



# Update on Energy Efficiency Opportunities in the Commonwealth

Pertinent New England Energy Issues  
Energy Efficiency, Natural Gas Issues/Costs and Energy Outlook  
January 4, 2011

A forum sponsored by the New England Association of Energy Engineers

David Cash  
Commissioner  
Department of Public Utilities



# Agenda

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Clean Energy Opportunities

Energy Costs Context

Review of Energy Efficiency Opportunities

Next steps



# Clean Energy Opportunities

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Patrick/Murray Administration's leadership designed to employ Energy Efficiency and Renewables to gain multiple benefits:

- Reduce energy costs and volatility
- Gain energy independence
- Grow clean energy sector/create jobs
- Reduce environmental impact

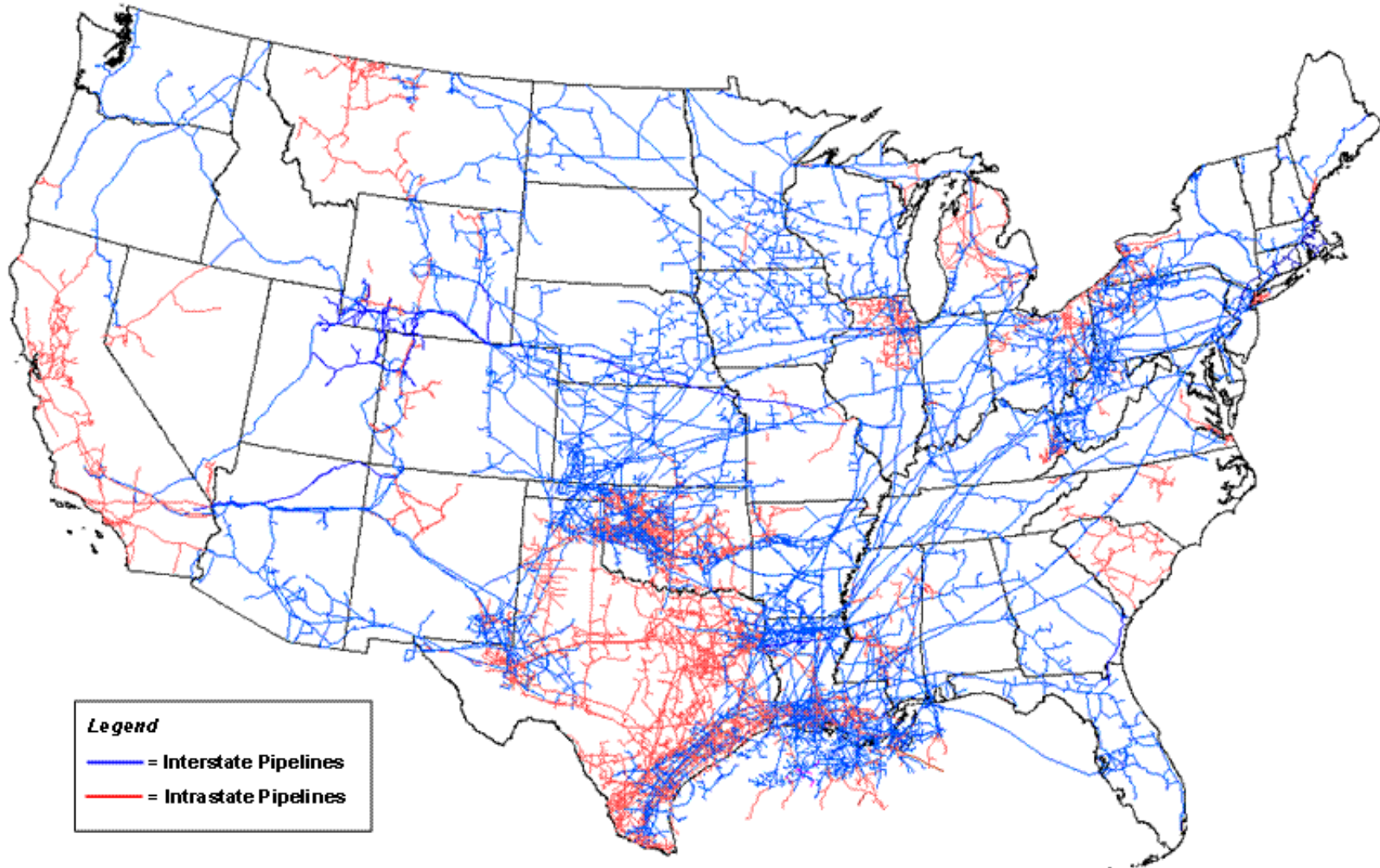


# Energy Cost Context

(or, Why Energy Efficiency  
Makes Sense)



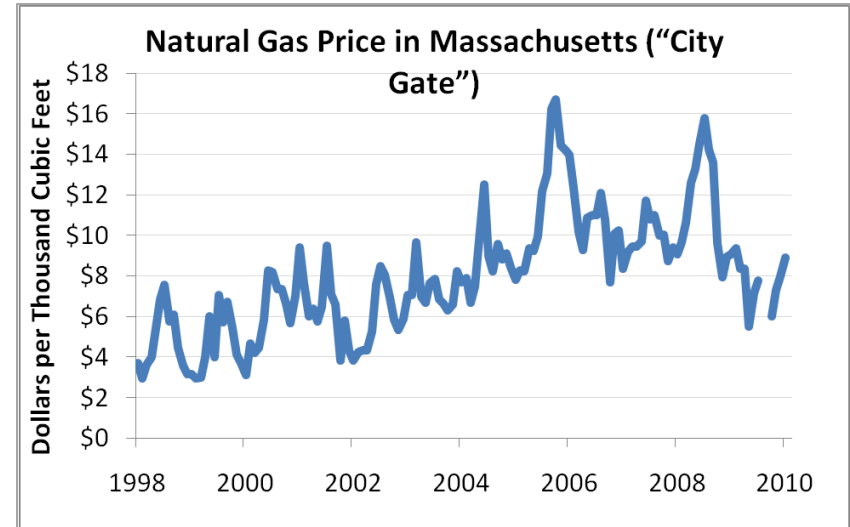
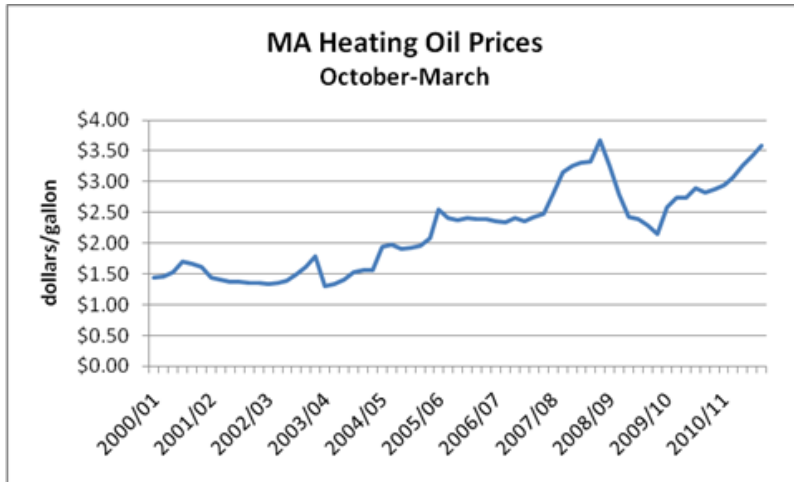
# Mass. is at the End of the Energy Pipeline



