



Rating and Disclosing the Energy Performance of U.S. Commercial Buildings

U.S. Green Building Council New Mexico Chapter
Lunch Program

October 6, 2010 | Albuquerque, NM

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Institute for Market Transformation
www.imt.org

Outline

- Introduction to commercial energy rating and disclosure

- Why is it important?

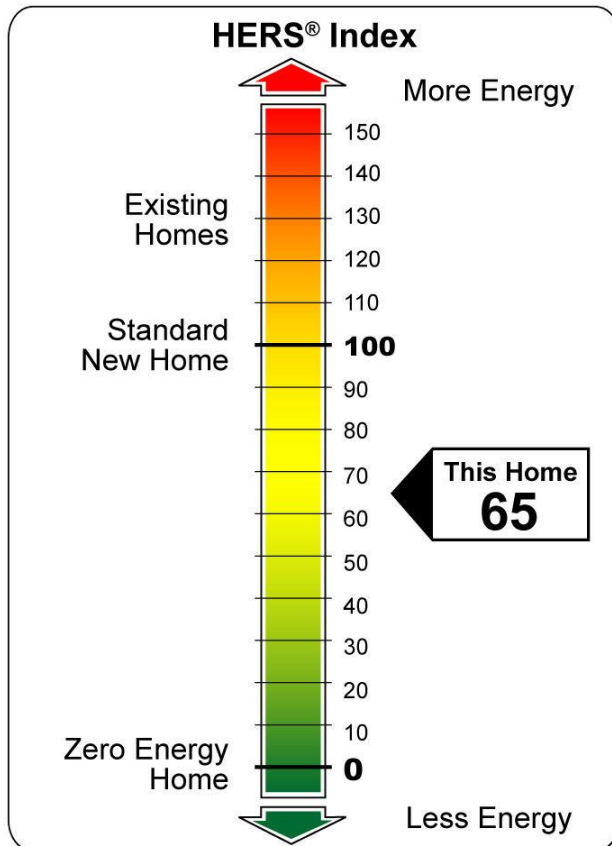
- Policy Overview – International, City, State and Federal

What is Building Rating and Disclosure?

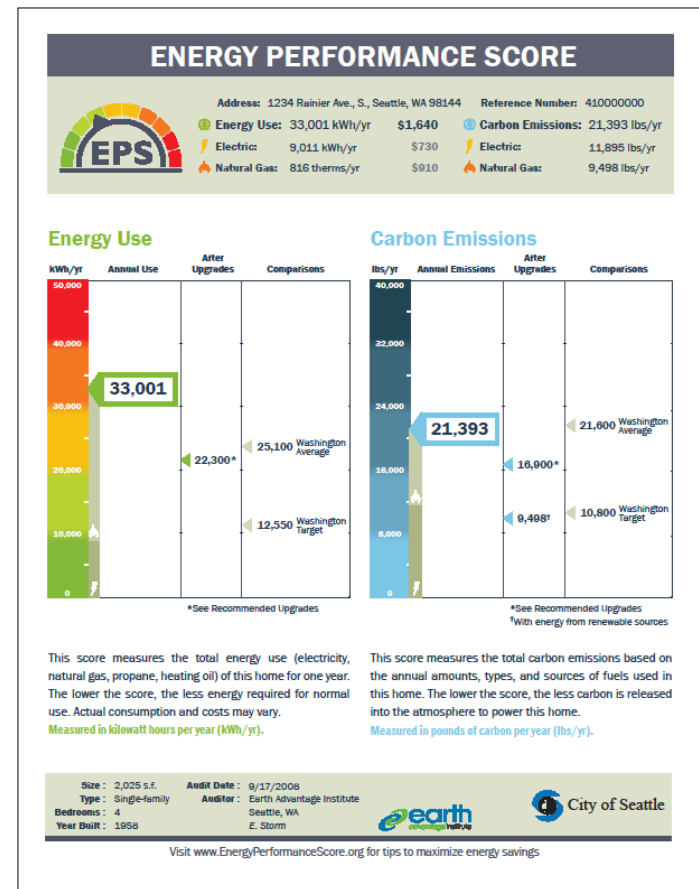
- ❑ Benchmarking the relative energy performance of buildings and disclosing info to market
 - ❑ Asset rating – Measures structural performance
 - ❑ Operational rating – Measures actual performance (utility bills)
 - ❑ Disclosure triggers: Transaction, recurring date, permit application
- ❑ Commercial and residential labeling highly segmented

