

# RENEWABLE ENERGY AND CARBON REDUCTION PLANS:

ACHIEVING POLICY GOALS IN NEW ENGLAND AND BEYOND

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*Presentation to NARUC-CAMPUT Bilateral Roundtable*

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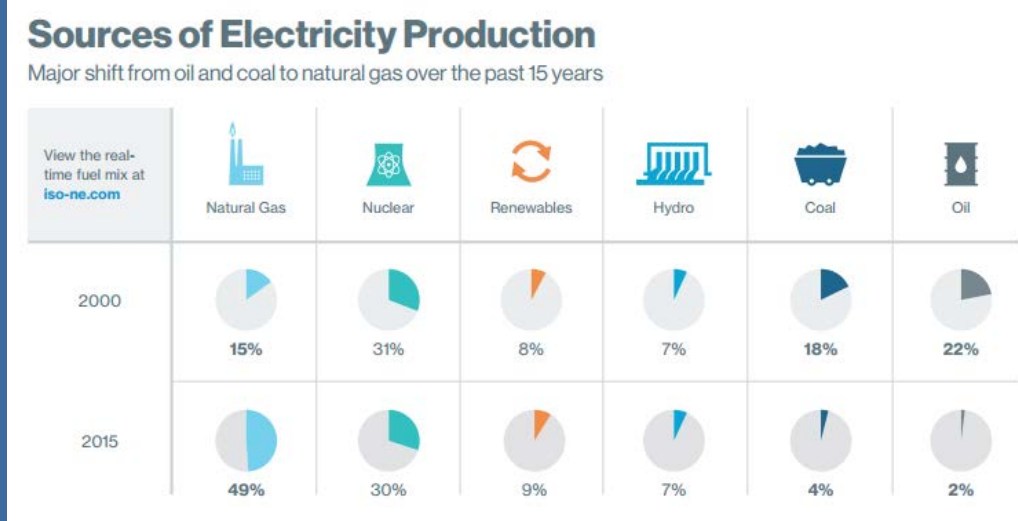


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# GRID IN TRANSITION: CHALLENGES



Source: ISO New England,  
New England Power Grid  
2015–2016 Profile

- Inadequate natural gas pipeline infrastructure
- Significant retirements
- Integration of intermittent resources
- Expensive transmission infrastructure upgrades
- Divide between state/retail and federal/wholesale is changing



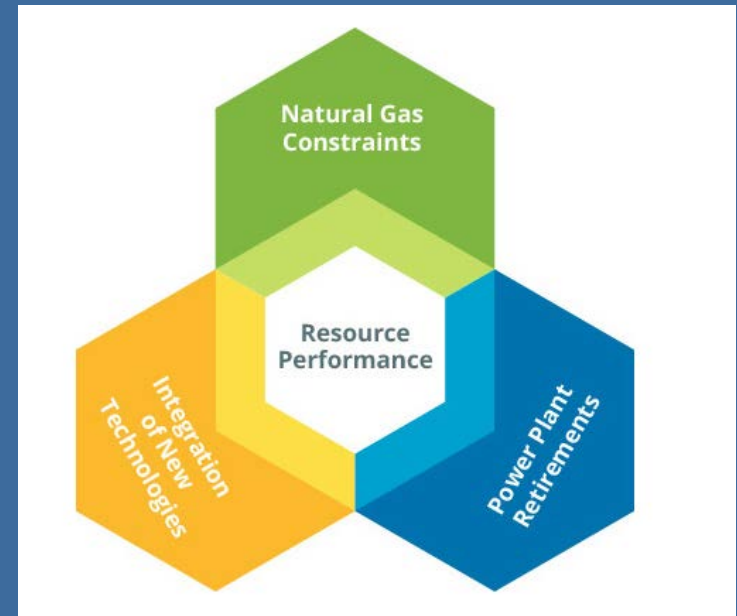
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# GRID IN TRANSITION: OPPORTUNITIES

- Nuclear power: invest or divest?
- State procurement small tranches of renewables in long-term contracts
- Natural gas as a bridge fuel
- How to incorporate state policy goals into wholesale electric markets?