**Legend**  
— = Interstate Pipelines  
— = Intrastate Pipelines

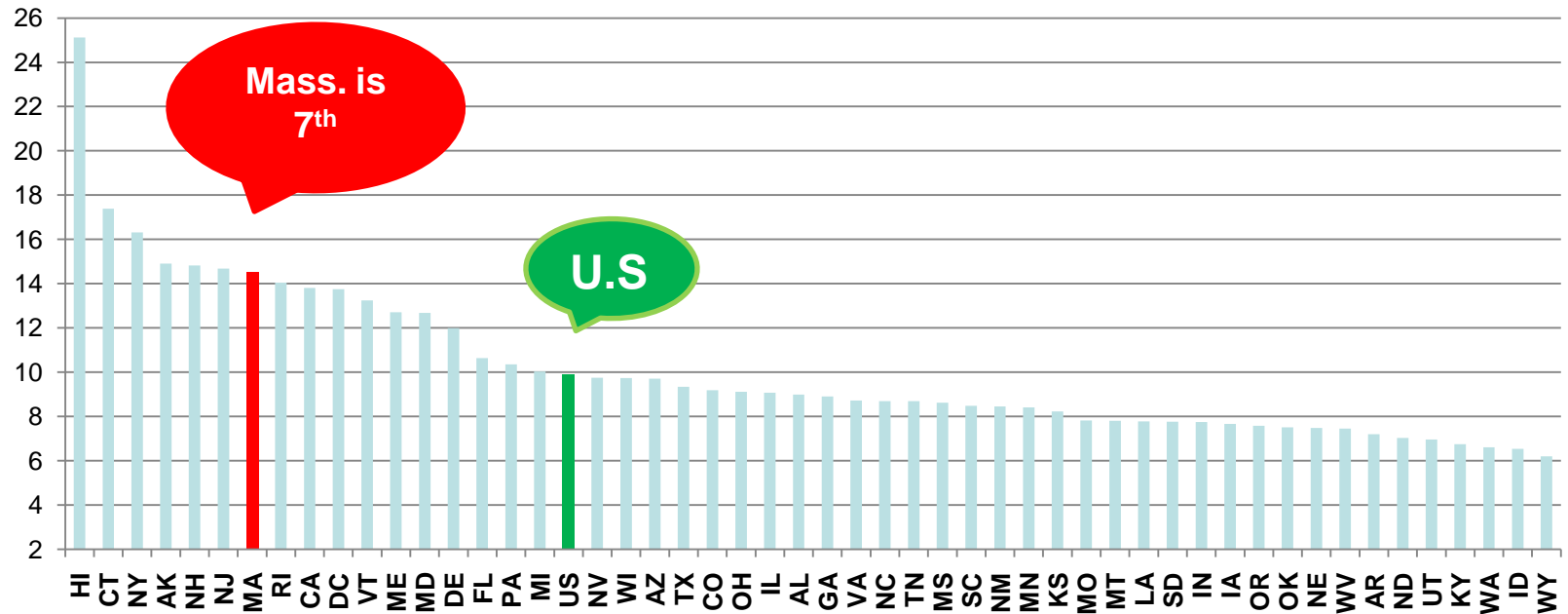


# Energy Costs: Increasing and Volatile



# Mass. Has High Electricity Prices

## 2010 Average Retail Electricity Price c/kWh



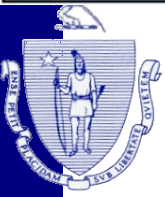
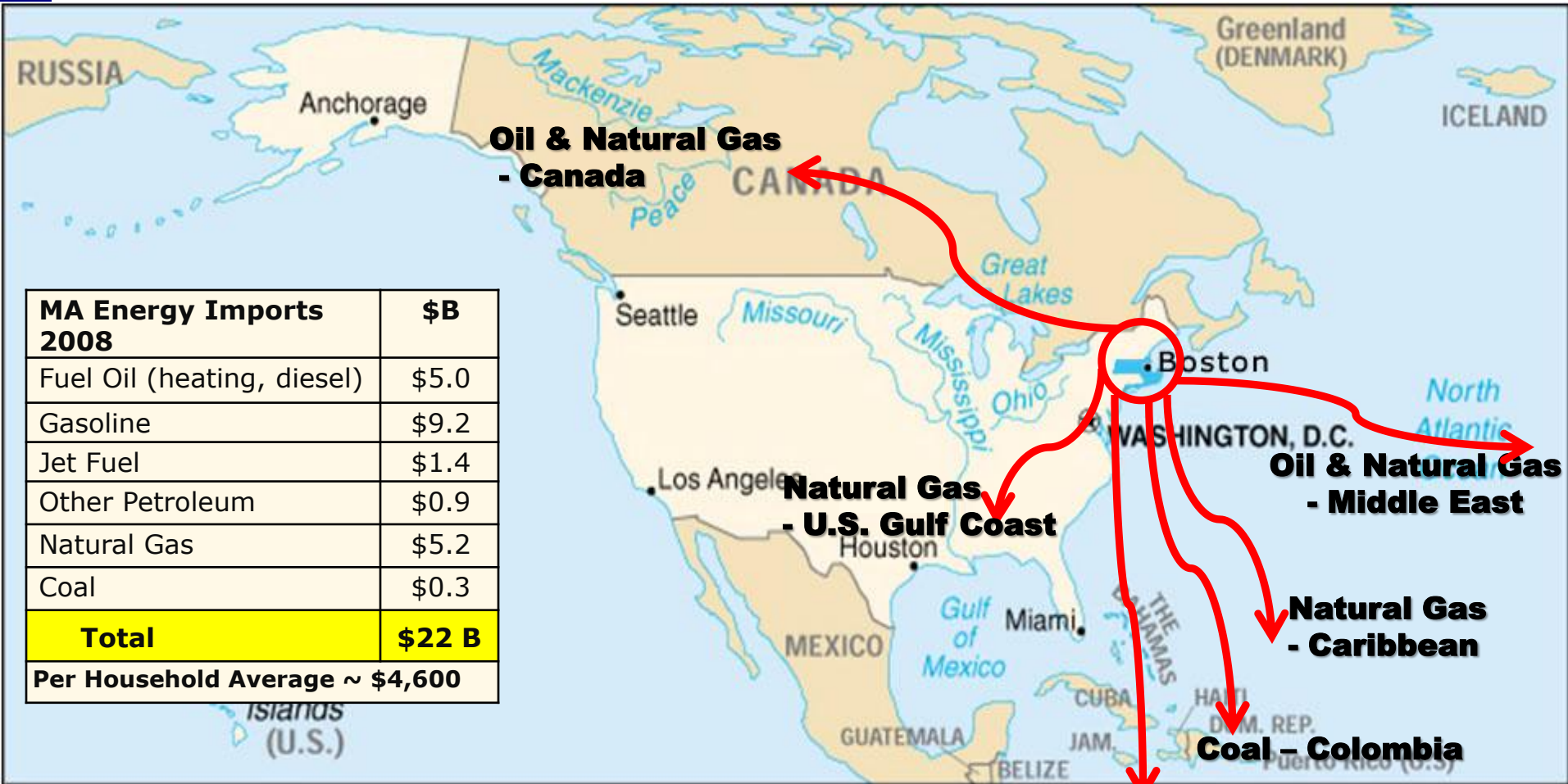
Source: EIA Form 826



