



U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



# Energy Efficiency: Update

## NASEO/ASERTTI Winter Conference

### February 9, 2012

**Kathleen Hogan**

Deputy Assistant Secretary for EE  
Office of Energy Efficiency and  
Renewable Energy

# Energy Efficiency is Top Priority

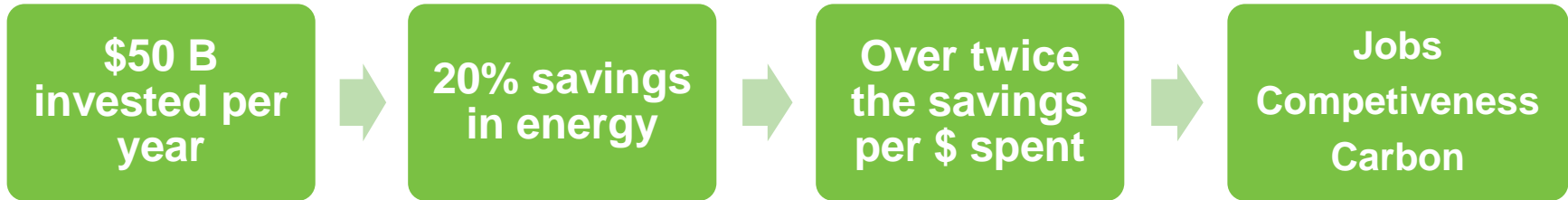
- Significant low cost EE resource
- Post-ARRA
  - Trained workers
  - New, broader state and local expertise
- EPA Rules
  - EE offers lower costs, enhances reliability
- Energy Prices
  - Keep EE competitive

## Energy Efficiency

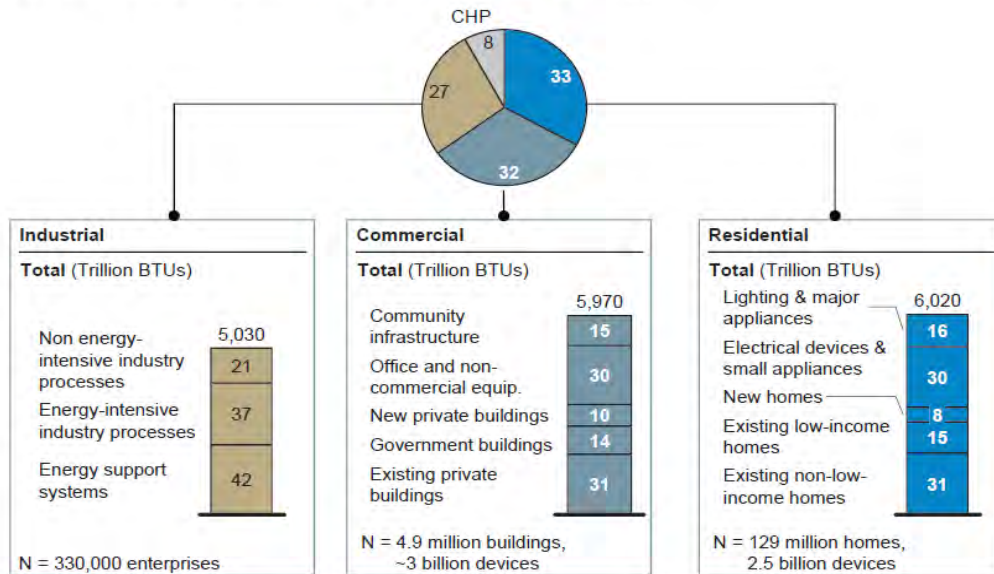
- Homeowner/ Business/ Industrial savings
  - Lower bills
  - Avoided infrastructure over longer-term
- Local job creation / retention
- Environment / public health benefits
- Help mitigate localized reliability concerns

## *Update on Progress and Next Steps*

# Opportunities and Priorities



Percent, 100% = 18,410 trillion BTUs of primary energy



Source: EIA AEO 2008, McKinsey analysis

## PRIORITIES

- Appliance programs
- Building codes
- Improvement /upgrade programs for existing buildings
- CHP
- Government focus
- Low income focus

# EPA Utility Mercury and Air Toxics Rule (“MATS”)

- Finalized December 2011
- Significantly reduces emissions and provides public health benefits
  - Mercury, acid gas, and sulfur dioxide emissions
- Covers ~1,400 coal/oil-fired units at ~600 power plants
  - Up to 4 years for compliance will be "broadly available" for most sources
- Offers range of compliance strategies
- Limited retirements
  - <1/2% national capacity (5 GW in 2020)
  - Special provisions for reliability critical units

