



Northeast  
Utilities System

# **Energy Efficiency at Northeast Utilities**

**Prepared for the Northeast Energy Efficiency  
Council and Association of Energy Service  
Professionals Annual Conference**

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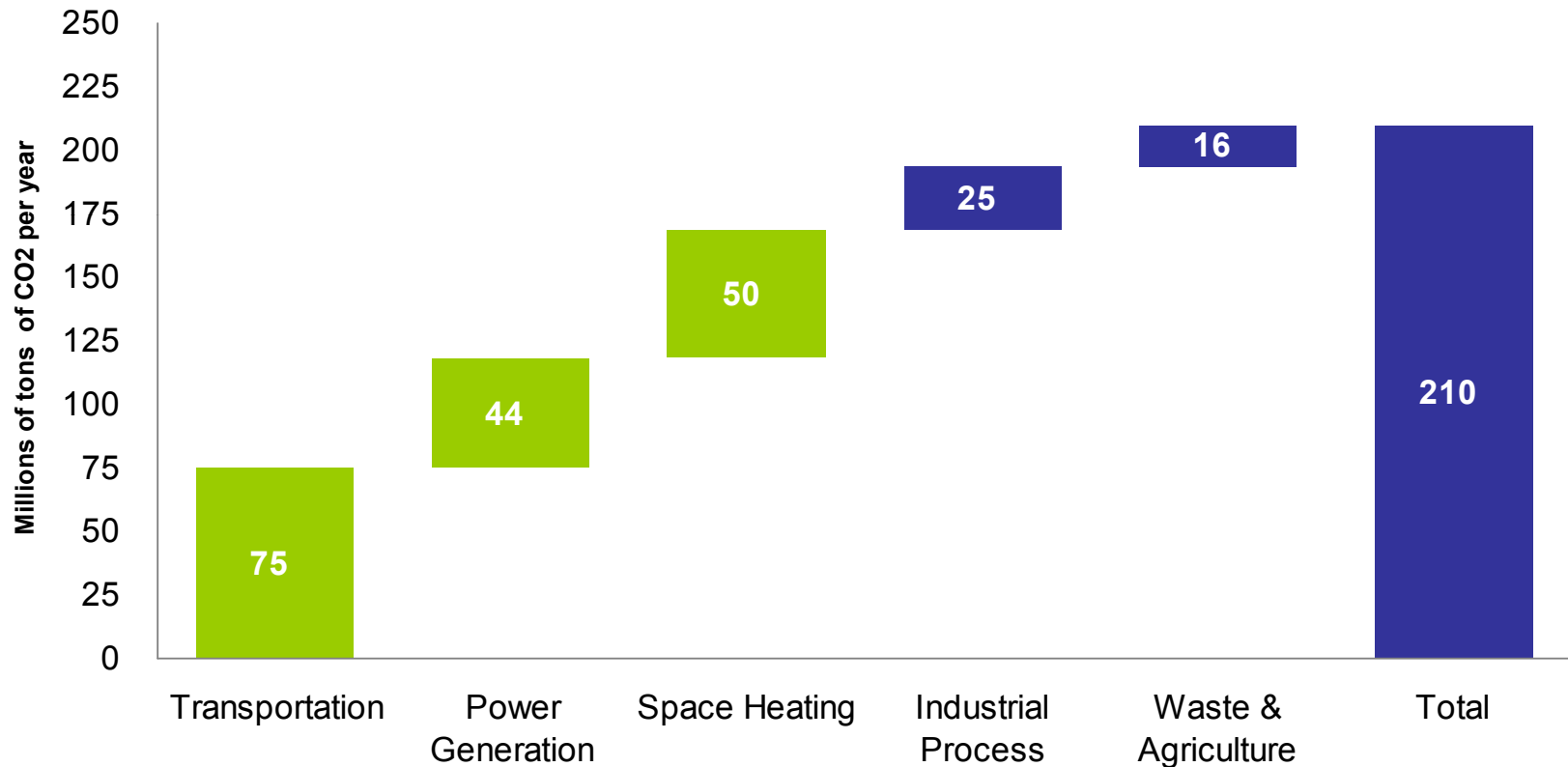
# NU's beliefs about the future

