

Powering New England in the New Environment: Regional Perspective

Connecticut Power & Energy Society
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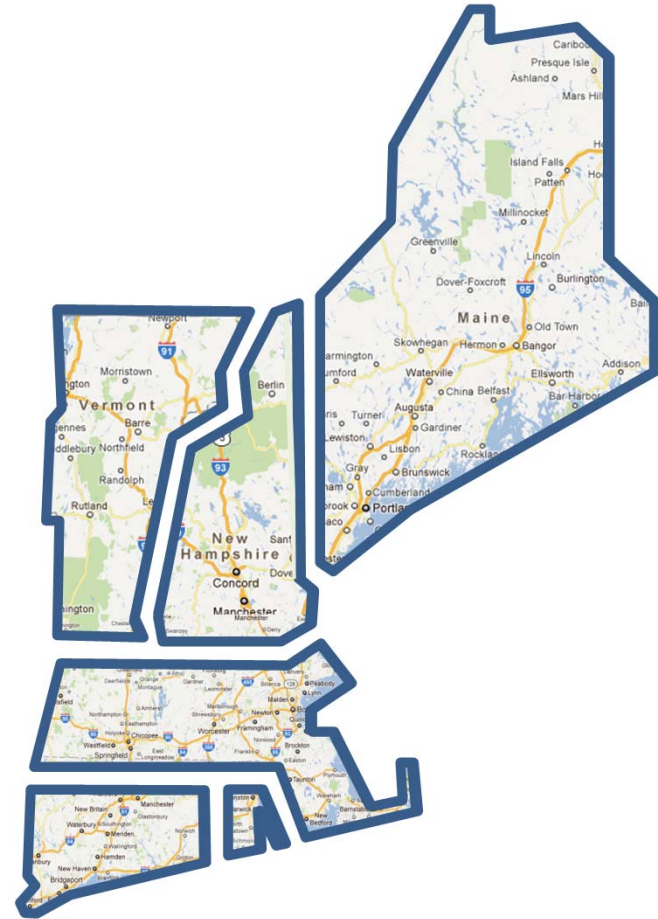
Overview

- Strategic Planning Initiative
- Renewable Energy
- FERC Order 1000: Transmission Planning
- Transmission Projects and Studies
- Energy Efficiency Forecast

Strategic Planning Initiative

A proposed Roadmap for the region

- Region- and industry-wide participation
- 5 risks identified
- Region considering and developing solutions
- Getting ahead of the curve
 - Market design and power system infrastructure take time to develop



Strategic Planning Risks

1. Resource Performance and Flexibility

- Variation between operator dispatch and actual performance

2. Increased Reliance on Natural Gas-Fired Capacity

- Generator contracting practices and uncertainty of gas supply in winter
- Potential disruptions due to gas pipeline contingencies

3. Retirement of Generators

- Economic, environmental and political factors can expedite retirements
- Older plants are still required under a variety of operational conditions

