
# 2022/2023 Winter Review

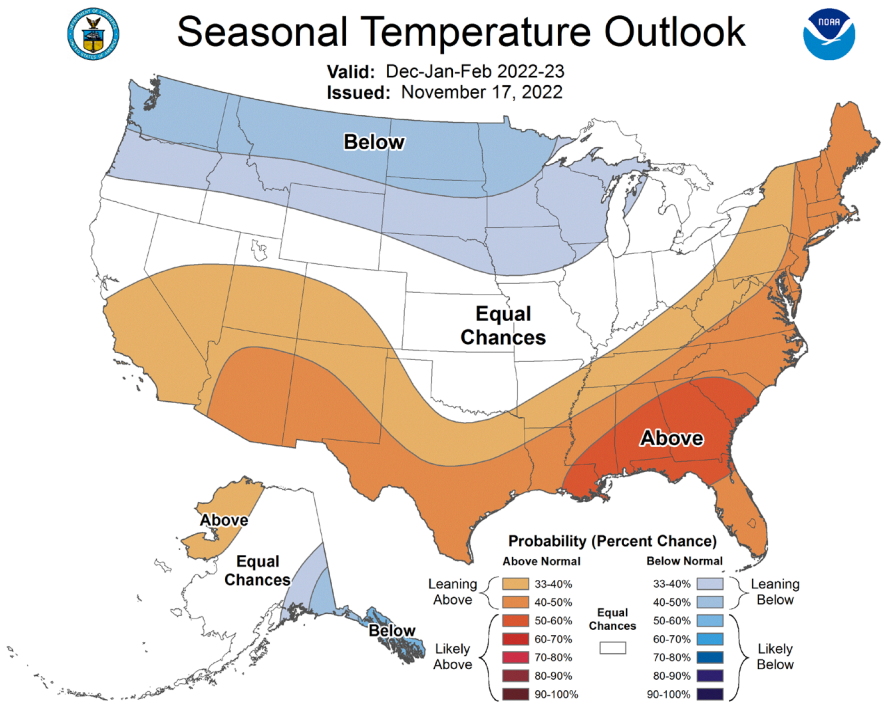
# Highlights

- The New England average winter temperature departure from normal of +4.8°F was consistent with NOAA's seasonal outlook of above normal temperatures
- The New England generation fleet and transmission system performed well overall
- LNG supplies were adequate and sendouts were minimal
- Fuel oil supplies were adequate; inventories ended the winter ~7M gallons above starting inventories
- With the exception of a brief capacity deficiency (OP-4) on December 24, surplus generating capacity was available throughout the winter
- No OP-21 Energy Alert or Energy Emergency actions were implemented this winter

# Winter Preparations 2022/2023

- ISO System Operations staff hosted a WebEx Generator Winter Readiness Seminar with Market Participants on November 14, 2022
- ISO staff met with industry and governmental officials to review seasonal expectations including capacity and demand forecasts and communication protocols
- Annual Winter Generator Readiness Survey was distributed to all generating resources in the region
- Annual Natural Gas Critical Infrastructure Survey process was completed in order to ensure critical infrastructure is not part of automatic or manual load shed schemes

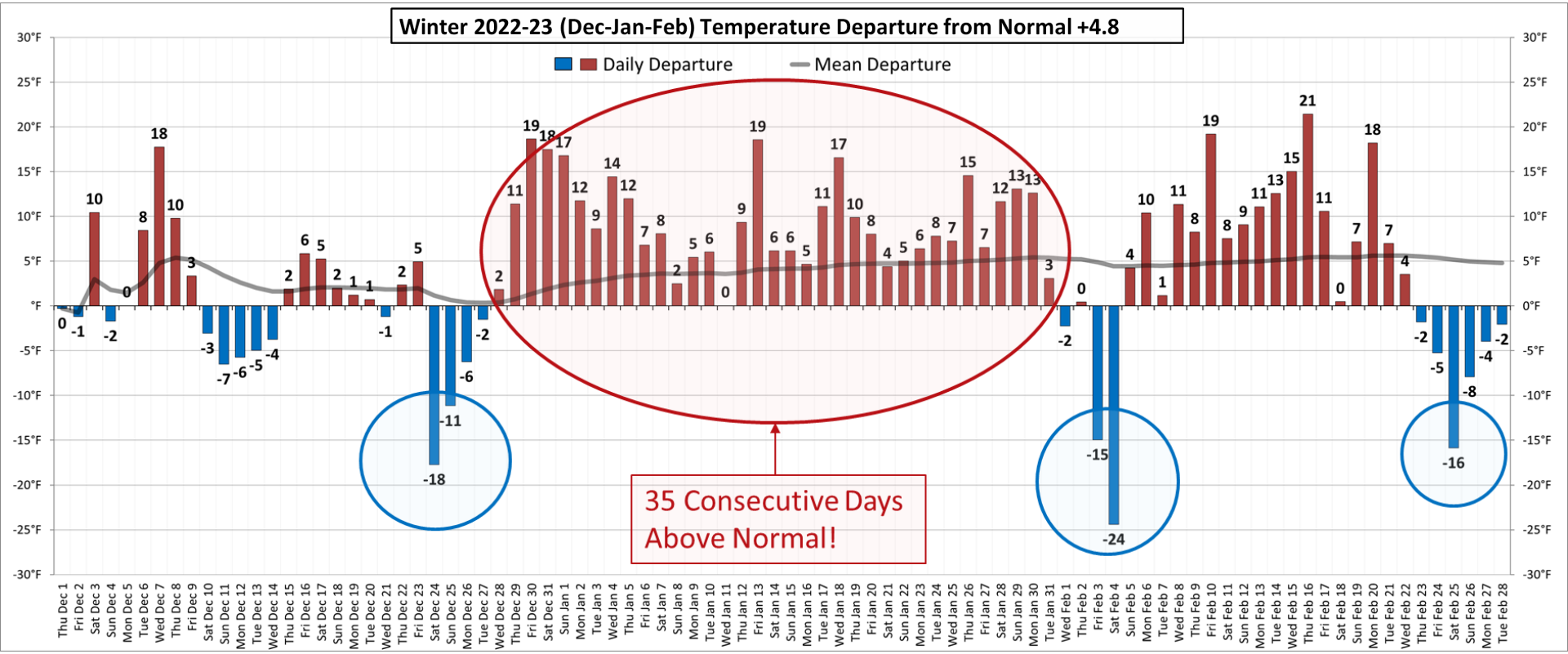
# Observed Winter Temperatures - Summary




