



ISO New England Regional Update

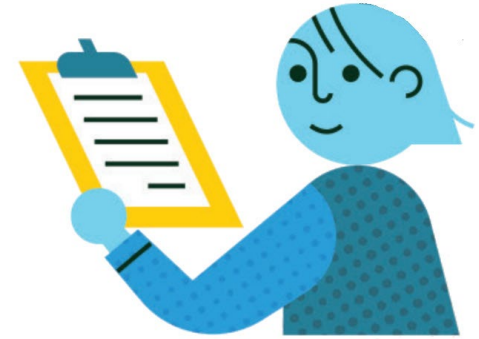
*Vermont System Planning Committee
July 2024 Quarterly Meeting*

Sarah Adams

STATE POLICY ADVISOR



Today's Updates



- Monthly Markets Highlights
- 2023 Annual Markets Report
- Update on Hot Weather Operations
- Proposed 2025 Operating and Capital Budgets
- Operational Impact of Extreme Weather Update
- 2024 CELT Report
- FERC Order 2023 Update

MARKETS UPDATE

Monthly Markets Highlights

2023 Annual Markets Report

MONTHLY MARKET HIGHLIGHTS



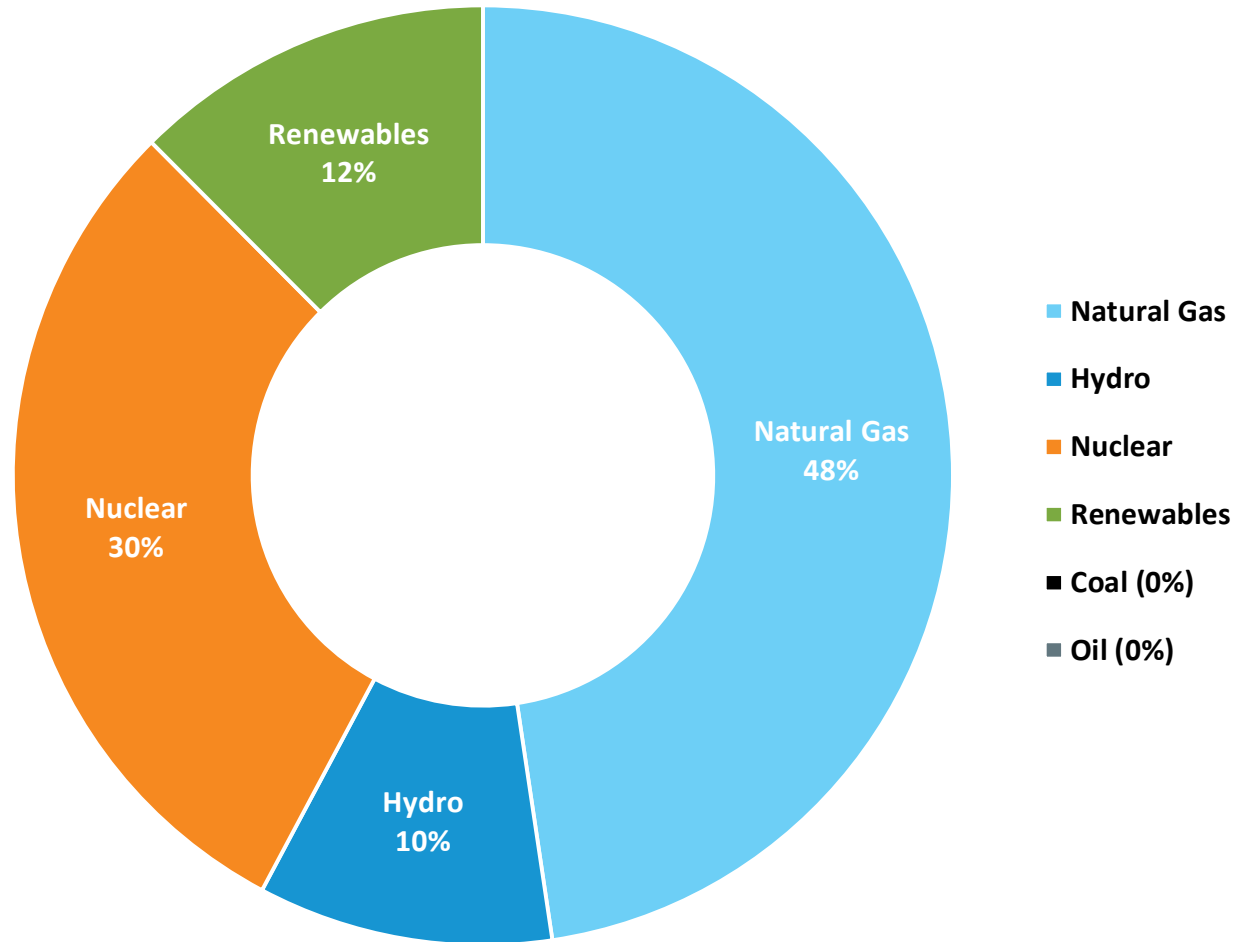
Monthly Wholesale Electricity Prices and Demand in New England, May 2024

May 2024 and Percent Change from May 2023 and April 2024	May 2024	Change from May 2023	Change from April 2024
Average Real-Time Electricity Price (\$/megawatt-hour)	\$26.25	13.5%	7.0%
Average Natural Gas Price (\$/MMBtu)	\$1.60	1.3%	6.0%
Peak Demand	17,328 MW	17.1%	10.7%
Total Electricity Use	8,629 GWh	5.0%	4.1%
Weather-Normalized Use*	8,338 GWh	-0.3%	0.8%

*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.



