



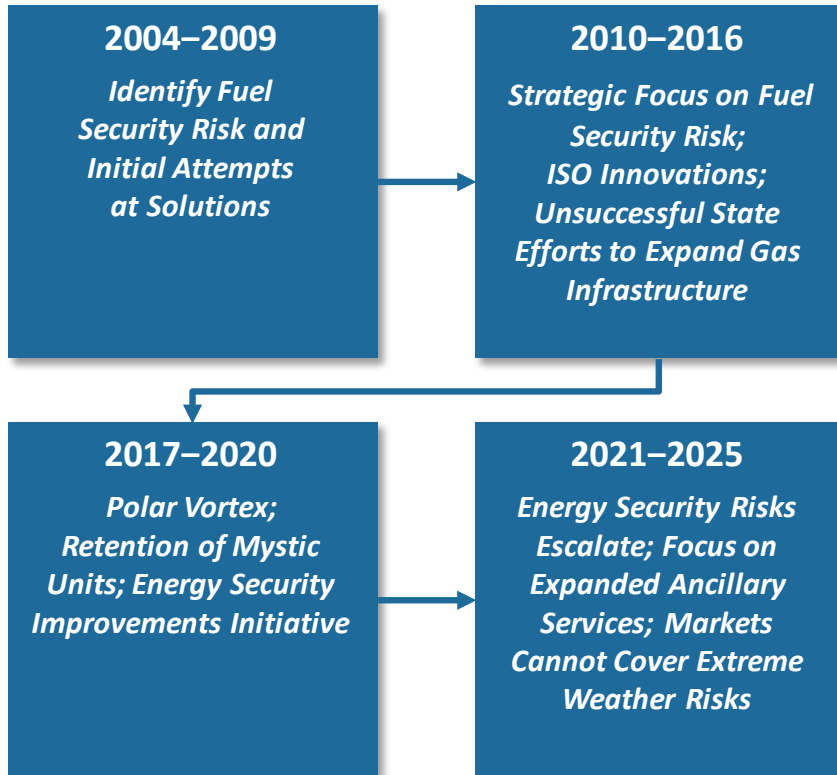
# ISO New England Energy Security Timeline: 2004–2025

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*Multiple Approaches Undertaken to Address  
Region's Energy Security Risks*

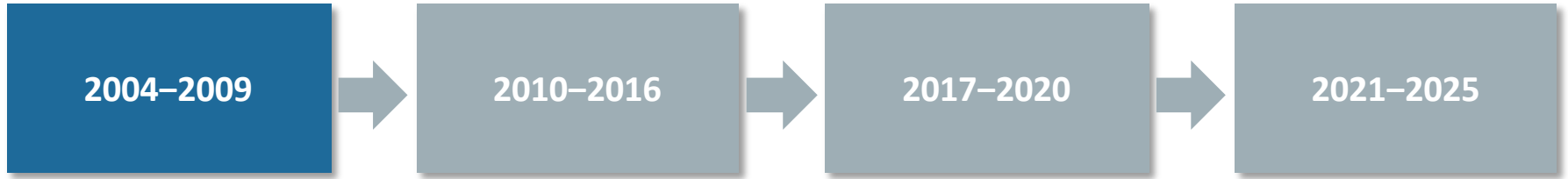


# A Journey Spanning Four *Eras* and Five *Approaches*



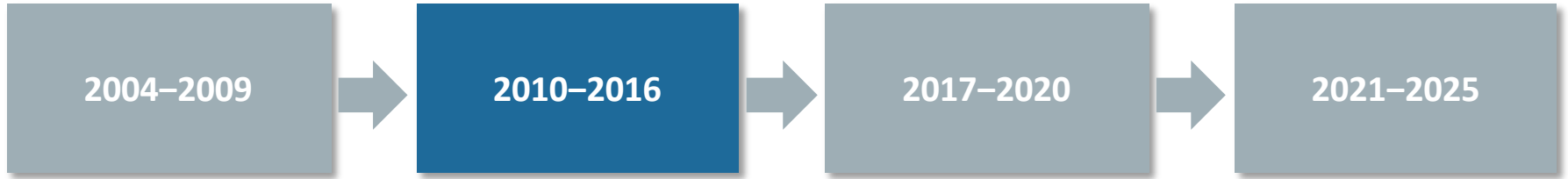
- 1** *Advocacy* for energy infrastructure
- 2** *Actions* to address risks through the wholesale market design
- 3** *Temporary Measures* by the ISO to fill short-term reliability gaps
- 4** *Improvements* to situational awareness for ISO system operators
- 5** *Actions* by the New England states