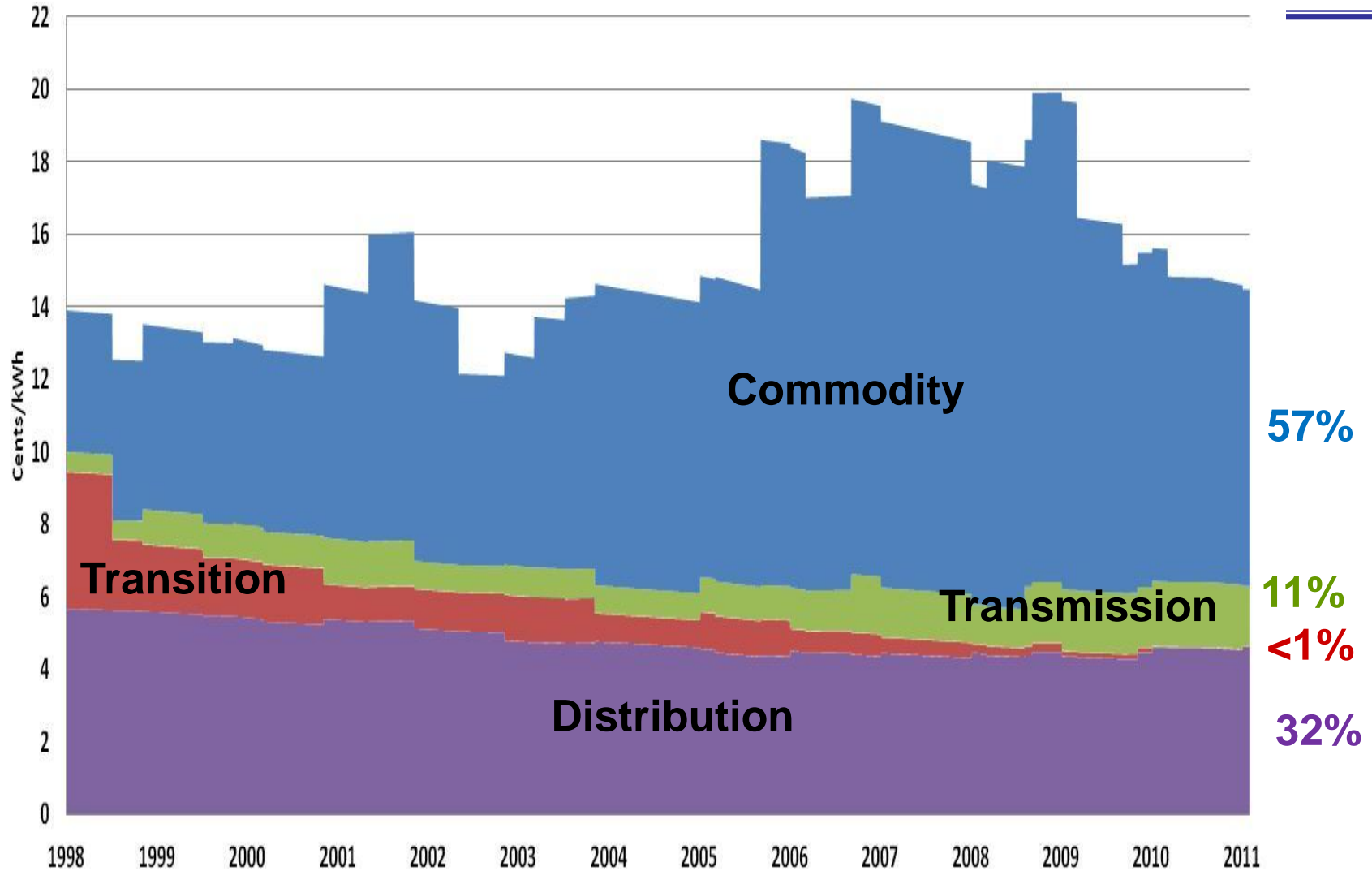
# Energy Dollars Flow Out of MA

We spend **\$22B** per year on energy; 80% leaves MA -- **\$18B**

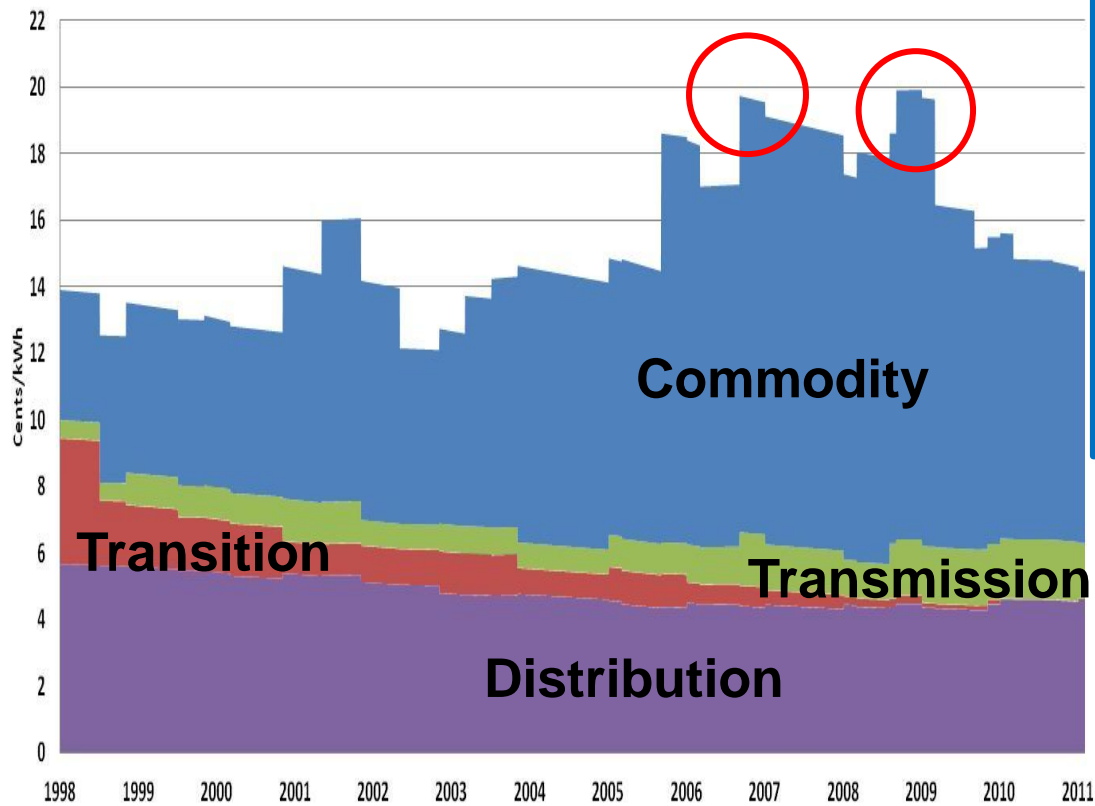
MA Energy Imports 2008	\$B
Fuel Oil (heating, diesel)	\$5.0
Gasoline	\$9.2
Jet Fuel	\$1.4
Other Petroleum	\$0.9
Natural Gas	\$5.2
Coal	\$0.3
<b>Total</b>	<b>\$22 B</b>
Per Household Average ~ \$4,600	



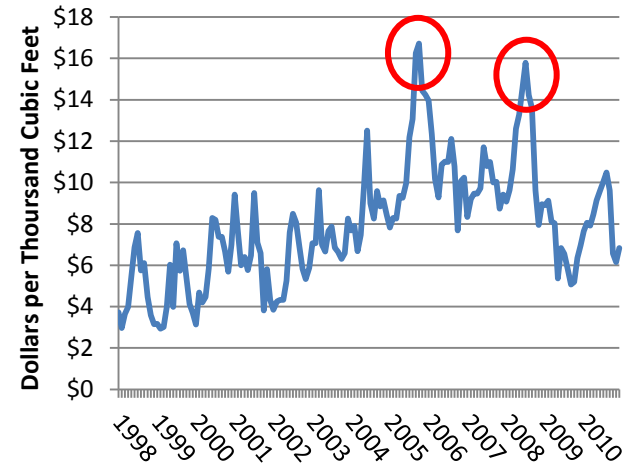
# Average Residential Electric Rates (adjusted for inflation)



