U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

EE Progress and Priorities

Market Transformation Forum

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DOE EE Priorities

Spend ARRA funding quickly & effectively

Build EE infrastructure for longer term (post Recovery Act)

Take EE to scale & create a new EE economy

- Federal Policies
  - R&D
  - Test procedures / Appliance Standards
  - Support ENERGY STAR
- Enable / grow EE markets/services
  - *Residential Retrofits*
  - Commercial Retrofits
  - Industrial Improvements
- State Policy Assistance
- Education / Outreach

- Create Jobs
- Reduce GHGs
- Save Money
- Enhance Competitiveness
- New Clean Energy Economy

EE is fastest, cheapest, largest, way to save energy and build jobs

Accelerating Efficiency Standards

New standards (>20 products) since March 2009 will save **$250 - 300 billion** through 2030

Standards issued in the next 2 years (11 products) could save an *additional* **$250 – 300 billion**

New standards will cover **>30% of *all*** energy consuming devices in the residential and commercial sectors

Combined with new reporting and enforcement efforts

Recent actions:
NOPR for fluorescent light ballasts
DFR for room AC / residential dryers
DFR for furnaces / central AC

Building Codes Goals

30% Better Codes

50% Better Codes

90% compliance by 2017

30% Goal for Model Energy Codes

- 2012 IECC expected to save 30% over 2006 IECC
- ASHRAE 90.1-2010 expected to save 20-25% over 90.1-2004
  - Published – October 2010
  - Determination – Nov 2011

50% Goal for Model Energy Codes: A challenge

- 2015 IECC – 20% jump in three years
- ASHRAE 90.1-2013 – 25-30% jump in 3 years and out of cycle
- Prescriptive approaches maxed out

90% Goal for Compliance

- Code compliance / training pilots

Comprehensive Adoption and Compliance Strategy

- Goal:10 states to adopt the IECC 2009 and ASHRAE 90.1 2007 or more efficient code during FY2011

DOE/EPA Coordination: ENERGY STAR and Buildings Programs

2011 Work Plan

Objectives

1. Coordinate / strengthen DOE and EPA activities related to buildings (commercial and residential) and products.
2. Gain efficiencies in staff and programmatic resource allocation.
3. Communicate the roles and responsibilities of each Agency to the public, to other Federal government agencies, and to Congress.

Highlights

- Up-to-Date ENERGY STAR Specifications / Verification testing
- ENERGY STAR: Most Efficient pilot program
- Innovative Whole-Building Programs
- Home Performance with ENERGY STAR Transitions to DOE.

ENERGY STAR: Most Efficient

- Leverage ENERGY STAR; link to DOE R&D
- Connect high efficiency products with consumers that want to
  - Do right thing for the environment
  - Do the most they can
  - Buy the most efficient product available
  - Be an early adopter; trendsetter
- 2 Rounds of stakeholder comments
- Next steps
  - Criteria available this month
  - 2011 Pilot
  - Fall assessment
  - 2012 Full year program

Needs to be Useful Tool for

- Consumers
- Manufacturers
- Program Administrators
- Retailers

Overview of Residential Buildings Efforts

	New Construction		Existing Building Improvements	
	DOE	**EPA**	**DOE**	**EPA**
1) Research and Development	Building America Builders Challenge Other R&D	ENERGY STAR Concept home pilot	Building America Indoor Air R&D	
2) Codes and Standards	IECC Proposals Training / Enforcement Industry standards	Quality Installation programs	Standard Work Specs	Quality Installation programs Indoor Environment Protocols Lead Safe Certifications
3) Workforce Development	Building America builder requirements	Workforce training associated with ENERGY STAR V3 Training associated with Quality Installation	Workforce Guidelines Standard Training Curriculum Training Program Accreditation Workforce certifications	Quality Installation programs Indoor Environments Protocols
4) Consumer Information	BTP Residential website	ENERGY STAR website	Home Energy Score pilots BetterBuildings website New media strategies	Online Home Energy Yardstick Online Home Energy Advisor ENERGY STAR website
5) Financing	Evaluate HUD PowerSaver loan	ENERGY STAR mortgages Appraiser and Realtor training	Power saver pilots (w HUD) RLFs and LLRs	
6) Program Delivery	Builders Challenge aligned with ENERGY STAR V3 and Concept Home	ENERGY STAR V3	BetterBuildings Home Performance with ENERGY STAR (transition)	Quality Installation programs Indoor Environments Protocols
7) Evaluation / Data	Building Energy Optimization Tool (BEOPT)	ENERGY STAR new homes evaluation and enhanced quality assurance	BetterBuildings evaluation Home Performance with ENERGY STAR evaluation (transition) Retrofit Measures database	