- > Carbon emissions will be priced
- > Energy policy will continue to shift
  - Supply policy will increasingly focus on low carbon solutions
  - Demand-side solutions will continue to have an increased focus
- > Utilities will play an increasingly important role in developing and implementing energy solutions

# Eighty percent of New England's carbon emissions are concentrated in three sectors.

## 2005 Carbon Emissions in New England

Millions of tons of CO2 per year



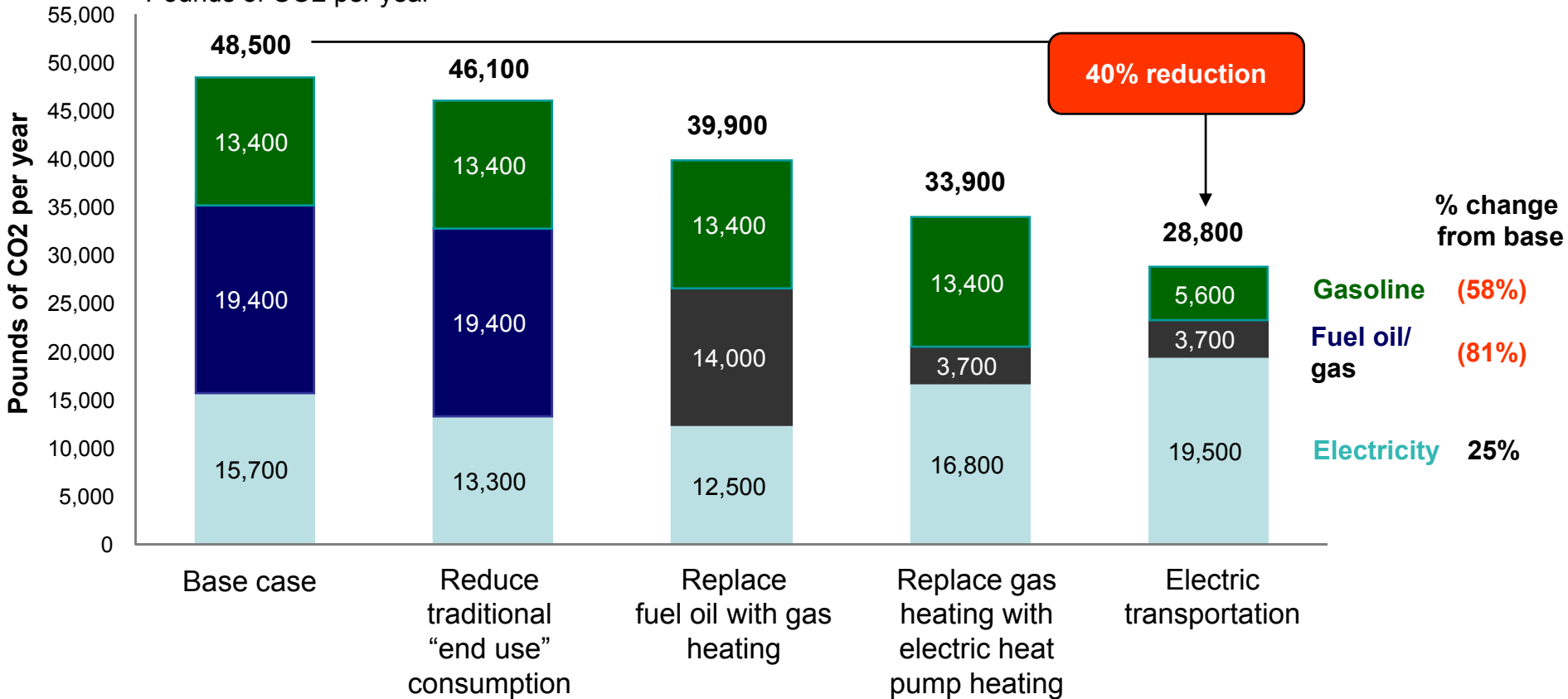
Source: Environment Northeast.

# A coordinated effort could reduce emissions by 40% or more in an average New England home.

## Average emissions for an average New England home

Pounds of CO2 per year

Illustrative



Source: EPRI and NU analysis.