4. Integration of a Greater Level of Variable Resources

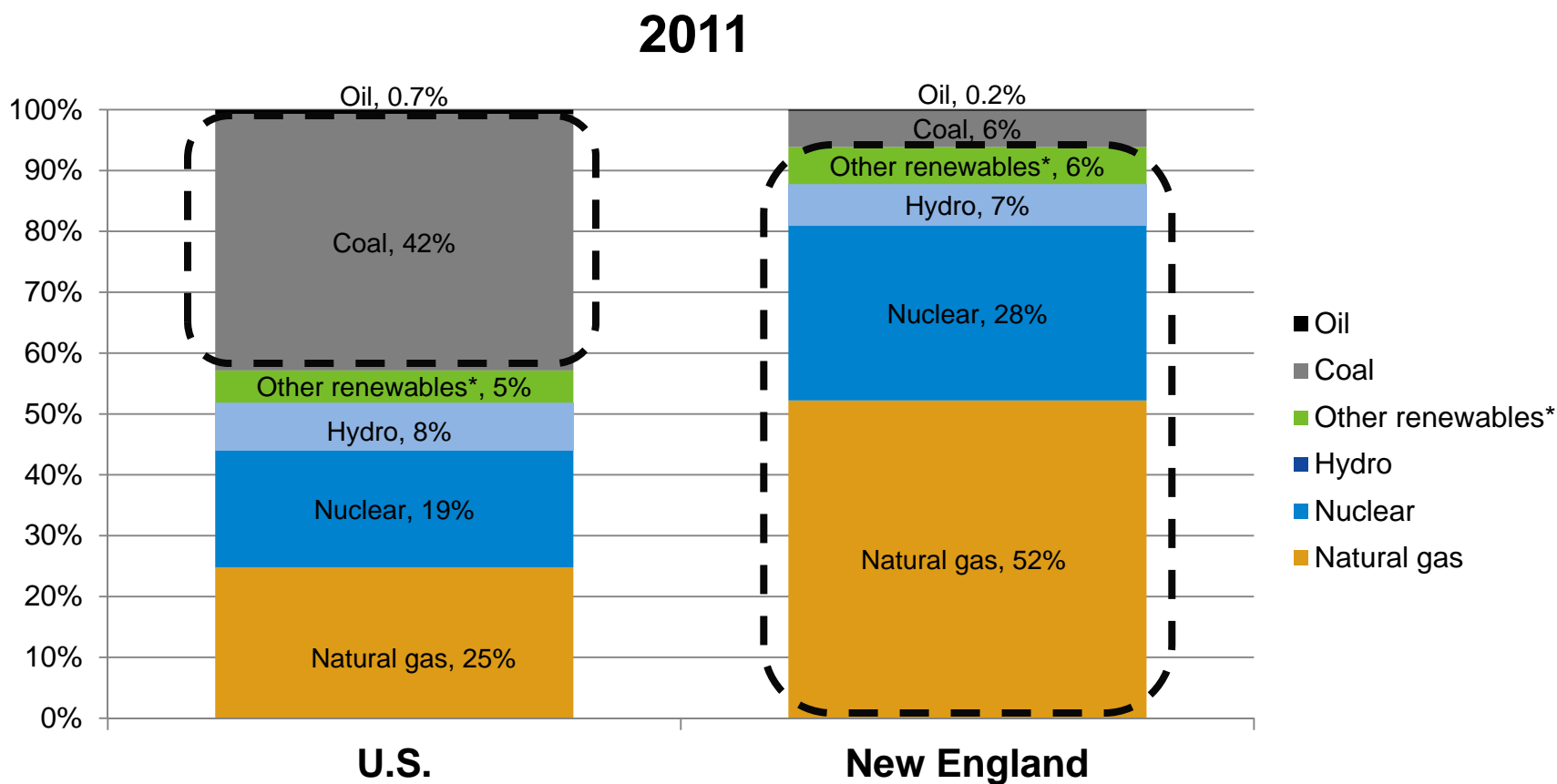
- Managing, dispatching and integrating more complex
- Intermittent resources being added may require gas generation back-up for balancing and ramping

5. Alignment of Markets and Planning

- Need for market signals and incentives for resource adequacy and transmission security

New England Fleet is Cleaner than the U.S.

90% of New England's electricity is produced by low-emitting resources



Sources:

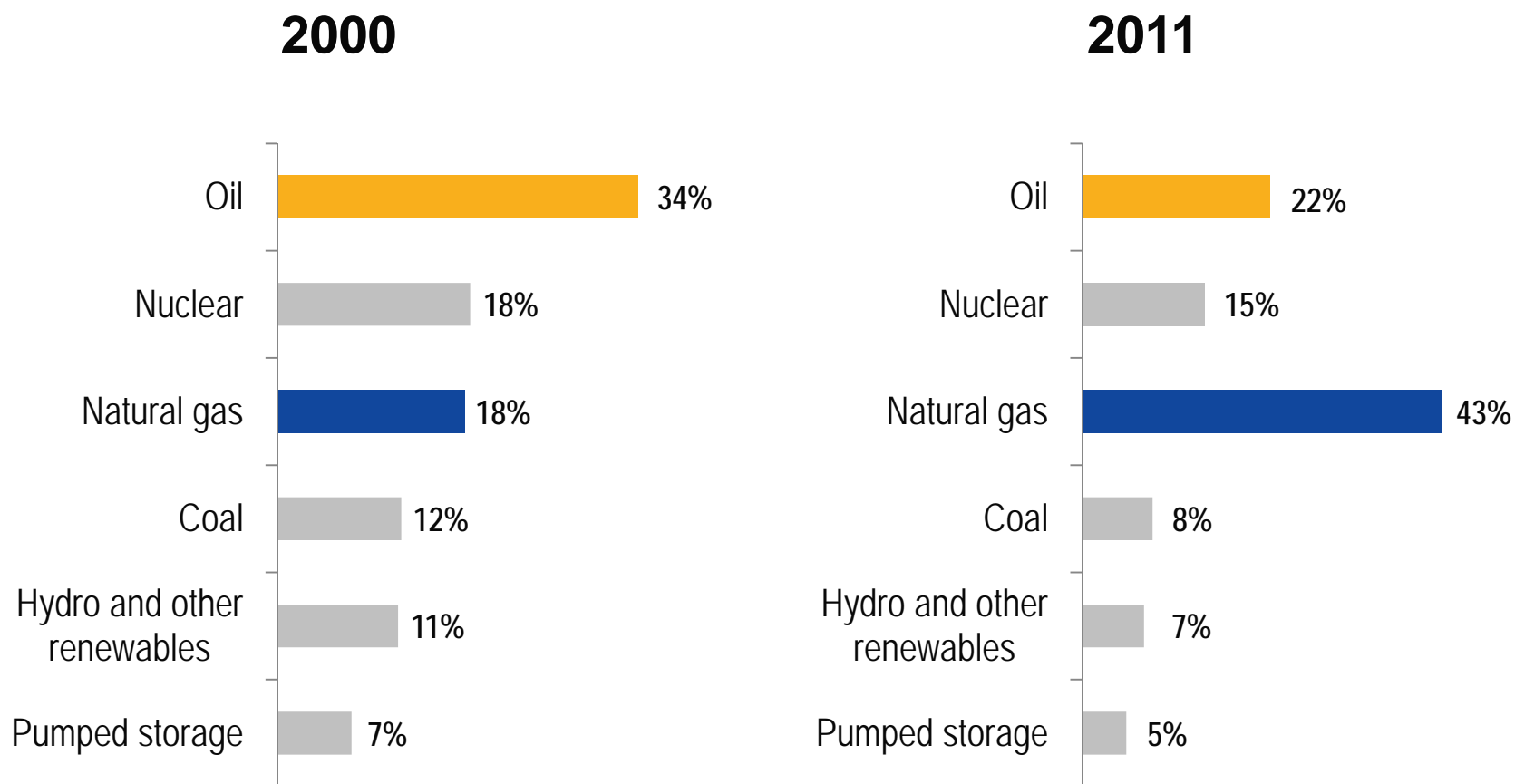
Electric Power Generation and Consumption Data by Month and State, 2001 to the Present, U.S. Energy Information Administration, Jan. 30, 2012.

Energy Sources in New England, ISO New England, 2011.

***Other renewables:** includes landfill gas, wood/biomass, other biomass gas, wind, solar, municipal solid waste, and misc. fuels.