Residential Labels

HERS Index

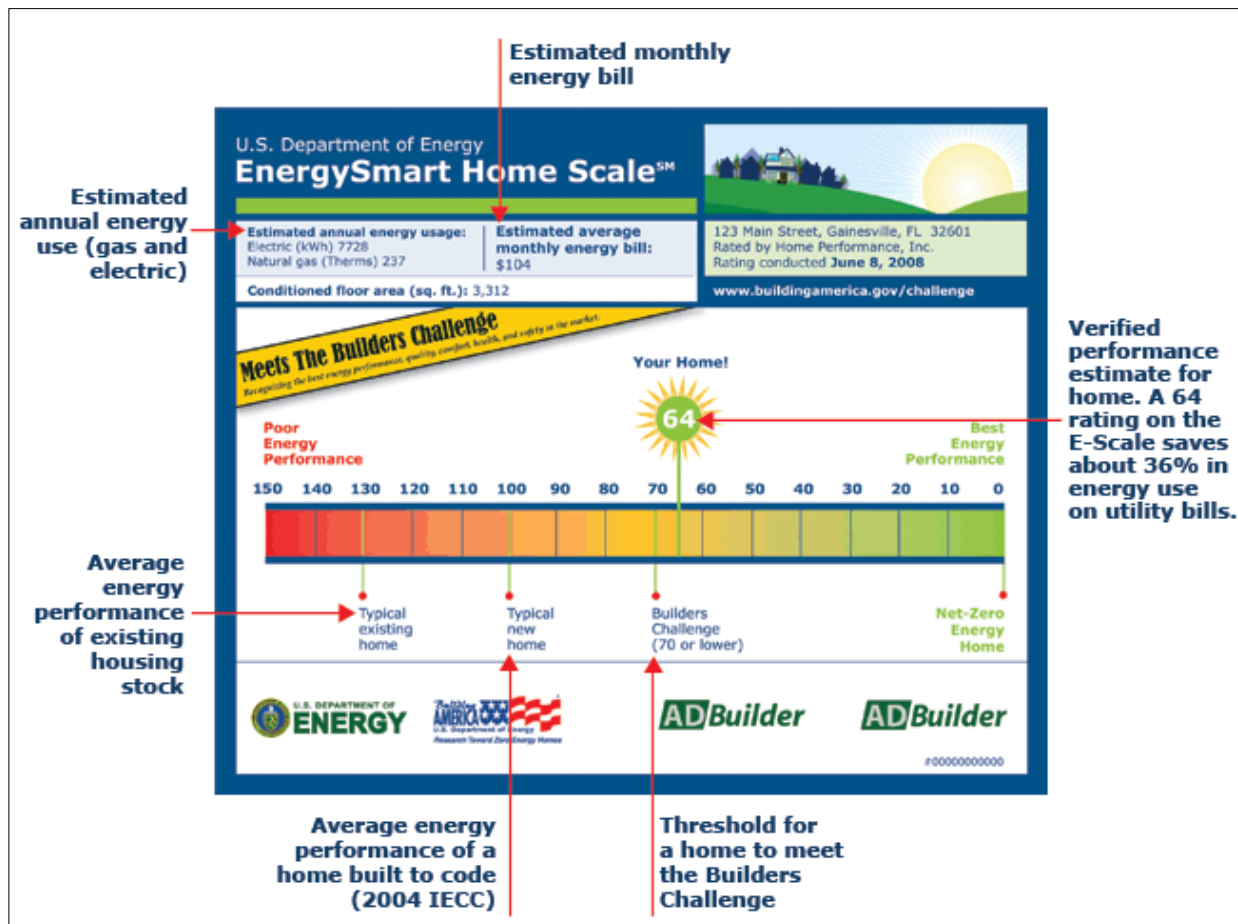


Energy Performance Score label



Residential Labels


DOE EnergySmart Home Scale



Commercial Labels

ENERGY STAR label

OMB No. 2060-0347



STATEMENT OF ENERGY PERFORMANCE
Office Sample Facility

Building ID: 1678984
For 12-month Period Ending: May 31, 2009¹
Date SEP becomes Ineligible: September 28, 2009

Date SEP Generated: August 27, 2009

Facility
Office Sample Facility
1234 Main Street
Charlotte, NC 28227

Year Built: 2000
Gross Floor Area (ft²): 53,232

Energy Performance Rating² (1-100): 85

Facility Owner
Sample Owner
1500 Test Avenue
Charlotte, NC 28227
555-555-5555

Primary Contact for this Facility
Jane Smith
1500 Test Avenue
Charlotte, NC 28227
555-555-5555
jsmith@j-smith.com

Site Energy Use Summary³

Electricity - Grid Purchase(kBtu)	2,288,770
Natural Gas (kBtu) ⁴	1,162,996
Total Energy (kBtu)	3,451,766

Energy Intensity⁵

Site (kBtu/ft ² yr)	65
Source (kBtu/ft ² yr)	166

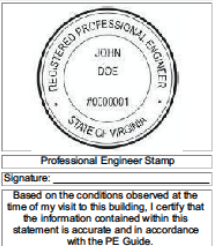
Emissions (based on site energy use)

Greenhouse Gas Emissions (MTCO ₂ e/year)	409
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Electric Distribution Utility
Duke Energy Carolinas, LLC

National Average Comparison

National Average Site EUI	102
National Average Source EUI	261
% Difference from National Average Source EUI	-36%
Building Type	Office



Professional Engineer Stamp

Signature: _____

Based on the conditions observed at the time of my visit to this building, I certify that the information contained within this statement is accurate and in accordance with the PE Guide.