# We believe there are some key common elements to a set of coordinated efforts in New England.

## Reduce “traditional” end use energy consumption

- Expand energy efficiency
- Provide “easy to leverage” information to customers to drive conservation
- Develop a demand and price responsive “smart grid”
- Deploy end-use energy management technologies (i.e., HAN, BMS)

## Decarbonize our electricity fuel supply

- Expand renewable generation
- Bring low carbon resources to market

## Reduce carbon intensity of “non-traditional” end uses through electrification and/or gasification

- Successfully introduce electric/hybrid vehicles
- Expand natural gas vehicle infrastructure
- Convert fuel oil heating to natural gas/electric/geothermal



# What's NU doing? – Beyond energy efficiency

## Reduce “traditional” end use energy consumption

- Designed one of the nation’s largest dynamic pricing rate pilots in CT
- Applied for ~\$125 million in stimulus funds to develop smart grid infrastructure in CT, MA and NH

## Decarbonize our electricity fuel supply

- Won approval for innovative solar program in MA
- Developing HQ HVDC project to bring substantial amounts of low carbon power to New England
- Working with policy makers to interconnect wind and biomass resources in Northern New Hampshire

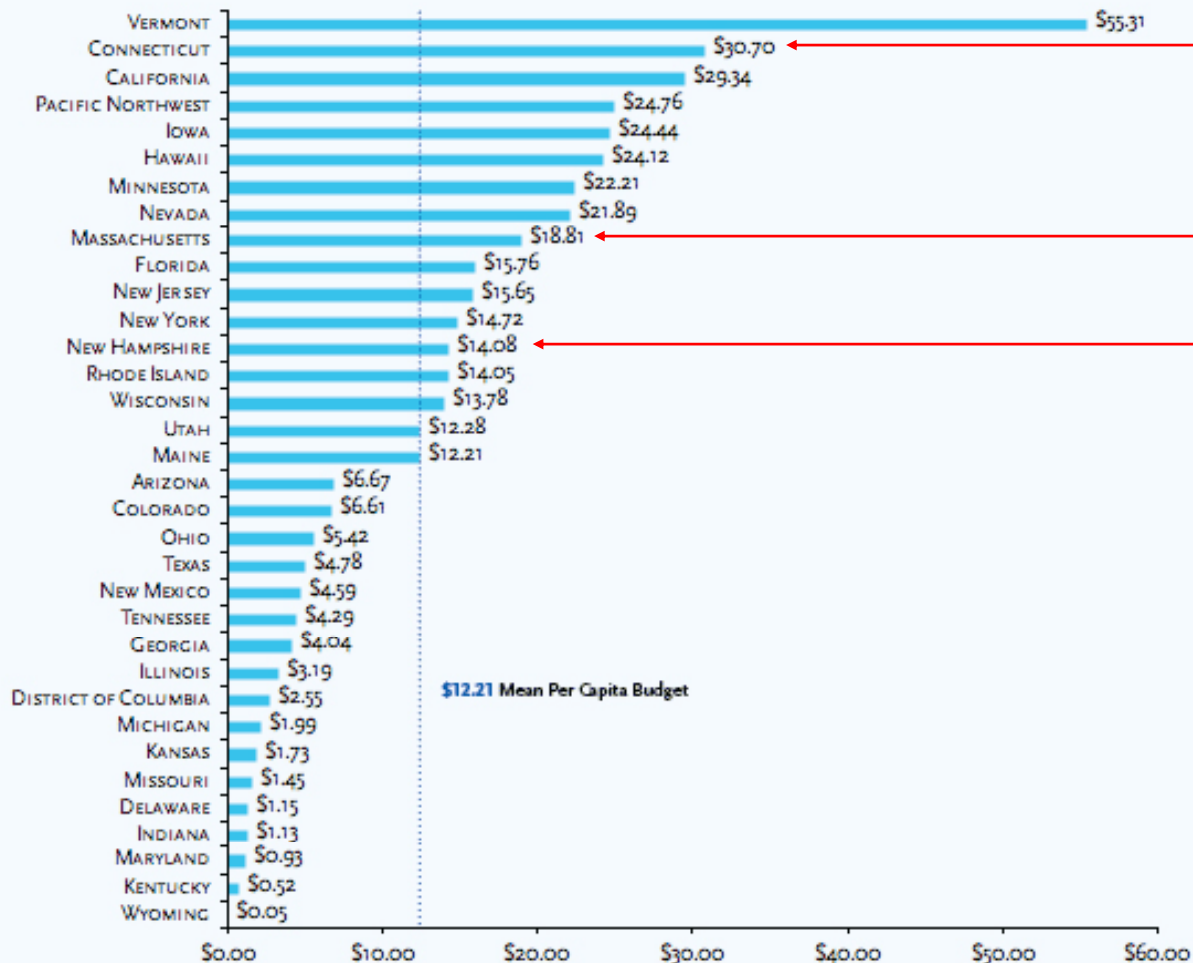
## Reduce carbon intensity of “non-traditional” end uses through electrification and/or gasification