- December was mild (+1.9°F) followed by a much warmer than average January (+8.9°F) and a milder than average February (+3.6°F)
- Three brief but notable cold snaps impacted the region; during the February 3-4 cold snap the mean temperature on Feb. 4 fell to 24°F below normal with some individual cities as much as 33°F below normal
- A remarkable stretch of 35 consecutive days of above normal temperatures were observed from December 28 through January 31

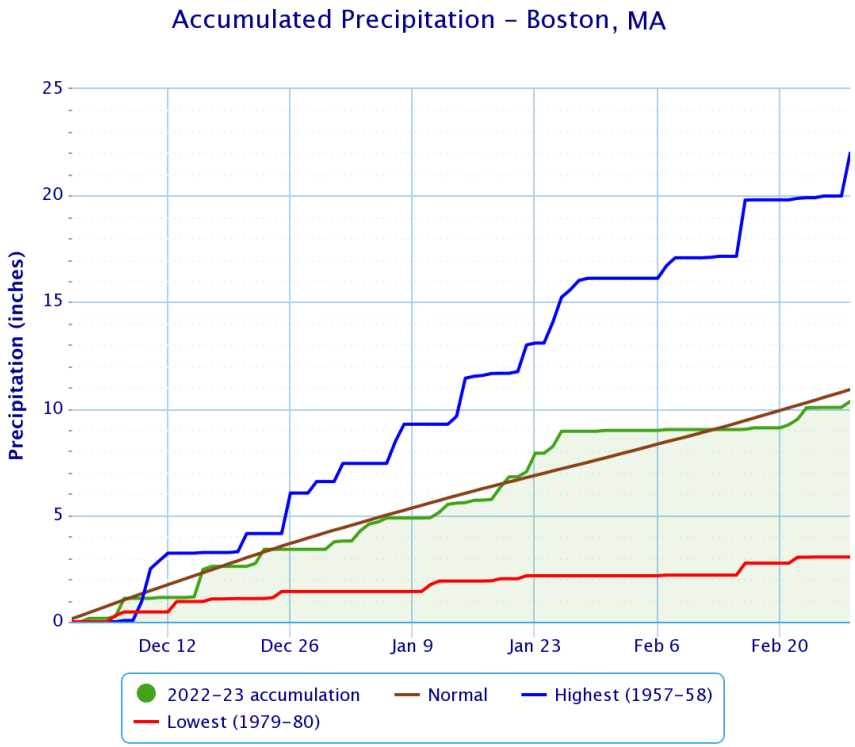
# Winter 2022/2023 Was Mild – 4.8°F Above Normal

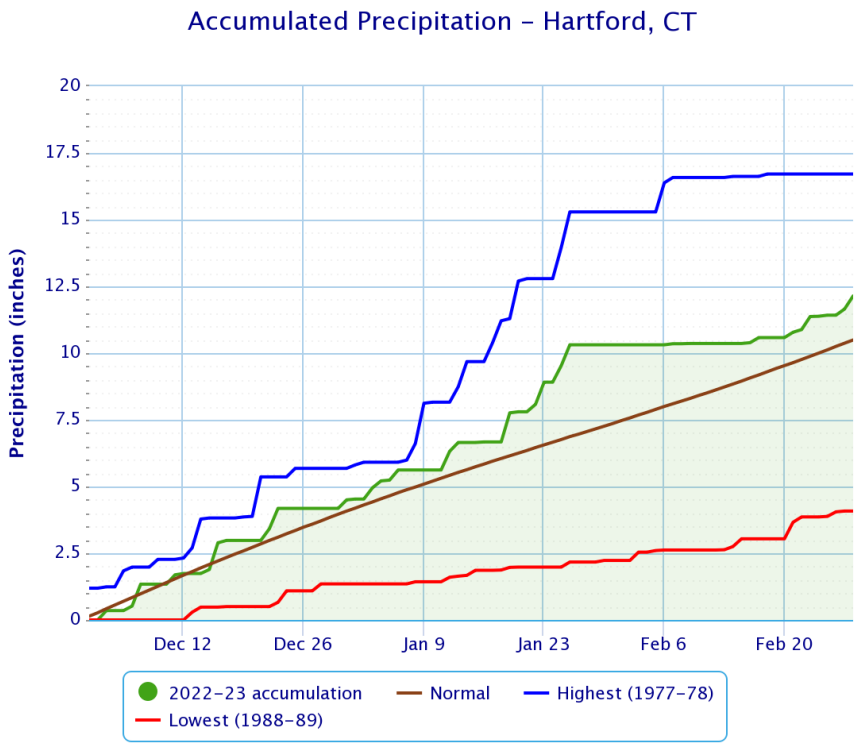
- Three notable, but short-duration cold weather events were observed, one in December and two in February



