



ISO New England Regional Update

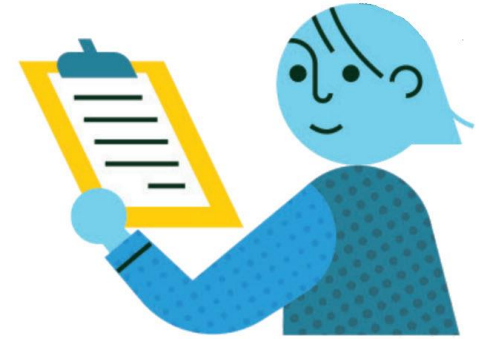
*Vermont System Planning Committee
April 2023 Quarterly Meeting*

Sarah Adams

STATE POLICY ADVISOR



Today's Updates



- Forward Capacity Auction #17
- Initial 2022 Wholesale Market Costs and Resource Mix
- ISO Interconnection Queue Snapshot
- Vermont 2032 Needs Assessment Scope of Work
- Notable ISO Planning and Improvement Efforts
- ISO New England Publications and Resources



FORWARD CAPACITY AUCTION #17 (FCA #17)



ISO Filed Results of Forward Capacity Auction #17

- On March 21, ISO filed the **results of FCA #17**, held on March 6
 - ISO requested a July 19, 2023 effective date
- **FCA #17** procured the resources needed to meet the demand for electricity, plus reserve requirements, during the **June 1, 2026 to May 31, 2027** capacity commitment period
- The auction concluded with **sufficient resources** to meet the installed capacity target of 30,305 MW
- **Clearing prices** in the auction ranged from \$2.55 to \$2.59 per kilowatt-month (kW-mo.), compared to last year's range of \$2.53 to \$2.64 per kW-mo.

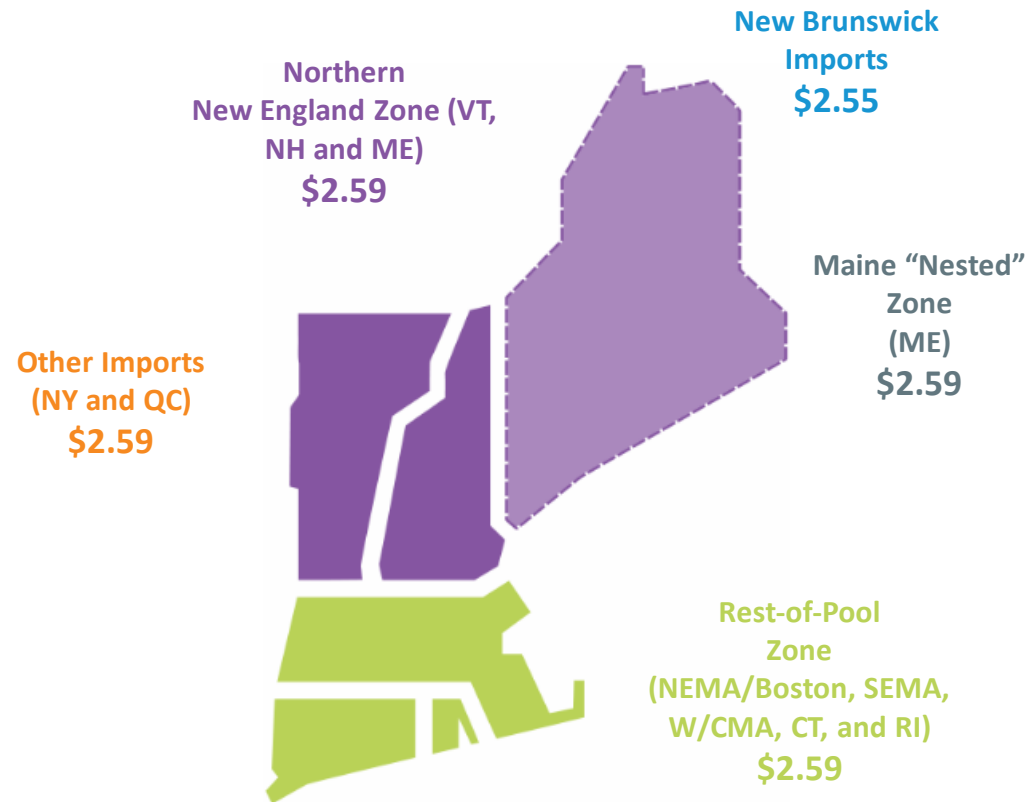
FCA #17 Results Filing: https://www.iso-ne.com/static-assets/documents/2023/03/fca_17_results_filing.pdf



FCA 17 Prices Are the Same Across all Zones within New England

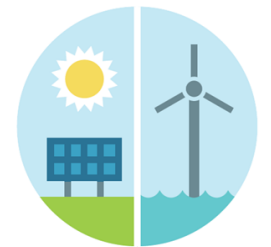
- **Clearing prices** in the auction ranged from \$2.55 to \$2.59 per kilowatt-month (kW-mo.), compared to last year's range of \$2.53 to \$2.64 per kW-mo.

