

Can Wholesale Markets Satisfy Both Electric Reliability and Public Policy Goals?



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How Does New England Achieve Compatibility Between Two Goals?

1. Achieving reliability through **competitive wholesale markets**



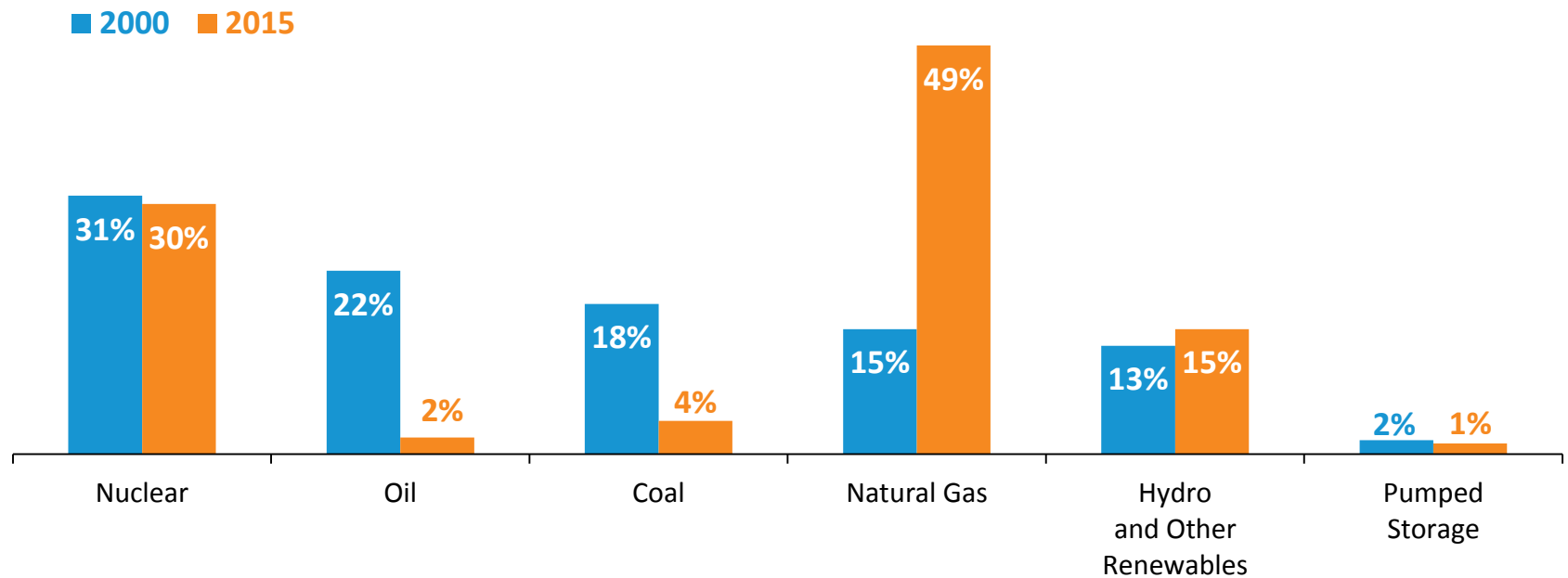
and

2. Achieving **reductions in carbon emissions**



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

