



Going beyond 2%: Investigating Opportunities for Connecticut's Comprehensive Strategy

Mathias Bell, Rocky Mountain Institute

ACEEEE // EE as a Resource

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Executive Summary

- 1. Past efforts have made Connecticut one of the leading states for energy efficiency**
- 2. Still, the short-term and long-term energy efficiency opportunities for buildings in Connecticut remain significant**
- 3. The Comprehensive Energy Strategy identified current challenges to unlocking these energy efficiency savings**
- 4. The Comprehensive Energy Strategy contains a list of recommendations for addressing these challenges and accelerating the adoption of broader and deeper efficiency savings**



About Connecticut Comprehensive Energy Strategy



The Department of Energy and Environmental Protection (DEEP) developed the first-ever Comprehensive Energy Strategy for the State of Connecticut – an assessment and Strategy for: all residential, commercial, and industrial energy issues, including energy efficiency, industry, electricity, natural gas, and transportation.



This Strategy was developed as called for in the milestone energy legislation, Public Act 11-80, passed in June of 2011.

The final Strategy was issued February 19, 2013.

****Note: the views in this presentation may not represent the views of DEEP or DEEP staff***



About Rocky Mountain Institute



ROCKY
MOUNTAIN
INSTITUTE®



Rocky Mountain Institute is a 30 year old nonprofit organization devoted to driving the efficient and restorative use of resources with market-based approaches.

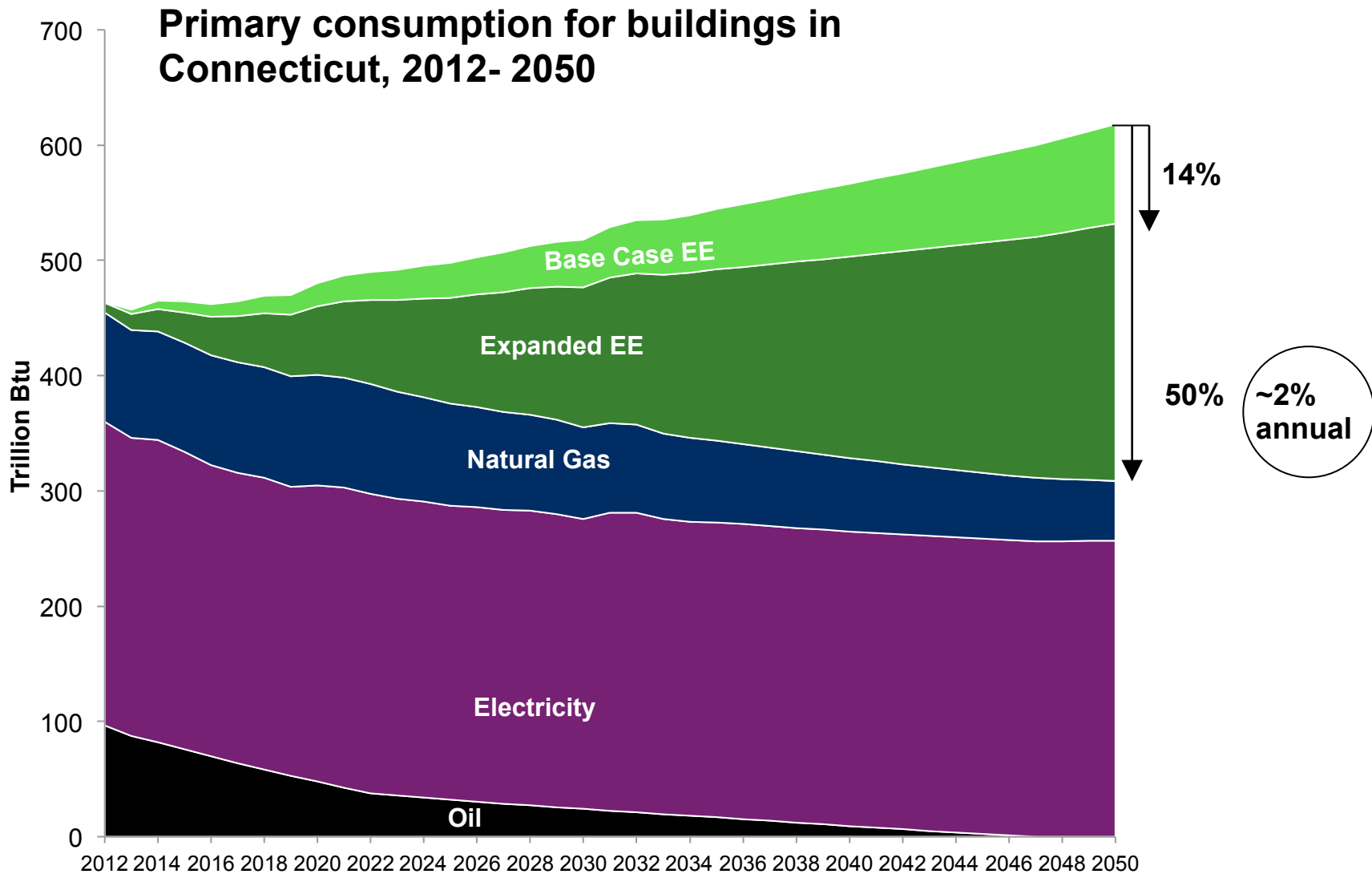
Our vision is a world in balance that is secure, prosperous, and life-sustaining for all, for ever.