- Developing plans for charging infrastructure in CT and MA
- Working with EPRI, GM, Ford on vehicle delivery strategies
- Working with regional stakeholders on potential policy focused on improving fuel oil conversion economics

We operate energy efficiency programs through coordinated state-wide efforts with a demonstrated track record.

## 2008 Per Capita Budgets, Electric Programs

INCLUDING LOAD MANAGEMENT



ACEEE Scorecard

3<sup>rd</sup>

7<sup>th</sup>

18<sup>th</sup>



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We plan to deploy more than \$120M in energy efficiency in 2010 across the three states we operate.

### **CL&P (1.2M customers)**

~\$70M in energy efficiency spend per year

- \$98M proposed for 2010
- Increasing scope of programs through RGGI funding (\$15 million) and stimulus funding (\$9 million)

### **PSNH (0.5M customers)**

~\$15M in energy efficiency spend per year

- \$16M proposed for 2010
- NH electric utilities submitted a proposal for RGGI funding to further expand programs. Proposal was approved for the July 2009-June 2010 period
- Working with state officials to leverage programs to deploy stimulus funds

### **WMECO (0.2M customers)**

~\$10M in energy efficiency spend per year

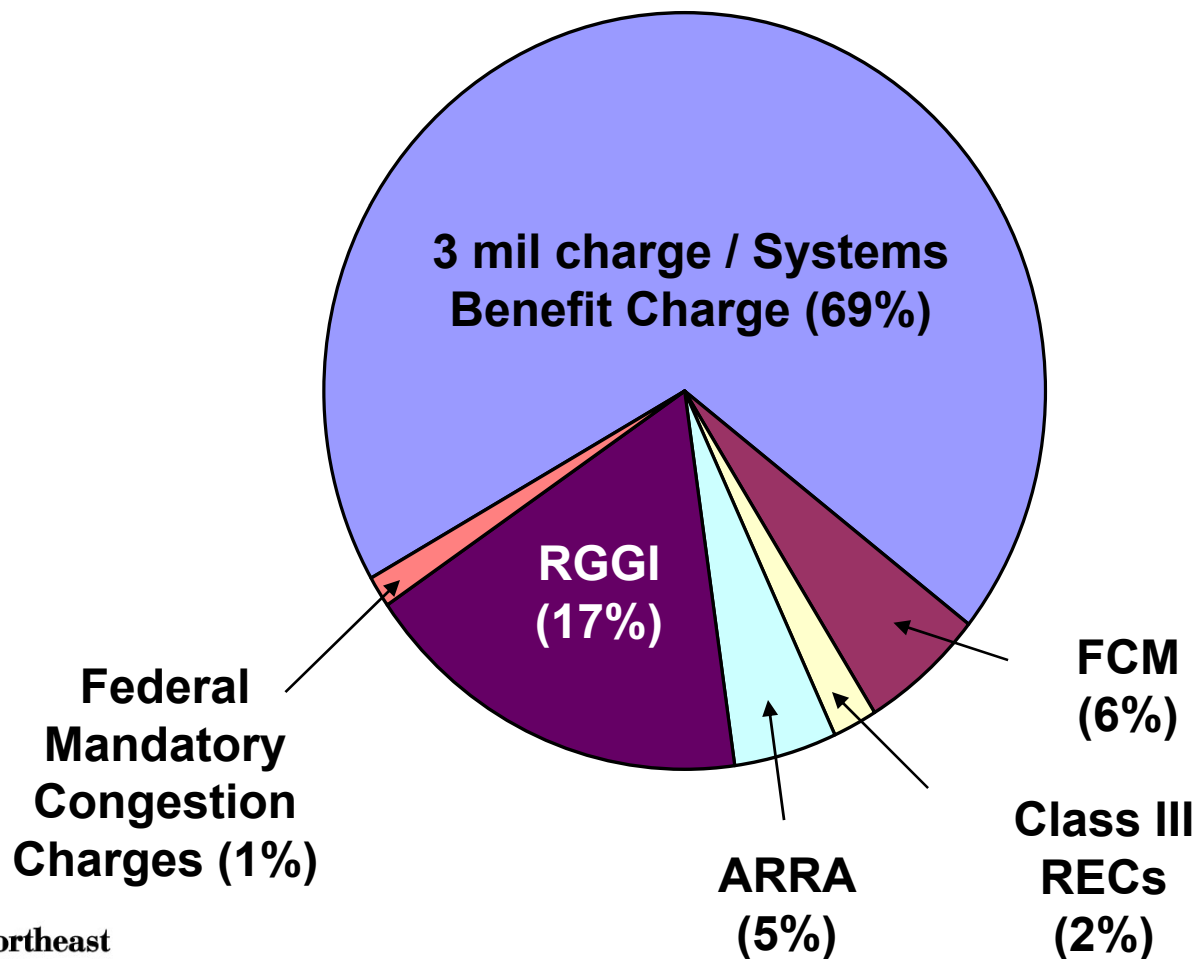
- Working with other utilities to support state plans to increase spend and scope of energy efficiency based on Green Communities Act mandate

