

Raising the BAR: Building Asset Rating in MA: Webinar on Phase 1

Nov 2, 2011

Massachusetts Department of Energy
Resources
and
Northeast Energy Efficiency Partnerships

NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS

“Accelerating Energy Efficiency”



NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS
Accelerating Energy Efficiency

MISSION

Accelerate the efficient use of energy in the Northeast and Mid-Atlantic Regions

APPROACH

Overcome barriers to efficiency through
Collaboration, Education & Advocacy



VISION

Transform the way we think about
and use energy in the world around us.

OVERVIEW

- Thank you!
 - The Barr Foundation
- Partnership
 - NEEP/ DOER
- Regional Project
 - Informing stakeholders



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AN 'ENERGY GUIDE' FOR BUILDINGS



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VALUING BUILDING ENERGY EFFICIENCY THROUGH DISCLOSURE AND UPGRADE POLICIES A ROADMAP FOR THE NORTHEAST U.S.

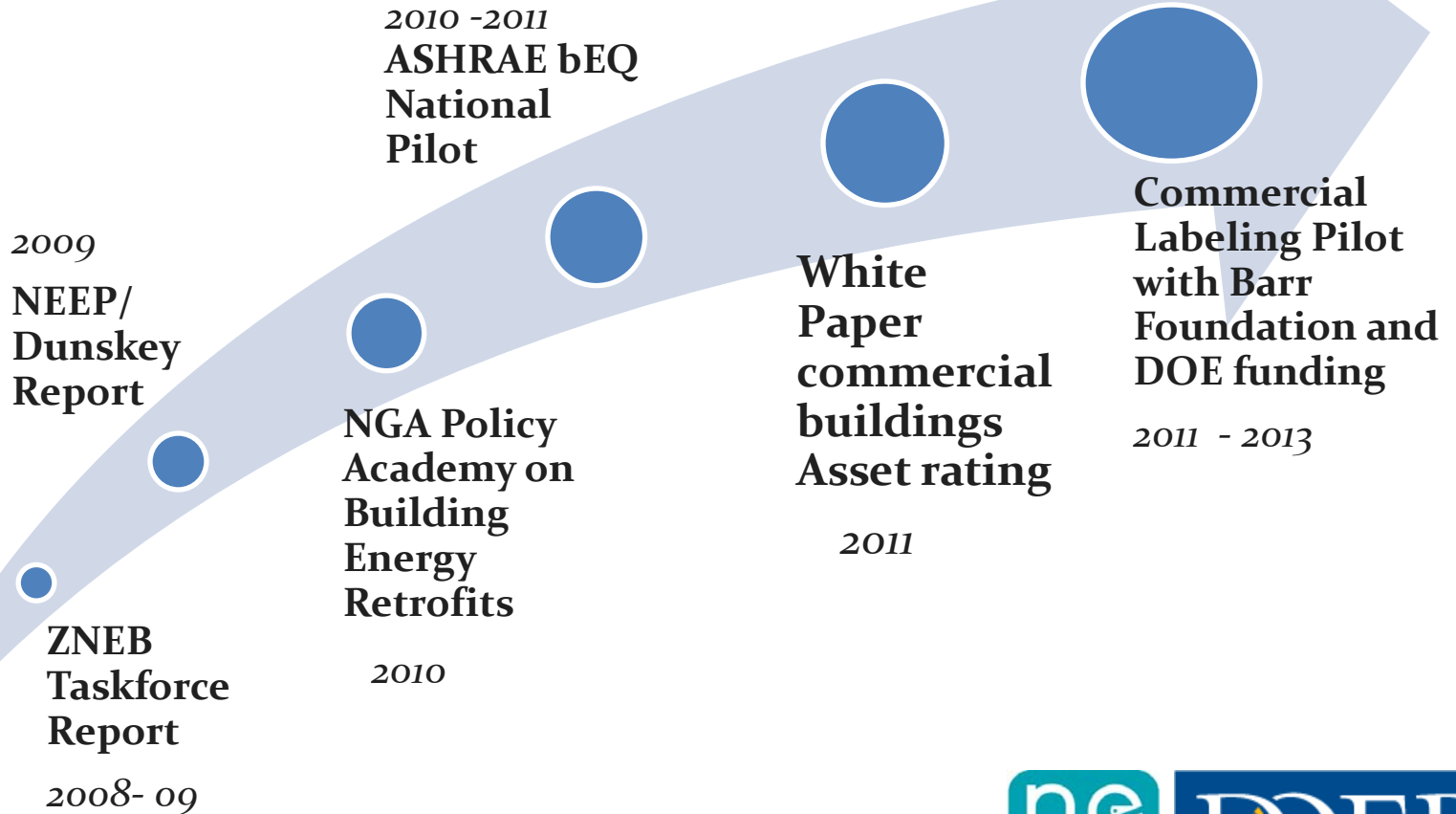
A DUNSKY ENERGY CONSULTING REPORT
in collaboration with VERMONT ENERGY INVESTMENT CORPORATION