Better Buildings: New Program Models / Elements

Overview Statistics

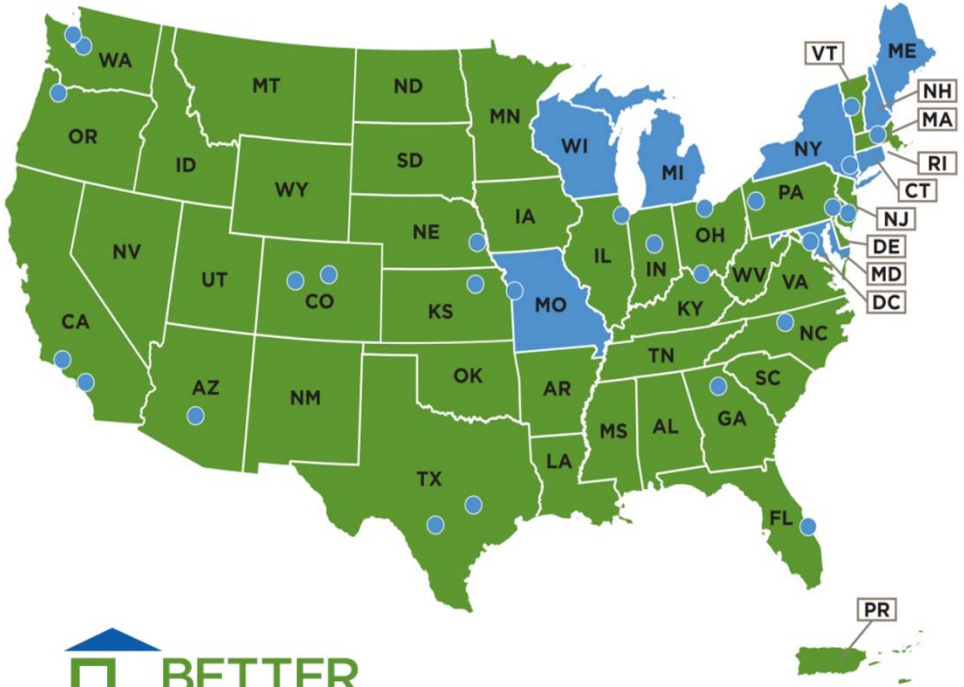
- 3-year grants of $1.5 to $40 million each
- 41 Grant Recipients
  - 25 initial grant recipients in June 2010
  - 9 additional awarded in August 2010
  - 7 additional from SEP portfolio in November 2010

Demographic Diversity

- 31 States
- 7 state-wide programs
- 4 programs span a region or group of locations
- Many programs focus on neighborhoods within a city
- Rural and urban mix
- Socioeconomic mix
- All climate zones covered