May 2024 Generation in New England, by Source



Source: [2024 Net Energy and Peak Load by Source](#)

2023 ANNUAL MARKETS REPORT

2023 Annual Markets Report Overview

- In May, ISO New England's **Internal Market Monitor (IMM)** issued the *2023 Annual Markets Report (AMR)*
 - The IMM functions **independently** of ISO management and reports directly to the ISO Board of Directors
- The AMR assesses the **state of competition** in the wholesale electricity markets administered by the ISO during the most recent operating year
- The AMR also presents the **most important findings, market outcomes, and market design changes** of New England's wholesale electricity markets for 2023



Note: The *2023 Annual Markets Report* is available on the [Internal Market Monitor webpage](#)

Lower Energy Costs Drove an Overall Decrease in Total Wholesale Costs in 2023

- The total wholesale cost of electricity was \$9.5 billion
 - The 43% drop compared to 2022 costs (\$16.7 billion) is largely attributed to lower energy costs
- Energy market costs totaled \$4.8 billion, **down 59% from 2022**
 - Natural gas prices were down 67% year over year
 - Energy costs accounted for 51% of the year's total wholesale electricity costs, compared to 70% in 2022
- Capacity costs totaled \$1.3 billion, **down 30% from 2022**
- Cost per megawatt-hour (MWh) of load served last year was \$82, compared to \$140 in 2022
 - The average price in the Real-Time Energy Market was down 58% year over year, at \$35.70/MWh. The average price in the Day-Ahead Energy Market was down 57%, at \$36.82/MWh
- Regional network load costs, which pay for the use of transmission facilities, reliability, and certain administrative services, were \$2.7 billion, **down 4%** from 2022



OPERATIONS UPDATE

Update on Hot Weather Operations

Proposed 2025 Operating and Capital Budgets

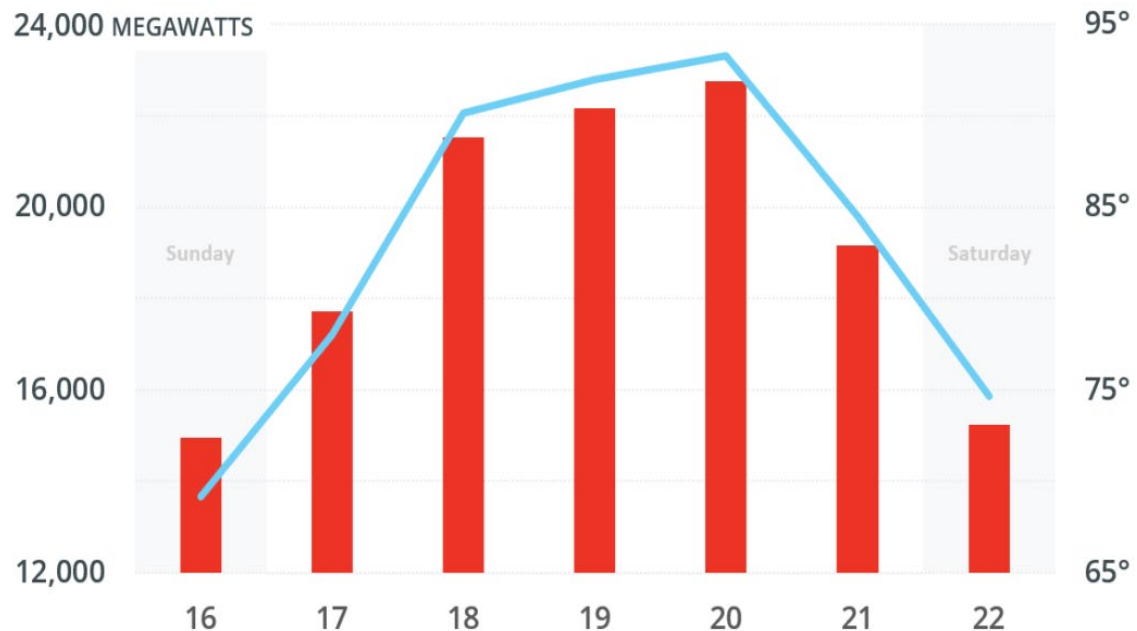
Operational Impacts of Extreme Weather Events

UPDATE ON HOT WEATHER OPERATIONS

New England's Power Grid Remained Reliable During June Heat Wave

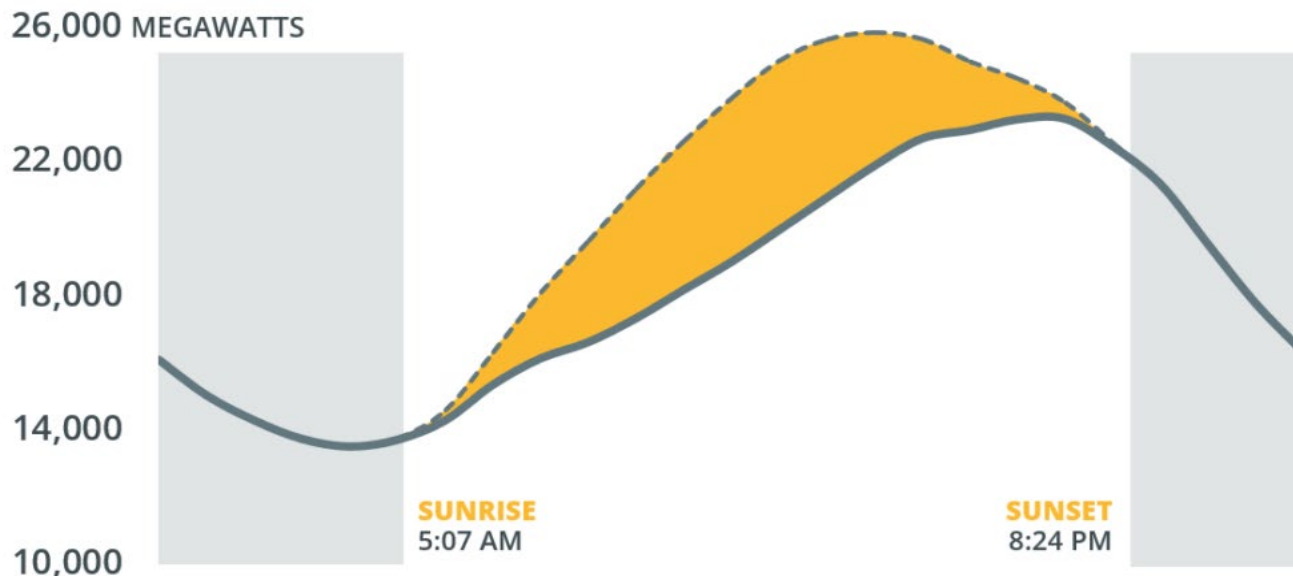
- Demand peaked at 23,324 MW on June 20
 - Within the expected range [forecasted for the summer](#)
- Temperatures in the region averaged more than 8° Fahrenheit higher than normal during the five-day heat wave

