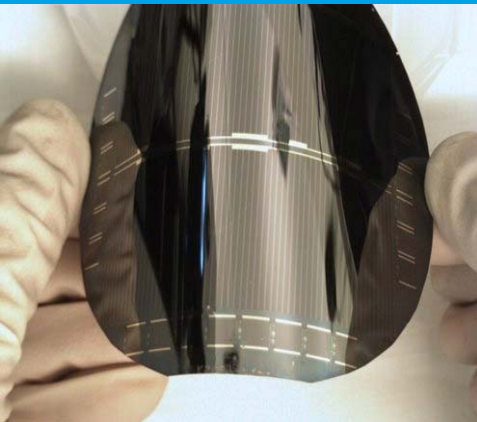


Energy Efficiency Update

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



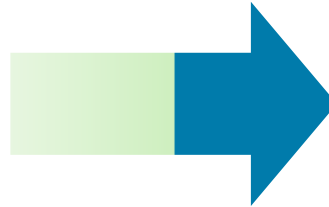
CEE
Winter 2011

Kathleen Hogan

Deputy Assistant Secretary for EE
Energy Efficiency and Renewable
Energy

DOE EE Priorities

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



Spend ARRA funding quickly & effectively

Building infrastructure for longer term (post Recovery Act)

Take EE to scale & create a new EE economy

Create Jobs Reduce GHGs Save Money New Clean Energy Economy

Test Procedure Schedule

- EISA 2007 requires DOE to review test procedures for all covered products at least once every 7 years.
- DOE is scheduled to complete a review of all its test procedures by December 2014.
- DOE adding standby requirements pursuant to EISA 2007
- Final Rule completions by calendar year for covered products:

	2009 Actual	2010 Actual	2011 Scheduled
Test Procedures	<ol style="list-style-type: none"> 1. General Service Incandescent Lamps 2. General Service Fluorescent Lamps 3. Incandescent Reflector Lamps 4. Small Electric Motors 5. Battery Chargers 6. External Power Supplies 7. Fluorescent Lamp Ballasts 8. Commercial Packaged Boilers 	<ol style="list-style-type: none"> 1. Metal Halide Lamp Ballasts 2. Residential Furnaces 3. Residential Boilers 4. Residential Refrigerators 5. Clothes Dryers 6. Room Air Conditioners 	<ol style="list-style-type: none"> 1. Walk-In Coolers and Freezers 2. Microwave Ovens 3. Battery Chargers 4. External Power Supplies 5. Fluorescent Lamp Ballasts 6. Residential Clothes Washers 7. Ranges and Ovens 8. Dishwashers 9. Dehumidifiers 10. Central Air Conditioners 11. Electric Motors

Test Procedure Schedule

ENERGY STAR Test Procedure Activities for 2011:

	Scheduled for FY2011
Test Procedures	1. Computers
	2. Lab Grade Refrigerator-Freezers*
	3. Pool Pumps and Sump Pumps
	4. Furnace Fans**
	5. Game Consoles
	6. Residential Imaging Equipment
	7. Uninterruptible Power Supplies*
	8. Climate Controls
	9. Servers (Tier 2)
	10. Small Network Equipment
	11. Data Storage
	12. Voice Over IP Phones
	13. Smart Capability***
	14. Water Coolers
	15. Residential Ranges, Cooktops*

*DOE covered product; may be opportunities outside DOE coverage

**ENERGY STAR guidance, rather than a test procedure

***Scope to be determined

Commercial Building Alliances

New Alliances
in 2011/12

Alliances

Commercial Real Estate
Hospitals
Retailers

Specifications

LED Parking Lot Lighting
Parking Structure Lighting
LED Refrigerated Case Lighting
Unitary HVAC Roof Top Units (RTUs) – this month

Key Issues

Right-sizing of HVAC and refrigeration equipment / systems
Rooftop HVAC equipment
Refrigerated display cases
Lighting systems
Process and plug loads
Energy management systems



Sector	SNAPSHOT OF 2011													
	Market Enabling Tools / Resources											Stakeholder Efforts		
	Energy Use Information		Design guides		Financing		Workforce		Deployment Models		Measure energy savings		Other Innovation	-- Broader adoption of existing tools / programs -- Key state / local policies -- Development of better tools / programs
	D	D	D	D	D	D	D	D	D	D	D	D		
v	p	v	p	v	p	v	p	v	p	v	p			
Residential														
New Construct			X	X									X	X
Home Retrofit	X	X	X	X	X		X	X	X		X		X	X
Low Income							X	X					X	
Commercial														
New Construct	X		X								X		X	X
Private	X				x		X				X		X	X
Public	X	X			X	X	X				X		X	X
Federal		X				X					X		X	X
Industrial	X	X					X				X		X	X