Building Types

- Residential (Single and Multifamily)
- Commercial
- Agricultural
- Public

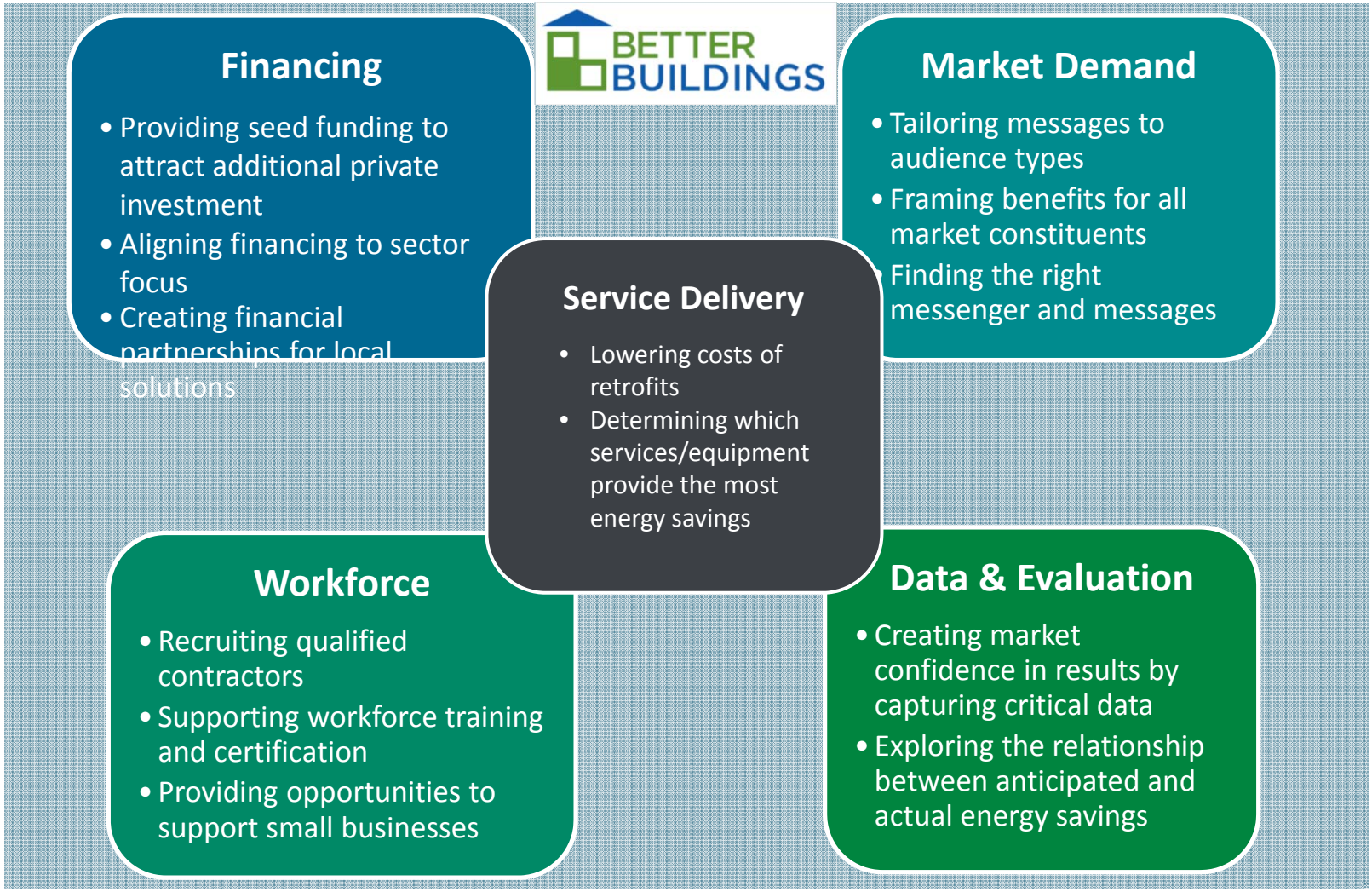


BETTER BUILDINGS

Selection Criteria Used for Applications

- Financial Leverage and Program Sustainability
- Project Impact
- Program Approach
- Partnership Structure and Capabilities

BetterBuildings: Address Market Barriers



Innovative Marketing

*Los Angeles is tapping into a state-wide marketing campaign, including **high-quality videos***

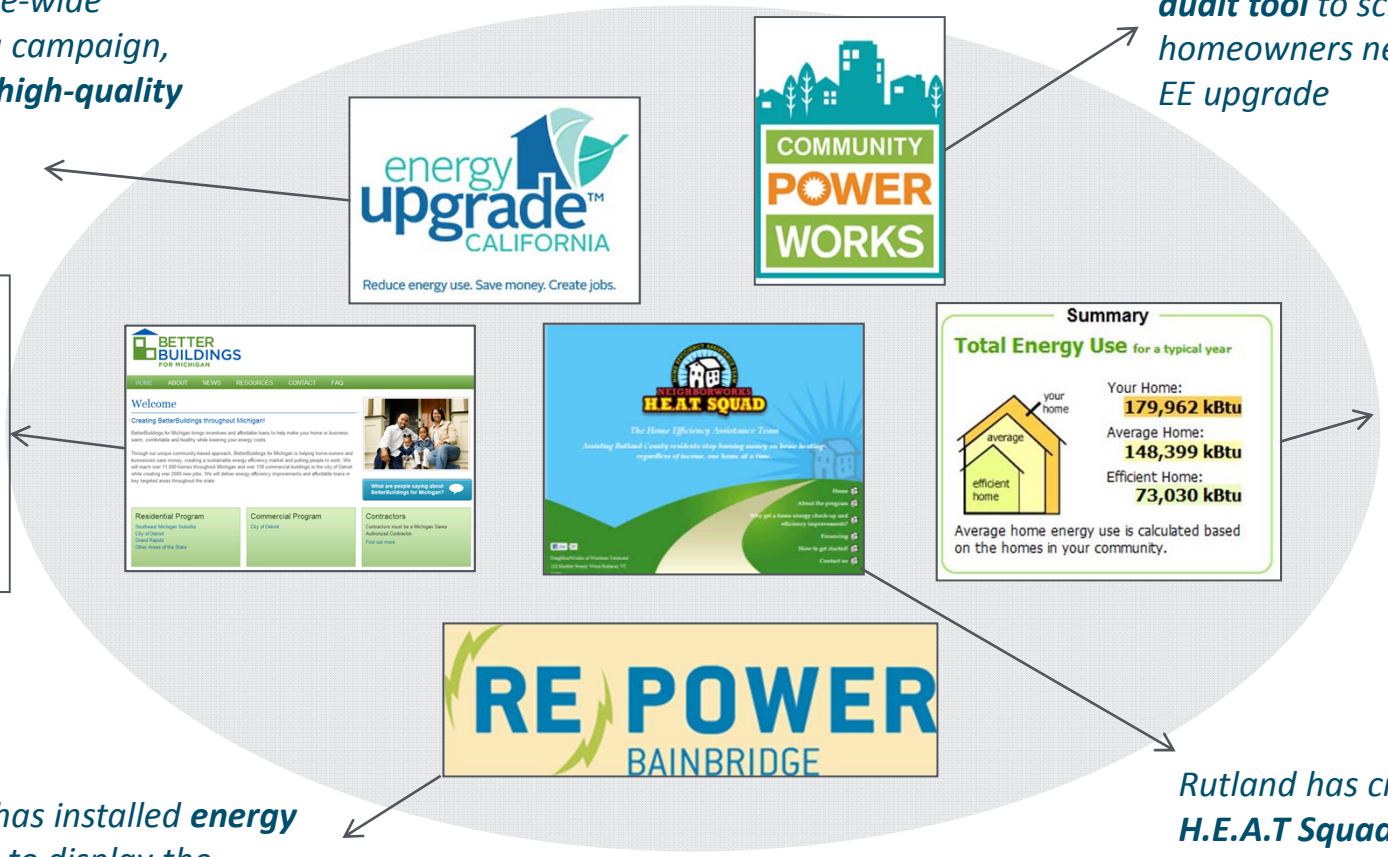
*Seattle is using an **online audit tool** to screen homeowners needing an EE upgrade*