# Regional Total Precipitation Was 1.4” Above Normal While Snowfall Amounts Were Below Normal

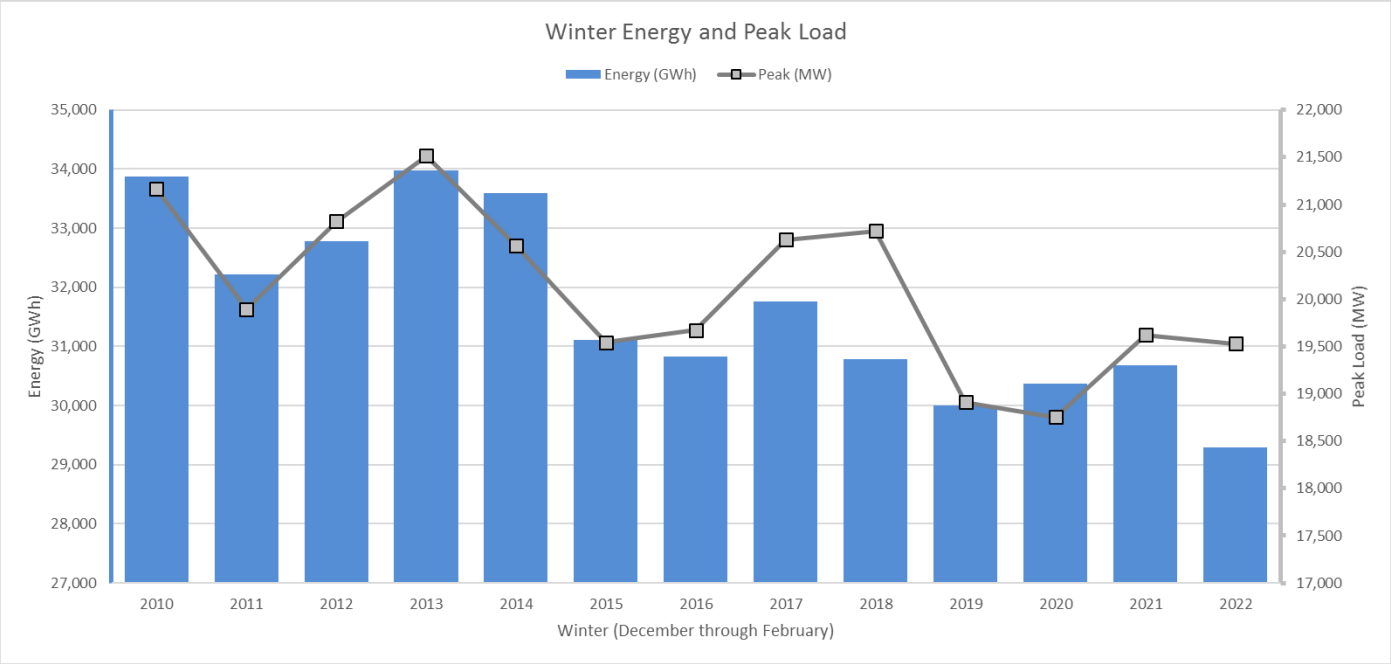
- Boston
  - Total precipitation was 0.6” below normal
  - 10.4” of snowfall recorded; 27.3” below normal
- Hartford
  - Total precipitation was 1.7” above normal
  - 14.0” of snowfall recorded; 25.1” below normal



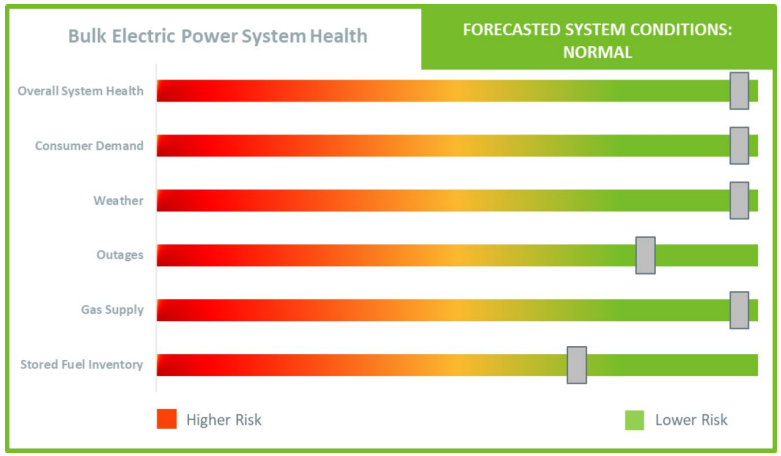
# Winter Peak Load and Total Energy Demand

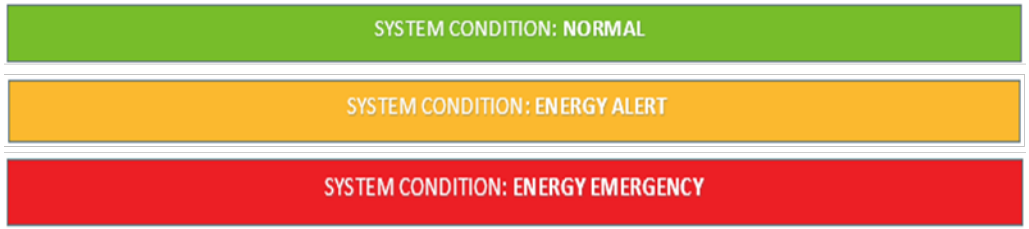
- Total winter energy demand was ~29,300 GWh
  - Since 2010 winter energy demand has averaged ~31,600 GWh
- Actual winter peak load was 19,529 MW on February 3, 2023
  - Forecasted 50/50 peak load was 20,009 MW