- **Capacity prices by zone:**
 - Northern New England: **\$2.59**
 - Export-Constrained
 - Maine “Nested”: **\$2.59**
 - Export-Constrained
 - Rest-of-Pool Zone: **\$2.59**
 - Unconstrained
 - Other Interfaces: **\$2.59**
 - Imports (NY and QC)
 - New Brunswick: **\$2.55**
 - Imports



FCA 17 Attracted and Retained a Variety of Resources to Ensure Resource Adequacy in 2026-2027

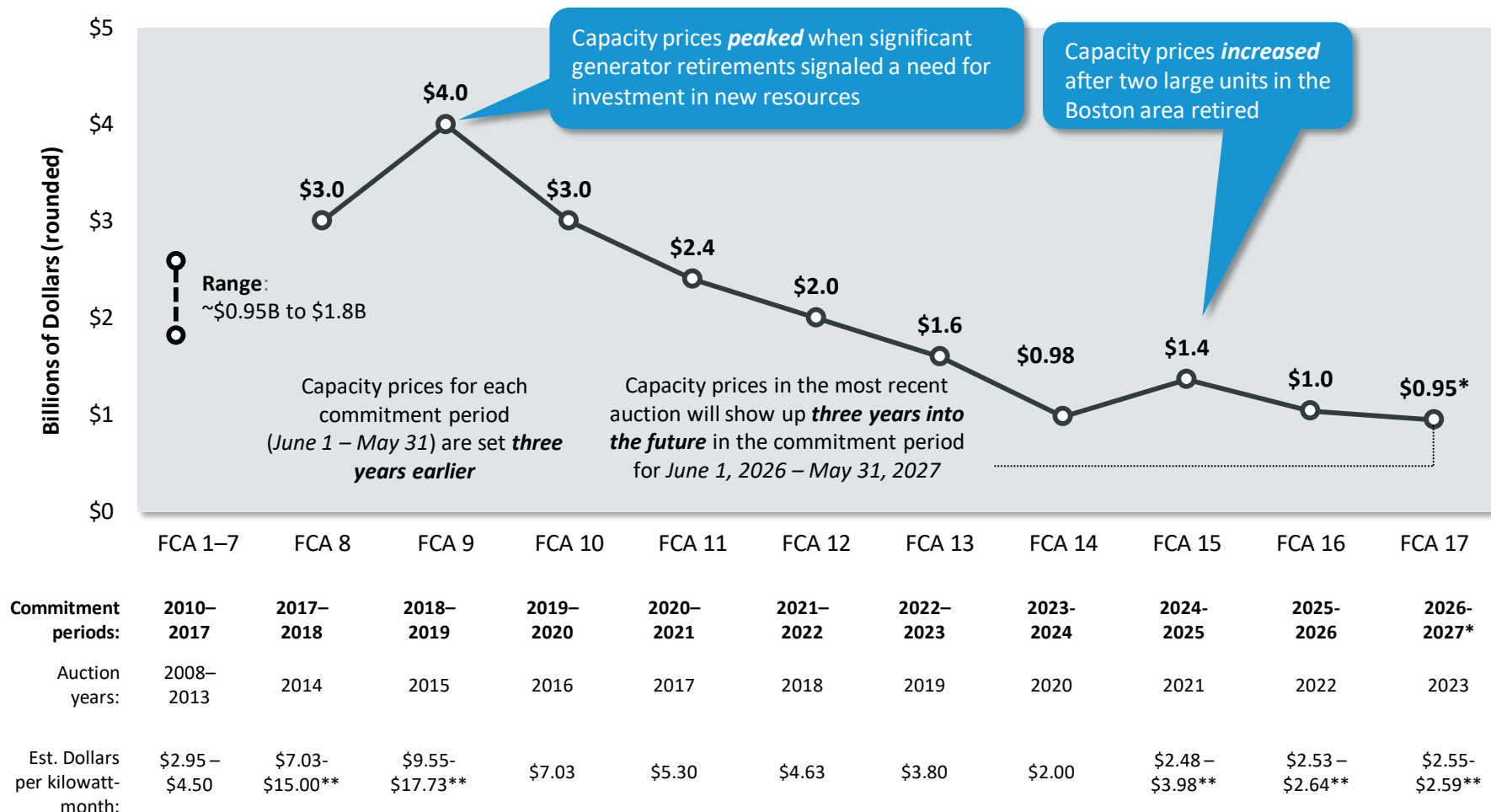
- The auction concluded with commitments from **31,370 MW** of capacity to be available during the 2026-2027 capacity commitment period
 - **27,864 MW** of generation, including:
 - Nearly **750 MW** of *new* renewable energy, battery storage, and demand-reducing resources secured obligations, including:
 - 130 MW of demand resources; and
 - 619 MW of renewables energy and storage
 - More than **350 MW** of new and existing wind generation cleared the auction
 - **2,940 MW** of energy-efficiency and demand-reduction measures, including **130 MW** of new demand resources
 - **567 MW** of total imports from New York, Québec and New Brunswick
- Solar and wind generation, energy storage, and demand response resources accounted for 16% of all capacity clearing the auction



Latest Prices Rank Among the Lowest in Auction History

As a “forward” market, consumers can anticipate future changes in capacity costs

Total Capacity Market Costs



* Data is preliminary and subject to change. ** Prices are different across some capacity zones.