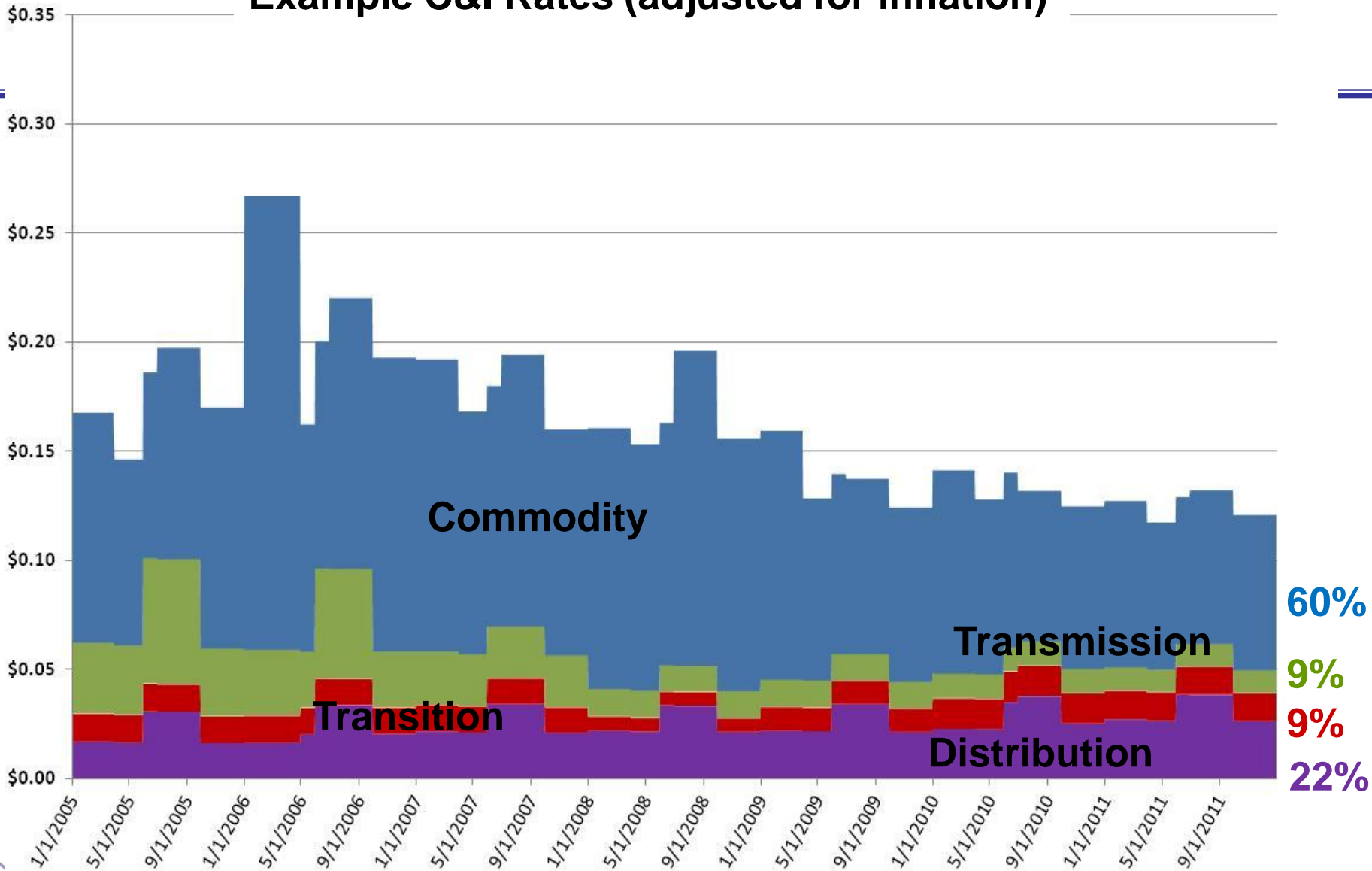
**Average Residential Rates (adjusted for inflation)**



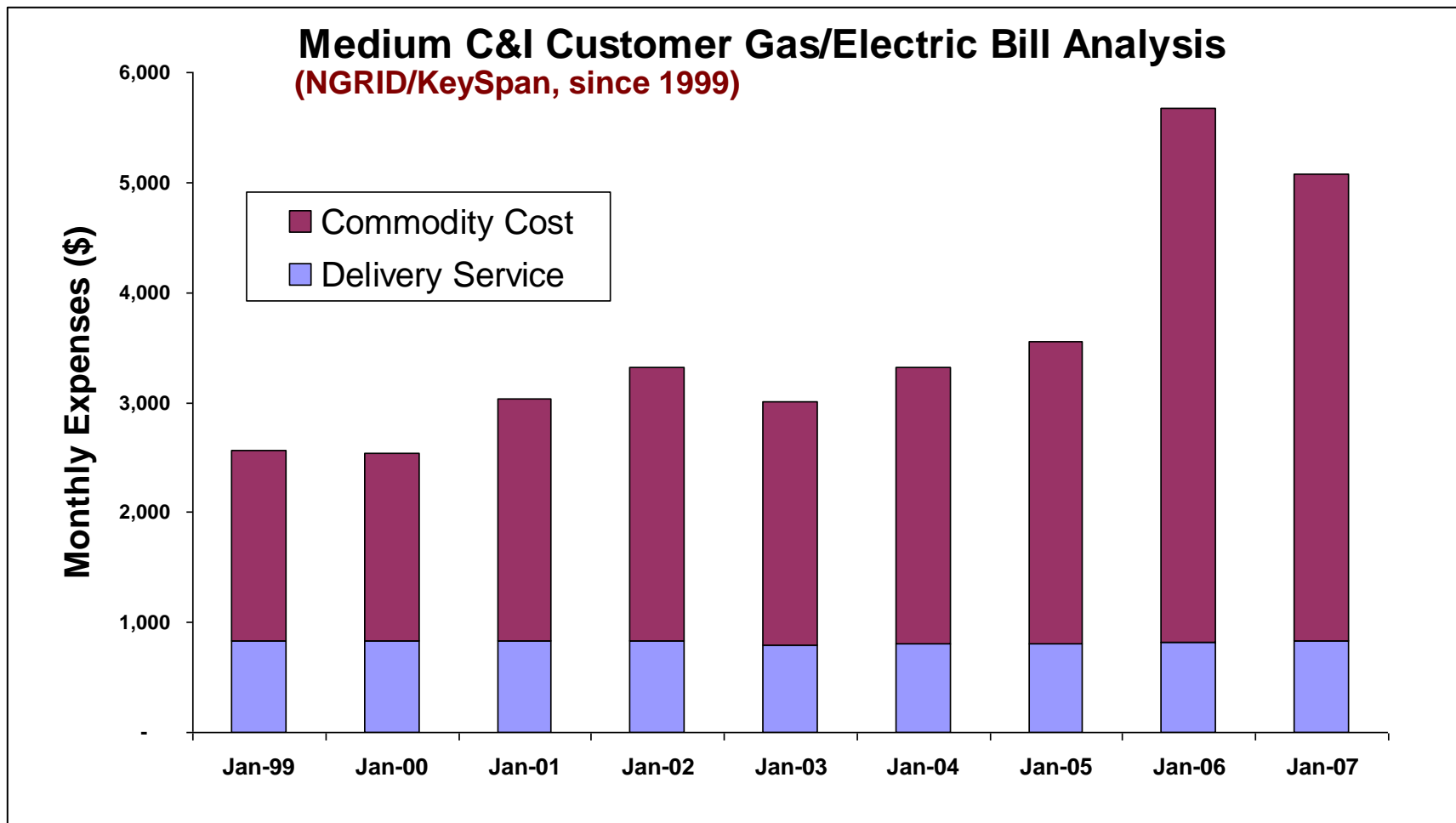
**MA Natural Gas Prices**



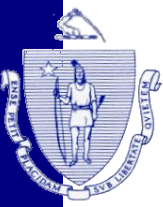
# Example C&I Rates (adjusted for inflation)