Meets Industry Standards⁶ for Indoor Environmental Conditions:

Ventilation for Acceptable Indoor Air Quality	Yes
Acceptable Thermal Environmental Conditions	Yes
Adequate Illumination	Yes

Professional Engineer

License Number: 0000203
State: NC
John Doe
33 Country Lane
Charlotte, NC 28227
555-555-7788

Notes:



- Application for the ENERGY STAR must be submitted to EPA within 4 months of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Values represent energy consuming use, annualized to a 12-month period.
- Natural Gas values are based on volume (e.g. cubic feet) and converted to kBtu with adjustments made for elevation based on Facility city code.
- Values represent energy intensity, annualized to a 12-month period.
- Based on Meeting ASHRAE Standard 62 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.


The government subsidizes the average time needed to fill out this form in 2 hours. Deduct this time for entering energy data, PE facility inspection, and certifying the SEP and send comments regarding this level of effort. Send comments (prepending OMB control number) to the Director, Collection Strategies Division, U.S. EPA (202)771-1200, Pennsylvania Ave., NW, Washington, D.C. 20460.

EPA Form 5900-16


Tracking Number: SEP200908270001037162

ASHRAE Building EQ label



Very Good A-



BUILDING ENERGY QUOTIENT[®]

100-1000

1000-1500

1500-2000

2000-2500

2500-3000

3000-3500

3500-4000

4000-4500

4500-5000

5000-5500

5500-6000

6000-6500

6500-7000

7000-7500

7500-8000

8000-8500

8500-9000

9000-9500


9500-10000

The Building Energy Quotient (BEQ) is a performance metric that compares a building's energy performance to a national average. The BEQ is calculated by dividing the building's energy performance by the national average energy performance for buildings of the same type and size. The BEQ is a score from 100 to 1000, where 100 is the lowest and 1000 is the highest. A BEQ of 1000 indicates that the building is performing at the national average level. A BEQ of 500 indicates that the building is performing at half the national average level. A BEQ of 200 indicates that the building is performing at one-fifth the national average level. A BEQ of 100 indicates that the building is performing at one-tenth the national average level. A BEQ of 50 indicates that the building is performing at one-twentieth the national average level. A BEQ of 25 indicates that the building is performing at one-fortieth the national average level. A BEQ of 10 indicates that the building is performing at one-hundredth the national average level. A BEQ of 5 indicates that the building is performing at one-hundredth the national average level. A BEQ of 1 indicates that the building is performing at one-hundredth the national average level.

Energy Star Portfolio Manager

- ❑ Operational rating
- ❑ Most popular commercial building rating tool in nation
 - ❑ “1” to “100” rating compared to peer buildings nationwide
- ❑ Free, online and nontechnical
 - ❑ Not an audit
- ❑ Normalizes for climate, occupancy, density, plug loads and other factors
- ❑ Built-in recognition for top achievers

OMB No. 2060-0347



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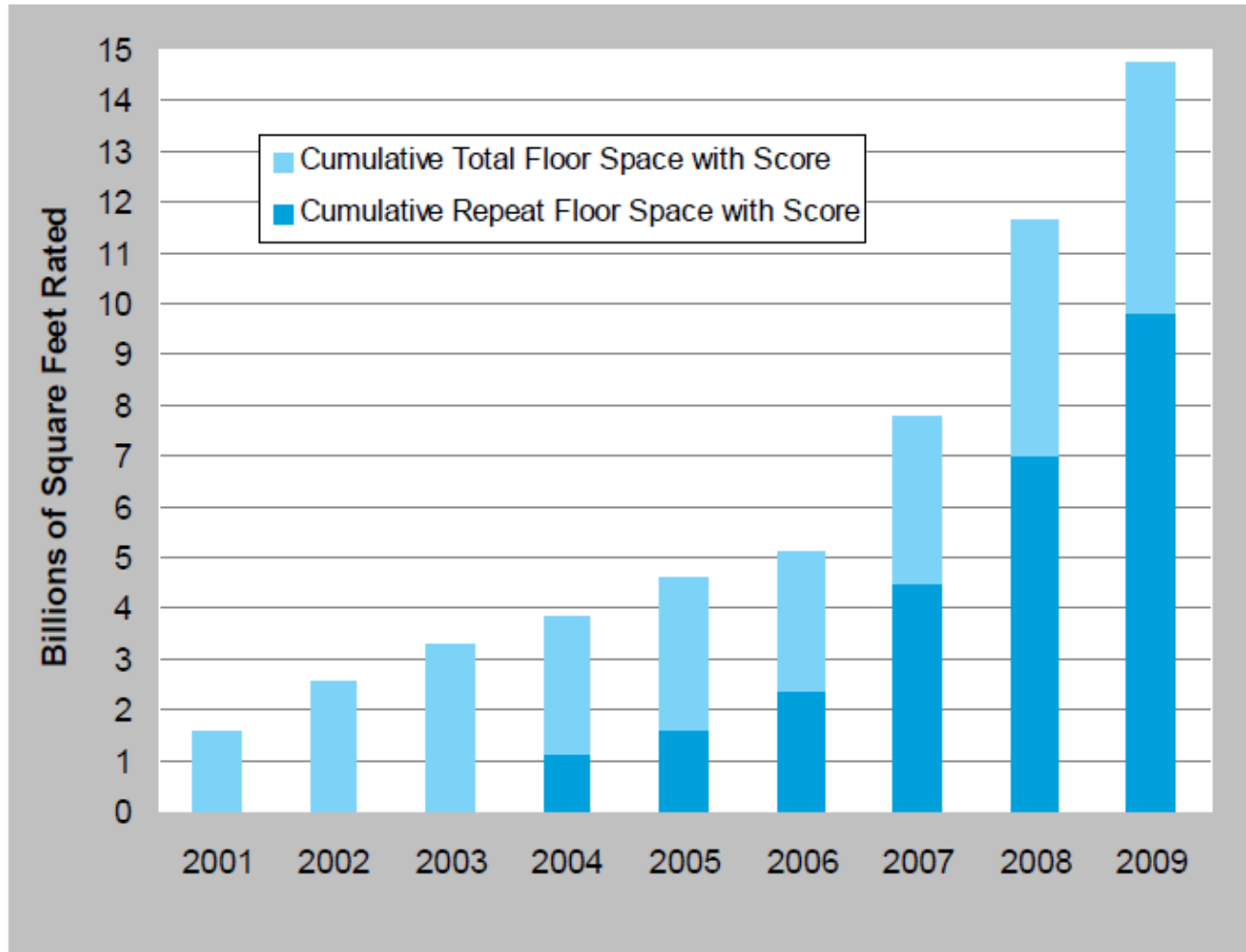
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6. Based on Meeting ASHRAE Standard 55 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

