

ISO New England Identifies Fuel Security as the Region's Most Pressing Challenge to Future Grid Reliability and Resilience

New England Energy Conference and Exposition



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KEY MESSAGES

- Ensuring adequate fuel for generators is the most pressing challenge to future grid reliability and resilience
- ISO New England's *operational analysis* and *experience* show the region trending in a negative direction with regard to fuel-security risk
- ISO New England is pursuing multiple tracks to address the region's fuel-security challenge

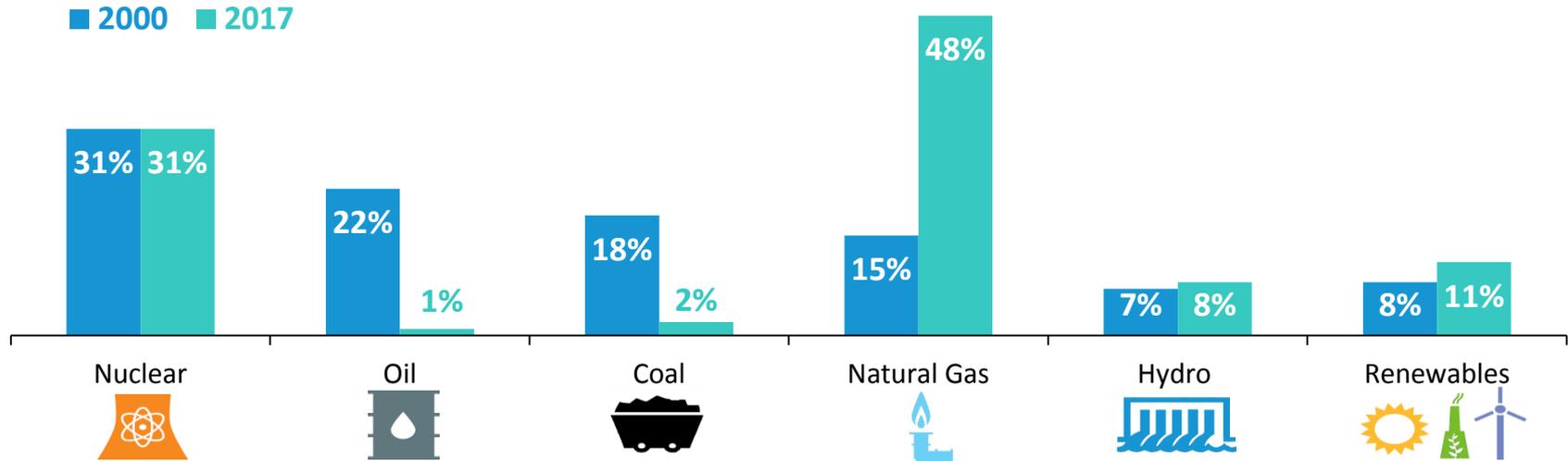
The North American Electric Reliability Corporation's (NERC) Resilience Framework



- The 2005 Federal Power Act requires NERC to develop and enforce reliability standards that provide for “an adequate level of reliability”
- A power system with an adequate level of reliability is “resilient”
 - Industry has designed a reliable Bulk Power System that is robust, resourcefully operated, and rapidly recovers
 - Lessons learned are actively considered during and after an event

New England Has Seen Dramatic Changes in the Energy Mix: *From Coal and Oil to Natural Gas*

Percent of Total **Electric Energy** Production by Fuel Type
(2000 vs. 2017)



Source: ISO New England [Net Energy and Peak Load by Source](#)

Renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and miscellaneous fuels.