Peak demand vs. high temperature, June 16–22



New England's Power Grid Remained Reliable During June Heat Wave

- Behind-the-meter (BTM) solar tempered mid-day demand for grid electricity throughout the heat wave
 - On June 20, BTM solar contributed approximately 5,100 MW of power at noon, and 160 MW during the peak hour



Estimated demand served by BTM solar Estimated demand without BTM solar Electricity demand seen in real time

New England's Power Grid Remained Reliable During June Heat Wave

- The ISO [declared a Power Caution](#) on June 18 after generation outages and reductions led to an operating reserve [shortfall](#)
 - ~1,600 MW of generation that was expected to be online was unavailable
 - Net imports were ~100 MW below expected levels entering the day
 - Demand was ~200 MW above forecast
- Declaring the Power Caution allowed operators to use reserve resources to maintain system balance, which ensured reliable system operations
- Prices in the RT Energy Market averaged approximately \$108.50/MWh on June 18, with averages reaching >\$750/MWh during the peak hour

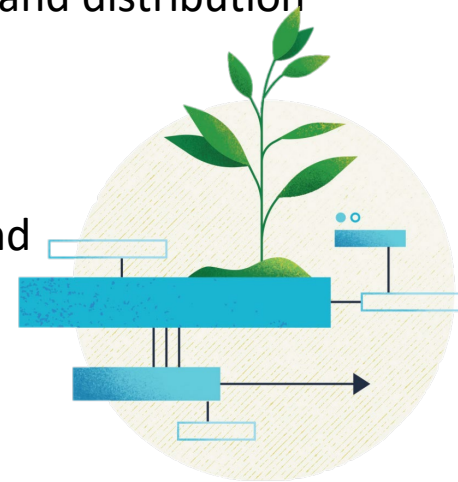


PROPOSED 2025 OPERATING AND CAPITAL BUDGETS



ISO New England Proposed 2025 Operating and Capital Budgets

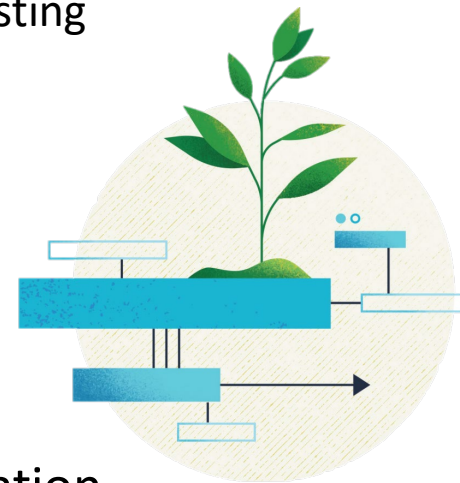
- The 2025 budget represents the organization's commitment to supporting the region as it transitions to clean energy, and ensuring that its continued operations are efficient and reliable
- Supporting decarbonization of the New England power system will be the primary driver of ISO work over the next decade
 - Substantial increases to the number of interconnected and behind-the-meter (BTM) generating assets are changing how the transmission and distribution system operate and interact with each other
 - A shift from large, dispatchable resources to smaller non-dispatchable, weather-dependent ones is changing the complexity involved in dispatching resources to meet demand
 - New daily and seasonal demand patterns are changing the types and timing of such needs



For more information, visit the ISO New England website: <https://www.iso-ne.com/about/corporate-governance/budget/>

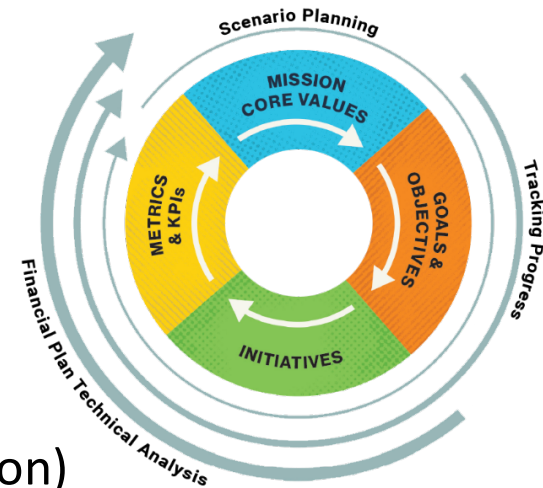
ISO New England Proposed 2025 Operating and Capital Budgets

- The main driver of the 2025 budget is the need for new personnel to address modeling, analysis, processing, operational and communication needs resulting from the clean energy transition
 - Developing a team to support longer-term transmission planning and administering of transmission RFPs
 - Upgrading IT infrastructure to support increasing cybersecurity risk mitigation, data analysis, and rapid technology evolution
 - Rapid and continuing advancements in modeling and forecasting to account for net load characteristics and trends
 - Market design work responding to changing system needs, public policies and new energy technologies
 - Responding to federal and state mandates and requests
 - Investing in more sophisticated operational tools
- For the 2025 budget, ISO is proposing adding 16 FTEs over the 30 FTEs projected in last year's budget presentation

