



U.S. Energy and GHG Emissions Reductions Policy and Regulations

Urban Green Expo

September 29, 2010 | New York City

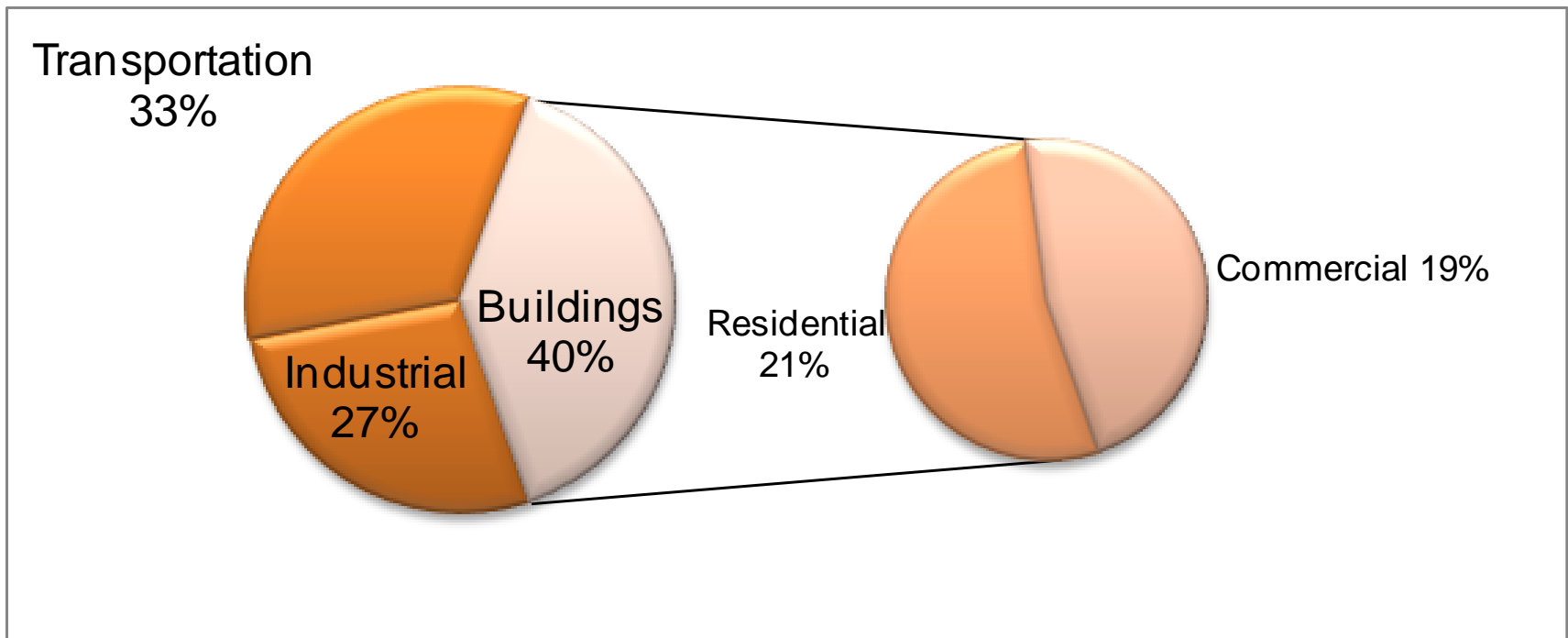
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Outline

- Federal and Congressional Summary and Outlook
- Building Energy Codes
- State and Local Activity

CO² Emissions from Buildings



U.S. Energy-Related Carbon Dioxide Emissions by End Use Sector, 2008

Major Climate and Energy Bills

- 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
- American Power Act of 2010 (Kerry-Lieberman) discussion draft released in May

HOME STAR

- Passed House May 2010
- Supported by 1,500+ organizations
- Incentives for prescriptive and whole-home retrofits
- Tax credits and financing



