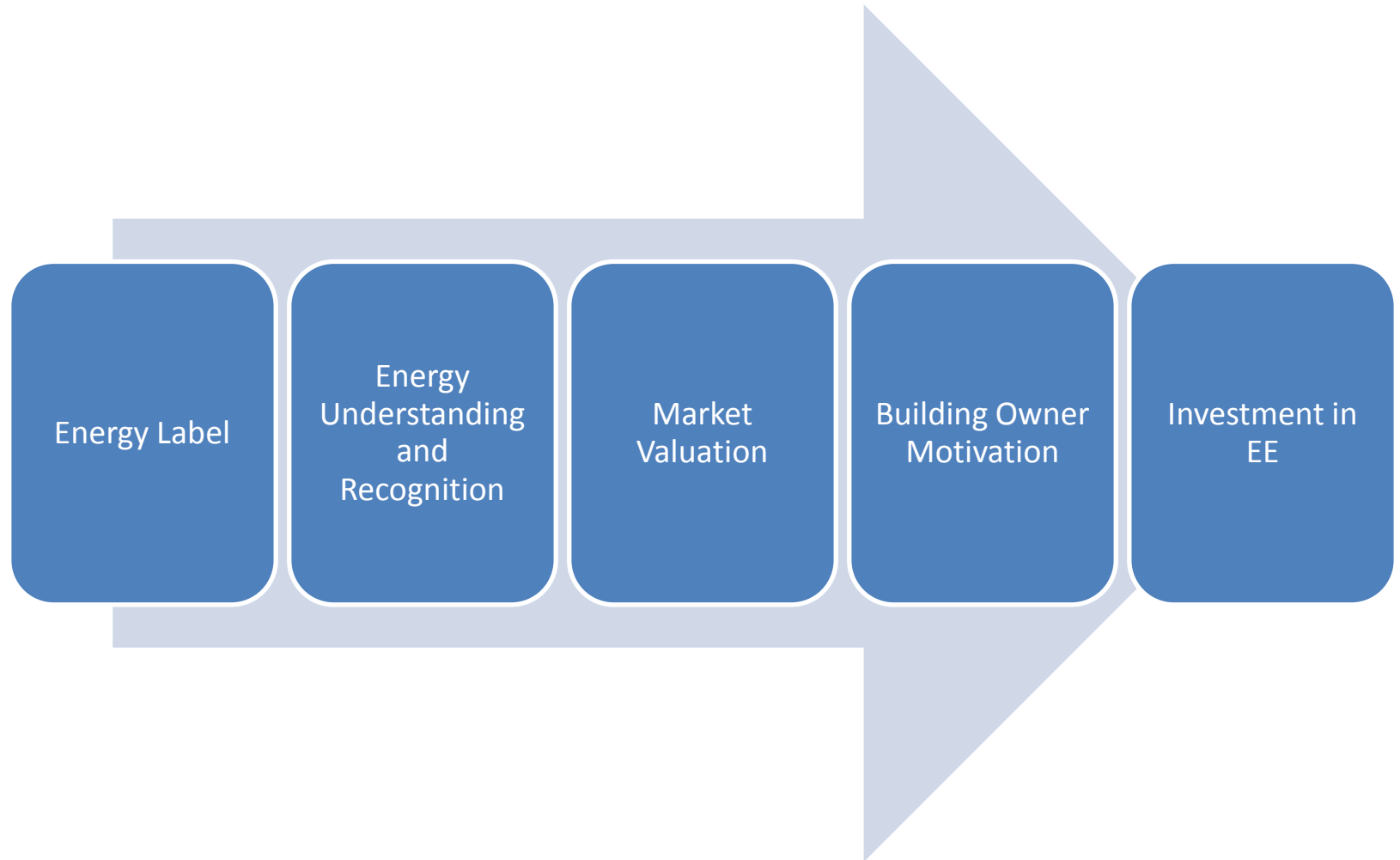


Building Labeling Initiatives in Massachusetts

March 10, 2011

Pathway to EE investments



Massachusetts Context

A large, light blue arrow pointing to the right, with a white outline, serves as a timeline. Five blue circles of increasing size are placed along the arrow's path, each corresponding to a text block. The arrow starts at the bottom left and curves upwards and to the right, ending in a large arrowhead.