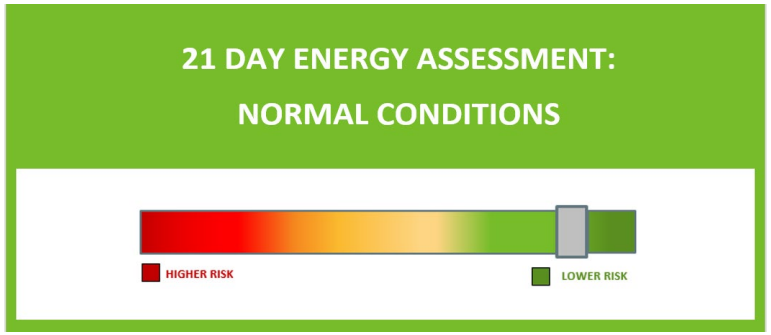


# ISO Published 21-Day Energy Assessments Weekly Throughout the Winter

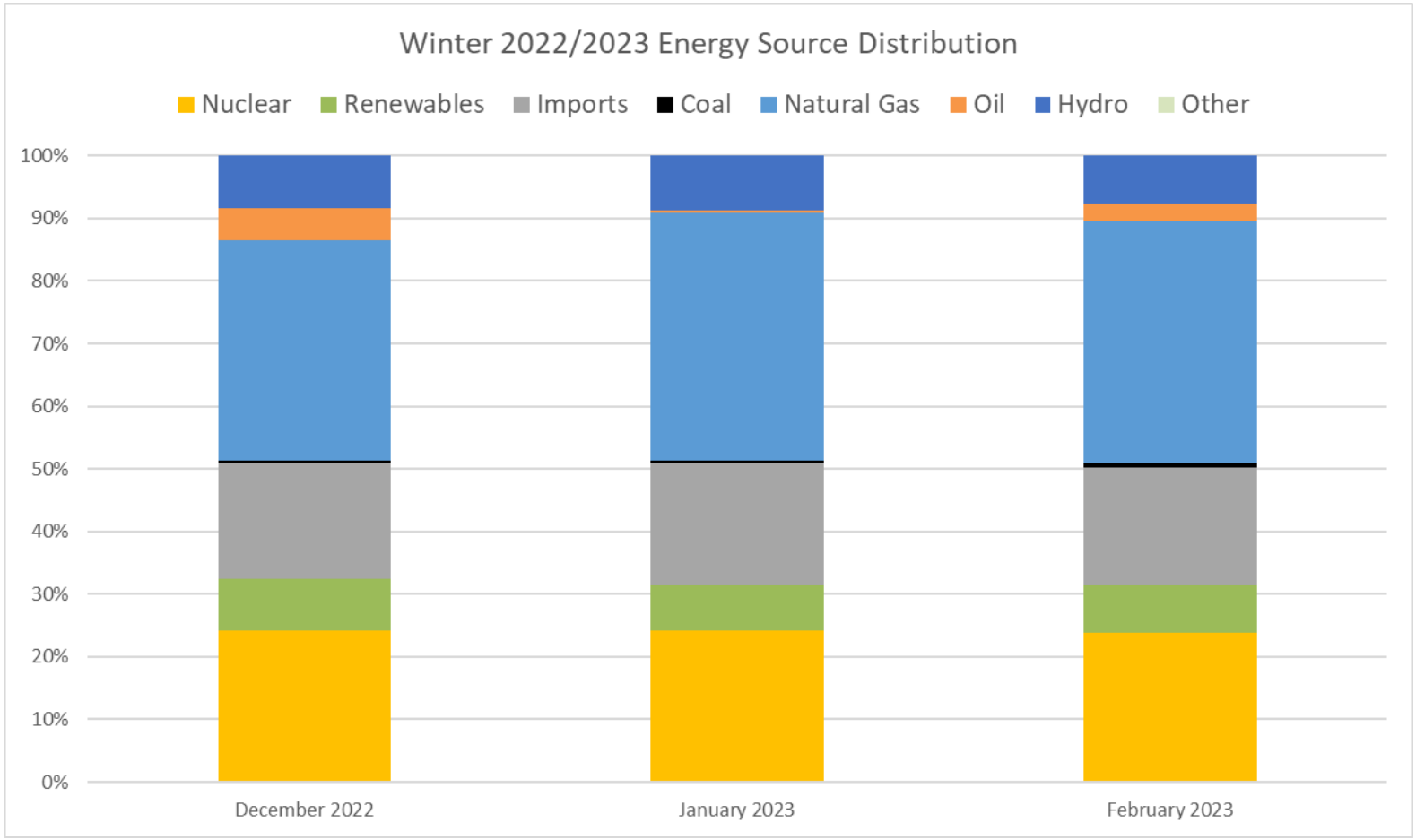
- Provide situational awareness of anticipated system conditions and identify potential energy shortfalls
- Several new visuals were added to the report this winter to more clearly indicate projected system conditions
- ISO's 21-Day Energy Assessment forecasted Normal System Conditions throughout the winter



