ISO New England Regional Update

new england

ISO

Vermont System Planning Committee January 2024 Quarterly Meeting

ISO-NE PUBLIC

Sarah Adams

STATE POLICY ADVISOR

ISO New England Performs Three Critical Roles to Ensure Reliable Electricity at Competitive Prices

Grid Operation

Coordinate and direct the flow of electricity over the region's high-voltage transmission system

Market Administration

Design, run, and oversee the markets where wholesale electricity is bought and sold

Power System Planning

Study, analyze, and plan to make sure New England's electricity needs will be met over the next 10 years



Today's Updates

- Operations Update
 - Winter 2023/2024 Outlook
 - Operational Impact of Extreme Weather Events
- Markets Update
 - Monthly Market Highlights
 - Forward Capacity Auction #18
 - Forward Capacity Auction #19 Delay
- System Planning Update
 - Vermont 2033 Needs Assessment
 - Legacy Distributed Energy Resources in Needs Assessments

ISO-NE PUBLIC

- 2050 Transmission Study
- Regional System Plan
- ISO Generator Interconnection Study Queue Snapshot



WINTER 2023/2024 OUTLOOK

On December 4, the ISO posted its Winter Outlook Press Release

For more information, visit <u>www.iso-ne.com/winter</u>



OPERATIONAL IMPACT OF EXTREME WEATHER EVENTS – ENERGY ADEQUACY STUDY



Operational Impact of Extreme Weather Events – Energy Adequacy Study

- <u>Operational Impact of Extreme Weather Events</u> is a probabilistic energy-security study undertaken jointly by the ISO and the Electric Power Research Institute (EPRI)
- The study seeks to inform the region about future energy adequacy risks and provide context for assessing solutions, is one of several <u>key projects</u> undertaken by the ISO to help New England prepare for tomorrow's greener grid
- The study is being undertaken in three major steps, with EPRI providing weather modeling and risk screening model development, and ISO completing the energy assessments, using the <u>21-day energy assessment tool</u>



• The energy adequacy risk profile is dynamic and will be a function of the evolution of both supply and demand profiles

Energy Adequacy Study Key Takeaways

- <u>Final Report</u> released in December 2023 includes results of Step 3 energy assessments completed for winter and summer 2027 and 2032 events, and reviews sensitivity analysis performed for the worst case 2032 winter event
- Results reveal a range of energy shortfall risks and associated probabilities and reveal similar energy adequacy risk with and without the Everett Marine Terminal in-service
- Sensitivity analysis of 2032 worst-case scenarios indicate an increasing energy shortfall risk profile between 2027 and 2032
- Timely additions of BTM and Utility Scale PV, offshore wind, and incremental imports from NECEC are critical to mitigate energy shortfall risks that result from significant peak winter load growth and retirements
- This energy adequacy study tool developed in partnership with EPRI provides a much needed foundation for the ISO to monitor risks and study the system as it continues to evolve



Introduction to the Regional Energy Shortfall Threshold (REST)

- The Probabilistic Energy Adequacy Tool (PEAT) framework for risk analysis under extreme weather events will be essential for evaluating regional energy shortfall risk as the resource mix evolves and as climate projections are refined
- ISO's initial 2027 and 2032 energy adequacy study results are expected to help inform the development of a Regional Energy Shortfall Threshold (REST)
 - ISO expects that the REST will be a reliability-based threshold that reflects the region's level of risk tolerance with respect to energy shortfalls during extreme weather
- ISO <u>introduced</u> the REST scope of work at the December NEPOOL Reliability Committee meeting; work will continue through 2024

More information on the Operational Impacts of Extreme Weather Events Key Project, including ongoing efforts related to development of a Regional Energy Shortfall Threshold, is available on the ISO website: <u>Operational Impacts of Extreme Weather Events Key Project (iso-ne.com</u>)

ISO-NE PUBLIC

MONTHLY MARKET HIGHLIGHTS

ISO-NE PUBLIC

Monthly Wholesale Electricity Prices and Demand in New England, November 2023

November 2023 and Percent Change from November 2022 and October 2023	November 2023	Change from November 2022	Change from October 2023
Average Real-Time Electricity Price (\$/megawatt-hour)	\$37.01	-45.0%	52.4%
Average Natural Gas Price (\$/MMBtu)	\$3.45	-40.1%	144.7%
Peak Demand	17,260 MWs	2.6%	4.6%
Total Electricity Use	9,174 GWh	2.1%	5.3%
Weather-Normalized Use*	9,058 GWh	-0.5%	4.3%

*Weather-normalized demand indicates how much electricity would have been consumed if the weather had been the same as the average weather over the last 20 years.