INITIAL 2022 WHOLESALE MARKET COSTS AND RESOURCE MIX

2022 Net Energy for Load Report

Preliminary 2022 Wholesale Market Costs



NET ENERGY FOR LOAD

2022 Report

ISO New England Publishes 2022 Net Energy for Load Report

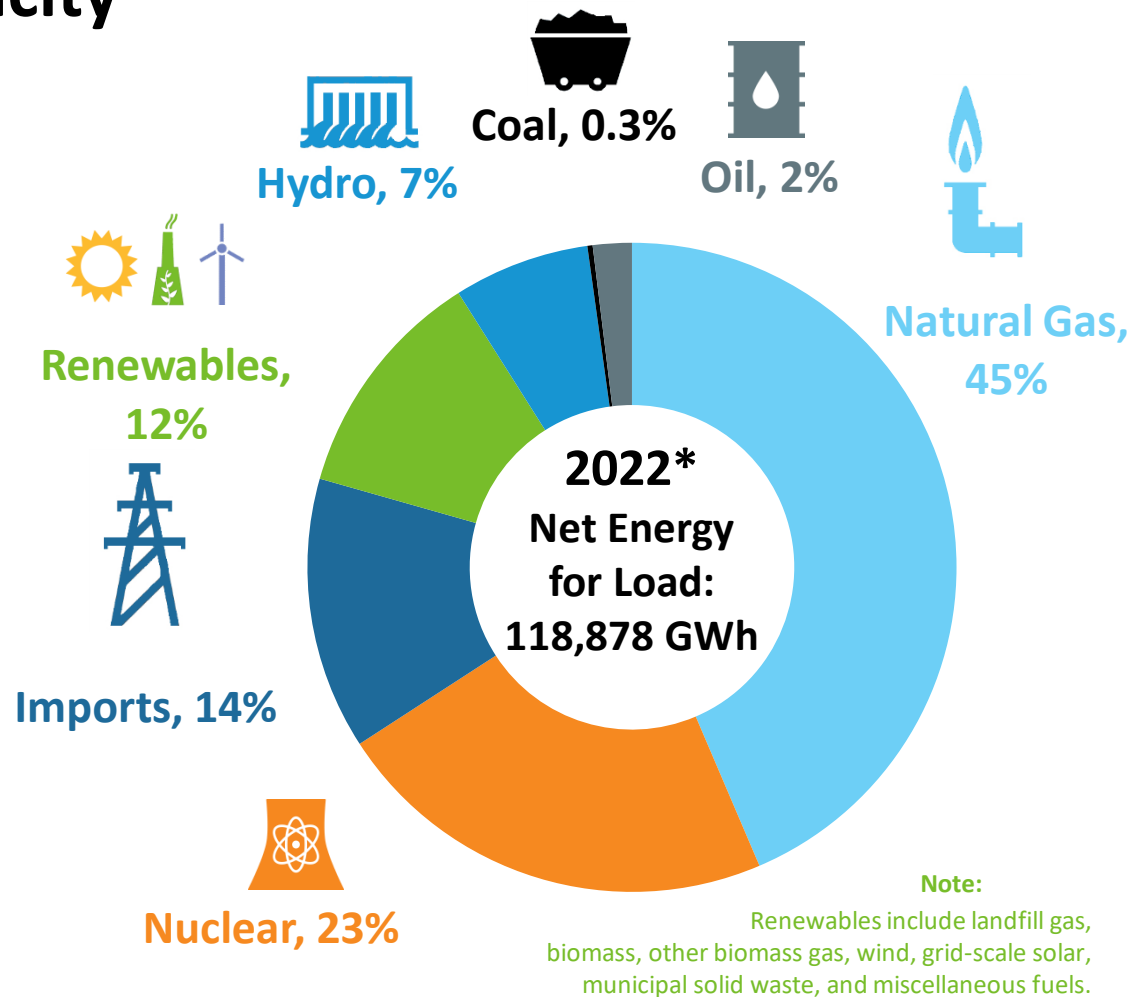
- The ISO [recently published](#) a breakdown of the amount of electricity produced by generators in New England and imported from other regions to satisfy demand in 2022
 - Total production for the year is known as net energy for load (NEL)
- Highlights of the NEL Report include*:
 - NEL amounted to **118,878 gigawatt-hours** in 2022 (+0.07% from 2021)
 - Output from solar installations increased by about a third from 2021 to 2022, **rising to 3,605 GWh or 3% of NEL.**
 - Oil played a larger role in 2022 than in 2021, reflecting rising prices for the region's main energy fuel, natural gas, that made oil more economical at certain times of the year
 - **Oil accounted for 1,844 GWh, or 2% of NEL**
 - Wind power was relatively steady from year to year at **3% of NEL**
 - Coal's contribution to NEL continues to decrease, down to 0.3% of NEL

