



Consumer Liaison Group
Coordinating Committee

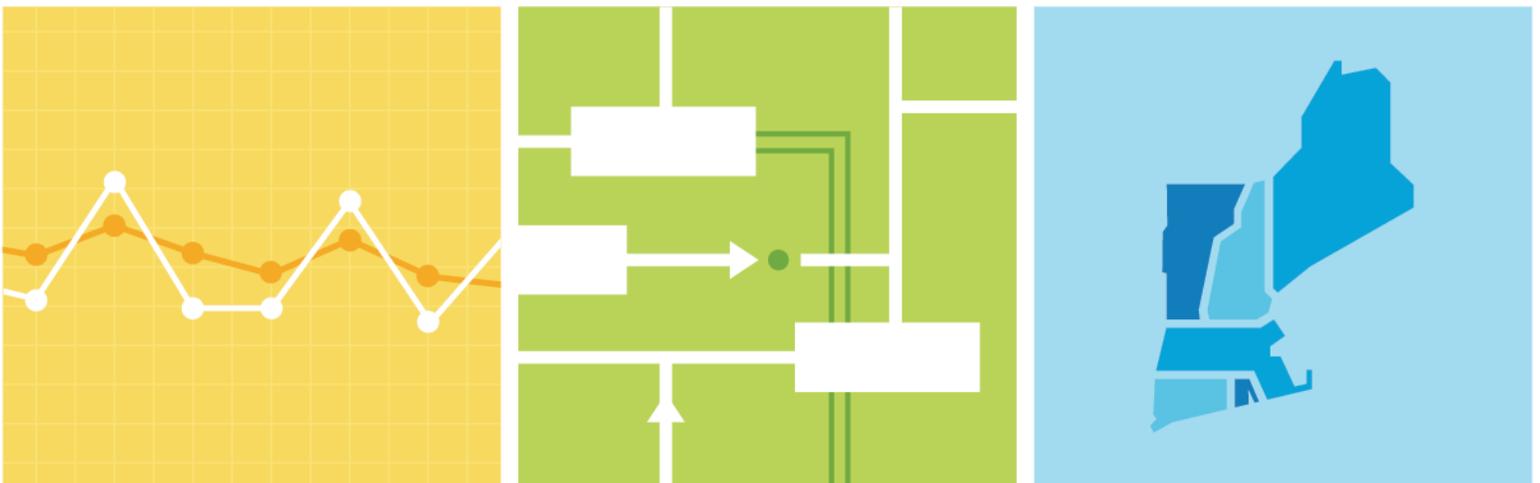
2020 Report of the Consumer Liaison Group

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

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Section 1

Statement from the Consumer Liaison Group Coordinating Committee

Dear Reader,

Welcome to the *2020 Report of the Consumer Liaison Group (CLG)* prepared jointly by the Consumer Liaison Group Coordinating Committee (CLGCC) and ISO New England (ISO). This is the eleventh 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.

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. In 2020, new Coordinating Committee members were added to replace members from Connecticut, Vermont, and Rhode Island. Rebecca Tepper, chief of the Energy and Environmental Bureau of the Massachusetts Attorney General's Office, continues to serve as chair of the CLGCC.

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 the ISO and to each other regarding what is working well and what may need to be changed. Looking to the future, members of the CLGCC recognize that the CLG's full mandate cannot be fulfilled without greater participation from consumers on the issues that concern them, including potential changes to the power system and the wholesale markets.

The CLGCC's goals for 2021 are as follows:

1. Increase dialogue and improve communication between ISO New England and the CLG, as well as between the CLGCC and CLG members at large.
 - Heighten efforts to provide the ISO, particularly board members and staff, with a greater understanding of consumer issues, needs, and concerns regarding reliability, costs, and environmental impacts of the electric power system.
 - Increase communication concerning the CLG and consumer issues, needs and concerns through current channels and enhanced use of new media.
2. Continue to provide a platform for CLG members to learn about proposed and newly enacted wholesale market and state and regional policy actions and the impact these actions may have on issues of concern to consumers.
 - Monitor current proposals for market and ISO governance reform, and provide a forum for input by CLG participants, particularly regarding the effectiveness of consumer representation in ISO New England policy and governance.

3. Ensure that CLG meeting topics and presentations balance consideration of environmental and consumer cost impacts and, where possible, provide information on potential mechanisms to mitigate increased costs in an understandable and useful manner.
 - Consider exploring the challenges of electricity supply options available to residential consumers.
4. Support ISO New England efforts to reduce carbon emissions.
5. Increase the number and diversity of CLG participants.
 - Develop and implement best practices for increasing racial and gender diversity of panelists and attendees at quarterly meetings.
 - Ensure that quarterly meeting topics incorporate the interests of environmental justice communities and other marginalized groups of consumers.
 - Capitalize on remote participation opportunities utilized during COVID-19 restrictions.
6. Complete revision of CLG governance documents.

Sincerely,

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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 a forum for sharing information between ISO New England 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, but they are not intended to be a substitute for end-user or consumer groups that wish to weigh in on items under discussion at the Planning Advisory Committee (PAC) or the New England Power Pool (NEPOOL) committees.¹

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 subject matter experts
- Be made aware of market changes, in advance of final consideration by the ISO when feasible, which can have an impact on consumers
- Work with the ISO to ensure that it provides timely quantitative and qualitative information on the cost impacts of important initiatives
- Have the ISO assist consumers in identifying the issues that can affect them economically
- Be informed of and participate in the stakeholder process that determines wholesale power market rules and power system needs
- Be informed of the results of any economic analysis conducted and presented to stakeholders in the regional stakeholder process
- Provide the ISO with a greater understanding of the specific issues of interest to consumers

2.2 Participation and Meeting Format

The CLG is open to the public. Participants generally include consumers and consumer representatives (including state consumer and ratepayer advocates), state business and industry associations, chambers of commerce, individual businesses, trade groups, nonprofit organizations, and other end users. Because the CLG is an open forum, several NEPOOL members and state regulators are also regular, active participants in CLG discussions.

¹ 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>. The New England Power Pool (NEPOOL) is a group formed in 1971 by the region's private and municipal utilities to foster cooperation and coordination among the utilities in the six-state region for ensuring a dependable supply of electricity. Today, NEPOOL members are ISO stakeholders and market participants. More information on NEPOOL is available at www.nepool.com.

CLG meetings attract a diverse group of approximately 75–100 attendees, both in person and via teleconference. CLG meetings follow the same general 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 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 response to the COVID-19 pandemic, the ISO’s employees began to host or attend stakeholder meetings via teleconference or webinar only. Out of an abundance of caution, the ISO cancelled the March 12 meeting and held the three remaining 2020 CLG meetings via WebEx.

The shift to an online platform did not reduce attendance; in fact, perhaps because of a reduction in travel time, attendance was higher at CLG meetings in 2020 than in 2019. Attendance ranged from a low of 120 at the September WebEx to about 175 at December’s.

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.²

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

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

2.4 Information and Communications

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

² The “CLG 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_liaison_grp/clg_structure_document_revised_12_29_09.pdf.

valuable information.³ This practice ensures that the body of information developed through the CLG is transparent, easily accessible, and available to all interested consumers and industry participants.

A glossary defining electricity market and power system terms is available on the ISO's website to assist CLG members in understanding frequently used electricity market or power system terms and acronyms.⁴

CLG participants are also encouraged to follow the ISO's online newsletter—the *ISO Newswire*—and subscribe to the mailing list to receive a monthly email highlighting some of the most recent articles.⁵

Since 2012, ISO New England has provided a mobile application, *ISO to Go*, offering smartphone access to frequently viewed real-time data available on the ISO website and data portal, *ISO Express*.⁶ 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 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

ISO New England's *Regional Energy Outlook*, issued at the beginning of each year, is a valuable source of information on current trends and issues affecting the regional electric power grid.⁷ Each month, ISO New England'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.⁸ These memos are available on the External Affairs page of the ISO website, along with presentations and speeches delivered by ISO technical experts and senior management.

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

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

⁵ The *ISO Newswire* is available at <http://isonewswire.com/>. To subscribe, send a blank email to isolist-isonewswire-subscribe@mail.iso-ne.com.

⁶ *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/>.

⁷ ISO New England, *2020 Regional Electricity Outlook* (February 2020), https://www.iso-ne.com/static-assets/documents/2020/02/2020_reo.pdf.

⁸ The ISO's "Government and Industry Affairs" webpage is available at <https://www.iso-ne.com/about/government-industry-affairs>.

Section 3

Consumer Liaison Group Meeting Summaries for 2020

In 2020, 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, special guest speakers, moderators, and panelists featured at these meetings.

The topics discussed in 2020 were wide-ranging and diverse and featured issues relating to the effects of the COVID-19 pandemic on the energy sector, carbon pricing in the wholesale energy markets, and the interaction between state policies and wholesale electricity markets, as follows:

- **March 12:** Out of an abundance of caution, the CLGCC and the ISO chose not to hold the March 12 meeting, which was scheduled to take place in Woodstock, Vermont.
- **June 11:** How Will the Energy Sector Look in the New World We Experience after COVID-19?
Meeting location: Held via Webex
- **September 17:** Carbon Pricing in Wholesale Electricity Markets
Meeting location: Held via Webex
- **December 2:** The New England States Committee on Electricity's New England States Vision Statement
Meeting location: Held via Webex

The following summaries capture the general discussions that took place at CLG meetings in 2020. They are not intended to capture every discussion and do not necessarily reflect the views of the ISO or the CLGCC. Individual meeting summaries capture 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 12: Crossing Energy Sectors: Lessons Learned from Vermont's Energy Transformation Standard (Cancelled due to COVID-19)

Meeting Summary: After much discussion and out of an abundance of caution resulting from the COVID-19 pandemic, the CLGCC and ISO New England cancelled the March 12 CLG meeting, which was scheduled to discuss lessons learned from Vermont's Energy Transformation Standard. A future CLG meeting covering this topic will be reconsidered. Despite cancellation of this meeting, the ISO posted a regional update to the CLG website.⁹

⁹ Anne George, "ISO New England Update," CLG presentation (March 12, 2020), https://www.iso-ne.com/static-assets/documents/2020/03/clg_meeting_george_iso_new_england_update_presentation_march_12_2020_final.pdf.

Publications Released

The presentation mentioned the release of the ISO's and CLGCC's *2019 Report of the Consumer Liaison Group* and several ISO publications:¹⁰

- *2020 Regional Electricity Outlook*¹¹
- *New England Power Grid Profile*¹²
- *New England State Profiles*¹³

Forward Capacity Auction #14

The update also provided details and outcomes of the Forward Capacity Auction #14 (FCA #14). FCA #14 was held on February 3, 2020, to procure capacity resources needed to meet demand for electricity plus reserve requirements for the June 1, 2023, to May 31, 2024, capacity commitment period (CCP). The clearing price in the auction was \$2.00 per kilowatt-month (kW-month) across all of New England, compared with \$3.80/kW-month in FCA #13. There was no price separation among capacity zones. The estimated cost of the capacity market in 2023–2024 will be about \$980 million. This figure is down from the FCA #13 estimate cost of \$1.6 billion. FCA #14 concluded with commitments from 33,956 megawatts (MW) of capacity, as follows:

- 28,978 MW of generation, including 335 MW of new generating resources
- 3,919 MW of energy-efficiency and demand-reduction measures, including 323 MW of new demand resources
- 1,059 MW of total imports from New York, Québec, and New Brunswick

Note that before the auction, ISO New England retained two units, Mystic Generating Station Units 8 and 9, needed for fuel security in 2023–2024.

Energy Security Improvements Project

The Federal Energy Regulatory Commission (FERC) has issued an order on this matter since this meeting occurred. For the latest information, please see section 5.1.3.

Regarding the ongoing Energy-Security Improvements (ESI) project, the update provided the following reasons why ISO New England is proposing these improvements:

- The risk of ensuring the grid had sufficient energy “on demand” to power New England if “just-in-time” natural gas and renewable technologies are unavailable simultaneously.

¹⁰ ISO New England and CLG Coordinating Committee, *2019 Report of the Consumer Liaison Group* (March 11, 2020), https://www.iso-ne.com/static-assets/documents/2020/03/2019_report_of_the_consumer_liaison_group_final.pdf.

¹¹ ISO New England, *2020 Regional Energy Outlook* (2020). The latest version of the report is available at <https://www.iso-ne.com/about/regional-electricity-outlook/>.

¹² ISO New England, *New England Power Grid Profile* (2020). The profile was updated in February 2021 and is available at https://www.iso-ne.com/static-assets/documents/2021/03/new_england_power_grid_regional_profile.pdf.

¹³ ISO New England, *New England State Profiles* (2020). The state profiles were updated in February 2021 and are available at: https://www.iso-ne.com/static-assets/documents/2021/03/new_england_power_grid_state_profiles.pdf

- The fact that, to date, no loss-of-load events have occurred in New England attributable to insufficient energy supplies.
- Industry trends show that this risk will increase over time, unless proactive solutions are developed

ESI has two key conceptual elements. One is that new reserve services will create new option-based services, as follows, in the day-ahead markets that compensate for flexibility of energy “on demand” to manage uncertainties each operation day:

- Generation-contingency reserves (GCRs)—Three new day-ahead ancillary services that ensure that the system has sufficient operating reserve energy to respond to system contingencies
- Replacement-energy reserves (RERs)—Two new day-ahead ancillary services that ensure that energy is sufficient through the balance of the day to cover any “supply gap” that may arise if scheduled energy supplies falter
- Energy-imbalance reserves (EIRs)—A new day-ahead ancillary service to ensure that energy is sufficient to cover any gap between forecasted consumer demand the next day and the supplies scheduled from both conventional and forecasted renewable resources.

The ISO submitted the ESI filing to FERC on April 15, 2020 (which explained a NEPOOL alternative that differed from ESI in three discreet ways), requesting an effective date of June 1, 2024.¹⁴

The second element of ESI is a new seasonal forward market ahead of the winter period, which would facilitate investments in costly supplemental energy supply arrangements in advance of the winter period. The expected development timeline for this new market is 2020-2021.

Finally, the results of an initial impact analysis of ESI were presented, which demonstrated that ESI will accomplish the following:

- Incentivize resources to acquire and maintain higher levels of energy inventory compared with current rules
- Commit more resources for energy and ancillary services through the day-ahead market compared with current rules
- Have a range of market and consumer impacts, including the following:
 - During stressed system conditions, ESI could have reduced costs by as much as \$36 million or increased them by as much as \$7.5 million
 - During other conditions, ESI could have reduced costs by as much as \$69 million or increased them by as much as \$257 million.

Transmission Planning Update

This update included an overview of the FERC Order No. 1000 request for proposal (RFP), which was issued in December 2019 to address needed system upgrades in the Boston area as a result of the retirement of Mystic Generating Station, including a brief description of the two-phase review process, submission

¹⁴ ISO New England, *Compliance Filing of Energy Security Improvements Addressing New England’s Energy Security Problems*, FERC filing, Docket Nos. EL18-182-000 and ER20-1567-000 (April 15, 2020), https://www.iso-ne.com/static-assets/documents/2020/04/energy_security_improvements_filing.pdf.

deadline, and anticipated final selection.¹⁵ An overview was provided of the FERC Order No. 1000 public policy transmission planning process, which the ISO released through a notice to the Planning Advisory Commission (PAC) in January 2020.¹⁶ PAC members were given until the end of February 2020 to submit local public policy transmission requirements driving needs and to provide input to New England States Committee on Electricity (NESCOE) on state or federal policies driving transmission needs.

An Overview of Wholesale Energy Market Costs

An overview was provided of the overall wholesale electricity market values from 2008 to 2019 broken down by energy, capacity, transmission, and ancillary services charges. Annual wholesale electricity costs have ranged from \$7.7 billion to \$5 billion between 2008 and 2019.

An overview of retail prices for each New England state from 2008 to 2019 and how they are correlated with wholesale market prices showed that the annual average retail price of electricity for residential customers in each New England state ranged from 17.68 cents/kilowatt-hour (kWh) to 22.02 cents/kWh in 2019.

3.2 June 11: How Will the Energy Sector Look in the New World We Experience after COVID-19?

Meeting objective: Discuss the future of the energy sector in the world we experience after the COVID-19.

3.2.1 Opening Remarks

Rebecca Tepper, chair of the CLGCC and chief of the Energy and Telecommunications Division at the Massachusetts Attorney General's Office offered welcoming remarks. She explained that the coordinating committee had felt some apprehension about holding an in-person meeting amid a pandemic. However, they decided it was important to continue sharing information with consumers in New England and shifted to a virtual meeting. Further, she explained that given the virtual platform, the June CLG would not feature a keynote speak but rather a short presentation by each panelist followed up a discussion, and question and answer period.

In closing, Ms. Tepper encouraged attendees to follow the CLG on Twitter, to submit possible topics for future meetings, and to provide feedback to the CLGCC by filling out the post-meeting surveys.

3.2.2 ISO New England Update

Anne George, vice president for External Affairs and Corporate Communications at ISO New England, provided the ISO New England update.¹⁷ Her presentation is available on the CLG page on the ISO's website. Highlights follow.

Impact of COVID-19 on ISO New England and Electricity Demand

About 95% of the ISO workforce is working remotely, with the control room staff and critical information technology and support services continuing to work on site. The ISO has developed a measured re-entry plan that will follow national, state, and local criteria; maintain on-site social distancing protocols; phase in

¹⁵ ISO New England, *Issuance of the Boston 2028 Request for Proposal*, memorandum (December 20, 2019) https://www.iso-ne.com/static-assets/documents/2019/12/boston_2028_rfp_announcement.pdf

¹⁶ ISO New England, *2020 Public Policy Transmission Upgrade Process*, PAC presentation (January 23, 2020) <https://www.iso-ne.com/static-assets/documents/2020/02/2020-pptu-process-final-975dc0d4.pdf>

¹⁷ Anne George, "ISO New England Update," CLG Webex presentation (June 10, 2020) https://www.iso-ne.com/static-assets/documents/2020/06/clg_meeting_george_iso_update_presentation_june_11_2020_final.pdf.

employees' return over at least three months based on business needs; and maintain flexibility to adjust to changing conditions. All reliability, market, and planning functions are being completed in accordance with all applicable standards, including the following:

- Running the region's wholesale markets efficiently and without interruption
- Conducting engineering reviews to ensure asset owners can perform spring maintenance while ensuring system reliability
- Continuing stakeholder processes through teleconferencing

COVID-19 has changed energy-usage patterns, with average demand down 3% to 5% below normal (weather normalized) historic patterns. ISO New England and its staff are continually analyzing these patterns. No issues with reliability have occurred during this period.

2019 Annual Markets Report

The ISO's internal market monitor (IMM) released the *2019 Annual Markets Report*, which states wholesale markets operated competitively in 2019.¹⁸ The IMM functions independently of ISO management and reports directly to the ISO board of directors. The annual report assesses the state of competition in the wholesale electricity markets administered by the ISO during the most recent operating year.

Energy costs totaled \$4.1 billion in 2019, representing a 32% (or \$1.9 billion) decrease compared with 2018, due largely to milder weather during the high-electricity-demand seasons of summer and winter. Natural gas prices averaged \$3.26/million British thermal unit (MMBtu) in 2019, down by \$1.69/MMBtu from 2018 prices (representing a 34% decrease). Additionally, capacity costs totaled \$3.4 billion in 2019, representing a 6% (or \$0.2 billion) decrease from 2018, due to clearing prices in the ninth and tenth Forward Capacity Auctions.

Summer Outlook Highlights

New England is expected to have the necessary resources to meet peak demand for electricity this summer under both typical and extreme weather conditions:

- The typical summer weather peak demand forecast is 25,125 MW
- The extreme summer weather peak demand forecast is 27,084 MW

Both forecasts take into account the demand-reducing effects of energy-efficiency measures (more than 3,300 MW) acquired through the Forward Capacity Market and behind-the-meter solar (nearly 800 MW). New England has more than 33,000 MW of total capacity available this summer.

Energy Security Improvements Proposal

The ISO filed its ESI proposal with FERC on April 15, 2020.¹⁹ ESI would procure essential reliability services through a transparent, technology-neutral, market-based mechanism. The ISO included in its filing an

¹⁸ ISO New England, *2019 Annual Markets Report* (May 26, 2020), <https://www.iso-ne.com/static-assets/documents/2020/05/2019-annual-markets-report.pdf>.

¹⁹ ISO New England, *Compliance Filing of Energy Security Improvements Addressing New England's Energy Security Problems*; FERC filing, Docket Nos. EL18-182-000 and ER20-1567-000, (April 15, 2020), https://www.iso-ne.com/static-assets/documents/2020/04/energy_security_improvements_filing.pdf.

alternative proposal supported by NEPOOL, which amends ESI in three discrete ways but otherwise adopts the ISO's design. The ISO asked FERC to respond to the ESI filing by November 1, 2020, and target implementation for June 1, 2024. An impact analysis shows that the ESI project will achieve the following:

- Incentivize resources to acquire and maintain higher levels of energy inventory compared with current market rules
- Commit more resources for energy and ancillary services through the day-ahead market, compared with current rules, and therefore increase incentives to be able to deliver real-time energy when needed
- Have a range of market and consumer impacts based on system conditions
- Impact winter production costs across an estimated range of \$36 million to \$7.5 million
- Impact consumer costs across an estimated range of \$69 million to \$132 million

2020 Capacity, Energy, Loads, and Transmission Report, including Electrification Forecasts

The ISO recently published its *2020 Capacity, Energy, Loads, and Transmission Report (CELT)*, which included its first-ever heating and transportation electrification forecasts.²⁰ The CELT is the primary source for assumptions used in ISO system planning and reliability studies.

The 2020 CELT projects both net energy usage and net peak demand will increase slightly over the 10-year period. Overall electricity use is expected to increase by 0.4% annually. This is an increase from the 2019 CELT, which reported an average annual decrease of 0.4%.

Peak demand under typical summer peak weather conditions is expected to fall slightly, by 0.2% over the 10-year period, and winter peak demand is forecasted to increase an average of about 0.1% annually, under both normal and extreme conditions. For normal winter weather, net peak demand is expected to increase from 20,166 MW in 2019 to 20,334 MW in 2029. These forecasts include the demand-reducing impacts of solar photovoltaic (PV) and energy efficiency.

The 2020 CELT includes 10-year forecasts for heating electrification and light-duty electric vehicles. The ISO seeks to capture the growth in air source heat pumps and light-duty electric vehicles and quantify the resulting increases in electricity demand. Regarding heating, the ISO forecasts that roughly 750,000 air source heat pumps will be installed in New England by 2029, which will have an estimated 661 MW impact on winter peak demand in 2029. Regarding light-duty electric vehicles, the ISO forecasts the deployment of more than 515,000 vehicles regionwide. Additional load could contribute 282 MW to summer peak demand in 2029 and 414 MW to the winter peak in 2029. The ISO recognizes that heating and transportation electrification are nascent trends and views its 2020 forecast methodology as a starting point.

A question and answer session followed Anne George's remarks. Topics of discussion included the impact of COVID-19 on long-term load forecasting, the heating and transportation electrification forecasts, and the greenhouse gas impacts of COVID-19.

²⁰ ISO New England, *2020 Report of Capacity, Energy, Loads, and Transmission* (May 1, 2020), https://www.iso-ne.com/static-assets/documents/2020/04/2020_celt_report.xlsx.

3.2.3 Panel Discussion

Guy Page, CLGCC member, moderated a panel of energy leaders from each of the New England states to discuss the impact of COVID-19 on the energy landscape.

Panelists included: **Patrick Woodcock**, commissioner, Massachusetts Department of Energy Resources; **Marissa Gillett**, chair, Connecticut Public Utilities Regulatory Authority (PURA); **June Tierney**, commissioner, Vermont Department of Public Service; **Barry J. Hobbins**, public advocate, State of Maine; **Becca Trietch**, administrator, Energy-Efficiency Programs, Rhode Island Office of Energy Resources; and, **Dr. Amro Farid**, associate professor of engineering, Thayer School of Engineering at Dartmouth.

Each speaker offered remarks, slides, or both; all slides presented are available on the CLG page on the ISO website.

Patrick Woodcock stated that the pandemic has had a significant impact on Massachusetts's energy-efficiency programs because all efficiency work was initially suspended.²¹ However, many ratepayers have since taken advantage of access to remote auditing of their homes, with over 3,000 remote audits completed and a subsequent increase in the audit-to-project execution rate. Commissioner Woodcock also explained that the state's electric vehicle (EV) incentive program has seen a sharp decrease in usage during the pandemic, consistent with the overall reduction in light-duty vehicle sales across the state. This has driven the state to look at targeting the EV incentive programs to ensure that the state is getting the most emissions reductions for its investments. The state is also looking to ensure that racial equity is considered in the program. The commissioner also discussed the recent emergency regulations filed to double the capacity of the state's SMART program (Solar Massachusetts Renewable Target). Finally, the commissioner discussed the changes in energy usage associated with more individuals working from home and the possibility of long-term changes in vehicle miles traveled in the future.

Marissa Gillett discussed the desire by many across Connecticut and the region to help with the immediate financial impacts of the pandemic on ratepayers' ability to make payments. She explained that her agency, the PURA, quickly implemented a moratorium on shutoffs across Connecticut until July. Further, PURA has instituted 24-month payment plans for those in financial distress to ease the burden during these difficult times. Chair Gillett said that her agency may soon have additional information that could foreshadow longer-term trends and issues PURA will need to address, such as residential usage patterns. She said the pandemic, moratorium, and payment plans reinforce the need to educate ratepayers on the programs available to them. She explained PURA's efforts to share such information with ratepayers, including a chronological list on its website of steps the state is taking.

June Tierney discussed the tension between a moratorium on shutoffs instituted by Vermont and the need to collect arrearages owed by ratepayers during a time of uncertainty. Commissioner Tierney highlighted the state's electricity service and internet connectivity issues, which she and the Department of Public Service have worked to address. Specifically, Vermont asked electric distribution companies and internet service providers to work collaboratively to increase internet access for the 70,000 homes that lack access to internet across the state. She also highlighted that the interconnected grid of the future will be reliant on internet connectivity, so this effort must continue moving forward post-pandemic. When discussing federal recovery efforts, Commissioner Tierney stated her belief that federal funds are available that could help ease some of the burden ratepayers are facing. The commissioner discussed the ability of renewables and other green projects to provide stimulus as the state, region, and country recover from the economic harm inflicted by the

²¹ Patrick Woodcock, "DOER Policy and Priorities—The Energy Sector Going Forward," CLG Webex presentation (June 11, 2020), https://www.iso-ne.com/static-assets/documents/2020/06/6_11_20_clg_slides_commissioner_woodcock.pdf.

pandemic. Finally, Commissioner Tierney suggested that the amount of remote work that is being done to verify energy efficiency measures might lead to changes moving forward in program design.

Barry Hobbins highlighted the need for policymakers and stakeholders to think outside the box when formulating policies to assist ratepayers. Mr. Hobbins discussed the unique demographics of Maine and said the pandemic may leave the state isolated from the other New England states. Further, he discussed the impacts that unpaid bills and decreased electricity demand could have on rates and ratepayers moving forward. Mr. Hobbins said his office is looking for funding sources to help reduce the burden on those who may be disproportionately affected by the pandemic. He said he appreciated the regular communications his office is receiving throughout the pandemic from the state's utilities. Finally, Mr. Hobbins indicated that using the state's newly formed climate council, he and his staff will work to ensure renewable energy and energy usage issues are at the forefront of the economic-recovery efforts.

Becca Trietch emphasized that energy-efficiency programs are the foundation of Rhode Island's energy portfolio.²² She explained that many efficiency programs were suspended to adhere to social-distancing recommendations; however, the state was able to move to virtual audits and monitoring to continue advancing the state's priorities. Ms. Trietch also highlighted the increased usage of online permit libraries, geographic information systems, and various online databases in helping verify deployment and completion of various energy projects. She emphasized that workforce development should be considered going forward and that online training could be useful to ensure that the region continues to advance its green energy economy. She discussed the changes in home-energy-usage patterns likely to occur over the summer as more individuals work from home. She said the pandemic has highlighted that the country's buildings are critical pieces of infrastructure and require equitable energy-efficiency investments.

Dr. Amro Farid said the changes and opportunities the pandemic has presented to the energy sector are occurring both locally and globally.²³ He said he believes the virus will result in a call-to-action to accelerate many of the trends already underway in the industry, including the use of nonwires solutions, the use of real-time energy management and monitoring, the need for resilient and effective domestic markets, and the need for equitable access to education and training. Dr. Farid shared some of his observations during the pandemic, including: a reduction in peak usage on the system as commercial and industrial operations have ceased; increased penetration of renewables and increased ramping needs of the system; increased disruptions in vital supply chains that hadn't been seen in the past; and, an increased need for real-time data to better respond to system conditions. Dr. Farid detailed how each of these trends could help alleviate some of these issues. Dr. Farid also emphasized that the June 11, 2020, CLG meeting summary prepared on behalf of the CLGCC mentions that the recruitment of a diverse and talented workforce into the energy sector is immensely important and that the goals of the twenty-first-century grid cannot be met without inclusivity.

A question and answer period followed, touching on the value and methods of remote measurement and verification work, the role of a carbon tax in wholesale electricity markets, and the "Future of the Grid" process underway jointly with NEPOOL, NESCOE, and ISO New England.

²² Becca Trietch, "Energy Efficiency and Covid-19," CLG Webex presentation (June 11, 2020), https://www.iso-ne.com/static-assets/documents/2020/06/6_11_20_clg_slides_becca_trietch.pdf.

²³ Amro Farid, "Accelerating the Shared Integrated Grid in the Midst of the COVID-19 Energy Landscape," CLG Webex presentation (June 11, 2020), https://www.iso-ne.com/static-assets/documents/2020/06/6_11_2020_clg_slides_professor_amro_farid.pdf.

3.3 September 17: Carbon Pricing in Wholesale Electricity Markets

Meeting objective: Discuss the implications of integrating carbon pricing into regional wholesale electricity markets.

3.3.1 Welcoming Remarks

Rebecca Tepper, chair, CLGCC and chief of the Energy and Telecommunications Division at the Massachusetts Attorney General's Office, offered welcoming remarks. Ms. Tepper welcomed the panelist and attendees, and stated that attendance was nearly double that of previous, in-person CLG meetings. She announced that the CLG would be electing the Coordinating Committee at its next meeting, scheduled for December 2, 2020. Coordinating Committee members serve two-year terms (through December 2022), and nominations will be accepted until November 6. Additional information will be distributed to members.

She encouraged attendees to follow the CLG on Twitter, to submit possible topics for future meetings, and to provide feedback to the CLGCC by filling out the post-meeting surveys.

3.3.2 ISO New England Update

Eric Johnson, director of External Affairs at ISO New England, provided the ISO New England update.²⁴ Highlights include the following:

- An overview of resources available to the public on the CLG webpage
- A September 30, 2020, FERC technical conference, Carbon Pricing in Organized Wholesale Electricity Markets. Gordon van Welie, president and chief executive officer of the ISO, and the ISO's chief economist, Dr. Matthew White, will speak at the conference.

ISO Stakeholder's Future Grid Exploration Efforts

Future of the Grid is a stakeholder-led, ISO-supported initiative that explored the following two paths of what is necessary for operating a reliable, clean-energy grid in the future and transitioning to this future grid:²⁵

- Studying whether the ISO can operate reliably under the status-quo market structures, assessing what products and attributes are missing, and analyzing what market changes could be developed. The ISO is supporting the development of future-grid scenarios, preparing to assist with request studies, and working with stakeholders to shape its scope of engagement on this path for 2021.
- Considering the region's future pathways for the wholesale electricity markets that could bring about the future grid envisioned by policymakers. In 2021, ISO resources are dedicated to assessing market-framework options.

All materials related to this project are available on the ISO's website.

²⁴ Eric Johnson, "ISO New England Update," CLG Webex presentation (September 17, 2020), https://www.iso-ne.com/static-assets/documents/2020/09/clg_meeting_johnson_iso_new_england_update_final.pdf.

²⁵ ISO New England, "New England's Future Grid Initiative Key Project," webpage (2020), <https://www.iso-ne.com/committees/key-projects/transition-to-the-future-grid-key-project/>.

Impact of COVID-19 on ISO New England's Workforce

About 80% of the ISO workforce is working remotely, and the return of employees to ISO's facilities will remain largely voluntary through the remainder of 2020. The ISO is continuing with cautious reentry of the workforce, as follows:

- Monitoring state and regional COVID-19 trends
- Adjusting plans in response to changing conditions and guidance from public health agencies.

All reliability, market, and planning functions are being completed in accordance with all applicable standards:

- Running the region's wholesale markets efficiently and without interruption
- Conducting engineering reviews to ensure that asset owners can perform maintenance while ensuring system reliability
- Continuing stakeholder processes through teleconferencing

Observations Regarding Electricity Demand During COVID-19

In general, summer electricity demand has been equal to or higher than what would have been expected without the pandemic, owing partly to an extended period of warm weather. This marks a change from mid-March, when the ISO noticed an average decline in overall electricity use of about 3 to 5%.²⁶ A preliminary review of the ISO's long-term forecast performance suggest summer demand during the period of June 1, 2020, and July 31, 2020, is consistent with the 2020 CELT forecast.²⁷ The ISO will update this analysis using all summer data (i.e., including August) at the September 25 meeting of the Load Forecasting Committee.

Transmission Planning Update

ISO New England made a selection in the Competitive Solicitation for Transmission Solutions in the Boston Area.²⁸ The selection was a result of the ISO's first-ever RFP issued to address transmission system upgrades needed in the Boston area. Eight different developers submitted 36 proposals with costs ranging from \$49 million to \$745 million.

The Great Boston Ready Path solution, a joint venture of National Grid and Eversource, was selected due to its ability to solve grid reliability needs at the lowest cost and its availability before the retirement of the Mystic Generation Station.²⁹ The *ISO Newswire* provides an update on the RFP and the June 17 meeting of the Planning Advisory Committee (PAC).³⁰

²⁶ ISO New England, "Checking in on consumer demand during the pandemic," *ISO Newswire* article (August 11, v2020), <https://isonewswire.com/2020/08/11/checking-in-on-consumer-demand-during-the-pandemic/>.

²⁷ ISO New England, *2021 CELT Load Forecast Development: Interim Update*, PAC Webex presentation (August 27, 2020), https://www.iso-ne.com/static-assets/documents/2020/08/a5_2021_celt_load_forecast_development_interim_update.pdf.

²⁸ ISO New England, "ISO-NE makes selection in first Order 1000 transmission RFP," *ISO Newswire* article (July 24, 2020), <https://isonewswire.com/2020/07/24/iso-ne-makes-selection-in-first-order-1000-transmission-rfp/>

²⁹ Eversource and National Grid, "Greater Boston Ready Path Solution," webpage (2020), <https://www.greaterbostonreadypath.com/about-the-ready-path/>.

³⁰ ISO New England, "ISO-NE makes selection in first Order 1000 transmission RFP," *ISO Newswire* article (July 24, 2020), <http://isonewswire.com/updates/2020/7/24/iso-ne-makes-selection-in-first-order-1000-transmission-rfp.html>.

Three Reliability Projects in Southern New England Cancelled due to Changes in Load

At the August 27, 2020, PAC meeting, the ISO presented the results of a recent review of the reliability need for projects previously identified for the Southeastern Mass/Rhode Island (SEMA/RI) area.³¹ The ISO reviewed 15 previously identified projects that have not yet begun construction. Of these, the needs of 11 projects were confirmed and will be retained; the needs of three projects were resolved and should be cancelled; and one project for which the need was resolved should continue given the age, likelihood of failure, and percentage of project cost already expended.

Forward Capacity Auction #15

Forward Capacity Auction (FCA) #15 is scheduled to take place in February 2021 to procure the capacity resource needed during the 2024-2025 capacity commitment period (June 1, 2024 to May 31, 2025). Planning for FCA #15 began soon after FCA #14 ended. Retirement delist bids for FCA #15 were due in mid-March. The ISO received an aggregate total of 42 MW of permanent delist bids and an aggregate of 199 MW of retirement delist bids. In August, the ISO determined that none of the resources that submitted permanent or retirement delist bids for FCA #15 triggered a transmission or fuel-security reliability need. Earlier this summer, the ISO announced that Mystic units 8 and 9 are not needed for either transmission or fuel-security reliability needs and will be “deemed retired” as on June 1, 2024.

Four capacity zones will be modeled in FCA #15:

- Northern New England, export-constrained
- Maine “nested,” export-constrained
- Southern New England, import-constrained
- Rest-of-Pool

ISO New England’s auction-related determinations and calculations must be filed with FERC for review:

- In September 2020, the NEPOOL Reliability Committee will vote on the ISO’s zonal determinations and projected capacity need for the region, as well as other auction related values.
- In October, the NEPOOL Participant Committee will note on the ISO’s determinations and calculations.
- In November, the ISO will submit a pre-FCA informational filing with FERC for review.

ISO New England’s Proposed 2021 Budget

The ISO presented its proposed 2021 budget to New England state agencies in August. The proposed capital budget for 2021, before depreciation and true-up, is projected to be \$178.6, which is \$4.4 million or 2.5% higher than the 2020 operating budget. After depreciation and true up, the revenue requirement for 2021 is projected to be \$205.1 million, which is \$6.3 million or 3.2% more than the 2020 revenue requirement. If

³¹ ISO New England, “Revised SEMA/RI 2029 Needs Assessment Update—Project Status Determination, Revision 1; Revision to the August 27, 2020 Presentation,” PAC Webex presentation (August 27, 2020), https://www.iso-ne.com/static-assets/documents/2020/09/revised_sema_ri_2029_needs_assessment_update_project_status_update_v2_rev1_redlined.pdf.

ISO's projected revenue requirement for 2021 were fully passed through to end-use customers, their cost would average \$1.04 per month (based on average consumption).

ISO New England states have the opportunity to submit questions and comments on the proposed budget following the August presentation. In September, the ISO's board of directors will review the budget, along with stakeholder feedback and the states' comments. In October, the ISO's board will vote on the proposed budget. The ISO plans to file the budget with FERC for review in mid-October, requesting approval by January 1, 2021.

ISO New England's Emission Report

ISO New England provides regular updates on emissions through the Environmental Advisory Group (EAG), which is open to all interested stakeholders. Each year the EAG issues an Electric Generator Air Emissions Report, which is a comprehensive analysis of New England generator air emissions including nitrogen oxides (NO_x), sulfur dioxides (SO₂), and carbon dioxide (CO₂). Highlights of the latest Generator Emissions Report include the following:

- During the 10-year period from 2009 to 2018, total system emission have decreased overall:
 - NO_x decreased 43%.
 - SO₂ decreased by 94%.
 - CO₂ decreased by 31%.
- The decline in emissions during this period reflects shifts in the regional generation mix, with increases in natural-gas-fired generation as well as wind generation and decreases in coal- and oil-fired generation.
- The ISO is working alongside stakeholders to determine a methodology for calculating emissions from imports.

A brief question period followed the ISO's update, touching on the role for nonwires alternatives in the ISO's grid and the effect of COVID-19 on FCA #15 and regional load forecasts.

3.3.3 Panel Discussion

Gus Fromuth, CLGCC member, moderated a panel of energy leaders from around the New England region to discuss the implications of integrating carbon pricing into regional wholesale electricity markets.

Panelists included: **Katie Dykes**, commissioner, Connecticut Department of Energy and Environmental Protection; **John Cleveland**, executive director, Boston Green Ribbon Commission; and, **Joseph Cavicchi**, vice president, Analysis Group.

Each speaker offered remarks, with some also presenting slides.³²

Commissioner Katie Dykes began her discussion by praising the commitment and progress that the Northeast has made in addressing greenhouse gas emissions and climate change. Dykes also discussed the acceleration of climate-related events, which have occurred in recent weeks and months, and the fact that policymakers and regional stakeholders need to consider these extreme events when thinking about the

³² Any slides presented, along with a recording of the meeting, are available on the CLG webpage on the ISO's website: <https://www.iso-ne.com/committees/industry-collaborations/consumer-liaison/>.

planning and operation of the grid today and in the future. Further, Dykes stated that the best pathway for curbing emissions was electrification across economic sectors and that an overarching theme of these efforts must be affordability.

Commissioner Dykes highlighted the nation's first carbon-pricing regime, the Regional Greenhouse Gas Initiative (RGGI). Dykes noted the 2017 program review process, which increased RGGI's emissions-reduction targets and highlighted some of the benefits of RGGI, including state-level jurisdiction, the program's flexibility, its commitment to competitive principles, and its status as a compliment to other state policies.

Dykes reiterated the New England states' continued opposition to carbon pricing through wholesale markets and noted that a number of policy decisions remain unclear: How the "adder" would complement other state policies; who would set the carbon price; how affordability would be ensured; and how proceeds would be distributed and used. Finally, Dykes raised concerns that the states are not represented at the upcoming FERC technical conference on carbon pricing (September 30).³³

John Cleveland emphasized the impacts being observed nationally and globally.³⁴ He introduced the Boston Green Ribbon Commission, its mission, its members, the work the organization has done alongside the City of Boston to formulate the Climate Ready Boston and Carbon Free Boston reports, and some of the services it provided to businesses seeking to purchase clean energy.

Further, Cleveland discussed the three "Mutually Reinforcing Strategies" the Green Ribbon Commission determined were vital to Boston's climate goals:

- Reducing demand and maximizing energy efficiency
- Electrifying to the maximum extent feasible
- Using GHG-free fuels and electricity

Cleveland stated that each of these strategies required mandates and incentives to be achieved and that the City of Boston's efforts needed to be in line with those also occurring at state level. Cleveland also highlighted technical analysis conducted by Boston University regarding the need for robust demand-reduction efforts in combination with electrification of the building and transportation sectors.

Cleveland discussed the ramping up of city and state climate objectives across the country, the role of financial markets in clean-energy development, and the role of technical expertise in achieving these goals. Finally, Cleveland laid out a few next steps he feels are imperative to progress, including the need for further integration of markets and policy, the development of decarbonization plans, and robust stakeholder engagement.

Joseph Cavicchi began his presentation by highlighting that there is an enormous level of engagement around how policy and markets need to work collaboratively to help address climate change.³⁵ He highlighted

³³ FERC, "Technical Conference regarding Carbon Pricing in Organized Wholesale Electricity Markets," webpage (September 30, 2020), <https://ferc.gov/news-events/events/technical-conference-regarding-carbon-pricing-organized-wholesale-electricity>.

³⁴ John Cleveland, "Aligning the Regional Electricity Grid with State and City Climate Goals," CLG Webex presentation (September 17, 2020), https://www.iso-ne.com/static-assets/documents/2020/09/j_cleveland_slides_for_iso_clg_9_17_20.pdf.

³⁵ Joseph Cavicchi, "Carbon Pricing for New England," CLG Webex presentation (September 17, 2020), https://www.iso-ne.com/static-assets/documents/2020/09/2020_09_17_iso_ne_clg_carbon_pricing_for_ne_cavicchi.pdf.

some of the successful mechanisms European countries have used over the past two decades to advance clean-energy deployment and the ongoing market-development discussions intended to help European countries achieve their goals.

Cavicchi discussed the key findings of the Analysis Group’s report on carbon pricing across all sectors in New England. Cavicchi highlighted that the region needs to address the transportation and building sectors to achieve its goals. Further, he discussed various sensitivity cases the Analysis Group ran to determine how to develop adequate price signals, provide sufficient revenue to existing resources, and create an environment without the need for long-term contracting. Finally, Cavicchi highlighted the substantial challenges and concerns that exist in designing, implementing and achieving a carbon-pricing regime that will effectively meet the regions goals and briefly discussed how to assuage these concerns through program design.

A brief question and answer period followed the panel discussion, touching on electrification of the building and transportation sectors, carbon-pricing regimes in other jurisdictions (e.g., Canada), and recent FERC decisions and their impact on the states’ ability to pursue their policy goals going forward.

3.4 December 2: Clean Energy & Regional Markets: The New England States’ and Other Visions of the Future

Meeting objective: Discuss NESCOE’s recently released New England States Vision Statement

3.4.1 Welcoming Remarks and Biennial Election

Rebecca Tepper, Chair, CLGCC and Chief of the Energy and Telecommunications Division at the Massachusetts Attorney General’s Office, offered welcoming remarks.

Tepper welcome panelists and attendees and thanked the current CLGCC members for their work during their term before kicking-off the sixth CLGCC biennial election. Individuals elected will serve on the CLGCC during the 2021-2022 timeframe. Tepper highlighted the CLG bylaws, which state that:

- The CLGCC may be made of up to twelve individuals; six members and six alternates;
- Eligible members must be a relevant stakeholder; for example, commercial ratepayers or state regulators;
- No New England state may have more than four CLGCC members;
- The intention of the six-member CLGCC is to have a representative from each state; and
- Once elected, the CLGCC chooses the Chair from amongst its members.

The CLG nominated fifteen individuals — including new and sitting CLGCC members — to fill twelve CLGCC seats. The results, announced at the conclusion of the meeting, are in section 3.4.4.

3.4.2 ISO New England Update

Eric Johnson, Director of External Affairs at ISO New England, provided the ISO New England update.³⁶ His presentation is available on the CLG page on the ISO’s website, and highlights include:

³⁶ Eric Johnson, “ISO New England Update,” CLG Webex presentation (December 2, 2020), https://www.iso-ne.com/static-assets/documents/2020/12/clg_johnson_iso_update_dec_2_2020_final.pdf

An Overview of FERC Order No. 2222 and ISO-NE Compliance

Issued on September 17, 2020, the Order requires ISO/RTOs to:

- Allow Distributed Energy Resource Aggregations (DERAs) as market participants
- Design market participation models for Distributed Energy Resources (DERs) that address issues including: location; size; metering and telemetry; and, coordination among ISO/RTOs, DERAs, distribution utilities, and Relevant Electric Retail Regulatory Authorities (RERRAs)

The ISO will begin discussion of Order No. 2222 and the proposed stakeholder process at the December 8 Markets Committee meeting. The compliance filing for Order No. 2222 is due July 19, 2021.

FERC's Rejection of ISO-NE's Energy Security Improvements (ESI) Filing

FERC rejected the proposed tariff changes on October 30. The ISO filed a request for clarification related to its obligation under an earlier order that initiated a proceeding under Section 206 of the Federal Power Act (FPA) requiring the ISO to file a long-term solution to address fuel-security concerns. In its request, the ISO asked that it be allowed to communicate directly with FERC on ESI and future market design, provided there are no *ex parte* issues. *(Note: On December 3, FERC rejected ISO's request for clarification and closed the FPA 206 Investigation into Fuel Security, stating other recent tariff revisions rendered the investigation moot.)*³⁷

Transition to the Future Grid Update

NEPOOL Stakeholder meetings in 2020 have followed two tracks:

- A Future Grid Reliability Study: A stakeholder-led assessment of the future state of New England's power system
- Pathways to the Future Grid: A regional identification, exploration, and evaluation of potential market frameworks that may help support the evolution of the power grid

In mid-October, the New England states released a pair of statements outlining their vision for a clean, affordable, and reliable 21st century regional electric grid. The statements cover three main areas:

- Market Design
- Transmission Planning
- ISO Governance

Transmission Planning for the Clean Energy Transition

The Planning Advisory Committee (PAC) is discussing potential challenges to transmission planning that will arise with increased DERs, offshore wind, HVDC transmission, and battery storage.

³⁷ FERC, *Order Addressing Arguments Raised on Rehearing and Terminated Section 206 Proceeding*, Docket Nos. ER18-1509-001 and EL18-182-001 (December 3, 2020) https://www.iso-ne.com/static-assets/documents/2020/12/er18-1509-001_el18-182-001_12-3-20_order_deny_rehearing_close_206_docket.pdf.

- It is anticipated that those resource trends will require new transmission planning study approaches to address: decreasing net load; DERs tripping due to transmission faults; stability performance; generation variability; and, low-inertia conditions
- The ISO has proposed conducting a pilot study in order to have a high-level view of the entire New England system under various load and renewable energy production scenarios to determine resulting trends in system behavior and reliability

ISO's Winter 2020/2021 Outlook

The ISO anticipates adequate resources are available to meet demand under normal and extreme forecast conditions. *(On December 8, 2020, ISO-NE released its Winter 2020-2021 Outlook; information regarding the Outlook can be found on [the ISO Website](#) and [ISONewswire](#).)*

Procures in Place to Help Maintain Reliability on the Coldest Winter Days

Highlights of existing operating procedures include:

- OP-4: Actions During a Capacity Deficiency
- OP-7: Actions in An Emergency
- OP-21: Energy Inventory Accounting and Actions During and Energy Emergency
- Cold Weather Operations

Upcoming Forward Capacity Auction (FCA) #15

FCA #15 will take place in February 2021 for the Capacity Commitment Period spanning June 1, 2024 to May 31, 2025. In November, the ISO submitted a pre-FCA informational filing with FERC for review. The filing includes capacity zones to be modeled in the auction and resources qualified to participate in the auction. All other FCA-related calculations and determinations were included in a separate filing for FERC review.

FCA #15 will model four capacity zones including:

- Northern New England Capacity Zone – Export Constrained
- Maine “Nested” Capacity Zone – Export Constrained
- Southeast New England Capacity Zone – Import Constrained
- Rest-of-Pool Capacity Zone

Other important FCA #15 inputs include:

- The 33,662 MW of existing capacity resources qualified to participate in the auction:
 - 29,800 MW from existing generation resources
 - 82 from existing import resources
 - 3,780 from existing demand resources
- The ISO qualified 219 new capacity resources totaling 7,030 MW, to participate in the auction
- The net Installed Capacity Requirement (ICR) is 33,270 MW

- The ISO qualified 13 demand bids, totaling 196 MW, and 116 supply offers, totaling 463 MW, to participate in the substitution auction under the Competitive Auctions with Sponsored Policy Resources (CASPR) framework

Projected Wholesale Market Costs for 2020

Estimated record low energy market (energy, capacity, and ancillary services) value of approximately \$5.5 billion dollars in 2020. (The ISO typically provides estimated wholesale market values for the current year at the December CLG meeting as a preview of information that will be presented in the annual report).

3.4.3 Panel Discussion

Robert Rio, CLGCC, moderated a panel of energy leaders from around the New England region to discuss the [Vision Statement](#) released in October by NESCOE.

Heather Hunt, Executive Director of NESCOE, kicked off the discussion with an overview of the Vision Statement. Other speakers included **Dave Cavanaugh**, Chair, New England Power Pool; **Robert Ethier**, Vice President, System Planning, ISO New England; **Francis Pullaro**, Executive Director, RENEW Northeast; and **Doug Hurley**, Principle Associate, Synapse Energy Economics, Inc.

Each speaker offered remarks and/or slides. Any slides presented are available on [the CLG page](#) on the ISO website.

Heather Hunt discussed the principles of NESCOE's Vision Statement and stated that NESCOE has long advocated that for the wholesale markets to be sustainable, they must account for state policy goals.³⁸ In addition, Hunt discussed NESCOE's request in July 2019 that the ISO dedicate time and resources in 2020 to investigate what the future of New England's power system will look like and what potential market mechanisms can help the region achieve these outcomes safely and reliably. One outcome of this request is the ongoing NEPOOL Future Grid Initiative. Hunt emphasized that NESCOE's Vision Statement was complementary to the Future Grid Initiative, which is ongoing.

Hunt also discussed the three major areas of interest that are addressed in the five New England Governors' statement and NESCOE's Vision Statement: markets, transmission, and governance. Hunt expressed concerns that the current market structure is not sustainable and will result in some ratepayers overpaying for electricity. Hunt noted the states' opposition to adding a new, incremental carbon pricing mechanism in the wholesale electricity markets and stated interest in exploring the concept of a forward clean energy market. When discussing transmission planning, Hunt stated that there is a desire for a conceptual transmission plan that can inform the states of what transmission is needed to meet their goals, provide analysis over a longer timeframe than the one the ISO currently uses, and provide high-level cost estimates. Hunt thanked the ISO transmission planning team for already being responsive to this type of transmission planning. In discussing ISO governance, Hunt emphasized a need to improve transparency, ensure cost-consciousness, and account for the states' policy goals.

Lastly, Hunt reiterated the states' intention to work with stakeholders through the Future Grid Initiative, mentioned state agencies' plans to hold technical conferences to further discuss the Vision Statement, and indicated the states' intention to report to their respective governors in the first quarter of 2021 on findings and recommendations for actions to advance their Vision. (Shortly after the meeting, the New England States launched a website dedicated to their Vision Statement and technical conferences. Contents of the website, including draft agendas and conference dates, can be viewed at NewEnglandEnergyVision.com)

³⁸ Heather Hunt, "21st Century Grid Conversation with CLG," CLG WebEx presentation (December 2020), https://www.iso-ne.com/static-assets/documents/2020/12/clg_nescoe_vision_dec_2_2020.pdf.

Dave Cavanaugh provided background on the formation and role of NEPOOL. Cavanaugh highlighted the wide range of stakeholders engaged in NEPOOL meetings and discussed the evolution of NEPOOL since its inception. He described NEPOOL's work as part of the Future Grid Initiative and welcomed the opportunity to collaborate with others on the work that is associated with the Vision Statement.

Doug Hurley said that the upcoming shift in the New England's electric grid is necessary and urgent. Additionally, Hurley emphasized that this shift will be seismic and vastly different than changes that have occurred in the past. Hurley congratulated the states on formulating a Vision Statement that highlighted vital regional issues. Hurley also discussed some of the ISO's work integrating storage assets and producing forecasts for various technologies. Finally, Hurley stated that the ISO must work with states to ensure that the market is purchasing what the states want.

Francis Pullaro underscored the importance of a rapid transition of the electricity grid [to clean energy resources]. Pullaro also said our power system was designed for a different era and that the region needs to develop new methods and criteria for transmission analysis, development, and investment. Lastly, Pullaro discussed the creation of the region's capacity market and how this market will need to change in the future in order to meet the region's policy goals.

Robert Ethier discussed the work that ISO New England has begun related to transmission planning beyond the usual ten-year planning horizon. Ethier described previous economic studies that have helped inform the region of the need for, and cost of, potential upgrades to interconnect resources. Finally, Ethier highlighted the need to look further ahead to ensure that investments are made that are cost-effective, prudent, and position the region to achieve its goals.

A brief question and answer session followed the panelist's remarks. Topics that were discussed included: the state legislative process; potential market mechanisms that account for carbon emissions; the best way to inform the public of the cost and benefits of the clean energy transition; land-use impacts on stakeholders; and the ISO's analyses of offshore wind resources.

3.4.4 Election

At the conclusion of the meeting, Tepper reported the outcome of the CLGCC election.

The twelve CLGCC members for the 2021-2022 term are as follows:

- Connecticut: Eric Annes and Dave Thompson
- Massachusetts: Rebecca Tepper, Robert Rio, and Mary Smith
- Rhode Island: Douglas Gablinski and Hank Webster
- Vermont: Deena Frankel and James Porter
- Maine: Andrew Landry
- New Hampshire: August "Gus" Fromuth and Donald M. Kreis

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.

Additionally, the CLGCC will continue striving to attract more end-user participation, to increase participation from all New England states, and to increase the consumers' presence in ISO New England stakeholder discussions and initiatives. The CLGCC will also explore more ways to educate end users about industry institutions, such as New England Power Pool (NEPOOL) and FERC (Federal Energy Regulatory Commission), and about how consumers can advocate before industry institutions, government bodies, and elected officials.

Efforts pinpoint and explain to end users the basic policy dilemmas and choices currently facing the energy industry, the public, and government.

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.

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. While meetings went virtual in 2020, the CLGCC planned the June and September meetings as if Vermont and New Hampshire hosted. CLGCC members from the host states served as moderators and attempted to focus discussions on the interests of Vermont and New Hampshire.

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.

Section 5

ISO New England Activities and Initiatives

This section highlights the major topics presented by the ISO at Consumer Liaison Group (CLG) meetings in 2020. 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.³⁹

³⁹ The monthly memos are posted at the ISO's CLG webpage at <http://www.iso-ne.com/committees/industry-collaborations/consumer-liaison>.

5.1 New England's Clean-Energy Transition

The region's electricity system has been transforming over the past decade. In this timeframe, the wholesale markets have facilitated the retirement of approximately 7,000 MW of older, less efficient power plants and have attracted more than 8,600 MW of newer and cleaner resources.^{40,41} The states have put in place incentives to promote development of additional clean energy to meet increasingly stringent decarbonization goals. As the region moves forward toward a clean energy future, the ISO is working with the New England states and regional stakeholders to ensure a reliable and cost-effective transition.

5.1.1 Future Pathways for Consideration

ISO New England's president and CEO, Gordon van Welie discussed the challenges the electricity grid faces and the possible paths the region can take in a presentation entitled, "New England's Wholesale Electricity Markets: The Clean-Energy Transition and Future Pathways."⁴² In the presentation, and at other events during the year, van Welie discussed the changes to New England's wholesale electricity markets and the region's resource mix over the past two decades.⁴³ In particular, he discussed the New England states' greenhouse gas reduction goals and renewable energy adoption policies, the longstanding federal and state laws that interact within the energy industry, and the benefits that regional system planning and competitive wholesale electricity markets have brought to consumers.

van Welie said he believes a pressing, current jurisdictional issue is the Federal Energy Regulatory Commission's (FERC's) desire to promote market efficiency and price formation, while states—which have the authority to select their own generation mix under the *Federal Power Act*—seek to decarbonize their economies using clean-energy generation. In light of the region's current market design and desired outcomes, van Welie discussed the potential evolutionary paths New England's market could take in the future, discussed potential timelines for these pathways, and compared the cost recovery and risk implications of these models.

The New England region has a successful history of solving difficult problems, and the ISO stands ready to help the region meet its goals and objectives and ensure a reliable electricity future, van Welie said.

5.1.2 Transition to the Future Grid Process

New England is unquestionably on a path to a clean-energy future. Over the past twenty years, competitive wholesale electricity markets, combined with state emission-reduction regulations and policies, have driven a dramatic transition of the region's power fleet to cleaner, more efficient energy resources. To achieve clean-energy goals going forward, the states are expanding their energy and environmental laws to reduce carbon emissions across the economy, which will set in motion extensive electrification of the transportation and heating sectors. This transformation of the economy to run on a clean power system leaves the region with the challenge of making the transition reliably while enabling the change in the grid.

⁴⁰ ISO New England, *2020 Regional Electricity Outlook* (February 2020), https://www.iso-ne.com/static-assets/documents/2020/02/2020_reo.pdf.

⁴¹ ISO New England, "Markets," webpage (2021) <https://www.iso-ne.com/about/key-stats/markets>.

⁴² Gordon van Welie, "The Clean-Energy Transition and Future Pathways," presentation (March 10, 2020), https://www.iso-ne.com/static-assets/documents/2020/02/iso_ne_clean_energy_transition_2020.pdf.

⁴³ Gordon van Welie gave an updated version of this presentation on October 2, 2020 at an event hosted by the New England Council. Gordon van Welie, "The Clean- Energy Transition Is Driving Change to New England's Wholesale Electricity Markets," virtual presentation to the New England Council (October 2, 2020), https://www.iso-ne.com/static-assets/documents/2020/10/iso_ne_pathways_presentation_october_update_nec_10_02_2020.pdf.

ISO New England is engaging with market participants and state entities, 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 this high-priority initiative follows two tracks taking place within the stakeholder process throughout 2020 and 2021. One track is the Future Grid Reliability Study, which is a stakeholder-led assessment of the potential future state of New England's power system. The work of this study includes the following tasks:

- Defining scenarios
- Studying whether the ISO can operate the grid reliably under current market mechanisms
- Considering what products and attributes are missing (through gap analysis)
- Discussing what market changes could be developed in response to any identified gaps in reliability or resource needs

The second track is the Pathways to the Future Grid effort, which includes regional identification, exploration, and evaluation of potential market frameworks that may help support the evolution of the power grid. As part of this effort, New England Power Pool's (NEPOOL's) Participants Committee (PC) hosted several speakers to discuss different existing and proposed market structures that might help the region achieve its goals. These speakers have discussed carbon pricing in the wholesale market, a Forward Clean-Energy Market, the Integrated Clean-Capacity Market, Electric Reliability Council of Texas's (ERCOT's) Energy- and Ancillary-Services-Only Design, and other frameworks instituted across the globe.⁴⁴

At the NEPOOL PC meeting on January 7, Dr. Frank Felder discussed a report he was commissioned to write for NEPOOL which evaluated the various pathways the region could take with a particular focus on the following two questions: 1) whether and to what extent a particular pathway would support (or help to advance) the clean energy policies of States; and, 2) whether and to what extent pathways garner efficiency of regional markets.⁴⁵

The ISO will be conducting analysis on two alternative mechanisms: a Forward Clean Energy Market and a Net Carbon Price. An initial meeting with stakeholders was held in early 2021.

The Future Grid Initiative will continue through 2021.^{46,47}

⁴⁴ NEPOOL Participants Committee, Webpage, (September 3, 2020), <https://www.iso-ne.com/static-assets/documents/2020/09/npc-20200903-additional.pdf>.

⁴⁵ Frank A. Felder, *NEPOOL's Pathways to the Future Grid Process Project Report* (January 6, 2021), https://www.iso-ne.com/static-assets/documents/2021/01/npc_20210107_felder_report_on_pathways.pdf.

⁴⁶ 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/>.

⁴⁷ The ISO posted an update on the Future Grid Initiative on February 25, 2021 on the *ISO Newswire*. See ISO New England, "New England Future Grid Initiative: February 2021 Update," *ISO Newswire* article (February 25, 2021), <https://isonewswire.com/2021/02/25/new-england-future-grid-initiative-february-2021-update/>.

5.1.3 Energy Security Improvements

Following the announcement of Mystic Generating Station's planned retirement and the ISO's request to retain this facility for fuel security, FERC directed the ISO to develop a long-term market design that better addressed energy security in the region.

After an extensive stakeholder process that spanned several years, ISO New England filed its Energy Security Improvements (ESI) proposal with FERC on April 15, 2020.⁴⁸ The ISO asked FERC to respond to this filing by November 1, 2020, and proposed that ESI take effect on June 1, 2024. However, on October 30, 2020, FERC issued an order rejecting the ISO's ESI proposal and the NEPOOL alternative.⁴⁹

On November 13, 2020, the ISO requested clarification on one aspect of the order.⁵⁰ In the request, the ISO asked FERC to clarify the ISO's obligations under the Federal Power Act Section 206 proceeding that was initiated in 2018, when FERC ordered the ISO to file a long-term solution to New England's fuel security concerns. On December 3, FERC rejected the ISO's request for clarification and closed the Federal Power Act 206 Investigation into Fuel Security.⁵¹ The reliability concerns that ESI sought to address still remain and the ISO will work with NEPOOL and the states in 2021 to find market solutions to this challenge.

5.1.4 FERC Order No. 2222

On September 17, 2020, FERC issued Order No. 2222, which governs the participation of distributed energy resources in wholesale electricity markets.⁵² In the Order, FERC determined that existing Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) rules pose barriers to the participation of distributed energy resources (DERs) in regional markets and required ISOs and RTOs to amend their tariffs in order to allow DERs to provide all services that they are physically and technically capable of providing through an aggregation. The Order includes eleven key directives, from establishing DER aggregators as a type of market participants and addressing size and location requirements for distributed energy resource aggregations (DERAs) and individual DERs to setting metering and telemetry requirements for DERAs.

⁴⁸ ISO New England Inc., *Compliance Filing of Energy Security Improvements Addressing New England's Energy Security Problems*, FERC filing, Docket No. ER20-1567-000 (April 15, 2020), https://www.iso-ne.com/static-assets/documents/2020/04/energy_security_improvements_filing.pdf.

⁴⁹ FERC, *Order Rejecting Proposed Tariff Revisions*, Docket No. ER20-1567-000 (October 30, 2020) https://www.iso-ne.com/static-assets/documents/2020/10/er20-1567-000_order_rejecting_esi_10-30-2020.pdf.

⁵⁰ ISO New England, *Request for Clarification and Expedited Treatment of ISO New England*, FERC filing, Docket No. ER20-1567-000 (November 13, 2020), https://www.iso-ne.com/static-assets/documents/2020/11/request_for_clarification_rev.pdf.

⁵¹ FERC, *Order Addressing Arguments Raised on Rehearing and Terminating Section 206 Proceeding*, Docket Nos ER18-1509-001 and EL18-182-001 (December 3, 2020), https://www.iso-ne.com/static-assets/documents/2020/12/er18-1509-001_el18-182-001_12-3-20_order_deny_rehearing_close_206_docket.pdf.

⁵² FERC, *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Docket No. RM18-9-000 (September 17, 2020) https://www.ferc.gov/sites/default/files/2020-09/E-1_0.pdf.

5.1.4.1 Stakeholder Discussions and Compliance Actions

In order to comply with the filing, ISO New England launched an extensive stakeholder process on December 8, 2020 at the NEPOOL Markets Committee.⁵³ The ISO's staff have also been providing regular updates regarding Order No. 2222 compliance to government officials. On January 21, 2021, the ISO released its draft, high-level proposed market design approach to amend the tariff in order to comply with Order No. 2222.⁵⁴

In the Order, FERC required compliance filings by July 19, 2021. The ISO plans to continue working with a variety of stakeholders, including distribution utilities and state regulators, as it takes the proposal through the NEPOOL committee process.

5.2 Regional System Planning

Two key aspects of the ISO's planning process in 2020 included developing forecasts of energy use and adapting for the impacts of the novel coronavirus on the electricity system.

5.2.1 Impact of COVID-19

ISO New England has been closely monitoring the spread of the COVID-19 outbreak around the world and across the US through updates from the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO). To protect the health and wellbeing of its employees and maintain critical business operations, ISO New England has been following guidelines set by the CDC, as well as the ISO's Business Continuity and Pandemic Response Plans.

As a result, the ISO implemented a series of precautions to minimize risk and exposure to employees and critical personnel. The most up-to-date information regarding the ISO's response to the pandemic is included in the *ISO Newswire*.⁵⁵

Through the pandemic, the ISO has continued to be in regular contact with its peer ISO/RTOs, New England transmission companies and other market participants, the North American Electric Reliability Corporation (NERC), the Northeast Power Coordinating Council (NPCC), and all relevant government agencies to share situational updates and best practices.

As residents and businesses across New England have changed their behavior in response to the COVID-19 pandemic, the ISO observed changes in demand for electricity and operated the system accordingly.⁵⁶ During summer 2020, demand for electricity was equal to or higher than what would have been expected without the pandemic, owing partly to an extended period of warm weather. This marked a change from mid-March, when the ISO noticed an average decline in overall electricity use of about 3 to 5%. In general, the ISO's

⁵³ ISO New England, "Order No. 2222: Participation of Distributed Energy Resource Aggregations in Wholesale Markets, Introduction to FERC's September 17, 2020, Order in Docket No. RM18-9-000" WebEx Presentation to the Markets Committee (December 8, 2020) https://www.iso-ne.com/static-assets/documents/2020/12/a08_presentation_order_2222.pptx.

⁵⁴ ISO New England, "Order No. 2222: Participation of Distributed Energy Resource Aggregations in Wholesale Markets, High-level market design approach to comply with Order No. 2222," WebEx presentation (February 9-10, 2021) https://www.iso-ne.com/static-assets/documents/2021/01/a0_order_2222_draft_high_level_market_design_approach.pptx.

⁵⁵ Access these updates at <http://isonewswire.com/>.

⁵⁶ ISO New England, "Checking in on consumer demand during the pandemic." *ISO Newswire* article (August 11, 2020), <http://isonewswire.com/updates/2020/8/11/checking-in-on-consumer-demand-during-the-pandemic.html>.

forecasters have also observed load patterns throughout the day that differ from previous patterns. Despite these changes, the weather remains the primary driver of demand for electricity.

The ISO continuously monitors these evolving trends in load patterns and will continue to make appropriate adjustments to calculate an accurate load forecast.

5.2.2 Energy Efficiency and Distributed Generation Forecasts

Since 2012, the ISO has developed an energy-efficiency (EE) forecast to equip system planners with information about the long-term impacts of EE investments on the region's peak and overall demand for energy. Energy efficiency is a key topic that experts and policymakers at the CLG have addressed since its inception.

Developing this forecast is a collaborative process led by the ISO with input from the Energy-Efficiency Forecast Working Group (EEFWG).⁵⁷ The process incorporates input from 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 1, 2020, with the next one scheduled for release in May 2021.⁵⁸ The ISO forecasts that the region will have approximately 5,800 MW of EE resources by 2029, a change from almost 5,400 MW projected by 2028 in the 2019 EE forecast.

Since 2013, the ISO has also 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.⁵⁹ For purposes of this forecast, DG resources are 5 MW or less in nameplate capacity and are interconnected to the distribution system. Solar PV resources represent the largest share of DG resources throughout New England.

The final 2020 photovoltaic (PV) forecast shows steady growth in PV through 2029, with approximately 7,795 MW of solar PV (AC nameplate rating) to be installed by 2029 throughout New England.⁶⁰ The forecast also reported that about 3,432 MW of solar PV had been installed throughout New England through the end of 2019. Refer to Table 5-1.

⁵⁷ More information about the EEFWG is available at the ISO's "Energy-Efficiency Forecast Working Group," webpage (2020), <https://www.iso-ne.com/committees/planning/energy-efficiency-forecast/>.

⁵⁸ ISO New England, *Final 2020 Energy-Efficiency Forecast for 2020–2029* (May 1, 2020), https://www.iso-ne.com/static-assets/documents/2020/04/eef2020_final_fcst.pdf. More information on the ISO's 2020 draft energy-efficiency forecast is available at the EEFWG webpage: <http://www.iso-ne.com/committees/planning/energy-efficiency-forecast>.

⁵⁹ Information about the DGFWG is available at the ISO's "Distributed Generation Forecast Working Group," webpage (2020), <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/>.

⁶⁰ ISO New England, *Final 2020 Solar PV Forecast* (March 20, 2020), https://www.iso-ne.com/static-assets/documents/2020/03/final_2020_pv_forecast_corrected.pdf.

**Table 5-1
Final 2020 PV Forecast (MW)**

| States | Cumulative Total MW (AC nameplate rating) | | | | | | | | | | |
|--|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| | Thru 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
| CT | 566.5 | 666.3 | 756.1 | 890.2 | 1,024.3 | 1,101.9 | 1,179.5 | 1,257.1 | 1,334.8 | 1,381.9 | 1,427.6 |
| MA | 2,180.4 | 2,500.1 | 2,783.6 | 3,051.3 | 3,319.1 | 3,540.2 | 3,718.7 | 3,891.9 | 4,059.9 | 4,222.7 | 4,380.2 |
| ME | 56.3 | 70.5 | 151.4 | 249.1 | 346.8 | 444.5 | 457.2 | 469.8 | 482.5 | 495.2 | 507.9 |
| NH | 105.2 | 125.6 | 144.8 | 163.0 | 181.2 | 199.4 | 217.6 | 235.8 | 254.0 | 272.1 | 290.3 |
| RI | 159.7 | 208.8 | 255.3 | 299.3 | 341.7 | 384.1 | 426.5 | 468.9 | 511.3 | 553.7 | 596.1 |
| VT | 364.1 | 393.6 | 417.0 | 439.1 | 461.2 | 483.3 | 505.4 | 527.5 | 549.6 | 571.7 | 593.8 |
| Regional— Cumulative (MW) | 3,432.4 | 3,964.9 | 4,508.2 | 5,092.0 | 5,674.2 | 6,153.3 | 6,504.8 | 6,851.0 | 7,192.0 | 7,497.3 | 7,795.8 |

The ISO develops the EE and solar PV forecasts with input from stakeholders; the forecasts are published in the ISO’s annual *Capacity, Energy, Loads and Transmission Report* (CELT Report).⁶¹

5.2.3 Transportation and Heating Electrification Forecasts

In 2020, for the first time, the ISO included forecasted impacts of heating and transportation electrification on state and regional electric energy and demand 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 that the power grid is prepared for the decarbonized future, ISO New England expanded its 10-year planning forecasts to capture growth in air-source heat pumps and light-duty electric vehicles and to quantify resulting increases in grid electricity demand. In February 2020, the ISO published its first 2020 heating electrification forecast and 2020 transportation electrification forecast.⁶²

The ISO forecasted that by 2029, roughly 750,000 air-source heat pumps would be installed in New England with nearly a 600 MW increase in load during the winter months. Light-duty electric vehicles (including cars and light-duty trucks) were estimated to number over 515,000 region-wide, adding up to 400 MW of load per month by the end of 2029. The final forecasts were published in the ISO’s 2020 CELT, released in May 2020.

The ISO recognizes that heating and transportation electrification are nascent trends and viewed the 2020 forecast methodology as a starting point. Improvements will be needed as policy drivers and state initiatives are further developed and additional data become available.

⁶¹ The ISO’s CELT Reports and related materials are available at <https://www.iso-ne.com/system-planning/system-plans-studies/celt/>.

⁶² ISO New England, *Final Draft 2020 Heating Electrification Forecast*, presentation (February 18, 2020), https://www.iso-ne.com/static-assets/documents/2020/10/iso_ne_pathways_presentation_october_update_nec_10_02_2020.pdf, and *Final Draft 2020 Transportation Electrification Forecast*, presentation (February 18, 2020), <https://www.iso-ne.com/static-assets/documents/2020/02/final-draft-2020-transselectr.pdf>.

5.2.4 ISO New England Economic Studies Completed in 2020

As a part of regional system planning efforts and as specified in Attachment K of its *Open-Access Transmission Tariff* (OATT), the ISO may conduct economic planning studies each year.⁶³ The economic studies provide information on system performance, such as estimated production costs, load-serving entity (LSE) energy expenses, transmission congestion, and environmental emission levels.⁶⁴ Scenario analyses also inform stakeholders about different future systems. These hypothetical systems should not be regarded as physically realizable interconnection plans or the ISO's vision of realistic future development, projections, and preferences.

In addition, the PAC also plays a significant role in the study process by facilitating discussions, identifying issues, and advising the ISO on proposed studies. The draft and final findings of economic studies conducted by the ISO are presented to the PAC meetings.

The findings of three studies submitted to the ISO in 2019 and summarized below focused on offshore wind, and one focused on the impacts of increasing the operating limits of the Orrington-South interface in Maine.⁶⁵

5.2.4.1 New England States Committee on Electricity 2019 Economic Study

In April 2019, NESCOE submitted a request for a scenario analysis on offshore wind integration that would provide information and data on increasing levels of incremental offshore wind resources, including the impact on the transmission system, the ancillary services markets, and regional emissions.⁶⁶ Specifically, the NESCOE 2019 Economic Study requested that the ISO consider the interconnection of as much as 8,000 MW (nameplate) of new offshore wind resources by 2030.⁶⁷ The transmission analysis request sought to provide interested stakeholders with information on several transmission configurations available to integrate various levels of additional offshore wind resources, at different points of interconnection into southern New England, and to estimate transmission upgrade costs associated with these conceptual configurations. In addition, NESCOE requested that the study consider wholesale market impacts and power sector air emissions for each scenario studied.

On June 30, the ISO released the final version of the study, which included offshore wind projects under development at the time of the NESCOE request, including Vineyard Wind (800 MW) and Revolution Wind (200 MW). The study considered an additional 7,000 MW of offshore wind strategically placed in southern New England and provided alternatives for transmission system expansion for specific offshore wind interconnection points.⁶⁸ In part, the study found that, under certain circumstances, approximately 5,800 MW of offshore wind can be interconnected to points along the southern shores of Massachusetts, Rhode Island,

⁶³ ISO New England, *ISO New England Inc. Transmission, Markets, and Services Tariff* (ISO tariff), Section II, *Open Access Transmission Tariff*, Attachment K, "Regional System Planning Process" (January 22, 2020), https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_2/oatt/sect_ii.pdf.

⁶⁴ *Load-serving entity (LSE) energy expenses* are the total electric energy revenues that resources and imports from neighboring systems would receive for supplying electric energy to the wholesale market plus the cost of congestion.

⁶⁵ Additional information and links to these and prior economic studies, presentations, and other background information is available at the ISO's Economic Studies webpage: <https://www.iso-ne.com/system-planning/system-plans-studies/economic-studies/>.

⁶⁶ NESCOE, "2019 Economic Study Request: Offshore Wind Integration," PAC presentation (April 25, 2019), https://www.iso-ne.com/static-assets/documents/2019/04/a2_nescoc_2019_economic_study_request_presentation.pptx.

⁶⁷ NESCOE's original request sought to examine increasing levels of offshore wind penetration in 2030 and 2035, which was later amended to examine 2030 only.

⁶⁸ ISO New England, *2019 Economic Study: Offshore Wind Integration* (June 30, 2020), https://www.iso-ne.com/static-assets/documents/2020/06/2019_nescoc_economic_study_final.docx.

and Connecticut without significant upgrades to the onshore transmission network. The ISO also identified an initial scenario to use HVDC submarine transmission to connect from an offshore collection substation directly to Boston, Massachusetts, specifically, the Mystic substation at 1,200 MW. (This scenario assumed the retirement of Mystic 8 and 9 resources.)

5.2.4.2 *Anbaric Development Partners 2019 Economic Study*

Anbaric Development Partners requested that the ISO analyze scenarios of high penetrations of offshore wind to determine the impacts on energy market prices, air emissions, and regional fuel security for 2030. For this study, the ISO considered three offshore wind penetration scenarios: 8,000 MW, 10,000 MW, and 12,000 MW (nameplate), including offshore wind strategically placed in southern New England and interconnecting in the Boston, Massachusetts, area.⁶⁹

The study found that the integration of offshore wind under a variety of scenarios would reduce production costs and emissions in the region but that transmission constraints could compromise the ability of the region to achieve those results modeled.⁷⁰

5.2.4.3 *RENEW Northeast*

RENEW Northeast (RENEW) requested an economic study to evaluate the effectiveness of transmission upgrades to Orrington South to increase production from constrained onshore renewables in Maine. Renew also asked the ISO to identify as a possible Market Efficiency Transmission Upgrade (METU) any upgrade from the scenarios that showed the expected production cost savings to New England customers exceeding the expected cost of that upgrade.⁷¹

The ISO released the report on October 30, 2020.⁷² Results showed that the limited reduction in production costs estimated in this study is not large enough to merit investigation of a METU.

5.3 Competitive Solicitation, Planning Transmission for Public Policy under FERC Order No. 1000

In 2020, the ISO conducted its first competitive solicitation for transmission to meet reliability needs under FERC Order No. 1000.

For reliability transmission projects, the planning process starts with the development of a study scope for a particular region within New England, followed by a needs assessment (NA). If the NA reveals violations of reliability standards or other regulated criteria during the study period, potential solutions must be developed to address these needs. If the identified need is three years out or sooner (i.e., it's a time-sensitive need), solutions are developed with the incumbent transmission owner through a solutions study. For non-

⁶⁹ The ISO determined optimal interconnection points early in the study process, which it presented to stakeholders at the May 21, 2019, PAC meeting; see *2019 Economic Studies*, https://www.iso-ne.com/static-assets/documents/2019/05/a2_2019_economic_study_draft_scope_of_work_and_high_level_assumptions.pptx. The study assumed that these interconnections would need a combination of 345 kilovolt (kV) reinforcements and expansion and that not all the 8,000 MW of offshore wind would be able to operate simultaneously at nameplate levels.

⁷⁰ ISO New England, *2019 Economic Study: Significant Offshore Wind Integration* (October 5, 2020), <https://www.iso-ne.com/static-assets/documents/2020/10/2019-anbaric-economic-study-final.docx>.

⁷¹ ISO New England, "Market Efficiency Technology Upgrade," webpage (2020), <https://www.iso-ne.com/system-planning/system-plans-studies/metu>.

⁷² ISO New England, *2019 Economic Study: Economic Impacts of Increases in Operating Limits of the Orrington-South Interface* (October 30, 2020), <https://www.iso-ne.com/static-assets/documents/2020/10/2019-renew-es-report-final.docx>.

time-sensitive identified needs, the ISO will issue an RFP for a competitive solution(s) and will evaluate any proposals submitted by qualified transmission project sponsors (QTPSs).⁷³

The competitive process began in late December 2019 when the ISO issued an RFP. In response, as part of the first phase of the competitive solicitation, eight different developers submitted 36 proposals whose costs ranged from \$49 million to \$745 million.

The ISO reviewed each of these proposals to ensure that they addressed the identified reliability needs while meeting other requirements. Ultimately, five proposals addressed the needs for a reliable power system and met all other requirements. The ISO then compared these projects' costs. Because the \$49 million project was significantly less expensive than the four other proposed projects (the second-least expensive proposal cost \$94 million) and it was unlikely that further review would have led to the selection of these other projects, the ISO did not advance them to the second phase of review. Development costs incurred during the second phase of review are charged to electricity customers, so not advancing proposals unlikely to be selected delivered additional cost savings.

After review of the bids, the ISO selected the Greater Boston Ready Path solution, a joint venture of National Grid and Eversource, because of its ability to solve grid reliability needs at the lowest cost and be in service before the retirement of the Mystic Generating Station.⁷⁴

The ISO posted the final report on phase one of the RFP solicitation process on July 17, after which the ISO began working with National Grid and Eversource on a solutions study as per the rules of the ISO's tariff.^{75,76}

While the outcome of the competitive solicitation is considered a success, the ISO and stakeholders have noted areas that could be improved. In October 2020, the ISO initiated a formal process to collect and evaluate that feedback in order to identify areas that did not work well or could be changed to improve future RFPs and their execution.⁷⁷ The PAC discussed the feedback received at its December 16, 2020 meeting.⁷⁸

Under FERC Order No. 1000, the ISO can initiate a competitive process for transmission needed to serve public policy needs. The ISO is required to conduct a process at least once every three years to determine if there is a policy-driven transmission need. The initial process was conducted in 2017, which concluded with

⁷³ In October 2019, FERC issued an order instituting a proceeding ([Docket EL19-90-000](#)) to consider how the exemption for immediate-need reliability projects (under Order 1000) is being implemented, and the ISO filed [responses](#) to the initial questions in that proceeding. On June 18, 2020, FERC [terminated](#) the proceeding and determined that the ISO has demonstrated compliance with each of the criteria established for the exemption. It also determined that the record in the proceeding did not support a finding that the ISO's implementation of the exemption is unjust, unreasonable, or unduly discriminatory or preferential.

⁷⁴ Eversource and National Grid, "Greater Boston Ready Path Solution," webpage (2020), <https://www.greaterbostonreadypath.com/about-the-ready-path/>.

⁷⁵ ISO New England, *Boston 2028 Request for Proposal (RFP) - Review of Phase One Proposals* (July 17, 2020), https://www.iso-ne.com/static-assets/documents/2020/07/final_boston_2028_rfp_review_of_phase_one_proposals.pdf

⁷⁶ All materials related to the Great Boston Key Study Area are available at <https://www.iso-ne.com/system-planning/key-study-areas/greater-boston/>.

⁷⁷ ISO New England, "Competitive Solution Process: Order 1000/Boston 2028 Request for Proposal Lessons Learned," presentation (October 21, 2020), https://www.iso-ne.com/static-assets/documents/2020/10/a4_competitive_solution_process_order_1000_boston_2028_rfp_lessons_learned.pdf

⁷⁸ ISO New England, "Competitive Solutions Process: Order 1000/Boston 2028 Request for Proposal Lessons Learned, Review of Submitted Lessons Learned Comments," presentation (December 16, 2020), https://www.iso-ne.com/static-assets/documents/2020/12/a3_competitive_solution_process_order_1000_boston_2028_request_for_proposal_lessons_learned_presentation.pdf

the ISO finding no need based on input from the New England states. This process commenced again in January 2020, beginning with a notice to the PAC. The ISO received stakeholder submittals regarding public policy requirements NESCOE's submittal, which included responses from all six New England states, indicated that the states did not believe that a public policy transmission study was warranted at that time.⁷⁹

5.4 Wholesale Electricity Markets

In 2020, ISO New England provided updates to the CLG regarding the markets it designs and operates, with key points summarized below.

5.4.1 Annual Markets Report from ISO New England's Market Monitors

The ISO regularly reports on the performance of the region's wholesale electricity markets.⁸⁰ In addition to detailed quarterly, monthly, and weekly reports, the ISO's internal and external market monitors (IMM and EMM) prepare comprehensive annual reports on the development, operation, and performance of the markets.⁸¹

In May 2020, the IMM published the *2019 Annual Markets Report*.⁸² 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, 2019. As stated in the report, the IMM determined that New England's capacity, energy, and ancillary service markets performed well and exhibited competitive outcomes, with the Real-Time Energy Market showing an overall improvement in its structural competitiveness. Anne George summarized the report results during her ISO update at the June CLG meeting (see Section 3.2).

Among other observations, the report noted that the total wholesale cost of electricity in 2019, at \$9.8 billion, was considerably lower than 2018, decreasing by 19%, or \$2.3 billion. This decrease was substantially due to lower energy market costs, which accounted for 85% of the overall decrease from 2018. Energy costs in 2019 were \$4.1 billion, down 32% or \$1.9 billion from 2018, largely driven by lower natural gas prices, particularly due to weather during the high electricity demand seasons of summer and winter. (This is in contrast to a 2019 winter with an extended cold snap and a hot and humid summer in 2018.)

Capacity costs totaled \$3.4 billion, down by 6% or \$0.2 billion, driven by clearing prices in the ninth and tenth Forward Capacity Auctions (FCA #9 and FCA #10).

5.4.2 Forward Capacity Auction #15

The fifteenth Forward Capacity Auction was held on February 8, 2021, and concluded with sufficient resources to meet peak demand in 2024-2025. The auction closed with clearing prices ranging from \$2.48 per kilowatt-month (kW-month) to \$3.98 kW-month across different pricing zones, compared to \$2.00 per kW-

⁷⁹ NESCOE, "NESCOE Submission Regarding Transmission Needs Driven by State and Federal Public Policy Requirements," submission to ISO New England (May 1, 2020), https://www.iso-ne.com/static-assets/documents/2020/05/nescoc-ppts-submission_5-1-2020.pdf.

⁸⁰ The ISO's various market reports are posted at its "Market Performance Reports," webpage (2020), <http://www.iso-ne.com/markets-operations/market-performance/performance-reports>.

⁸¹ 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>.

⁸² ISO New England, *2019 Annual Markets Report* (May 26, 2020, Revised June 9, 2020), <https://www.iso-ne.com/static-assets/documents/2020/05/2019-annual-markets-report.pdf>.

month across all zones in the 2020 auction. The ISO filed finalized results of the auction with FERC on February 26.⁸³

The auction cleared three separate prices because of local capacity requirements within New England. For this auction, the region was divided into four zones: Northern New England (NNE), made up of Vermont, portions of Maine and New Hampshire; “Nested” Maine, referring to the remainder of Maine; Southeast New England (SENE), comprising Northeastern Massachusetts, Greater Boston, Southeastern Massachusetts, and Rhode Island; and Rest of Pool (ROP), which includes Connecticut and western and central Massachusetts. Capacity zones are developed to align with power system transmission constraints. They signal areas of the system with a potential shortfall or surplus of capacity. Multiple zones help to ensure that capacity is located and priced appropriately. (A table illustrating results from FCA #15 are in Table 1.)

The clearing prices for FCA #15 are: \$3.98 kW-month in the SENE zone, \$2.61 kW-month in the ROP zone, and \$2.48 kW-month in the NNE and Maine zones.

In total, commitments for 34,621 MW were secured, with 1,351 MW of surplus supply over the net installed capacity requirement. The auction rules allow the region to acquire more or less than the capacity target, providing flexibility to acquire additional capacity and enhanced reliability at a cost-effective price.

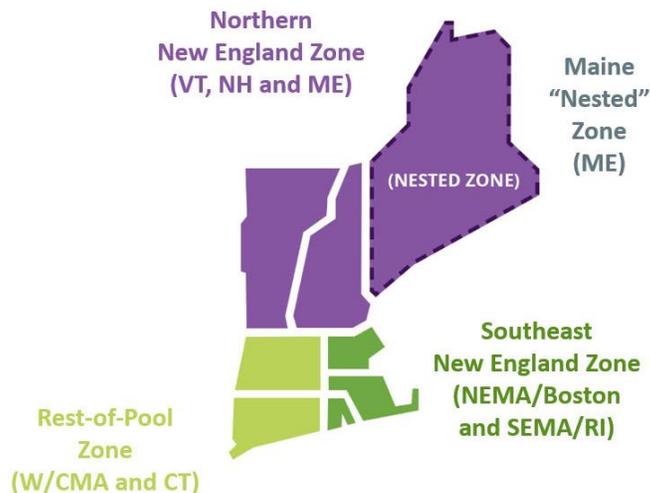
This capacity is comprised of 29,243 MW of generation, 3,891 MW of demand resources, and 1,487 of imports from New York, Québec, Canada and New Brunswick, Canada. More than 2,525 MW of new resources within New England secured obligations. Of this total, approximately 19 MW received their obligations under the renewable technology resource (RTR) designation, which is the last year for this exemption. Almost 600 MW have come into the market under the RTR designation since FCA #9, the first auction for which the RTR designation applied.

The eligibility requirements to conduct a substitution auction were not met in this auction, so there are no results to report.

The estimated value of the capacity market in 2024-2025 will be about \$ 1.36 billion.

⁸³ ISO New England Inc., *Forward Capacity Auction Results Filing*, FERC filing, Docket No. ER21-___-000, (February 26, 2021), https://www.iso-ne.com/static-assets/documents/2021/02/fca_15_results_filing_2-26-2021.pdf

Figure 1 - The Capacity Zones Modeled for Forward Capacity Auction #15



The annual FCM auction is held three years before each capacity commitment period to provide time for new resources to be developed. Capacity resources can include conventional power plants, renewable generation, imports, and demand resources such as load management and energy-efficiency measures. Resources that clear in the auction receive a monthly capacity payment in that future year in exchange for their commitment to provide power or curtail demand when called on by the ISO.

Resources that fail to meet their capacity commitment during a shortage event must refund part of their capacity payment; this refunded money goes to resources that overperformed during the shortage event. The capacity market is separate from the energy market, where resources with and without a capacity commitment compete on a daily basis to provide power and are paid for the electricity they produce.

5.4.3 Carbon Pricing in Wholesale Electricity Markets

ISO New England has for years supported carbon pricing in wholesale electricity markets to enable carbon reductions.

On September 30, 2020, FERC held a full-day technical conference on the potential for state-adoption of mechanisms to price CO₂ emissions in RTO/ISO wholesale electricity markets.⁸⁴ ISO New England's president and CEO, Gordon van Welie, as well as the ISO's chief economist, Matt White, appeared on separate panels.

Through a pretechnical conference statement and opening comments, van Welie reiterated the ISO's long-standing support for pricing carbon in New England's wholesale markets as a way to help states meet their

⁸⁴ FERC, "Technical Conference regarding Carbon Pricing in Organized Wholesale Electricity Markets," webpage (September 30, 2020), <https://ferc.gov/news-events/events/technical-conference-regarding-carbon-pricing-organized-wholesale-electricity>.

public policy goals while continuing to benefit from the efficiencies and competitive forces of wholesale markets.⁸⁵

The role of carbon pricing in wholesale electricity markets has been the topic at several CLG meetings through the years, most recently at the September 17, 2020 meeting. (Refer to Section 3.3).

5.5 The ISO's Budget Review Process

On October 15, ISO New England filed with FERC its proposed 2021 operating and capital budgets for review and approval.⁸⁶ The ISO requested that the commission accept the proposed budgets as filed, effective January 1, 2021. FERC approved the budget on December 18, 2020.⁸⁷

5.5.1 Proposed Operating Budget

The proposed operating budget for 2021, before depreciation and true up, is projected to be \$178.6 million, which is \$4.4 million or 2.5% higher than the 2020 operating budget of \$174.2 million. After depreciation and true up, the revenue requirement for 2021 is projected to be \$205.1 million, which is \$6.3 million or 3.2% higher than the 2020 revenue requirement of \$198.8 million. Note that the 2020 revenue requirement reflects a \$0.2 million true-up (or overcollection) of revenues. If the ISO's projected revenue requirement for 2021 were fully passed through to end-use customers, their cost would average \$1.04 per month (up from \$1.02 per month for the 2020 revenue requirement). The proposed 2021 budget represents level headcount and level professional fees.

In addition to compensation and inflationary costs, the primary activities driving changes from the 2020 operating budget are as follows:

- Renewable resources/emerging technologies (wind, photovoltaic, energy storage) impacting market monitoring and system planning
- The Future of the Grid and market efforts
- Increases in computer services and cybersecurity and NERC critical infrastructure protection (CIP) compliance, including additional consultant resources, costs for new and enhanced products, and for data archiving
- Competitive transmission solution (FERC Order No. 1000)—Allocated funding to FERC Order No. 1000 will only be used for this purpose, with any underutilization of funds being returned in a subsequent budget,

⁸⁵ ISO New England, *ISO New England Inc., Pretechnical Conference Statement* (Docket No. AD20-14) (September 15, 2020), https://www.iso-ne.com/static-assets/documents/2020/09/carbon_pricing_technical_conf_comments_opening_statements.pdf. Gordon van Welie, "Carbon Pricing in Organized Wholesale Electricity Markets, Docket No. AD20-14-000, opening comments (September 15, 2020), <https://ferc.gov/sites/default/files/2020-09/Panel-2-van-Welie-ISONE-Opening-Remarks.pdf>.

⁸⁶ ISO New England Inc., *Filing of 2021 Capital Budget and Revised Tariff Sheets for Recovery of 2021 Administrative Costs*, Docket No. ER20-106-000 (October 15, 2020), https://www.iso-ne.com/static-assets/documents/2020/10/iso_2021_ann_budget_filing.pdf.

⁸⁷ FERC, *2021 Capital Budget and Revised Tariff Sheets for Recovery of 2020 Administrative Costs*, Docket No. ER20-106-000, letter order (December 18, 2020), <https://www.iso-ne.com/static-assets/documents/2020/12/er21-106-000.pdf>.

5.5.2 Proposed Capital Budget

The proposed capital budget for 2021 is projected to be \$28 million, the same as the 2020 capital budget. Projects in the capital budget include significant market and reliability software programs, as well as physical and cybersecurity efforts.

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

The ISO's formal budget-review process usually includes a preliminary budget presentation at the annual New England Conference of Public Utilities Commissioners (NECPUC) Symposium in June and an additional budget presentation with the New England states in August.⁸⁸ This year, because of the COVID-19 pandemic, the June and August budget meetings were held via WebEx.

After the budget presentation in August, the New England states had the opportunity to submit questions and comments on the proposed budget, for which the ISO issues formal responses. The comments submitted by the New England states and the ISO's responses are filed with FERC in October alongside the proposed budget.

More information regarding the ISO's budget is available on the ISO website.⁸⁹

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. The ISO 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.

⁸⁸ ISO New England, *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.

⁸⁹ ISO New England, "The ISO's Budget," webpage (2021), is <https://www.iso-ne.com/about/corporate-governance/budget/>.

Table 6-1 shows the range of average wholesale market costs for calendar years 2012 to 2020 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.

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

| | Wholesale Market Costs (¢/kWh) | Date Residential Retail Power Supply Rates in Effect | Residential Retail Power Supply Rates ^(b) (¢/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 |

(a) The analysis is based on a hypothetical residential consumer that uses 750 kWh/month. The values indicate a range of lowest-to-highest costs among the states. Wholesale markets costs for 2020 are preliminary.

(b) 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 2019 to 2020, wholesale market costs decreased 21% to 22% in all the New England states, largely because of decreases in wholesale energy market costs during 2020, due to lower demand and low natural gas prices during the COVID-19 pandemic, compared with those in 2019. All the states with unbundled retail electricity markets (Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island) saw a decrease in retail power supply rates in effect on January 1, 2021, compared with retail power supply rates in effect on January 1, 2020.
- Three of the six states saw an increase in total residential retail electricity rates in effect on January 1, 2020, compared with total residential retail electricity rates in effect on January 1, 2019. These rates include costs for power supply, transmission, distribution, and all other delivery service charges.⁹⁰

⁹⁰ Total residential retail electricity rates in effect on January 1, 2020, ranged from 15.48 to 25.43 ¢/kWh among the New England states. Total residential retail electricity rates in effect on January 1, 2021, ranged from 15.54 to 25.20 ¢/kWh among the New England states.

- The estimated regional transmission rate increased by approximately 11% from 2019 to 2020 (from 1.7344 ¢/kWh in 2019 to 1.9193 ¢/kWh in 2020) and is equivalent to 8% to 12% of total residential retail electricity rates in effect on January 1, 2021, which ranged from 15.54 ¢/kWh to 25.20 ¢/kWh.⁹¹
- A review of actual transmission rates for residential retail consumers in Connecticut, Maine, Massachusetts, New Hampshire, and Rhode Island in effect on January 1, 2021 shows that transmission represents 11.5% to 23.7% of total residential retail electricity rates.⁹²

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 13 years, total annual costs have ranged from a low of \$7.7 billion in 2016 to a high of \$14.9 billion in 2008.

Table 7-1 summarizes New England’s wholesale electricity costs for 2009 to 2020.

⁹¹ 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 2020, the period is based on the 12 months ending December 31, 2020. 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>.

⁹² 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.

**Table 7-1
New England Wholesale Electricity Costs, 2009 to 2020 (in Millions and ¢/kWh)^(a)**

| | 2009 | | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | | 2020 ^(b) | |
|---|---------|-------|----------|-------|---------|-------|---------|-------|----------|-------|----------|-------|---------|-------|---------|-------|---------|-------|----------|-------|---------|-------|---------------------|-------|
| | \$ Mil. | ¢/kWh | \$ 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) | \$5,884 | 4.3 | \$7,284 | 5.2 | \$6,695 | 4.9 | \$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 |
| Ancillaries^(d) | \$190 | 0.1 | \$164 | 0.1 | \$39 | 0.0 | \$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 |
| Capacity^(e) | \$1,768 | 1.3 | \$1,647 | 1.2 | \$1,345 | 1.0 | \$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 |
| Subtotal | \$7,842 | 5.8 | \$9,095 | 6.5 | \$8,079 | 5.9 | \$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 |
| Transmission charges^(f) | \$1,115 | 0.8 | \$1,417 | 1.0 | \$1,368 | 1.0 | \$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 |
| RTO costs^(g) | \$116 | 0.1 | \$145 | 0.1 | \$130 | 0.1 | \$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 |
| Total | \$9,073 | 6.6 | \$10,657 | 7.6 | \$9,577 | 7.0 | \$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 |

- (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 2020 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 transitional Installed Capacity (ICAP) Market through May 2010 and the Forward Capacity Market from June 2010 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 \$50.0 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 2008 and 2020, the ISO's annual costs have ranged from \$116 million to \$196 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 2020, the total value of all wholesale electricity costs, including the cost of regional transmission upgrades and ISO operations, was approximately \$8.2 billion. Allocating this cost across the load served at a wholesale level (real-time load obligation) in 2020 yields a rate of 6.7 ¢/kWh. Wholesale values for 2020 are preliminary and subject to reconciliation.