Consumer Information: MPG Rating for the Home

- Being piloted this Spring
- Home Energy Score
 - Asset based home assessment
 - Voluntary
- Value proposition
 - Credible, motivational information at low cost
 - Easy, understandable, comparative score – 1 to 10
 - Recommendations for home improvements and estimate of savings
 - Recommendation to get further detail from certified home auditor
 - Supported by web site information
 - Offered by qualified assessor
- Administered by partnering organization
 - Can work be in tandem with other Home improvement programs;
 - Not a replacement for a comprehensive energy audit

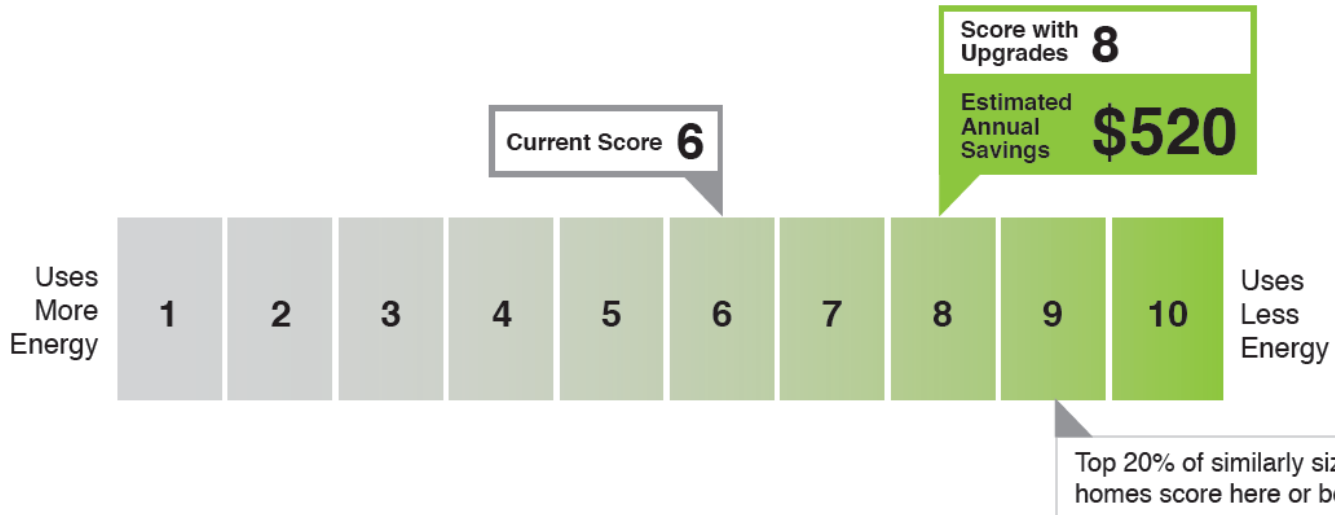
Recommendation of the
Vice President's Middle
Class Task Force

HOME ENERGY SCORE

Address **555 Park Lane
Pittsburgh, PA 99999**

Total Energy **190 MBTUs / year**
Home Size **1,500 square feet**
Air Conditioning **Yes**

Climate Zone



Energy use reported in Million British Thermal Units (MBTUs). Estimated savings reflect the amount a homeowner will save on their annual utility bill if all recommended improvements are made. Both energy use and savings estimates assume that 2 adults and 1 child live in the home. Your actual energy use and savings will depend on how you maintain your home, how many people live there, your day-to-day habits and weather. To learn more about how to save energy and money in your home, as well as more about the home energy score, visit:

homeenergyscore.gov



U.S. DEPARTMENT OF
ENERGY

Assessor # **85317** Assessment Date **11/05/2010** Label # **000062465**

Address **555 Park Lane | Pittsburgh, PA 99999**

Improvements recommended now

These upgrades can help you save energy right away.