*BetterBuildings Michigan is **embracing the BetterBuildings brand** and promoting it at the local level*

*Charlottesville is using a new **handheld tool** and will be piloting the Home Energy Score*

*Bainbridge has installed **energy dashboards** to display the islands energy load throughout the day to change behavior individual consumption*

*Rutland has created a **H.E.A.T Squad** of friendly neighborhood experts to engage the community about EE benefits*



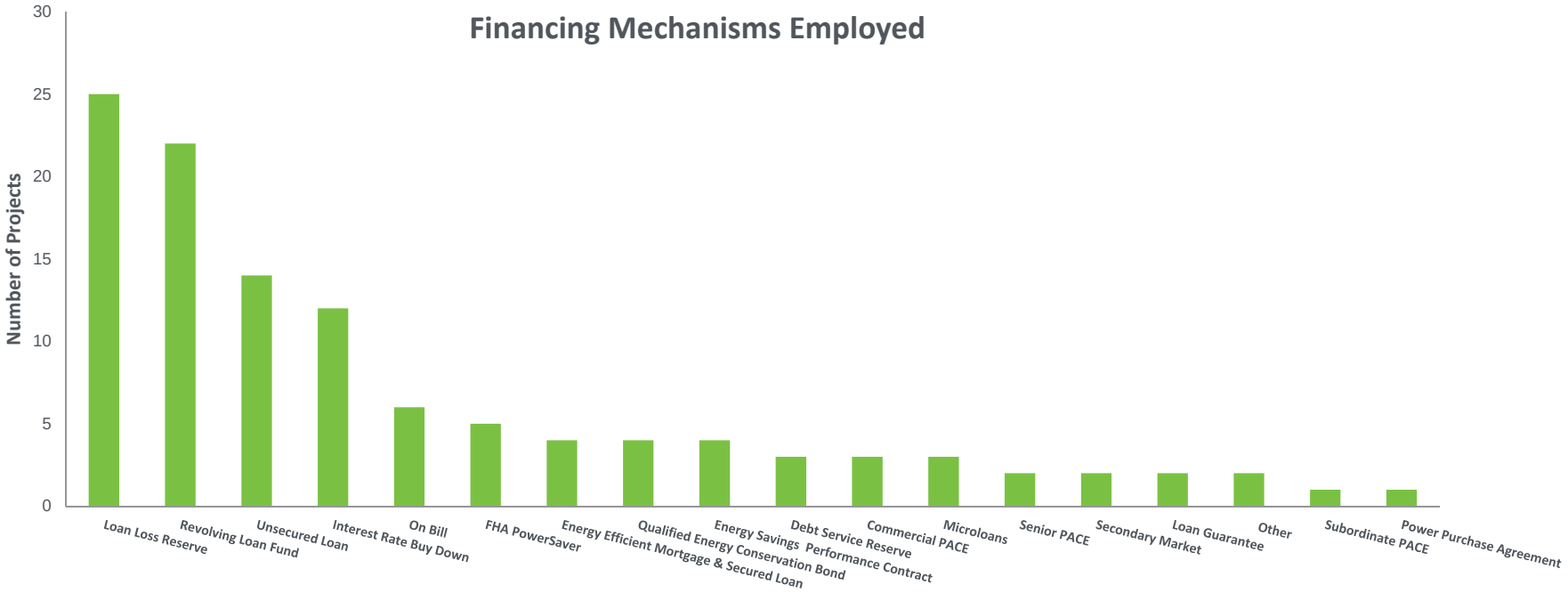
Innovative program delivery strategies

BetterBuildings is working to reduce retrofit delivery costs for providers and consumers