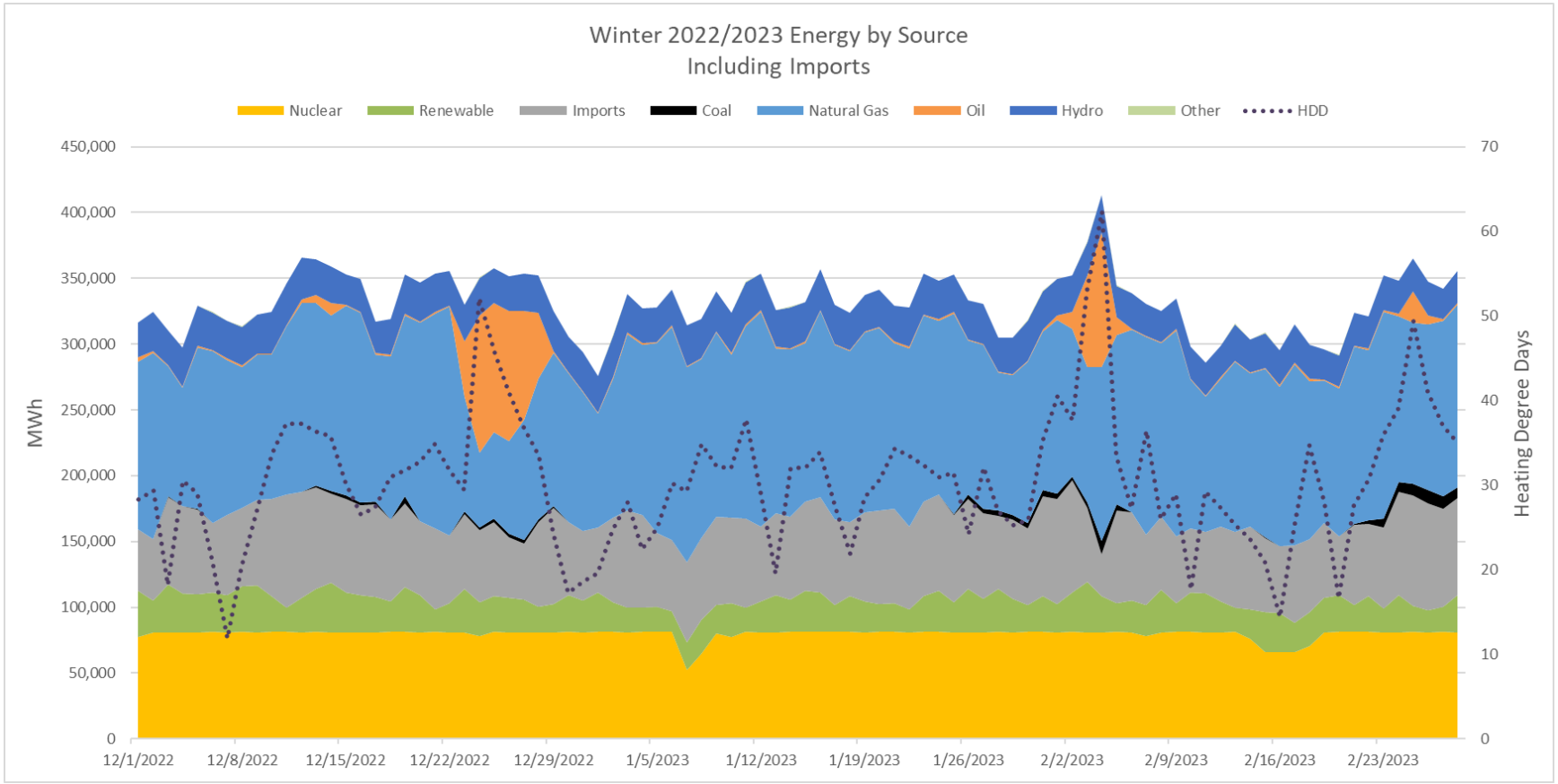



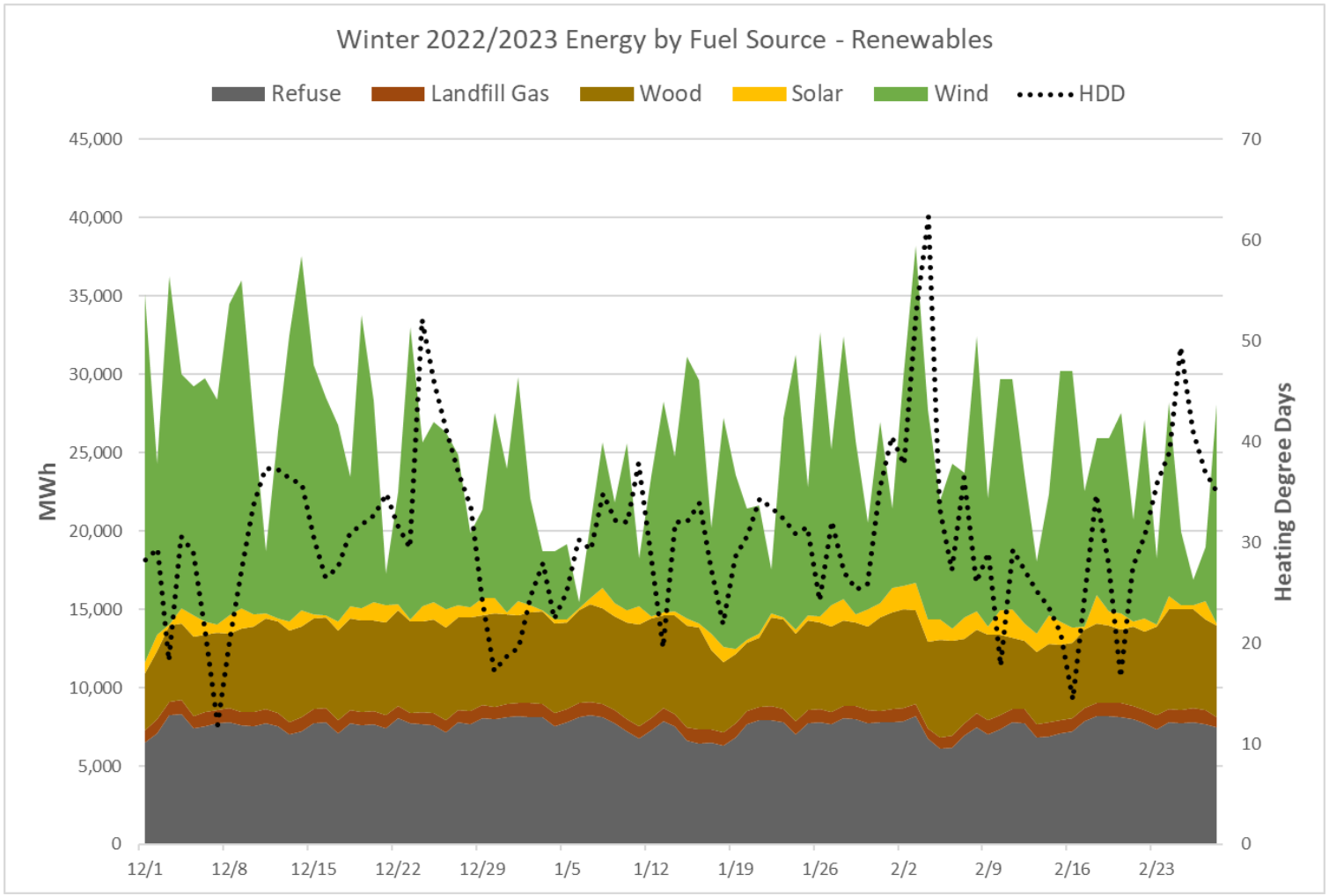
# Winter 2022/2023 Energy Sources



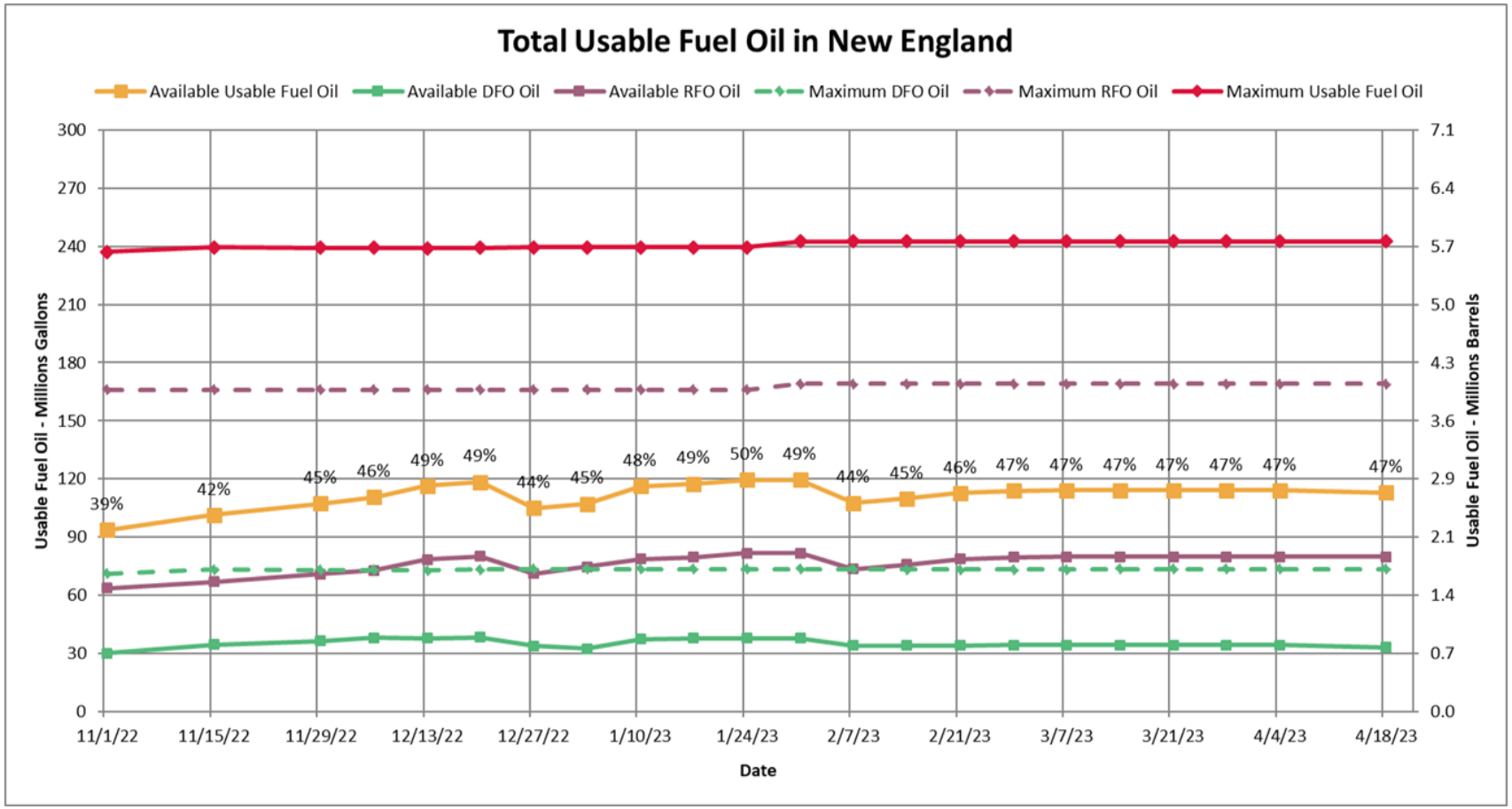
# On The Coldest Days in December and February Oil-Fired Generation Ramped Up Significantly



