2016 Comprehensive Energy Strategy: 
*What’s Changing*

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21st Century Energy: What’s The Deal?  
CBIA Conference  
October 4, 2016

Connecticut Department of Energy and Environmental Protection
Electricity: Restructuring, 15 Years On

Objectives and Outcomes of Restructuring: Public Act 98-28

• Electric utilities sell off their generation assets; rely on competitive ISO-NE wholesale market to procure electricity
  • Shift risks from shareholders to ratepayers
  • Secure reliability at least cost through fuel-neutral market design
• Enable competition in retail electricity sales, to provide greater choice for CT ratepayers
• Maintain commitment to fuel diversity, clean energy sources through Renewable Portfolio Standard and efficiency programs
Electricity: Fuel Diversity

Percent of Total Electric Energy Production by Fuel Type

Source: ISO-NE

* The figures are preliminary, based on pre-90-day resettlement data. Starting with 2015, data more closely approximate the amount of generation by individual fuels used by dual-fuel units, such as natural-gas-fired generators that can switch to run on oil and vice versa. Previously, generation from such units was attributed only to the primary fuel type registered for the unit.

** Includes pondage, run-of-river, and pumped storage.

*** Fuels include: landfill gas, methane, refuse, solar, steam, wind, and wood. Hydro is not included primarily because the various sources that make up hydroelectric generation are not universally defined as renewable in the six New England states.
Electricity: Fuel Diversity

Source: ISO-NE
Market-based Programs Harness Competition to Reduce GHG Emissions

- **Malloy Administration Renewable Programs:** 465+ MW in CT since 2011
  - Five Competitive RFPs for grid-scale renewables since 2011, two currently pending for 15% of load
  - Reverse auction for LREC/ZREC program, open to broad range of Class I technologies
  - Declining schedule for Residential PV incentive program through CT Green Bank
  - Competitive RFP for Shared Clean Energy Facility projects, open to broad range of Class I technologies

- **Regional Greenhouse Gas Initiative**
  - 45% reduction in CO₂ over 10 years
  - 8% increase in GDP
  - $1.3 billion in net economic benefits just in last 3 years
Electricity: Challenges and Opportunities Ahead

- Continued need for decarbonization of electric grid: 75% renewable, 5% gas by 2050?
- Reliability challenges: climate change, cybersecurity, integration of intermittent renewables, natural gas reliance
- Fuel diversity: role of existing generation (nuclear, trash to energy) in electric system mix
- Integration of distributed clean energy into electric system planning
- Increasing transmission and distribution system costs
- Accommodating state public policy efforts within our deregulated market structure
Energy Efficiency & Renewable Energy Investment

Doubled investment in electric efficiency; increase in natural gas efficiency investment. Continued lack of funding for oil efficiency.

- More than 6,000 businesses and 980,000 households saved on their energy bills in 2015 through clean energy programs
- Nearly 39,000 homes weatherized each year through C&LM programs, including critical services to 20,000 low income homes
- Support 10,000 “green jobs” in our state
- Avoid building dirty, expensive fossil fuel power generation—equivalent to 500+ MW

Every $1 of investment in state’s efficiency programs offsets $2.80 of new generation and transmission projects

Every $1 invested in CT Green Bank financing programs supports ~$10 of private co-investment
Buildings: Opportunities for Families & Businesses

- Actual Heating Oil Prices
- Actual Residential NG Prices

Projections Beginning in 2015

- Residential Heating Oil Prices
- Delivered Residential Natural Gas Prices

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Buildings: Opportunities for Families & Businesses

Natural Gas Expansion Program

“[M]ake it easier for many Connecticut residents and businesses to take advantage of the opportunity to heat with lower cost and cleaner burning natural gas – if they would like to do so.”

☑ Enable “portfolio” expansion projects
☑ Encourage municipal partnerships
☑ Safeguard against rate increases for existing gas customers (below 0.2% to date)
☑ Establish low-cost financing
☑ Ensure adequate capacity to serve new gas customers

38,000 residents and businesses switched to natural gas in 2014 and 2015, representing 76% of gas utilities’ original targets, and 103% of adjusted targets.
Renewable Thermal Opportunities

Another choice for Connecticut families and businesses

- Rebates currently available through EnergizeCT.com
- Models and lessons learned from other states’ incentive programs
- Technical and economic potential
- ASHP: maintaining backup heating systems; appropriate equipment efficiency standards
- Ensuring competitive electricity rates
Transportation

Energy Consumption by Sector

Distribution of GHG Emissions by Sector

- Electric Power: 39%
- Transportation: 28%
- Residential: 15%
- Commercial: 8%
- Industrial: 10%

- Transportation: 40%
- Electric Power: 17%
- Residential: 18%
- Commercial: 8%
- Waste: 6%
- Industrial: 10%
- Agriculture: 1%
Sales-weighted fuel economy and gasoline prices, 2012-2015

Sales-weighted Fuel Economy

Gasoline Price
Transportation GHG Emissions

- Passenger cars: 45%
- Heavy-duty vehicles (including buses): 27%
- Light-duty trucks: 17%
- Aircraft: 4%
- Boats: 1%
- Locomotives: 0%
- Other (e.g., construction equipment, farm equipment): 6%