	Estimated Utility Bill Savings (\$/year)	Simple Payback Period (years)	Greenhouse Gas Reductions (lbs CO ₂ /year)
Basement: Add insulation to walls to R-11.	\$230	2	1,680
Air tightness: Have a professional seal the gaps and cracks that leak air into your home.	\$130	6	970
Attic: Increase attic floor insulation to R-38.	\$120	6	890

Recommendations for when you need to replace equipment

These recommendations will help you save energy when it's time to replace or upgrade.

Furnace: Pick one with an ENERGY STAR label.	\$160	3	1,150

It is important to consult a certified energy professional to ensure improvements are made properly and take into account health, comfort, and safety. Proper installation, including details such as complete coverage of rigid insulation and taping the seams, is critical to achieving energy savings. As with any major purchase, you should seek more than one cost estimate before making a buying decision.

How are savings calculated?

These estimates are based on standard energy use patterns of 2 adults and 1 child. Actual energy bills and projected savings will vary according to the number and type of appliances, the number of occupants and their behavior, and weather.

What do lbs of CO₂ mean in my everyday life?

On average, a car generates about 11,000 lbs of CO₂ each year.

What does payback period mean?

For improvements recommended now, simple payback reflects the number of years it will take to cover your upfront costs. For recommendations concerning future equipment replacement, payback time is the number of years it will take for your savings to add up to your upfront cost if you buy an Energy Star, or high-efficiency unit, instead of a lower-efficiency one. Payback periods will vary depending upon local energy costs and the costs of improvements in your area. Only measures with paybacks of 10 years or less are included. If you take into account the opportunity cost of money, the payback time is longer.

Home Energy Score: Pilots in 11 States

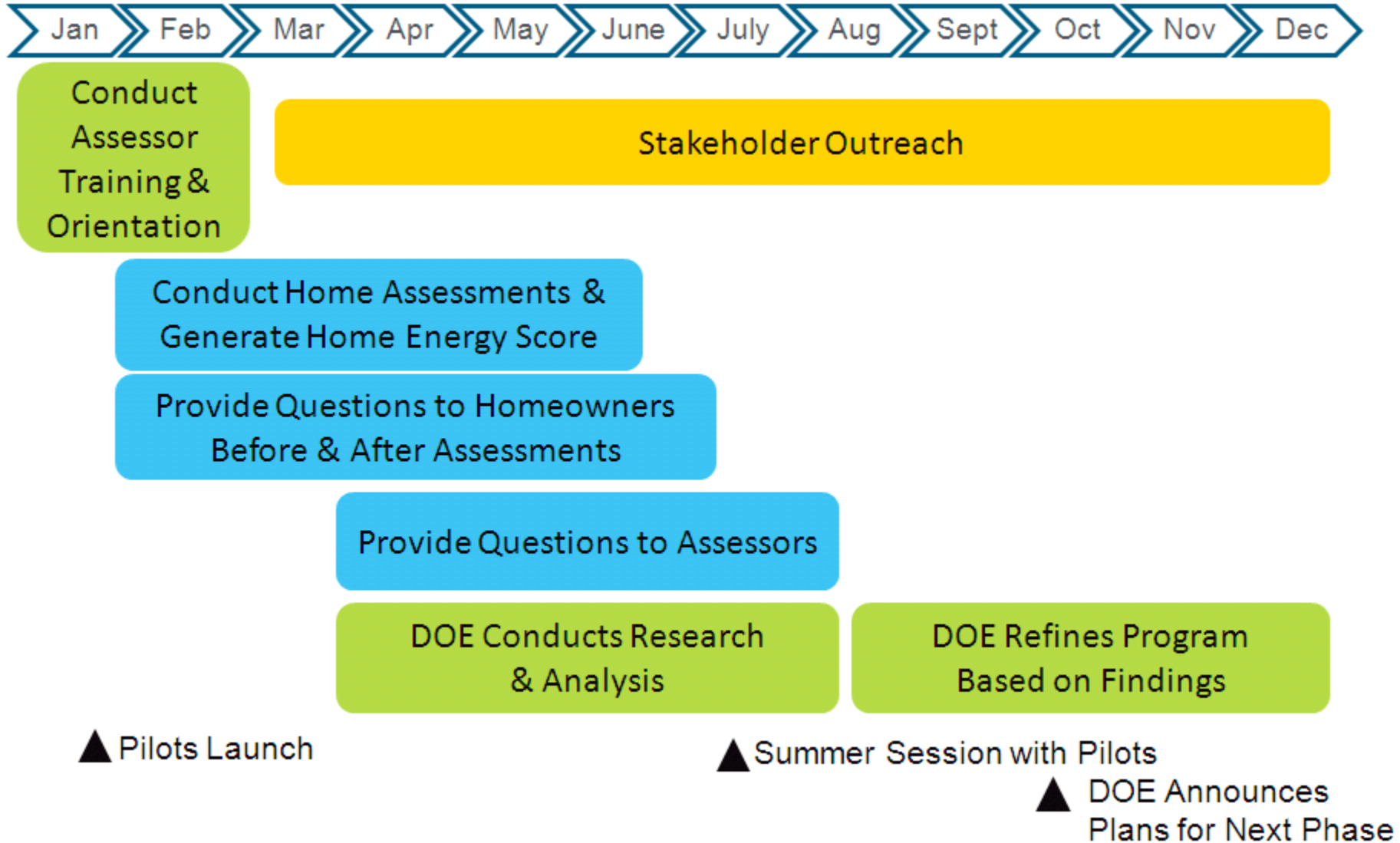
- Virginia
- Massachusetts (Cape Light Compact)
- Minnesota
- Indiana (Hoosier Energy)
- South Carolina (Electric Cooperatives of South Carolina)
- Colorado
- Nebraska
- Texas (United Cooperative Services)
- Oregon
- Pennsylvania
- Illinois