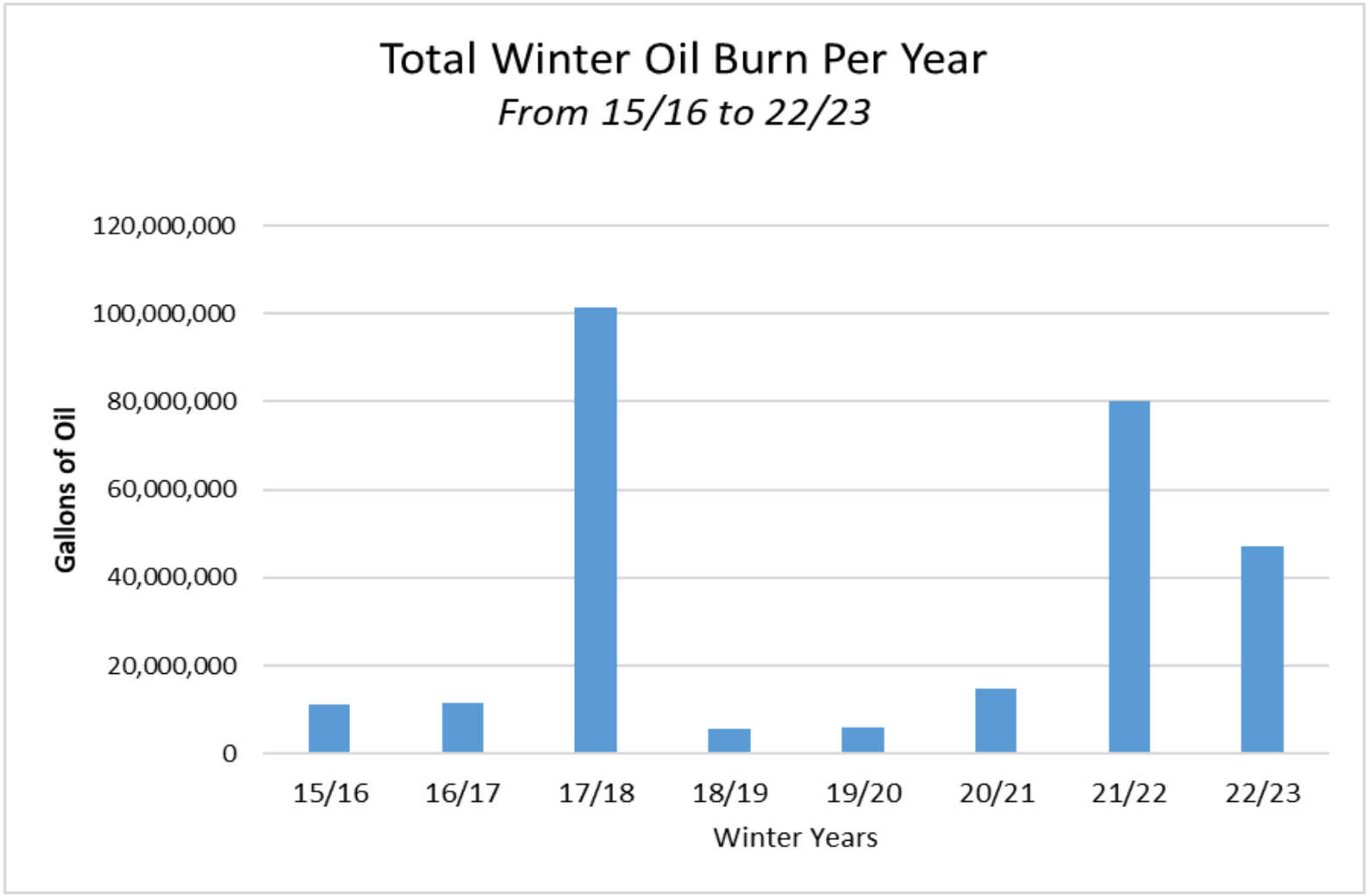
# Daily Energy by Fuel Source - Renewables Only