The government estimates the average time needed to fill out this form is 6 hours (includes the time for entering energy data, PE facility inspection, and submitting the SEP) and will come with instructions for reducing this level of effort. Send comments (including OMB control number) to the Director, Collection Strategies Division, U.S. EPA (2027), 1200 Pennsylvania Ave., NW, Washington, DC 20460.

EPA Form 5900-16 Tracking Number: SEP200908270001037162

Energy Star Portfolio Manager

Buildings Receiving an ENERGY STAR Score
(through December 31, 2009)



Why are we Labeling Buildings?

- ❑ Helps us understand building performance
 - ❑ U.S. existing building stock: ~80 billion SF
 - ❑ We can't manage what we aren't measuring
 - ❑ Smarter policies, effective incentives, better building operations
 - ❑ Seattle outcome-based codes pilot

- ❑ Increases accountability for building energy performance
 - ❑ Feedback loop among architects, engineers, operators and tenants
 - ❑ Will help bring predicted performance in line with actual performance

A Familiar Concept

THE WALL STREET JOURNAL

Menu Labeling to Go National, Thanks to Health Bill's Passage

The New York Times

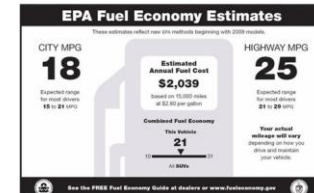
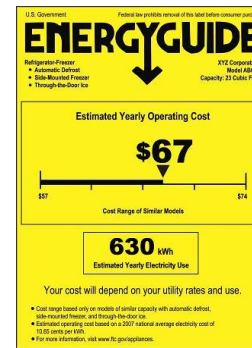
Calorie Data to be Posted at Most Chains

AP

US Law to Make Calorie Counts Hard to Ignore



Nutrition Facts	
Serving Size 1 cup (228g)	
Servings per Container 2	
Amount Per Serving	
Calories 260	Calories from Fat 121
% Daily Value*	
Total Fat 13g	26%
Saturated Fat 5g	10%
Trans Fat 2g	4%
Cholesterol 2mg	10%
Sodium 660mg	26%
Total Carbohydrate 31g	10%
Dietary Fiber 3g	6%
Sugars 5g	
Protein 5g	
Vitamin A 4%	Vitamin C 2%
Calcium 15%	Iron 4%
Percent Daily Values are based on a diet of 2,000 calories a day. Your daily values may be higher or lower depending on your calorie needs.	
Calories: 2,000 2,500	
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Fiber	25g 30g
Calories per gram:	
Fat 9	Carbohydrate 4 Protein 4