Data is preliminary and subject to adjustment

ISO-NE PUBLIC

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

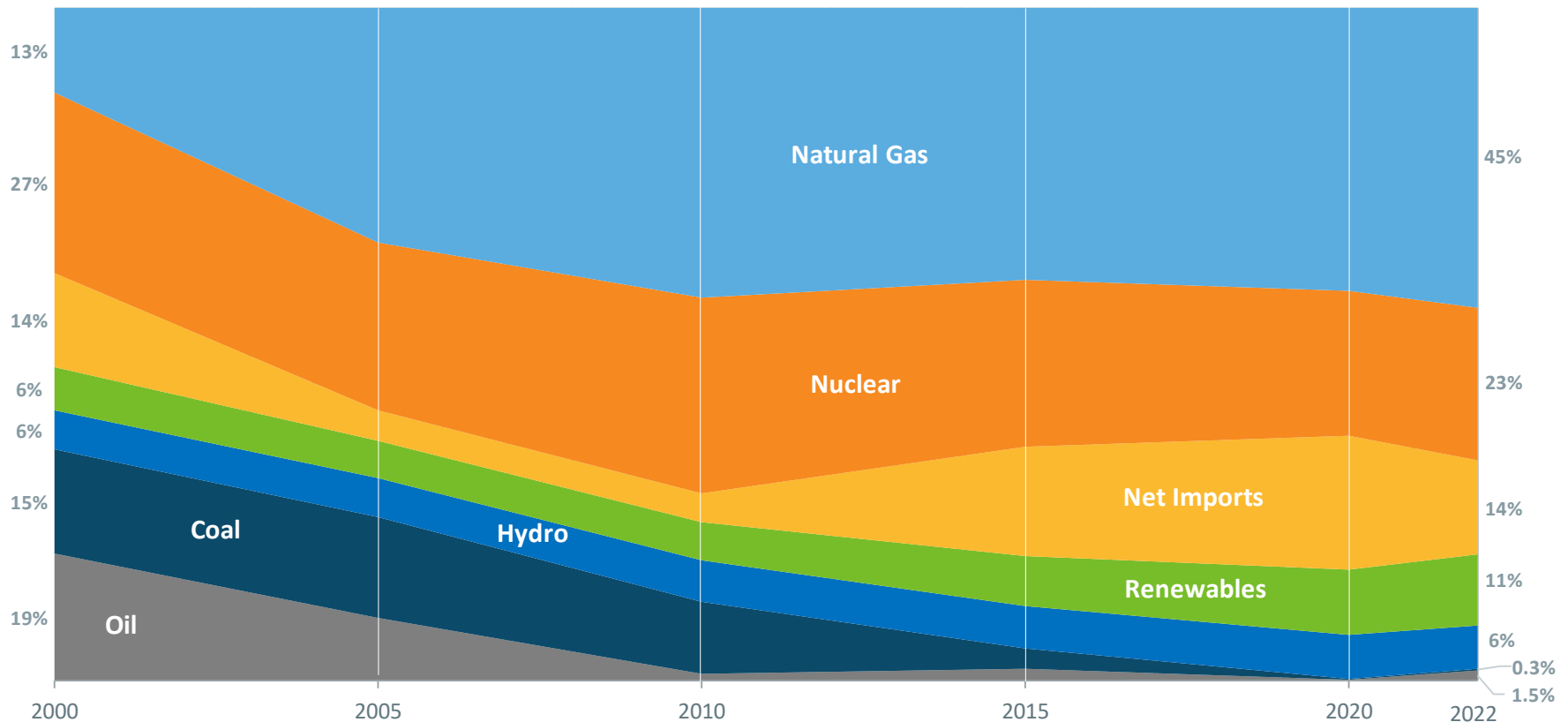
- In 2022, most of the region's energy needs were met by natural gas, nuclear, imported electricity (mostly hydropower from Eastern Canada), renewables, and other low- or non-carbon-emitting resources



*Data is subject to adjustment. Source: 2022 Net Energy and Peak Load by Source
<https://www.iso-ne.com/isoexpress/web/reports/load-and-demand/-/tree/net-ener-peak-load>

Dramatic Changes in the Energy Mix

Sources of Grid Electricity in New England (Annual Net Energy for Load)



Source: ISO New England, generation data, and *Net Energy and Peak Load by Source Report*

2022 WHOLESale MARKET COSTS

Preliminary Cost Information



New England Wholesale Electricity Costs^(a)

	2017		2018		2019		2020		2021		2022**	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
Wholesale Market Costs												
Energy (LMPs)^(b)	\$4,498	3.5	\$6,041	4.7	\$4,105	3.3	\$2,996	2.4	\$6,101	4.8	\$11,698	9.0
Ancillaries^(c)	\$132	0.1	\$147	0.1	\$83	0.1	\$62	0.1	\$52	0.0	\$134	0.1
Capacity^(d)	\$2,245	1.8	\$3,606	2.8	\$3,401	2.7	\$2,662	2.2	\$2,243	1.8	\$1,864	1.4
Subtotal	\$6,875	5.4	\$9,794	7.6	\$7,589	6.0	\$5,720	4.7	\$8,404	6.6	\$13,697	10.6
Transmission charges^(e)	\$2,199	1.7	\$2,250	1.7	\$2,146	1.7	\$2,331	1.9	\$2,688	2.1	\$2,741	2.1
RTO costs^(f)	\$193	0.2	\$196	0.2	\$184	0.1	\$191	0.2	\$216	0.2	\$214	0.2
						Mystic Cost of Service Agreement					\$166	0.1
Total	\$9,267	7.3	\$12,240	9.4	\$9,918	7.9	\$8,242	6.7	\$11,308	8.9	\$16,819	13.0

