



ISO New England 2024/2025 Winter Outlook

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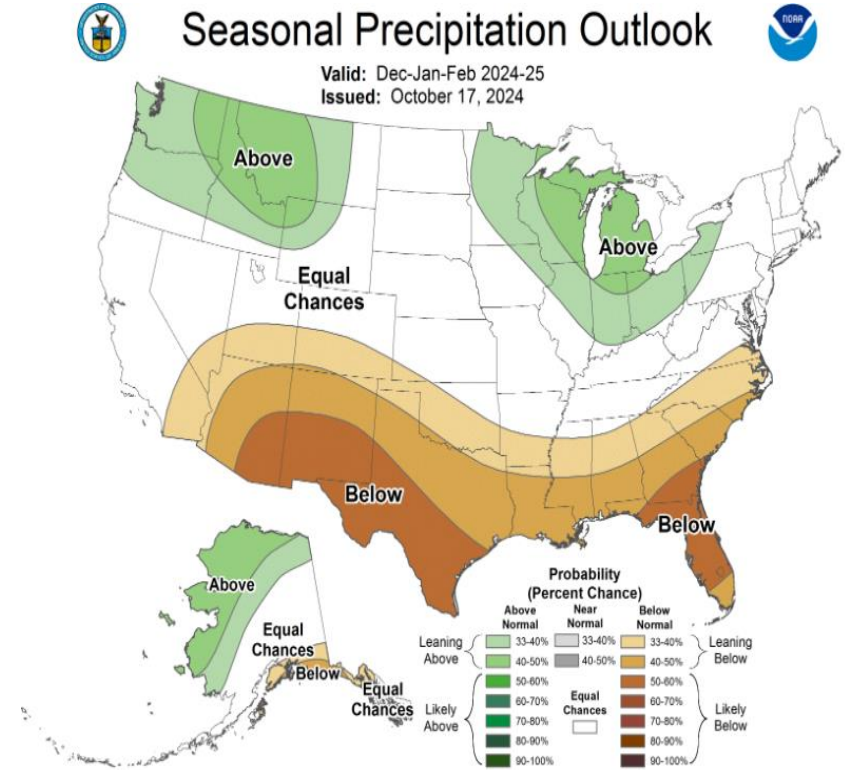
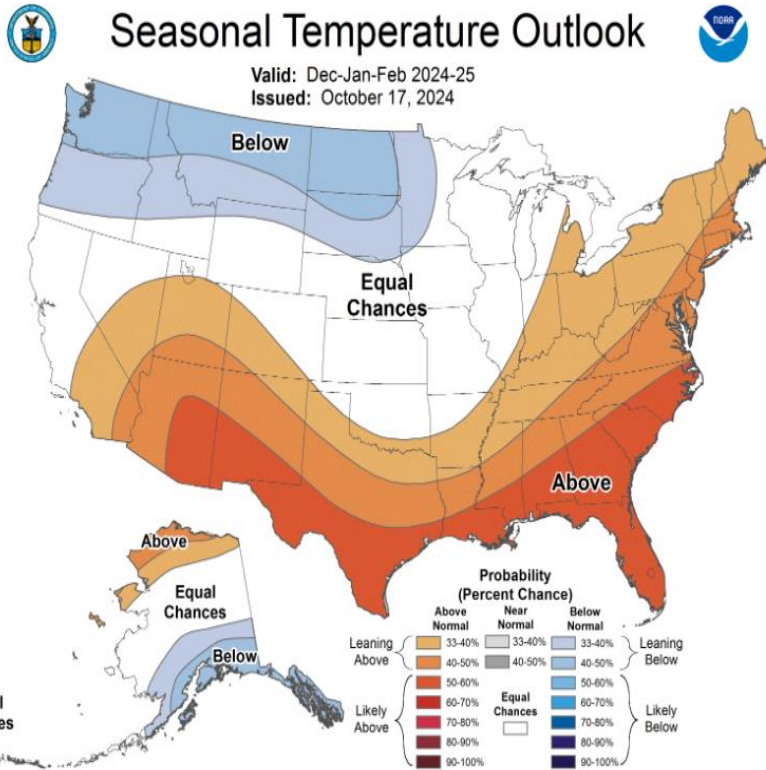
EXECUTIVE VICE PRESIDENT AND CHIEF OPERATING OFFICER