As a complement to the pilots, DOE is conducting additional research with NYSERDA, national labs, others

Home Energy Score: What are we testing?

- Scoring methodology
 - Essential inputs, costs of collecting inputs
 - Diagnostic information: to what degree does it affect calculations?
 - Comparison to other tools (energy calculations, recommendations)
 - Range of BTU values in each climate zone: do BTU values accurately reflect homes in each climate zone?
 - Assessor understanding and reaction
 - Does level of certification or training make a difference?
 - How long does it take to collect and input the data?
 - Homeowner understanding and reaction
-
- Ratings/Scores for commercial buildings
 - Learn from Home Energy Score development process
 - Similar questions, different context and players

Home Energy Score Timeline



Enhanced Information for ARRA Grantees: New Best Practices Guidance

- EECEBG and SEP ARRA funding offers unprecedented opportunity for implementation and deployment of best practices in energy efficiency management
- DOE providing new guidance on best practices in energy management
 - To 2,300+ public organizations
 - Encouraging use of Portfolio Manager to track building energy use
 - Allowing costs of tracking infrastructure as allowable cost
- Goals:
 - Better EE performance of grantees
 - Improved ability for grantees to sustain EE efforts
 - Contribute to a positive EECEBG, SEP, and ARRA legacy
 - Recognition of leadership in EE across grantees
 - Consistent messaging from DOE related to EE performance and what it means to be a leader

Workforce Development: Worker Certification & Training

Build confidence with consumers and EE finance community that retrofit work delivers expected benefits

National Workforce Guidelines for Home Energy Upgrades

- Job Task Analyses
- KSAs
- Standard work specifications

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

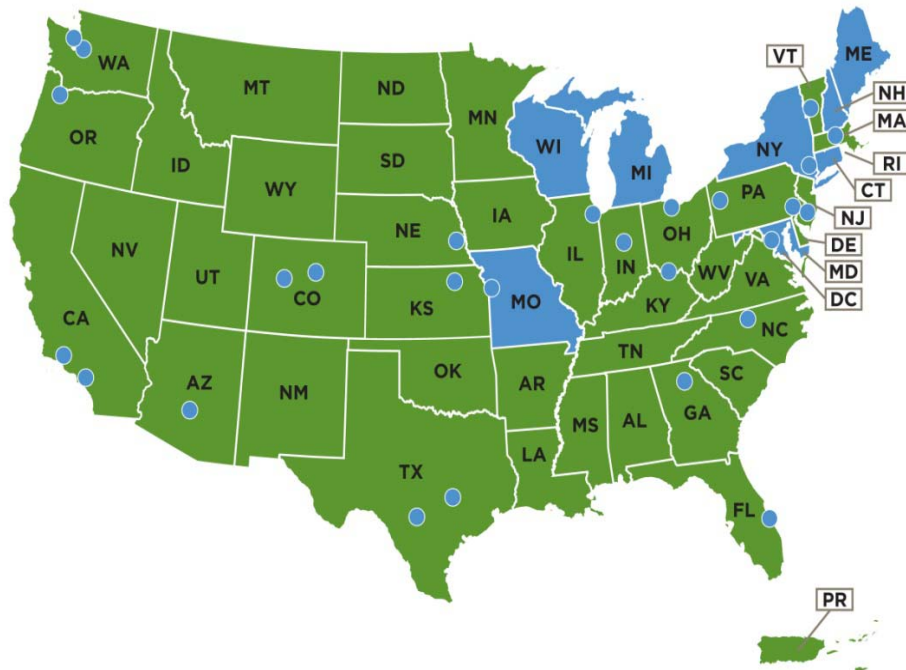
April 2011: Certification Scheme finalized
June 2011: Private sector implementation of Certification Scheme