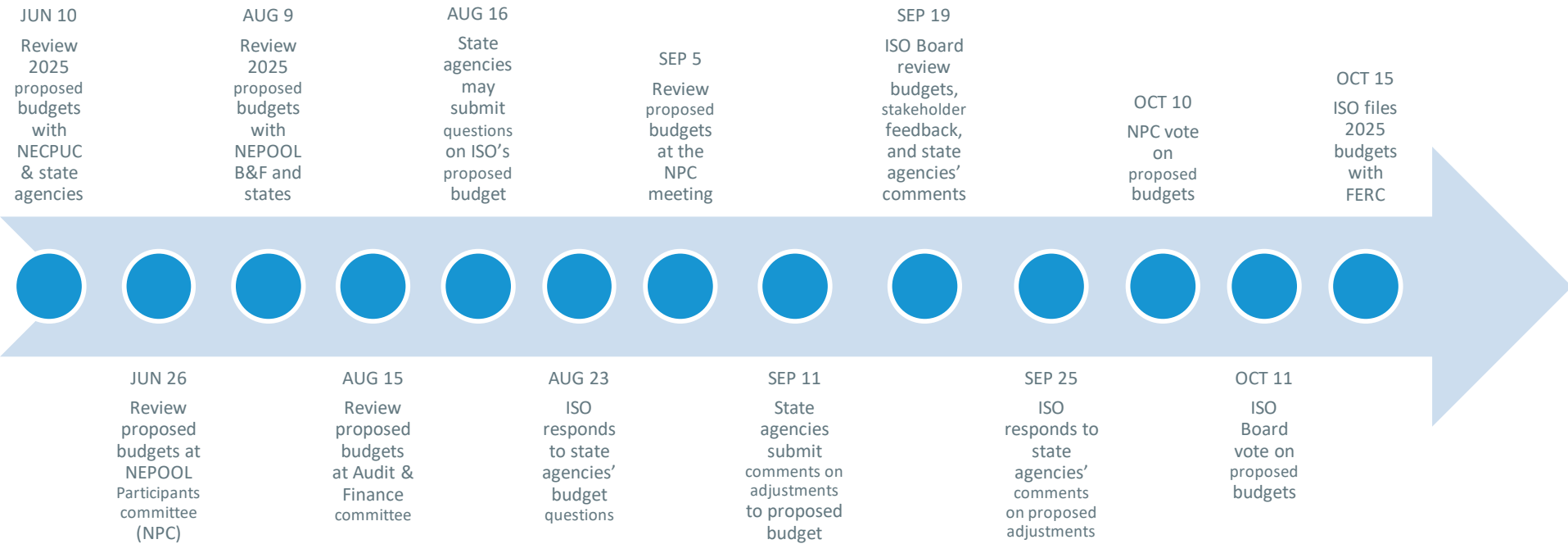


ISO New England Proposed 2025 Operating and Capital Budgets

- In June, ISO presented its preliminary 2025 operating and capital budgets to reps of the New England states and to NEPOOL's Participants Committee (PC)
- The 2025 operating budget (before depreciation and true up) is projected to be **\$269.1 million** (10% higher than the 2024 operating budget of \$244.3 million)
- The 2025 capital budget is projected to be **\$40 million** (14% higher than 2024)
- After depreciation and true up, the revenue requirement for 2025 is projected to be \$310.9 million (13.5% higher than the 2024 revenue requirement of \$273.9 million)
- If the revenue requirement was fully passed through to end-use customers, their cost would average **\$1.71 per month**



2025 Budget Process – Key Dates



OPERATIONAL IMPACTS OF EXTREME WEATHER EVENTS

Operational Impacts of Extreme Weather Events

- The ISO reported results from the **Probabilistic Energy Adequacy Tool (PEAT)** in 2023
 - PEAT framework for risk analysis under extreme weather events will be essential for evaluating **regional energy shortfall risk (REST)** — the electricity supply falling below consumer demand — giving the region’s stakeholders advance warning and an opportunity to take steps to avert it
 - The REST scope of work was [introduced](#) 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 REST, is available on the ISO website: [Operational Impacts of Extreme Weather Events Key Project \(iso-ne.com\)](https://www.iso-ne.com/operational-impacts-of-extreme-weather-events-key-project)

New England’s energy shortfall risk is dynamic, and will evolve as the region continues its clean energy transition



Operational Impacts of Extreme Weather Events

- **Regional Energy Shortfall Threshold:** ISO's initial 2027 and 2032 energy adequacy study results from the PEAT will help inform the development of a reliability-based threshold that reflects the region's level of risk tolerance with respect to energy shortfalls during extreme weather
 - Considerations for development of the REST:
 - Periodicity of Studies (*When?*)
 - Extreme Event Selection Process (*How?*)
 - REST Metrics and Thresholds (*What?*)
 - Stakeholder discussions continued in Q2 2024 on establishing a REST, with a proposal anticipated to be presented by the end of year
 - Analysis of scope, timing, and feasibility of regional solutions to maintain/achieve a REST would follow in 2025 as needed

New England's energy shortfall risk is dynamic, and will evolve as the region continues its clean energy transition



Operational Impacts of Extreme Weather Events

Stakeholder Committee and Date	Scheduled Project Milestone
Reliability Committee July 16, 2024	Review of ISO's current thinking regarding REST metric(s) and threshold(s)
Reliability Committee August/September 2024	Presentation of ISO's REST proposal
Reliability Committee October 2024	Presentation of any modifications to ISO's REST proposal based on stakeholder feedback
Reliability Committee November 2024	Review of ISO's near-final REST proposal
Reliability Committee December 2024	Presentation of ISO's final REST proposal