New England's Generating Fleet has Shifted from Oil to Natural Gas

Percent of Total System Capacity

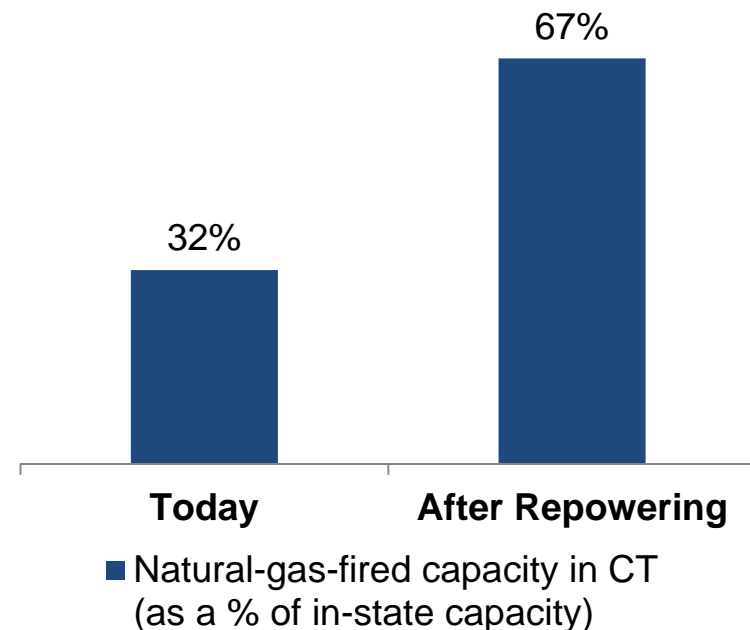


Other renewables include landfill gas, biomass, other biomass gas, wind, solar, municipal solid waste, and misc. fuels.

Future is Uncertain for Older Units

- Oil units produce less than 1% of energy in the region
- Oil units challenged by:
 - High fuel costs
 - Market pressures
 - Environmental regulations
- Connecticut is vulnerable to oil unit retirements
 - 40% of oil units are in CT
- Repowering scenarios would increase reliance on natural gas

Repowering oil units could **double** natural gas-fired capacity in Connecticut



Strategic Planning Studies Underway

Retirement scenarios considered in multiple studies

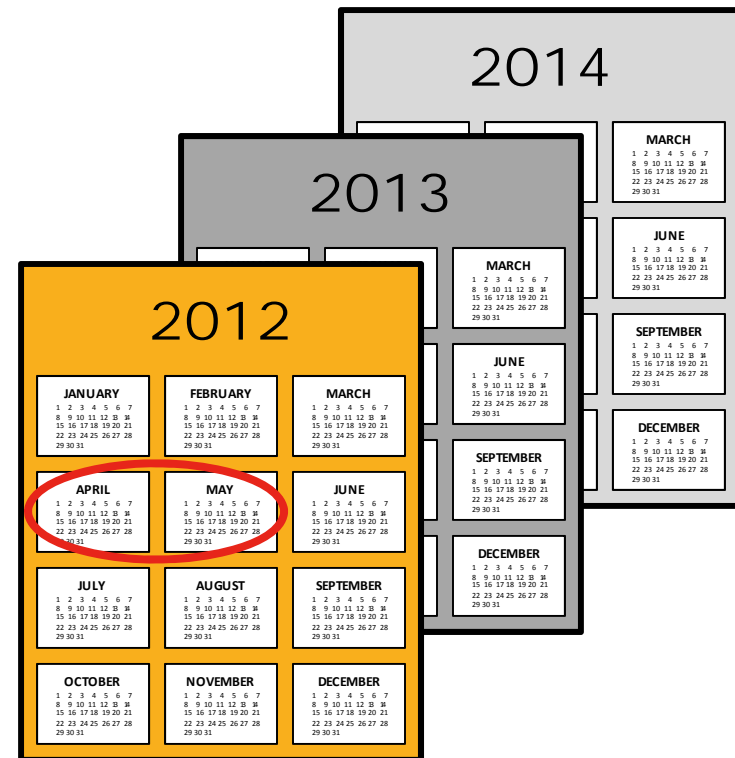
- Generation Retirements
 - Study of units expected to face significant capital investment due to regulatory requirements
- Strategic Transmission Analysis
 - Study of long-term transmission system needs for two future resource scenarios:
 - Generator retirements, and
 - Wind expansion
- Natural Gas
 - Study of the amount of natural-gas-fired generation that can be served by the natural gas system after all firm/priority natural gas customers are served
 - Look at a future case when oil/coal resources may be retired and repowered with new, natural gas resources