Better Buildings: A Diversity of Test Platforms



Selection Criteria Used for Applications

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



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 added from the SEP portfolio in November 2010

Demographic Diversity

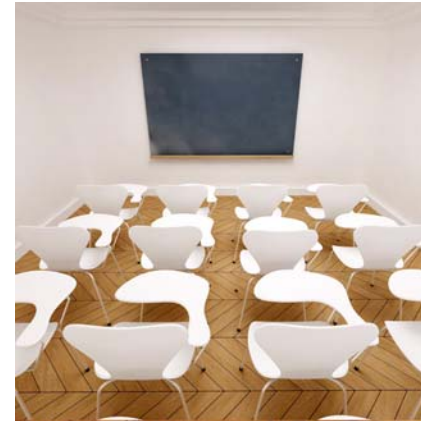
- 31 States
- 7 state-wide programs
- 4 programs span a region or group of locations
- Many programs focus on neighborhoods within a city
- Rural and urban mix
- Socioeconomic mix
- All climate zones covered

Building Types

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

Sample Grant Recipient Approaches

- Demand creation
 - Energy efficiency concierges
 - Community partnerships
 - New information tools
- Workforce
 - Contractor partnerships
 - Training through community colleges
- Financing
 - Low interest loans
 - Revolving loan funds
 - Leverage private investment
- Measurement and evaluation
 - Energy use reductions
 - Cost savings
 - Jobs created



Program summaries at: www.betterbuildings.energy.gov

BetterBuildings will help answer key questions

Financing

- Can energy savings be tied to loan performance?
- What mechanisms best support different retrofit programs and consumer types?

Market Demand

- What tools/approaches are most effective for creating consumer demand?
- What messages are best for building demand in different market sectors?
- Who are the right messengers and what are the best avenues to deliver the message?

Service Delivery

- What approaches are the most effective for driving down costs of delivery?
- What approaches/equipment create the greatest energy efficiency?

Market Confidence

- What business models are most effective for reducing program administration costs?
- What approaches were most effective for generating energy savings?

Workforce

- What impact does technical training and/or certification have on program results?
- Is business support needed to expand the pool of successful retrofit contractors?

Gathering extensive information to continually improve the programs

- **Targeted data from recipients and partners**

Building Information	Retrofit Information
<ul style="list-style-type: none">• Energy types used• Energy audit data• Energy use data (pre and post retrofit)	<ul style="list-style-type: none">• Installed measures/equipment• Estimated energy savings• Contractor qualifications• Cost
Financial Information	Communication Strategies
<ul style="list-style-type: none">• Leveraged funds• Loan types and value• Underwriting criteria• Financial performance (e.g., payment history)	<ul style="list-style-type: none">• Communication type• Messaging approach (Primary and Secondary Messages)• Outreach tactic