SYSTEM PLANNING UPDATE

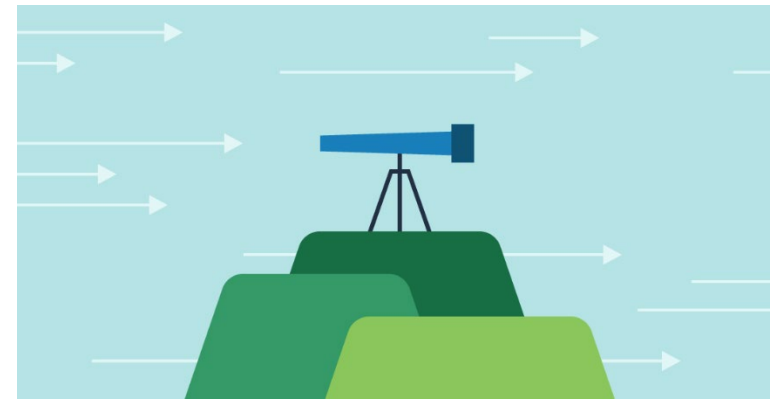
2024 CELT Report

FERC Order 2023 Update

CAPACITY, ENERGY, LOADS, AND TRANSMISSION REPORT

ISO Releases Annual 10-Year Forecast Report

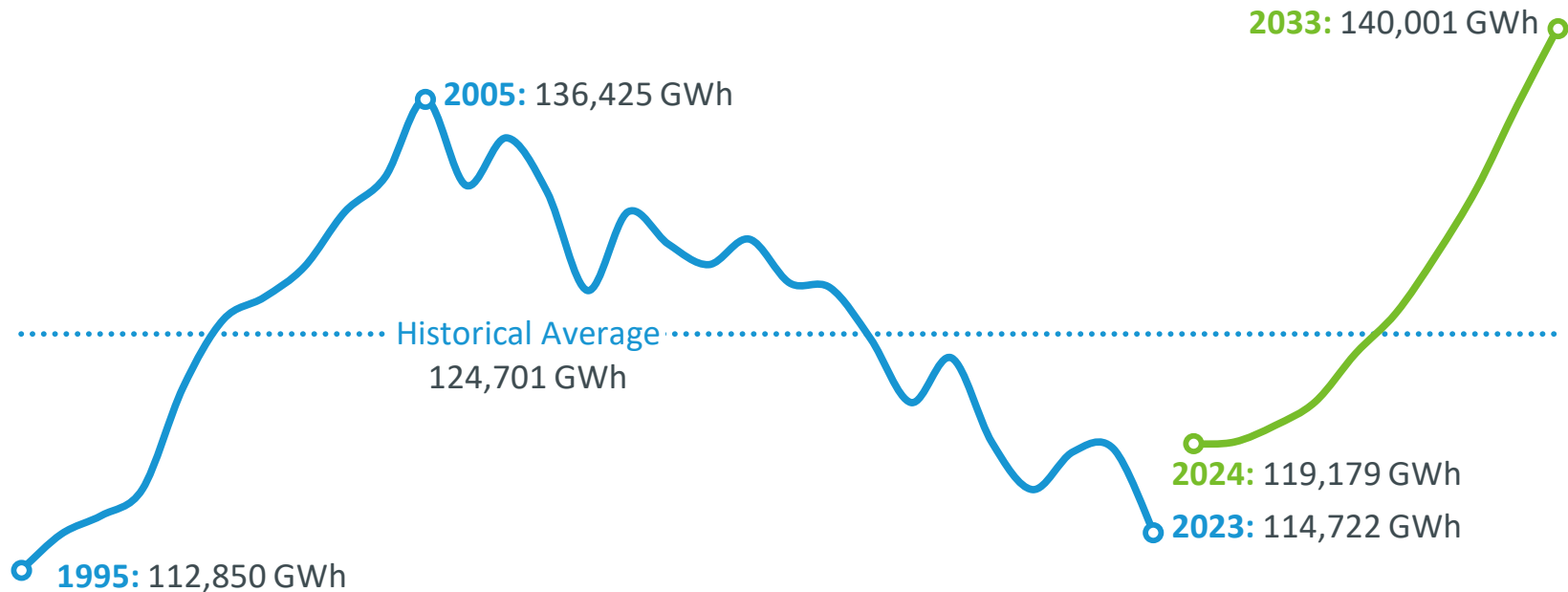
- Issued on May 1, the annual Capacity, Energy, Loads, and Transmission (CELT) [Report](#) is the **primary source** for assumptions used in ISO system planning studies
- **Overall** electricity use is expected to **increase 1.8%** annually over the ten year period (2024–2033)
- **Summer peak demand** is expected to **increase 1%** annually
- **Winter peak demand** is expected to **increase 3.1%** annually



Increased Electrification is Expected to Drive Steady Growth in Net Annual Energy Use

Following two decades of decreased net energy use as a result of state policies incentivizing solar PV and energy efficiency

