APRIL 23, 2025 | CONCORD, NH

ISO New England Overview and Regional Update

Business & Industry Association of NH

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EXECUTIVE DIRECTOR, EXTERNAL AFFAIRS

ISO New England's *Mission and Vision*

Mission: *What we do*

Through collaboration and innovation, ISO New England plans the transmission system, administers the region's wholesale markets, and operates the power system to ensure reliable and competitively priced wholesale electricity

Vision: *Where we're going*

To harness the power of competition and advanced technologies to reliably plan and operate the grid as the region transitions to clean energy

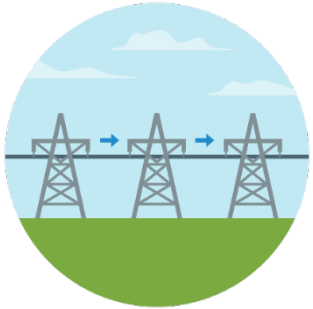
ISO New England Has Nearly Three Decades of Experience Overseeing the Region's Restructured Electric Power System

- **Regulated** by the Federal Energy Regulatory Commission
- **Reliability Coordinator** for New England under the North American Electric Reliability Corporation
- **Independent** of companies in the marketplace and **neutral** on technology

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

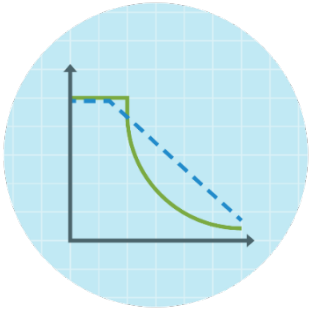
Grid Operation

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



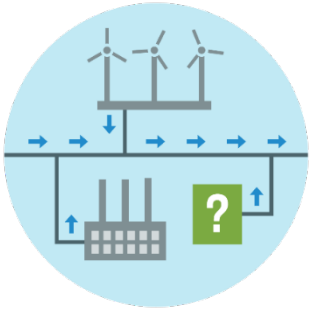
Market Administration

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

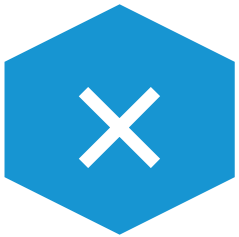


Things We Don’t Do

Handle retail electricity

Own power grid infrastructure