**ZNEB
Taskforce
Report**
*March
2009*

**NEEP/
Dunskey
Report**
*November
2009*

**NGA Policy
Academy on
Building Energy
Retrofits**
January 2010

**ASHRAE bEQ
National Pilot
(Operational)**
May 2010

**Residential
Labeling Pilot
with funding
from DOE**
*September
2010*
**and
Commercial
Labeling Pilot
with Utilities**

Residential Labeling

Springfield area, MA – Part of a 4 State U.S. DOE funded Pilot

- MA, AL, WA, and VA with coordination by NASEO
- \$11M Grant (\$2.6 to MA) over 3 years
- Multi State Partners
 - Earth Advantage
- Massachusetts Pilot Municipalities (Springfield, Longmeadow, East Longmeadow, Belchertown, Palmer, Wilbraham, and Hampden)
- Utilities/ PAs (National Grid, Western Mass Electric, and Columbia Gas)
- Lead Vendor (TBD by Utilities)
- Workforce Development (MassGREEN and others)
- Thermal Imaging (Sagewell)
- Western MA Homebuilders / Western Mass AIA (and others)

Key Innovations

- Customized web site
 - Contractor proposals
 - Consumer review of auditors and contractors
- Home Energy Rating
 - Energy Performance Score
 - Link to MLS property listings
- Thermal Image & Analysis
- Financing forms on the web

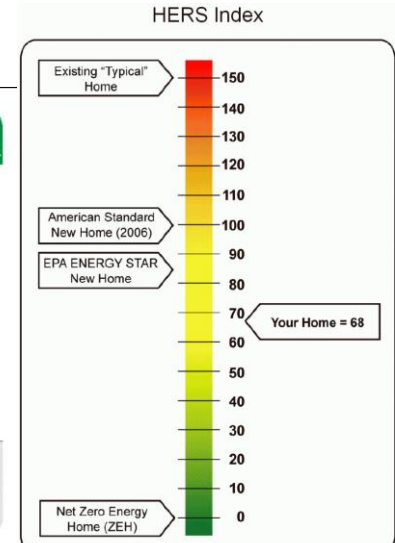
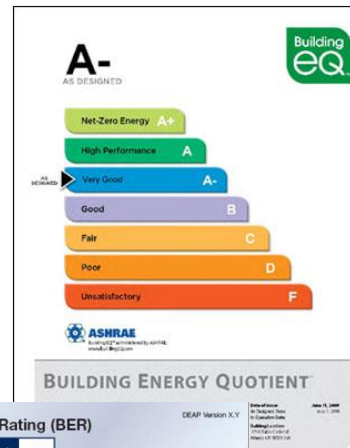
Commercial Labeling

Commercial Building Labeling White Paper

- National Governors Association Policy Academy on State Building Efficiency Retrofit Programs - MA awarded technical assistance
- Massachusetts private-public team - monthly meetings
- Progress report submitted to NGA in the Summer of 2010
- White Paper published for public comment (until February 12th): ["An MPG Rating for Commercial Buildings: Establishing a Building Energy Asset Labeling Program in Massachusetts"](#)

Labeling Program Goals

- Establish a commercial building energy rating systems that measures the energy performance of building assets to:
 - Directly **compare energy use** between buildings irrespective of tenant operations;
 - Enable **market valuation** of energy performance in buildings, and;
 - Combined with operational data**, provide comprehensive building energy performance information and motivate **efficiency investments**.



Building Energy Rating (BER) DEAP Version X.Y

BER for the building detailed below is:

Name of House, Street Name One, Street Name Two, Town name One, Town Name Two, County name One, County name Two.

BER Number: XXXXXXXXXX
 Date of Issue: Day Month Year
 BER Assessor No.: XXXX
 Assessor Company No.: XXXX

The Building Energy Rating (BER) is an indication of the energy performance of this dwelling. It covers energy use for space heating, water heating, ventilation and lighting, calculated on the basis of standard occupancy. It is expressed as primary energy use per unit floor area per year (kWh/m²/yr).

'A' rated properties are the most energy efficient and will tend to have the lowest energy bills.

Building Energy Rating	kWh/m ² /yr	Carbon Dioxide (CO ₂) Emissions Indicator kgCO ₂ /yr
A+	<25	<10
A	>25	<15
B1	>75	<20
B2	>100	<25
B3	>125	<30
C1	>150	<35
C2	>175	<40
C3	>200	<45
D1	>225	<50
D2	>260	<55
D3	>300	<60
E1	>340	<65
E2	>380	<70
F	>420	<75
G	>450	>120

IMPORTANT: This BER is calculated on the basis of data provided to and by the BER Assessor, and using the current set of assessment software applied above. A future BER assigned to the dwelling may be different, as a result of changes to the dwelling or to the assessment software.

Compare this vehicle to others in the **FREE FUEL ECONOMY GUIDE** available at the dealer.

CITY MPG	Fuel Economy Information	HIGHWAY MPG
23	<p>1993 CANARY 2.0 LITER L4 ENGINE FUEL INJECTED AUTO 3 SPD TRANS CATALYST FEEDBACK FUEL SYSTEM</p> <p>Estimated Annual Fuel Cost: \$850</p>	30

Actual Mileage will vary with options, driving conditions, driving habits and vehicle's condition. Results reported to EPA indicate that the majority of vehicles with these estimates will achieve between 19 and 27 mpg in the city and between 26 and 35 mpg on the highway.

For Comparison Shopping, all vehicles classified as **COMPACT** have been issued mileage ratings ranging from 1 to 31 mpg city and 16 to 41 mpg highway.

Existing Building Rating Systems

- Operational rating, which uses energy data to provide an energy performance rating, allows comparison of actual building energy use, which can be affected significantly by tenancy
 - EPA Energy Star Portfolio Manager (EPSM)
 - LEED EB rating
- An Asset rating uses energy modeling to predict the energy use of a building. LEED NC is an asset rating, which rates a building's energy performance against itself and does not allow for comparisons of energy performance across commercial buildings



Why an MPG for buildings?

- An operational rating with an asset rating together can provide a comprehensive view of a building's energy performance and help identify EE priorities.
- Building Energy **Comparative Asset Rating**
 - Facilitate direct comparisons of the potential energy performance between similar buildings
 - Evaluate the energy performance of a building's "assets," such as the thermal envelope (e.g. insulation, windows) and mechanical and electrical systems
 - Independent of tenant behavior

Design Elements

Three Key Design Elements:

1. The **process** by which the data is collected and used (i.e. information/data gathering, modeling, etc.);
2. The **nature of the rating scale** (i.e., placing a building's energy performance on a continuum); and
3. The means by which a rating is communicated (i.e., the **label**).



Source:

<http://greenbookenergyratings.ie/assets/images/services01.jpg>

Main Recommendations

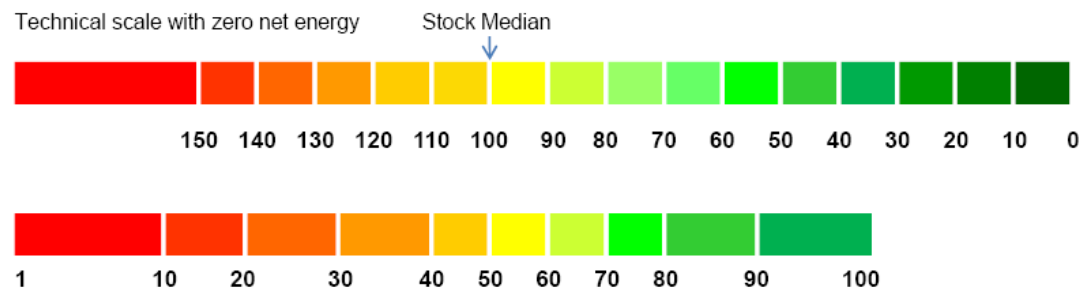
Assessment Process

- On-site assessment, provide recommendations
- Integrate recommendations with utility incentives and other financing opportunities
- Retrofit, and then post-retrofit rating for final label and utility incentives
- Data Collection and Modeling Guidelines for consistency and reliability
- Quality assurance
- Energy rating standard

Main Recommendations

Rating Scale

- Use of a technical rating scale
- Use of two metrics: Site EUI and GHG Emissions Metric
- Adjusting the asset rating scale to different building categories
- Use standardized guidelines for inputs



Statistical scale based on population sample

Comparison of Technical and Statistical Scales,
Source: "ASHRAE Building Energy Labeling Program: Implementation
Report (FINAL DRAFT)"

Main Recommendations

Label Information

- There are several ways to present the information: letter grade, number, symbol, etc.
 - Possible adoption of a letter grading system based on modeled EUI that makes building to building comparisons easy to understand for the intended audience
- Effective Communication (clear message)
- BTUs, GHGs, \$

Moving Forward

- DOER reviewing public comments and amending the strategy as appropriate
- Collaborate with a number of stakeholders to design a commercial building labeling pilot program
- Implement label pilot in Boston, Cambridge and Merrimack Valley