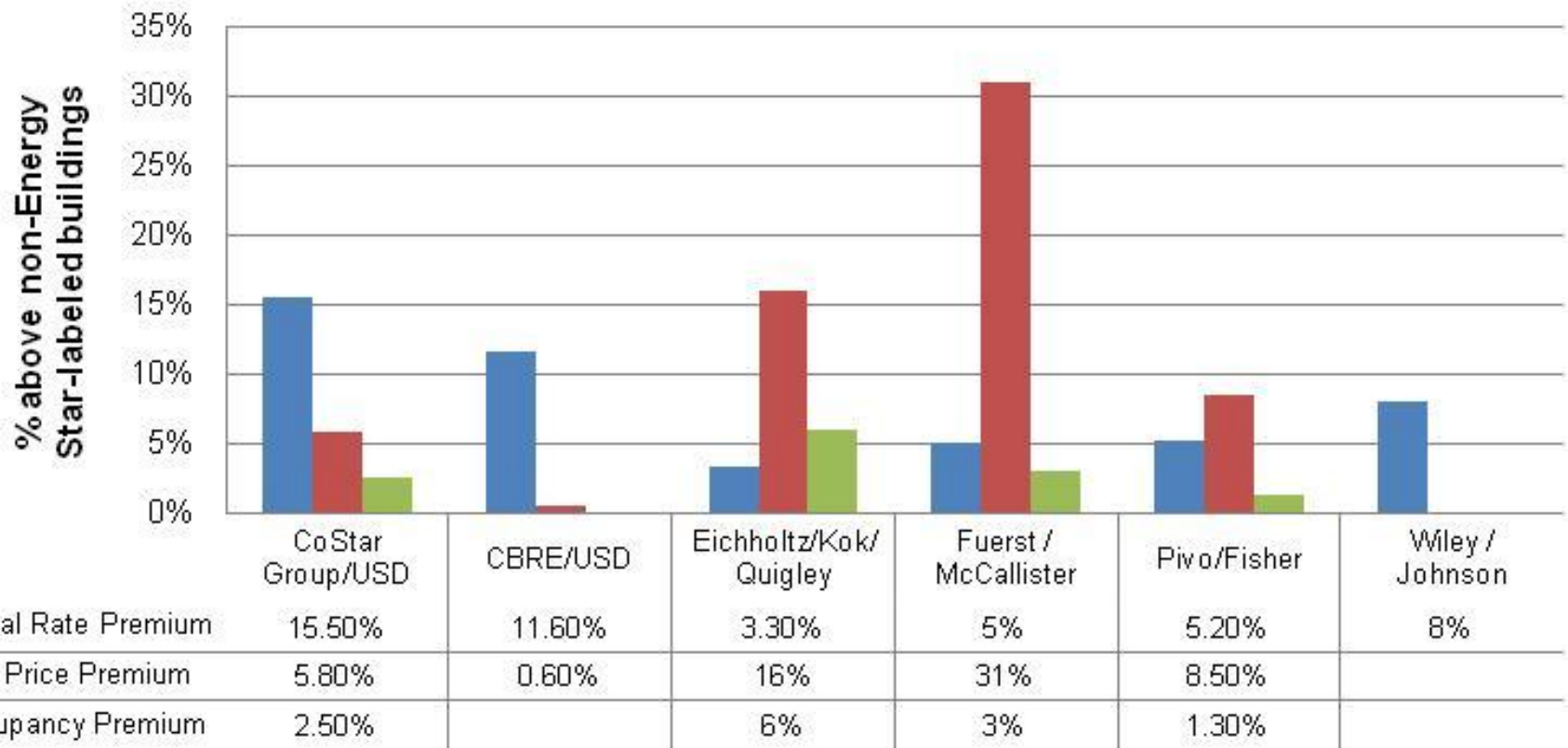
Get the Market Thinking About Energy

- ❑ Energy performance is a blind spot for consumers - homebuyers, homeowners, building owners, small business tenants and banks

- ❑ Market can't value what it doesn't know

- ❑ Creating competition based on energy efficiency will save consumers money and result in more efficient buildings (retrofits, management and behavior)
 - ❑ **Already seeing this with LEED**

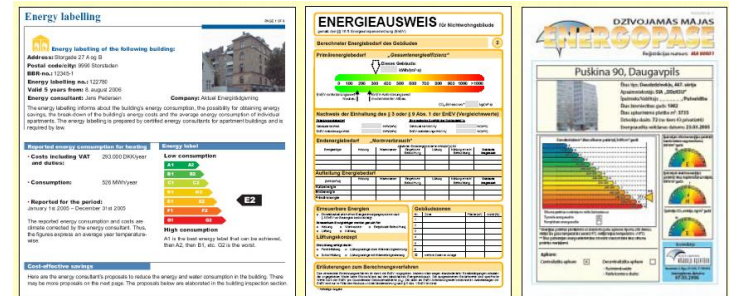
Market Premiums of Energy Star-labeled U.S. Commercial Buildings



International Rating Policy Europe



- ❑ Energy Performance of Buildings Directive (EPBD) adopted in 2002 to help EU meet Kyoto targets
- ❑ One of the strongest building efficiency policies in the world
- ❑ Requires all Member States to rate homes and buildings
- ❑ EPBD Recast adopted this year improves original rating requirements



International Rating Policy China



- ❑ Label for high-rise multifamily and commercial buildings developed by Ministry of Housing and Urban-Rural Development
- ❑ Focus on reporting to government rather than market mechanism