Cost: \$6 Billion

Homes: 3.3 Million

Jobs: 168,000

Homeowner Saving (10 yr.): \$9.4 Billion

Equivalent Cars Off-Road: 615,000 Cars

Power Generation Offline: 4 x 300MW Plants

Other Energy Bills

- Practical Energy and Climate Plan of 2010 (Lugar)
- Building Star
- Rural Star
- Reid's energy bill (Clean Energy Jobs and Oil Company Accountability Act) introduced in August
 - Includes HOME STAR
- Energy Independence and Security Act (EISA)
- Recovery Through Building Renovation Act
- Sensible Accounting to Value Energy (SAVE) Act, pending introduction

Energy Independence and Security Act (EISA) of 2007

- Energy Star leasing provision on federal agencies effective 12/10
- Energy consumption reduction of 30% by 2015 in federal buildings
- Energy efficient product procurement
- Phases out inefficient incandescent light bulbs in US beginning in 2012.
 - Benefits:
 - *Cut US electric bill by > \$10 billion/yr*
 - *Eliminate the need for 30 large (500 MW) power plants*
 - *Prevent 100 million tons of CO₂ pollution/yr*

Recovery Through Retrofit

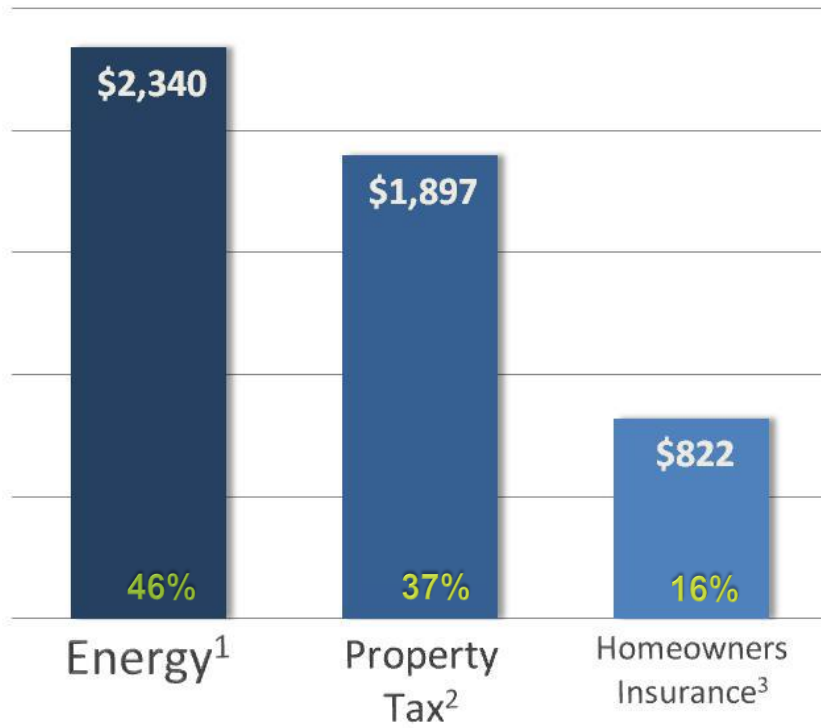


- Vice President Biden’s “Middle Class Task Force” and CEQ release “Recovery Through Retrofit” October 2009
- Outlines economic recovery plan through creating a home retrofit industry to make homes more efficient, create jobs
- Identifies home energy labeling as priority

The SAVE Act:

Sensible Accounting to Value Energy

Average U.S. Homeowner Costs 2007-2008



- Average annual energy costs exceed taxes and insurance, which are underwritten in mortgages
- SAVE Act would require federal loan agencies to assess the expected energy costs for mortgage loan applicants.
- Accomplished through modest adjustments to underwriting guidelines and appraisal practices
- Championed by Sen. Michael Bennet (D-Colo.)