# Energy efficiency challenges & opportunities

- > General funding
- > Financing options and performance-based contracting
- > Program management opportunities
- > New technology developments
- > Feedback mechanisms to drive conservation
- > Demand response through dynamic pricing enabled by smart meters

We will need to continue to work on expanding the number and size of funding sources.

### 2010 Proposed Program Revenues – CL&P (\$98.4M)



# Financing options and performance-based contracting

CT example

- > Loans for the Residential Sector:
  - › Limited Income Financing Program (Subsidized Loans) through the Connecticut Housing Investment Fund (“CHIF”)
  - › Third Party Financing program with Secured and/or Unsecured Loans
- > Loans for the Commercial and Industrial Sectors:
  - › Zero Percent, on-bill loan repayment provided to small businesses or municipal customers who participate in certain utility programs
- > Small Commercial & Industrial Loan Program
  - › Reduced Interest Rate Loans provided by third party financing entity.
- > Large C&I Loan Program (Loans from \$250,000 to \$1,000,000) [Proposed]
- > DPUC C&I Loan Program - Low-interest DPUC subsidized financing for energy efficiency projects greater than \$1,000,000.
- > Hospital Loan Program - Connecticut Hospital Association Trust loans for participating eligible health care facilities.

# Program management opportunities

- > Pursuing more comprehensive approaches – acquiring more savings per site, especially in the C&I sector.
- > Seeking additional funding opportunities (like stimulus in CT) that allow program offerings that include more non electric measures.
- > Addressing uncertainties in the CFL market by identifying new areas of opportunity (i.e., focusing on specialty bulbs).
- > Launching retrofit challenges/zero energy challenges to encourage communities to develop new market transformation ideas.
- > Redesigning programs to capture more energy savings available from control systems.

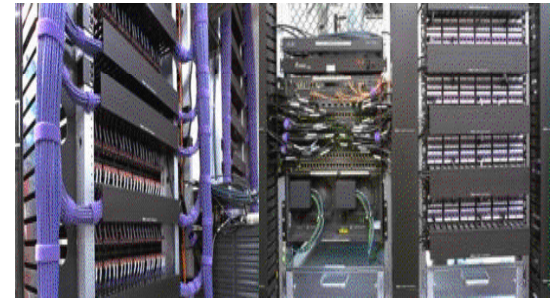
# New technologies – EPRI demonstration projects