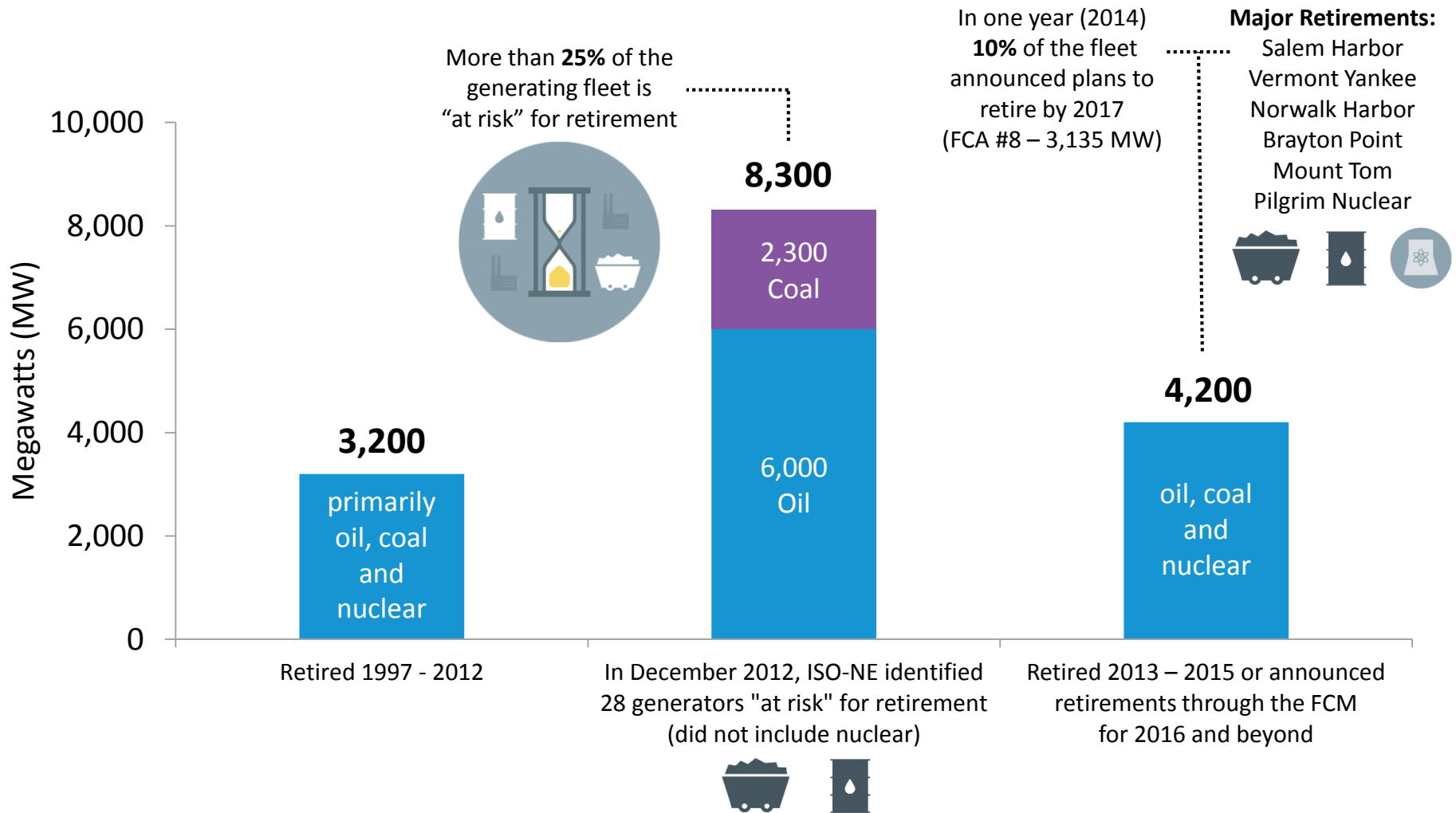
Percent of Total **Electric Energy** Production by Fuel Type
(2000 vs. 2015)



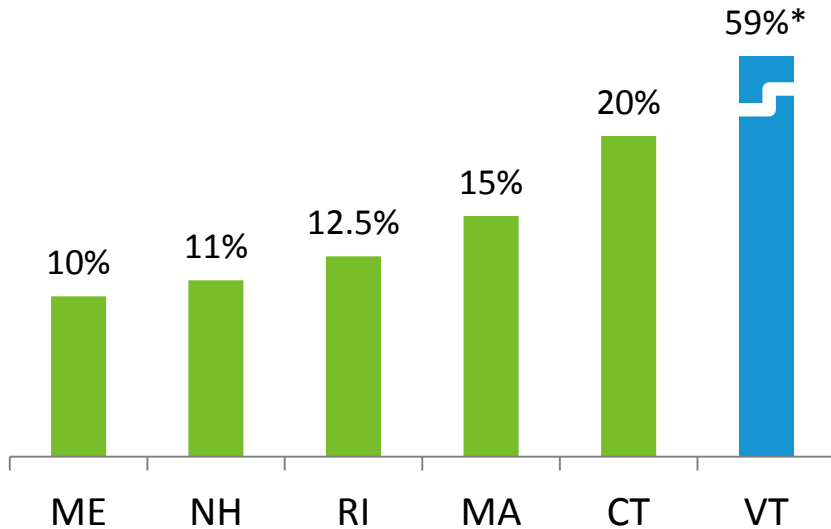
Source: ISO New England [Net Energy and Peak Load by Source](#)

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

More Than 4,200 MW of Non-Gas Generation Have Recently Retired or Announced Plans to Retire