Select areas of focus include:

- Electricity Innovation Laboratory (eLab)
- PV system cost reduction and finance
- Electric Vehicle Adoption and Infrastructure
- Industrial Process and Product Transitions
- Deep Commercial Building Retrofits
- Super-Efficient Housing
- Lightweight vehicle manufacturing
- Energy- and resource-centric design (Factor 10 Engineering)



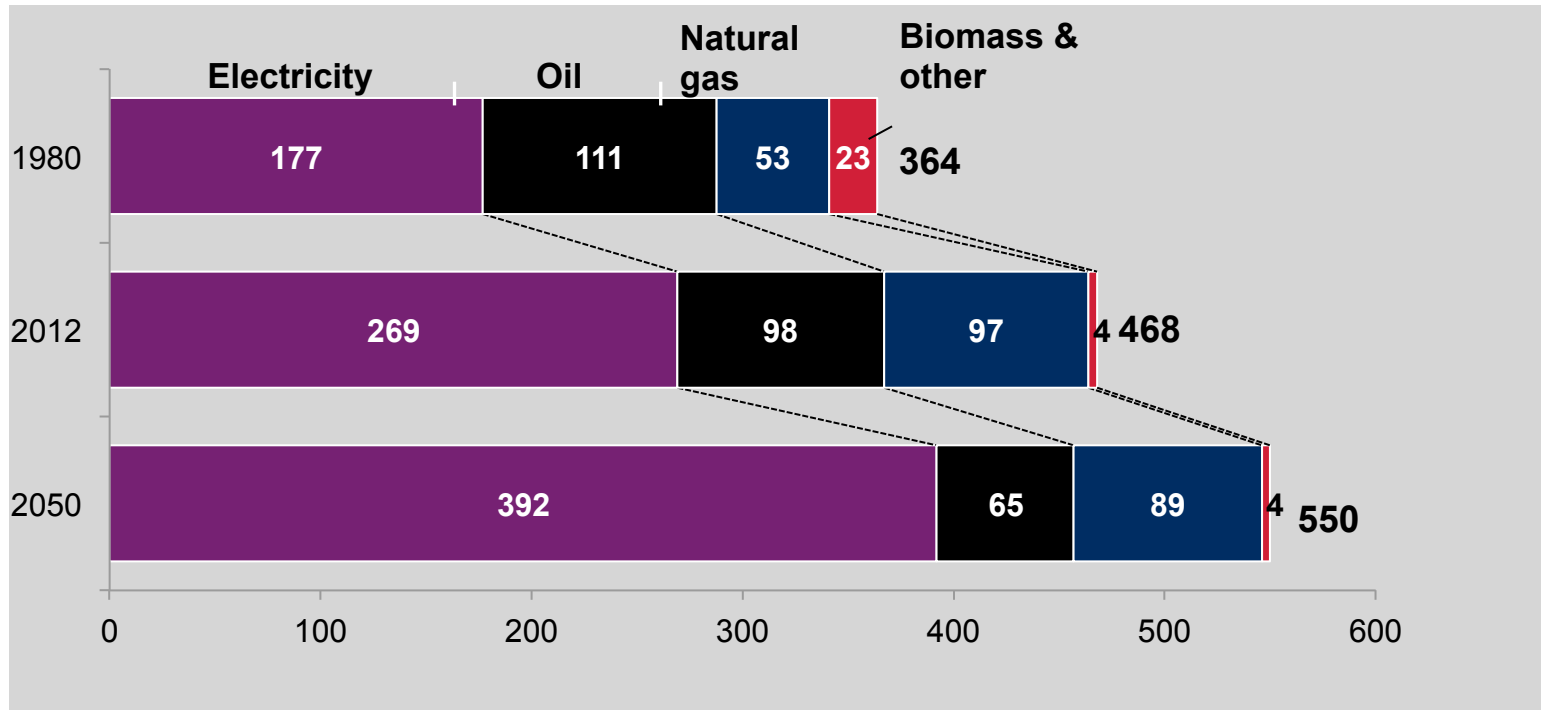
As part of the CT strategy, we created a long-term vision for the state's building sector



