



# Key Grid Challenges Facing the New England Electric System

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## *Restructuring Roundtable*

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# ISO New England Is Focused on Developing Solutions to Today's Key Grid Challenges

## Integrating Markets and Public Policy

Accommodating the states' clean energy goals while maintaining competitively based capacity pricing for other resources



## Addressing Fuel Security

Ensuring the region's generators have adequate fuel to produce electricity, particularly in the wintertime



# States Are Supporting the Development of Clean Energy Resources to Meet Their Public Policy Goals

- Growing provision of out-of-market revenues through long-term contracts
- Legislative initiatives vary by state



State(s)	Recent State Resource Procurement Initiatives	Expected Resources	Target MW (nameplate*)
MA, CT, RI	2016 Multi-State Clean Energy RFP	Solar, wind	460
MA	2016 Energy Diversity Act	Clean energy, incl. hydro import	Approx. 1200
MA	2016 Energy Diversity Act	Off-Shore Wind	Up to 1600

\*Note: Nameplate megawatts (MW) may be higher than qualified Forward Capacity Market (FCM) capacity MW



# But Current Forward Capacity Market Rules Are at Odds with State Policy Goals

- The Forward Capacity Market (FCM) must ensure accurate pricing to attract and sustain needed resources
- The minimum offer price rule (MOPR):
  - Prevents resources from bidding below their competitive price
  - Exempts a limited amount of state-sponsored renewables
- As more state-sponsored renewables come on line:
  - They will exceed the MOPR exemption and be excluded from the FCM
  - New non-state-sponsored resources may clear instead



# The Likely Results Are Inefficient for the Region

- The region could end up with overbuilt capacity—more power resources than needed to reliably serve load
- Consumers would effectively “double pay” to incentivize future electricity supplies:
  1. Capacity payments through the FCM
  - +
  2. Retail fees/charges to fund policy resources that remain outside the capacity market



# ISO New England's Proposed Path Forward

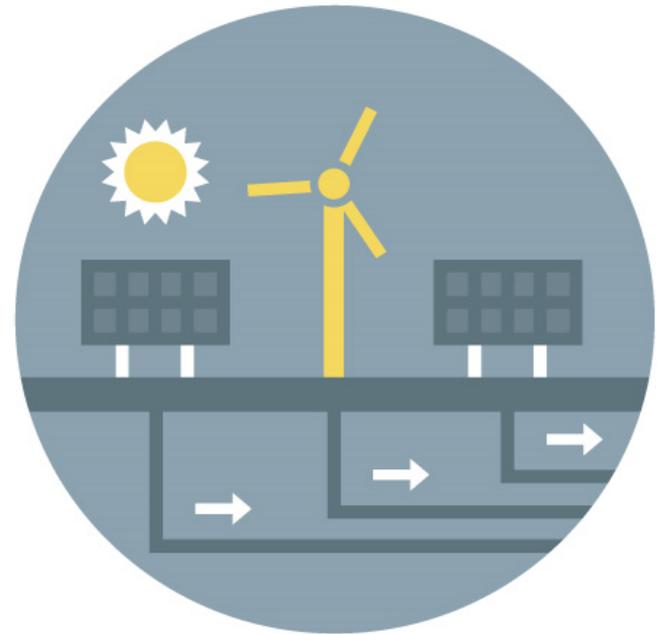
## *Competitive Auctions with Sponsored Policy Resources (CASPR)*

- Coming out of the IMAPP process, ISO New England has offered a design approach that could be implemented in the **near term**, involving enhancements to the FCM
- The ISO's capacity market design approach:
  - **Accommodates** sponsored policy resources into the Forward Capacity Market over time, and
  - **Preserves** competitively based capacity pricing for other resources
- **Key idea:** Coordinate the entry of new state-sponsored (i.e., clean energy) resources with the exit of existing capacity resources through a new *substitution auction*



# A Substitution Auction Has Many Notable Features

- The substitution auction generally does not affect payments to existing (non-retiring) resources awarded CSOs, or to load, and **preserves competitive pricing** (with the MOPR) in the *primary* auction
- It is likely to help the New England states **achieve** their GHG policy goals (as older, high-emitting units are likely to retire sooner)
- The FCA's **competitive price signals** continue to guide entry and exit when sponsored policy resources are not available



# Why Is a Near-Term Solution Important?

- New England relies on the wholesale electricity markets to attract private investment, but **investor confidence** in the market structure may be weakened if action is not taken
- State procurement efforts for **clean energy** may attract resources that seek to participate in the ISO's February 2019 Forward Capacity Auction (FCA #13) with plans for commercial operation in the 2022 timeframe
- Following an extensive **stakeholder process**, the ISO plans to file tariff changes in January 2018, in time for FCA #13
- FERC approval will be needed in **early 2018** to accommodate these resources