# Combined Gas and Electric Monthly Bills



**Level and Variation in Red Bar Driven By Market Price of Natural Gas**



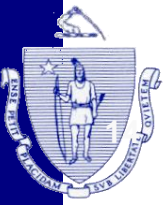
# Why Energy Efficiency?



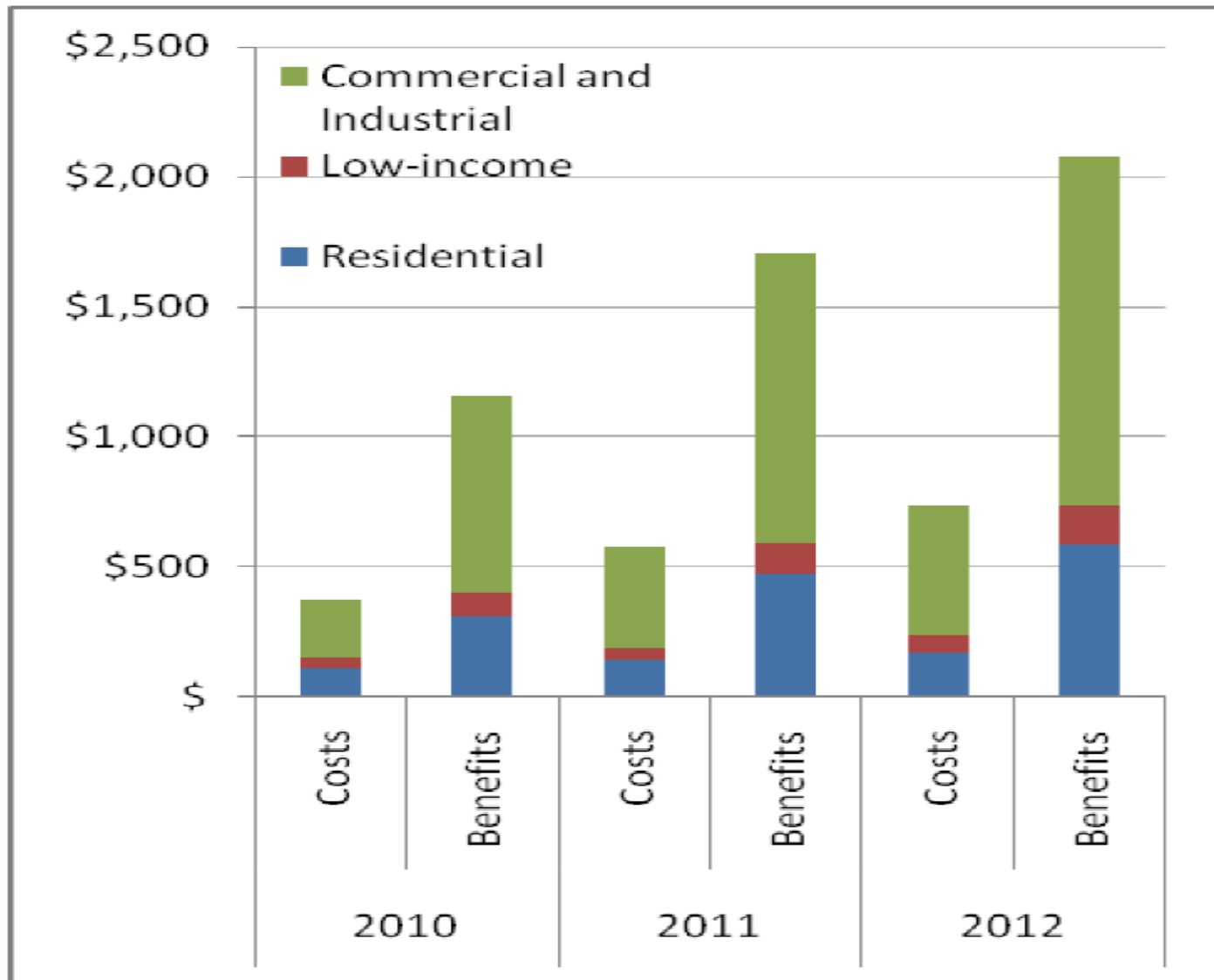
# Energy Efficiency: Our First Fuel

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- Energy efficiency is the cheapest way to decrease the “commodity” part of energy bills.
- Keeps energy dollars in Massachusetts in two ways:
  - Savings stay with residential and business customers
  - Paying for energy services
- Grows clean energy jobs: efficiency services has doubled since 2007; plans expected to add 4,000 jobs - all along the value chain.



# Energy Efficiency Benefits far outweigh Costs



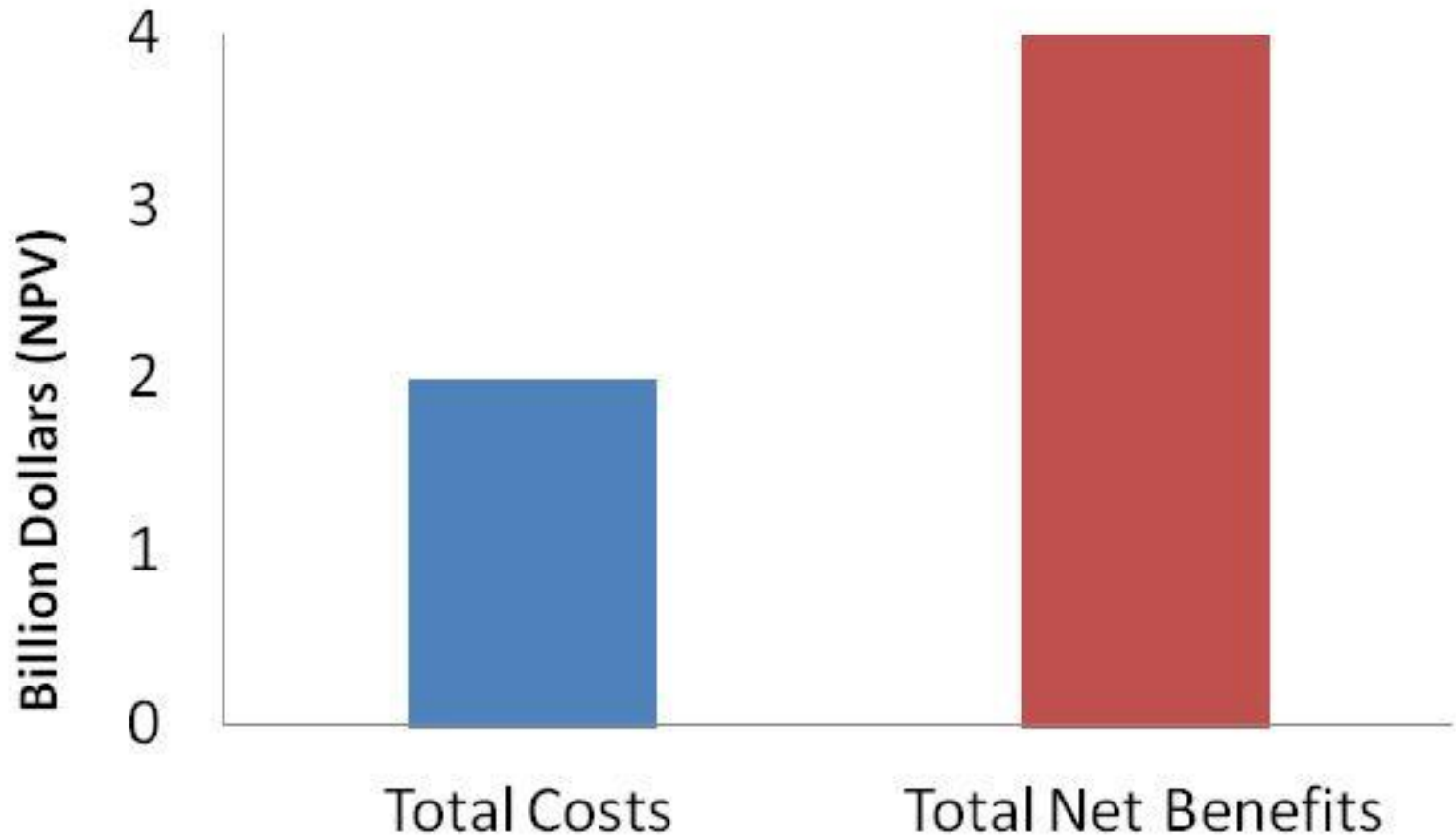
From:  
Recent Electricity Market  
Reforms in Massachusetts  
*A Report of Benefits and Costs*