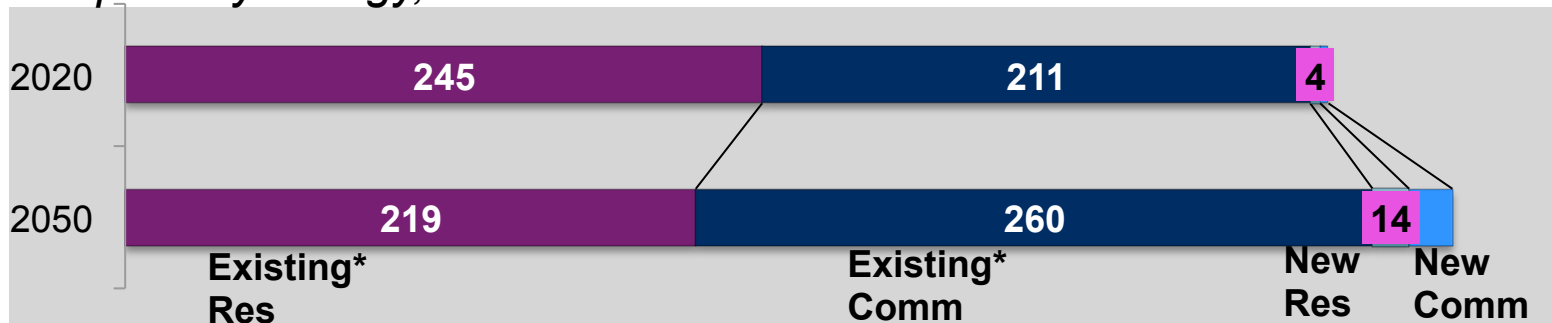


CT expects growth in energy consumption, mostly from existing buildings

Primary Consumption (Trillion BTU/yr) –Base case forecast



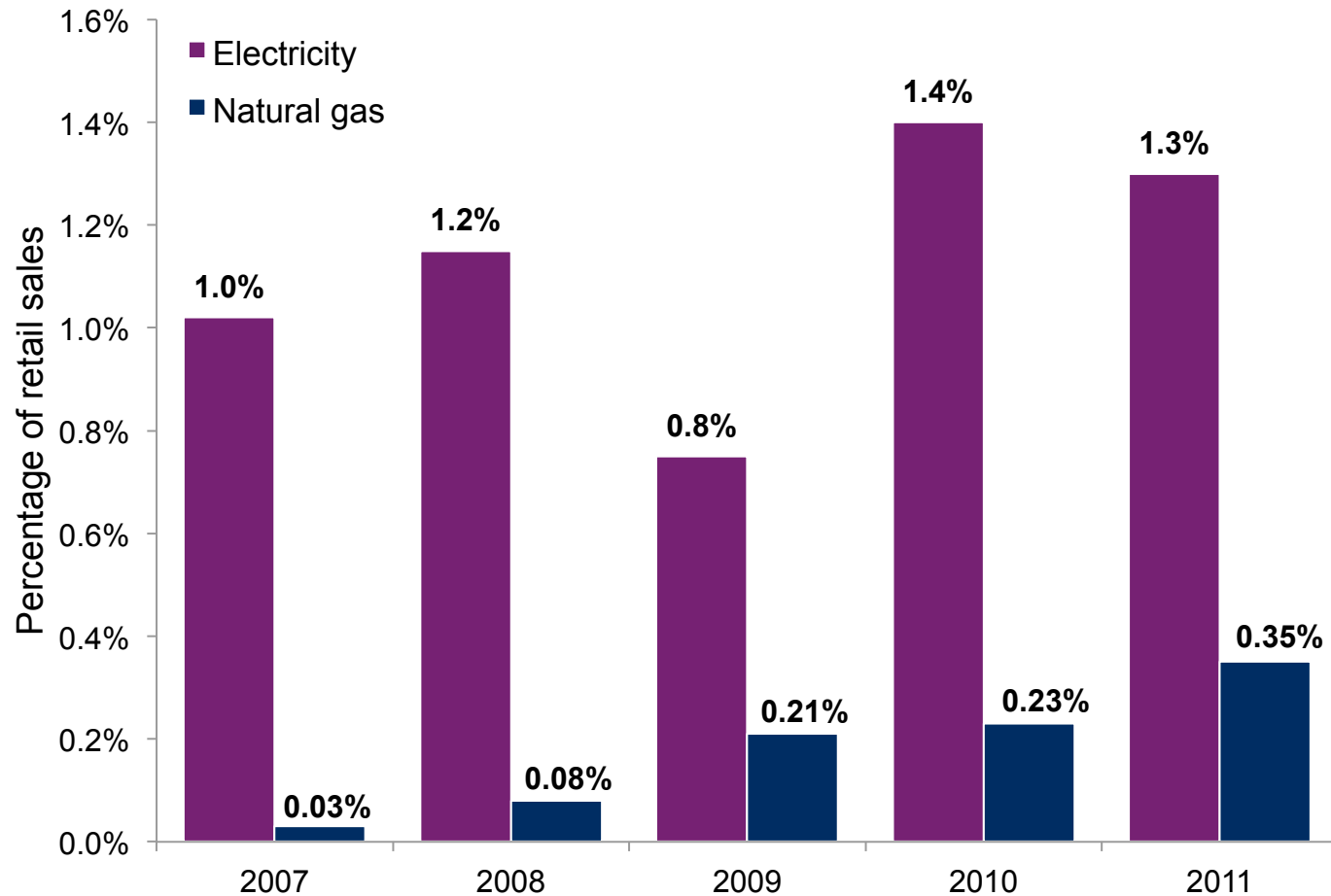
CT projected buildings' energy use by stock type
primary energy, Trillion BTU