Have a stake in companies that own grid infrastructure

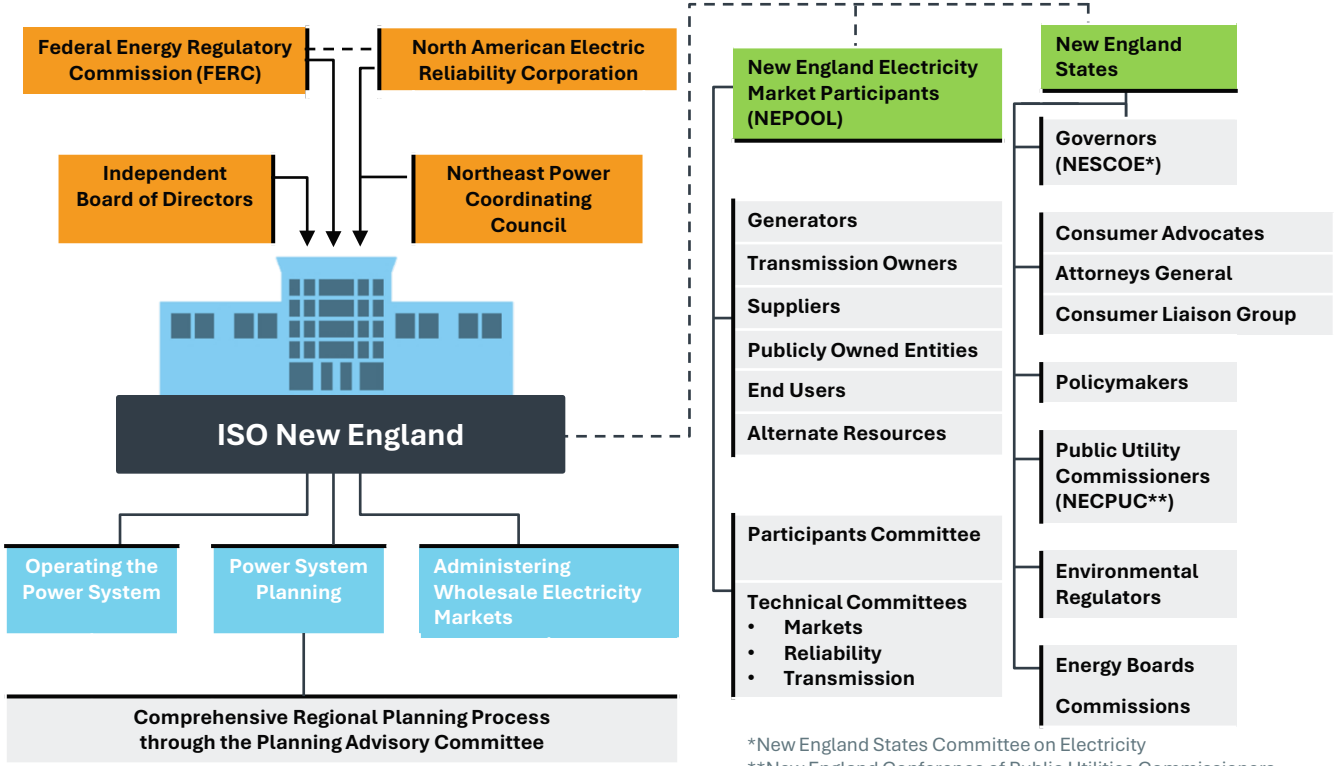


Have jurisdiction over fuel infrastructure

Have control over siting decisions

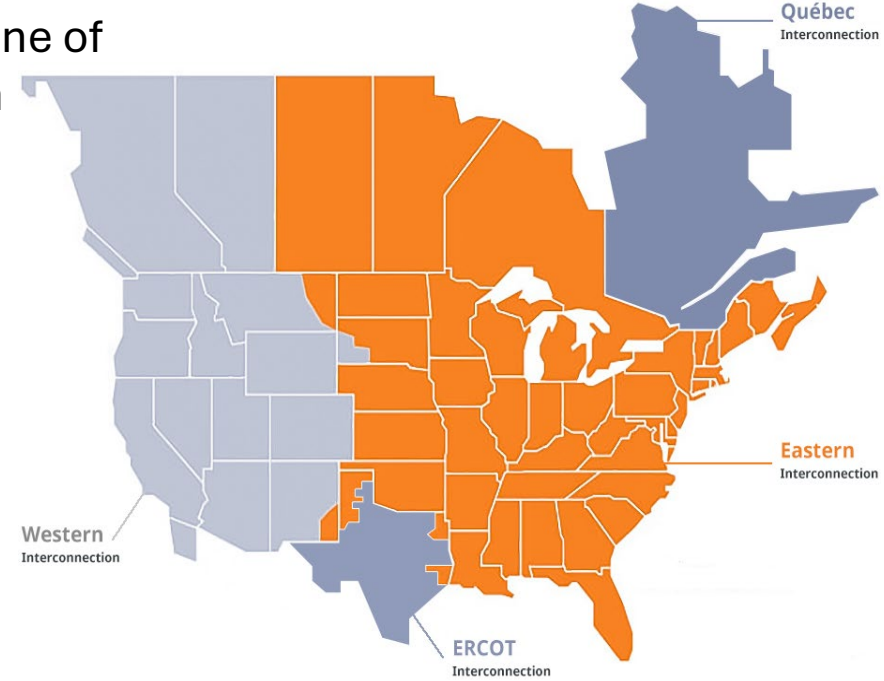
Plan the resource mix

Numerous Entities Including an Independent Board Provide Oversight of and Input on ISO's Responsibilities



New England's Power Grid Is Part of a Larger Electric Power System

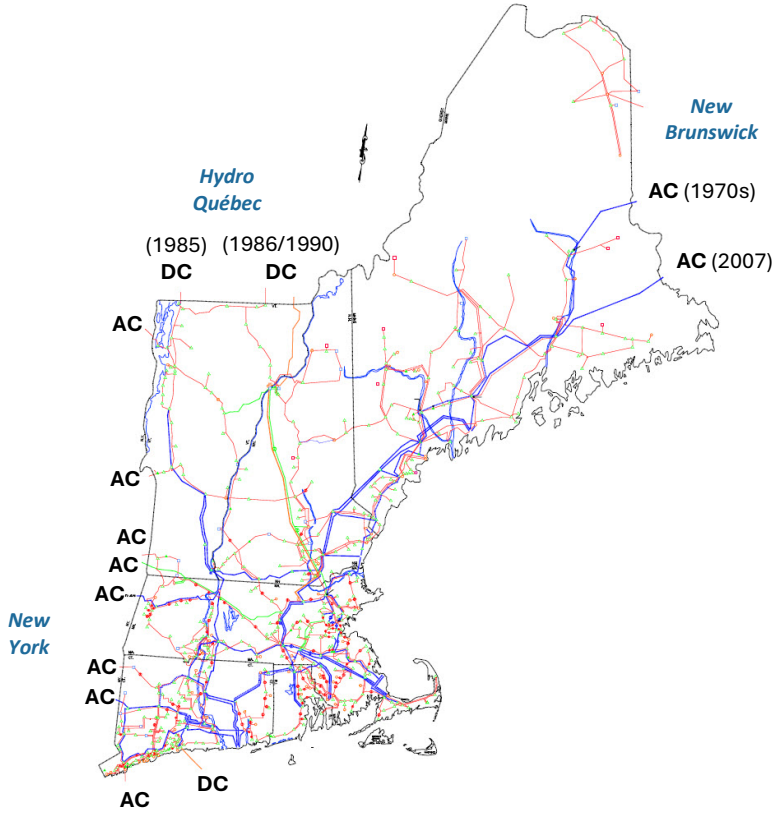
- Part of the **Eastern Interconnection**, one of four large power grids in North America
  - Interconnected through primarily alternating current (AC) transmission
- Tied to **Québec** only through direct current (DC) transmission
- 2003 blackout ushered in wide-area monitoring and **mandatory** reliability standards
- Subject to reliability standards set by **NERC** and **NPCC***



* North American Electric Reliability Corporation (NERC) and Northeast Power Coordinating Council (NPCC)

New England Has Multiple Ties to Neighboring Regions

- Transmission system is tied to neighboring power systems in the U.S. and Eastern Canada:
  - New York (8 AC ties, 1 DC tie)
  - Hydro Québec (2 DC ties)
  - New Brunswick (2 AC ties)
- **9%** of the region's energy needs were met by imports in 2024



ISO-NE Is a Summer-Peaking System

New England shifted from a winter-peaking system to a **summer-peaking** system in the early 1990s, largely because of the growth of air conditioning and a decline in electric heating

