

Creating A Cleaner Energy Future For the Commonwealth



Moving to performance-based energy code

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Division

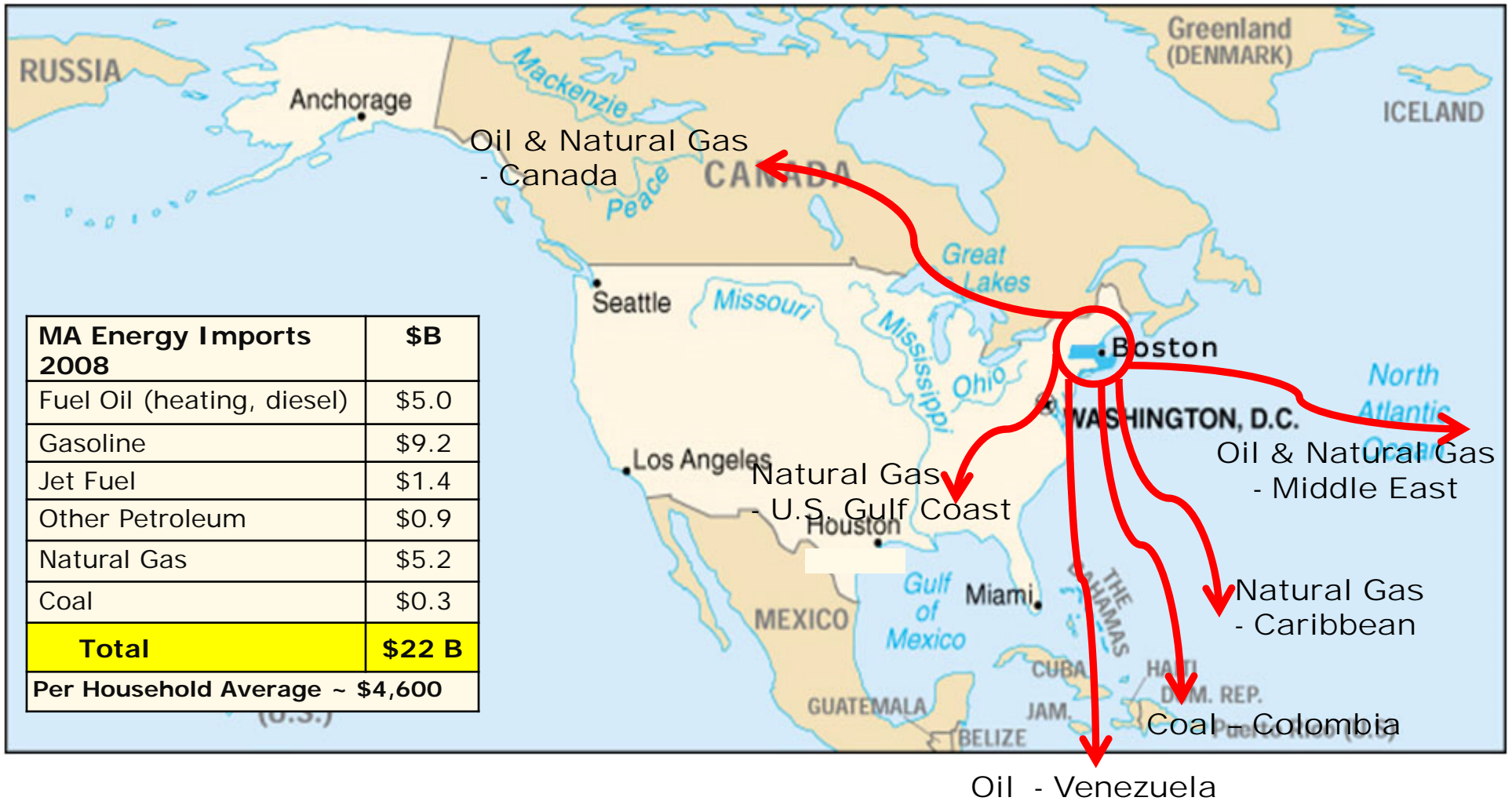
Outline

- Energy Context in MA
- Why Performance-based code?
- New Construction: Stretch energy code
- Existing buildings: Energy Ratings
- Lessons learned to date



\$18B year Energy Dollars Flow Out of MA

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



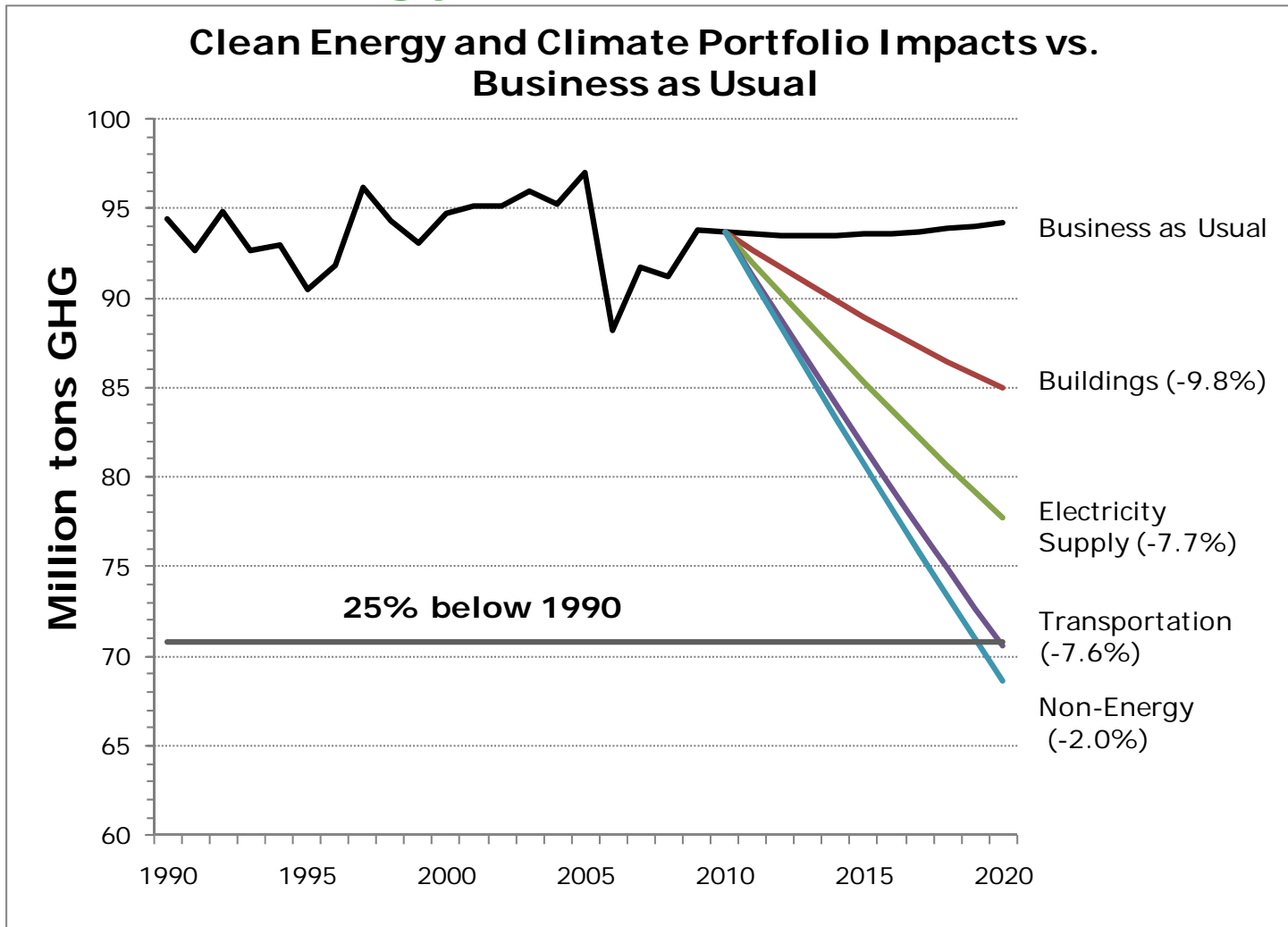
MA Energy Imports 2008	\$B
Fuel Oil (heating, diesel)	\$5.0
Gasoline	\$9.2
Jet Fuel	\$1.4
Other Petroleum	\$0.9
Natural Gas	\$5.2
Coal	\$0.3
Total	\$22 B
Per Household Average ~ \$4,600	

2008 Landmark Energy Legislation

- **Global Warming Solutions Act (GWSA)**
25% below 1990 statewide GHG by 2020
80% below 1990 GHG by 2050
- **Green Communities Act (GCA)**
Expanded energy efficiency programs
Energy code updates every 3 years
Municipal 'Green Communities' Program



Clean Energy and Climate Plan for 2020



1.6% of 25% goal for 2020: Advanced building energy codes

Why Performance-based code?



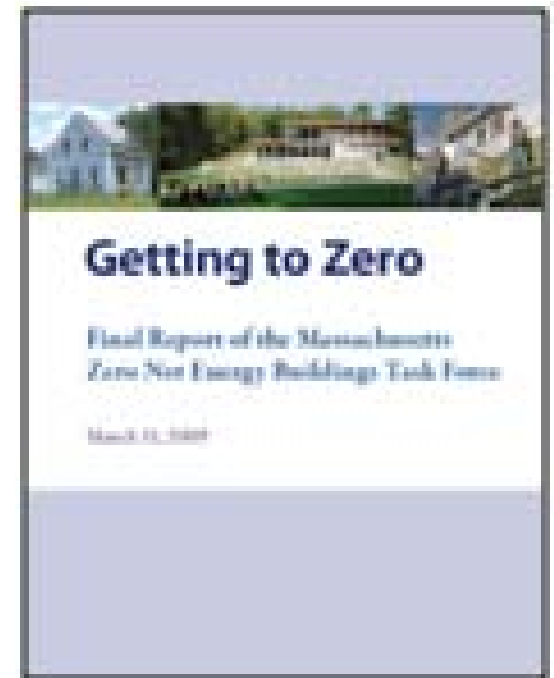
Zero Net-Energy Buildings Taskforce 2008 - 2009

Joint public & private sector taskforce

Report recommendations:

C1. Establish energy performance standards for new buildings and major renovations by building type

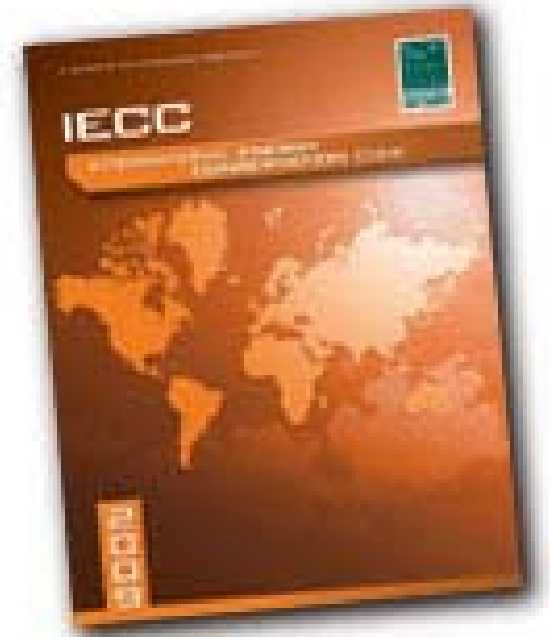
R1. Establish energy performance standards for new homes and major renovations based on HERS Index



<http://www.mass.gov/eea/docs/eea/press/publications/zneb-taskforce-report.pdf>

Base Energy Code

- IECC 2009/ASHRAE 90.1-2007 base code
 - Primarily ‘Prescriptive’ approach
 - Few design trade-offs
- Added HERS rating option
- Added Passivehaus option

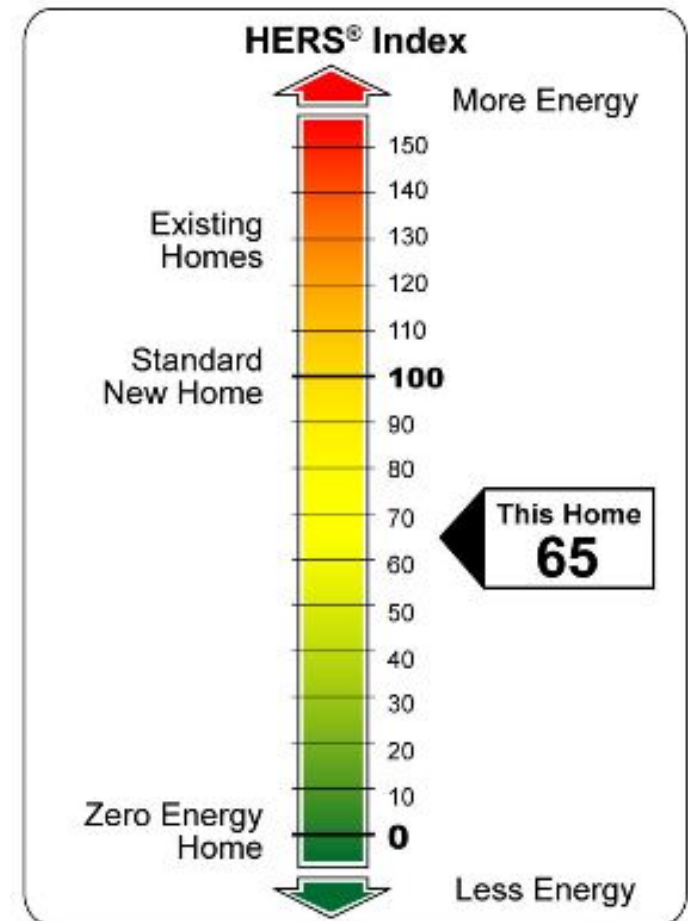


Stretch energy code



Residential– Stretch Energy Code

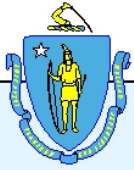
- 20% more energy efficient
- Required HERS index: 65 or 70
- Introduces 3rd party tester
- Blower door & duct test required
- Allows more design trade-offs



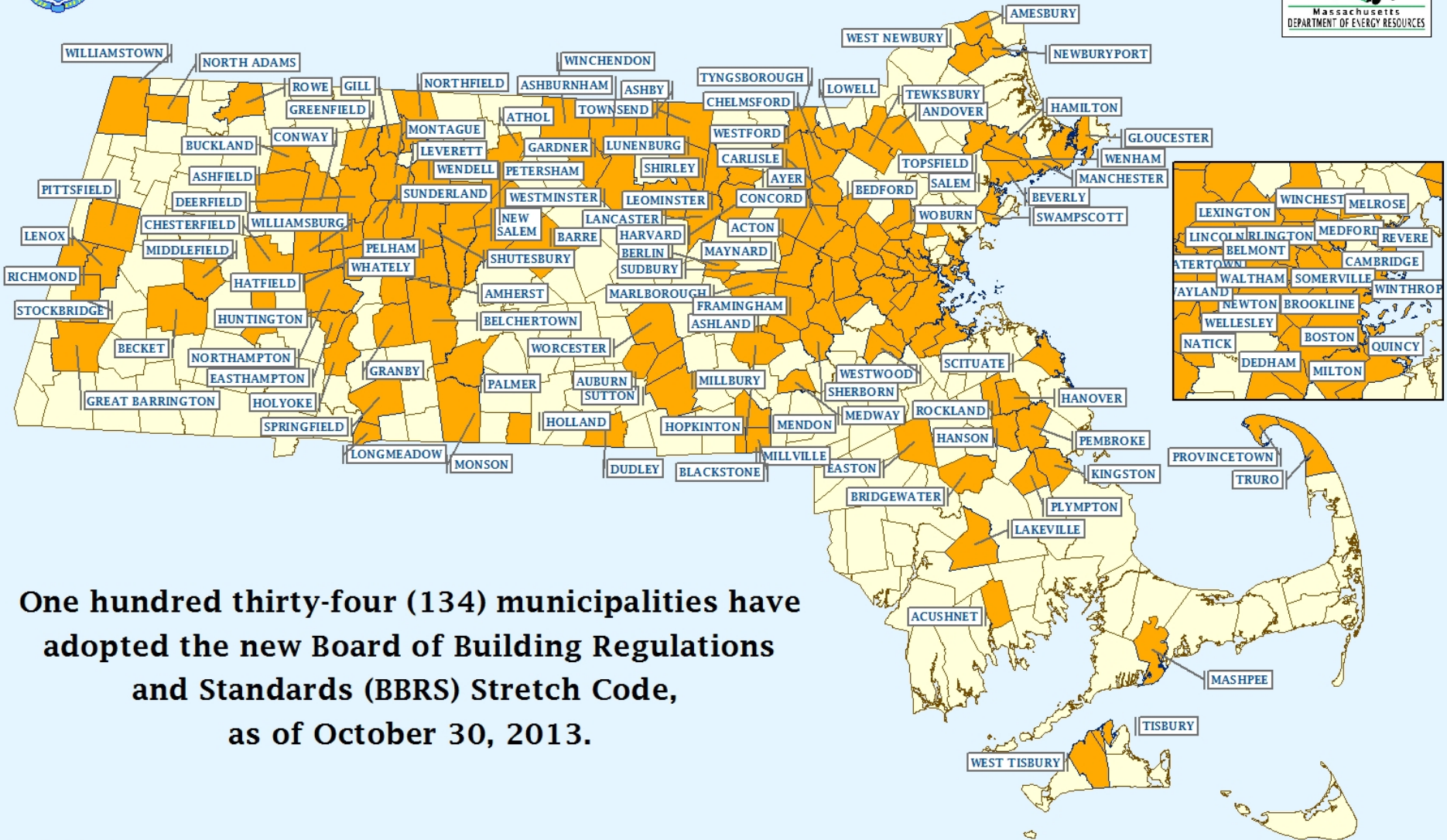
Commercial– MA Stretch code

- 20% more energy efficient
- ASHRAE 90.1 - Appendix G:
‘performance’ modeling option (USGBC)
- NBI developed ‘prescriptive’ option
- More design trade-offs
 - Lighting, HVAC, Renewables etc.



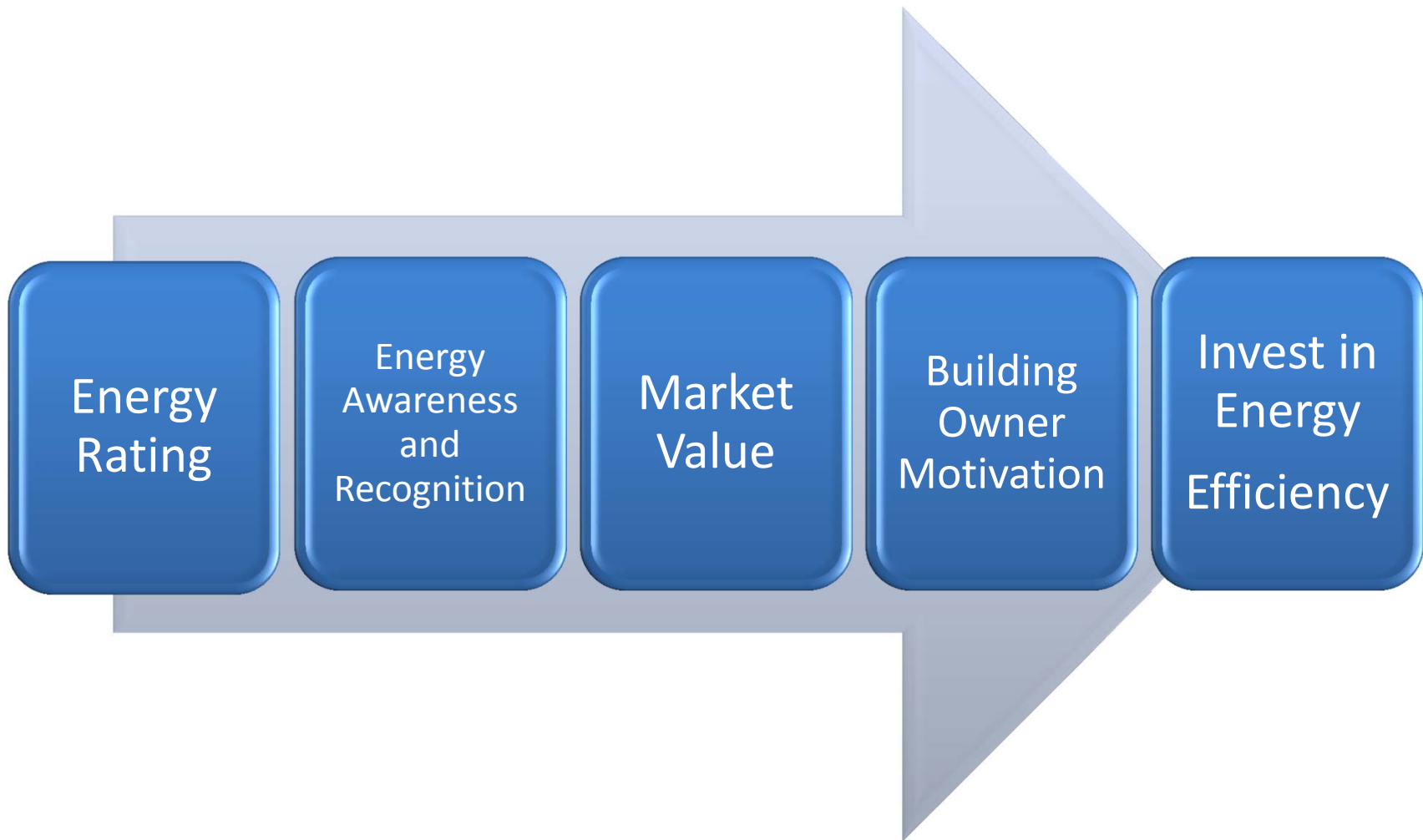


Stretch Code Adoption, by Community



One hundred thirty-four (134) municipalities have adopted the new Board of Building Regulations and Standards (BBRS) Stretch Code, as of October 30, 2013.

Pathway to EE investments



Existing Building Ratings



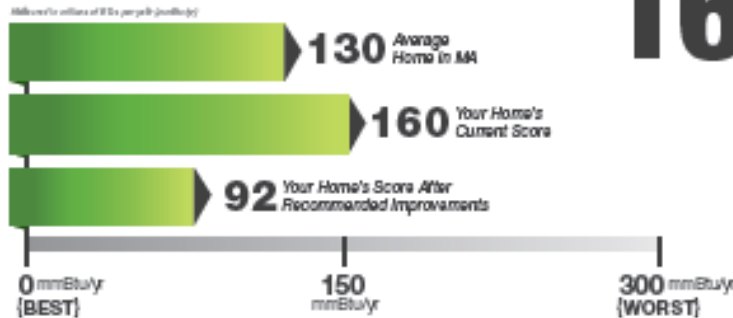


YOUR HOME'S ENERGY PERFORMANCE SCORE

Home MPG, a program within Mass Save®, provides you with your home's "miles per gallon" energy performance rating, called an "energy performance score" or EPS. By helping you better understand your home's energy use, Home MPG helps you make smart decisions about implementing improvements that make your home more energy efficient and reduce your energy costs.

Your Home's ENERGY PERFORMANCE SCORE

This score shows the estimated total energy use (electricity and heating fuel) of your home for one year. The lower the score, the better!



160

Estimated percentage of energy use by fuel type: Electric: <XXXX>, Natural Gas: <XXXX>

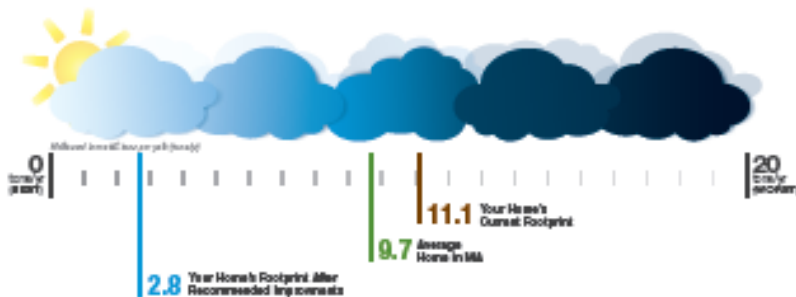
PREPARED FOR
<Customer Name>
<Customer Address>
<City>, <State> <Zip>
Ref #: <Site ID>

Year Built: <XXXX>
Sq Footage: <XXXX>
Bedrooms: <X>
Primary Heating Fuel: <XXXX>

EPS Report Date: <XX/XX/XXXX>
Energy Specialist: <Energy Specialist Name>

Your Home's CARBON FOOTPRINT

This score shows the estimated carbon emissions based on the annual amounts, types, and sources of fuels used in your home. The lower the score, the less carbon is released into the atmosphere to power your home.



11.1

Estimated average carbon footprint (tons/yr): Electric <XX>, Natural Gas <XX>

DOLLARS & SENSE

Current Estimated Energy Costs **\$2000** For Year



ESTIMATED ENERGY SAVINGS

\$1150 For Year

Based on implementing all of the recommended energy efficient improvements

Embedding performance in the buildings sector

- 134 Stretch Code Communities
- Existing Building labeling
 - Home MPG and Office 'BAR' pilots
- MEPA GHG modeling - large developments
- Green Schools - MA-CHPS incentives
- State buildings – MA LEED+ standard

Summary / Lessons Learned

- Integrate energy performance everywhere
 - With prescriptive back-stops
- Build on existing above-code programs
 - HERS & LEED
- Legislation helps drive a change in mindset
- Training is a valuable outreach opportunity
- Customers want more information
- Local government can help