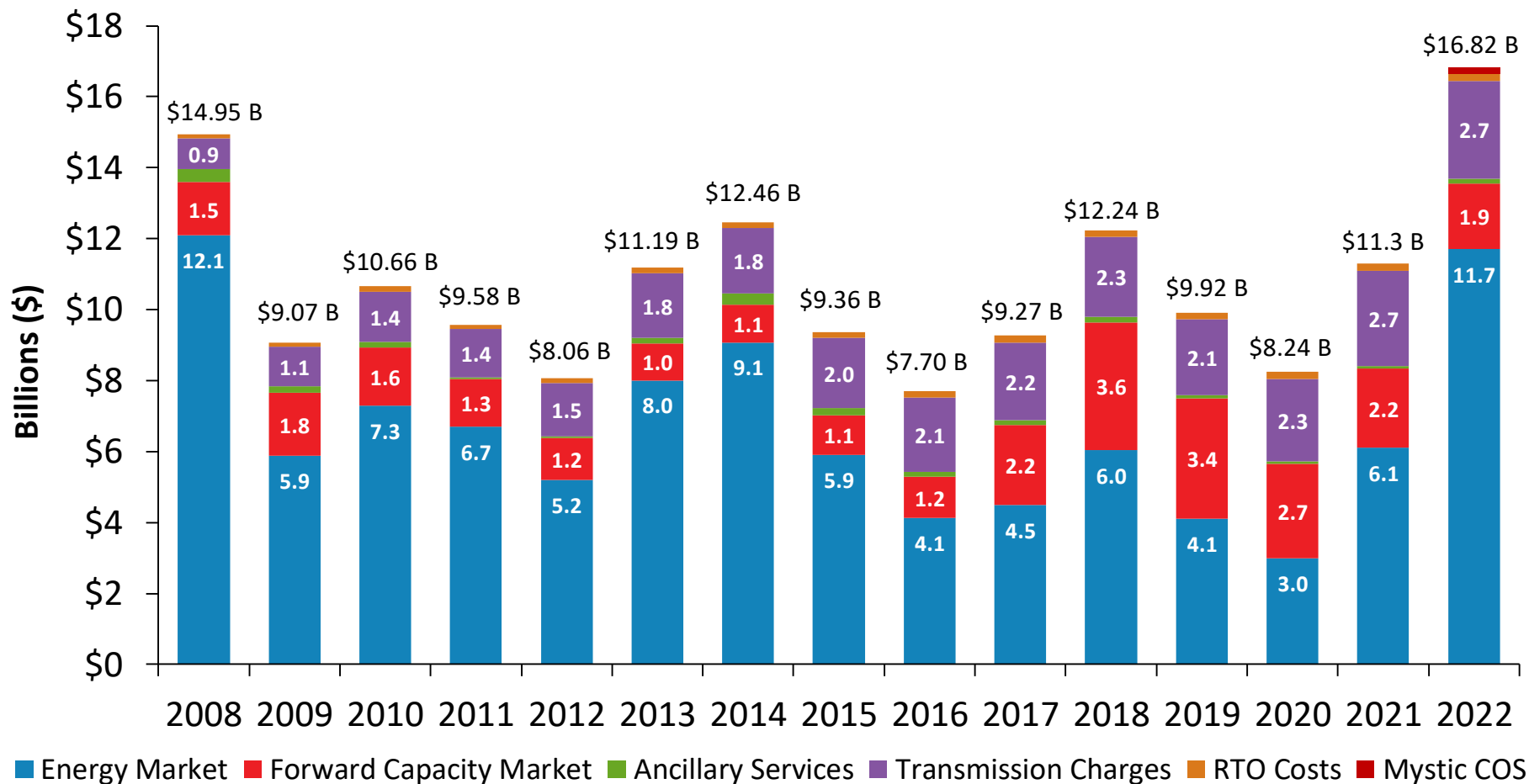
- (a) Average annual costs are based on the 12 months beginning January 1 and ending December 31. Costs in millions = the dollar value of the costs to New England wholesale market load servers for ISO-administered services. Cents/kWh = the value derived by dividing the dollar value (indicated above) by the real-time load obligation. These values are presented for illustrative purposes only and do not reflect actual charge methodologies. ***The wholesale values for 2022 are preliminary and subject to resettlement.**
- (b) 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.
- (c) 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.
- (d) Capacity charges are those associated with the Forward Capacity Market (FCM).
- (e) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services, including black-start capability, voltage support, and FCM reliability.
- (f) 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*.

** 2022 figures are preliminary



New England Wholesale Electricity Costs*

Annual wholesale electricity costs have ranged from \$7.7 billion to \$16.8 billion



(The total costs for each year include Ancillary Services and RTO costs)

Source: 2022 Report of the Consumer Liaison Group; *2022 data is preliminary and subject to resettlement

Note: Forward Capacity Market values shown are based on auctions held roughly three years prior to each calendar year.