Winter Outlook Highlights

- Winter Outlook
 - The seasonal temperature outlook for the winter months of Dec-Jan-Feb indicates a 33-40% probability of above-normal temperatures for northern New England and a 40-50% probability of above-normal temperatures for southern New England
 - An equal chance for above-normal or below-normal precipitation is forecasted across New England
 - Inventoried Energy Program (IEP) is in effect this winter
 - Based on generator capabilities expected during the winter season, capacity analysis for the 50/50 and the 90/10 load forecast indicates a surplus even after accounting for generation at risk due to gas supply
 - Unlike prior years, when ISO's winter energy analysis was deterministic and evaluated shortfall risk over a 90-day period, this year's analysis uses the PEAT tool which is probabilistic and evaluates shortfall risk over 21-day periods
 - Also, in prior years, the ISO studied mild, moderate, and extreme weather conditions
 - The new winter energy analysis only studies extreme weather conditions
 - The 2024/25 expected winter conditions are different than the extreme winter conditions modeled with PEAT; the results of the extreme winter energy analysis are on slide 10

Winter Temperature and Precipitation Outlook



2024/2025 Winter Expectations

- Winter Demand Forecast
 - 50/50 winter peak demand forecast of 20,308 MW, which is ~39 MW (~0.2%) higher than the 2023/24 forecast
 - 90/10 winter peak demand forecast of 21,089 MW, which is ~57 MW (~0.3%) higher than the 2023/24 forecast
- Scheduled Generation and Transmission Outages
 - All generation and transmission outages continue to be coordinated to minimize any adverse transmission or capacity conditions
 - No significant generation or transmission outages are currently scheduled
- Transfer Capability
 - Transfer capability on the New York Northern AC ties will be increased from 1,400 to 1,600 MW for the winter period



Winter Expectations, cont.

- Natural Gas Deliverability
 - ISO will continue to monitor natural gas deliverability throughout the winter
 - Consistent with past winter seasons, the ISO assumes that approximately 3,900 – 4,800 MW¹ may be at risk due to constrained natural gas pipelines
- Winter Capacity Outlook
 - Projects a lowest 50/50 operable capacity margin of ~2,099 MW and a lowest 90/10 operable capacity margin of ~561 MW for the week beginning December 28, 2024¹
 - If extended periods of cold weather rapidly deplete stored fuel, the capacity outlook will be adjusted accordingly