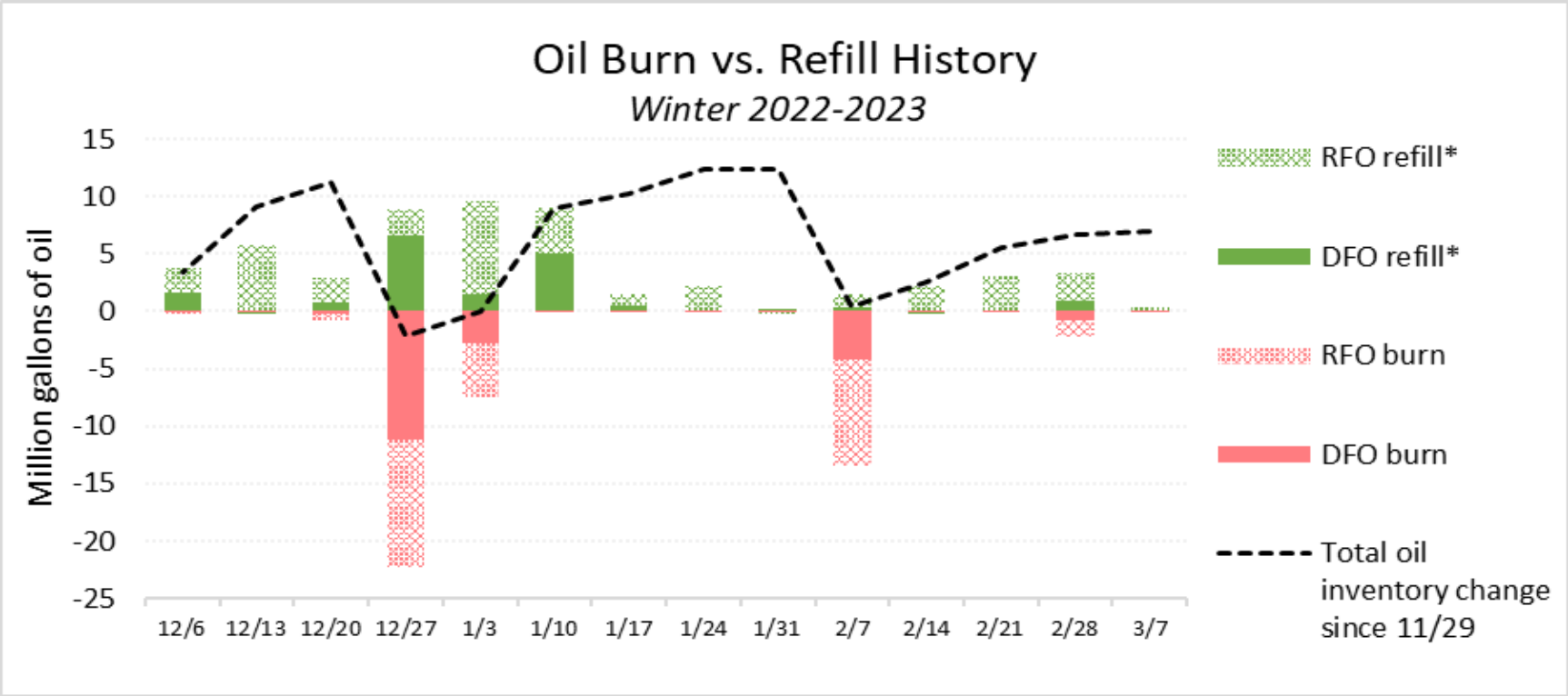
# Fuel Oil Inventories Increased Ahead of the Winter and Were Adequate Throughout



# Winter Fuel Oil Usage of ~47M Gallons Was ~41% Lower Than Last Winter



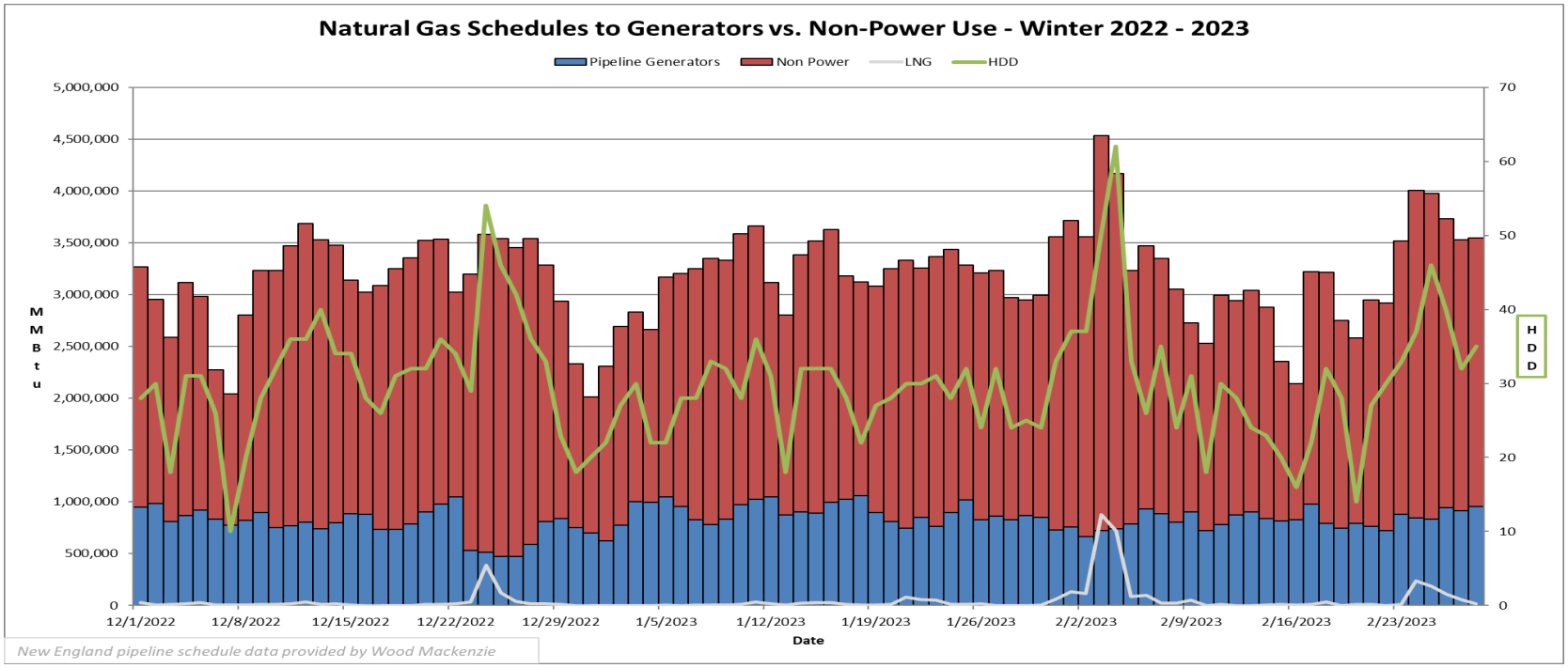
# Timely Fuel Oil Replenishment Occurred Prior To and Following Periods of Fuel Oil Burn