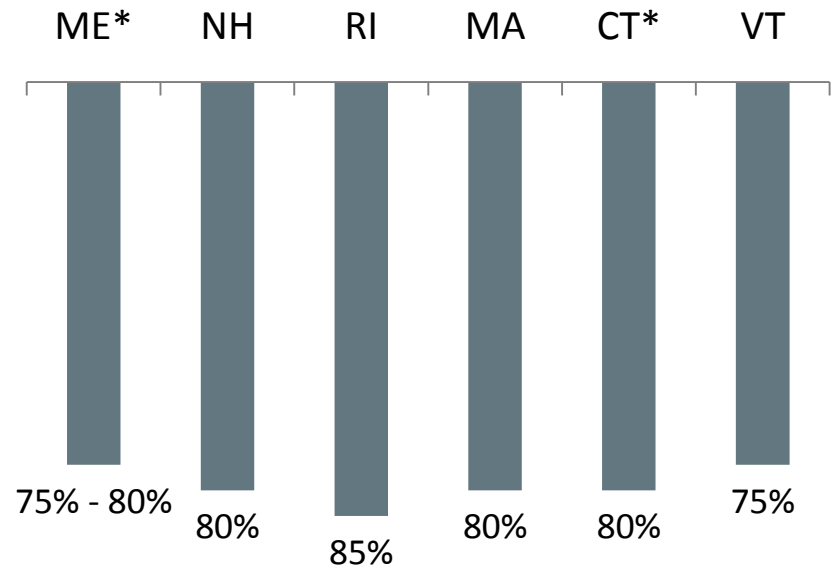


States Have Set Goals to *Increase* Renewable Energy and *Reduce* Greenhouse Gas Emissions



State Renewable Portfolio Standard (RPS) for Class I or New Renewable Energy by 2020

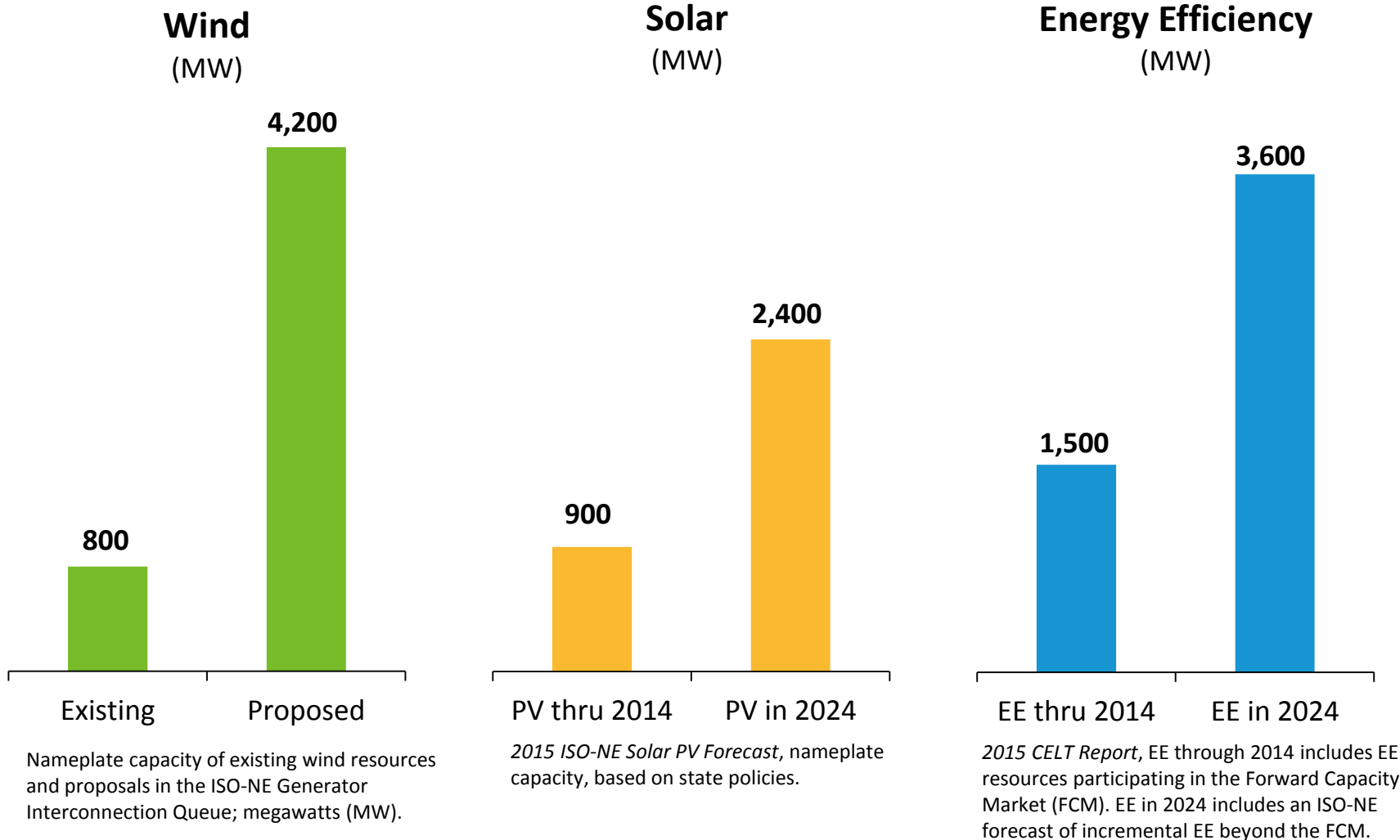
Percent Reduction of Greenhouse Gas (GHG) Emissions Below 1990 Levels* by 2050 (economy wide)



* Vermont's standard recognizes all forms of renewable energy, and is unique in classifying large-scale hydro as renewable.

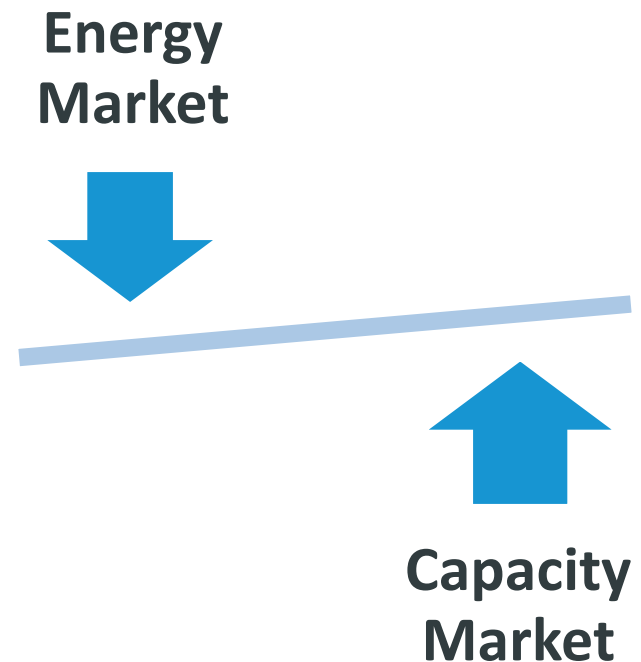
* Connecticut's goal is tied to 2001 levels. Maine's goal is tied to 2003 levels.

Renewable and EE Resources Are Trending Up



The Energy and Capacity Markets Are Linked; Changes in One Market Will Affect the Other

- Because the renewable resources the states are supporting have **no fuel costs**, they will be dispatched ahead of conventional generation (gas, coal, and oil), putting *downward* pressure on energy-market prices and *upward* pressure on capacity prices
- The **shift in revenues** from the energy to the capacity market **will affect the resource mix**, putting additional financial pressure on energy-market dependent resources like nuclear and coal-fired units



With increasing levels of renewables, the capacity market will play a key role in ensuring resource adequacy

The Objective of the Markets

- Wholesale electricity markets have a limited objective:
 - Short and long term reliability at the most competitive price
- Critical market design elements:
 - Clear definition of reliability services
 - Unambiguous performance expectations and incentives under scarcity conditions
 - Appropriate price formation in all markets
 - Pay for Performance expectations tied to capacity supply obligations
- The current market design should ensure adequate resources to meet the reliability standards and that the resulting resource mix appropriately complements the operational capabilities and variability of renewable resources, however ...
- What are the consequences if policymakers seek specific outcomes through 'out of market' actions?



Achieving Reductions in Carbon Emissions

- States achieve this goal by setting targets for emissions reductions and renewable energy, but also by providing direct out-of-market financial support to select renewable resources or technologies
 - This could become problematic if developers or policymakers desire that uneconomic resources clear in the capacity auction and the consequence is that price formation in the capacity market is affected
 - A carbon pricing mechanism, or a technology neutral attribute-based incentive, such as a clean-energy standard, is most compatible with wholesale electricity markets and should not disrupt price formation in the capacity market



Wholesale Markets Can Operate With Environmental Public Policy Activity

- Achieving the benefits of efficient and effective provision of reliable electricity service alongside public policies that support renewable and non-carbon emitting energy sources is possible
- This has been shown through successful SO₂ and NO_x trading programs, and the Northeast's Regional Greenhouse Gas Initiative which puts a price on carbon emissions
 - These programs have achieved mandated emission levels while working seamlessly with the regional wholesale electricity market
 - By extension, a carbon tax would also fit well
- Renewable Portfolio Standards, which pay a premium for electricity generated by wind, solar, etc, and thereby incent the development of renewable resources also work well with the wholesale market
- Some state policy strategies, such as contracting with specific resources, can undermine the effectiveness of the markets
 - Minimum Offer Price Rules seek to ensure that long-term contracts for new resources don't undermine price formation in the capacity market
 - These rules are complicated to implement and create friction when they limit the perceived effectiveness of state policy actions