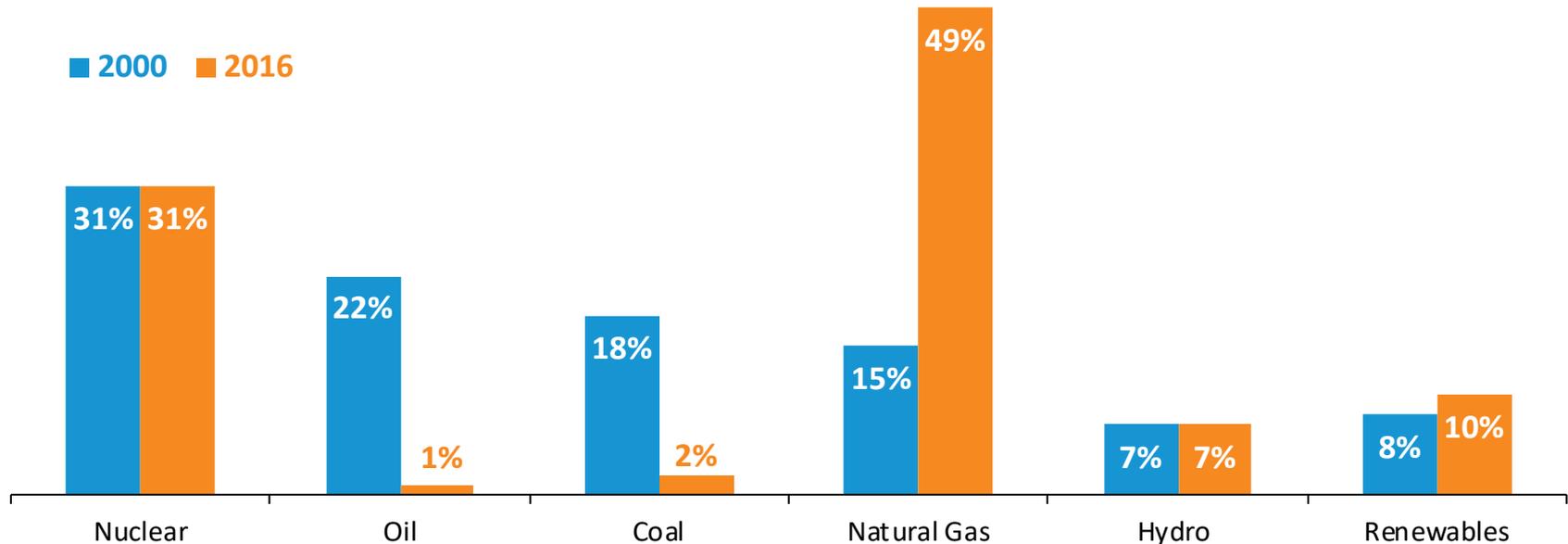
## Key Grid Challenge: Fuel Security

Ensuring the region's generators have adequate fuel to produce electricity, particularly in the winter

- ISO will finalize and release its *Operational Fuel-Security Analysis* upon resolution of the U.S. Department of Energy (DOE) Notice of Proposed Rulemaking (NOPR) on Grid Resiliency Pricing

# 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. 2016)

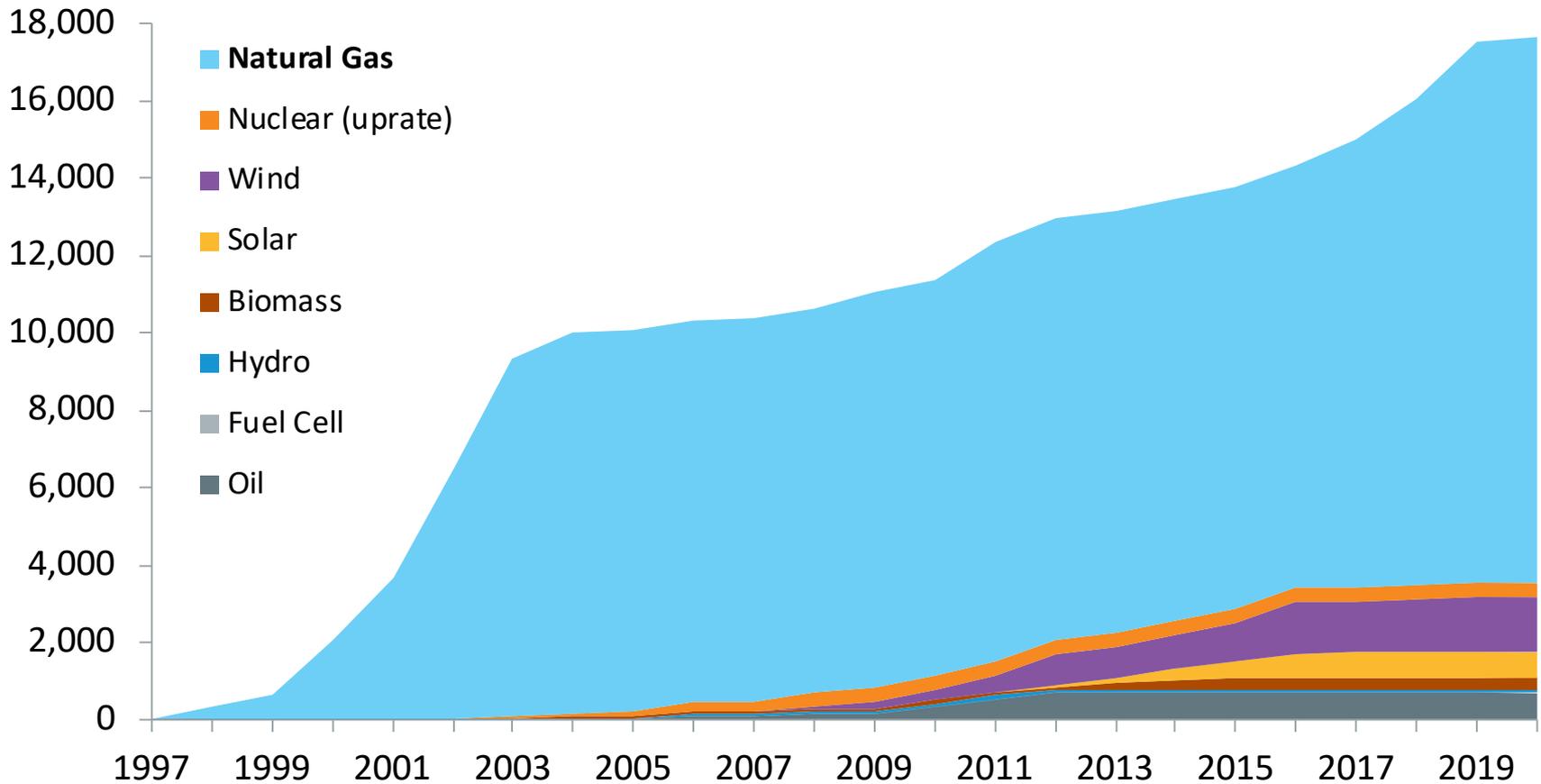


Source: ISO New England [Net Energy and Peak Load by Source](#)

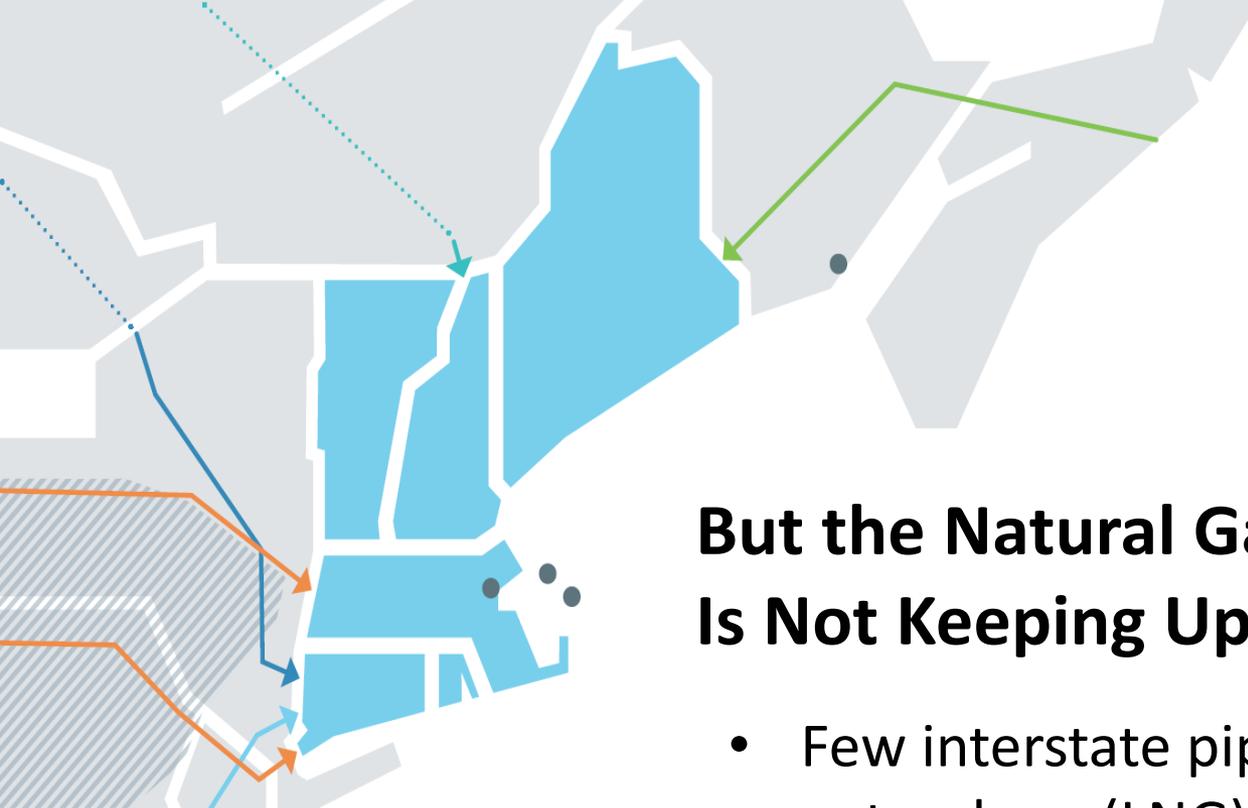
Renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and miscellaneous fuels