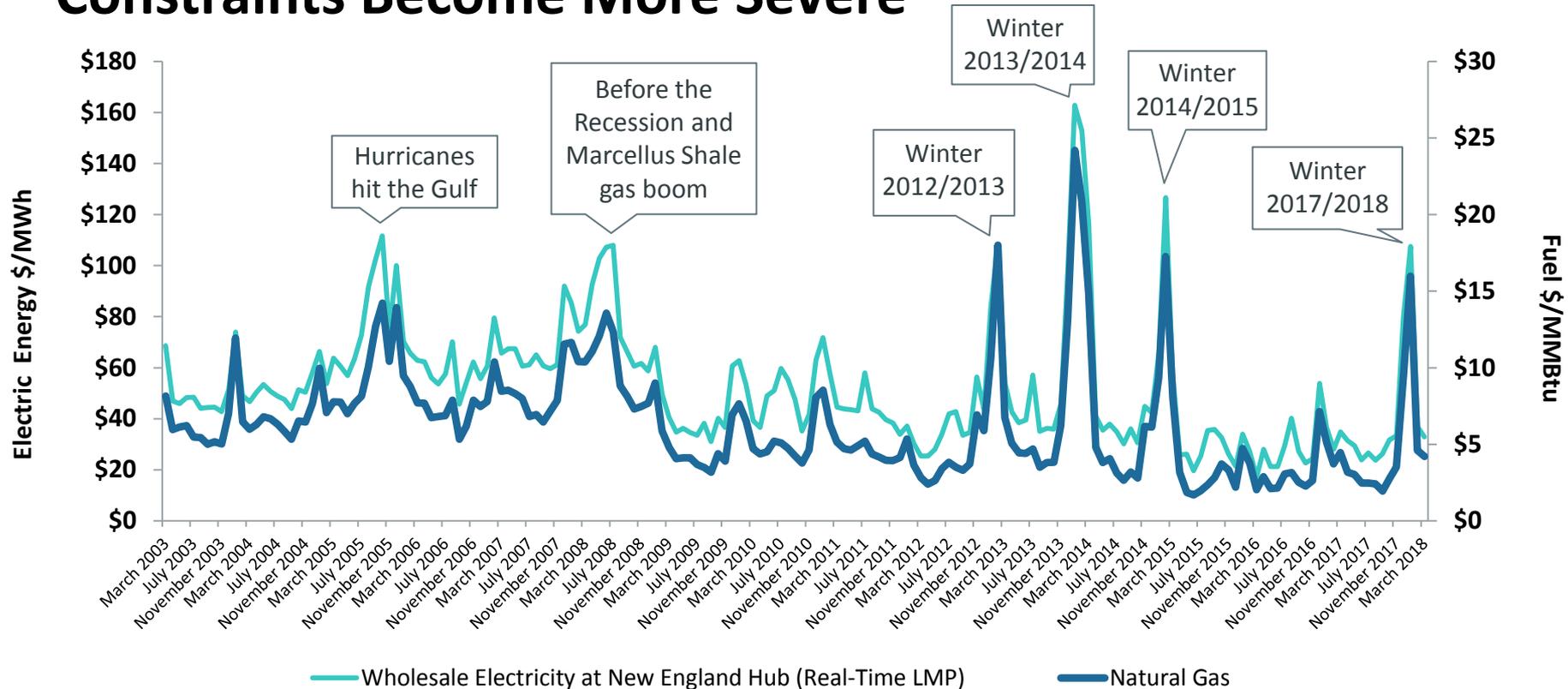
This data represents electric generation within New England; it does not include imports or behind-the-meter (BTM) resources, such as BTM solar.

Since 2013, More Than 4,600 MW of Generation Have Retired or Announced Plans for Retirement in the Coming Years

- More than **5,000 MW** of remaining coal and oil are at risk of retirement
- These resources have played a **critical** role in recent winters when natural gas supply is constrained in New England



Price Volatility Becomes More Acute as Infrastructure Constraints Become More Severe



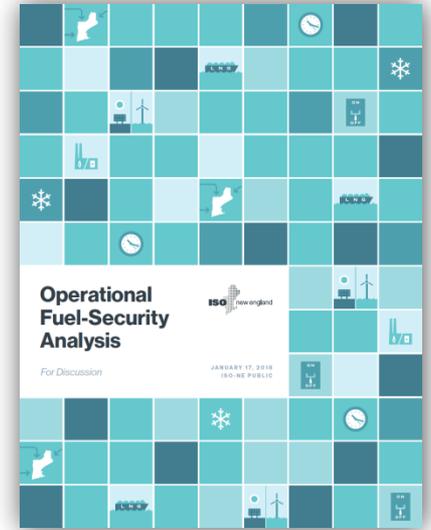


FUEL SECURITY

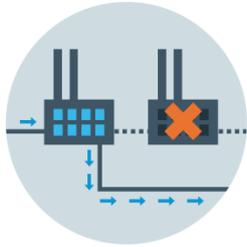
- Ensuring adequate fuel for generators is the most **pressing** challenge to future grid reliability and resilience
- Launched in the fall of 2016, ISO New England's *Operational Fuel-Security Analysis* shows the region is **trending** in a negative direction with regard to fuel-security risk

Study Seeks to Understand the Future Effects of Trends Already Affecting Power System Operations

- The analysis examines **23** possible fuel-mix combinations during the 2024-2025 winter, and quantifies each case's **fuel-security risk**
 - *i.e.*, the number and duration of energy shortfalls that would require implementation of emergency procedures to maintain reliability
- The study assumed **no** additional natural gas pipeline capacity to serve generators would be added during the study timeframe
- The study seeks to illustrate the **range of potential risks** that could confront the power system if fuel and energy were constrained during the winter



Study Suggests Six Major Conclusions



Outages: The region is vulnerable to the season-long outage of any of several major energy facilities.