ISO-NE PUBLIC

November 2023 Generation in New England, by Source



Source: 2023 Net Energy and Peak Load by Source

ISO-NE PUBLIC

FORWARD CAPACITY AUCTION #18



Forward Capacity Auction #18 is Scheduled to Take Place in February

- The Federal Energy Regulatory Commission (FERC) has <u>accepted</u> ISO's proposed Installed Capacity Requirement and related values for the 18th Forward Capacity Auction (FCA 18) – scheduled to commence February 5
- FCA 18 will procure the resources needed to meet the demand for electricity, plus reserve requirements, during the June 1, 2027 to May 31, 2028 capacity commitment period

ISO-NE PUBLIC

- The ISO will model the same **three** capacity zones used in FCA #17
 - Northern New England Capacity Zone
 - Export-Constrained
 - Maine "Nested" Capacity Zone
 - Export-Constrained
 - Rest-of-Pool Capacity Zone



FCA #18: Other Important Auction Inputs

• The ISO qualified a total **of 32,685 MW** of existing capacity resources to participate in the auction, including:

ISO-NE PUBLIC

- 29,855 MW from existing generating resources (intermittent and non-intermittent)
- 84 MW from existing import resources, and
- 2,746 MW from existing demand resources
- The ISO qualified 135 new capacity resources totaling 4,108 MW to participate in the auction
- The net Installed Capacity Requirement is 31,591 MW



FORWARD CAPACITY AUCTION #19 DELAY



FCA 19 Delay Filing

- This month, FERC <u>approved a request</u> by ISO and the New England Power Pool (NEPOOL) to delay the auction for FCA 19 by one year (until February 2026)
 - FCA 19 will secure obligations from resources to be available during the 2028/2029 capacity year, with the qualification process beginning in early 2024
 - The delay will not affect the capacity commitment period, nor will it affect elimination of the Minimum Offer Price Rule
- Delaying FCA 19 by one year will allow ISO staff and stakeholders more time to complete the <u>Resource Capacity Accreditation (RCA) project</u>
 - FCA 19 is scheduled to be the first auction to include the updated capacity accreditation changes developed through the RCA project, but the discovery of a modeling issue has slowed the project's completion
 - The ISO expects to file its RCA proposal with FERC in August 2024
- The delay will also allow for continued discussions on revising the forward, annual capacity market to a prompt and/or seasonal market

ISO-NE PUBLIC

 ISO engaged Analysis Group to draft a <u>report</u> looking at the tradeoffs associated with these options ahead of making a recommendation to stakeholders (expected at February Markets Committee meeting)

16

• FCA 18 will not be affected by the delay

VERMONT 2033 NEEDS ASSESSMENT



Vermont 2033 Needs Assessment Background

- The ISO issued a <u>Notice of Initiation of the Vermont 2033 Needs</u> <u>Assessment</u> in November 2022
- The ISO regularly conducts studies in key areas pursuant to the <u>Open Access Transmission Tariff</u> (Section II) based on several triggers
 - Assess compliance with reliability standards consistent with long-term system needs
 - Assess the adequacy of the transmission system capability, such as transfer capability, to support local, regional and interregional reliability
 - Examine short circuit performance of the system
- The Vermont Needs Assessment evaluates performance and identifies reliability-based needs in Vermont for the year 2033 while considering:
 - Future load conditions reflecting the 2023 Capacity, Energy, Loads and Transmission Report forecast
 - Resource changes in the study area based on FCA 16 results with relevant updates in FCA 17 included
 - Reliability over a range of generation patterns and transfer levels
 - Conducting steady-state, stability, and short-circuit analysis
 - Study assumptions consistent with NERC Standard TPL-001, "Transmission System Planning Performance Requirements", NPCC Directory # 1, "Design and Operation of the Bulk Power System", and ISO Planning Procedure No. 3 (PP3), "Reliability Standards for the New England Area Pool Transmission Facilities"