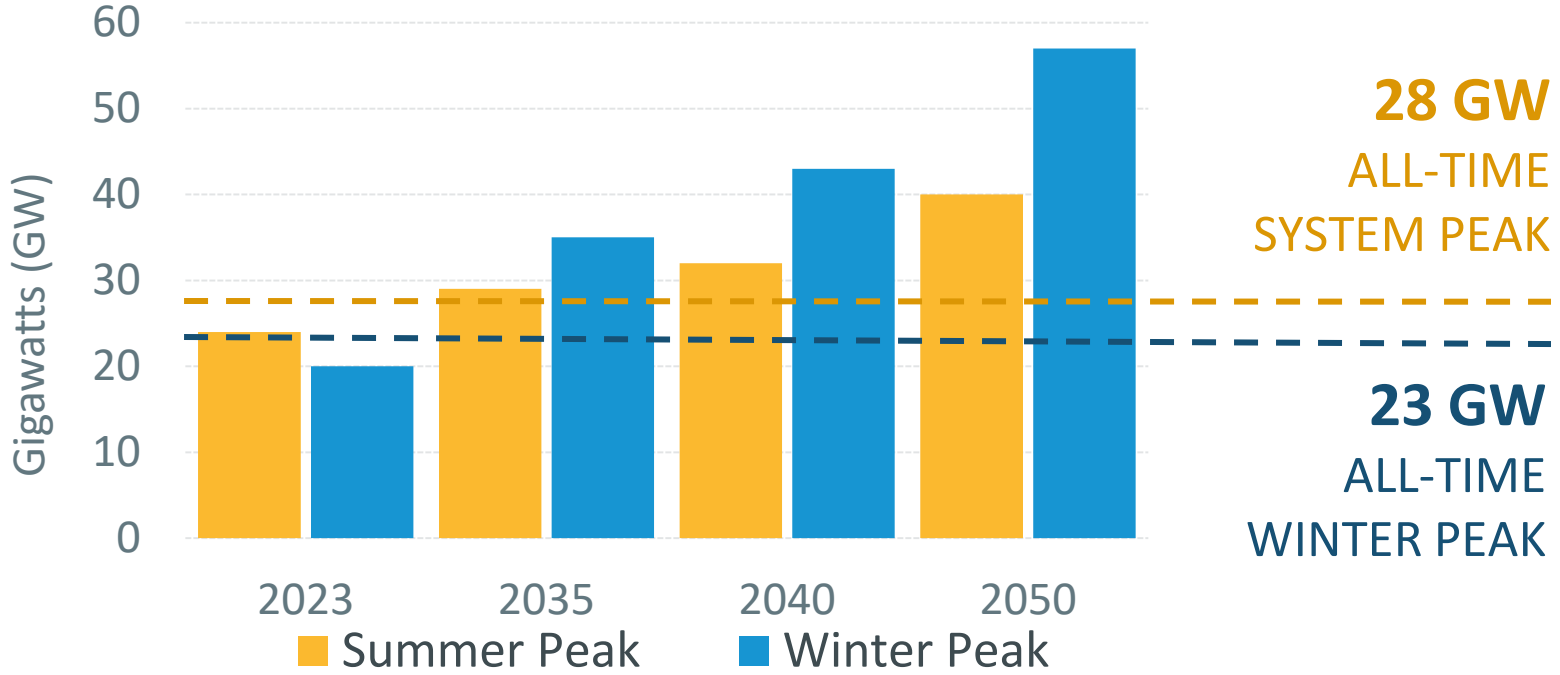
- Peak demand on a normal summer day has typically ranged from 17,500 MW to 22,000 MW
- Summer demand usually peaks on the hottest and **most humid** days and averaged roughly 25,600 MW since 2000
- Region's all-time summer peak demand was **28,130 MW** on **August 2, 2006**

The region is expected to shift back to a **winter-peaking system** with the electrification of heating demand

- Region's all-time **winter** peak demand was **22,818 MW** on **January 15, 2004**

Peak Demand Period Will Shift to Winter

Significant amounts of clean energy will be needed to meet state decarbonization goals while serving significantly increased demand

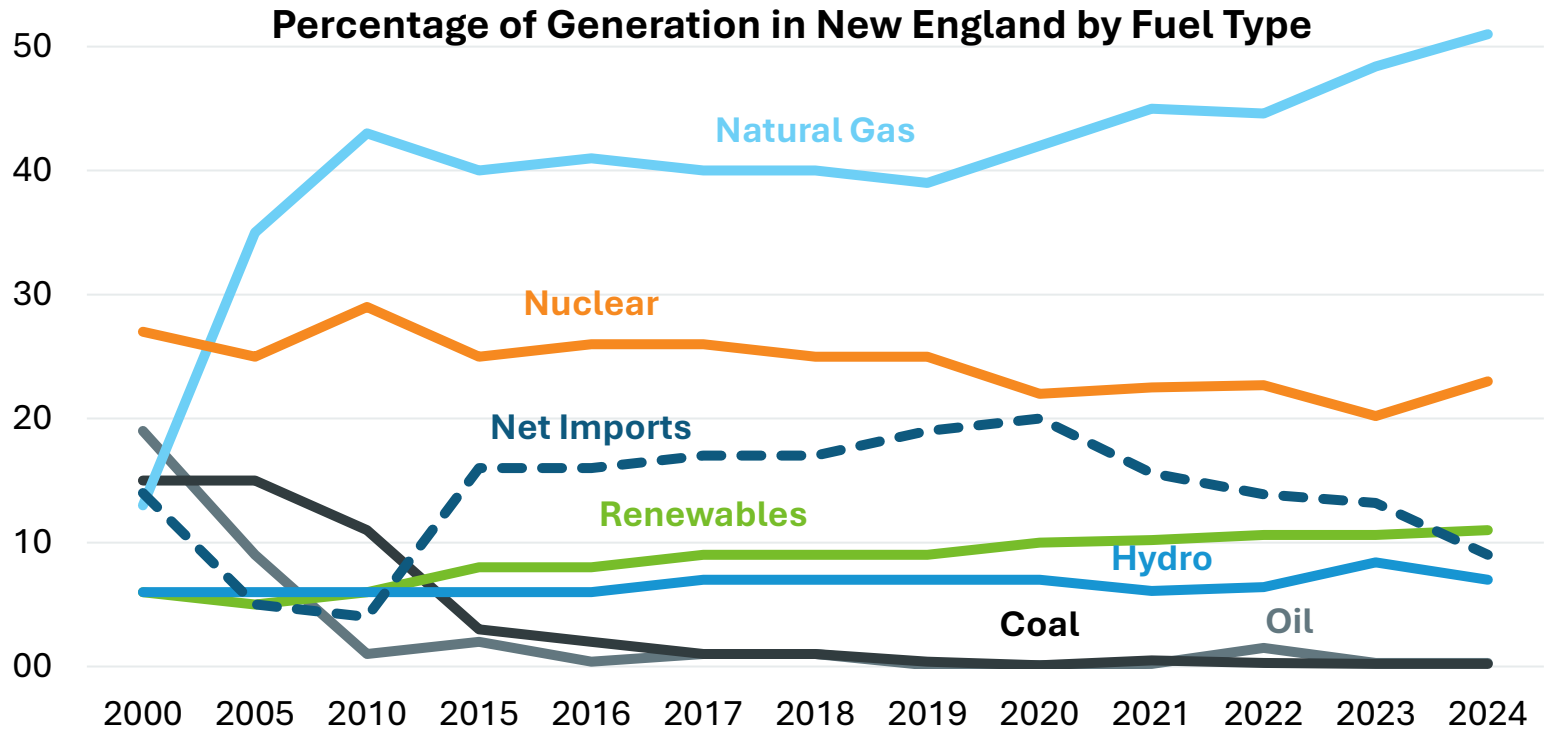


Generation and Demand Resources Are Used to Meet New England's Energy Needs

- Nearly **400** dispatchable generators in the region
- **Nearly 30,000 MW** of generating capacity
- Approximately **38,000 MW** of proposed generation in the ISO Queue
  - Mostly wind, storage, and solar proposals
- Roughly **7,000 MW** of generation have retired or will retire in the next few years
- Nearly **3,600 MW** of demand resources with obligations in the Forward Capacity Market*, including energy efficiency, load management, and distributed generation resources
  - Demand resources have had further opportunities in the wholesale markets since 2018

* In the Forward Capacity Market, demand-reduction resources are treated as capacity resources.