Efficiency efforts have reduced electricity and natural gas demand

Annual Efficiency Savings as a % of State Retail Sales



Existing programs

- Home Energy Solutions
- Residential Retail Products
- Residential New Construction
- EEsmarts/ K-12 Education
- Energy Conscious Blueprint
- Energy Opportunities
- Small Business Energy Advantage
- PRIME



Existing gaps and efforts underway to address them

GAPS

- Inconsistent funding for electricity and natural gas programs
- No funding for oil energy efficiency program
- Scaling challenges
- Concern about near-term impacts on rates

GOALS

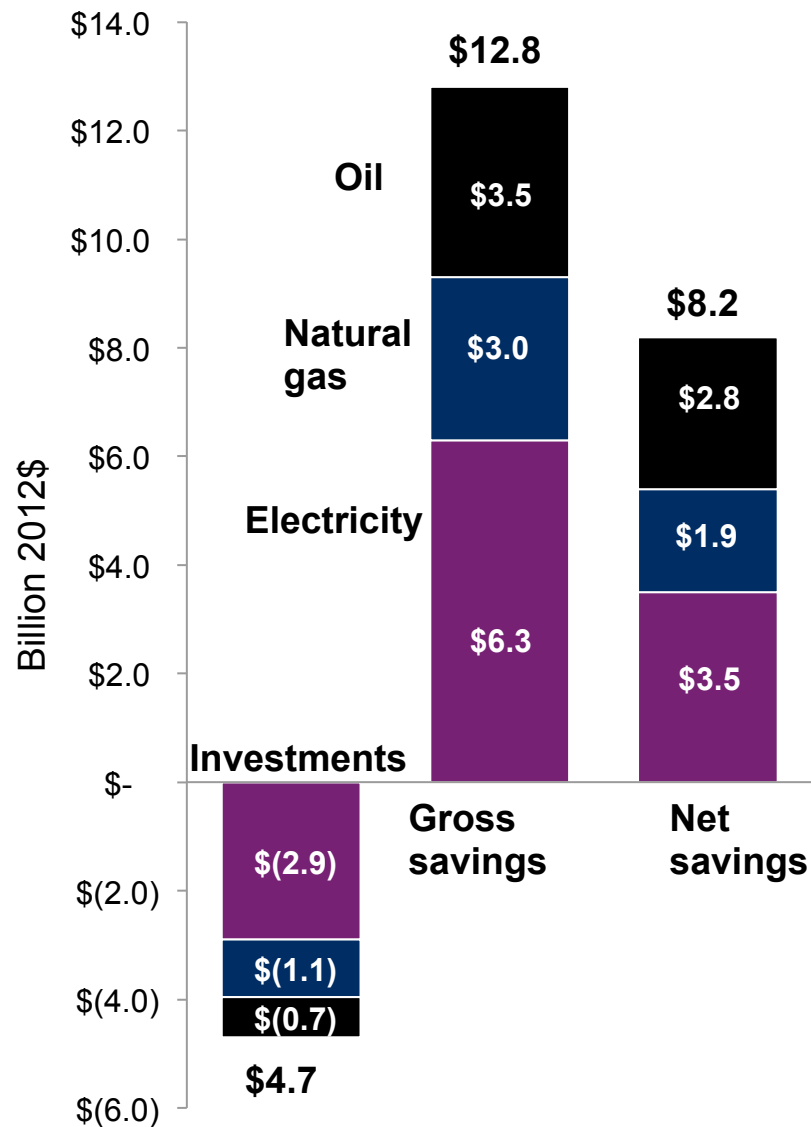
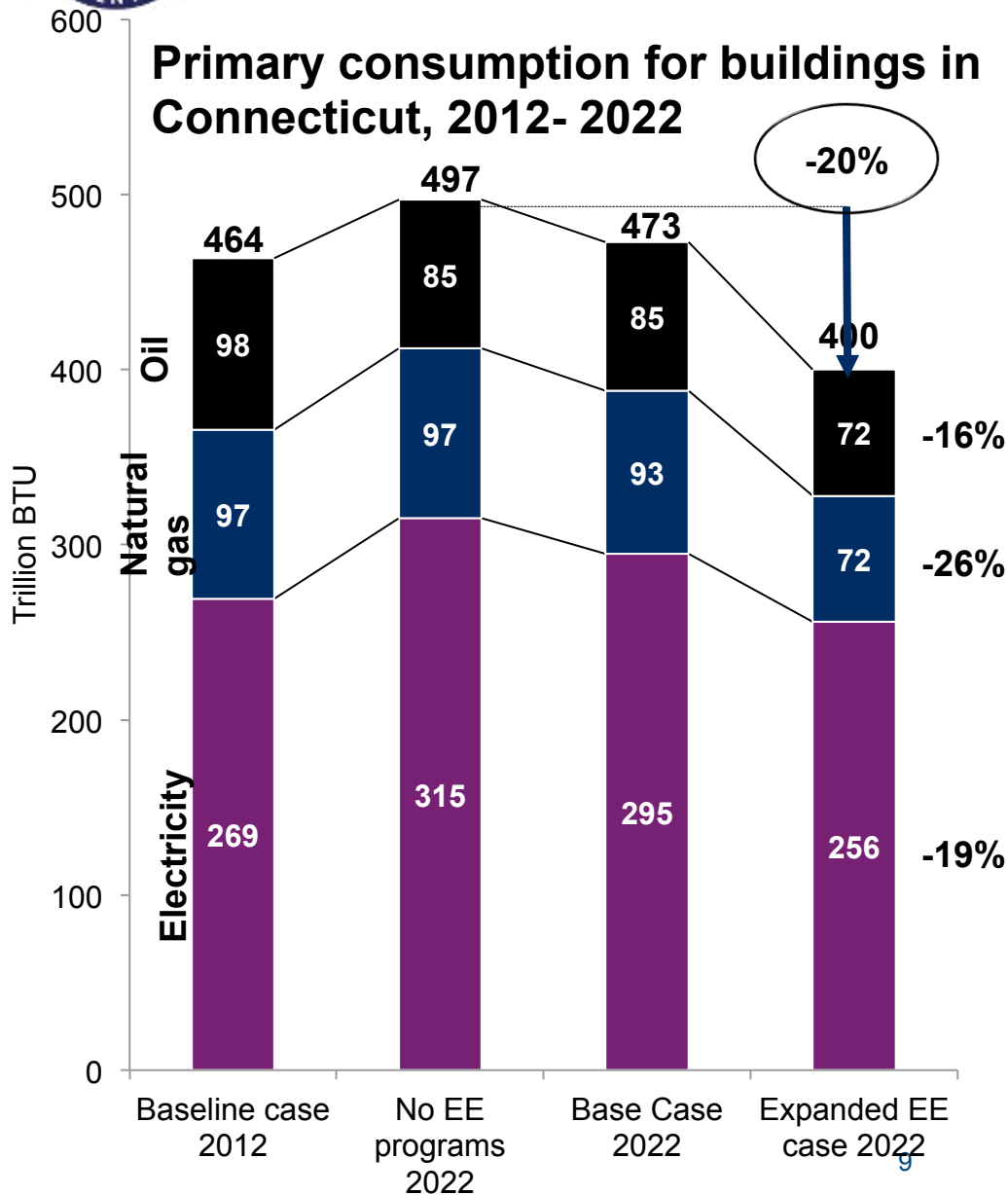
- Reduce energy consumption in State buildings by 10 percent by the end of 2012
- Weatherize 80 percent of CT homes by 2030

APPROACHES

- Implement all cost-effective measures of energy efficiency on a fuel-blind basis
- Leverage the Energy Efficiency Fund through innovative financing and performance contracting



Capturing all cost-effective EE will have dramatic impacts on energy and the state economy