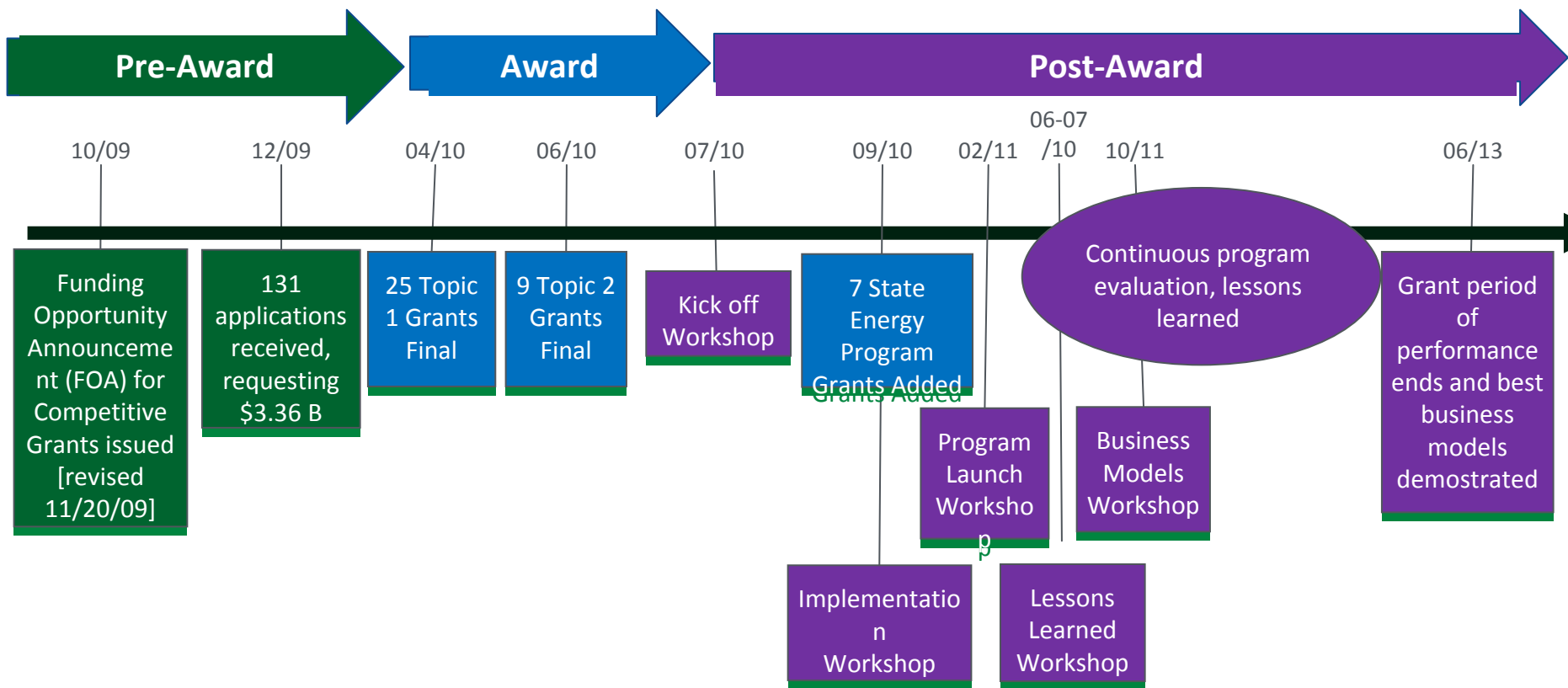
- **Users of the information include:**

- Financial Institutions – low risk investments
- Consumers – benefits of retrofits for occupant (e.g., comfort, energy savings, and payback)
- Service Providers – which measures/equipment approaches work best by building characteristic (e.g., type, size, age, occupancy pattern)
- Energy Efficiency Program Administrators – proven approaches for improving their retrofit programs

- **Preliminary data analysis after the first year (approximately December 2011)**

Aggressive Timeline

Timeline



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

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

ISO 50001

Components in place:

- Baseline
- Policy
- Plan
- Team/Leader

Superior Energy Performance

A market-based, ANSI/ANAB-accredited certification program that provides industrial and commercial facilities with a pathway for achieving continual improvement in energy efficiency performance

Goals:

- Drive continual improvement in energy performance
- Develop a transparent system to validate energy performance improvements and management practices
- Encourage broad participation throughout the commercial buildings and industrial sectors
- Support and build the energy efficiency market and workforce



**Superior Energy
Performance will launch
nationwide in 2011**

Note: ANSI is the American National Standards Institute
ANAB is the ANSI-ASQ National Accreditation Board

Superior Energy Performance

Certification Requirements

An ANSI/ANAB-accredited Verification Body will conduct a third-party audit to verify that the following requirements are met:

1. Energy Management System Conformance to ISO 50001 Energy Management Standard
2. Energy Performance Improvement

Resources to Help Facilities Prepare for Certification

Standards & Protocols:

ISO 50001
Energy Management Standard



System Assessment
Standards



Measurement & Verification
Protocol

Certified Practitioners

Certified Practitioner in Energy
Management Systems

Certified Practitioners in
[Type] System

SEP Lead Auditors
SEP Performance Verifiers

www.superiorenergyperformance.net/

Energy Management Demonstration Projects

DOE's Industrial Technologies Program is conducting State/Regional Energy Management Demonstration Projects. ITP has funded 23 state awards starting in 2009 to help industry save energy.

