seek to retire. While the ISO-NE Interconnection Request Queue is dominated by proposals for clean energy, planned large-scale renewable projects have been

[13] The monthly memos are posted to the ISO's CLG webpage at http://www.iso-ne.com/committees/industry-collaborations/consumer-liaison.

canceled or delayed as retirements of older, more traditional generation are happening—approximately 7,000 megawatts (MW) worth of oil, coal, and nuclear generation has retired over the past 20 years.[14]

To plan for the clean energy transition, ISO-NE continues to engage with market participants and state entities, including the New England States Committee on Electricity (NESCOE), to assess the future of the regional power system in light of state energy and environmental laws and to explore potential pathways forward to ensuring a reliable, efficient, and sustainable clean energy grid.

Work on the high-priority Future Grid Initiative Key Projects will continue throughout 2023.[15]

### **5.1.1** *Future Grid Reliability Study*

In July 2022, ISO-NE released Phase 1 of the *Future Grid Reliability Study* (FGRS).[16] A short summary is available on the *ISO Newswire*, and a summary document is also available.[17]

The study, requested by New England Power Pool (NEPOOL) stakeholders, identifies the operational and reliability challenges that may develop during the clean energy transition. The resulting analysis produced takeaways under three categories—energy adequacy, resource and demand flexibility, and resource mix diversity—that may help inform decision-making as the region moves toward a transformed grid.

The ISO worked with regional stakeholders to develop assumptions and scenarios that considered varying levels of decarbonization. Much of the study focuses on a "deep decarbonization" scenario derived from the *Massachusetts 2050 Deep Decarbonization Roadmap Study*, which projects heavy renewable penetration and high electrification loads.[18]

To explain FGRS findings to interested members of the public, ISO-NE hosted a free, virtual briefing on October 21, 2022. The audience was able to submit questions via chat during the session, which was recorded and posted online after the event.[19]

Following publication of the FGRS, in late 2022 and early 2023, the ISO issued three technical appendices to the report covering production cost analysis, ancillary services, and resource adequacy.[20]

---

[14] Interconnection Request Queue, webpage (February 8, 2023); https://www.iso-ne.com/system-planning/interconnection-service/interconnection-request-queue/.

[15] Information about this key project is posted to the ISO's Future Grid Initiative webpage; https://www.iso-ne.com/committees/key-projects/new-englands-future-grid-initiative-key-project/.

[16] *2021 Economic Study: Future Grid Reliability Study Phase 1* (July 29, 2022); https://www.iso-ne.com/static-assets/documents/2022/07/2021_economic_study_future_grid_reliability_study_phase_1_report.pdf

[17] *Future Grid Reliability Study Summary* (September 2022); https://www.iso-ne.com/static-assets/documents/2022/09/future_grid_reliability_study_summary_03.pdf; "ISO-NE issues report of study analyzing impacts of a transformed future grid," *ISO Newswire* (July 29, 2022); https://isonewswire.com/2022/07/29/iso-ne-issues-report-of-study-analyzing-impacts-of-a-transformed-future-grid/.

[18] Massachusetts Executive Office of Energy and Environmental Affairs, *Massachusetts 2050 Deep Decarbonization Roadmap Study* (December 2020); https://www.mass.gov/doc/ma-2050-decarbonization-roadmap/download.

[19] "Future Grid Reliability Study Public Meeting - 2022-10-21," webinar video (October 21, 2022); https://vimeo.com/763905079.

[20] *Future Grid Reliability Study Production Cost Technical Appendix* (December 5, 2022); https://www.iso-ne.com/static-assets/documents/2022/12/future_grid_reliablity_study_production_cost_technical_appendix_final_12_05_2022.pdf; *Future Grid Reliability Study Ancillary Services Technical Appendix* (December 30, 2022), https://www.iso-ne.com/static-assets/documents/2022/12/future_grid_reliability_study_ancillary_services_technical_appendix_12.30.22_final.pdf; *Future Grid Reliability Study Resource Adequacy Technical Appendix* (January 18, 2023); https://www.iso-ne.com/static-assets/documents/2023/01/fgrs_phase_i_resource_adequacy_technical_appendix_01_18_2023.pdf.

### **5.1.2** *Pathways to the Future Grid*

In early 2021, the ISO New England Board of Directors directed management to pursue an analysis to guide the region's discussion on the next generation of market design, aimed at meeting the states' decarbonization goals. The ISO retained Analysis Group, Inc., to conduct the study.

Analysis Group worked with ISO-NE staff, the New England states, and regional stakeholders to develop assumptions and scenarios before completing study-modeling work. The final report, *Pathways Study: Evaluation of Pathways to a Future Grid*, was published in April 2022.[21]

The report focused on four potential "paths":

- New England states continue **status quo** arrangements and sign long-term power purchase agreements with renewable energy developers
- A centralized **forward clean energy market (FCEM)** with a forward procurement that awards certificates for clean energy production
- A **net carbon price** is imposed on carbon emissions for each unit of carbon emitted and revenues are returned to consumers
- A **hybrid approach** that combines net carbon pricing applied to existing resources, and an FCEM for clean energy that only awards clean energy certificates to new resources

The *Pathways Study* provides significant data and analysis to evaluate the four approaches. The objective of the study was not to determine a preferred approach, but to examine key differences and tradeoffs between the pathways. The findings indicate all of the approaches can achieve substantial reductions in greenhouse gas emissions; however, each approach has different implications for economic and market outcomes. In addition, each approach differs in the degree of coordination needed among the six New England states and in the level of complexity in implementation.

On June 1, 2022, ISO-NE hosted a virtual briefing to present the *Pathways Study*. The briefing, held via WebEx, was free and open to the public. A video recording and presentation slides from the webinar are available on the ISO-NE website.[22]

ISO New England, the New England states, and NEPOOL will continue conversations throughout 2023 about the pros and cons of the four pathways and a possible consensus on a preferred path, determining jurisdiction and governance frameworks for the path, and identifying details needed to develop the market design.

### **5.1.3** *Transmission Planning for the Clean Energy Transition*

As part of the *Future Grid Reliability Study*, the ISO identified areas for improvement in current frameworks and software tools to perform economic analyses. The *Transmission Planning for the Clean Energy Transition*

[21] Analysis Group, Inc., *Pathways Study: Evaluation of Pathways to a Future Grid* (April 28, 2022); https://www.iso-ne.com/static-assets/documents/2022/04/schatzki-et-al-pathways-final.pdf

[22] "Pathways Public Meeting 2022-06-01," webinar video (Posted June 8, 2022); https://vimeo.com/718052312; "Pathways Study: Evaluation of Pathways to a Future Grid—Regional Update and Study Overview," presentation, ISO New England, Holyoke, MA (June 1, 2023); https://www.iso-ne.com/static-assets/documents/2022/06/6_1_22_pathways_combined_presentation.pdf.

pilot study tested a variety of transmission planning assumptions for 2030, exploring the question: What new concerns and phenomena need to be analyzed?[23]

Historically, transmission planning reliability studies have concentrated on two conditions—peak load and minimum load. However, the increase in variable energy resources means these two conditions no longer cover the full spectrum of system conditions and possible reliability concerns. The results of the pilot study were intended to provide additional information to stakeholders on the degree of system upgrades that may be required due to new critical system conditions, and to explore the data requirements and modeling choices required to effectively evaluate the transmission system's performance in a highly inverter-based, variable-energy, and distributed-energy future.

The ISO began to incorporate the study's findings into reliability studies in 2022.