International Rating Policy Australia

- ❑ Building Energy Efficiency Disclosure Act enacted in July
- ❑ Building Energy Efficiency Certificates (BEECs) based on NABERS rating disclosed upon sale or lease
- ❑ Home labeling policies in place in some provinces for a decade

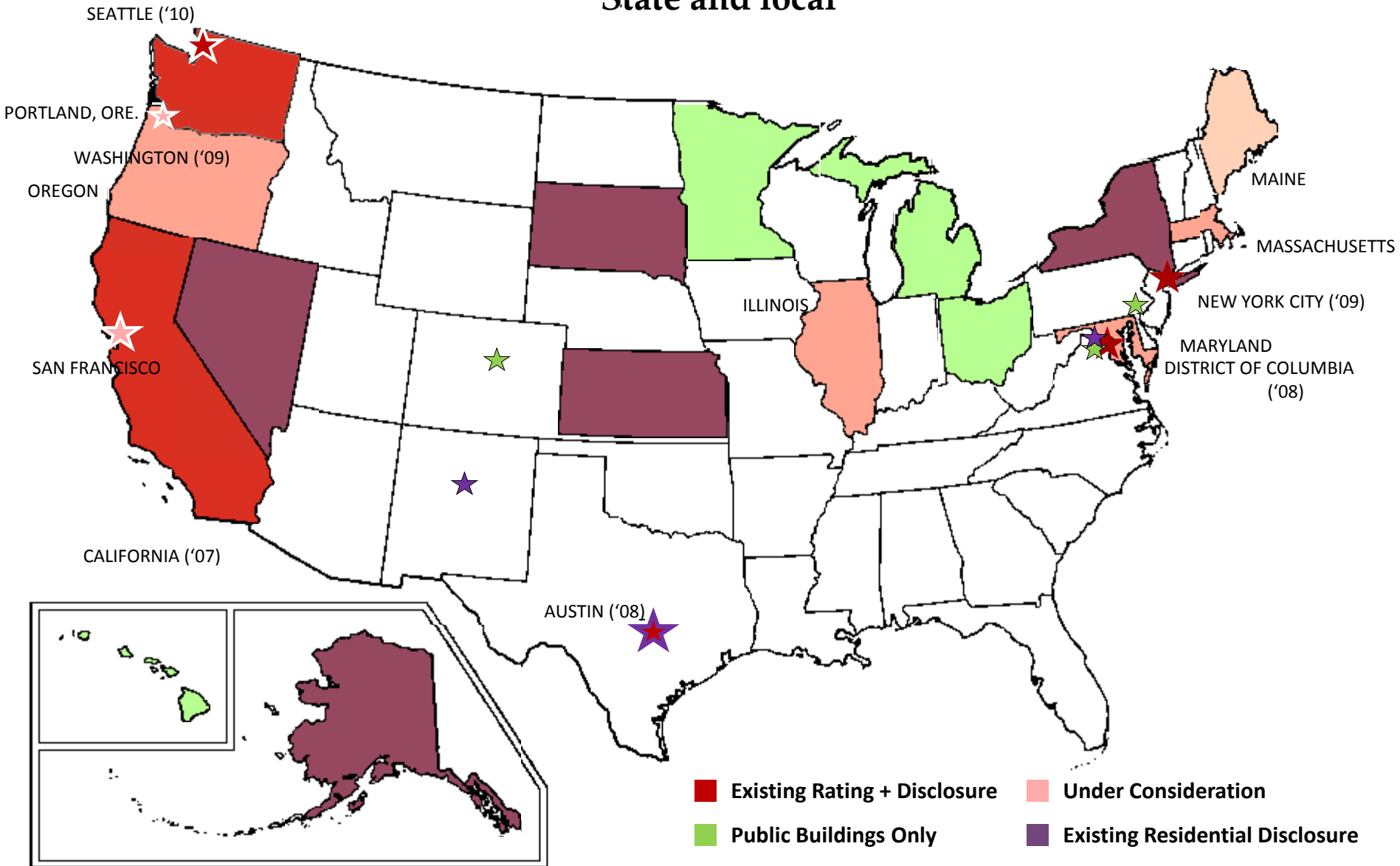


Australian Government



U.S. Labeling Policies

State and local



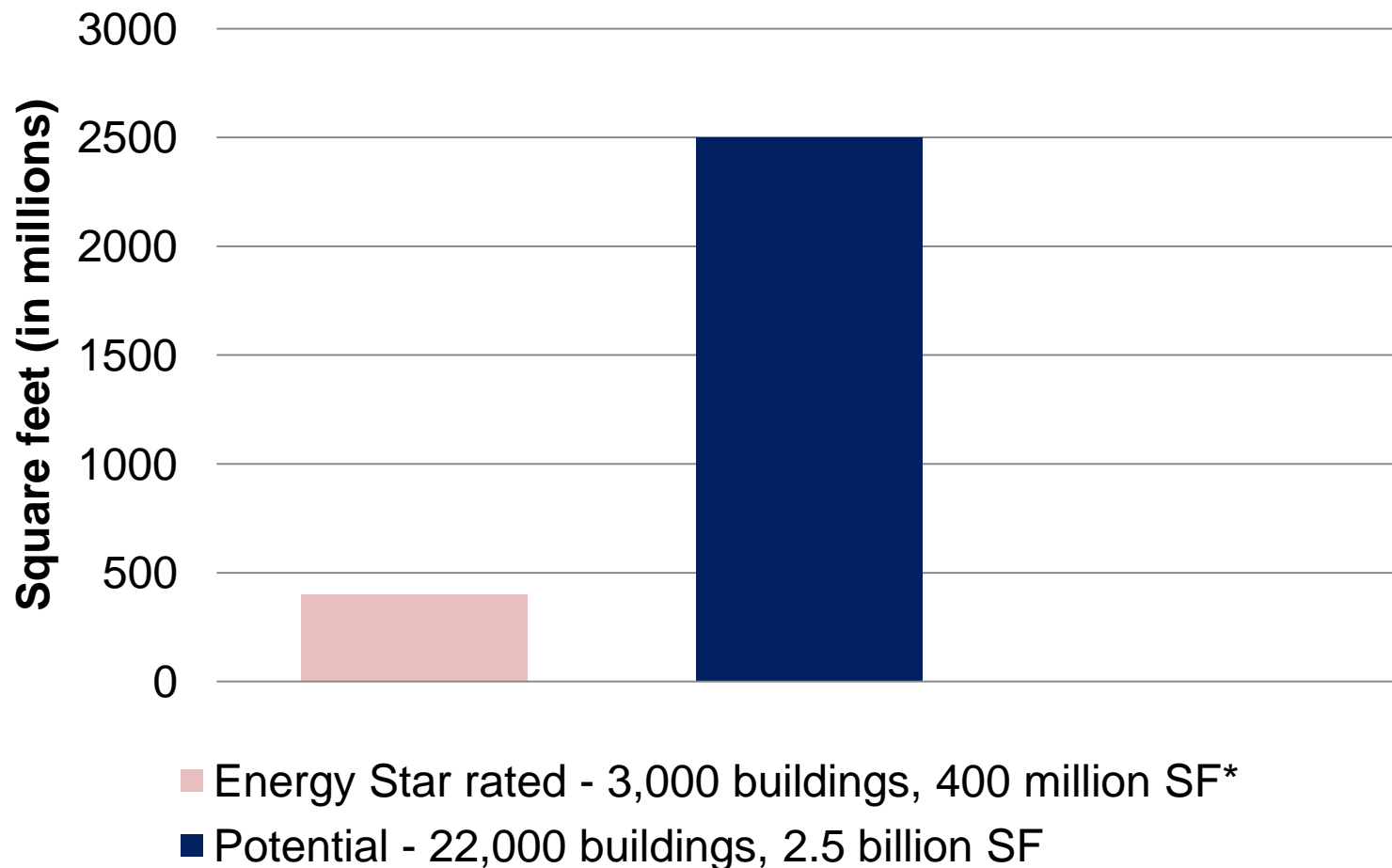
- Existing Rating + Disclosure
- Under Consideration
- Public Buildings Only
- Existing Residential Disclosure

NYC Greener, Greater Buildings Plan



- ❑ Enacted 2009
- ❑ Requires:
 - ❑ Building Energy Rating and Disclosure
 - ❑ Water Benchmarking
 - ❑ Audits and RCx
 - ❑ Tenant Submetering
 - ❑ Lighting Upgrades
 - ❑ Code Improvements

NYC Greener, Greater Buildings Plan



*"Energy Star rated" data from EPA Energy Star Snapshot Spring 2010 report. "Potential" data from PlaNYC Report

Federal Policy

- ❑ No U.S. federal policy on labeling

- ❑ American Clean Energy and Security Act (ACES, Waxman-Markey) passes House in Summer 2009

- ❑ American Clean Energy and Leadership Act (ACELA, Bingaman) passes out of committee in Summer 2009

- ❑ Bills direct EPA and DOE to create building energy certificates – neither has passed

Administration Support



- ❑ Vice President Biden's "Middle Class Task Force" and CEQ release "Recovery Through Retrofit" October 2009
- ❑ Outlines economic recovery plan through creating a home retrofit industry to make homes more efficient, create jobs
- ❑ Identifies home energy labeling as priority