*Refill is estimated from fuel oil burns and inventories reported by participants on periodic OP-21 generator surveys

# Natural Gas Demand – Winter 2022/2023

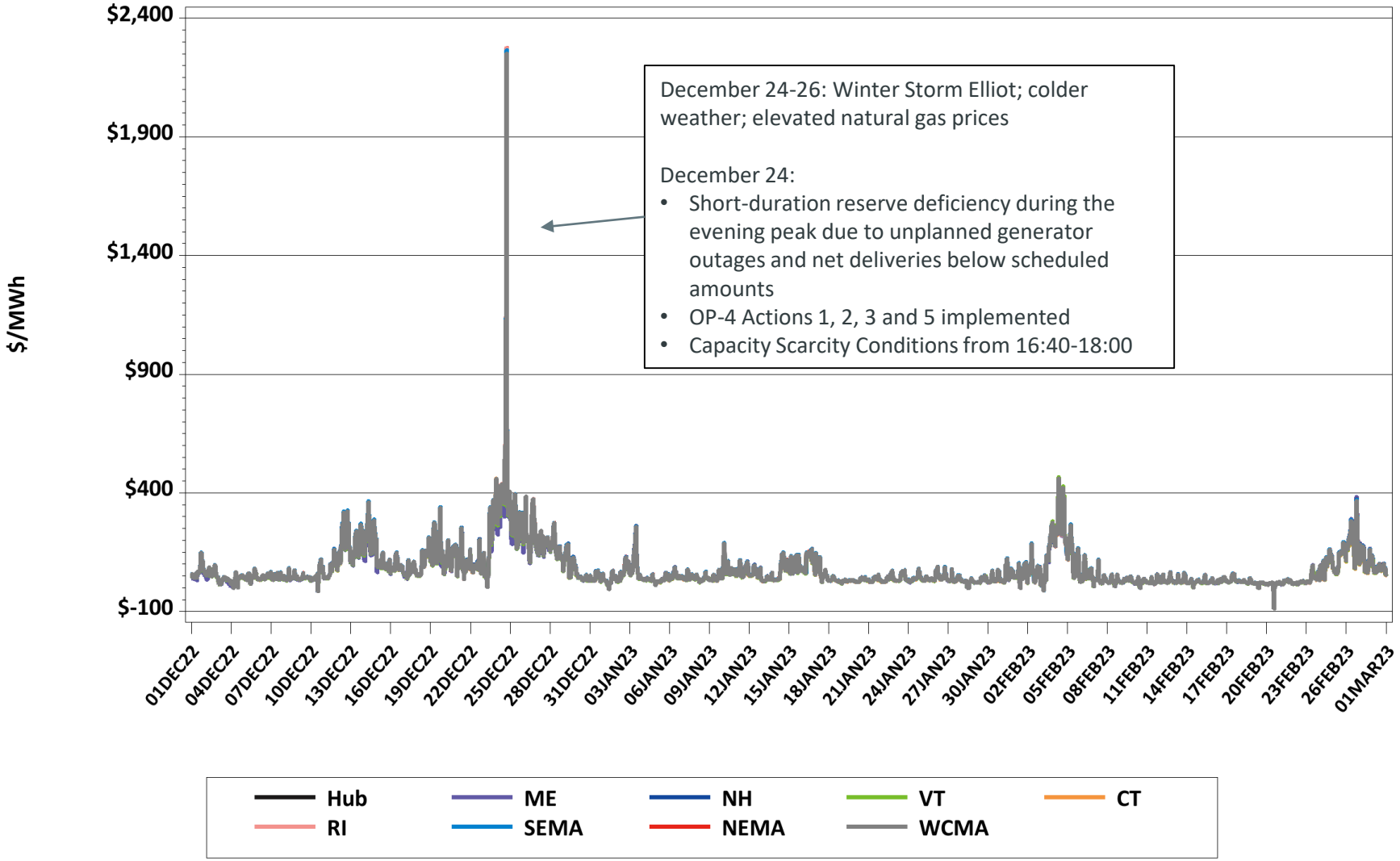
- Non-power demand for heating is higher than natural gas demand for generation
- On February 3, LNG scheduled to pipelines was higher than the natural gas scheduled to generators



# Winter 2022/2023 Wholesale Market Summary

- December
  - Average RT Hub LMP: **$121.47/MWh** (highest December value since SMD)
  - Average natural gas price: **$13.86/MMBtu** (up ~65% from prior December)
  - December natural gas prices were the highest in over 15 years
  - Capacity Scarcity Conditions on December 24 contributed to elevated RT pricing
- January
  - Average RT Hub LMP: **$50.51/MWh** (down ~66% from prior January)
  - Average natural gas price: **$4.73/MMBtu** (down ~77% from prior January)
  - Weather was ~7°F warmer than prior January and the warmest January in over 15 years; loads were the lowest for a January since SMD
- February
  - Average RT Hub LMP: **$65.21/MWh** (down ~40% from prior February)
  - Average natural gas price: **$8.13/MMBtu** (down ~44% from prior February)
  - Relative to the February 2022, average temperatures were ~2°F warmer and average loads were down 4%

# Hourly Real-Time LMPs, Winter 2022/2023



# Comparison of Recent Winter Wholesale Energy Market Revenues

- The table below shows a comparison of Energy Market Revenues for seven of the past 10 winters, in millions of dollars

| Winter | December | January | February | Total | Rank[1] |
|---|---|---|---|---|---|
| 2013/14 | $1,161 | $2,190 | $1,703 | $5,054 | 1 |
| 2014/15 | $498 | $871 | $1,400 | $2,769 | 6 |
| 2017/18 | $856 | $1,340 | $401 | $2,597 | 8 |
| 2019/20 | $468 | $297 | $233 | $998 | 20 |
| 2020/21 | $450 | $489 | $759 | $1,698 | 15 |
| 2021/22 | $720 | $1,792 | $1,216 | $3,728 | 2 |
| 2022/23 | $1,328* | $552 | $749 | $2,629 | 7 |

1 Since the beginning of Standard Market Design in March 2003

* December 2022 value ($1.33B) was highest for a December month since SMD primarily due to elevated natural gas prices