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For **NORTHEAST ENERGY EFFICIENCY PARTNERSHIPS**
under the direction of Ed Schmidt, *Director of Regional Initiatives*

NOVEMBER 2009

Massachusetts Trajectory



Massachusetts Department of Energy Resources

Creating A Greener Energy Future For the Commonwealth

How Does an Asset Rating Help?

- Operational ratings (e.g. Portfolio Mgr) are great, but Asset ratings identify opportunities
- HVAC Systems - largest energy users in Commercial office buildings*
- Energy use generally related to Age of building* but ... your mileage may vary

*Source: Jones Lang LaSalle



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How Does an Asset Rating Help?

- Need for a system level “Miles-Per-Gallon” rating
- To compare buildings...
 - To each other
 - Systems within bldgs.
- To inform EE investment decisions

Bldg Asset Rating

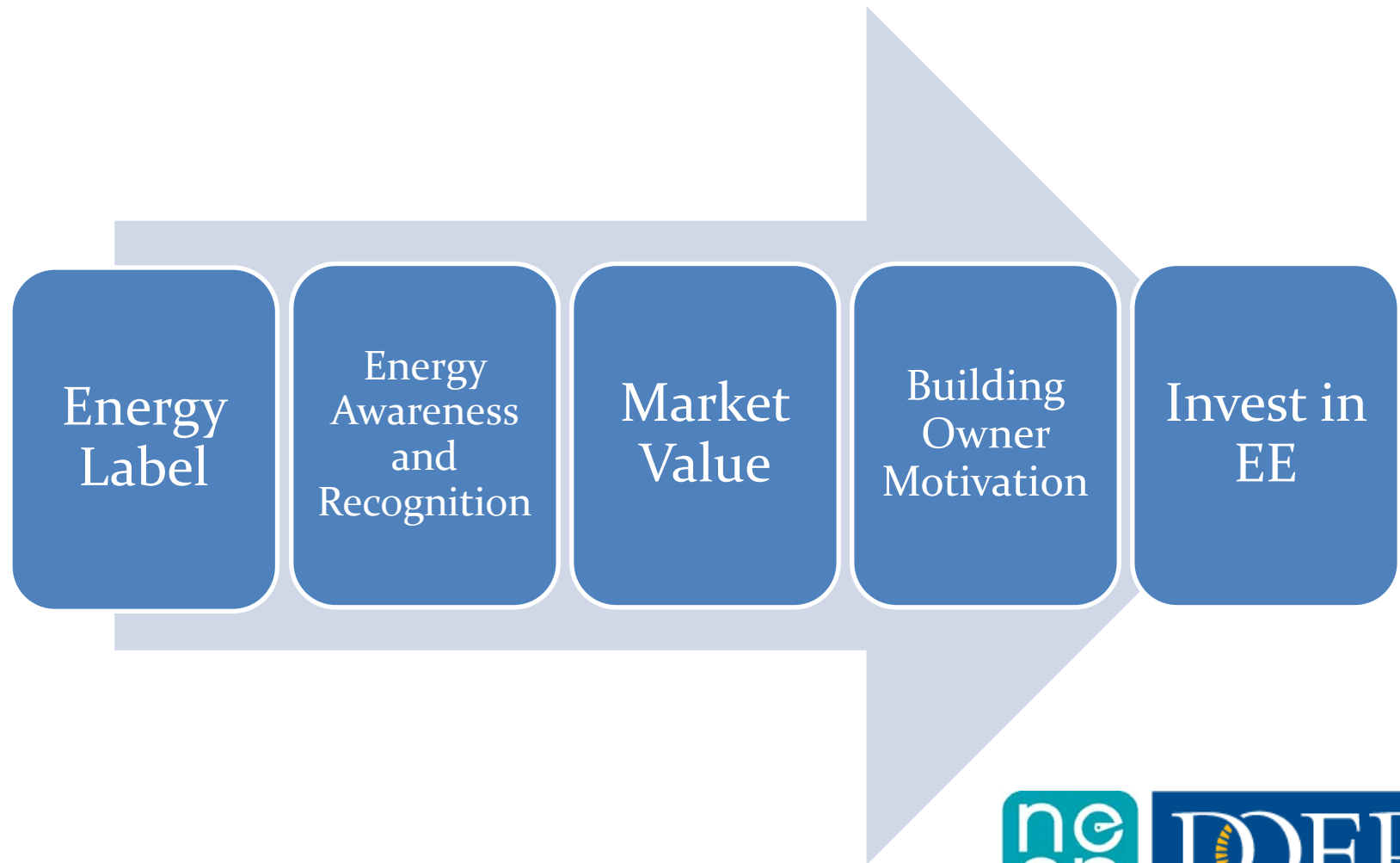
100 Cambridge Street, Boston, MA 20114

C O M

US B.A.R. RATING:

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

Pathway to EE Investments

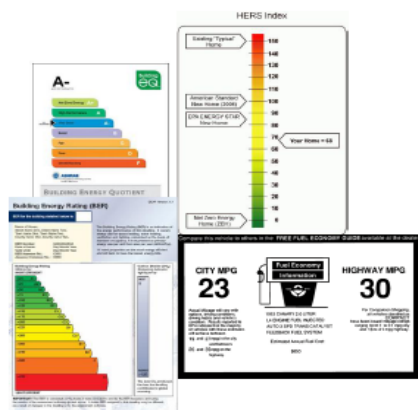


What Did We Learn from Public Comments?

An MPG Rating for Commercial Buildings:

Establishing a Building Energy Asset Labeling Program in Massachusetts

A White Paper
Prepared by the
Massachusetts Department of Energy Resources



December, 2010



1. Focus on cost reduction (especially for older buildings)
2. Use operational data to calibrate asset data
3. Consistency is important
4. Scale and label is a separate discussion from the metric



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Commercial Office Asset Rating Pilot

- Two year pilot: Oct 2011-2013
- Two Phases:
 - I. Testing innovation
 - Boston
 - Cambridge
 - II. Demonstration
 - Boston
 - Cambridge
 - Merrimack Valley



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Commercial Office Asset Rating Pilot

- Goals:
 - Test data collection and modeling methodologies and costs in MA
 - Inform US DOE Asset Rating program
 - Collaborate with CA and other states to share findings
 - Qualify methodologies for Phase II



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Offices in Boston & Cambridge

A good place to pilot:

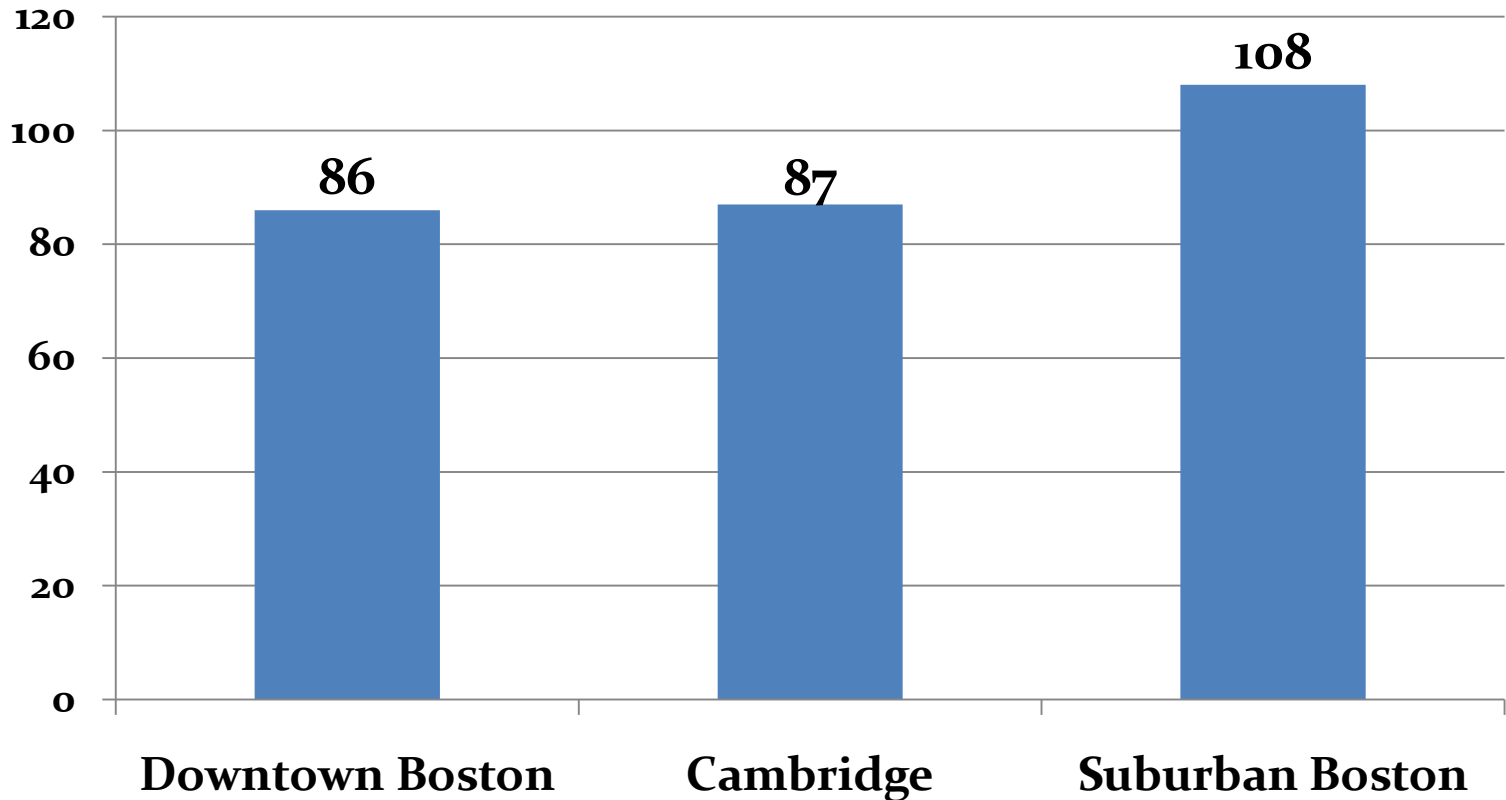
- Cooling and Heating
- Office market active
- Mix of ages and sizes
 - 31.5m sf in 'towers'
 - > 100m sf in total



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Location, Location, Location

Office energy use kBtu/sf/year



Source: BOMA 2008 Experience Exchange Report



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Commercial Office Pilot Details

- Phase I (Winter-Spring 2012)
 1. Asset Rating of 8-12 office buildings
(ground floor retail allowed)
 2. Engineering study will be conducted
in parallel (Audit & Modeling)
 3. Compare findings to qualify
innovative methodologies



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Commercial Office Pilot Details

- Buildings will range in age and size
- Documentation will range from 'CAD' to Scanned drawings, to 'None'
- Monthly billing data will be available
- Can request data from the engineering study or do own field visit



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Desired Asset Rating Features

- Collect data on durable energy “assets”:
 - type and condition of HVAC, ventilation, fenestration, envelope, etc.
- Combine with historical energy use from billing data and interval metering
- “Apples to apples” EUI comparison of ‘as built’ energy performance among similar buildings,
- Use results as basis to inform cost-effective efficiency investments



DDER

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Possible Asset Rating Technologies

- Satellite and street-level imagery
- Interval and sub-metering data
- Assessment /diagnostic testing of HVAC efficiency and distribution systems
- Targeted/rapid energy modeling
- Targeted on-site inspections, field verification
- Other tools welcome



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Minimum Building Requirements – Phase I

- Location: Boston or Cambridge
- Building Use: 90% office space or related uses up to 10% retail allowed.
- Size: Greater than 5,000 ft²
- Age: Any
- Interval Metering for electricity usage
- Support from property management team



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Building Documentation Requirements

- Occupancy Data
- Building Plans or Blueprints
- HVAC Mechanical Plans, Schedules
- Billing data and/or energy tracking data for the last 12-18 months
- Access to interval metering data



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Estimated Time Frame

- Nov 2012: RFP released
- Jan 2012: Award RFP for 3-5 teams
- Jan – April: ‘Conventional’ ASHRAE level II, engineering site visit, audit and modeled EUI
- Jan – April: Data collection and Asset ratings by 3-5 teams, for building and systems data, with various degrees of on-site access needed.
- April-June: Evaluation of Asset ratings relative to actual energy use and ‘conventional’ baseline.



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Target Audience for Ratings

Goal: Energy Rating findings help connect stakeholders:

- Property managers and owners
- Tenants considering space changes
- Utility energy efficiency programs
- Real estate appraisal and finance
- Design & Engineering professionals



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Questions? Comments ?

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