### **5.1.4** *Operational Impacts of Extreme Weather and Contingency Events*

In the past two years, four out of seven independent system operations and regional transmission organizations in the US have resorted to controlled outages because of extreme weather resulting in limited energy supplies. In that same period, through press outreach, detailed studies, and forward-looking reports, ISO New England has made significant efforts to raise public awareness about the potential for a similar situation to occur here. As the entity responsible for operating the region's power system, the ISO is committed to raising concerns when they exist, and working to mitigate them where its role allows.[24]

In this vein, the ISO is collaborating with the Electric Power Research Institute (EPRI), an independent, nonprofit research and development organization, to conduct a probabilistic study to assess energy security risks over the next decade under different weather scenarios. The study will identify the scenarios that pose the greatest risk to the future power system and study them to account for different variables, such as renewable energy output, consumer demand for electricity, and generator availability.

The ISO will use its enhanced 21-day energy assessment tool to assess the power system impacts of these scenarios. This effort, which began in earnest in late 2021, is expected to conclude in 2023.[25]

### **5.1.5** *Emerging Technologies Working Group*

On July 21, 2022, the Emerging Technologies Working Group (ETWG) held its inaugural meeting.[26] The new stakeholder working group will serve as a forum to exchange information and discuss technical issues related to emerging technologies' integration into New England's bulk power system and participation in the region's wholesale electricity markets.

---

[23] *Transmission Planning for the Clean Energy Transition – Pilot Study Final Report* (January 2022); https://www.iso-ne.com/static-assets/documents/2022/01/final_transmission_planning_for_clean_enery_transitiont_pilot_study_report.pdf.

[24] "Vision in Action" – ISO New England's Strategic Plan (October 2022); https://www.iso-ne.com/static-assets/documents/2022/10/2022-strategic-plan-vision-in-action.pdf

[25] "ISO-NE launches effort to quantify energy supply risks associated with extreme weather events," *ISO Newswire* (March, 14 2022); https://isonewswire.com/2022/03/14/iso-ne-launches-effort-to-quantify-energy-supply-risks-associated-with-extreme-weather-events/.

[26] *Emerging Technologies Working Group*, webpage, (January 24, 2023), https://www.iso-ne.com/committees/markets/emerging-technologies/; ISO New England, "ISO-NE and NEPOOL launch Emerging Technologies Working Group," *ISO Newswire* (July 7, 2022); https://isonewswire.com/2022/07/07/iso-ne-and-nepool-launch-emerging-technologies-working-group/.

The ETWG will meet quarterly, reporting to the NEPOOL Markets (MC), Reliability (RC), and Transmission (TC) committees. Topics for review are referred by the MC, RC, or TC, or relevant discussions may be suggested by stakeholders and the ISO.

The ETWG replaces the Demand Resources Working Group (DRWG) and Variable Resources Working Group (VRWG). The new working group broadens the scope of the VRWG's charter beyond variable resources (such as wind, hydro, and solar) to include additional current and future technologies. Examples of emerging technologies include inverter-based resources, distributed energy resources, or other new technologies that may materialize over time as the industry evolves.

Over the coming years, the ETWG will provide a forum to discuss and address the many complex issues associated with the implementation of new rules and procedures that arise from Federal Energy Regulatory Commission (FERC) Order No. 2222, which directs regional transmission organizations like ISO-NE to reduce barriers to wholesale market participation for distributed energy resources. (On March 1, FERC issued an order accepting in part and rejecting in part the ISO's Order 2222 proposal to further integrate DERs and DER Aggregations into the regional markets. The ISO will be making a series of filings to comply with the order.)

## 5.2 Winter Operations and Energy Adequacy

For the past two decades, ISO New England has raised concerns about energy adequacy and fuel supply limitations during periods of extreme cold weather. Many actions have been taken over the years by the New England states, FERC, and the ISO in attempts to address our region's energy adequacy risks. Nevertheless, the New England region remains vulnerable to fuel supply shortages during prolonged periods of very cold weather. These challenges will continue until a robust regional solution is determined to address the vulnerable energy supply chain.[27]

Resolving the region's energy adequacy and fuel supply issues are also essential to supporting a reliable clean energy transition. The ISO has identified energy adequacy as one of the four essential pillars to developing and maintaining a reliable, clean, decarbonized grid. Energy adequacy requires developing a dependable energy supply chain and/or robust energy reserve to manage through extended periods of severe weather or energy supply constraints, when the region will need to depend on its balancing resources to keep supply and demand in equilibrium.

In 2022, the ISO provided the CLG with updates regarding its efforts to address the region's energy adequacy issue in the short, medium, and long-term, key points from these efforts are discussed below.

### **5.2.1** *ISO New England Hosts Exercise Simulating Extreme Cold Weather and Energy Shortages*

On October 12, 2022, ISO New England and the region's electric utilities held a tabletop exercise in Westborough, MA, to demonstrate how they would work in close coordination to navigate potential winter energy shortages.[28]

Participating in the exercise were representatives from Central Maine Power, Eversource, National Grid, Rhode Island Energy, United Illuminating, Unitil, and VELCO. Officials from all six New England states, as well as federal and regional agencies, observed the exercise.

---

[27] *Timeline: Historical Efforts to Address Fuel Security Issues in New England*, webpage (March 17, 2023); https://www.iso-ne.com/about/what-we-do/in-depth/efforts-to-address-fuel-security-in-new-england

[28] "Exercise simulating extreme cold weather and energy shortages helps the ISO, region's utilities prepare," *ISO Newswire* (October 19, 2022); https://isonewswire.com/2022/10/19/exercise-simulating-extreme-cold-weather-and-energy-shortages-helps-the-iso-regions-utilities-prepare/.

The exercise brought together both operations and communications personnel from the ISO and the regional utilities to explore a scenario similar to the winter of 2017–2018, when two weeks of extreme cold strained the supply of fuels used to generate New England's electricity.[29] During the exercise, representatives of the ISO, transmission owners, and local distribution companies described steps they would take to:

- Forecast a possible energy shortfall using the ISO's 21-Day Energy Assessment Forecast and Report
- Mitigate the impact of the shortfall by urging generators to stock up on stored fuels, making public appeals for energy conservation, and other measures
- Protect against widespread and long-lasting damage to the regional electric grid by conducting controlled outages if other efforts are unsuccessful
- Keep the public, government, and energy industry informed at each stage of the emergency

Observers were able to ask questions throughout the exercise, and each participating organization was able to learn valuable lessons about how to improve processes and procedures heading into winter.

### **5.2.2** *Winter 2022–2023 Outlook*

For the past two decades, ISO-NE has raised concerns about fuel supply issues and their impact on electricity supply during periods of extremely cold weather. Constraints on the natural gas pipeline system limit the availability of fuel for natural-gas-fired power plants, as heating customers are served first through firm service contracts. While the region has tried to address the need to ensure regional energy adequacy through actions by the states, FERC, or the ISO, most of these major steps to solve this risk have been unsuccessful. In 2022, the ISO launched a webpage detailing the history of efforts to address fuel security issues in New England.[30]

Further exacerbating these regional energy risks is the retirement, or announced retirement, of roughly 7,000 MW of resources fueled by liquefied natural gas, coal, oil, or nuclear energy, which have traditionally operated when natural gas is unavailable or is priced higher than alternative fuels.

While the ISO has developed a significant number of tools and procedures to better assess and respond to these energy security issues, a severe, prolonged cold snap could necessitate emergency actions if power-producing resources lack access to the fuel they need to operate. To enhance situational awareness entering winter, the ISO begins planning months in advance.