The strategy identifies short and long-term challenges

Short-term

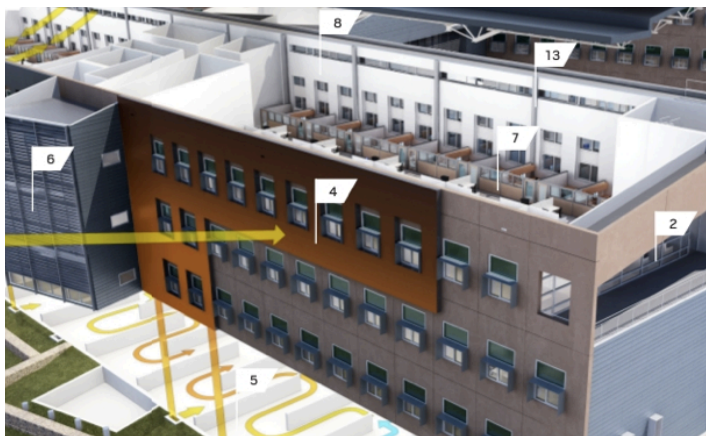
- Underfunded program
- Inconsistent business environment
- Scaling challenges for programs
- Customers' ability to pay
- Near-term impacts on rates

Long-term

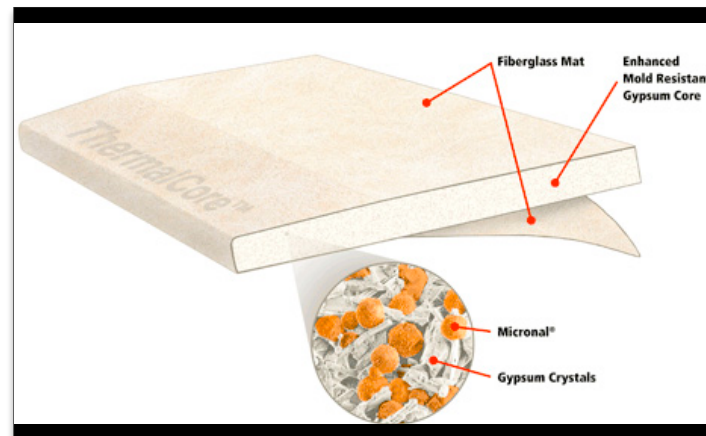
- Uncertainty about how much energy efficiency is available
- Impacts on the utility business model
- Exposure to fuel-price volatility and continued GHG emissions from oil and natural gas
- High proportion of load growth will increase peak demand



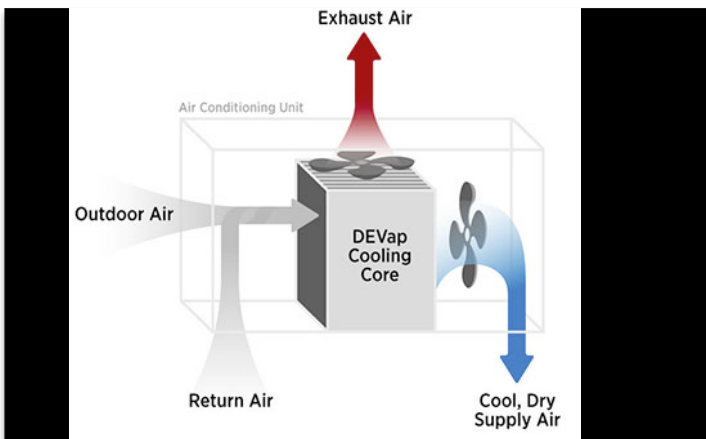
Emerging technologies create new opportunities but to what extent?



Smart windows



Phase change materials



Enhanced evaporative cooling



OLEDs



Increasing savings will require reducing lost opportunities at several key “touch” points

Total Residential Customers:
1.5 million

Most CT households have never heard of Home Energy Solutions

How many customers were aware of the program?

Most of CT households are not interested in participating because they're unaware

Of those aware, how many customers were interested in participating?

Of those who are interested, many don't participate because they don't have the time or they have other priorities

HES participants:
130,000

Many CT households cannot participate in programs because they use oil for space heating and hot water

Few customers who participate in audit have vendors install measures due to upfront costs of EE or poor quality of service

Customers who installed some recommended additional measures:
13,000

Of those who install recommended measures, most only install 1 or 2 measures

How many customers installed all recommended measures?



Capturing all cost-effective energy efficiency will create impacts for the utility business models

CT has several different incentive mechanisms to promote utility investment in energy efficiency:

- CL&P has a conservation adjustment mechanism (LBR)
- UI has a decoupling with shared savings pilot.
- LDC's have decoupling.