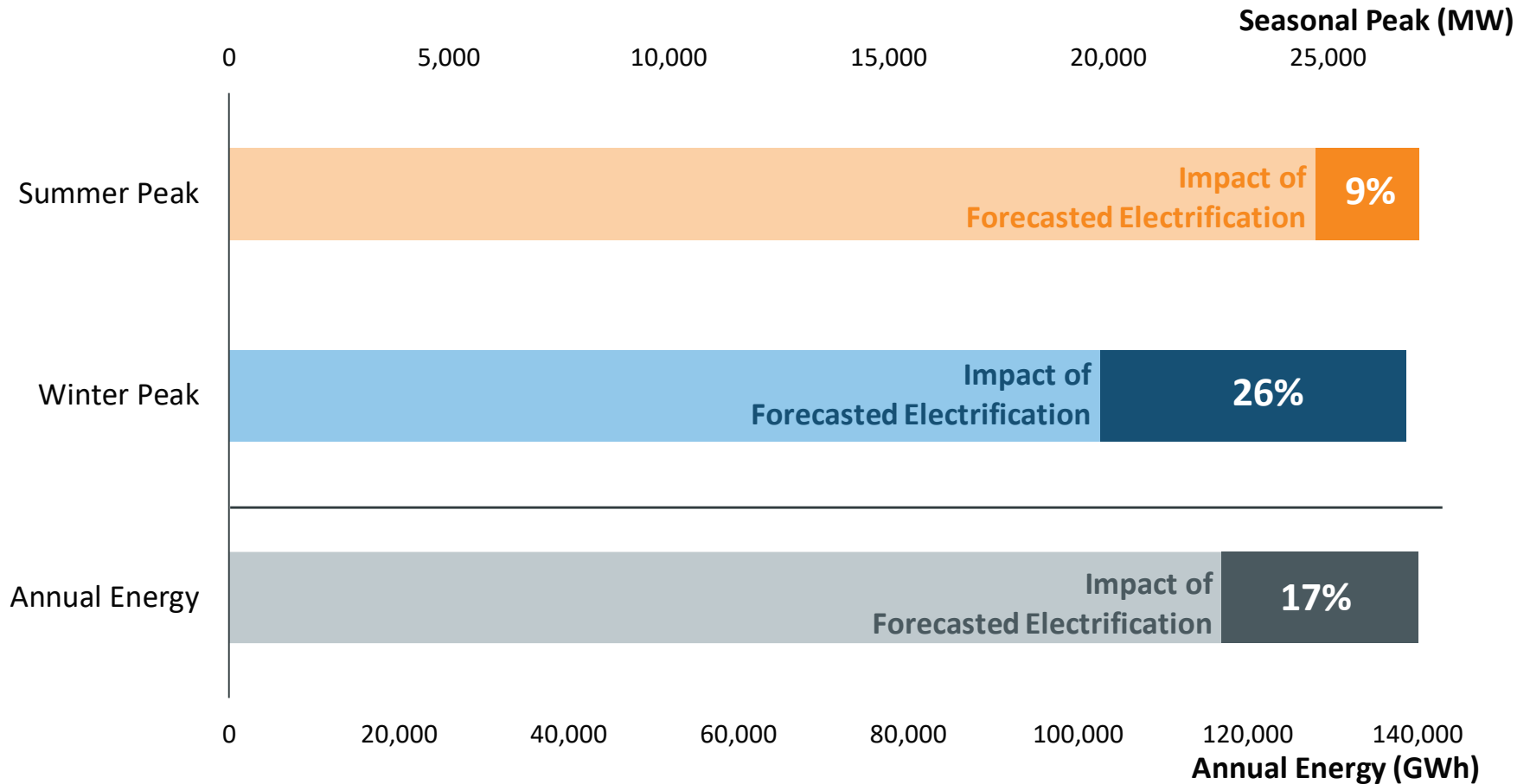
Historical and Forecast Net Energy Use



Source: [ISO New England 2024-2033 Forecast Report of Capacity, Energy, Loads, and Transmission](#) (2024 CELT Report) (May 2024)

Impact of Electrification on 2033 Annual Energy Use and Seasonal Demand in New England

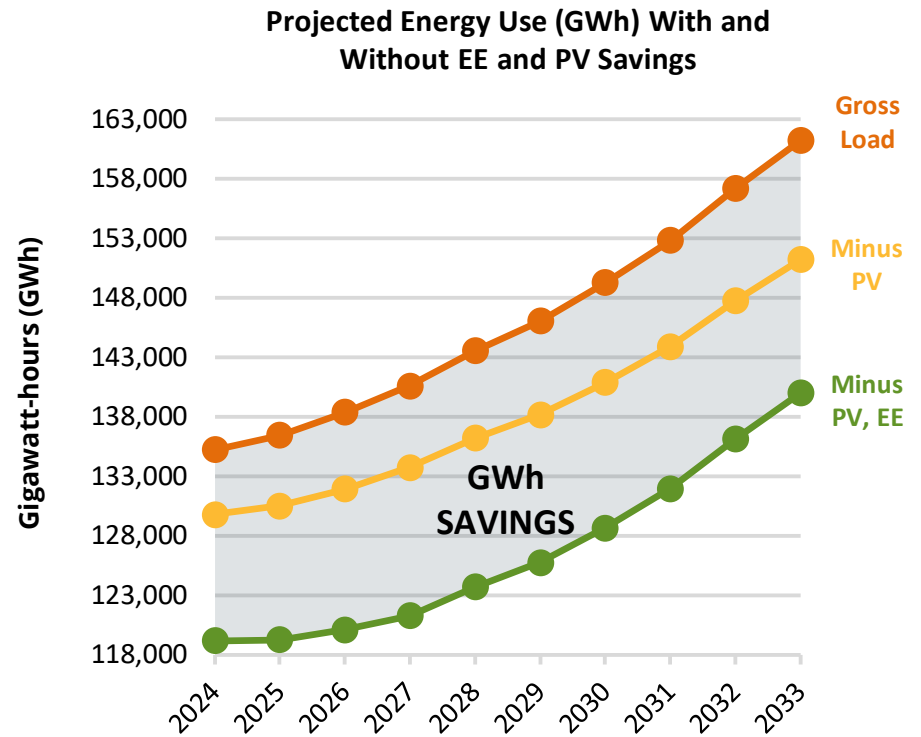
In 2033, impacts of electrification are expected to account for more than 23,000 GWh of annual energy consumption, roughly 2,500 MW of summer demand and 7,000 MW of winter demand



Source: [ISO New England 2024-2033 Forecast Report of Capacity, Energy, Loads, and Transmission](#) (2024 CELT Report) (May 2024)

Energy Efficiency and Behind-the-Meter Solar Resources Are Reducing Demand on the Grid

- **136,355 GWh:** all-time highest total annual energy served, set in 2005
- Energy efficiency (EE) and behind-the-meter (BTM) solar are reducing demand on the grid
- Annual energy use reductions:
 - 2024: EE and BTM solar **reduce load by 11.9%**
 - 2033: EE and BTM solar **reduce load by 13.1%**