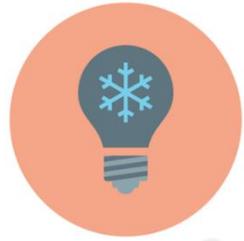


Key Dependencies: As we retire more resources, reliability becomes heavily dependent on LNG and electricity imports; more dual-fuel capability is also a key reliability factor.

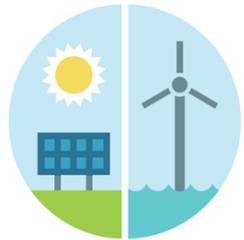


Logistics: Timely availability of fuel is critical, highlighting the importance of fuel-delivery logistics.

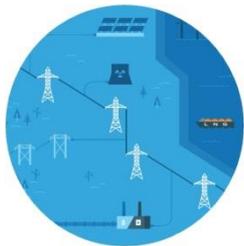
Study Suggests Six Major Conclusions, *continued*



Risk: All but four of 23 scenarios result in load shedding, indicating a trend towards increased fuel-security risk.



Renewables: More renewables can help lessen fuel-security risk but are likely to drive oil-and coal-fired generator retirements, requiring high LNG imports to counteract the loss of stored fuels.



Positive Outcomes: Higher levels of LNG, imports, and renewables can minimize system stress and maintain reliability; delivery assurances for LNG and imports, as well as transmission expansion, will be needed.

Recent Cold Weather Period Reinforces Findings in *Operational Fuel-Security Analysis*

- During the recent cold weather period (from December 26 to January 8), gas and oil **fuel price inversion** led to oil being in economic merit and base loaded, leading to rapid depletion of the region's oil supply
- Fuel delivery **logistics** became a concern
 - Heating customers get priority for oil and gas
 - Storms can delay trucked oil and LNG tankers
 - Truck drivers face restrictions on driving time
- With oil being base loaded, **emissions** limitations became a concern for several oil-fired generators



ISO's Response to FERC Order on Resilience Focuses on New England's Unique Fuel-Security Risks

- On **March 9, 2018**, ISO filed a response to FERC's January 8 order directing ISOs and RTOs to answer a series of questions on the resilience of the power systems in their respective regions
- The ISO's *Operational Fuel-Security Analysis* and the additional experience gained during the 2017/2018 winter provided the basis for its response
- The ISO recognized that there are **other factors that can impact resilience** (e.g., cybersecurity, physical security, and extreme weather) but focused its response on the issue that has been most challenging for New England and lacks an immediate solution—fuel security



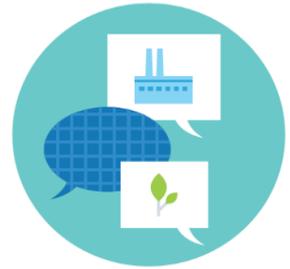
Recent Retirement Announcements Trigger Immediate Action on Fuel Security

- Retirement de-list bids have been submitted for Units 7, 8, and 9 and the jet at the **Mystic Generating Station**, located in Boston, for the upcoming Forward Capacity Auction (FCA #13)
 - Units 8 and 9 are the primary customer for the Distrigas LNG terminal that supplies both Mystic Station and the New England pipeline system
- An updated fuel-security analysis shows that the loss of Units 8 and 9 and/or Distrigas presents an **unacceptable fuel-security risk**
- Exelon has stated that Units 8 and 9 will be retired unless it can recover its costs



Note: FCA #13 will be held in February 2019 for the resources needed during the June 1, 2022 – May 31, 2023 Capacity Commitment Period.

The ISO Is Pursuing Three Tracks to Address the Region's Fuel-Security Challenge



- Immediate: Seek a ***waiver from FERC*** to retain Mystic 8 and 9 to ensure fuel security (not currently allowed under the ISO tariff); Exelon will seek cost-of-service compensation through FERC
- Short-term: Working with stakeholders, ***develop criteria*** to retain resources for fuel security under the ISO tariff
 - File tariff changes by end of 2018 so they are in place before the March 2019 retirement de-list bid deadline for FCA #14
- Long-term: Working with stakeholders, develop a ***market-based solution*** that will ensure sufficient firm energy to maintain reliability in the winter
 - Needed resources and infrastructure will be ***compensated through the market***, rather than reliability contracts

Note: FCA #14 will be held in February 2020 for the resources needed during the June 1, 2023 – May 31, 2024 Capacity Commitment Period.

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