DOE and EPA Take Action

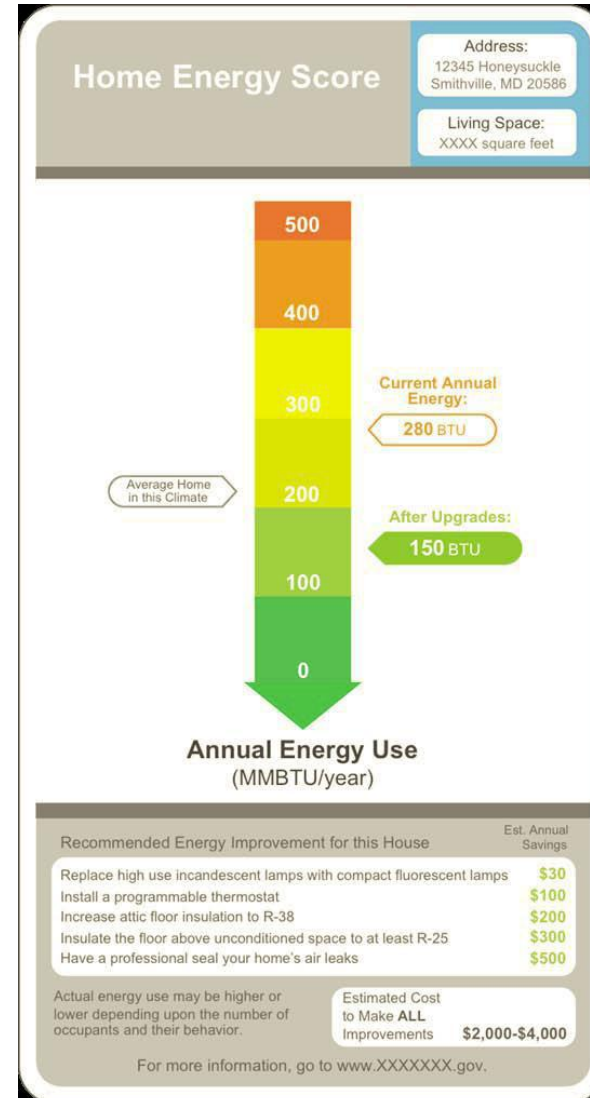
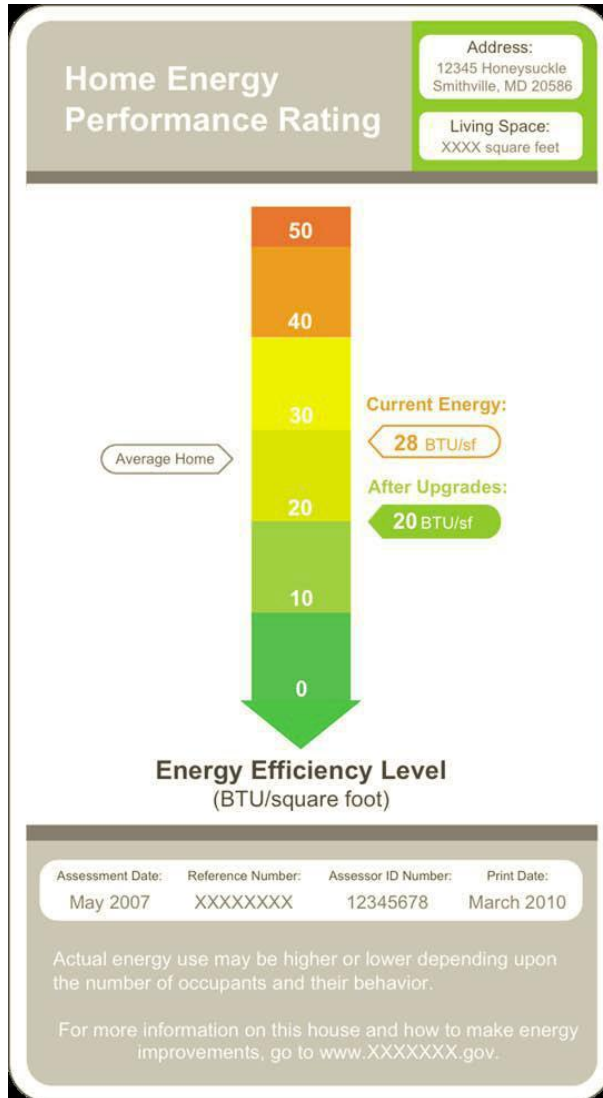
- ❑ Create National Building Rating Program, October 2009 in DOE-EPA MOU

- ❑ DOE in the process of designing a home energy label and rating methodology
 - ❑ Includes home energy registry

- ❑ Work on commercial label to follow

- ❑ Reaction from industry has been mixed

NBRP Mock Labels



Other Federal Initiatives

- ❑ EISA of 2007 (Bush Energy Bill) – requires GSA to lease space in buildings that are top Energy Star achievers beginning end of 2010

- ❑ SAVE Act in drafting
 - ❑ Mortgage underwriting would account for expected energy costs and energy cost savings
 - ❑ Expected cost savings demonstrated through home energy ratings
 - ❑ Supported by homebuilders

Closing Thoughts

- ❑ Energy reduction strategies for **existing buildings** must leverage the market and must bridge the information gap – voluntary rating and disclosure is insufficient
- ❑ Labeling for homes and buildings is already mandatory in many other parts of the world – Europe, China and Australia
- ❑ Rating and disclosure policies will save consumer money and are fiscally responsible for governments
- ❑ States and cities are leading the way with innovative policies



Thank you! Questions?

www.imt.org/rating

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ANDREW@IMT.ORG