Natural Gas Study: Preliminary Findings

- Examination of Natural Gas System Capacity
 - Region's gas delivery supply capability is inadequate to fully serve regional power plant demands on a winter design day over the next decade
 - System is designed to serve firm customers and many power plants have non-firm (interruptible) service
- Repowering Oil and Coal Resources with Natural Gas
 - Repowering case suggests that regional gas delivery system will become even more tightly balanced on a winter design day
- Next Steps
 - Revising assessment based on stakeholders comments
 - Possible Phase-II study under consideration

Regional Stakeholder Process

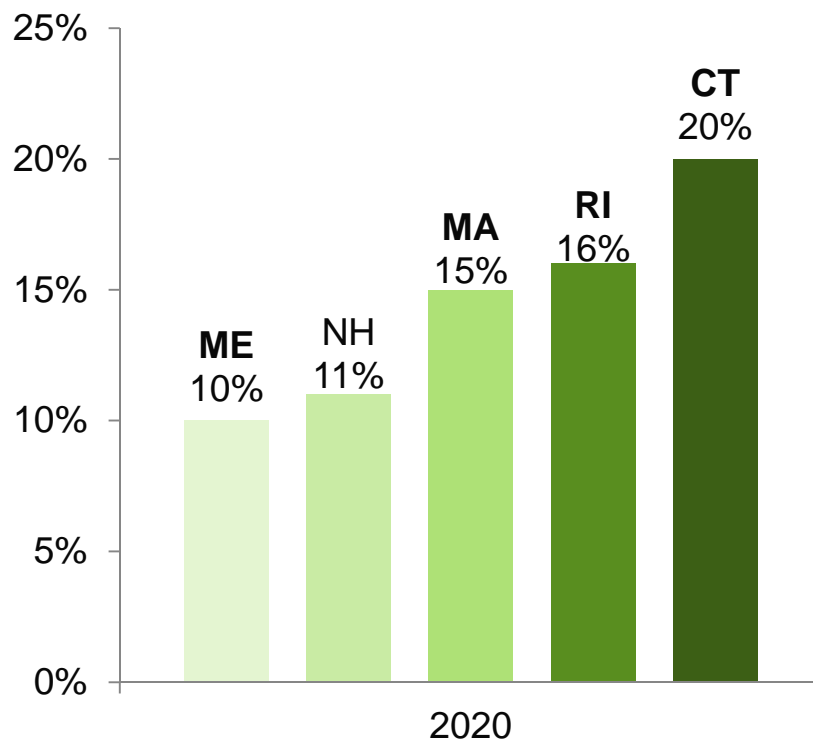
- ISO plans to issue proposed Roadmap in the April/May timeframe for stakeholder comment
- Stakeholder process for solutions and rule development is expected to begin in 2012 and continue through 2014