LBNL Analysis of Utility Business Models for MA

Figure 7. Effects of Alternative Energy Efficiency Business Model Components on Earnings (2009-2030)

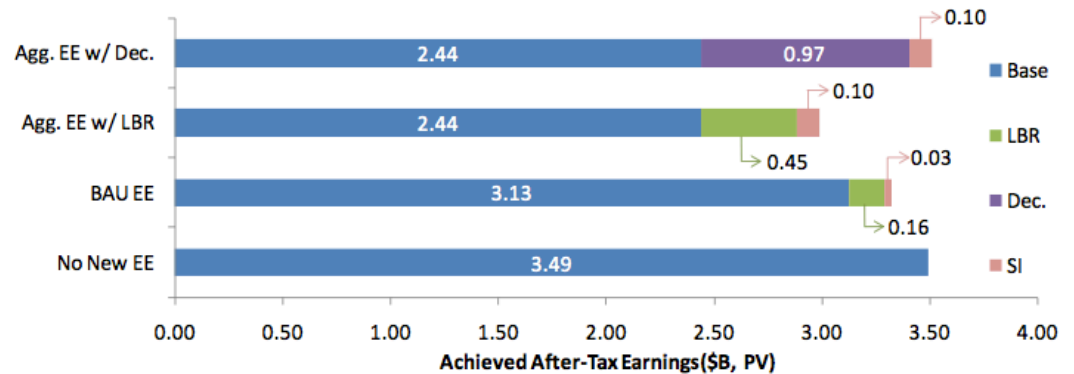
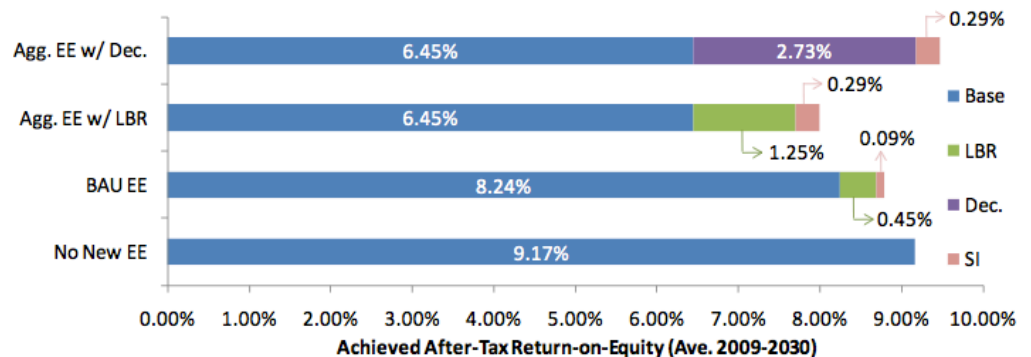


Figure 6. Effects of Alternative Efficiency Business Models Components on ROE (2009-2030)





Our Recommendations

1

Provide sufficient and consistent long-term funding for efficiency programs

- Allocate full funding for capturing all cost-effective energy efficiency
- Establish funding for oil efficiency programs
- * Enable multi-year plan and budget

2

Implement decoupling to align utility incentives with energy efficiency

- Create a mechanism that allows public utility regulators adjust rates to cover a utility's allowable costs and provide a reasonable return as sales drop due to efficiency gains for both EDC's and the LDC's

3

Spur business innovation in energy efficiency

- Evaluate existing and new programs using consistent metrics that drive innovation to reduce costs and to increase participation
- Develop targeted incentives for program administrators and contractors and vendors for lowering the cost per unit of saved energy and for increasing participation



Our Recommendations (Cont'd)

Empower people with information and tools

Options include:

- Public outreach and education
- Labeling and disclosure
- * Real-time energy information and displays
- Sub-metering in rental or leased buildings
- Net-metering
- Codes and standards

4

Increase access to capital for energy efficiency investments

- Take promising financing programs to scale, which will require increasing customer awareness and driving demand
- Continue to support self-funding

5



Our overall strategy for CT buildings:

Goals

Elements of Strategy

Key Levers

Potential Actions

Energy Efficiency

Foster Business Innovation

Engage Public

Support Emerging Technologies

- Expand Opportunities
- Align Incentives
- Embrace world-class business practices
- Provide stable business environment
- Enable financing
- Create Energy Transparency
- Raise Awareness
- Enhance Standards and Codes
- Support Adoption

- Establish funding for oil programs
- Allow multi-year plan and budget
- Introduce new rate structures
- Full Decoupling and shared savings
- Raise customer awareness and interest in programs
- Enable innovation in program design and execution
- Increase the visibility of buildings' energy consumption
- Build out smart meter program
- Focus on growing plug loads
- Coordinate regionally to drive scale on promising technologies