Energy Management Demonstration Goals

- **Provide a roadmap** to achieve ambitious goals to reduce industrial energy intensity.
- **Test the elements of Superior Energy Performance.**
- **Build energy management expertise** at the regional, state, and plant level by showcasing lessons learned and best practices.
- **Broaden energy savings** throughout the nation.



Kick-Off Dates

- **2009:** Northwest region
- **2010:** Southeast, Midwest, and Mid-Atlantic regions
- **2011:** California, Colorado, Texas (second round) and Northeast region

<http://www1.eere.energy.gov/industry/energymanagementdemonstrations/>

Benefits to Local and Regional Programs

Superior Energy Performance builds and supports the industrial and commercial energy efficiency market:



Stakeholders

Benefits

Utilities

- Empowers a facility-wide, systems-oriented approach
- Helps plan for and justify industrial and commercial energy efficiency program investments to public utility commissions

ESCOs and Service Providers

- Builds greater credibility with industrial and commercial customers and a stronger business case for providing third-party energy efficiency services and capital investments

Supply Chains

- Provides a proactive turn-key program for major OEMs and retailers to request their suppliers to meet the program requirements

Building Occupants

- Provides a pathway for building operators and owners to meet program requirements across their portfolio

Energy Efficiency Programs

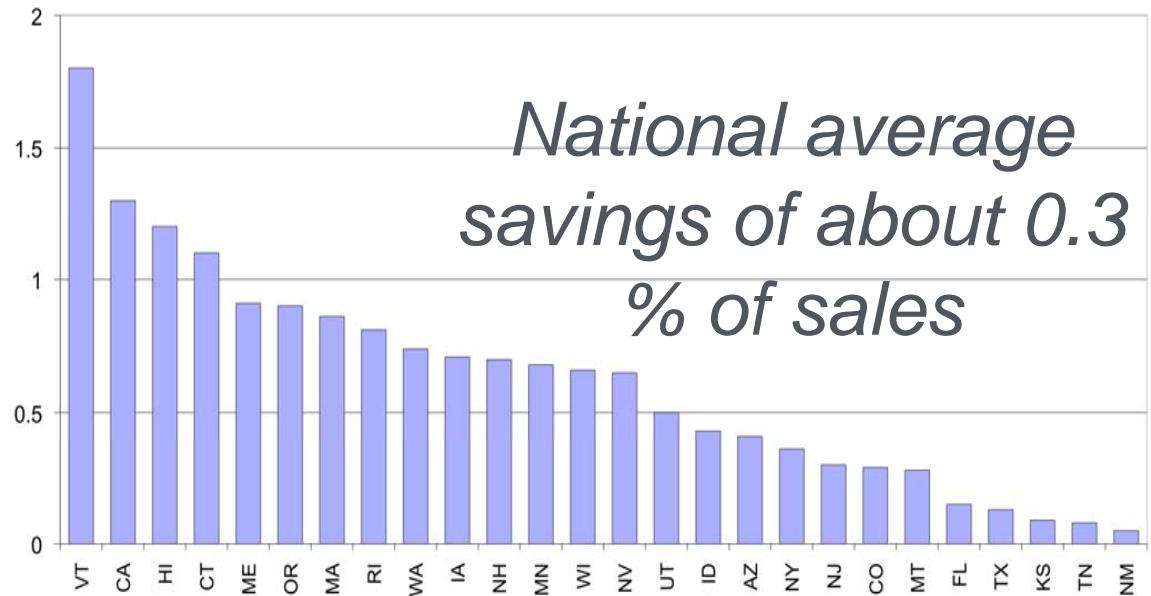
- Provides a mechanism to recognize and encourage building/facility operational level energy performance improvements that leverages an international standard
- Supports streamlined growth of energy efficient buildings/facilities workforce with knowledge, skills, and abilities that are standardized and recognized by DOE and industry

Broad 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
- **EE is a regional / local resource**
 - Regional planning key to capturing full value
 - Regional / state consistency / oversight
- **DOE will provide assistance to states, PUCS and others**
 - SEP technical assistance
 - State Energy Efficiency Action Network