- The gross peak and load forecast
- The gross peak and load forecast minus existing and anticipated BTM solar PV and energy efficiency
- The gross peak and load forecast minus existing and anticipated “behind-the-meter” (BTM) solar PV resources

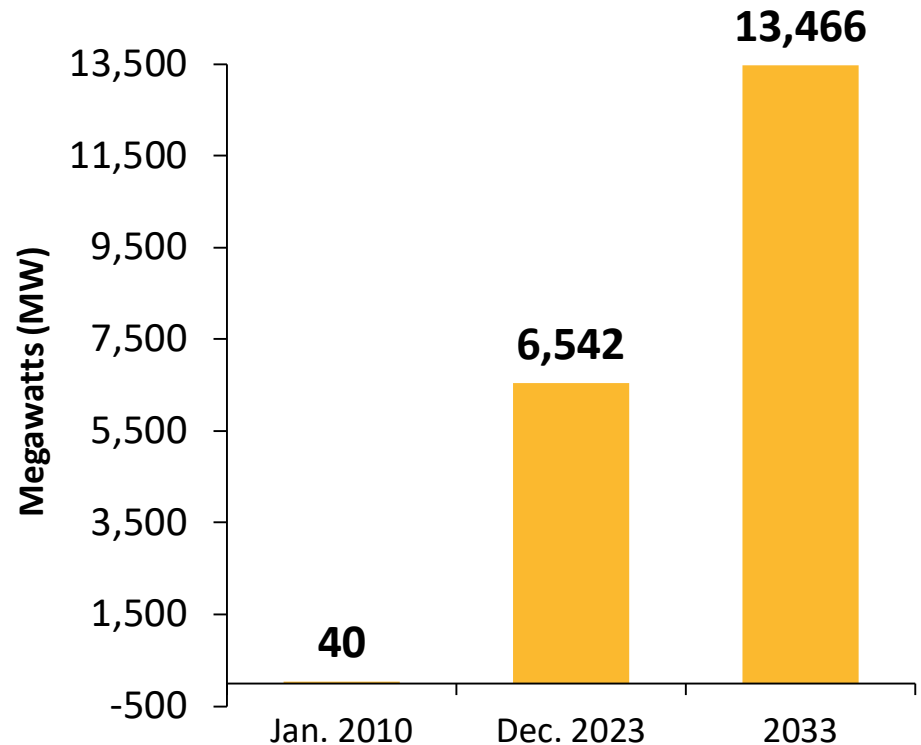
Source: [ISO New England 2024-2033 Forecast Report of Capacity, Energy, Loads, and Transmission](#) (2024 CELT Report) (May 2024)

ISO New England Forecasts Strong Growth in Solar Photovoltaic (PV) Resources

December 2023 Solar PV Installed Capacity (MW_{ac})

State	Installed Capacity (MW _{ac})	No. of Installations
Connecticut	1,091	91,290
Massachusetts	3,712	179,362
Maine	588	11,506
New Hampshire	244	21,234
Rhode Island	400	22,769
Vermont	507	21,179
New England	6,542	347,341

Cumulative Growth in Solar PV through 2033 (MW_{ac})



Note: The bar chart reflects the ISO’s projections for nameplate capacity from PV resources participating in the region’s wholesale electricity markets, as well as those connected “behind the meter.” The forecast does not include forward-looking PV projects > 5 MW in nameplate capacity

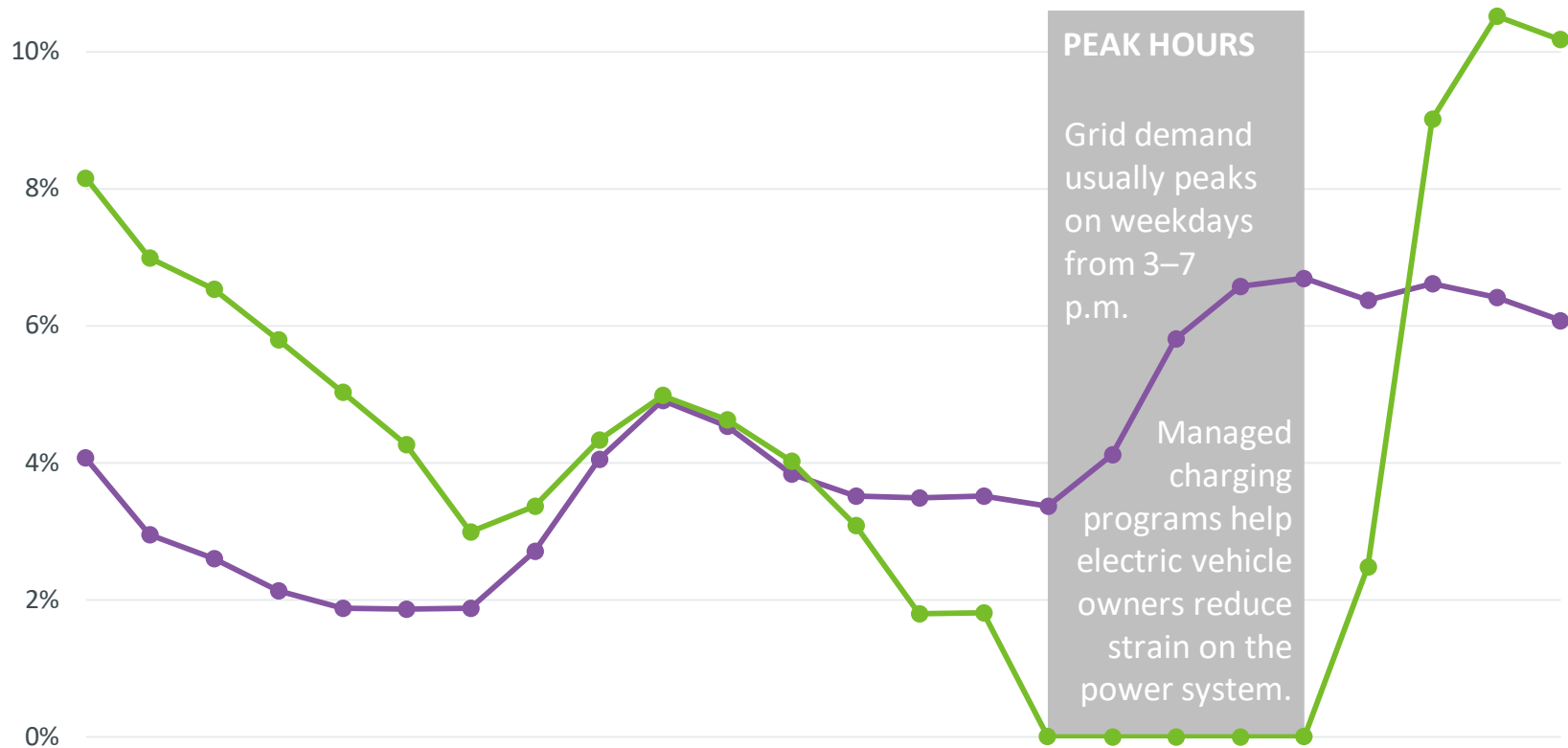
Source: [ISO New England 2024-2033 Forecast Report of Capacity, Energy, Loads, and Transmission](#) (2024 CELT Report) (May 2024), and [2024 Photovoltaic \(PV\) Forecast](#); MW values are AC