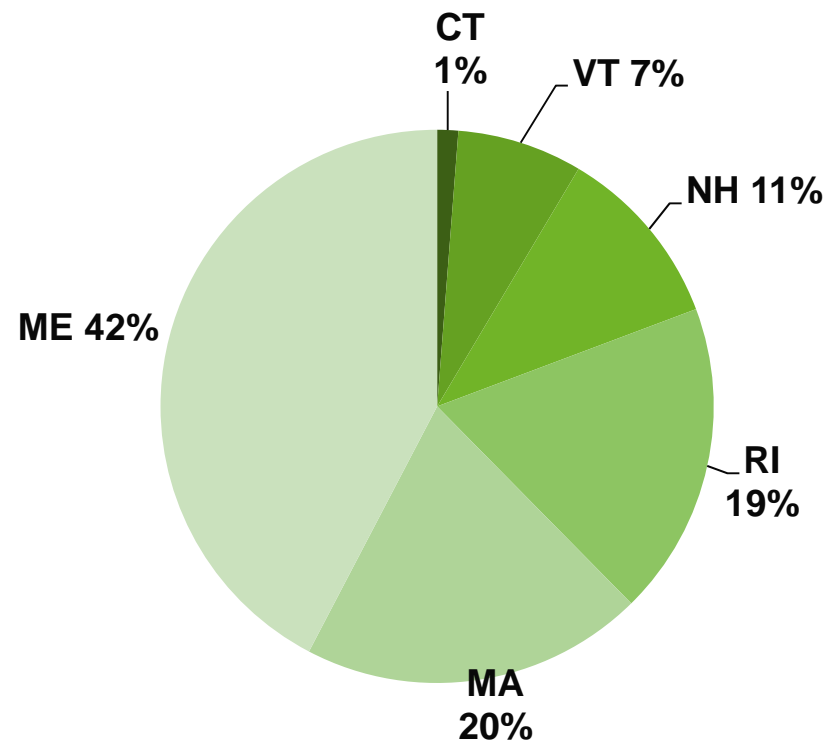
Connecticut Set High Bar for Renewables

Where will resources come from ... in-state or imports?