Dramatic Changes in the Energy Mix Have Occurred

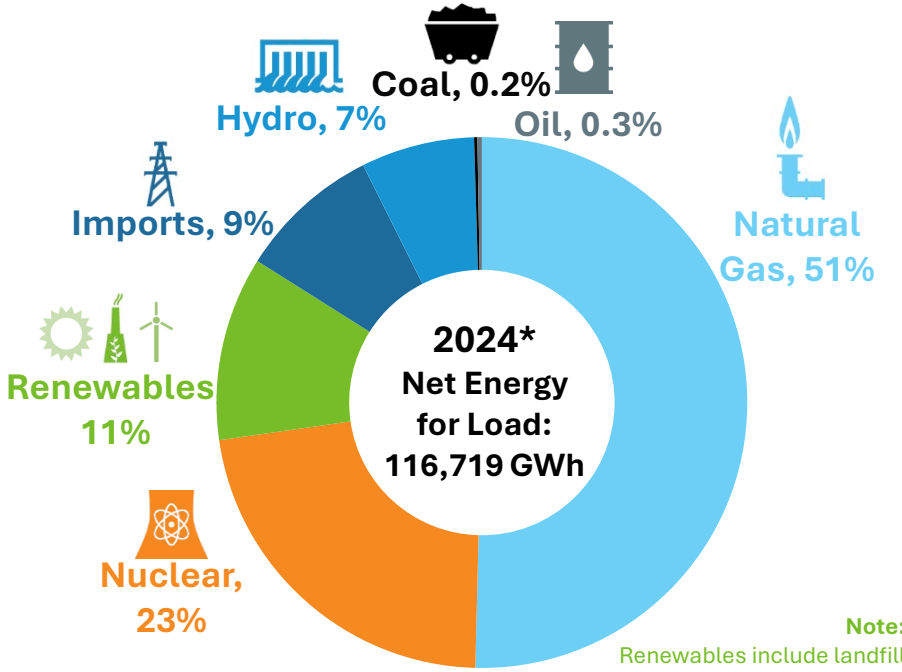


Source: ISO-NE Net Energy and Peak Load by Source

Electric generation within New England; excludes imports and behind-the-meter (BTM) resources, such as BTM solar.

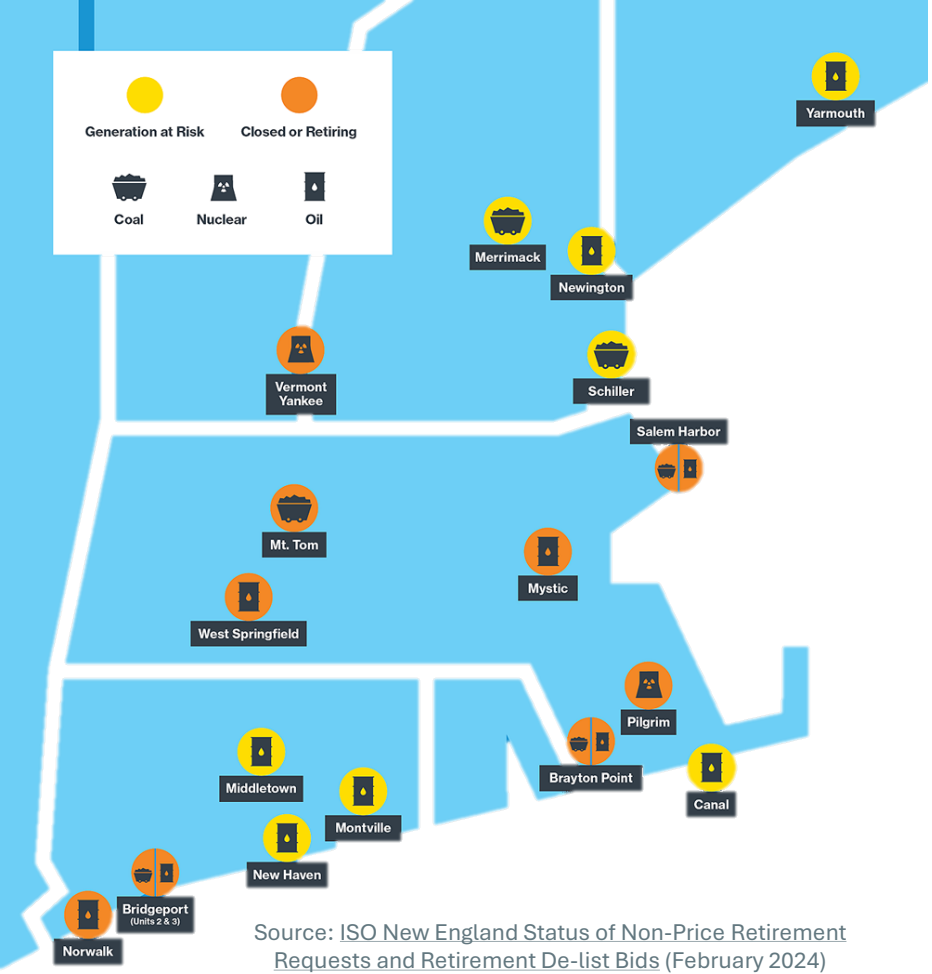
Lower-Emitting Sources of Energy Supply Most of New England's Electricity

- In 2024, most of the region's energy needs were met by natural gas, nuclear, imported electricity (mostly hydropower from Eastern Canada), renewables, and other low- or non-carbon-emitting resources
- Region is transitioning away from older coal and oil resources



Note: Renewables include landfill gas, biomass, other biomass gas, wind, grid-scale solar, municipal solid waste, and miscellaneous fuels.

*Data is subject to adjustment. Source: 2024 Net Energy and Peak Load by Source
https://www.iso-ne.com/isoexpress/web/reports/load-and-demand/-/tree/net-ener-peak-load



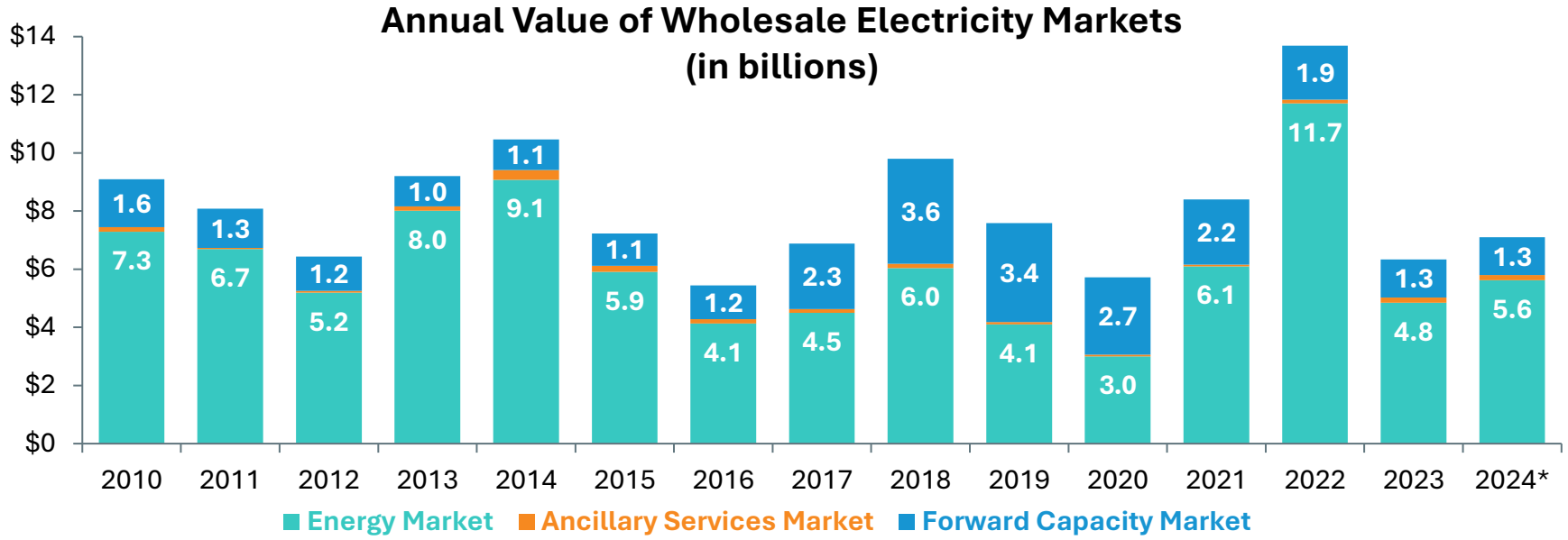
Source: ISO New England Status of Non-Price Retirement Requests and Retirement De-list Bids (February 2024)

From 2013 to 2024, More than 7,000 MW of Generation Have Retired

- Includes predominantly coal, oil, and nuclear resources
- Another **750 MW** of generation have announced plans for retirement
- These resources have played an **important** role in recent winters when natural gas supplies are constrained in New England

Markets Select the Most Cost-Efficient Resources to Meet Current and Future Electricity Needs

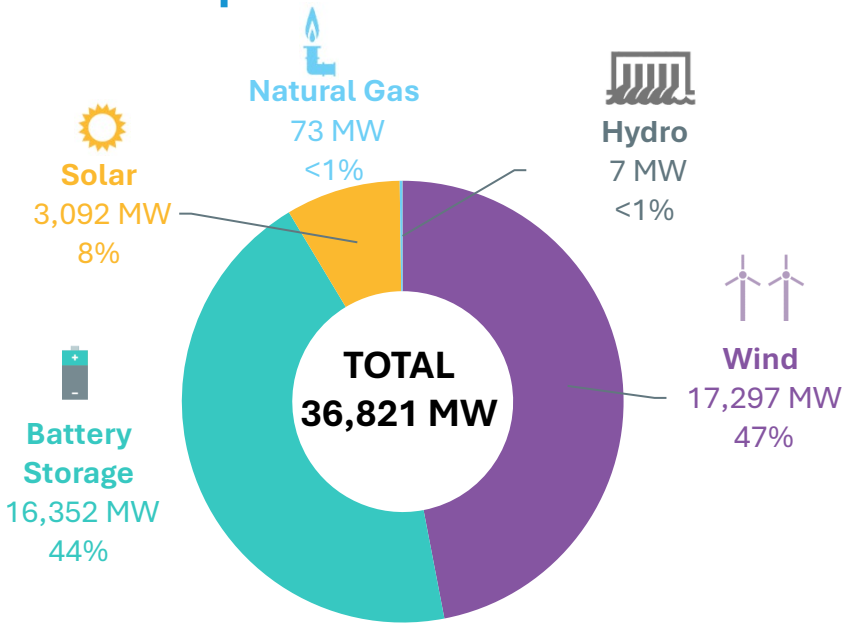
Energy market values vary with fuel prices, while capacity market values vary with changes in supply



Source: ISO-NE Markets and Settlements Data (March 2025); *2024 data are subject to adjustment

Wind Power & Battery Storage Comprise Most of the New Resource Proposals in the ISO Interconnection Queue

All Proposed Resources



Source: ISO Generator Interconnection Queue (April 2025) FERC Jurisdictional Proposals; Nameplate Capacity Ratings
Note: Some natural gas proposals include dual-fuel units (with oil backup). Some natural gas, wind, and solar proposals include battery storage. Other includes hydro, biomass, fuel cells and nuclear uprate.

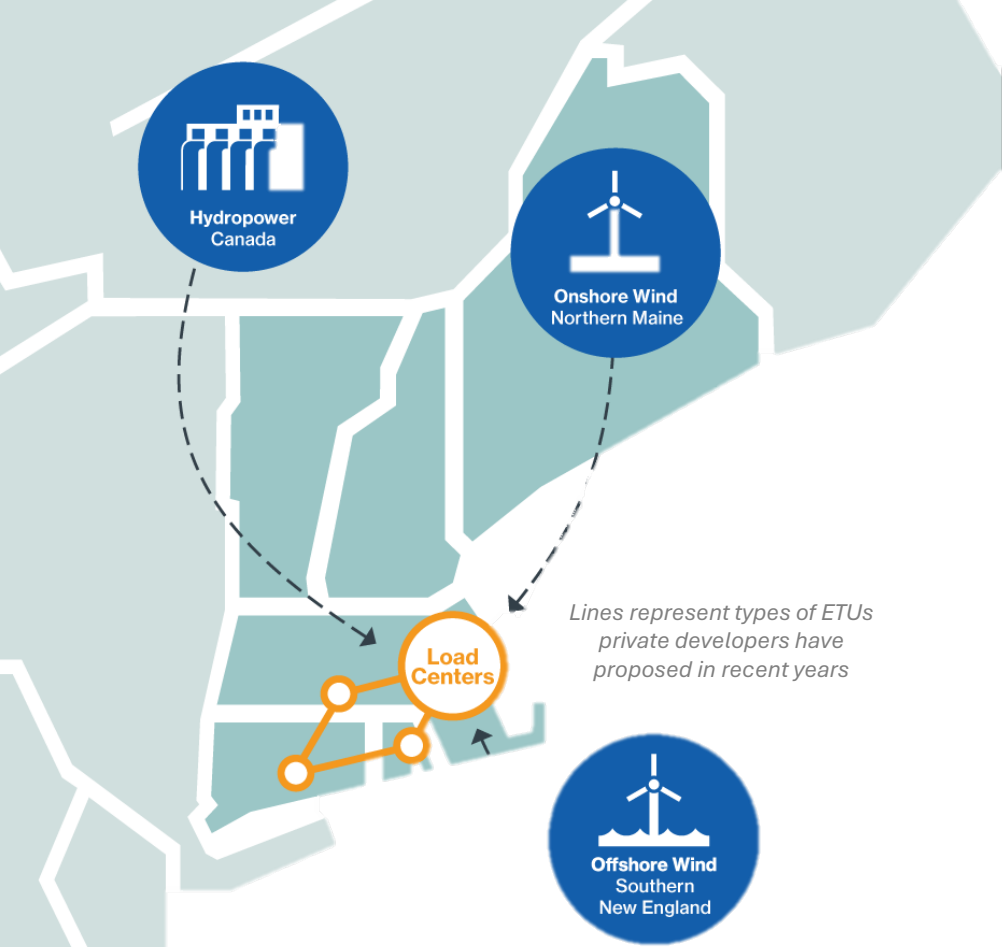
Proposals by State

(all proposed resources)

State	Megawatts (MW)
Connecticut	7,786
Massachusetts	20,546
Maine	5,117
New Hampshire	430
Rhode Island	2,597
Vermont	344
Total	**36,821**

Source: ISO Generator Interconnection Queue (April 2025) FERC Jurisdictional Proposals

Developers Are Proposing Large-Scale Transmission Projects to Deliver Clean Energy to Load Centers



Source: ISO Interconnection Queue (January 2025)

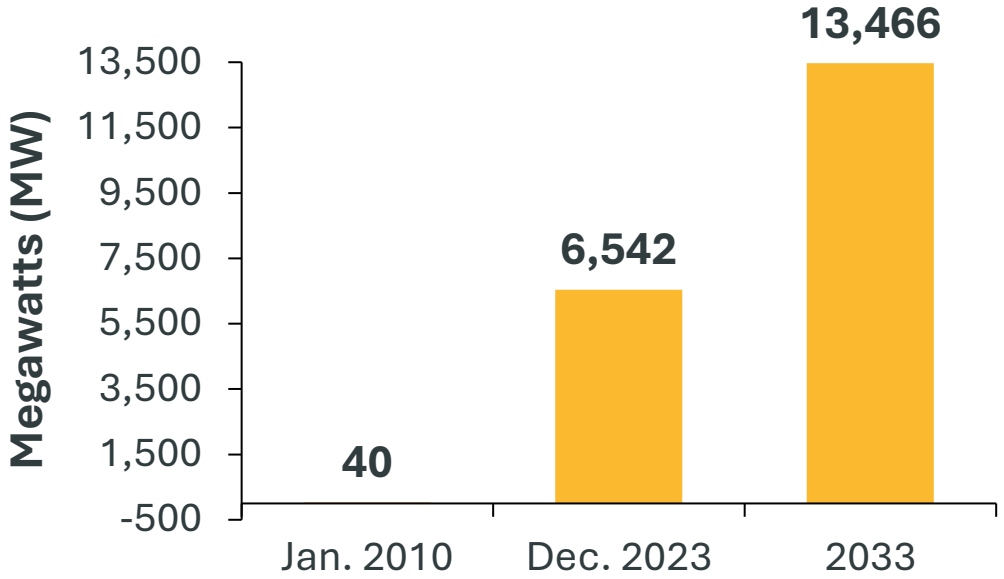
- Developers are proposing six elective transmission upgrades (ETUs) to help deliver over **10,000 MW** of clean energy to New England load centers
- Wind projects make up about **40%** of new resource proposals in the ISO Queue
  - Most are offshore wind proposals in southern New England, but some are onshore wind proposals in northern New England and **would require transmission** to deliver the energy to load centers

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})

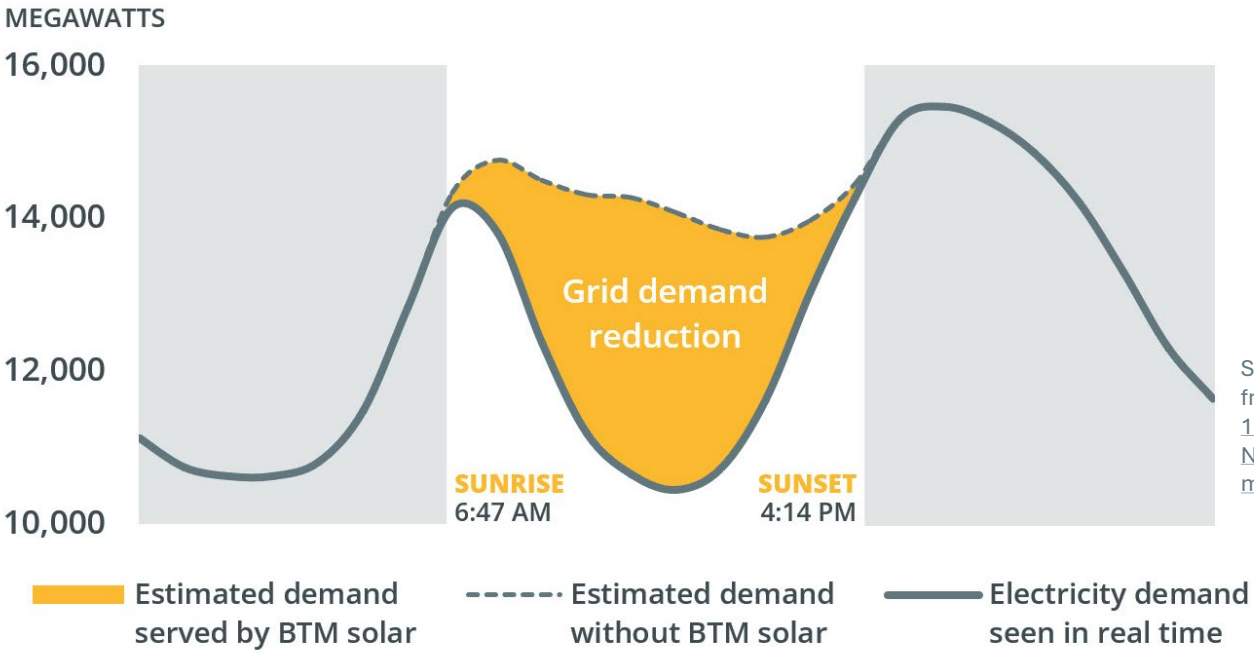


Note: The bar chart reflects the ISO's projections for nameplate capacity from PV resources participating in the region's wholesale electricity markets, as well as those connected "behind the meter." The forecast does not include forward-looking PV projects > 5 MW in nameplate capacity. Source: ISO New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

Nighttime Electricity Load on the Region's Electric Grid is Exceeding Daytime Consumption On Sunny Days

Continued development of solar drives down afternoon load, especially in spring when demand is lower

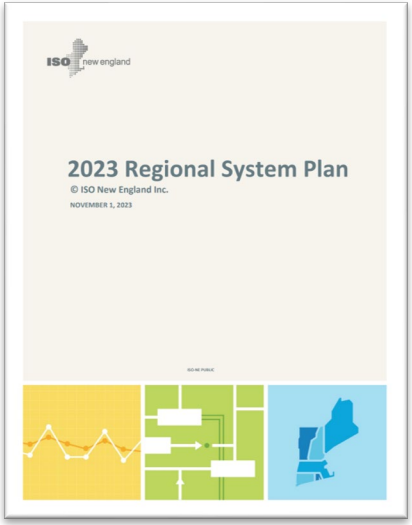
Grid demand reduction from behind-the-meter (BTM) solar on November 25, 2024



Source: ISO Newswire Article from November 26, 2024, 100th 'duck curve' day marks New England solar power milestone - ISO Newswire

ISO's Role in Transmission Planning

- As the **Regional Transmission Organization**, the ISO is required to identify transmission infrastructure solutions that are essential for maintaining power system reliability in New England
- Through an **open stakeholder process**, the ISO is responsible for the development of long-range plans to address future system needs over the ten-year planning horizon
  - Summarized in a **Regional System Plan (RSP)**
- The transmission planning process is governed by a **FERC-approved tariff**
- ISO-NE continuously revises the transmission planning process to comply with applicable FERC orders



ISO New England 2023 Regional System Plan

New Process Adds Longer-Term Transmission Planning Horizon

- FERC has approved **new process to implement transmission system upgrades** based on longer-term transmission studies (e.g., 2050 study horizon)
- **States**, through NESCOE, can evaluate and determine cost allocation for **transmission upgrades** needed to ensure a reliable grid throughout the clean energy transition
  - Upon request by the states, ISO will issue and evaluate requests for proposals (RFPs) to **address needs identified by the states** and provide **technical assistance** to the states

There Are Four Pillars Necessary to Support a Successful Clean Energy Transition

PILLAR ONE

Clean Energy

Significant amounts of clean energy to power the economy with a greener grid

PILLAR TWO

Balancing Resources

Resources that can supply electricity, reduce demand, or provide other services to maintain power system equilibrium

PILLAR THREE

Energy Adequacy

A dependable energy supply chain and/or a robust energy reserve to manage through extended periods of severe weather or energy supply constraints

PILLAR FOUR

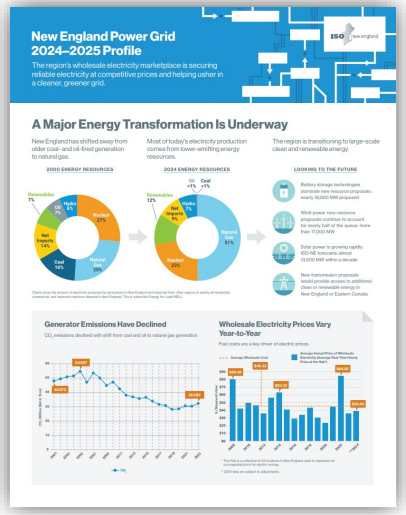
Robust Transmission

To integrate renewable resources and move clean energy to consumers across New England