Managed charging profiles added to Transportation Electrification Forecast

Managed charging programs offer incentives for EV owners to avoid charging during peak hours, shifting charging to times when demand and wholesale prices tend to be lower

Managed vs. Unmanaged EV Charging

Hourly Percentage of Daily Charging Energy

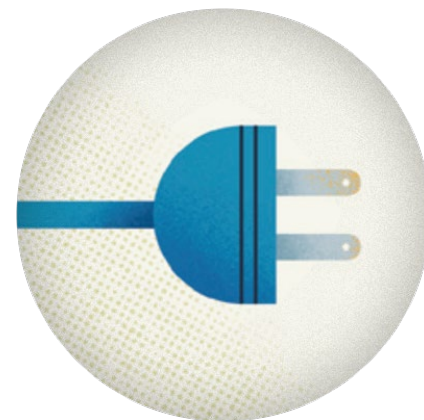


Source: [ISO New England 2024-2033 Forecast Report of Capacity, Energy, Loads, and Transmission](#) (2024 CELT Report) (May 2024)

FERC ORDER 2023

Background on FERC Order 2023

- In July 2023, FERC issued [Order No. 2023](#)
- The ISO's [proposal](#), filed in May, will bring the region into compliance with Order Nos. 2023 and 2023-A
 - Requested an effective date of August 12, 2024
- The proposal's major changes include:
 - Adoption of a “first-ready, first served cluster study process” for all interconnection requests
 - A penalty structure applied to the ISO and transmission owners for delays in study completion beyond established deadlines
 - Increased financial and site control requirements for developers entering projects into the ISO's interconnection process
 - Improved integration of battery storage projects and other new technologies onto the transmission system
- **These reforms aim to prioritize projects with a high likelihood of development and deter speculative ventures**



Learning Resources and Related Links

- [Knowledge Articles](#) in Ask ISO on the 2024 Transitional Interconnection Process
- [FERC Order No 2023 – State Jurisdictional Interconnection Coordination \(Affected System Operator Study Coordination\)](#) presentation and recording
- [2024 Transitional Cluster Study and FERC Order Nos. 2023 and 2023-A](#) video
- [2024 Interim Reconfiguration Auction Qualification Process timeline](#)
- [ISO Public Interconnection Queue](#)
- [Interconnection Process Guide](#)

Additional information on the compliance plan, including presentations, memos, and stakeholder comments is available on the [Order No. 2023 Key Project page](#)



Next Steps

- The ISO has initiated discussions with the [NEPOOL Reliability Committee](#) to develop **Planning Procedure updates** to
 - Incorporate several conforming details regarding Order No. 2023 implementation
 - Update model submittal guidance
 - Incorporate implementation details regarding ASO study coordination
- Targeting to complete this effort by **Summer 2024**



FOR MORE INFORMATION...



Subscribe to the *ISO Newswire*

[ISO Newswire](#) 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

[ISO Express](#) provides real-time data on New England's wholesale electricity markets and power system operations



Follow the ISO on X (fka Twitter)

[@isonewengland](#)

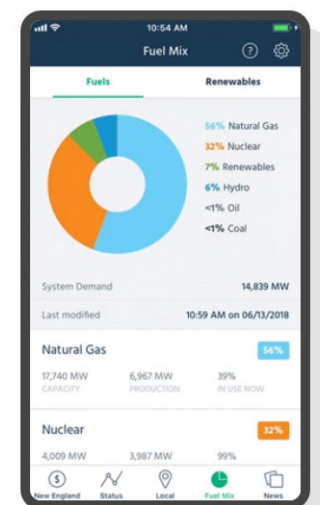
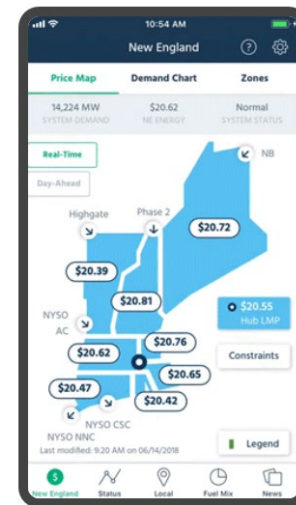


Follow the ISO on LinkedIn

[@iso-new-england](#)

Download the ISO to Go App

[ISO to Go](#) is a free mobile application that puts real-time wholesale electricity pricing and power grid information in the palm of your hand



Questions