# FOUR “ERAS” FOR ADDRESSING ENERGY SECURITY IN NEW ENGLAND



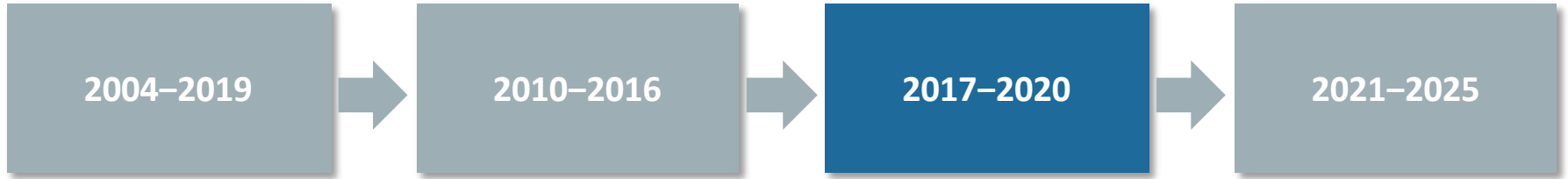
## **Identify Fuel Security Risk and Initial Attempts at Solutions**

- January 2004 Cold Snap spotlights New England's vulnerability to fuel security risks
- ISO attempts to address the problem through programs to incent additional dual-fuel capability
- ISO begins to develop additional tools to improve situational awareness for system operators
- Summer 2005 Gulf hurricanes cause major damage to gas infrastructure, affecting supply to New England
- ISO revamps Oil Embargo-era operating procedures to deal with energy emergencies
- Marcellus Shale gas boom begins around 2005, bringing supply closer to New England
- Pipelines into the region are constrained and cold weather drives price volatility in gas and electricity markets



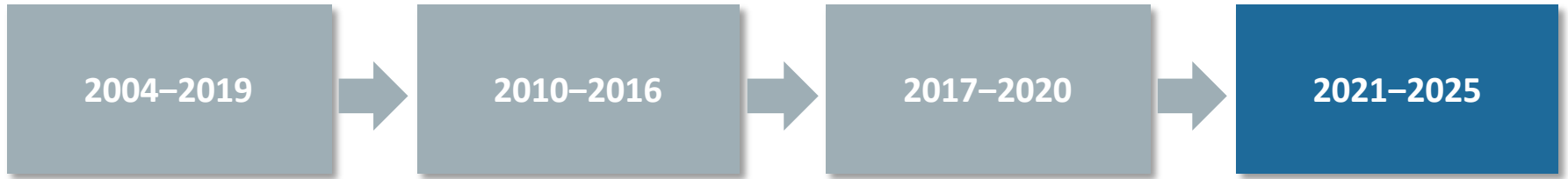
## **Focus on Fuel Security Risk; ISO Innovations Around Situational Awareness and Market Design; Unsuccessful State Efforts to Expand Gas Infrastructure**

- ISO announces Strategic Planning Initiative to address region's increased reliance on natural gas and potential for reduced operational performance during stressed system conditions
- Region considers multiple timeframes to address risks:
  - *Long-term*: expand fuel infrastructure
  - *Short-term*: winter reliability programs
- ISO implements market enhancements to strengthen generator performance during stressed system conditions (Pay for Performance)
- ISO improves situational awareness on the gas system and begins monthly fuel surveys
- Three successive winters with cold weather, reliability concerns, and high prices (2012/13, 2013/14, 2014/15)
- In 2016, the states' efforts to expand gas infrastructure were effectively stymied by a Massachusetts' court ruling that electric distribution customers could not be charged for gas infrastructure



## **Polar Vortex; Retention of Mystic Units; Energy Security Improvements Initiative**

- New England considers market-based solutions to long-term energy security risks
  - FERC directs ISO to transition away from stopgap winter programs
- Major retirements of non-gas resources occur (nuclear, coal)
- ISO continues to improve situational awareness and to signal energy risks to the marketplace
- Polar Vortex drives ISO to quantify energy security risk
- ISO seeks to retain Mystic Generating Units due to fuel security concerns
- States accelerate decarbonization efforts, driving renewable (intermittent) resources onto the power system
- Three warm winters after winter 2017/18
- ISO proposes Energy Security Improvements (“ESI”), but the states and stakeholders object and FERC rejects ESI



## **Energy Security Risks Escalate; Focus on Expanded Ancillary Services; Recognition that Markets Cannot Cover Extreme Weather Risks**

- “What we have is what we’ve got” until approximately the 2023–2025 timeframe
  - Retirements are moving forward as expected (Bridgeport Harbor, Mystic); but new state-sponsored resources (e.g., offshore wind and HVDC imports) are challenged to meet expected in-service dates
  - No changes to market rules for this winter; new ancillary services implementation is targeted for 2025
  - Region is not receptive to incremental fuel infrastructure
- New England is highly dependent on LNG imports for power generation in the winter, and this winter faces competition for LNG cargoes from strong global demand; region remains vulnerable to high prices
- ISO kicks off joint effort with EPRI to model energy security risks in New England
- Public conservation appeals and emergency actions may be needed during extreme cold weather

***ISO’s focus is managing power system reliability throughout the clean energy transition***

# MULTIPLE APPROACHES UNDERTAKEN TO ADDRESS REGION'S ENERGY SECURITY RISKS

*By ISO New England and the New England States*



# ISO-NE Energy Security Timeline: 2004 to 2025

Highlighting efforts in five areas related to energy security:

- 1 **Advocacy** for energy infrastructure to improve power system resiliency
- 2 **Actions** to address risks through the wholesale market design
- 3 **Temporary Measures** by the ISO to fill short-term reliability gaps
- 4 **Improvements** to situational awareness for ISO system operators
- 5 **Actions** by the New England states


**Note:** Actions that were blocked or rejected are indicated by this symbol:



## 1 Advocacy for Energy Infrastructure


- ISO evaluates dual-fuel capability and environmental constraints at gas/oil-fired generators (2005)
- ISO works with state DEPs to enable dual-fuel use at gas-fired generators during emergencies
- ISO launches Strategic Planning Initiative (2010)
- ISO testifies before Congress to spotlight energy security concerns (2013, 2017, 2018)
- ISO testifies before FERC on energy security concerns for New England (2013–2021)
- US DOE’s Quadrennial Energy Review reflects ISO’s concerns for energy security (2015, 2017)
- NERC calls attention to New England’s risk (2020)

## 2 Actions Through the Wholesale Markets

- Increase reserve constraint penalty factors to strengthen price signals in the reserve market (2012)
- ISO advocated for generators to firm up fuel arrangements; FERC limited the strict performance obligation to real time fuel procurement (2013) 
- Shift Day Ahead Market timeline to better align electric day with the gas day (2013)
- Expand definition of “shortage hours” in FCM to better align with stressed system conditions (2013)
- Create *Hourly Energy-Offer Flexibility* to better reflect fuel prices in generators’ energy offers (2014)
- Implement *Pay-for-Performance* to strengthen generator performance incentives (2018)

Continued

## 2 Actions Through the Markets, *continued*

- Introduce *opportunity costs* into energy market offers for resources with short-term fuel limitations (2018)
- ISO proposed *Energy Security Improvements* “ESI” (2018); FERC rejected it (10/2020); and the ISO is proposing a two-phase reformulation 

## 3 Temporary Measures to Fill Short-Term Gaps

- Winter Reliability Programs (2013–2018)
  - Incentives for dual-fuel (winter 2013/14)
- Retain Mystic Units for fuel security (2022–2024)
- Inventoried Energy Program (2023–2025)

## 4 Improvements to Situational Awareness

- Revamp legacy operating procedure to forecast and manage energy emergencies (2005)
- Begin monthly generator fuel surveys and annual winter Generator Readiness seminars (2013)
- Modify Information Policy to share info with gas pipeline operators (2014)
- Create Gas Utilization “GUT” Tool (2015)
- Create 21-day energy assessment forecast (2018)
- Identify lessons learned from GridEx (2013–present)
- Hold long-running pre-winter calls with Northeast Gas Association and ongoing coordination with Electric-Gas Operations Committee (EGOC)

## 5 Actions by the New England States

- NESCOE seeks ISO support to flow the cost of electric and natural gas infrastructure through the ISO tariff (2014); ISO (and FERC) determine that this is not feasible
- Several states coordinate with their Electric Distribution Companies (EDCs) to consider funding gas infrastructure expansion; the State Supreme Judicial Court blocked this approach in Massachusetts (2016)
  - Other states determined that only a regional approach would be viable
- States exercise their procurement authority to solicit resources to meet their long-term decarbonization goals, e.g., HVDC imports from Québec, wind, nuclear, solar, and DG (MA, CT, RI, ME) (~2017–present)



## Distinctions Between the Actions of the States and the ISO

### **The States:**

- Can enter *long-term* contracts with *specific* resources to achieve their policy objectives
- Can select resources based on considerations other than price, such as *environmental attributes* (i.e., states may be discriminatory in their selections)

### **The ISO:**

- Markets are *short-term* (up to three years) and select the *lowest-priced* resources
- Market rules must be *non-discriminatory*
- Cannot enter *long-term* contracts with individual resources

## Other Potential State Actions During Emergencies

- **Governors' appeals** to the public to reduce energy consumption to reduce *need for* or *duration of* ISO emergency actions during extreme weather events
- Waive **driver-hours restrictions** for fuel-oil delivery to generators
- Waive **emissions** or **run-time** limits on oil-fired generators
- *Potential longer-term solutions:*
  - Link retail electricity prices to wholesale prices to enable retail demand response
  - Contract for fuel storage within the region

## ISO Communications with Public Officials and the Public During Emergencies

*The ISO has well-established tools to communicate with states and stakeholders about these risks – including during actual emergency situations – and continually works to exercise and build upon efforts in this area*

- Annual **Regional Electricity Outlook**
- Annual **State of the Grid** report
- **Pre-summer** and **pre-winter** briefings for government officials and EDCs
- **Seasonal Outlook** press releases
- **New: Pre-winter press conference** (Dec. 6)
- **ISO Website, ISO Express Portal, ISO Newswire, social media, and listservs**
- **Automated voice/email/text communications** with government officials and EDCs