The ISO works with generators to understand fuel procurement plans, while offering pre-winter training to discuss market and operational changes. The ISO also consults seasonal weather forecasts published by the National Oceanic and Atmospheric Administration. NOAA's 2022–2023 winter forecast projected above-average temperatures in New England, though a warmer-than-average season does not eliminate the threat of prolonged stretches of cold weather. Climate change is making weather more volatile and harder to predict.

---

[29] "Winter 2017/2018 recap: Historic cold snap reinforces findings in Operational Fuel-Security Analysis," *ISO Newswire* (April 25, 2018); https://isonewswire.com/2018/04/25/winter-2017-2018-recap-historic-cold-snap-reinforces-findings-in-operational-fuel-security-analysis/.

[30] *Timeline: Historical Efforts to Address Fuel Security Issues in New England*, webpage (January 17, 2022); https://www.iso-ne.com/about/what-we-do/in-depth/efforts-to-address-fuel-security-in-new-england.

ISO-NE also holds a pre-winter briefing with the region's utilities and government officials to discuss expectations for the season and test emergency communications procedures.[31]

The ISO's 2022–2023 winter outlook anticipated that New England would have adequate electricity supplies under mild and moderate weather conditions. Prolonged periods of very cold weather continue to pose reliability risks to the region, but ISO-NE will use procedures and plans, including a rolling three-week energy supply forecast, with the goal of mitigating these conditions should they materialize.[32]

The ISO's 2022–2023 winter outlook anticipated:

- Peak demand of 20,009 MW under typical weather
- Peak demand of 20,695 MW under below-average temperatures
- 34,103 MW of total resources would be available to meet demand

New England's all-time winter peak is 22,818 MW, set on January 15, 2004.

The ISO did not anticipate calling for controlled outages, and would resort to this drastic step only as a last resort to prevent a collapse of the power system. In the event controlled power outages are needed, the ISO would coordinate with local utilities, which would then take the necessary actions to reduce electricity demand in their areas.[33]

The ISO works closely with the states and regional utilities to plan and prepare for operational conditions. We post information on the seasonal outlook twice each year, for both summer and winter.[34]

### **5.2.3** *Resource Capacity Accreditation in the Forward Capacity Market*

In addition to other key projects, the ISO is undertaking a major effort to implement methodologies that will more accurately reflect resources' contributions to resource adequacy. This effort, The Resource Capacity Accreditation project, will further support a reliable clean energy transition.

Throughout 2022, ISO New England and stakeholders discussed concepts underpinning the Resource Capacity Accreditation (RCA) effort including Effective Load Carrying Capability (ELCC); Marginal Reliability Impact (MRI); Resource Adequacy Assessment (RAA); gas resource accreditation; firm and non-firm capacity; and substitutability.

The ISO has made a commitment to FERC to file proposed improvements in time for the 19th Forward Capacity Auction (FCA 19), which is scheduled to take place in February 2025 and corresponds with the capacity commitment period from June 1, 2028, to May 31, 2029. The ISO plans to file with FERC by Q4 2023.

---

[31] *ISO New England Overview of Emergency Procedures and Communications Process*, presentation (November 29, 2022); https://www.iso-ne.com/static-assets/documents/2022/11/webex_2022_pre_winter_op4_briefing_11_29_final_noNPCC.pdf.

[32] *Seasonal System Outlook*, webpage (February 6, 2023); https://www.iso-ne.com/markets-operations/system-forecast-status/seasonal-system-outlook/.

[33] "New England's Power Grid Prepared for Winter," news release (December 5, 2022); https://www.iso-ne.com/static-assets/documents/2022/12/20221205_pr_winteroutlook_final.pdf

[34] *Seasonal System Outlook*, webpage (February 6, 2023); https://www.iso-ne.com/markets-operations/system-forecast-status/seasonal-system-outlook/

**5.2.4** *Day-Ahead Ancillary Service Initiative*

The ISO initiated the Day-Ahead Ancillary Services Initiative (DASI) in April 2022. DASI seeks to develop a market design for procuring and transparently pricing the ancillary service capabilities needed for a reliable next-day operating plan as the generation fleet evolves.

DASI includes procuring a new day-ahead ancillary service, the Energy Imbalance Reserve (EIR), to cover the "gap" when the day-ahead market's physical energy supply awards are below the ISO's forecast of real-time load. In addition, DASI will procure day-ahead (10- and 30-minute) fast-start and fast-ramping capabilities, known as Flexible Response Services (FRS), in amounts consistent with applicable reliability standards.

Together, the EIR and FRS will ensure that the day-ahead market schedules physical supply resources that will (in aggregate) provide a reliable next-day operating plan, ensure the system is prepared to recover from sudden source-loss contingencies, and respond quickly to fluctuations in net load during the operating day.[35]

The ISO anticipates a robust stakeholder process extending through 2023, with a final proposal, including appropriate market mitigation measures, prepared by Q4 2023.

**5.2.5** *ISO New England Participates in FERC's New England Winter Gas-Electric Forum*

On September 8, 2022, ISO-NE participated in the New England Winter Gas-Electric Forum convened by FERC in Burlington, VT, to discuss the electricity and natural gas challenges facing the region.[36] ISO-NE President and CEO Gordon van Welie; Stephen George, director of Operational Performance, Training and Integration; and Mike Knowland, manager, Forecast and Scheduling, each participated in panels during the forum.

In addition, prior to the forum, the ISO joined several of New England's gas and electric distribution companies in issuing a draft problem statement on liquefied natural gas (LNG) and energy adequacy.[37] The statement emphasizes the importance of the Everett LNG Facility to maintain reliable electricity and natural gas service in the near term, the need to develop and execute a plan to reduce dependence on imported LNG in the medium to long term, and the importance of energy adequacy to a clean and reliable energy future. The statement calls on the region to undertake a comprehensive study of the energy adequacy problem and potential solutions.

Further, van Welie wrote a letter to US Department of Energy (DOE) Secretary Jennifer Granholm to underscore the importance of maintaining the region's supply of LNG as it transitions to clean energy sources.[38] The letter expresses support for and seeks the DOE's assistance in advancing the idea of the six New England states to develop a regional energy reserve, stating that such a reserve could help ensure energy

---

[35] *Day-Ahead Ancillary Services: Project Scope, Status, and Timeline*, webpage (April 6, 2022); https://www.iso-ne.com/static-assets/documents/2022/04/a05_mc_2022-04-12_day_ahead_ancillary_services_memo.pdf

[36] FERC, New England Winter Gas-Electric Forum (September 8, 2022); https://www.ferc.gov/news-events/events/new-england-winter-gas-electric-forum-09082022.

[37] *Draft ISO/EDC/LDC Problem Statement and Call to Action on LNG and Energy Adequacy* (August 28, 2022); https://isonewswire.com/wp-content/uploads/2022/08/DraftFERCTechConferenceEverettandEnergyAdequacyProblemStatement-8.29-final.pdf.

[38] Letter to U.S. Department of Energy Secretary Jennifer Granholm (August 29, 2022); https://www.iso-ne.com/static-assets/documents/2022/08/isone_energy_security_letter_to_us_doe_and_statement_for_ferc_winter_forum_2022_08_29.pdf.

adequacy during extended periods of severe weather or energy supply constraints.[39] (On February 23, 2023, FERC announced that on June 20, 2023 it would hold a second New England Winter Gas-Electric Forum[40])

**5.2.6** *FERC Approves Minimum Offer Price Rule Transition Proposal*
On March 31, 2022, ISO-NE filed a proposal with FERC to remove the Minimum Offer Price Rule (MOPR) from the Forward Capacity Market (FCM). The ISO's proposal allows for a phase out of the MOPR over a three-year period, with an immediate exemption to the rule for a significant amount of renewable resources during the transition.