DOE and EPA Take Action

- Create National Building Rating Program, October 2009 in DOE-EPA *Memorandum of Understanding*
- Appliance and equipment standards
- 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

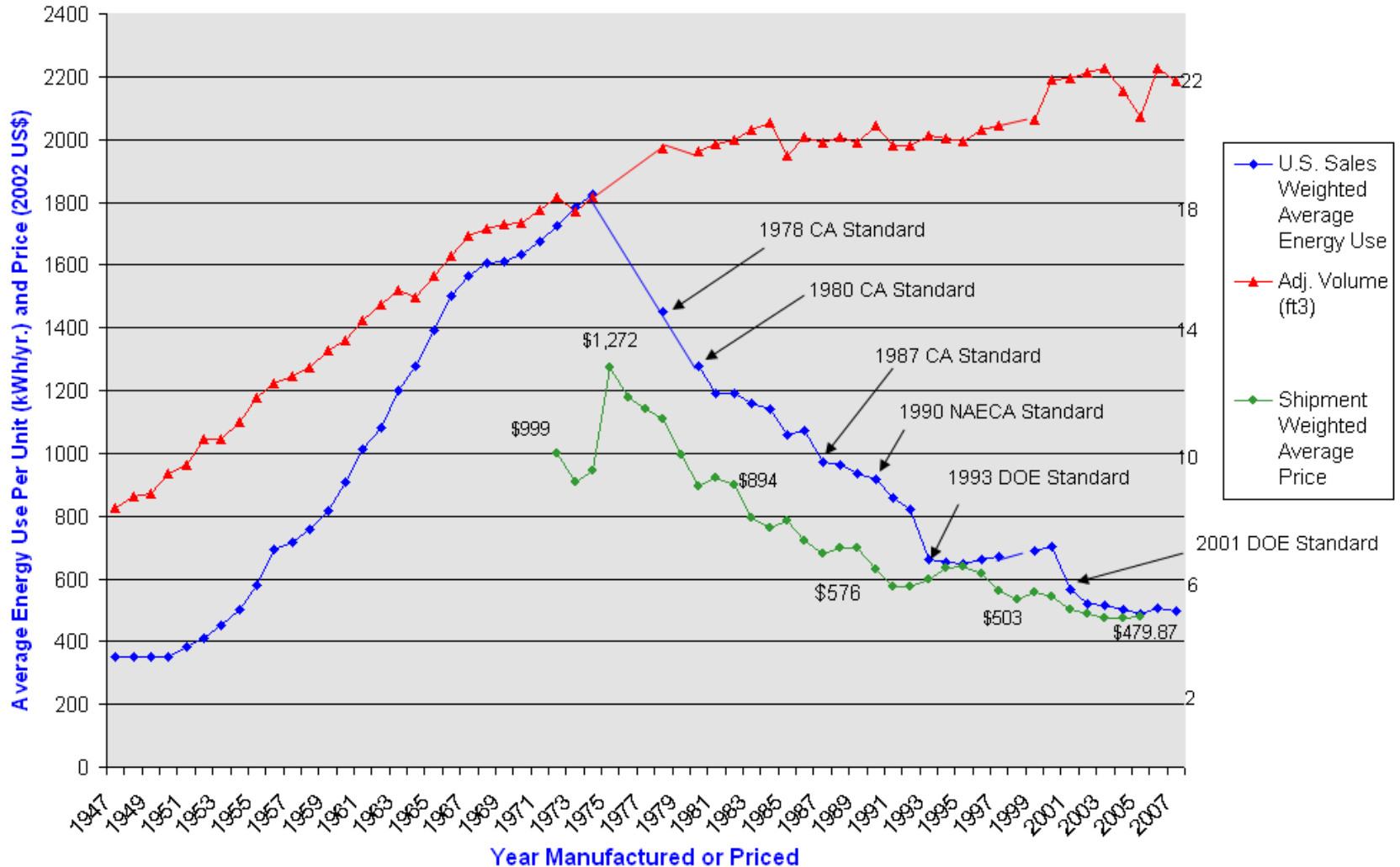
Federal Appliance & Equipment Standards

- Benefits from standards:
 - Projected savings from existing standards: 273 billion kilowatt-hours in 2010 or approximately 7 percent of US electricity consumption
 - Future savings potential: 26 appliance standards in the pipeline at DOE with the potential to save 1,900 terawatt-hours cumulatively by 2030. This would be equal to an annual reduction of 158 million tons of carbon dioxide or the equivalent annual output 63 coal fired power plants.
- Pending standards today:
 - Residential appliances – refrigerators, freezers, clothes washers, clothes dryers, dishwashers and room air conditioners;
 - Residential heating and cooling equipment – furnaces, central air conditioners and heat pumps;
 - Lighting
 - Drinking water dispensers, hot food holding cabinets and portable electric spas
 - Overall savings: 1.2 quadrillion Btu and \$90 billion by 2030, reducing annual CO₂ emissions by 71 MMT CO₂.

(Source: ACEEE, <http://www.aceee.org/press/2009/07/ka-boom-appliance-standards-make-big-bang>)

Refrigerators Use 75% Less Power Today

U.S. Refrigerator Energy Use v. Time with Real Price



Recent Progress on Green Codes

- High-performance code published by ASHRAE (Standard 189.1)
- International Green Construction Code (IgCC) being developed by International Code Council (ICC)



International Energy Conservation Code (IECC) Set to Become 30% More Efficient

- International Code Council Final Action Hearings for 2012 IECC in October 2010
- Comprehensive proposals for commercial buildings (EC 147) and homes (EC 25) would increase energy efficiency by roughly 30% over 2006 IECC



ICC Final Action Hearings

ARRA Funding and Codes

- State Energy Program funding under ARRA requires adoption of energy-efficient model codes and 90% compliance by 2017

(2) The State, or the applicable units of local government that have authority to adopt building codes, will implement the following:

(A) A building energy code (or codes) for residential buildings that meets or exceeds the most recently published International Energy Conservation Code, or achieves equivalent or greater energy savings.

(B) A building energy code (or codes) for commercial buildings throughout the State that meets or exceeds the ANSI/ASHRAE/IESNA Standard 90.1-2007, or achieves equivalent or greater energy savings.

(C) A plan for the jurisdiction achieving compliance with the building energy code or codes described in subparagraphs (A) and (B) within 8 years of the date of enactment of this Act in at least 90 percent of new and renovated residential and commercial building space. Such plan shall include active training and enforcement programs and measurement of the rate of compliance each year.

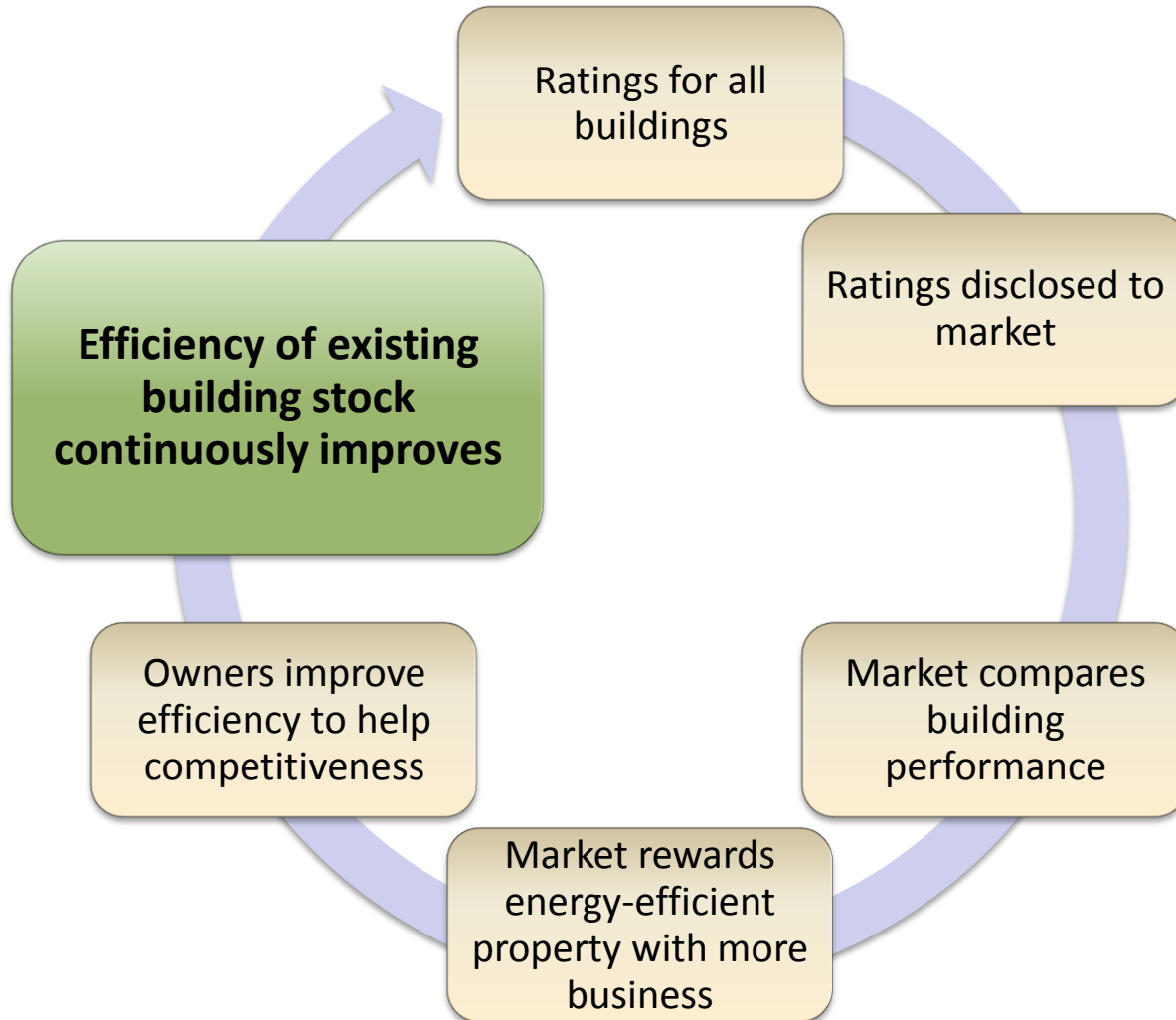
Dramatically more Resources Needed for Code Compliance



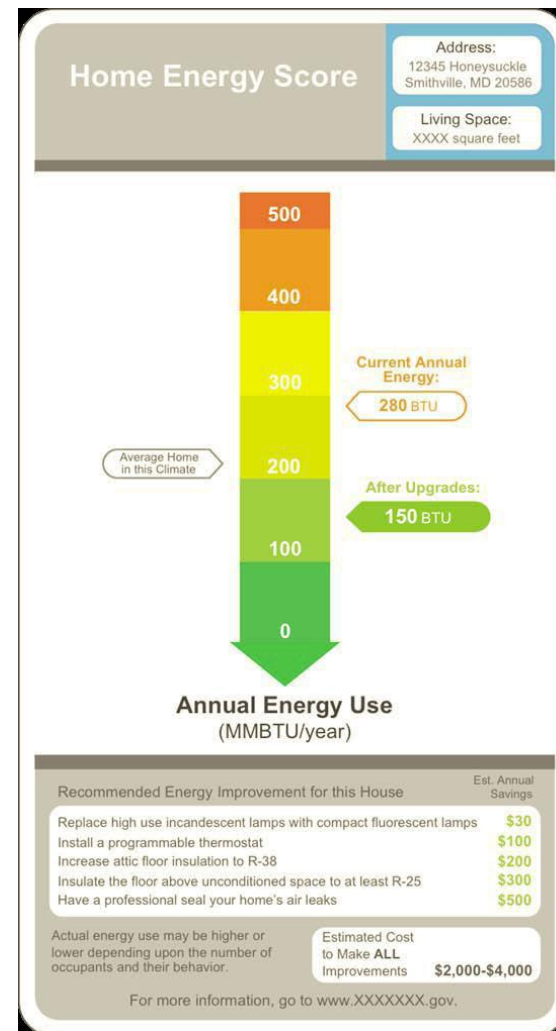
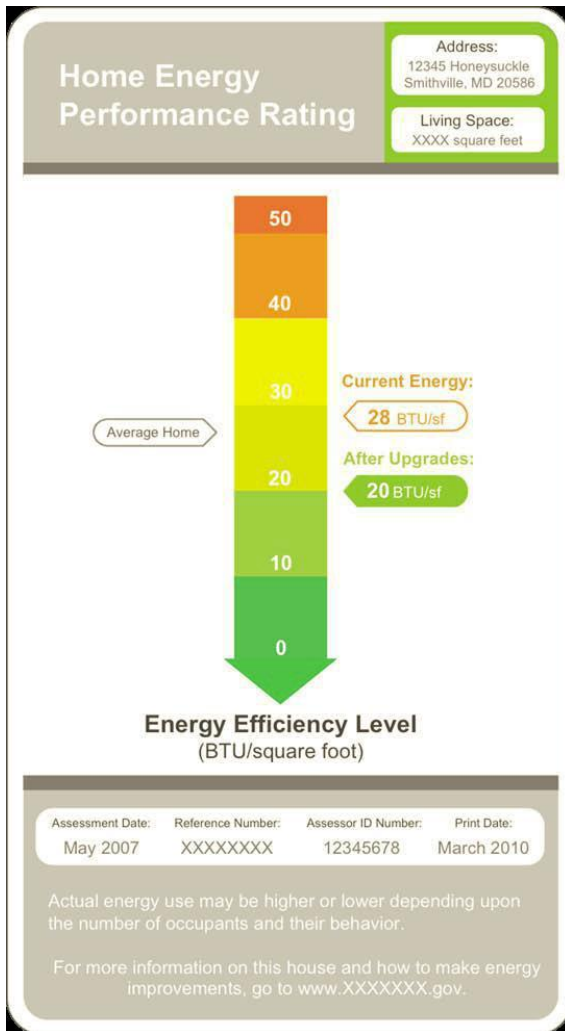
- Total funding of **\$810 million** needed annually for states to reach 90% compliance
 - plan review and inspection
 - Implementation and training
 - Federal code support activities
- Every dollar spent yields **\$6** in energy savings



Building Energy Rating and Disclosure Cycle of Improvement



National Building Rating Program (NBRP) Mock Labels

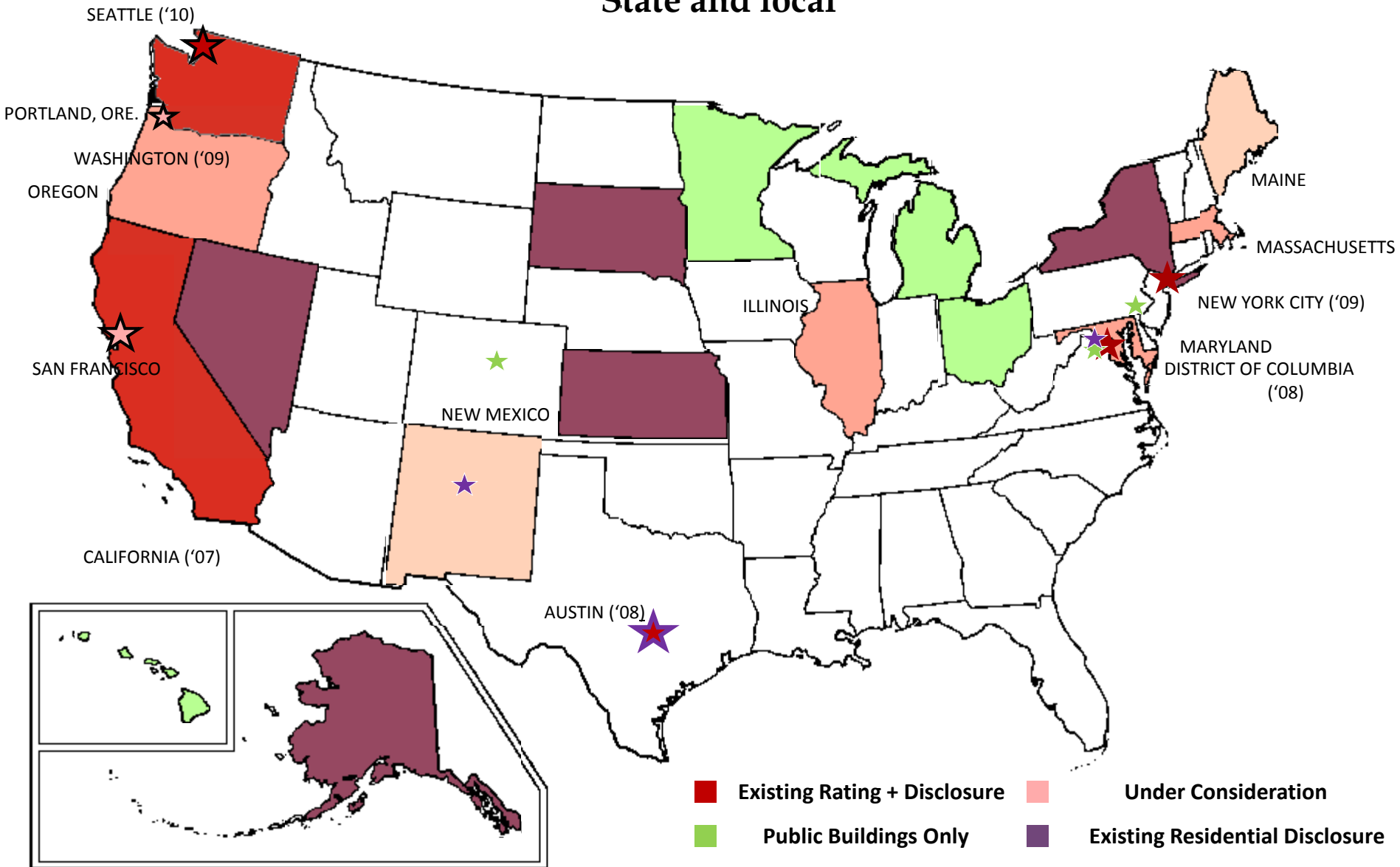


State and Local Activity

- New York City Greener, Greater Buildings Plan
- Austin Energy Conservation Audit & Disclosure (ECAD) Ordinance
- California AB 1103 and AB 758
- DC Energy Act
- Washington State “Efficiency First” Law
- Seattle Energy Disclosure Ordinance

U.S. Labeling Policies

State and local

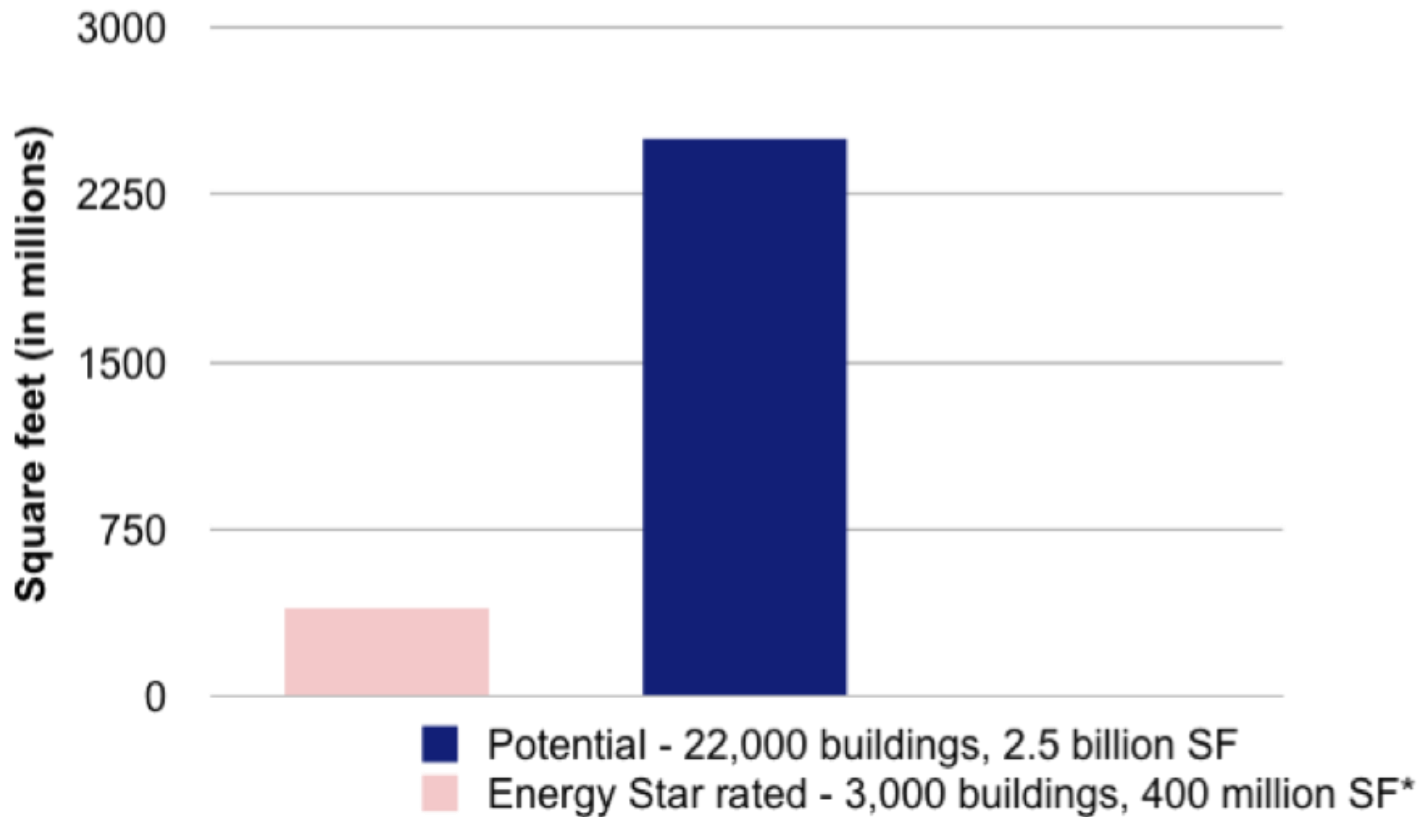


NYC Greener, Greater Buildings Plan

- Enacted 2009
- Requires:
 - Building Energy Rating and Disclosure
 - Water Benchmarking
 - Tenant Submetering
 - Lighting Upgrades
 - Code Improvements
- **Predicted to reduce GHG emissions by nearly 5%, more than any other *PlaNYC* program**



Benchmarked Buildings vs. Benchmarking Potential Under GGBP



*"Energy Star rated" data for New York metropolitan areas from EPA Energy Star Snapshot Spring 2010 report. "Potential" data from PlaNYC Report

Austin, TX: Energy Conservation Audit & Disclosure (ECAD) Ordinance

- Enacted 2008
- Administered by Austin Energy
- Requires:
 - Commercial Building Energy Rating and Disclosure
 - Home Energy Audits at Time of Sale
 - Multifamily Energy Audits and Mandatory Upgrades for Inefficient Buildings



Early ECAD Results

- **4,500+ home audits conducted**
 - Ducts leak almost twice the code standard
 - Older homes need ~10 inches of insulation to meet Austin Energy recommended levels
 - 68% need in-home weatherization
 - 58% need solar shading
 - 68% need HVAC air duct system renovation and sealing
 - 79% need additional attic insulation
- **Multifamily Audits:**
 - About 1,200 MF buildings need audit by June 2011
 - Preliminary results indicate 66 properties must perform upgrades to reduce energy to within 110% of average MF consumption

DC Energy Act of 2008

- First in US to require that buildings publicly disclose Energy Star benchmark ratings. Public building ratings will be online in fall 2010; private commercial building ratings online in early 2012, starting with buildings 200,000+ sf and phasing down to buildings 50,000 sf.
- Requires that new buildings 50,000+ sf publish Energy Star Target Finder ratings and then benchmark ratings. This will increase accountability from design through operations.

Other State and Local Activity

- **California AB 1103 and AB 758**
 - AB 1103 (benchmarking) begins 1/1/2011
 - AB 758 deals with CA HERS II program, asset labeling for commercial and state building rating system (BEARS)
- **Washington State Efficiency First law**
 - Code improvements based on Architecture 2030 goals
 - Benchmarking and mandatory upgrades for state buildings
- **Seattle Energy Disclosure law**
 - Improves state benchmarking law
 - Possible outcome-based codes pilot

Closing Thoughts

- Greener, Greater Buildings Plan is a model for other jurisdictions and federal action
- Growing recognition by policymakers that **existing homes and buildings** are the key to GHG reductions
- Most action happening at state and local levels
- Outlook for federal legislative action on energy and climate not good for remainder of 2010



Thank you! Questions?

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