Mystic Cost of Service Agreement

- In 2018, after the owner of the Mystic Generation Station signaled their intention to retire the remaining generating units (Mystic 8 and 9), the ISO filed for, and FERC approved the retention of the units for regional fuel security for the Capacity Commitment Period (CCP) 2022/23 and CCP 2023/2024
 - Mystic 8 and 9 are fueled exclusively by the Everett Liquefied Natural Gas (LNG) facility
 - The Mystic units, the Everett LNG facility, and the cost of LNG delivered to fuel the generating units are included in the Cost-of-Service Agreement
- **The preliminary cost of the Mystic Cost of Service Agreement in 2022 was \$166 Million***
- Additional information about the Mystic COS Agreement is available on the [ISO website](#)



*2022 data is preliminary and subject to resettlement

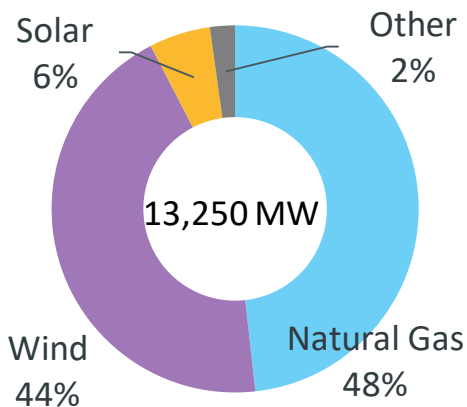
ISO GENERATOR INTERCONNECTION QUEUE SNAPSHOT



The ISO Generator Interconnection Queue Provides Snapshots of the Future Resource Mix

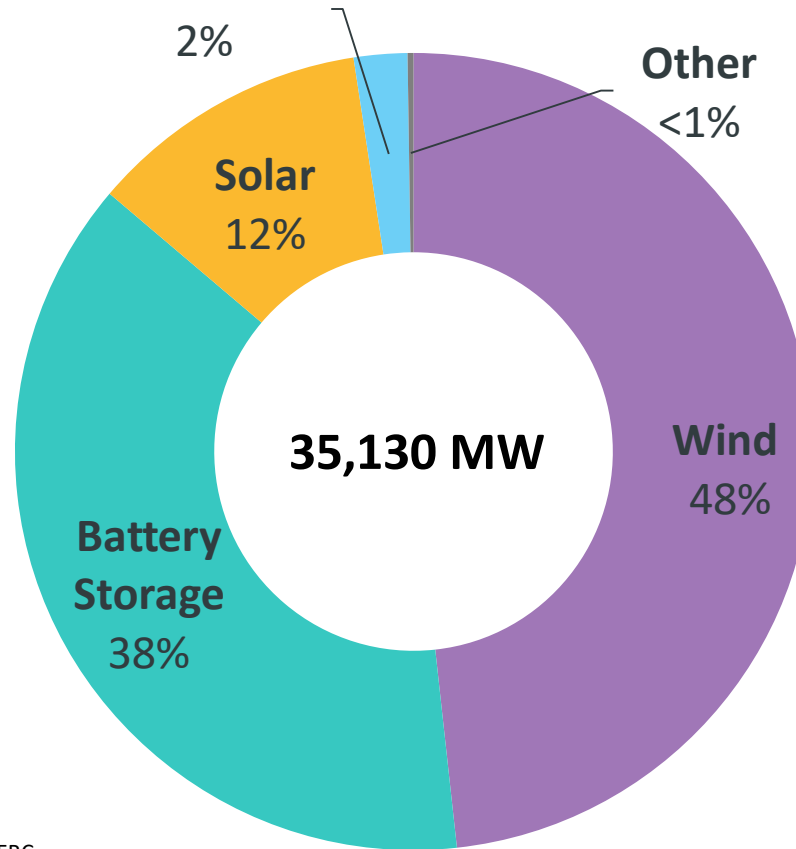
Dramatic shift in proposed resources from natural gas to battery storage and renewables

Then



June 2017

Now



April 2023

Offshore Wind



CT	2,400 MW
MA	11,514 MW
ME	12 MW
RI	704 MW

Onshore Wind



ME	2,325 MW
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Source: ISO Generator Interconnection Queue, FERC Jurisdictional Proposals; Nameplate Capacity Ratings.

NOTABLE ISO PLANNING AND IMPROVEMENT EFFORTS



Forecasting the Future Grid

An Ongoing, Important Effort

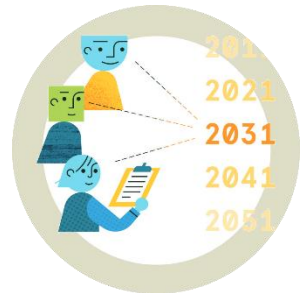
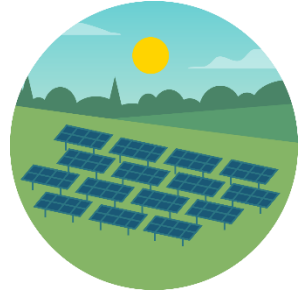
- ISO New England undertakes a number of forecasting efforts each year in order to develop a 10-year plan for the region to ensure the power grid will continue to meet New England's evolving needs

Forecasting Effort	Description
Transportation Electrification Adoption Forecast	Forecast the energy and demand impacts associated with the uptake of electric vehicles (EVs)
Heating Electrification Forecast	Forecast the energy and demand impacts associated with the electrification of the heating sector
Energy Efficiency Forecast	Forecast the reductions in energy and demand from state-sponsored EE programs in the New England control area by state
Solar PV Forecast	Forecasts the long-term adoption of PV in the region.
Energy and Seasonal Peak Forecasts	Develops a 10-year forecast of energy and demand (gross and net), factoring in electrification, energy efficiency measures, distributed generation, and price responsive demand



Other Market, Planning, and Study Improvements Underway

- [FERC Order No. 2222](#)
 - On March 1, FERC issued an order accepting in part and rejecting in part the ISO's Order 2222 proposal to further integrate DERs and DER Aggregations into the regional markets. **The ISO will be making a series of filings to comply with the order**
- [Storage as a Transmission Only Asset](#)
 - The ISO recently submitted proposed tariff changes to FERC to **create a new, separate class of storage resources that would be purpose-built as transmission equipment**
 - The revisions will allow storage to be considered as a solution to needs in both the Solutions Study process and the competitive solution process
- [Economic Studies Improvements](#)
 - The ISO recently submitted proposed tariff changes to FERC to **improve the economic study process by making its studies more consistent and repeatable**. These changes will provide greater insight into power system trends and help better facilitate the comparison of findings.