The MOPR will be removed completely for FCA 19, scheduled for 2025. Once the MOPR is removed, the ISO has proposed a new methodology to measure buyer-side market power, an undesirable outcome the MOPR was designed to avoid

The Renewable Technology Resource (RTR) exemption provides a clear path for projects that are ready to enter the FCM over the next two years. The exemption is for 300 MW of qualified capacity in FCA 17 and 400 MW of qualified capacity in FCA 18. Over the two auction periods, this is the equivalent of up to 2,000 MW of renewable nameplate capacity.[41] This new methodology will maintain market competitiveness while allowing entry of state-sponsored resources. The RTR exemption is in addition to other avenues for renewable resources to enter the market, either through the substitution auction process or through clearing in the initial auction. (Note FCA results if available)

While MOPR removal is not tied to the completion of other projects, the transition was designed to allow the ISO and stakeholders to focus on completing the RCA and DASI projects (described above), with the goal of having those projects finished and in place for FCA 19.[42]

FERC issued an order accepting the ISO's MOPR transition proposal on May 27, 2022.[43]

## 5.3 Regional System Planning

One of the ISO's critical roles is to conduct analysis on the future demand for electricity so the region and the marketplace will be informed about the potential need for additional energy infrastructure. This information drives decisions on transmission needs, as well as providing signals in the wholesale markets for development of supply and demand resources. Through the planning process, the ISO does not have the authority to select specific supply resources for development or retirement. Those decisions are made by resource owners and developers through the wholesale markets. Key aspects of the ISO's planning process in

[39] "ISO-NE's CEO stresses energy adequacy in letter to US energy secretary," *ISO Newswire* (September 1, 2022); https://isonewswire.com/2022/09/01/iso-nes-ceo-stresses-energy-adequacy-in-letter-to-us-energy-secretary/.

[40] FERC, New England Winter Gas-Electric Forum; Notice of Second New England Winter Gas-Electric Forum (February 23, 2023); https://www.federalregister.gov/documents/2023/02/23/2023-03734/new-england-winter-gas-electric-forum-notice-of-second-new-england-winter-gas-electric-forum

[41] The ISO has previously estimated various intermittent power resource technologies' annualized qualified capacity values (under current rules), as a share of their nominal (installed) capacity, that range from 19 percent (for PV solar) to 46 percent (for offshore wind). Using an approximate value of 35 percent solely for present purposes of illustration, 700 MW of qualified capacity would correspond to 2,000 MW of installed capacity (i.e., 700 MW = 35 percent × 2,000 MW).

[42] "Region's clean energy transition continues as ISO-NE files proposal to eliminate MOPR," *ISO Newswire* (March 31, 2022); https://isonewswire.com/2022/03/31/regions-clean-energy-transition-continues-as-iso-ne-files-proposal-to-eliminate-the-mopr/.

[43] FERC, *Order Accepting Tariff Revisions,* Docket No. ER22-1528-000 (May 27, 2022); https://www.iso-ne.com/static-assets/documents/2022/05/er22-1528-000_5-27-2022_order_accept_mopr_removal.pdf.

2022 included developing forecasts of energy use, energy efficiency and distribution generation development, and transportation and heating electrification.

### **5.3.1** *Energy Efficiency and Distributed Generation Forecasts*

Since 2012, the ISO has developed an energy efficiency (EE) forecast to equip system planners and regional stakeholders with information about the long-term impacts of EE investments on the region's peak electricity use and overall demand for energy. Energy efficiency has been a key topic of interest to consumers and consumer advocates since the inception of the CLG.

Through the FCM, the ISO identifies EE resources that will be developed in the near term (i.e., approximately three to four years) if these resources take on a commitment through the capacity auction. The ISO develops a 10-year forecast to identify EE resources it anticipates will be developed beyond the FCM timeframe, which is input into long-term transmission and economic planning studies.

Developing the forecast is a collaborative process led by the ISO with input from the Energy Efficiency Forecast Working Group (EEFWG).[44] The process incorporates input from representatives of state-sponsored EE programs and state regulatory agencies. State policies are the major drivers of EE investments, and thus the forecast model is built using state policy information on EE statutory targets, funding levels, and economic trends, as well as FCM inputs such as clearing prices.

The most recent EE forecast was released on May 2, 2022, with the next one scheduled for release in May 2023.[45] The ISO forecasts that by 2031 the region will have approximately 3,082 MW of EE resources and will experience annual load reductions of 16,468 gigawatt-hours (GWh) from EE resources.

Since 2013, the ISO has led a regional Distributed Generation Forecast Working Group (DGFWG) to collect data on distributed generation (DG) policies and implementation and to forecast long-term incremental DG growth in New England.[46] For the purposes of this forecast, DG resources are usually 5 MW or less in nameplate capacity and are interconnected to the distribution system. Photovoltaic (PV) resources represent the largest share of DG resources throughout New England.

The *Final 2022 PV Forecast* shows steady growth, with approximately 11,520 MW (AC nameplate rating) of solar power resources to be installed by 2031 throughout New England.[47] The forecast also reported that about 4,767 MW of PV had been installed throughout New England through the end of 2021.

---

[44] More information about the EEFWG is available at the ISO's "Energy-Efficiency Forecast Working Group" webpage (2022); https://www.iso-ne.com/committees/planning/energy-efficiency-forecast/.

[45] *Final 2022 Energy-Efficiency Forecast for 2022-2031*, presentation (May 2, 2022); https://www.iso-ne.com/static-assets/documents/2022/04/eef2022_final_fcst.pdf.

[46] Information about the DGFWG is available at the ISO's "Distributed Generation Forecast Working Group," webpage (2022); https://www.iso-ne.com/committees/planning/distributed-generation/. Information about the latest DG forecast is available at https://www.iso-ne.com/system-planning/system-forecasting/distributed-generation-forecast/.

[47] *Final 2022 Solar PV Forecast* (April 28, 2022); https://www.iso-ne.com/static-assets/documents/2022/04/final_2022_pv_forecast.pdf.

**Table 5-1**
**Final 2022 PV Forecast (MW)**

| States | Cumulative Total MW (AC nameplate rating) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Thru 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
| CT | 809.0 | 922.0 | 1,034.0 | 1,186.0 | 1,291.0 | 1,396.0 | 1,501.0 | 1,606.0 | 1,705.0 | 1,793.0 | 1,880.0 |
| MA | 2953.0 | 3,402.0 | 3,827.0 | 4,229.0 | 4,630.0 | 5,032.0 | 5,362.0 | 5,661.0 | 5,995.0 | 6,244.0 | 6,527.0 |
| ME | 125.0 | 233.0 | 458.0 | 670.0 | 892.0 | 1,114.0 | 1,239.0 | 1,160.0 | 1,190.0 | 1,216.0 | 1,241.0 |
| NH | 157.0 | 187.0 | 215.0 | 242.0 | 269.0 | 296.0 | 323.0 | 349.0 | 376.0 | 403.0 | 430.0 |
| RI | 288.0 | 341.0 | 390.0 | 437.0 | 483.0 | 530.0 | 577.0 | 623.0 | 670.0 | 709.0 | 748.0 |
| VT | 434.0 | 463.0 | 490.0 | 515.0 | 541.0 | 566.0 | 592.0 | 617.0 | 643.0 | 668.0 | 694.0 |
| **Regional—Cumulative (MW)** | **4,767.0** | **5,548.0** | **6,414.0** | **7,279.0** | **8.106.0** | **8,934.0** | **9,493.0** | **10,022.0** | **10,539.0** | **11,033.0** | **11,520.0** |

The ISO develops the EE and PV forecasts with input from stakeholders. The forecasts are published in the ISO's annual *Forecast Report of Capacity, Energy, Loads and Transmission* (CELT Report).[48]

### 5.3.2 *Transportation and Heating Electrification Forecasts*

Since 2020, the ISO has forecasted the impacts of heating and transportation electrification on state and regional electricity use. The forecasts are included in the annual CELT Report.