Bulk purchasing	• Camden, NJ • Rutland, VT
Concierge services	• Boulder County, CO • Connecticut
Pre-qualified contractor list	• Los Angeles County, CA • Austin, TX
Packaging multiple jobs for contractor bidding	• Omaha, NE
Geographically-based contractor scheduling	• Cincinnati, OH

Range of Financing Mechanisms

- **Testing**
  - Which mechanisms best fit different retrofit programs (by sector, by socioeconomic demographic)
  - When financing is not a barrier to uptake
- **Creating confidence for national application**
  - Ease of accessibility for individuals, tailored to different types of retrofits, and demonstrate loan performance



BetterBuildings: Next Steps

- Business model frameworks
  - Program administrators or sponsors
  - Service deliverers (home improvement contractors, allied trades)
- Continued DOE assistance
- Lessons learned workshop – May 2011
- Business model workshop – Fall 2011
- Data and information collection

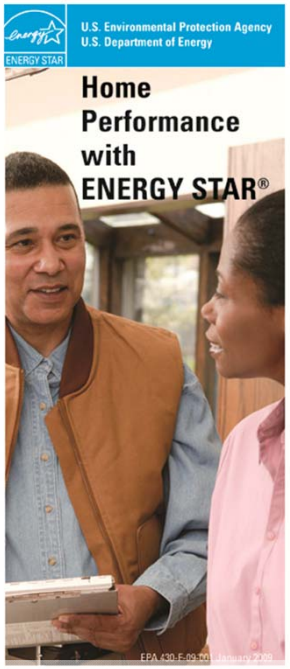
Home Performance with ENERGY STAR

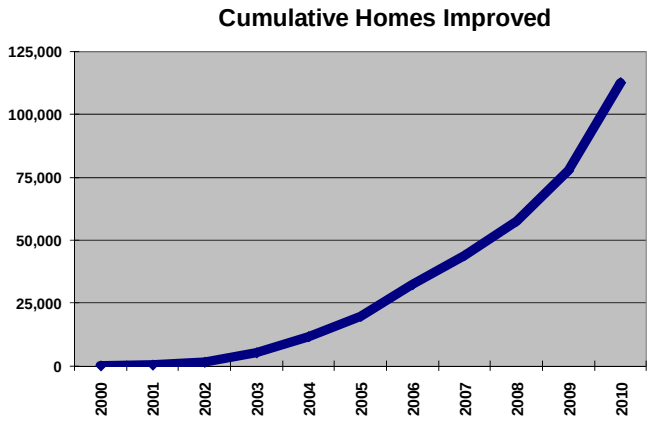
Transition to DOE

- Integrate program with other efforts such as Better Buildings, Workforce Guidelines, and Home Energy Saver
- Addition financial and staff resources, leveraging Better Buildings.
- Run in parallel to Better Buildings during FY12, programs will eventually merge thereafter.

Key Points for Transition

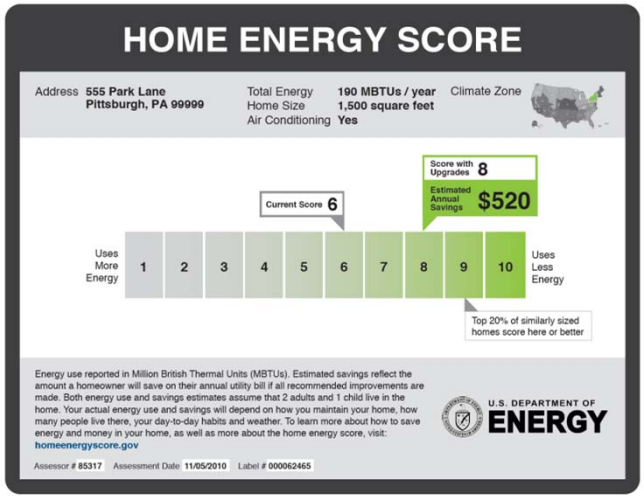
- Integration has started. Complete transition by FY2012
- Spring: Stakeholder discussions on options for Program changes and need for additional tools / resources.
- Early Summer
  - Draft modified Program Sponsor Guide.
  - Webinars to discuss proposed changes.
- Continue success: 110,000 homes improved to date

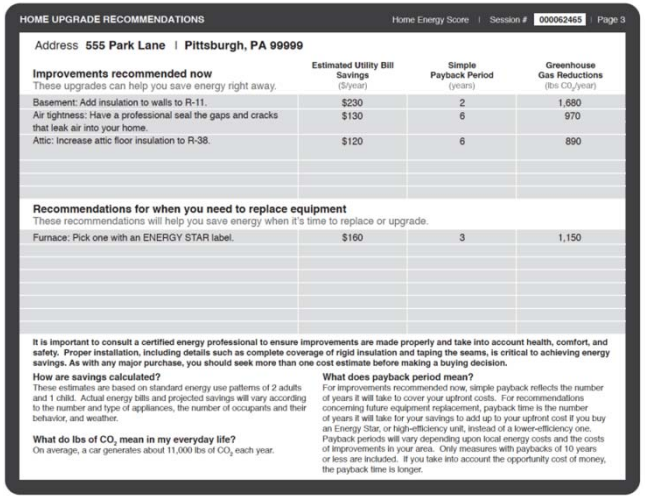




Better Information

- Homeowner
  - MPG Rating for the Home
  - Low cost, easy, understandable, comparative score – 1 to 10
  - Asset-based
  - Recommendations for home improvements and estimate of savings
  - Being piloted this Spring: 11 pilots
  - Additional research: NYSERDA and others
- Commercial buildings ratings/scores
  - Promote Portfolio Manager
  - Explore asset based tools
  - Learn from Home Energy Score development process
  - Summer/Fall 2011





Workforce Development: Worker Certification & Training

Build confidence with consumers and EE finance community that retrofit work delivers expected benefits; demand is a function of price and quality

National Workforce Guidelines for Home Energy Upgrades

- Job Task Analyses
- KSAs
- Standard work specifications

- Multifamily -- underway

March 2011: Finalize Guidelines

Spring/Summer 2011: Deploy through WAP and other grantees

Worker Training and Accreditation

- Training Platform
- Accreditation protocols
- Accreditation body
- Expanded Training Centers

Platform being tested now; operational by summer; complete by Fall 2011

Accreditation rolled out Spring 2011 -- Fall 2012

Worker Certifications

- Certification protocols
- Certification bodies

May 2011: Certification Scheme development

Fall 2011: Implementation of Certification Scheme

Better (Commercial) Buildings: Overview

Goals

- **Achieve a 20 percent improvement in the energy efficiency of commercial buildings by 2020.**
- **Reduce companies' and business owners' energy bills by about $40 billion per year.**
- **Save energy by reforming outdated incentives and challenging the private sector to act.**

President Obama at Penn State University
February 3, 2011

http://www.whitehouse.gov/the-press-office/2011/02/03/president-obama-s-plan-win-future-making-american-businesses-more-energy

Overview: Building on Progress

- **Weatherization, Better Buildings (residential) and EECBG will retrofit 1,000,000 homes**
- **The interagency Energy Regional Innovation Cluster (E-RIC) initiative award of $129.7 million for building efficiency RD&D to a consortium led by Penn State University (http://gpichub.org).**
- **GSA -- $5.5 billion to improve the efficiency of existing federal buildings and build more efficient new buildings.**
- **Executive Order 13154 -- directing federal agencies to use high-performance and sustainable design principles for buildings.**
- **The Administration continues to be committed to the passage of the HOMESTAR program.**

Overview: Initiatives

1. Tax incentives. Streamline the 179D commercial building tax deduction for tax year 2011 and restructure the tax incentive for tax year 2012.

2. Financing. Increase and accelerate financing opportunities for commercial and public building energy improvements through existing SBA loan program & proposed DOE loan guarantee program

3. Grants. Give competitive grants to state and local governments to streamline and update codes and regulations and to adopt policies and programs to attract private-sector investment in building retrofits.

4. Challenge. Challenge CEOs and university presidents to systematically upgrade their facilities for improved efficiency.

5. Workforce. Improve and expand workforce training and pilot a buildings extension service.

Commercial and Industrial Efficiency: Continuous Energy Improvement

ISO5001 SUPPORT

Foundational tool that any organization can use to manage energy

SUPERIOR ENERGY PERFORMANCE

Single facility ISO 50001 conformance with validated energy performance improvement

Focus for Certified workforce

INDUSTRY PARTNERSHIPS

Companies that pledge to reduce energy intensity 25% in 10 years

Advancing energy management

BETTER BUILDINGS INITIATIVE

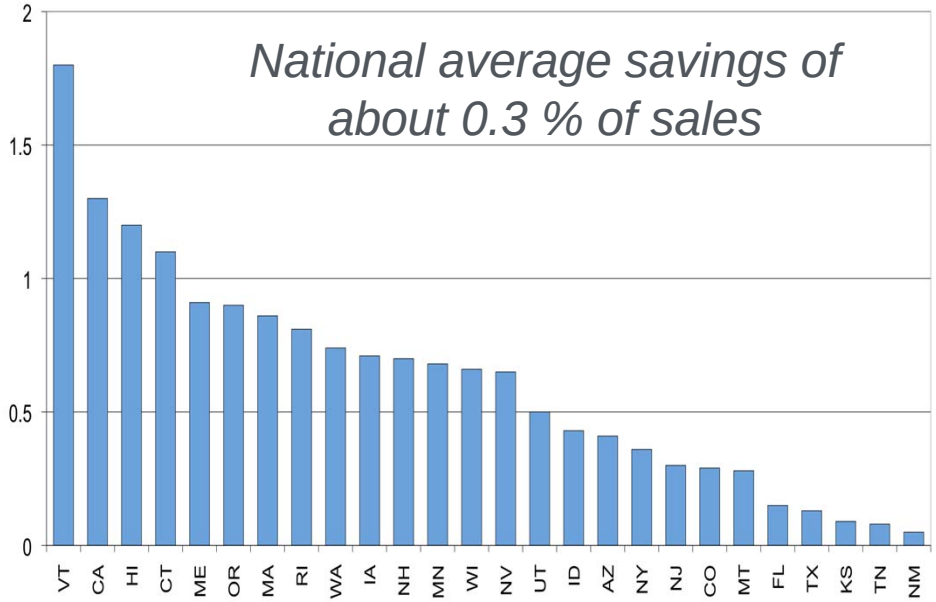
ISO 50001

Components in place:

- Baseline
- Policy
- Plan
- Team/Leader

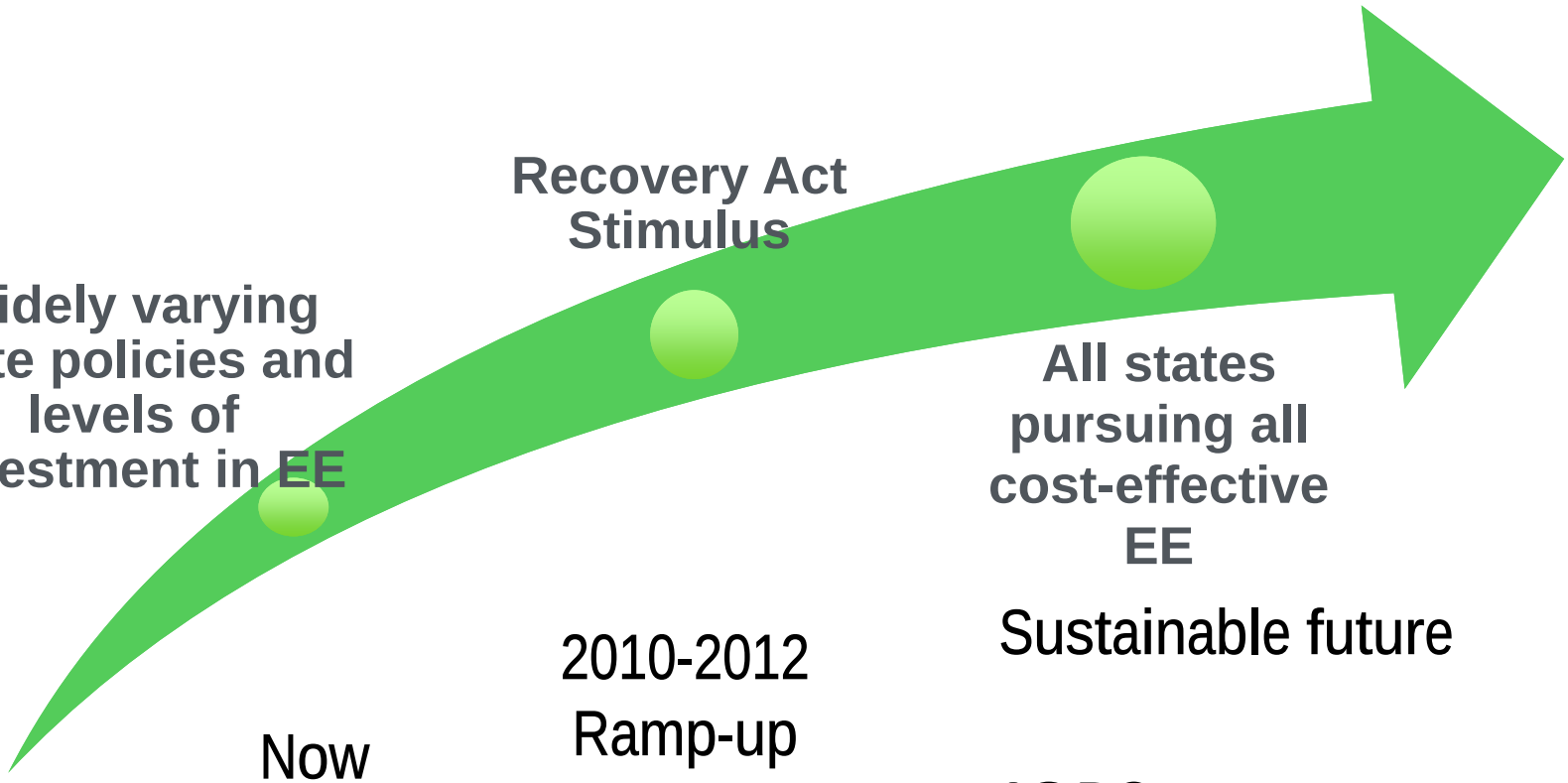
State, Local and Regional Stakeholder Engagement

- Critical to EE future
- State / regional/ local policies affect majority of EE investment
  - EERS
  - Public benefits
  - IRPs
  - Energy use disclosure for buildings
  - Building codes
- EE is regional / local resource
  - Regional planning key to capturing full value
  - Regional / state consistency / oversight
- DOE assisting states, PUCS and others
  - SEP technical assistance
  - State Energy Efficiency Action Network



- New State Energy Efficiency Action Network
- SEP Competitive Grant (Part 2)
- Section 410

SEE Action: All Cost-Effective Energy Efficiency



SEE Action Network - WGs

SEE Action Working Groups

- State/local co-chairs
- Diverse WGs
- Aggressive Goals
- Blueprint to Achieve Goals
  - Goal
  - Where are we today
  - What we need to do
  - Roles/responsibilities
  - Coordination/outreach
- Implementation

↓

DOE/EPA facilitate

- Work groups
- Meetings
- Development of key deliverables
- Coordination platform

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

SEE Action: Next Steps

- Implementation discussions
  - WGs
  - Executive Groups
- Two phase release
  - Spring 2011 (phase 1) – ~ 4 Blueprints
  - Summer 2011 (phase 2) – ~ 4 Blueprints
- Ongoing implementation
- Address in Energy Policy Summit with ARRA grantees: May 2011

SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

EPA Utility Air Toxics Rule: Overview

- March 16, 2011: EPA proposed Utility Air Toxics Rule (aka “Utility MACT”) released for comment
  - Rule will be final November 16, 2011.
  - Compliance: 2015, with possible 1-year extension
- Controls power plant smokestack emissions
  - New and existing facilities
  - Coal & oil steam electric units > 25 MW
  - Hazardous air pollutants (HAP)/air toxics:
    - metals (e.g., mercury, arsenic, chromium, nickel)
    - acid gases (e.g., hydrogen chloride (HCl))
    - organic air toxics (dioxin, furans)
- Requirements
  - MACT emission limits -- Mercury, Particulate Matter (PM), HCl (acid gas)
  - Work practice standards (good combustion) -- Dioxin/furans
- Expected Responses
  - Some existing units comply with current controls
  - Some will have required installations, including:
    - Activated Carbon Injection
    - Upgraded particulate controls
    - Scrubber or Dry Sorbent Injection
  - Some units will retire rather than invest in controls

EPA Utility Air Toxics Rule

- Retirements
  - **MACT retires <1% national capacity (10 GW)** -- on top of 27 GW expected to retire regardless
    - Includes Transport Rule in baseline but not future rules for ash, cooling water, NOX, or GHGs
  - Retired: small, inefficient generators that do not operate near full capacity
  - Extra capacity in existing fleet to take up slack
  - Capacity additions, regardless of MACT
    - 25-36 GW renewables (mostly wind)
    - 1-3 GW gas
- Issues with predictions of 50-80 GW coal retirements
  - Studies based on subjective judgments of EPA rules - Air Toxics and Water Rules had not been released when studies published
  - Assume aggressive compliance schedules & worst-case estimates of other rules (ash disposal, cooling water, future NOX, and GHGs)
  - Omit flexibility that EPA included in the proposed rules
  - Assume all units install most expensive technologies
    - EPA allows lower cost alternative technologies to comply
  - Include baseline retirements projected regardless of EPA regulation

Bipartisan Policy Center, March 24, 2011. EPA Air Toxics Proposed Rule

EPA Utility Air Toxics Rule and Energy Efficiency

- "EE Sensitivity" illustrates benefits of integrating EE within air rule
  - DOE assisted EPA with analysis; two key drivers of future EE investments
    1. Increasing investment in **ratepayer-funded EE programs**
       - Driven by state policies such as EERS and IRP/DSM plan based on 2009 LBNL study
    2. DOE's rulemakings for **federal appliance standards**
       - Driven by existing federal statutory mandates (EISA 2007, EPACT 2005 and EPACT 1992); 30+ required rulemakings
  - Estimated demand reductions: equal to 5.3% of US demand in 2020 and 6.6% of demand in 2030 -- reducing demand growth by approx. 1/3 through 2030
- Key results:
  - Cost of the standards lowered by more than half in 2020 (from $10B to $4B)
  - Consumer bills lowered by an average of 7% in 2020
  - CO2 emissions reduced by more than 6% in 2020; emissions of SO2, NOx and mercury reduced by a similar amount
- Important role for State Utility Regulators, Power Companies, System Operators and environmental health
  - Early planning will ensure orderly and affordable compliance with the standards.
  - Resources to assist you: National Action Plan for Energy Efficiency and State Energy Efficiency Action Network (SEE Action)

Challenges

- Robust business models to take EE to scale
- Quality work
- Measurement and evaluation
- Multistakeholder engagement to capture full value of EE

THANK YOU!