Recent FERC Filings

- **Reliability Standards to Address Inverter-Based Resources**

- On February 6, the ISO submitted [comments](#) in response to FERC's [Notice of Proposed Rulemaking](#) proposing that NERC develop new or modified Reliability Standards that address reliability “gaps” related to inverter-based resources
- In addition, the ISO joined [comments](#) submitted by the ISO/RTO Council



- **Inventoried Energy Program**

- On February 14, FERC issued an [Order](#) approving ISO-NE's [revisions](#) to the Financial Assurance Policy and Billing Policy Associated with resources participating in the IEP
 - In order to comply with a [DC Circuit Court of Appeals ruling](#), and subsequent [FERC Order](#), the ISO removed assets that run on coal, nuclear, biomass or hydropower from eligibility for the program
- The ISO is separately proposing other changes to the IEP, intended to increase the likelihood of attracting incremental inventoried energy to support winter reliability



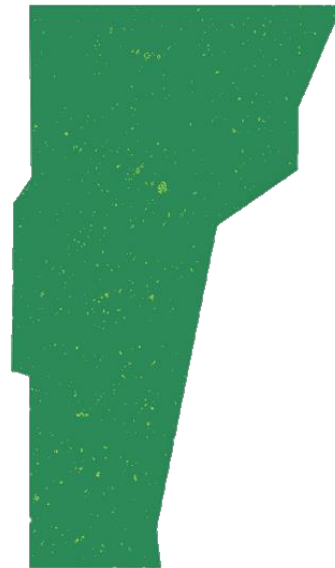
VERMONT 2032 NEEDS ASSESSMENT



Vermont 2032 Needs Assessment

Background

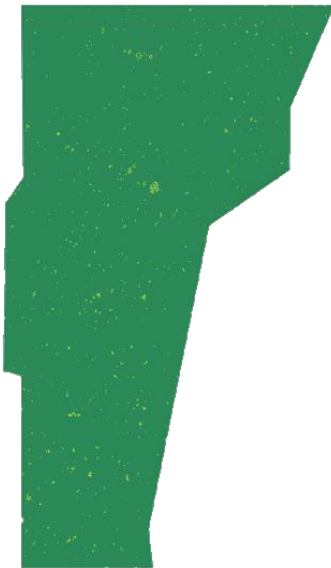
- The last Needs Assessment for the Vermont study area was the NH/VT 2023 Needs Assessment (completed in 2015)
- The ISO issued a [Notice of Initiation of the Vermont 2032 Needs Assessment](#) in November 2022
- The ISO regularly conducts studies in key areas pursuant to the [Open Access Transmission Tariff](#) (Section II of the ISO Tariff) based on several triggers. The triggers for the Vermont 2032 Needs Assessment are:
 - Assess compliance with reliability standards and criteria consistent with the long term needs of the system
 - 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 will evaluate the performance and identify reliability-based needs in the Vermont Area for the year 2032



Vermont 2032 Needs Assessment

Winter Peak Scenario

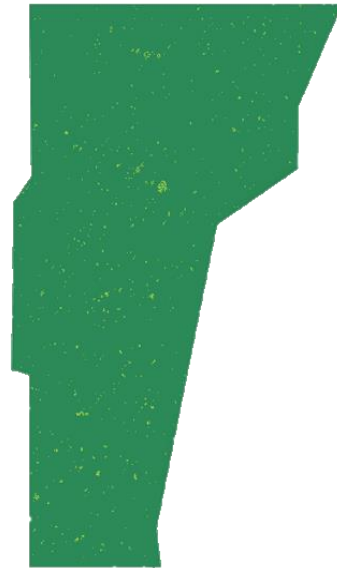
- At the December 2022 Planning Advisory Committee, the ISO presented the [Vermont 2032 Needs Assessment Scope of Work](#)
 - The summer peak load and minimum load scenarios were presented
 - A request to consider a winter peak load scenario was received
 - A few additional comments on the PAC presentation were received; [responses to stakeholder comments](#) were posted to the ISO website
- ISO staff [presented](#) Winter Peak Scenario assumptions that will underpin the Assessment at the February PAC
 - One winter peak scenario that represents winter evening peak load levels with low renewable output conditions will be assessed
 - ISO staff also discussed potential generator dispatch, intraregional transfer limits across interfaces, and study methodology