# Natural Gas Is the Dominant Fuel Source for New Generating Capacity in New England

Cumulative New Generating Capacity in New England (MW)



Note: New generating capacity for years 2017 – 2020 includes resources clearing in recent Forward Capacity Auctions.



## But the Natural Gas Delivery System Is Not Keeping Up with Demand

- Few interstate pipelines and liquefied natural gas (LNG) delivery points
- Regional pipelines are:
  - Built to serve heating demand, not power generation
  - Running at or near maximum capacity during winter



Source: ISO New England

# The Region Has Lost—and *Is at Risk of Losing*—Substantial Non-Gas Resources

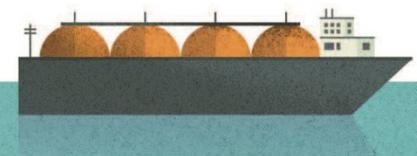
## Major Generator Retirements:

- **Salem Harbor Station (749 MW)**
  - 4 units (coal & oil)
- **Norwalk Harbor Station (342 MW)**
  - 3 units (oil)
- **Mount Tom Station (143 MW)**
  - 1 unit (coal)
- **Vermont Yankee Station (604 MW)**
  - 1 unit (nuclear)
- **Brayton Point Station (1,535 MW)**
  - 4 units (coal & oil)
- **Pilgrim Nuclear Power Station (677 MW)**
  - 1 unit (nuclear)
- **Bridgeport Harbor Station (564 MW)**
  - 2 units (coal & oil)
- *Additional retirements are looming*



# LNG Is Increasingly Important, But Deliveries Can Vary

- An imported global commodity
- Must be contracted for in advance
- Arrivals of spot LNG cargoes depend on global prices and destination-flexible contracts
- Severe weather could delay ships



# ISO New England Is Conducting a Study of Fuel Security Challenges



- The study is examining more than 20 cases of generating resource and fuel-mix combinations during the 2024-2025 winter, and will quantify each case's **fuel security risk**
  - *i.e.*, the number and duration of energy shortfalls that could occur and that would require implementation of emergency procedures to maintain reliability
- The study is **not** focused on the effects of expanded access to natural gas and will **not** identify needs for new or expanded pipeline capacity or natural gas infrastructure
- The preliminary results will be presented to regional stakeholders **after resolution** of the U.S. Department of Energy Notice of Proposed Rulemaking

# ISO New England Submitted Comments Objecting to the DOE NOPR on Several Grounds

- The NOPR will significantly **undermine** the efficient and effective wholesale electricity markets that, with FERC’s guidance, the New England region has built over the last two decades
- The NOPR does not address New England’s **biggest challenge**, which is fuel security and availability of natural gas for power generation in the wintertime
- “Resilience” is an **amorphous concept** that is difficult to define or quantify—likely means something different to different regions
- Should additional reliability measures be needed, the region should be permitted to design **market-based solutions** through the stakeholder process that are targeted to meet New England’s specific needs

## Closing Thoughts...

- State-sponsored resources are coming forward in large quantities through state procurement efforts; the ISO is seeking to accommodate them while maintaining competitively based capacity pricing for other resources
- The ISO's *Operational Fuel-Security Analysis* will help inform regional discussions on fuel security risks around the 2024-2025 timeframe