Source: ISO New England, 2016 Regional Electricity Outlook



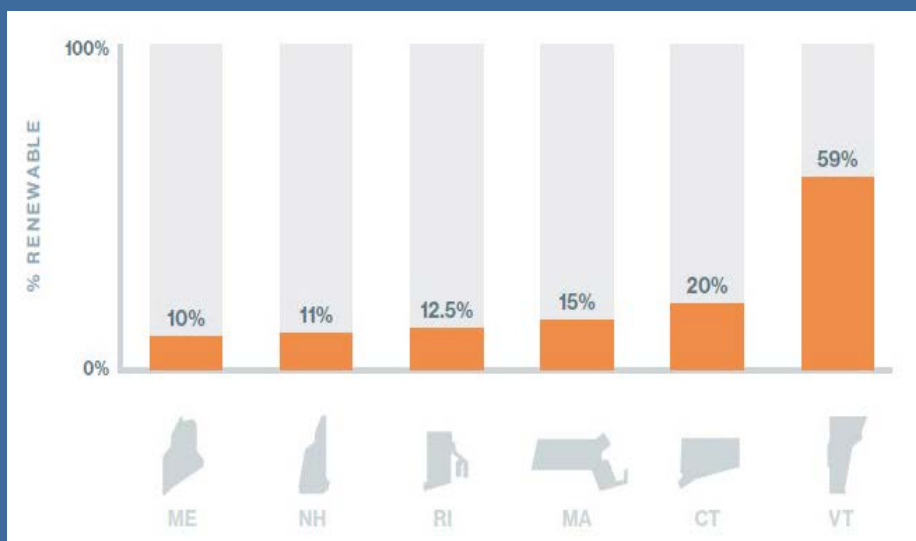
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# AMBITIOUS POLICY GOALS

## State Renewable Portfolio Standards for New Renewable Energy by 2020



Source: ISO New England, 2016 Regional Electricity Outlook

Connecticut



New England



United States



Worldwide



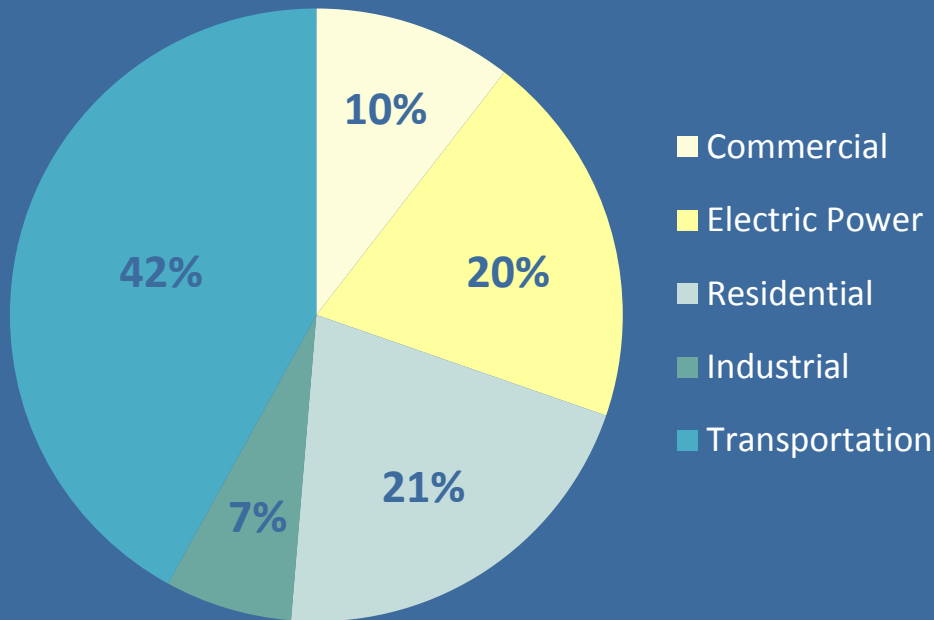
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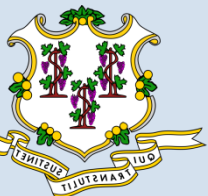
# RENEWABLES AS GHG REDUCTION STRATEGY

## Connecticut CO<sub>2</sub> Emissions By Sector



- Progress in Electric Power Sector: 35% → 20% of current emissions
- Progress needed in Transportation Sector
- Two sectors are intertwined

Source: US Energy Information Administration, Energy-Related Carbon Dioxide Emissions at the State Level, 2013 Data  
<http://www.eia.gov/environment/emissions/state/analysis/>



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# CONNECTICUT'S DIVERSE STRATEGIES

*“Cleaner, Cheaper and More Reliable”*

Innovative programs  
drive policy goals

- Three State Procurement
- LREC/ZREC
- Connecticut Green Bank
- Shared Solar

State	Installed Capacity (MW <sub>ac</sub> )
Connecticut	188.01
Maine	15.34
Massachusetts	947.11*
New Hampshire	26.36
Rhode Island	23.59
Vermont	124.57*
<b><i>New England Total</i></b>	<b><i>1,325.00</i></b>

Source: ISO New England, 2016 PV Forecast

\*Includes values based on estimated state data



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# NET METERING AND VIRTUAL NET METERING

## *Net Metering*

- Expanded in 2008
  - Allowed customer banking of excess kWhs
  - Accommodated solar PV

## *Virtual Net Metering*

- Allows banked kWhs to be assigned to credit a different account
- Currently applies to agricultural, municipal and state entities only



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# CHANGING ROLE FOR ENERGY REGULATORS

- The New England system is decreasing traditional resources (coal, oil, nuclear) and increasing amounts of renewable energy
- Connecticut is examining the role low-carbon nuclear generation plays in its future
- Improved access to data is needed for operations and operations forecasting, particularly on DG
- Must harmonize state policy goals in a regional deregulated energy market



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