The electrification of the heating and transportation sectors is expected to play a pivotal role in meeting the New England states' greenhouse gas reduction mandates and goals over the coming decades. To help ensure the power grid is prepared for the decarbonized future, ISO-NE expanded its 10-year planning forecasts to capture growth in air-source heat pumps and a broader variety of electric vehicles, and to quantify resulting increases in grid electricity demand. In April 2022, the ISO published its 10-year heating electrification forecast and transportation electrification forecast.[49]

The ISO forecasted that by 2031, more than 1.35 million air-source heat pumps would be installed in New England, increasing annual energy consumption by 3,056 MW and contributing up to 1,899 MW to winter peak load. For the 2022 transportation electrification forecast, the ISO has expanded the scope of vehicles considered to include four classes of fleet vehicles: light-duty fleet, medium-duty delivery, school buses, and transit buses. Total fleet electric vehicle adoption is estimated to reach over 57,000 by 2031. Light-duty electric vehicles, including cars and light-duty trucks, were estimated to total over 1.5 million regionwide. The ISO forecasted that in 2031, overall transportation electrification will increase annual energy consumption by 5,934 GWh and contribute 1,096 MW to summer peak and 1,535 MW to the winter peak.

The ISO recognizes that heating and transportation electrification are relatively new trends. Therefore, as needed, the ISO will modify its forecasting methodologies as state policies and initiatives are further developed and additional data becomes available. For example, the ISO is exploring including other heating

[48] The ISO's CELT Reports and related materials are available at https://www.iso-ne.com/system-planning/system-plans-studies/celt/.

[49] *Final 2022 Heating Electrification Forecast* (April 28, 2022), https://www.iso-ne.com/static-assets/documents/2022/04/final_2022_heat_elec_forecast.pdf; *Final 2022 Transportation Electrification Forecast* (April 28, 2022), https://www.iso-ne.com/static-assets/documents/2022/04/final_2022_transp_elec_forecast.pdf.

electrification technologies, such as ground-source heat pumps and heat pump water heaters, in its 2023 forecasts.

### **5.3.3** *2050 Transmission Study*

One of ISO New England's responsibilities as a regional transmission organization is ensuring that the power system continues to operate reliably as conditions on the grid change. Ensuring continued reliability of the transmission system requires continuous review and planning.

In response to recommendations outlined by NESCOE, the ISO is conducting a high-level transmission study for the years 2035, 2040, and 2050.[50] The study's goal is to inform the region about the amount, type, and estimated cost of transmission infrastructure that would be necessary to cost-effectively incorporate clean energy and distributed energy resources and meet state energy policy requirements and goals, including economy-wide decarbonization.

The ISO began stakeholder discussions of the objectives, preliminary assumptions, and methodology for the *2050 Transmission Study* in November 2021.[51] Further, through the fourth quarter of 2021, the ISO consulted with NESCOE to consider feedback received at the Planning Advisory Committee (PAC) and finalized the study's scope of work.

In March 2022, the ISO presented the preliminary results of its thermal steady-state analysis to the PAC.[52] The preliminary results included analysis of the length and number of pool transmission facilities (PTF) lines that the model shows would be overloaded. The preliminary results indicated that approximately half of the total PTF line miles in New England would be overloaded in 2050. Projected overloads occurred in all New England states, with the vast majority of overloads occurring during the winter evening peak. These findings indicate that significant new transmission could be needed to reliably serve load under the assumptions analyzed in the study.

At the PAC meeting in April 2022, the ISO presented the results of sensitivity analyses intended to determine whether the severity and number of overloaded transmission lines could be reduced for the 2050 winter evening peak and the 2050 summer daytime peak.[53] Additionally, the ISO presented an approach for solution development and requested feedback, including from NESCOE, before proceeding with the proposed approach. Following this presentation, NESCOE requested an evaluation of the estimated duration of overloads. During the July 2022 PAC meeting, the ISO presented the approximate duration of overloads, as well as a summary of additional updated study results.[54]

---

[50] New England State Committee on Electricity, *New England States Vision Statement* (October 16, 2020), https://nescoe.com/resource-center/vision-stmt-oct2020/.

[51] "2050 Transmission Study: Preliminary Assumptions and Methodology for the 2050 Transmission Study Scope of Work—Revision 2," presentation (November 17, 2021); https://www.iso-ne.com/static-assets/documents/2021/12/draft_2050_transmission_planning_study_scope_of_work_for_pac_rev2_clean.pdf.

[52] "2050 Transmission Study: Preliminary N-1 and N-1-1 Thermal Results," presentation (March 16, 2022); https://www.iso-ne.com/static-assets/documents/2022/03/a4_2050_transmission_study_preliminary_n_1_and_n_1_1_thermal_results_presentation.pdf.

[53] "2050 Transmission Study: Sensitivity Results and Solution Development Plans," presentation (April 28, 2022); https://www.iso-ne.com/static-assets/documents/2022/05/a13_2050_transmission_study_sensitivity_results_and_solution_development_plans.pdf.

[54] "2050 Transmission Study – Updated Results and Approximate Duration of Overloads," presentation (July 20, 2022); https://www.iso-ne.com/static-assets/documents/2022/07/a7_2050_transmission_study_updated_results_and_approximate_frequency_of_overloads_1.pdf.

In December 2022, the ISO provided the PAC with an update on solution development.[55] This presentation included an overview of key lessons learned to date from the study and a progress update on transmission solution development. Additionally, the presentation noted that a consultant has begun work to develop cost estimates for more complex and challenging solution components. The solutions development work is expected to continue throughout 2023.

## 5.4 Board Announcements, Governance Enhancements, and Public Meeting

The ISO elects its board of directors through a joint nominating process that involves representatives from the board, NEPOOL, and the New England Conference of Public Utilities Commissioners (NECPUC).

The members of the board of directors have expertise in financial markets, law, electric power operations, and regulation, among other disciplines. Board members are subject to the company's code of conduct, which includes a non-affiliation provision designed to maintain the independence of the company from participants in New England's wholesale markets and their affiliates.[56]

### **5.4.1** *ISO New England Elects 2022 Board Slate*

In May 2022, the ISO announced the election of its 2022 board of directors slate. Chair Cheryl LaFleur was reelected to a second term, along with new director Melvin G. Williams Jr. LaFleur and Williams' three-year terms began on October 1, 2022. Barney S. Rush and Vickie A. VanZandt, members of the board since 2013 and 2011, respectively, retired prior to October 1.[57]

Williams is a former US Navy nuclear-trained submariner. As a presidential appointee in the Obama administration, he served as the associate deputy secretary of energy, responsible for the day-to-day management and operational excellence at the US Department of Energy. Williams currently serves as associate dean of engineering at the Catholic University of America.

LaFleur joined the board in 2019 and was named chair in 2021. Previously, LaFleur was one of the longest-serving FERC commissioners, serving from 2010 to 2019 and chairing the commission for approximately two years during that time. Before her FERC tenure, LaFleur served as chief operating officer and acting CEO at National Grid USA. LaFleur is a nonresident fellow with the Columbia University Center on Global Energy Policy.

### **5.4.2** *ISO Board Adopts Resolution on Cost-Consciousness*

On June 22, 2022, the board adopted a resolution on cost-consciousness.[58] In the resolution, the board affirmed its practice of considering the cost impacts of significant wholesale market, transmission planning, and operations initiatives to New England's consumers.

The resolution is a continuation of governance enhancements that the ISO adopted in response to NESCOE's 2020 *New England States Vision Statement*.[59] The board is pursuing targeted governance and communications enhancements, consistent with its independence and oversight role and with the need to focus on

[55] "2050 Transmission Study – Solution Development Update," presentation (December 13, 2022); https://www.iso-ne.com/static-assets/documents/2022/12/a04_2050_transmission_study_soultion_development_update.pdf.

[56] "Board of Directors," webpage (February 21, 2023), https://www.iso-ne.com/about/corporate-governance/board/.

[57] "ISO New England elects 2022 board slate," *ISO Newswire* (May 19, 2022), https://isonewswire.com/2022/05/19/iso-new-england-elects-2022-board-slate/.

[58] *Resolution on Cost-Consciousness* (June 22, 2022), https://www.iso-ne.com/static-assets/documents/2022/06/2022-06-22_bod_board_resolution_on_cost_consciousness_june_2022.pdf.

[59] *ISO New England Governance Enhancements – Update to May 20, 2022 Memo* (July 6, 2022), https://www.iso-ne.com/static-assets/documents/2022/05/board_memo_to_nescoe_governance_enhancements_052022.pdf.

transmission and market priorities.[60] Enhancements include more direct communication with the states, improving communication of technical information to nontechnical audiences, and continuing to serve as a resource to the states on matters related to the regional power system.

### **5.4.3** *ISO Board Hosts First Annual Open Meeting*

In 2021, the board committed to conducting one open meeting annually to provide an opportunity for the public to listen to and observe board and management discussions. These meetings will be in addition to current meetings the board holds with the states and NEPOOL sectors.

On November 1, 2022, the board held its first open meeting in Providence, RI, with a virtual option for attendance. The board heard input from 14 attendees during the meeting's public comment period and discussed steps the organization is taking to facilitate the transition to clean energy while maintaining power grid reliability. ISO CEO Gordon van Welie outlined the ISO's strategic plan.[61] Chief Operating Officer Vamsi Chadalavada discussed the development of new market mechanisms. Massachusetts Institute of Technology professors Robert Armstrong and Richard Schmalensee discussed MIT's recent *Future of Energy Storage* report. Presentation slides and a video recording of the meeting have been posted to the ISO-NE website.[62]

In 2023, the board's open meeting will take place on November 1 and coincide with the ISO's biennial *Regional System Plan* and the ISO's long-standing public meeting to review the plan with the public.[63]

## 5.5 Wholesale Electricity Markets

The ISO continuously works to modernize and enhance the wholesale markets, ensuring that they remain competitive and continue to provide efficient outcomes to support a reliable grid. In 2022, ISO New England provided updates to the CLG regarding the markets it designs and operates, with key points summarized below.

### **5.5.1** *Annual Markets Reports from ISO New England's Independent Market Monitors*

The ISO regularly reports on the performance of the region's wholesale electricity markets.[64] In addition to detailed quarterly, monthly, and weekly reports, the ISO's internal and external market monitors (IMM and EMM, respectively) prepare comprehensive annual reports on the development, operation, and performance of the markets.[65] Each year, the IMM meets with state officials, including public utility commissioners, consumer advocates, and attorneys general, to discuss its annual markets report and field questions about the performance of the markets.

---

[60] *Response to the New England States' Vision Statement and Advancing the Vision Report* (September 23, 2021), https://www.iso-ne.com/static-assets/documents/2021/09/iso-ne-response_to_states-vision_sept_23_2021.pdf.

[61] *Vision in Action: ISO New England's Strategic Plan* (October 26, 2022); https://www.iso-ne.com/static-assets/documents/2022/10/2022-strategic-plan-vision-in-action.pdf.

[62] "2022 ISO New England Open Board Meeting," presentation (November 2, 2022); https://www.iso-ne.com/static-assets/documents/2022/11/combined_master_slide_deck_nov_1_bod_open_meeting.pdf; *November Board of Directors Open Meeting*, video (Posted November 8, 2022); https://vimeo.com/768678263.

[63] "Regional System Plan and Related Analyses," webpage (October 20, 2022); https://www.iso-ne.com/system-planning/system-plans-studies/rsp.

[64] The ISO's various market reports are posted at its "Market Performance Reports," webpage (2023); http://www.iso-ne.com/markets-operations/market-performance/performance-reports.

[65] The internal market monitor's annual reports are posted at: http://www.iso-ne.com/markets-operations/market-monitoring-mitigation/internal-monitor. The external market monitor's annual reports are posted at: http://www.iso-ne.com/markets-operations/market-monitoring-mitigation/external-monitor.

In May 2022, the IMM published the *2021 Annual Markets Report*.[66] The report assessed the state of competition in the wholesale electricity markets administered by the ISO during the prior operating year, January 1 to December 31, 2021. The IMM determined that New England's capacity, energy, and ancillary services markets performed well and exhibited competitive outcomes.

Among other observations, the report noted that the total wholesale cost of electricity in 2021 was $11.2 billion. This was $3.1 billion (or 38%) higher than the 2020 total. The higher energy prices were primarily driven by significantly higher natural gas prices (120% higher compared to 2020). Energy costs in 2021 were $6.1 billion, up 103% or $3.1 billion from 2020. Capacity costs totaled $2.2 billion, down 16% or $0.4 billion from 2020, driven by clearing prices in FCA 11 and FCA 12.

### **5.5.2** *Forward Capacity Auction 17*

On Monday, March 6, 2023, ISO New England conducted the 17th Forward Capacity Auction (FCA 17). After four rounds of competitive bidding, the FCA concluded with sufficient resources to meet peak demand in 2026-2027. The auction secured capacity supply obligations (CSO) from 31,370 megawatts (MW) of resources to be available during the 2026-2027 capacity commitment period (CCP).

The auction closed with clearing prices of $2.590 per kilowatt-month (kW-month) in all zones and import interfaces except the New Brunswick interface, which cleared at $2.551 kW-month. Prices last year ranged from $2.531 per kW-month to $2.649 per kW-month across different pricing zones.[67]

Continuing the trend seen in recent auctions, new generating resource securing CSOs were non-carbon-emitting resources, including offshore wind, solar, and hydroelectric resources. Overall, non-carbon-emitting generators within New England, including new and existing resources, secured nearly a quarter of the auction's total CSOs. The 7,620 MW of obligations secured by these resources represents an 11% increase over the 6,844 MW of obligations secured by non-carbon-emitting resources in FCA 12, held in 2018.

Solar and wind generation accounted for 3.5% of all CSOs in the FCA 17 CCP (including new and existing resources), a six-fold increase over five years ago, and they accounted for 35% of new generating resources. Battery storage, which was largely nonexistent five years ago, also accounted for 3.5% of total obligations secured in FCA 17, and 65% of new generating resources.

More than 9% of the total obligations secured in FCA 17 went to new and existing demand-reducing resources. This category includes an assortment of business models, including traditional energy efficiency and demand response programs, as well as aggregations of residential homes that agree to reduce grid demand during peak summer hours through a combination of solar panels and batteries.[68]

The annual auction of the Forward Capacity Market is held three years before each capacity commitment period, to provide time for new resources to be developed. Capacity resources can include traditional power plants, renewable generation, imports, and demand-side resources such as load management and energy efficiency measures.

---

[66] *2021 Annual Markets Report* (May 26, 2022); https://www.iso-ne.com/static-assets/documents/2022/05/2021-annual-markets-report.pdf.

[67] *New England's Forward Capacity Auction Closes with Adequate power System Resources for 2026/2027* (March 10, 2023); https://www.iso-ne.com/static-assets/documents/2023/03/20230310_pr_fca17_initial_results_final.pdf

[68] *Finalized capacity auction results underscore region's clean energy transition* (March 21, 2023); https://isonewswire.com/2023/03/21/finalized-capacity-auction-results-underscore-regions-clean-energy-transition/

Resources clearing in the auction will receive a monthly payment during the CCP in exchange for their commitment to provide power or lower system demand. The capacity market is separate from the energy market, where resources compete on a daily basis to produce electricity or reduce use in real time.

The results of FCA 17 show the capacity market not only attracting new clean energy resources, but securing existing capacity needed to meet the region's reliability needs—including those resources needed to balance a grid increasingly powered by variable resources.[69]

The ISO filed the finalized FCA 17 results with FERC on March 21, 2023.[70]

## 5.6 The ISO's Budget Review Process

ISO New England is committed to providing an open and transparent budgeting process, starting with preliminary reviews by the states, followed by detailed discussions with the states and regional stakeholders, and culminating with a FERC review. On October 14, 2022, following consultation with New England state regulators, consumer advocates, state attorneys general, and other stakeholders, the ISO filed its proposed 2023 operating and capital budgets with FERC for review and approval.[71] FERC approved the budget on December 20, 2022.[72]

### **5.6.1** *Proposed Operating Budget*

The proposed operating budget for 2023, before depreciation and true up, is projected to be $209.2 million, which is $20.1 million or 10.7% higher than the 2022 operating budget. After depreciation and true up, the revenue requirement for 2023 is projected to be $225.6 million, which is $9.5 million or 4.4% higher than the 2022 revenue requirement of $216.1 million. If the ISO's projected revenue requirement for 2022 was fully passed through to end-use customers, their cost would average $1.18 per month (up from $1.12 per month for the 2022 revenue requirement).

### **5.6.2** *Proposed Capital Budget*

The 2023 capital budget is projected to be $33.5 million ($1.5 million or 4.7% higher than the 2022 capital budget). The increase is driven by investments in software, cybersecurity needs, projects to enable the clean energy transition and improve reliability, and the replacement of IT asset and infrastructure.

### **5.6.3** *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. In the June to August timeframe, the ISO presents preliminary 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. The ISO's board of directors plays an active

---

[69] *New England's Forward Capacity Auction closes with adequate power system resources for 2026/2027* (March 10, 2023); https://isonewswire.com/2023/03/10/new-englands-forward-capacity-auction-closes-with-adequate-power-system-resources-for-2026-2027/

[70] ISO New England Inc., Docket No. ER23-___-000 Forward Capacity Auction Results Filing (March 21, 2023); https://www.iso-ne.com/static-assets/documents/2023/03/fca_17_results_filing.pdf

[71] *Filing of 2023 Capital Budget and Revised Tariff Sheets for Recovery of 2023 Administrative Costs*, Docket No. ER23-94-000 (October 14, 2022); https://www.iso-ne.com/static-assets/documents/2022/10/2023_iso_budget_filing.pdf.

[72] FERC letter, Docket No. ER23-94-000 (December 20, 2022); https://www.iso-ne.com/static-assets/documents/2022/12/er23-94-000_12-2022_ltr_order_accept_2023_budget.pdf.

role throughout the budget-review process, taking into account feedback from stakeholders before voting on the proposed budget in October.[73]

The ISO's formal budget-review process also includes a preliminary budget presentation around the time of the annual NECPUC Symposium and an additional budget presentation with the New England states in August.[74] The states have the opportunity to submit questions and comments, to which the ISO issues formal responses. The comments submitted by the states and the ISO's responses are filed with FERC in October alongside the proposed budget, and posted to the ISO's website.[75]

More information regarding the ISO's budget, including an overview of the budget-development process, is available on the ISO-NE website.[76]

# Section 6
# Analysis of Wholesale Costs and Retail Rates

One of the primary goals among Consumer Liaison Group (CLG) participants when the group first formed was to better understand how a typical retail consumer's bill reflects wholesale market costs. ISO New England (ISO-NE) first conducted this analysis in 2009 and has subsequently updated it each year for the annual CLG 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 also vary with each utility's and state's procurement practices for retail power. Understanding these differences is essential when comparing the two markets.

Table 6-1 shows the range of average wholesale market costs for calendar years 2012–2022 among the New England states and the range of residential retail power supply rates in effect immediately thereafter (i.e., on January 1 of each year) for each of the states with unbundled retail electricity markets.

[73] "The ISO's Funding and Budgeting Process," webpage (January 2023); https://www.iso-ne.com/about/what-we-do/in-depth/the-iso-funding-and-budgeting-process.

[74] *Settlement Agreement,* Docket Nos. ER13-185, ER13-192 (May 13, 2013); https://www.iso-ne.com/static-assets/documents/regulatory/ferc/filings/2013/may/er13_185_000_5_9_13_settlement_agreement.pdf.

[75] "Budget," webpage (2023); https://www.iso-ne.com/about/corporate-governance/budget/.

[76] "The ISO's Funding and Budgeting Process," webpage (2023); https://www.iso-ne.com/about/what-we-do/in-depth/the-iso-funding-and-budgeting-process.

**Table 6-1**
**Wholesale Market Costs and Residential Retail Power Supply Rates (¢/kWh)[a][b]**

| | Wholesale Market Costs (¢/kWh) | Date Residential Retail Power Supply Rates in Effect | Residential Retail Power Supply Rates[c] (¢/kWh) |
|---|---|---|---|
| **2012** | 4.82 – 5.10 | **January 1, 2013** | 7.19 – 9.08 |
| **2013** | 6.75 – 7.23 | **January 1, 2014** | 6.81 – 9.56 |
| **2014** | 7.53 – 8.27 | **January 1, 2015** | 7.56 – 15.56 |
| **2015** | 5.43 – 5.78 | **January 1, 2016** | 6.56 – 11.85 |
| **2016** | 4.11 – 4.37 | **January 1, 2017** | 6.64 – 10.36 |
| **2017** | 5.36 – 5.68 | **January 1, 2018** | 7.83 – 12.61 |
| **2018** | 7.48 – 7.81 | **January 1, 2019** | 8.92 – 13.51 |
| **2019** | 6.13 – 6.20 | **January 1, 2020** | 7.24 – 13.11 |
| **2020** | 4.82 – 4.88 | **January 1, 2021** | 6.41 – 11.97 |
| **2021** | 6.63 – 6.75 | **January 1, 2022** | 9.82 – 15.18 |
| **2022** | 10.51-10.89 | **January 1, 2023** | 17.47 – 29.28 |

(a) The analysis is based on a hypothetical residential consumer that uses 750 kilowatt-hours (kWh) per month. The values indicate a range of lowest-to-highest costs among the states. Wholesale markets costs for 2022 are preliminary.