**LED Street and Area Lighting**



**Variable Refrigerant Flow Air Conditioning**



**Efficient Data Centers**



**Hyper-Efficient Residential Appliances**



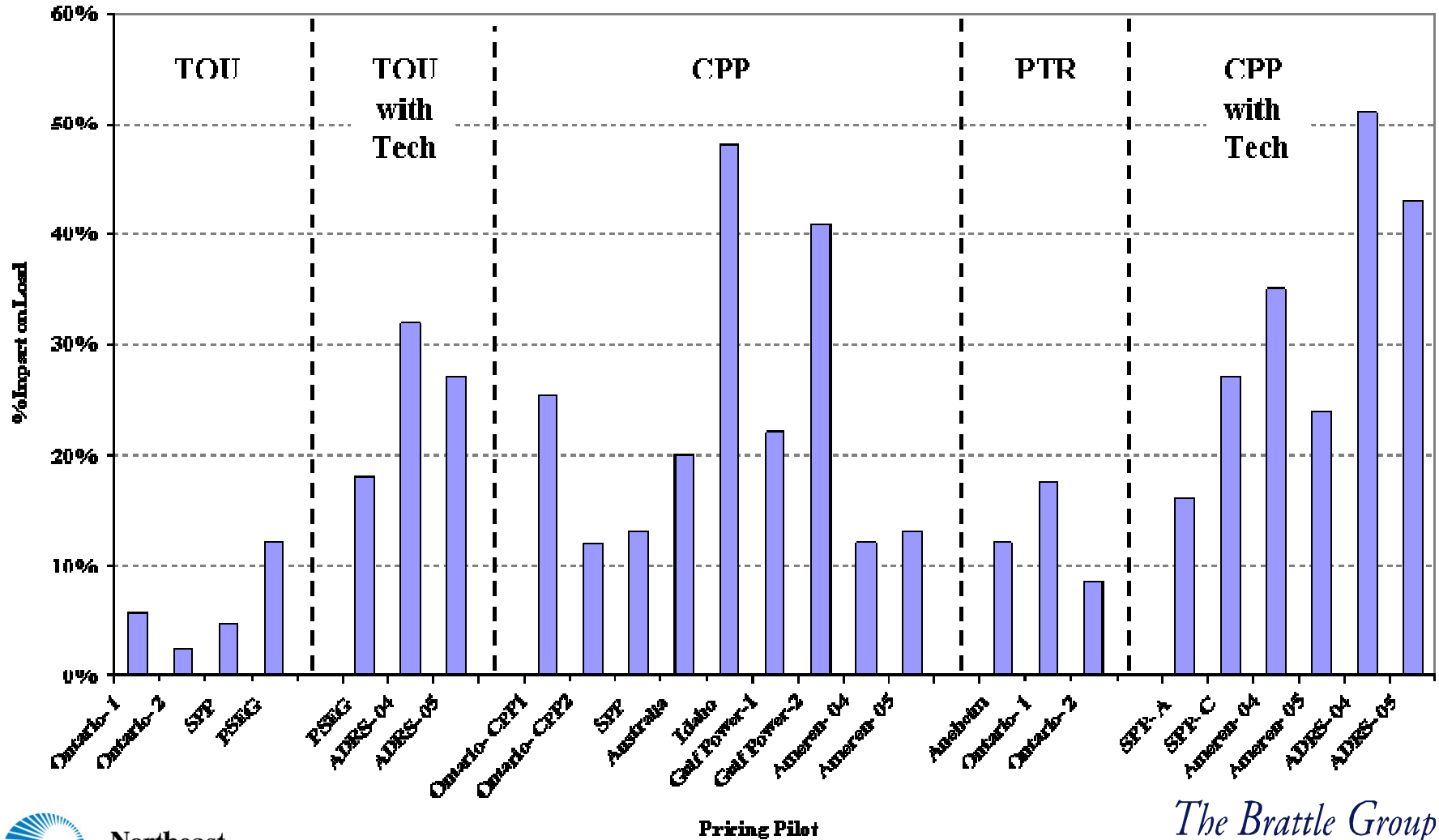
**Heat Pump Water Heaters**



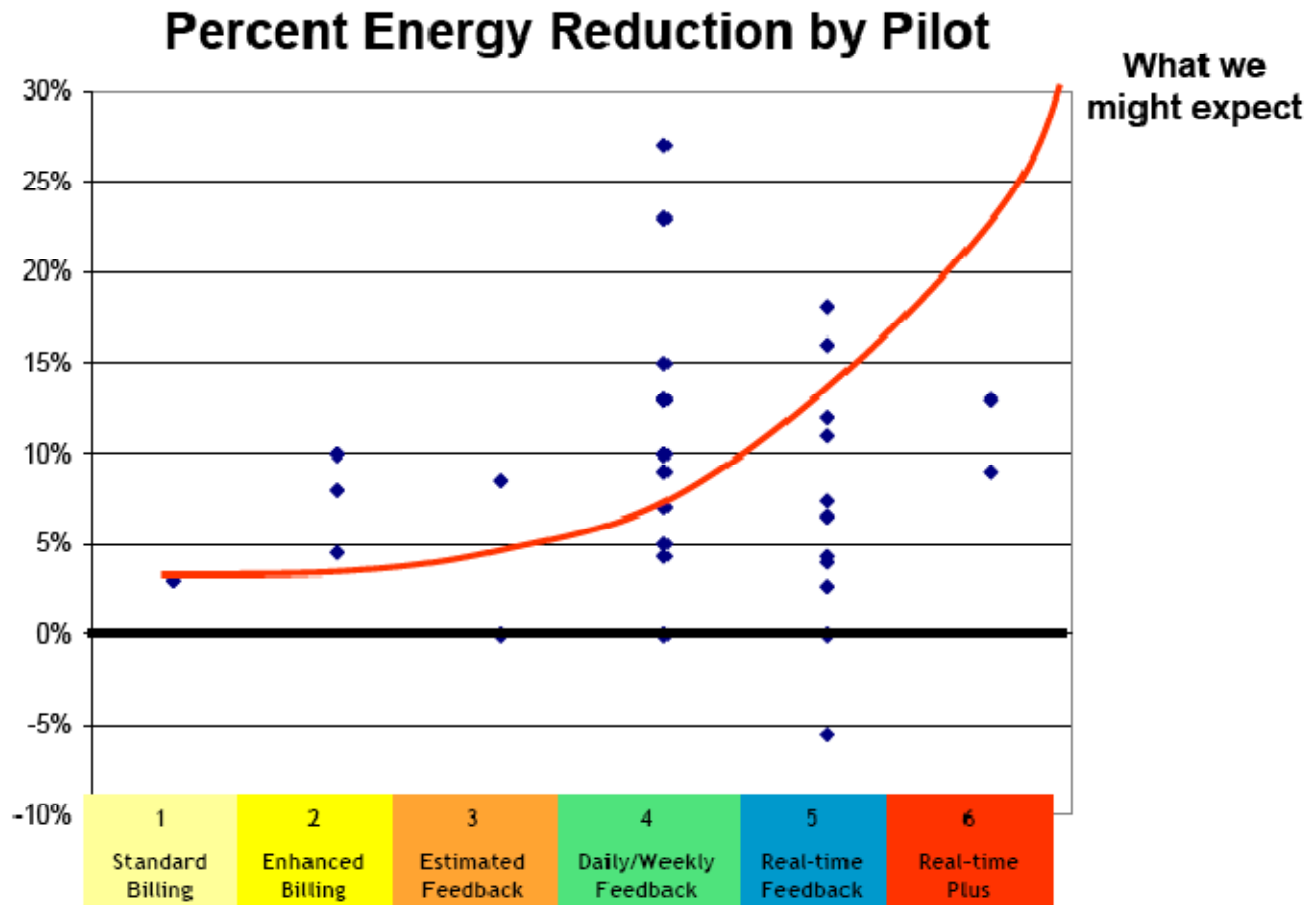
**Ductless Residential Heat Pumps and Air Conditioners**

# Demand response through dynamic pricing

Percentage Reduction Estimates from Different Pricing Pilots



# Conservation feedback



**Other factors are intervening, or more complex processes are involved**

Source: EPRI



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# Closing remarks

- > Energy efficiency is a key element in driving the discussion from “kWh saved” to “CO2 avoided”.
- > Energy efficiency can reduce customer bills during times of increased energy costs (i.e., promotes “smart growth”).
- > Utilities have a natural role in managing comprehensive energy efficiency programs due to their expertise, local energy brand recognition, integrating with pricing/metering technologies, financial accountability for program management, integration across fuel opportunities and low cost customer access
- > Energy efficiency has to make business sense to be a viable, growing business.

# Questions?

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