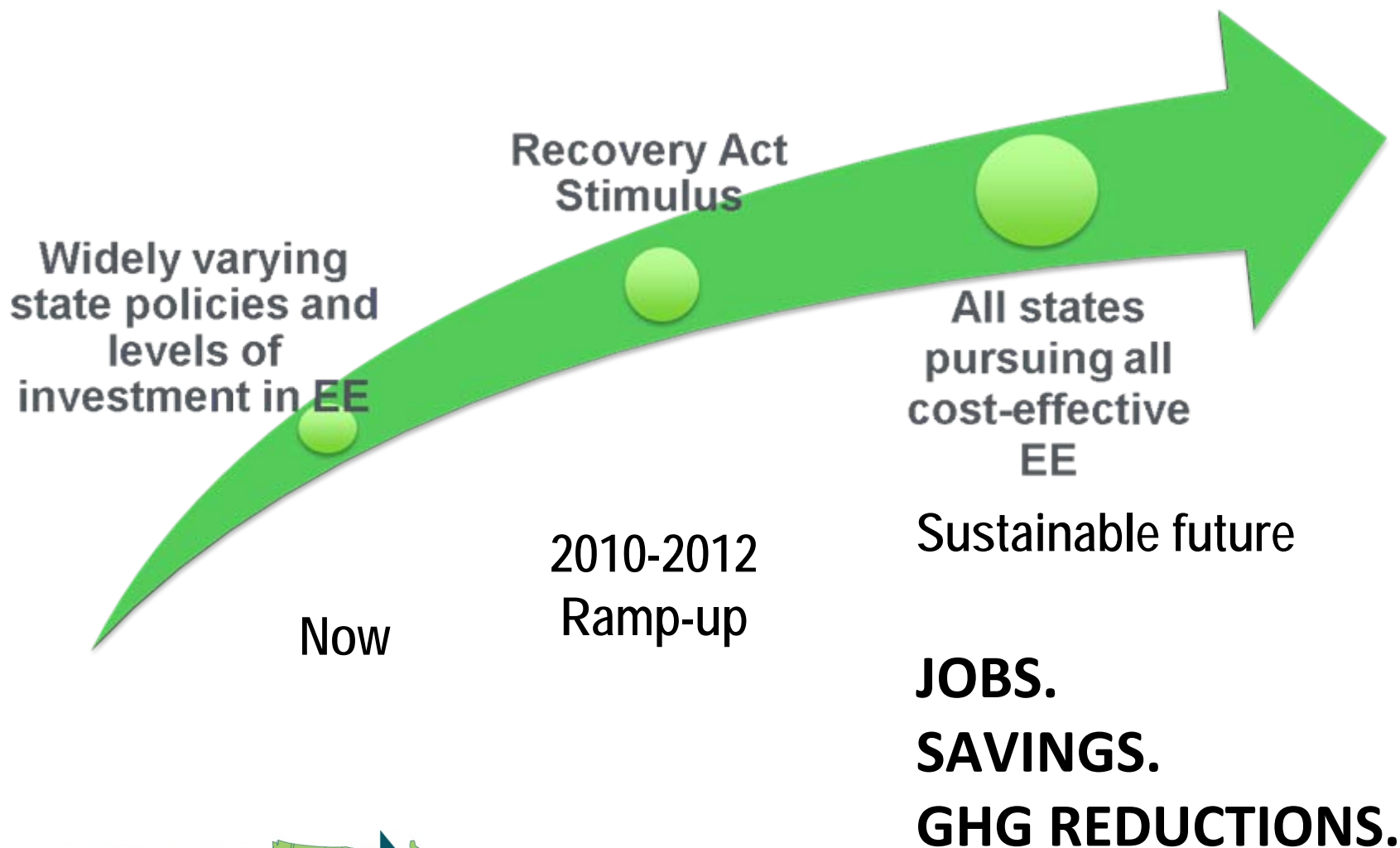
State Policy Assistance

- State policies affect majority of EE investment
- State policies driving very different levels of investment



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

All Cost-Effective Energy Efficiency



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

SEE Action Network - WGs

SEE Action Working Groups



SEE Action Next Steps

- WGs
 - Continued work
 - Draft blueprints
 - Proposed recommendations
- Executive Group – implementation discussion
- Two phase release
 - Spring 2011 (phase 1) – ~ 4 Blueprints
 - Summer 2011 (phase 2) – ~ 4 Blueprints
- Communication plan
- Ongoing implementation
- Address in Energy Policy Summit with ARRA grantees:
May 2011



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK