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Nuclear Generation in New England

Vermont House Committee on Energy & Digital Infrastructure

Sarah Adams, AICP

SENIOR STATE POLICY ADVISOR, EXTERNAL AFFAIRS

Eric Johnson

EXECUTIVE DIRECTOR, EXTERNAL AFFAIRS

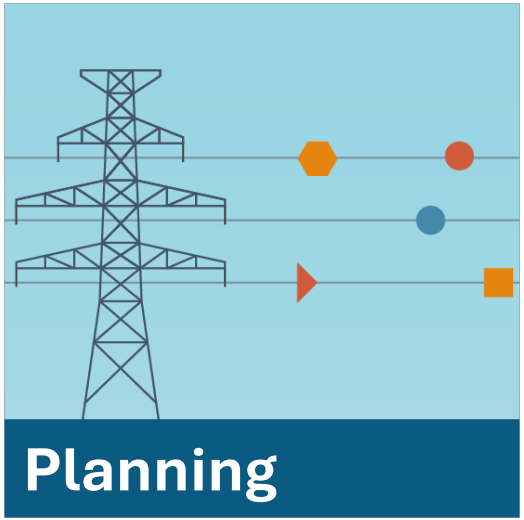
We have a mission that matters

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

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

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

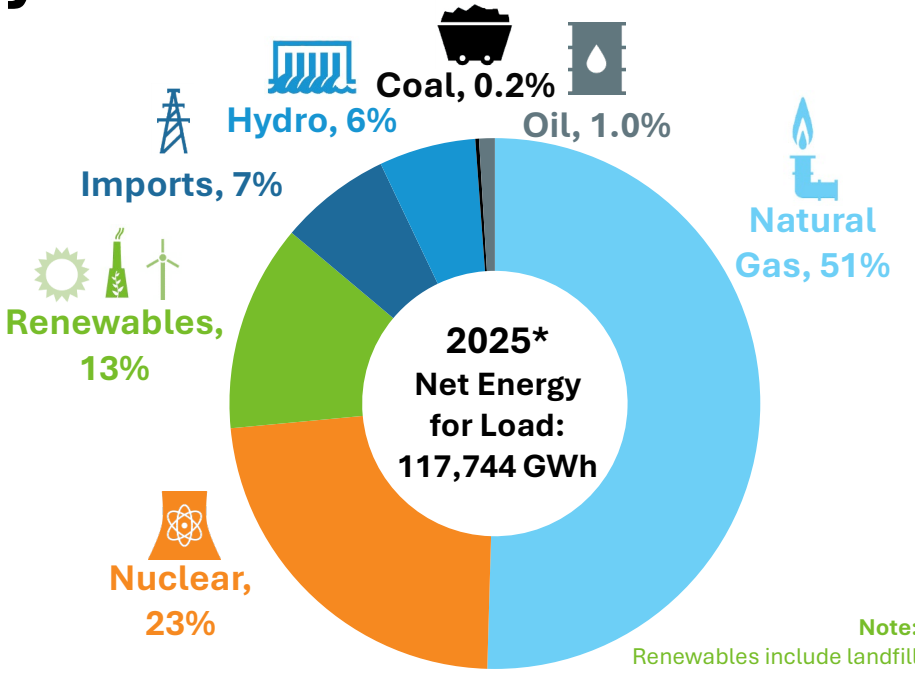
Design, run, and administer the billion-dollar markets where wholesale electricity is bought and sold



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

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

- In 2025, most of the region's energy needs were met by natural gas, nuclear, renewables, imported electricity (mostly hydropower from Eastern Canada), 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: 2025 Net Energy and Peak Load by Source
https://www.iso-ne.com/isoexpress/web/reports/load-and-demand/-/tree/net-ener-peak-load

Weather Drives Regional Demand

- New England is a **summer-peaking system**; heat and humidity drive demand
  - Summer peaks average ~25,600 MW
- Region anticipates shift to **winter-peaking system** with the electrification of heating demand
  - Winter peaks average ~21,000 MW

ISO New England Top Demand Days

Summer
28,130 MW
Aug. 2, 2006

Winter
22,818 MW
Jan. 15,2004

NEW ENGLAND'S NUCLEAR GENERATION

Features of Nuclear Power in New England

- New England's high-voltage 345 kV transmission system was originally designed around nuclear plants
- Supply significant capacity and energy to the grid
- Units self-schedule in the energy market and tend to be price-takers
- Units operate as baseload resources with high availability
- Long runtimes between refueling outages
- Pumped-storage-hydro facilities designed to work with nuclear plants

Nuclear Power Plants in New England

- At the peak of nuclear power in New England, in 1990, the region had eight operational nuclear power stations totaling nearly 7,000 MW
- Two stations are still operational, totaling 3,300 MW

Plant Name	Location	Capacity (MW)	Status
Yankee Rowe	MA	185	Retired 1991
Millstone 1	CT	652	Retired 1995
CT Yankee	CT	619	Retired 1996
Maine Yankee	ME	870	Retired 1996
Vermont Yankee	VT	604	Retired 2014
Pilgrim	MA	677	Retired 2019
Millstone 2 & 3	CT	2,102	**Operating *3,347 MW***
Seabrook	NH	1,245	
Total	**New England**	**6,954**	

Source: ISO New England 2025-2034 Forecast Report of Capacity, Energy, Loads, and Transmission (2025 CELT Report); Net Energy and Peak Load by Source;

Millstone 2 & 3

	Unit 2	Unit 3
Operator	Dominion Nuclear Connecticut, Inc.	
Operating License	Issued 09/26/1975 Expires 07/31/2035	Issued 01/31/1986 Expires 11/25/2045
Reactor Type	Pressurized Water Reactor	
Electrical Output	869 MW	1233 MW
Reactor Vendor/Type	Combustion Engineering	Westinghouse Four-Loop
Containment type	Dry, Ambient Pressure	Dry, Subatmospheric

Seabrook

Operator	NextEra Energy Resources
Operating License	Issued 03/15/1990 Expires 03/15/2050
Reactor Type	Pressurized Water Reactor
Electrical Output	1245 MW
Reactor Vendor/Type	Westinghouse Four-Loop
Containment type	Dry, Ambient Pressure

ISO Coordinates Outages with Nuclear Plant Operators

Refueling Outages

- ISO coordinates the outage schedules of each of the nuclear plants, approximately six months before refueling
  - Typically refuel every 18 months during off-peak times, for approximately 4-6 weeks
    - Off-peak: April – May and Oct. – Nov.

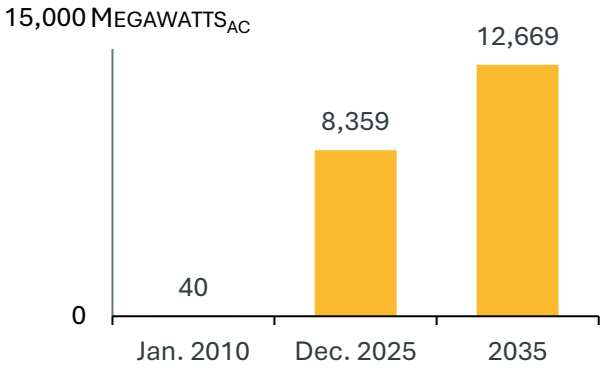
Transmission Line Outages

- ISO coordinates with nuclear plants when transmission line outages are occurring and could impact nuclear plant operations
  - Internal lines and external ties

Growth in the Region's Distributed PV Produces Extreme 'Duck Curves' on Some Days

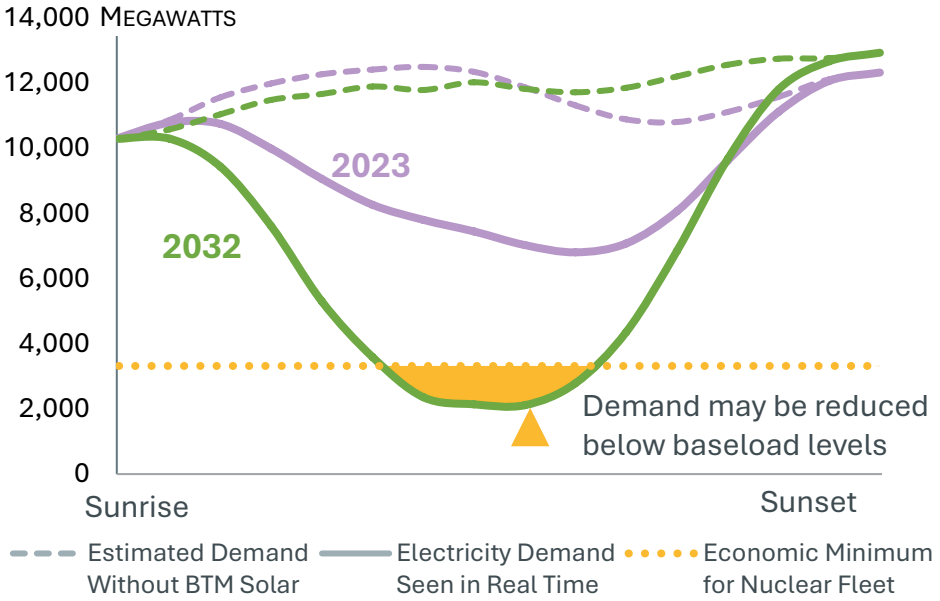
- Balancing, flexible resources will be crucial to ensure equilibrium as intermittent resources see swings in energy production

Cumulative Growth in Solar PV



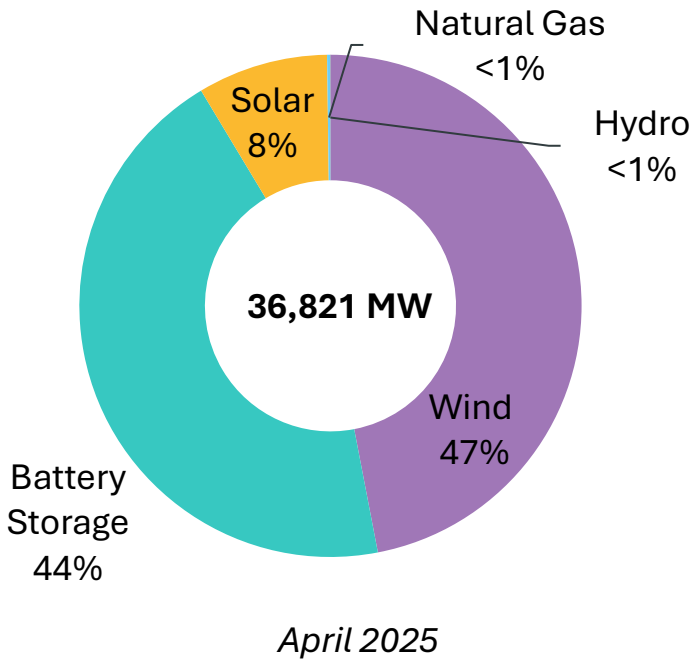
Source: 2026 Photovoltaic (PV) Forecast; MW values are AC nameplate.

Potential Impact of Behind-the-Meter Solar

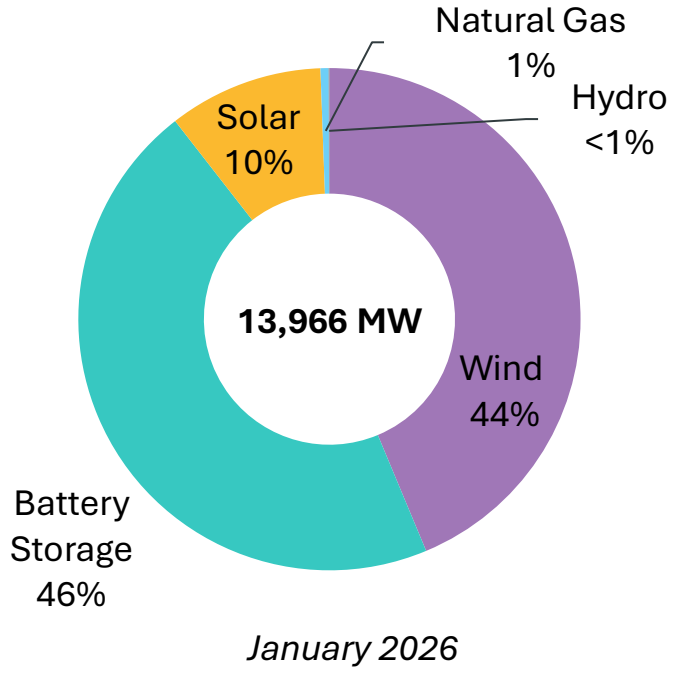


Source: Economic Planning for the Clean Energy Transition: Illuminating the Challenges of Tomorrow's Grid (October 2024)

Today's Queue Reflects the Changing Interconnection Process



April 2025



January 2026

Source: ISO Generator Interconnection Queue, FERC Jurisdictional Proposals; Nameplate Capacity Ratings.

Closing Thoughts

- New England has a long history of operating nuclear power stations safely and reliably
- Economic modeling* shows that including dispatchable, zero-carbon resources…
  - Significantly improves system efficiency and reliability
  - Reduces total capacity needs by more than 15%
  - Limits cost growth as the region approaches deep decarbonization
- New, advanced nuclear technologies could enter the ISO's interconnection queue when they are commercially viable
- Future resource mix expected to be nuclear, natural gas and renewable energy resources, distributed resources, and imports

Source: New England's Evolving Grid - The 2024 Economic Study Report (September 2025)

Questions