(b) The figures in this range are the load-weighted residential retail power supply rates as calculated by the ISO using winter 2022/23 rates approved by state regulators and 2022 load figures by utility, by state.

(c) The ranges for residential retail power supply rates include the states that have unbundled retail electricity markets. Vermont has not unbundled its retail electricity market; therefore, its rates are not included as part of this analysis.

Additional results of the analysis are as follows:

- From 2021 to 2022, wholesale market costs increased 58.5% to 63.0% across the New England states, largely due to higher demand and higher natural gas prices following Russia's invasion of Ukraine. All the states saw a significant increase in retail power supply rates in effect on January 1, 2023, compared with retail power supply rates in effect on January 1, 2022.
- All six states saw a significant increase in total residential retail electricity rates in effect on January 1, 2023, compared with total residential retail electricity rates in effect on January 1, 2022. These rates include costs for power supply, transmission, distribution, and all other delivery service charges.[77]
- The estimated regional transmission rate increased by approximately 1.8% from 2021 to 2022 (from 2.1757 ¢/kWh in 2021 to 2.2153 ¢/kWh in 2022) and is equivalent to 5.0% to 11% of total residential retail electricity rates in effect on January 1, 2022, which ranged from 20.13 ¢/kWh to 44.60 ¢/kWh.[78]
- A review of actual transmission rates for residential retail consumers in Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island in effect on January 1, 2022, shows that transmission represents 7.9% to 15.3% of total residential retail electricity rates.[79]

# Section 7
# New England Wholesale Electricity Costs

The annual wholesale costs of meeting consumer demand for electricity in New England can vary significantly. Over the past 10 years, total annual costs have ranged from a low of $7.7 billion in 2016 to a high of $16.8 billion in 2022.

Table 7-1 summarizes New England's wholesale electricity costs for 2012 to 2022.

[77] Total residential retail electricity rates in effect on January 1, 2022, ranged from 19.40 to 29.93 ¢/kWh among the New England states. Total residential retail electricity rates in effect on January 1, 2023, ranged from 20.13 to 44.60 ¢/kWh among the New England states.

[78] 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 and tariff-based reliability services for the specific period, divided by the total net energy for load for the same period. For 2022, the period is based on the 12 months ending December 31, 2022. The regional transmission rate is established by the region's transmission owners and is collected through ISO New England's *Transmission, Markets, and Services Tariff*. For more information, see http://www.iso-ne.com/participate/rules-procedures/tariff and http://www.iso-ne.com/participate/support/faq/oatt-iso-tariff. Information on net energy for load is available at: http://www.iso-ne.com/isoexpress/web/reports/load-and-demand/-/tree/net-ener-peak-load.

[79] The difference between actual transmission rates for residential consumers and the regional transmission rate 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. This analysis does not include VT.

## Table 7-1
## New England Wholesale Electricity Costs, 2011 to 2022 (in Millions and ¢/kWh)[a]

| | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | | 2020 | | 2021 | | 2022 [b] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh | $ Mil. | ¢/kWh |
| **Wholesale market costs** | | | | | | | | | | | | | | | | | | | | | | |
| **Energy (LMPs)[c]** | $5,193 | 3.9 | $8,009 | 6.0 | $9,079 | 6.9 | $5,910 | 4.5 | $4,130 | 3.2 | $4,498 | 3.5 | $6,041 | 4.7 | $4,105 | 3.3 | $2,996 | 2.4 | $6,099 | 4.8 | $11,698 | 9.0 |
| **Ancillaries[d]** | $56 | 0.0 | $152 | 0.1 | $331 | 0.3 | $210 | 0.2 | $146 | 0.1 | $132 | 0.1 | $147 | 0.1 | $81 | 0.1 | $61 | 0.0 | $59 | 0.0 | $134 | 0.1 |
| **Capacity[e]** | $1,182 | 0.9 | $1,039 | 0.8 | $1,056 | 0.8 | $1,110 | 0.8 | $1,160 | 0.9 | $2,245 | 1.8 | $3,606 | 2.8 | $3,401 | 2.7 | $2,662 | 2.2 | $2,245 | 1.8 | $1,864 | 1.4 |
| ***Subtotal*** | *$6,431* | *4.8* | *$9,200* | *6.9* | *$10,466* | *8.0* | *$7,229* | *5.5* | *$5,437* | *4.2* | *$6,875* | *5.4* | *$9,794* | *7.6* | *$7,586* | *6.0* | *$5,719* | *4.7* | *$8,404* | *6.6* | *$13,697* | *10.6* |
| **Transmission charges[f]** | $1,493 | 1.1 | $1,822 | 1.4 | $1,828 | 1.4 | $1,964 | 1.5 | $2,081 | 1.6 | $2,199 | 1.7 | $2,250 | 1.7 | $2,146 | 1.7 | $2,331 | 1.9 | $2,688 | 2.1 | $2,741 | 2.1 |
| **RTO costs[g]** | $139 | 0.1 | $167 | 0.1 | $165 | 0.1 | $165 | 0.1 | $180 | 0.1 | $193 | 0.2 | $196 | 0.2 | $184 | 0.1 | $191 | 0.2 | $216 | 0.2 | $214 | 0.2 |
| | | | | | | | | | | | | | | | Mystic Cost of Service Agreement | | | | | | $166 | 0.1 |
| **Total** | **$8,063** | **6.0** | **$11,189** | **8.4** | **$12,459** | **9.5** | **$9,358** | **7.1** | **$7,698** | **5.9** | **$9,267** | **7.3** | **$12,240** | **9.4** | **$9,915** | **7.9** | **$8,242** | **6.7** | **$11,308** | **8.9** | **$16,819** | **13.0** |

(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 and do not reflect actual charge methodologies.

(b) **The wholesale values for 2022 are preliminary and subject to reconciliation.**

(c) Energy values are derived from wholesale market pricing and represent the results of the Day-Ahead Energy Market plus deviations from the Day-Ahead Energy Market reflected in the Real-Time Energy Market.

(d) 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.

(e) Capacity charges are those associated with the Forward Capacity Market from June 2012 forward.

(f) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services, including blackstart capability, voltage support, and FCM reliability. In 2019, the cost of payments made to these generators for reliability services under the ISO's *Open-Access Transmission Tariff* (OATT) was $57.4 million. Transmission charge totals for 2010 forward reflect the refund of OATT, Schedule 1 through-or-out (TOUT) service charges to regional network load.

(g) RTO costs are the costs to run and operate ISO New England and are based on actual collections, as determined under Section IV of the *ISO New England Inc. Transmission, Markets, and Services Tariff*.

Total 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 power system planning process, and provide market-monitoring oversight of participant behavior and in-depth market analysis and reporting. Between 2011 and 2022, the ISO's annual costs have ranged from $130 million to $216 million.

Market participants that purchase electricity from the wholesale market for their own use or to supply to retail customers pay wholesale electricity costs. 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 upgrades for reliability and generally pay for it over a 35- to 40-year period through the transmission rates in their retail bill.

In 2022, the total value of all wholesale electricity costs, including the cost of regional transmission upgrades and ISO operations, was approximately $16.8 billion. Allocating this cost across the load served at a wholesale level (real-time load obligation) in 2022 yields a rate of 13.0 ¢/kWh. Wholesale values for 2022 are preliminary and subject to reconciliation.