¹ - Based on resource Winter Seasonal Claimed Capabilities

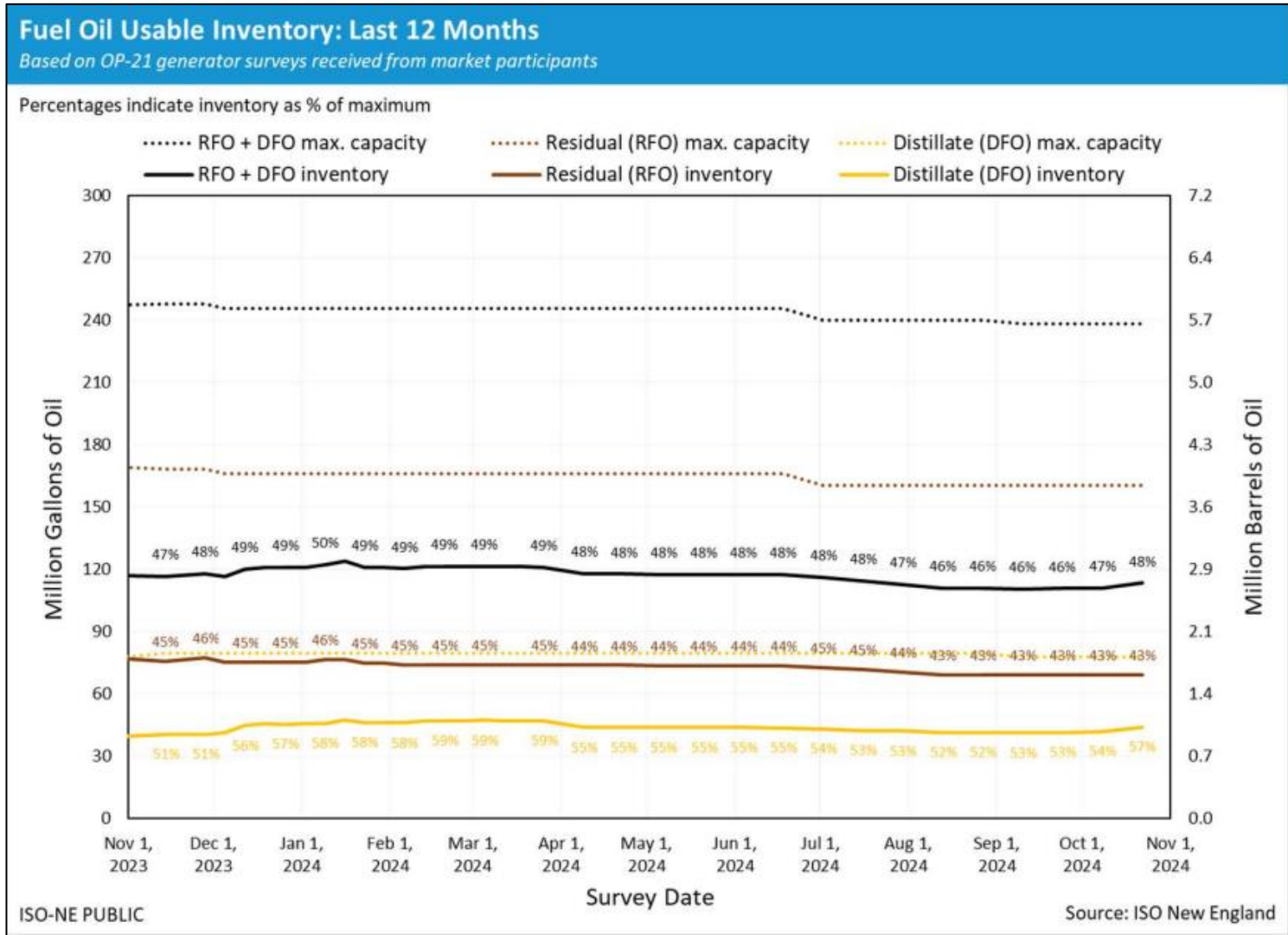


LNG and Fuel Oil Expectations

- Saint John liquified natural gas (LNG) tanks are expected to be full (~10 Bcf) heading into the winter
- Aggregate fuel-oil inventories ended winter 2023/24 at ~121M gallons (~49% of max); current inventory is ~113M gallons (~48% of max)



Total Usable Fuel Oil in New England



2024/25 Extreme Winter Energy Analysis

- ISO studied extreme winter 21-day events to evaluate the region's probabilistic worst-case energy shortfall risk this winter
 - Studies were performed using ISO's PEAT
- Similar to the methodology employed for ISO's PEAT-based analysis of winter 2027 and 2032, four representative extreme 21-day events were selected for study
 - 2 events represent longer-duration winter events*
 - Jan 22, 1961 & Feb 2, 1979
 - 2 events represent shorter-duration winter events*
 - Feb 14, 2015 & Jan 14, 1982
 - Winter events are characterized by periods of extreme cold temperatures, low winds, and low solar irradiance on average across the 21-day period
- Each event was studied 720 times (*i.e.*, “cases”) with each case representing different combinations of fuel oil inventories, LNG inventories, imports, generator forced outages, and fuel prices

*Winter events are grouped into Winter Cluster 1 (longer-duration events) and Winter Cluster 2 (shorter-duration events)

2024/25 Extreme Winter Energy Analysis, cont.

- Key Assumptions
 - FCA 15 (existing) resource mix
 - 7.5 GW of behind-the-meter (BTM) PV nameplate capacity
 - Up to 1.2 Bcf/d of LNG injection capability
 - Everett Marine Terminal (EMT) is expected to be available to meet LDC demand, and possibly generators
 - Incremental energy from IEP modeled as 1.5 Bcf of LNG and 10M gallons of fuel oil

Energy Shortfall Risk Associated With Extreme Winter Events

Event Descriptions & Key Results

Event:	Jan 22, 1961	Feb 2, 1979	Feb 14, 2015	Jan 14, 1982
Peak 21-Day Load (MW)	20,601	20,742	19,847	21,249
21-Day Energy Demand (TWh)	7.97	7.77	7.73	7.97
Expected 21-day Shortfall (MWh)*	1,475	204	732	147
Max (i.e., worst-case) 21-day Shortfall (MWh)	244,353	83,569	76,053	204,126
Probability of Max 21-day Shortfall (%)	0.000031	0.000004	0.000031	0.000004
Expected Shortfall Days (of days 1-21)	10-12	13-14, 16-17	11, 13-14	12-14