Vermont 2032 Needs Assessment

Schedule and Next Steps

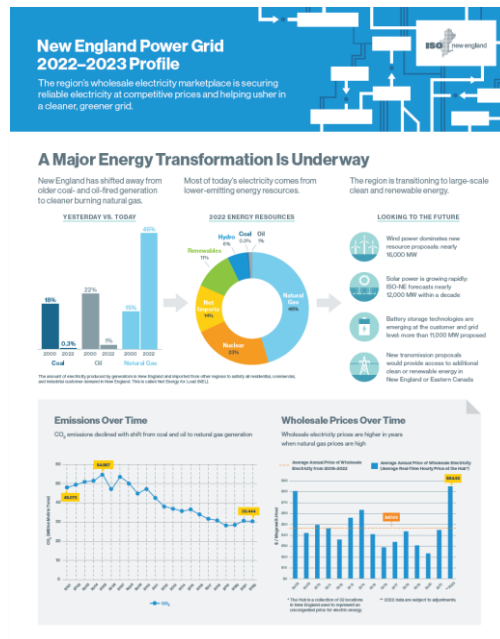
- The ISO plans to post the draft Vermont 2032 Needs Assessment Scope of Work report and intermediate study files for review by the PAC in the first half of 2023
- The Vermont 2032 Needs Assessment is expected to be completed and presented to the PAC in Q3/Q4 2023



ISO NEW ENGLAND PUBLICATIONS AND RESOURCES

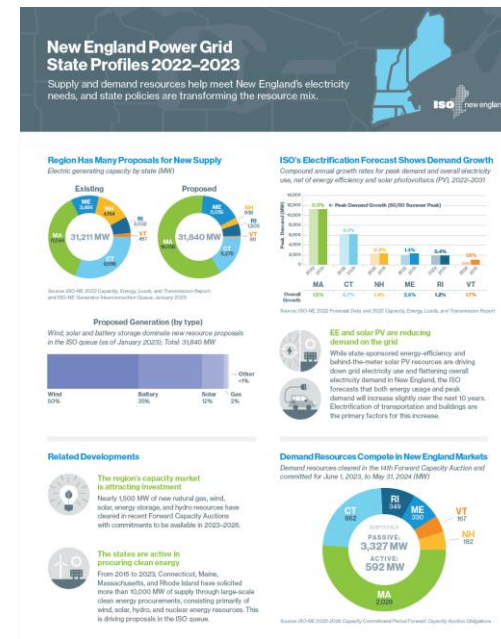


ISO New England Regional & State Profiles Are Posted



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

Consumer Liaison Group

2022 Report

- The CLG is a forum for sharing information between the ISO and electricity consumers in New England
 - Quarterly meetings are free and open to the public, with in-person and virtual options to participate
- On March 30, the ISO and the CLG Coordinating Committee posted the **2022 annual report**
 - The CLG Report is a joint publication of the ISO and the CLG Coordinating Committee (CLGCC)
 - The report provides summaries of the 2022 meetings; updates on ISO initiatives previously discussed at 2022 meetings; and analysis of regional wholesale costs and retail rates
 - The report will be updated after the new CLGCC develops their priorities and future initiatives



[2022 CLG Annual Report](#)

More information on the CLG is available at:

<https://www.iso-ne.com/committees/industry-collaborations/consumer-liaison/>

ISO-NE 2023 Training Schedule Announced

- ISO New England has [announced](#) its training schedule for 2023, including classes and webinars
- 2023 Training Classes Include:
 - Introduction to Wholesale Electricity Market (WEM)101
 - May 22-25
 - Forward Capacity Market (FCM 101)
 - October 24-26
 - Intermediate Whole Electricity Markets (WEM 201)
 - November 14-16
- Interested Parties can also sign up for the [ISO training mailing list](#)
- Other, self-paced, training courses are available through [ISO-TEN](#), and [training materials](#) and [e-learning materials](#) posted on the ISO website



Upcoming Opportunities for Engagement in the Region

- **June 8** – Second Quarterly CLG Meeting
- **June 20** – FERC to convene its [second New England Winter Gas-Electric Forum](#) in Portland, Maine
- **September 21** – Third Quarterly CLG Meeting (Vermont)
- **November 1** – [2023 Regional System Plan Public Meeting/Open Meeting of the ISO New England Board of Directors](#)
- **December 6** – Fourth Quarterly CLG Meeting



FOR MORE INFORMATION...



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Log on to ISO Express

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



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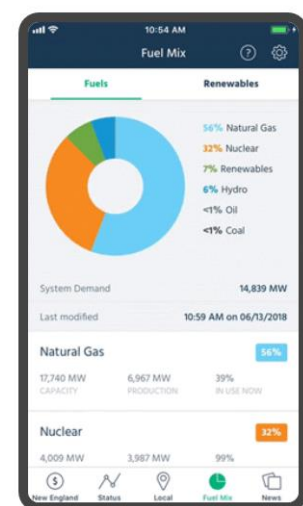
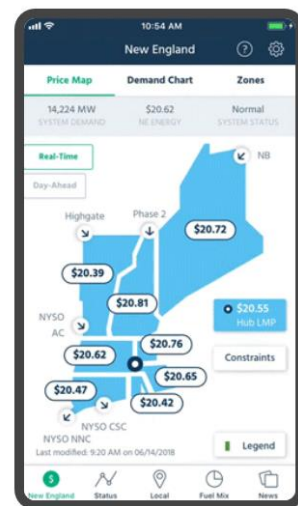


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Questions