Executive Office of Housing and Economic Development  
Executive Office of Energy and Environmental Affairs

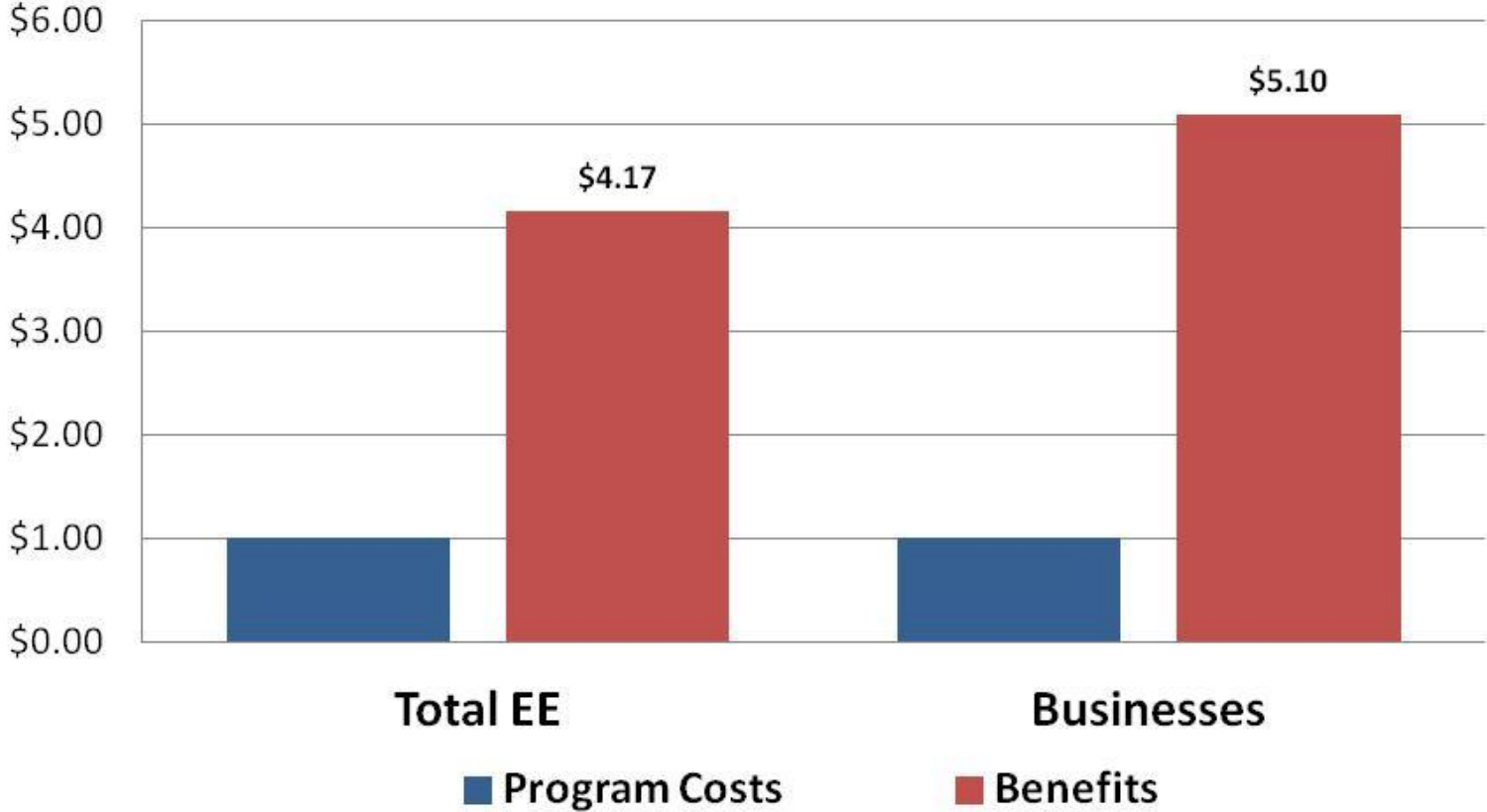
July 2011



# Total Costs & Net Benefits of Energy Efficiency



# Program Costs & Net Benefits of Energy Efficiency



# Review of Energy Efficiency Programs



# Energy Efficiency

## Green Communities Act of 2008

- **All Cost Effective Energy Efficiency**
  - Residential
  - Commercial
  - Industrial
- **Decoupling**
- **Standards and Codes**  
Intrinsic market driver for energy efficiency
- **Green Communities Division**



# Green Communities Division

## Programs & Resources for Municipalities

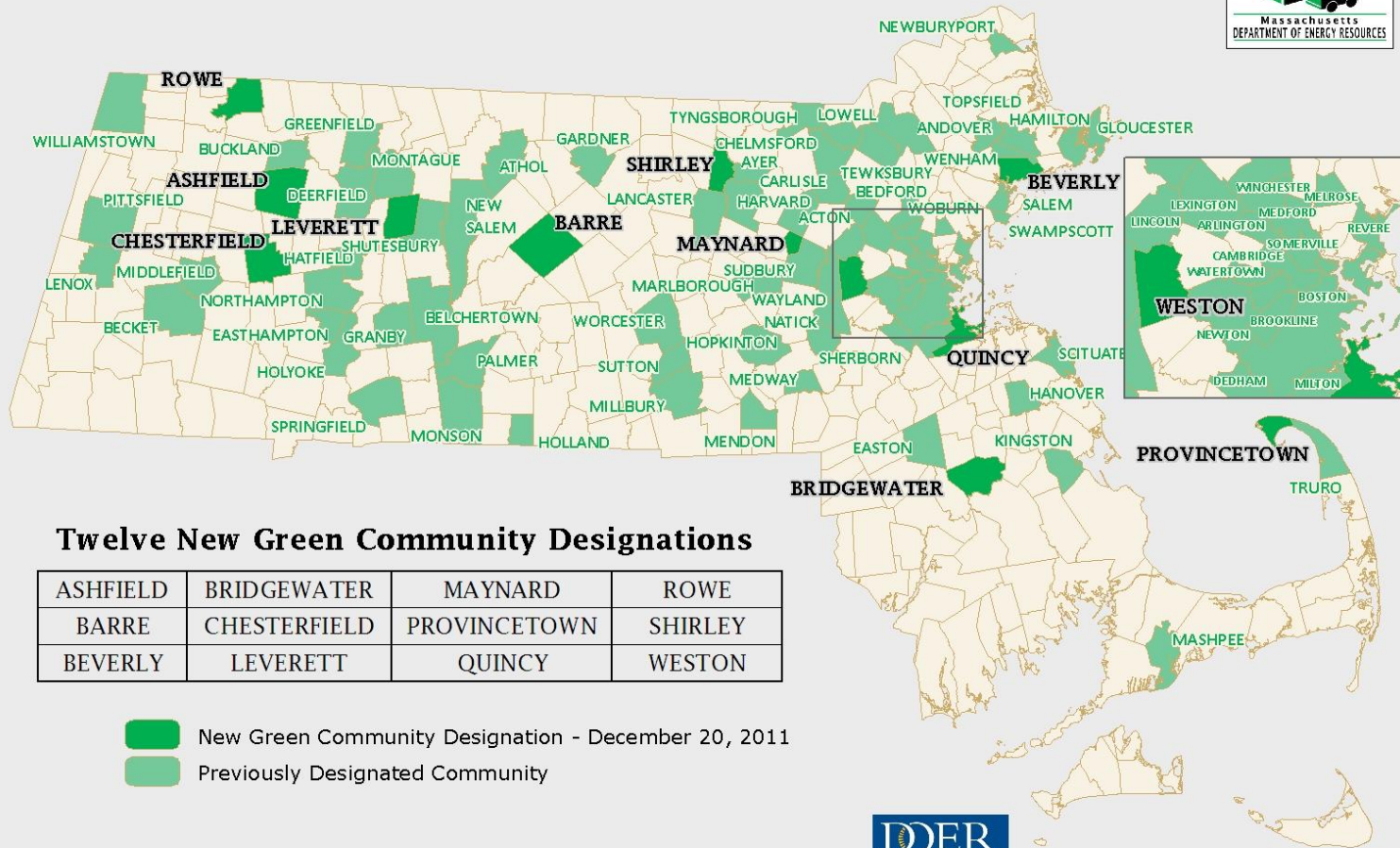
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- Green Communities Designation and Grant Program
- MassEnergyInsight energy tracking and analysis tool
- Municipal Energy Efficiency Program
- Energy Management Services Technical Assistance
- ARRA stimulus funding
- Website filled with tools & resources  
[www.mass.gov/energy/greencommunities](http://www.mass.gov/energy/greencommunities)
- Email updates via listserv – Sign up by sending an email to: [join-ene-greencommunities@listserv.state.ma.us](mailto:join-ene-greencommunities@listserv.state.ma.us)



# Green Communities Division

## GREEN COMMUNITY DESIGNATIONS REACH EIGHTY-SIX



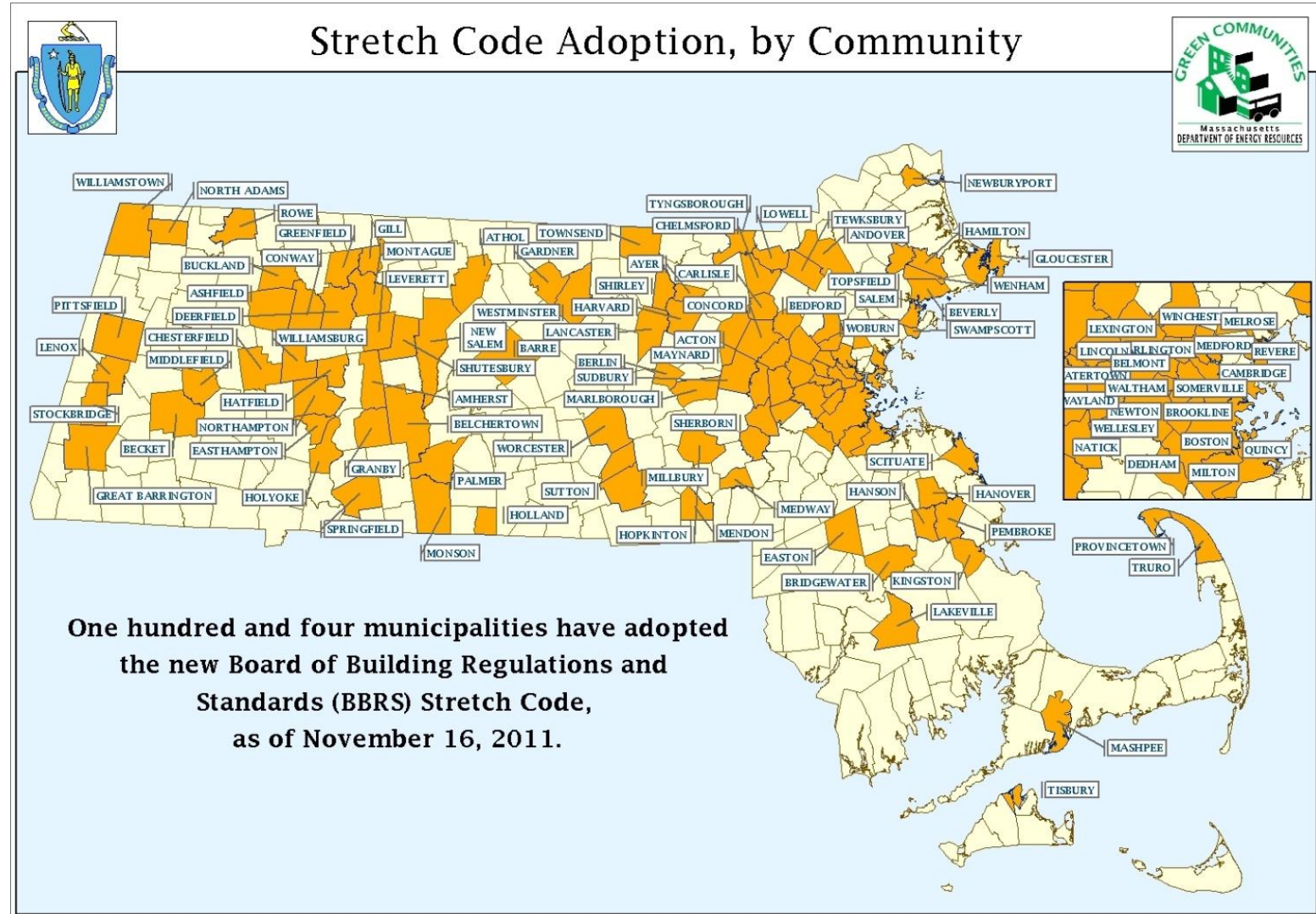
40 Miles



J. Pfister, 12-21-11

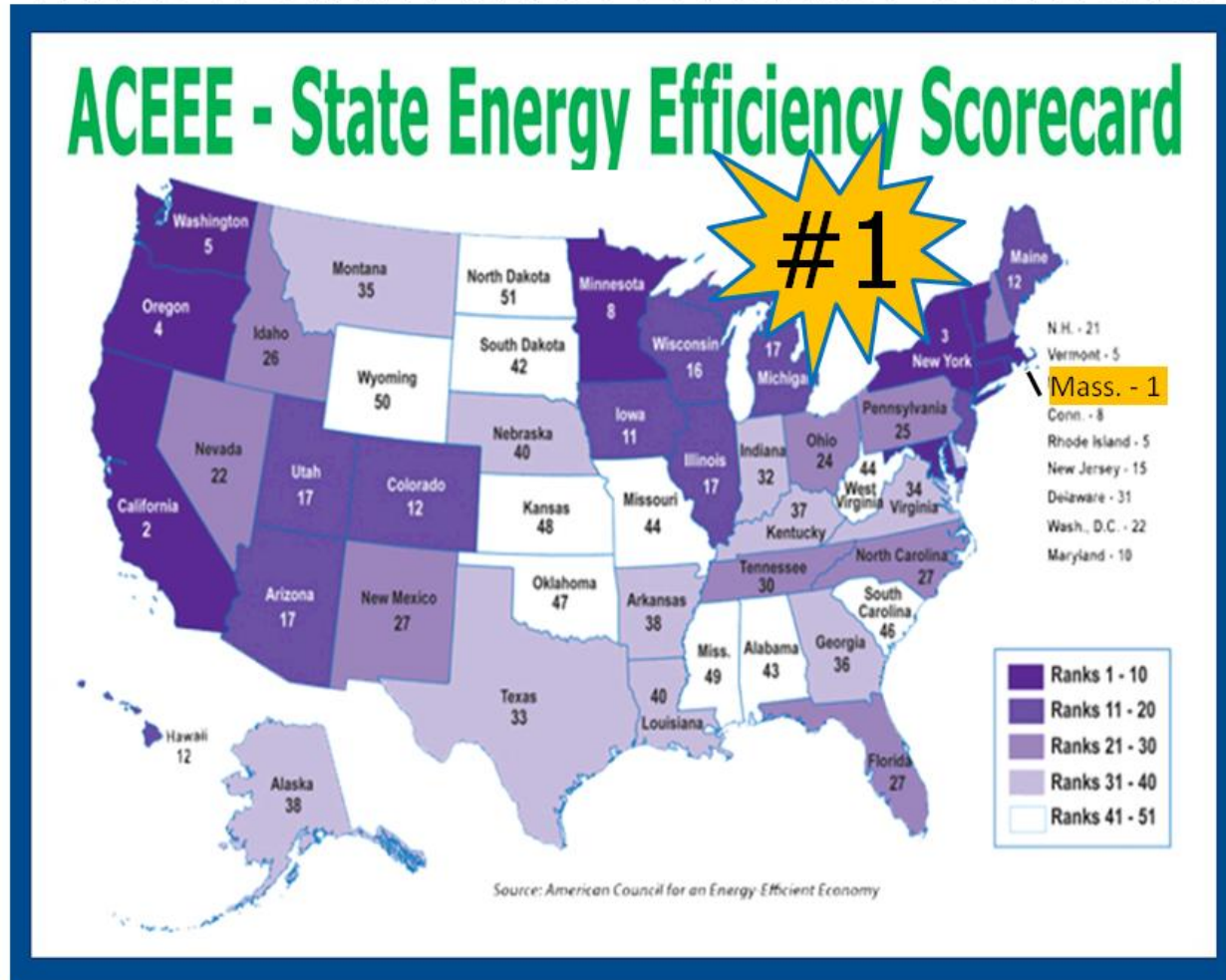


# Adoption of Stretch Code



# ACEEE: #1 State in Energy Efficiency

## THE 2011 STATE ENERGY EFFICIENCY SCORECARD



# New Approaches

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- Statewide programs
  - Integrated gas & electric programs - Utilities
  - Streamlining, reducing costs
  - Single efficiency brand and marketing
- CHP program
- Technical assistance
- Proactive outreach and education to customers
- Financing Tools
- Pilots to figure out more/better/faster
  - Behavior (residential/commercial)
  - Deep Energy Retrofit
  - Building Labeling Pilots
- Grid Modernization



[www.MassSave.com](http://www.MassSave.com)



# Building Labeling Pilots

A catalyst for energy retrofits

## 1. Commercial Building Labeling Pilot

- DOE grant
- Barr Foundation Grant
- Boston, Cambridge, Merrimack Valley
- Focus on the building, not the operations

## 2. Residential Pilot in Greater Springfield

- Miles Per Gallon for your home
- Every Audit gets a rating
- Customized website per home
- Financing package as part of scope of work

**Labeling process must create a path for better energy efficiency and savings**



### Bldg Asset Rating

100 Cambridge Street, Boston, MA 20114



#### US B.A.R. RATING:

**B<sub>2</sub>**

Square Feet:	90,000		
Fuel (Site):	Natural Gas		
Fuel (Source):	Coal		
Carbon:	10,000 tons/yr		
<b>EU1:</b>	<b>125</b>	Regional Average	Performance Rating
HVAC:	45%	47%	A1
Lighting:	35%	33%	A3
Plug Load:	20%	20%	B3
Heating System Effic.	87%	90%	C1
<b>Building Envelope:</b>			
Thermal Insulation:	R-35	R-27	B3
Air Leakage:	.23	.29	B2
<b>Glazing:</b>			
SHGC	32	25	A3
U-Value	.28	.35	A3

#### Renewables:

250 kW Solar Array	A2
1 MW CHP	A1

# Energy Efficiency Financing Options

- Mass Save offers 0% loans up to \$100,000
- Clean Energy Investment Program for state facilities
- PACE program under development

Commercial & Industrial Financing (Incl. Multi-Family and Non-Profit)	Federal	State	MUSH*	Industrial/Large C&I	Commercial Properties	Small C&I
<b>Loans</b>						
Mass Save <sup>®</sup> Financing	○	◐	●	●	●	●
Commercial PACE/Equity Investment	○	○	◐	◐	◐	◐
Construction Loan	○	○	◐	●	●	◐
Commercial Loan/Line of Credit	○	○	◐	●	●	◐
Vendor Financing	○	○	◐	●	●	●
Consumer Lending (Personal loan, HELOC, etc.)	○	○	○	○	○	●
<b>Energy Performance Contracts</b>						
Energy Service Agreement	●	●	●	●	◐	◐
Shared Savings Agreement	●	●	●	●	◐	◐
Guaranteed Savings Agreement	●	●	●	●	◐	◐
<b>Leases</b>						
Capital/Operating/Seasonal/True Lease	○	○	◐	●	●	◐
Tax Exempt Lease-Purchase Agreement	○	●	◐	○	○	○
Commercial Equipment Lease	○	○	◐	●	●	◐
Federal Alternative Finance Contract	●	○	○	○	○	○
<b>State Sponsored Financing for Private &amp; Non-Profit Industry</b>						
Boston Local Development Corporation (BLDC)	○	○	○	◐	◐	●
Boston Industrial Development Financing Authority (BIDFA)	○	○	◐	●	●	○
Massachusetts Development Corporation	○	○	◐	●	●	○

● Applicable      ◐ Somewhat Applicable      ○ Not Applicable

\* Municipal, University, School, Hospital



# Next Steps with Energy Efficiency

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- Stakeholder engagement in 3 year plans 2013-2015
- Continue focus on cost-effectiveness
- Identify needs, gaps, and opportunities
- Evaluation Measurement and Verification (EM&V) review
- Market characterization



# END

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