*Expected 21-day shortfall is the probability-weighted average across all cases

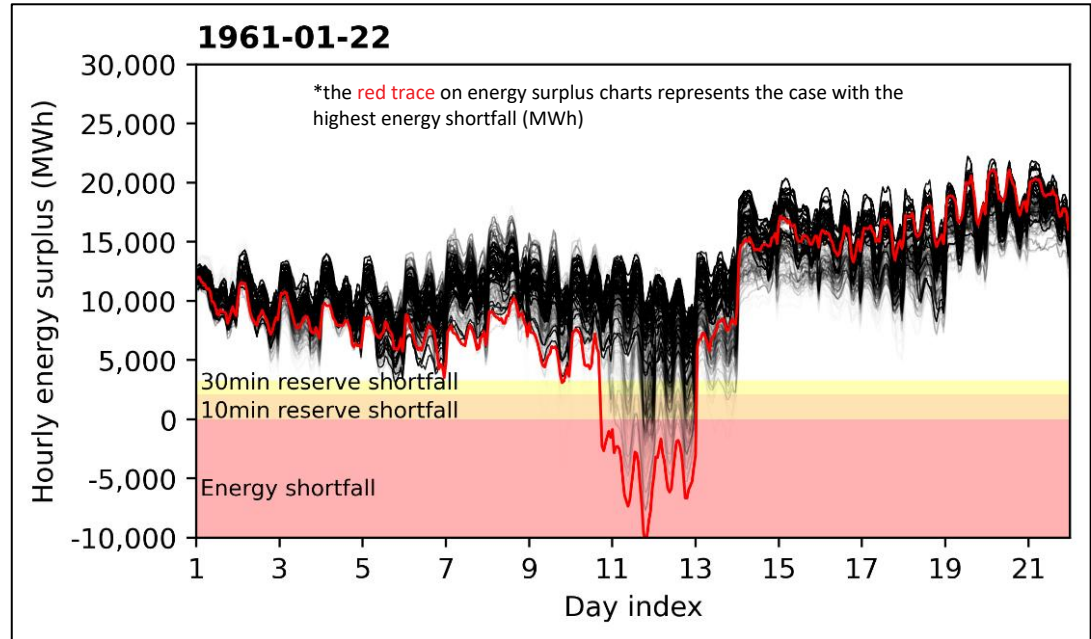


Extreme Winter Energy Analysis Summary

- Study results are consistent with the existing resource mix and expectations for load this winter
- As a reminder, the worst-case, 21-day energy shortfall quantities in the January 22, 1961 event result from a low probability combination of several factors
 - Low aggregate fuel oil and LNG starting inventories of ~95M gallons and ~8.0 Bcf, respectively
 - Low (total) imports of ~2,400 MW/hr (versus capability of ~4500 MW) on average during shortfall hours
 - Approximately 10 – 12 GW of generation unavailable during shortfall hours due to forced outages or lack of fuel
- The 244,353 MWh maximum 21-day energy shortfall under the 1961 case, with a probability of .000031 percent, is in comparison to the ~425,000 MWh of energy consumption on a single peak winter day

Energy Shortfalls Under Extreme Weather Conditions Begin on Day 10 or Later Thus Allowing Time for Market Response and Other Preventive Actions

- ISO expects these shortfalls are manageable and that market-based incentives will provide relief in the form of market response, including the use of opportunity costs in energy offers and fuel replenishment



- In addition to the anticipated market response, if necessary, the ISO would implement additional preventive operational measures such as reducing exports/scheduling additional imports, seeking waivers of emissions or air permit limitations, conservation appeals

Inventoried Energy Program Update

- The second year of the IEP runs from Dec. 1, 2024 through Feb. 28, 2025
 - Program consists of Forward and Spot Components
 - Forward component elections were submitted to the ISO between Sept. 1 and Oct. 1, 2024; Spot-only component elections may be submitted between Sept. 1 and the end of the winter period
- Forward Energy inventory elections for this winter total ~995,014 MWh, including ~59,630 MWh of Forward LNG Inventory Elections
 - Forward energy includes ~64% from oil-fired resources and ~34% from natural gas-fired resources; remainder is from pumped storage hydro and refuse-burning resources
 - Base payment rate is \$79 per MWh
 - Forward cost is ~\$78.6 million
- 2023-2024 IEP Participation was ~844,201 MWh
 - Base payment rate was \$92.51 per MWh
 - Forward cost was ~\$78.1 million
- As of Nov. 1, Spot Energy inventory elections for this winter total ~166,846 MWh; this includes ~5,898 MWh of Spot-only component participation and ~160,948 MWh of Spot component participation estimated from resources participating in the forward component of the program (in excess of Forward Inventory elections)
 - Spot participation is compensated at \$7.90/MWh on days meeting the IEP day threshold; therefore each IEP day adds ~\$1.32 million to total program costs
 - Spot Energy inventory is incremental to the Forward Energy inventory

Winter Preparations

- Winter Readiness Seminar
 - Will host a Generator Winter Readiness Seminar with Market Participants on November 12, 2024
- Winter Generator Readiness Survey
 - Will distribute a Winter Generator Readiness Survey to all generating resources in the region with responses due by December 1, 2024
- Completed the annual Natural Gas Critical Infrastructure Survey process to ensure critical infrastructure is not part of automatic or manual load shed schemes
- Dual fuel audits of ~30 generators totaling ~6,500 MW of capacity to be completed prior to December 1, 2024
- Generator Fuel and Emissions Surveys and 21-Day Energy Assessments will be performed weekly (or daily, if required) during the winter season
 - 21-day Energy Assessment results and summaries of generator fuel surveys will be posted weekly to the ISO public website