Sustainable Supply

Enhance Supply Options

- Reduce Costs
- Promote innovation

- Couple EE with fuel switching
- Coordinate regionally for market transformation

Demand Flexibility

Leverage DR and Storage Roles

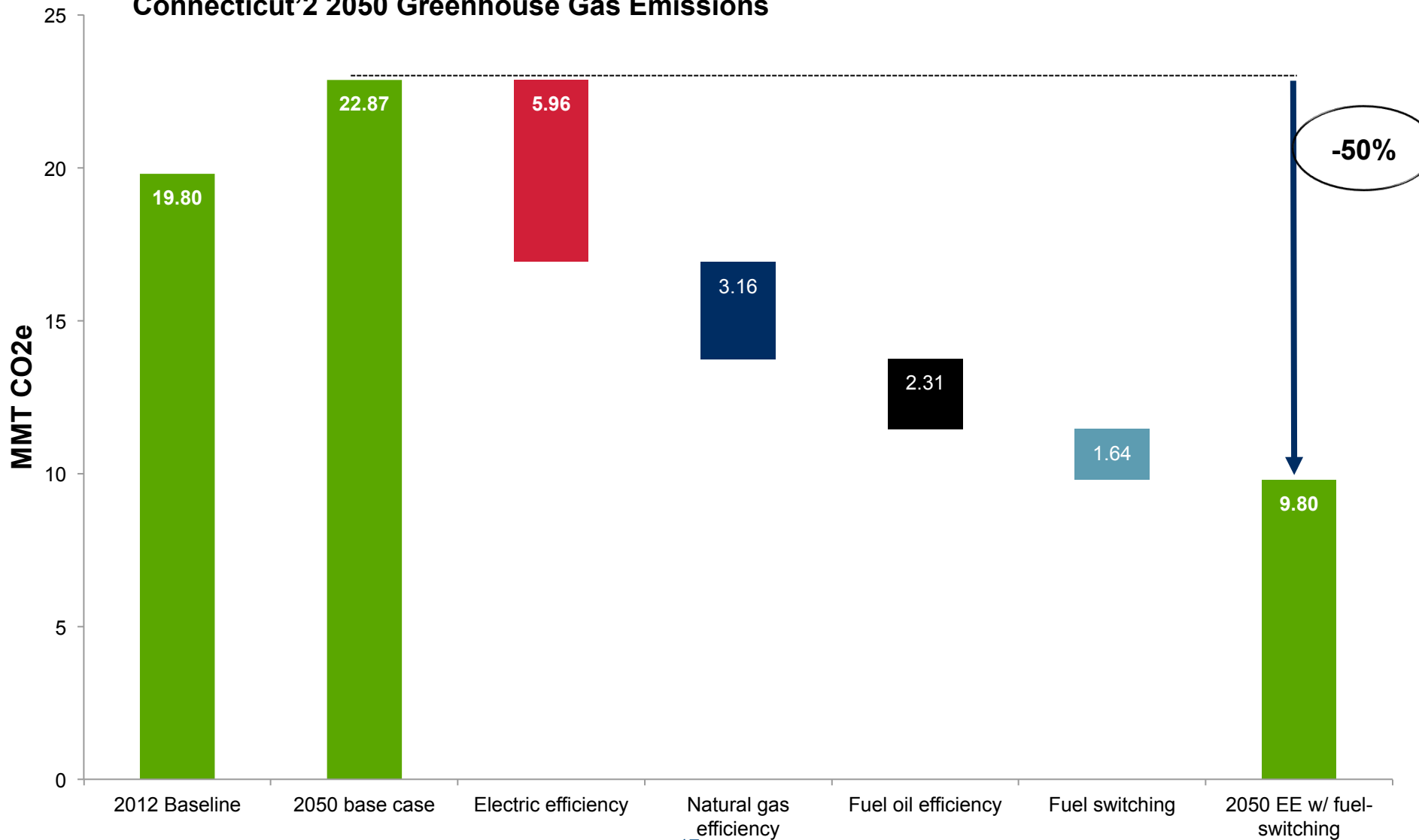
- Develop Markets
- Create strategic plan

- Create a market for flexibility and ancillary services
- Understand emerging options
- Agree on key elements



The long-term benefits of continued aggressive EE investment could be tremendous

Connecticut's 2050 Greenhouse Gas Emissions





Further Steps

- **Using rates to send accurate pricing signals to customers**
- **Look far ahead to ensure that the momentum for increasing efficiency continues over the long-term**
- **Encourage fuel conversions to cleaner and cheaper fuels**
- **Increase demand response to make overall load more flexible**



Thanks!



Questions? Contact Mathias Bell (mbell@rmi.org)