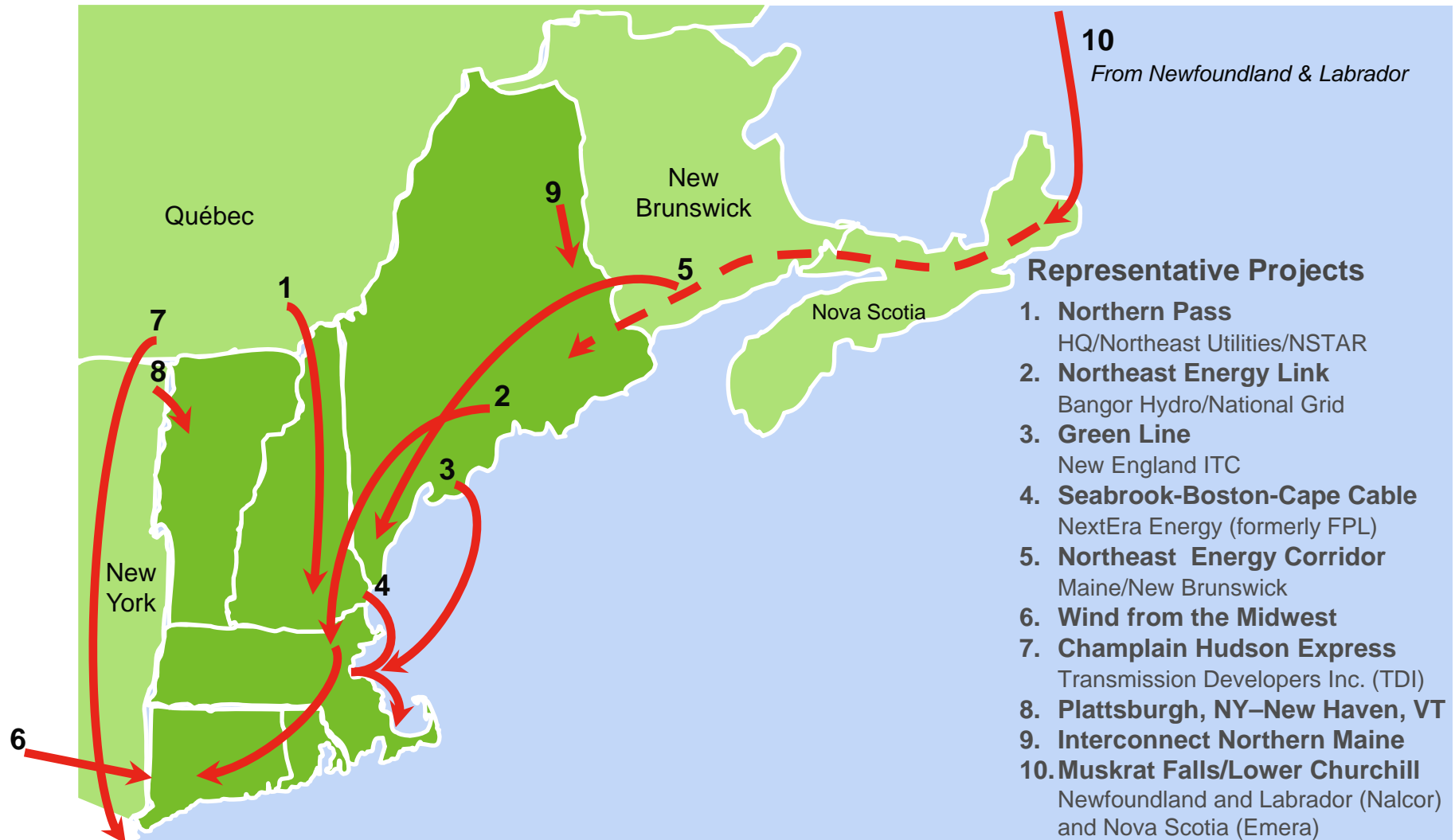
State Renewable Portfolio Standards



Renewable Energy Proposals in the ISO Queue



On- and Off-shore Transmission Projects Vying to Move Renewable Energy to New England Load Centers

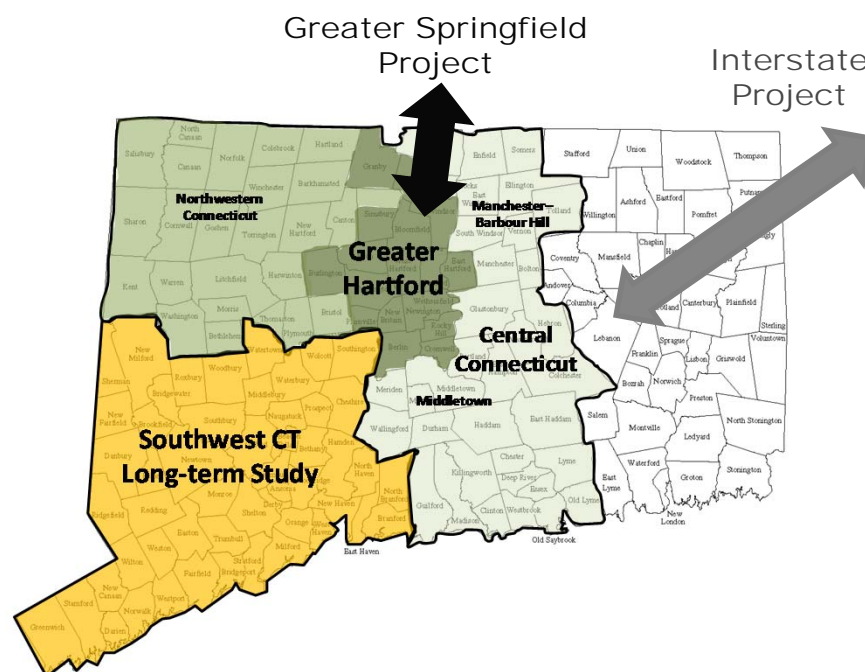


FERC Order 1000: Transmission Planning

- New England has taken steps prior to the Order to implement interregional planning and coordination
 - ISO's filing will enhance coordination with neighboring regions and help identify interregional transmission solutions
- Transmission needs to meet “public policy” requirements must be included in regional planning processes
 - ISO's position: States together need to identify the public policy
 - NESCOE has taken lead on identifying public policy requirements and associated cost allocation methods
- Next Steps
 - ISO is working with states and other stakeholders to submit compliance filings to FERC by fall 2012 and spring 2013

Major Transmission Projects and Studies Underway in Connecticut

- Strengthening transmission paths into Connecticut
 - Greater Springfield Reliability Project is under construction
 - New England East–West Solution (NEEWS) Interstate project is in siting
- Long-term reliability studies are underway for ~2020 horizon:
 - Southwest Connecticut
 - Greater Hartford/Central CT
 - Includes analysis of market resource alternatives



New *Energy Efficiency* Forecast Will Inform Long-term Planning Studies

Peak Demand Savings (MW)