ISO-NE PUBLIC



Vermont 2033 Needs Assessment

Summary of Needs Assessment Results

- ISO-NE has posted the draft VT 2033 Needs Assessment report and study files under the <u>New Hampshire and</u> <u>Vermont Key Study Area</u> on the ISO website
 - No short-circuit needs were identified
 - No stability needs were identified
 - Instances of New England loss of source criteria violations due to Legacy DER tripping will be evaluated in the future New England 2034 Daytime Minimum Load Needs Assessment
 - One N-1-1 thermal need under winter peak conditions
 - The K32 Coolidge Cold River 115 kV line was overloaded under 2032-2033 winter peak load conditions

ISO-NE PUBLIC

No other steady-state needs were identified



Vermont 2033 Needs Assessment Next Steps

- Typically, once a non-time-sensitive need (greater than three years) is identified, the next step is the initiation of a competitive solution process
- In this case, the ISO is proposing a **pause** in the process due to the following factors:
 - Potential interaction with the <u>Longer-Term Transmission Study</u> (LTTS) Phase II process

ISO-NE PUBLIC

- Impact of FERC Order 881 implementation
- Use of <u>Storage as a Transmission-only Asset</u> (SATOA)
- Need-by-date for the K32 thermal violation
 - December 1st, 2032



LEGACY DISTRIBUTED ENERGY RESOURCES IN NEEDS ASSESSMENTS



Legacy DER in Needs Assessments Background



22

- "Legacy DER" refers to DER that interconnected under the IEEE 1547- 2003 standard
 - Not required to have voltage ride-through capability



- In New England, Legacy DER mostly includes solar PV resources that interconnected prior to January 1, 2019 (approximately 3,000 MW total)
- With the assumed 20-year life-cycle for Legacy DER, all would be replaced with inverters required to have voltage ride-through capability by 2039
- The critical assumption for modeling the tripping of Legacy DER for transmission events is the low voltage trip logic
- The Boston and Vermont 2033 Needs Assessments independently assessed the impact of Legacy DER tripping because there was uncertainty on the types of criteria violations that could be caused

ISO staff presented on Legacy DER in Needs Assessments at the December Planning Advisory Committee meeting. The most up-to-date information on the New England Daytime Minimum Load Needs Assessment is available at the PAC.

ISO-NE PUBLIC

New England 2034 Daytime Minimum Load Needs Assessment

Coordination with Boston and Vermont 2033 Needs Assessments

- ISO proposed the initiation of a New England Daytime Minimum Load Needs
 Assessment to identify and resolve needs using a regional solutions study
 - The study will use 2023 Transmission Planning Base Case Library cases to look at a 2034 study year
 - The study will evaluate stability contingencies that could cause loss of source criteria violations
- Boston and Vermont 2033 Needs Assessments will not identify needs based on New England loss of source criteria violations
- If needs are identified as a part of the Boston and Vermont 2033 Needs
 Assessments that are considered independent of the loss of source based needs,
 then these needs will move forward to solutions development
- Solutions development for needs from the Boston and VT 2033 Needs Assessments that are not independent of loss of source based needs will be performed in a coordinated manner
- The ISO expects to initiate the 2034 Daytime Minimum Load Needs Assessment in Q1 2024

ISO staff presented on Legacy DER in Needs Assessments at the December Planning Advisory Committee meeting. The most up-to-date information on the New England Daytime Minimum Load Needs Assessment is available at the PAC.

ISO-NE PUBLIC

2050 TRANSMISSION STUDY

A High-Level Study for the Years 2035, 2040, and 2050



2050 Transmission Study

A High-Level Study for the Years 2035, 2040, and 2050

- In November, the ISO released the Draft 2050 Transmission Study report
 - Initial study scope and assumptions developed in conjunction with the states
 - Aims to inform the region of the amount, type, and high-level cost estimates of transmission infrastructure that would be *needed to cost-effectively and reliably serve peak loads*, including electrified transportation and heating, in a clean-energy future



- Study looks beyond the ISO's typical 10-year horizon
- The results, driven by future resource mix and demand assumptions provided by the New England states, offer an overview of the regional transmission system investment needed to ensure reliability throughout the clean energy transition
- The report includes sets of potential solutions, or roadmaps, designed to assist stakeholders in their efforts to facilitate the clean energy transition

The most up-to-date information on the 2050 study is available at the <u>Planning Advisory Committee</u> and <u>Longer-Term Transmission Studies</u> webpages.

REGIONAL SYSTEM PLAN



2023 Regional System Plan

- To forecast system needs 10 years out, the RSP considers:
 - Forecasts of Electric Energy, EE, and PV Capacity and Energy
 - Existing and Future Resource Development in Areas of Need
 - Fuel-Related Risks to System Reliability
 - Existing and Pending Environmental Regulations
 - Projections of Capacity and Operating Reserves Needs
 - Federal, State, and Regional Initiatives
 - Transmission System Needs, Solutions, and Cost Considerations
 - Interregional Planning
- ISO New England hosted a public meeting to discuss the 2023 Regional System Plan on November 1
 - A <u>recording</u> of the meeting is available on our website

ISO-NE PUBLIC



ISO New England's Regional System Plan (RSP) is a comprehensive look at the 10-year horizon for New England's power grid, including resources, transmission, market efficiencies, and economic and environmental considerations. The RSP helps regional stakeholders assess needs related to grid reliability. Publishing an RSP at least once every three years is one of the ISO's responsibilities as mandated by the Federal Energy Regulatory Commission (FERC). This overview of the 2023 RSP highlights key updates since the 2021 RSP.

State and Federal Initiatives



State policy objectives and federal funding initiatives related to the clean energy transition have a significant impact on power system planning.

- ISO staff provided technical assistance to the New England states as they applied for funding related to the Bipartisan Infrastructure Law of 2021
- Prompted by Massachusetts renewable energy laws, construction of the New England Clean Energy Connect (NECEC), a major new transmission line, will bring 1,200 MW of hydropower from Québec into the region via Maine.
- Maine utility regulators have approved a major transmission line and wind farm that will connect Northern Maine to ISO New England and will provide renewable energy to Maine and Massachusetts utilities
- Passage of state legislation continues to increase authorizations for offshore wind procurements.

Regional System Plan 2023 Summary

ISO GENERATOR INTERCONNECTION QUEUE SNAPSHOT



The ISO Generator Interconnection Queue Provides a Snapshot of Resource Proposals

Dramatic shift in proposed resources from natural gas to battery storage and renewables



FOR MORE INFORMATION...



Subscribe to the ISO Newswire

<u>ISO Newswire</u> is your source for regular news about ISO New England and the wholesale electricity industry within the six-state region



Log on to ISO Express

<u>ISO Express</u> provides real-time data on New England's wholesale electricity markets and power system operations

Follow the ISO on X (fka Twitter) @isonewengland

ISO-NE PUBLIC



Download the ISO to Go App

<u>ISO to Go</u> is a free mobile application that puts real-time wholesale electricity pricing and power grid information in the palm of your hand



Questions

ISO-NE PUBLIC





ISO NEW ENGLAND PUBLICATIONS AND RESOURCES



ISO New England Releases Several Publications



2022 Regional Electricity Outlook

Provides an in-depth look at New England's biggest challenges to power system reliability, the solutions the region is pursuing, and other ISO New England efforts to improve services and performance



New England Power Grid Profile

Provides key grid and market stats on how New England's wholesale electricity markets are securing reliable electricity at competitive prices and helping usher in a cleaner, greener grid

ISO-NE PUBLIC



New England State Profiles

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

Consumer Liaison Group Provides a Forum for Consumers to Learn about Regional Electricity Issues

- A forum for sharing information between the ISO and electricity consumers in New England
- The CLG Coordinating Committee consists of 12 members who represent various stakeholder groups
- Quarterly meetings are free and open to the public, with in-person and virtual options to participate
- Tentative 2024 CLG Meeting Dates:
 - Wednesday, March 6
 - Tuesday, June 4
 - Thursday, September 12
 - Wednesday, December 4



More information on the CLG is available at: <u>https://www.iso-ne.com/committees/industry-</u> <u>collaborations/consumer-liaison/</u>

34

More information on the CLG is available at: https://www.iso-ne.com/committees/industry-collaborations/consumer-liaison/