ISO New England Publications

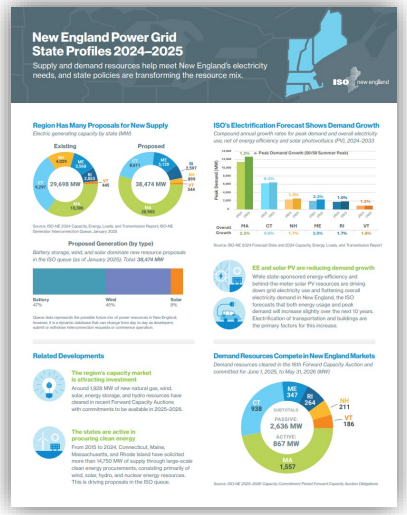
2024 Regional Electricity Outlook

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



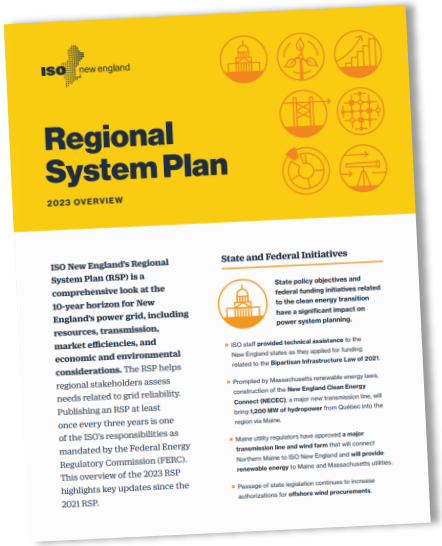
New England State Profiles

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

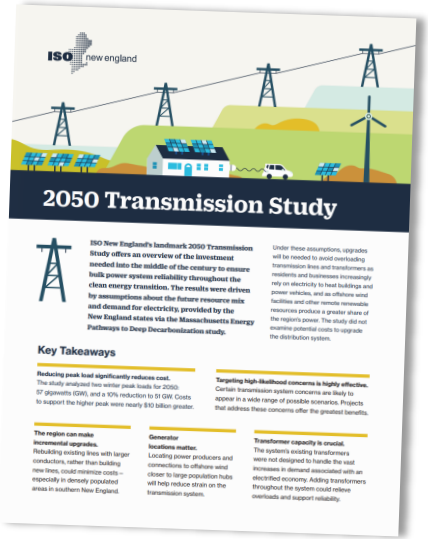
Opportunities to Engage and Learn More

ISO creates accessible and informative **fact sheets** on many key initiatives

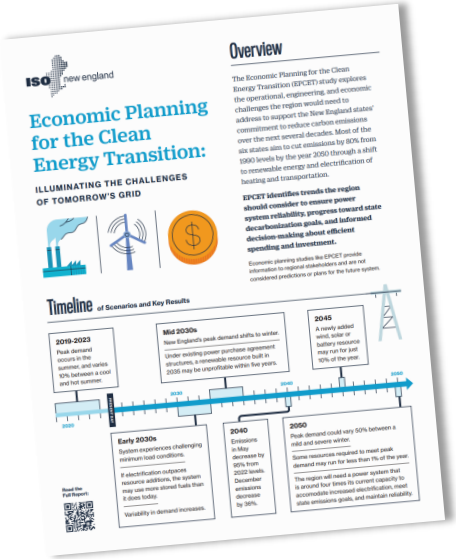
Future Grid Reliability Study Summary



2023 Regional System Plan Summary



2050 Transmission Study Factsheet



2024 EPCET Report Factsheet

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 14 members who are elected every two years
- Quarterly meetings are free and open to the public, with in-person and virtual options to participate

2025 CLG Meeting Dates and Locations:

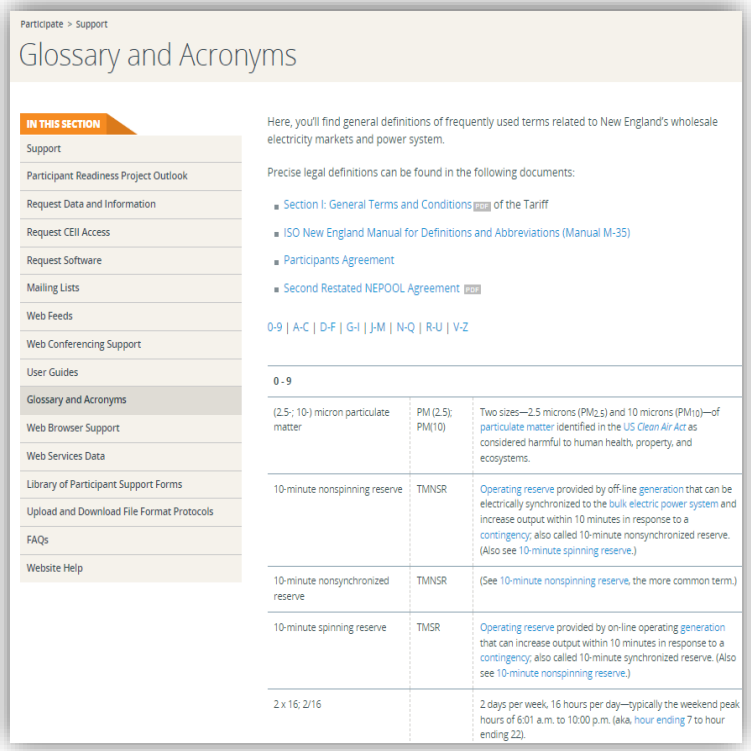
- Thursday, March 27 – Providence, Rhode Island
- Wednesday, June 4 – Massachusetts
- Thursday, September 11 – New Hampshire
- Wednesday, December 3 – Boston, MA

2023 CLG Annual Report

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

ISO Glossary and Acronyms

- ISO maintains a glossary with short definitions of industry terms appearing in ISO materials
- The glossary is available at the ISO's website under the **Participate** then **Support** menus
  - The feature is presented on the ISO website for use by anyone needing to get a handle on a term
  - As terms morph or emerge over time, the glossary is regularly updated
  - The page also includes links to official documents that include full-length legal definitions for many terms



For More Information

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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

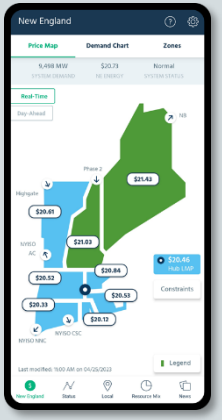
ISO Express provides real-time data on New England's wholesale electricity markets and power system operations

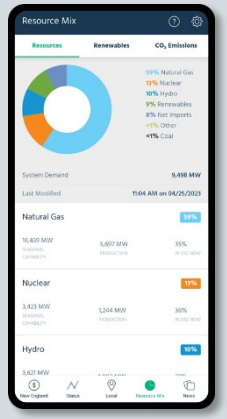
Follow the ISO on Social Media

www.iso-ne.com/social

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





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Questions

About the Presenter

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