## **EE can reduce costs of compliance by more than 50% by 2020**

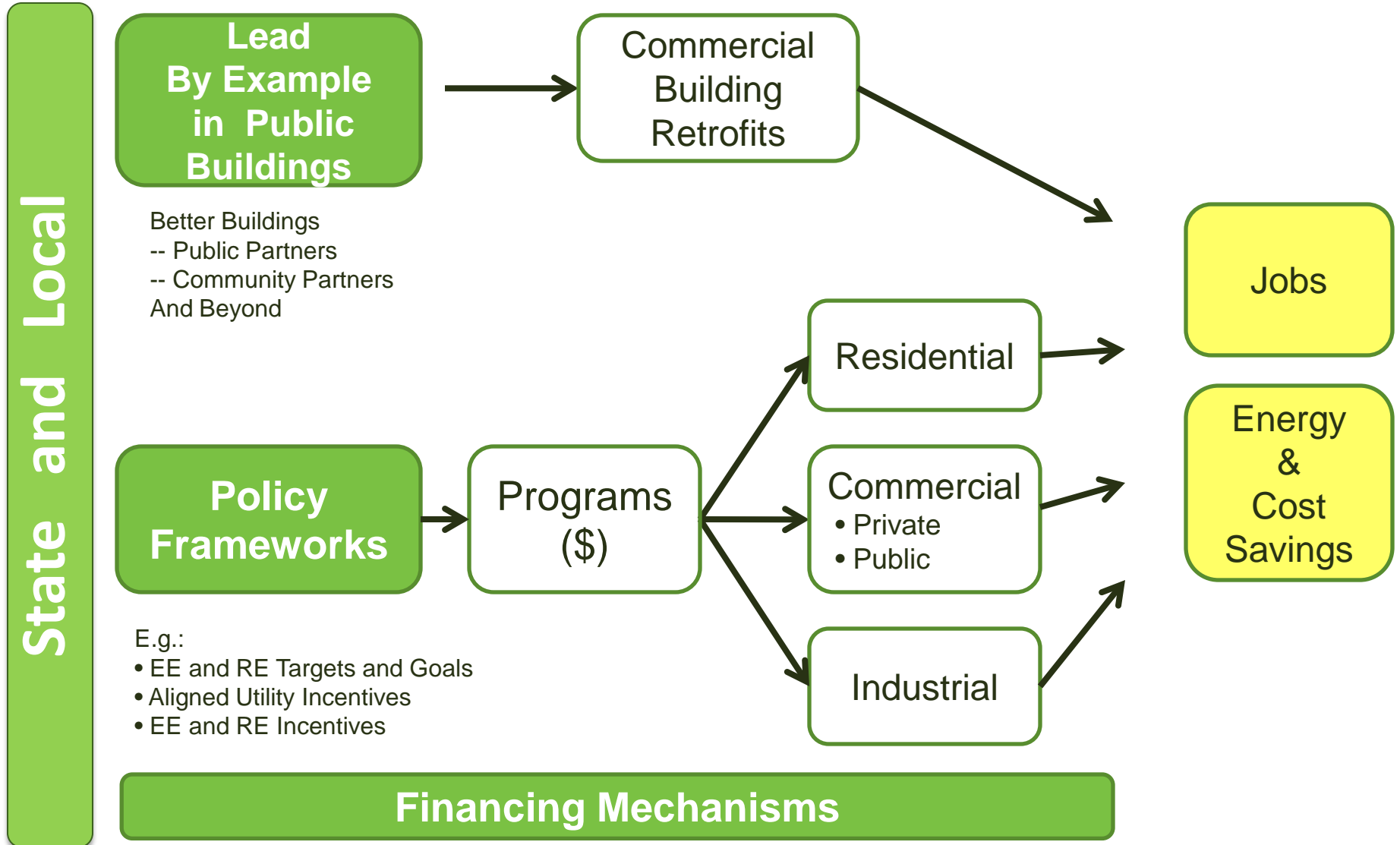
- From \$10 B to \$4 B
- Based on sensitivity runs and reducing demand by about 5% by 2020

**State and local policies and programs play large role in EE savings**

# Progress

- Recovery Act
  - **\$12 B** in energy efficiency investments (low income, public buildings)
  - More than 24,600 jobs created/ maintained
  - WAP has weatherized approx. 650,000 homes and 165,000 multi-family units
  - SEP: Over 70% of funding expended; 27 states have spent more than 75%
  - \$530 million in Revolving Loan Funds; 45% expended; \$215 million in loans
  - **2,300+** local governments engaged in projects
- Appliance/equipment programs
  - Standards for almost **30** products since 2009 offering savings of almost **\$400 B** thru 2030; goal of 9 additional standards by 2013
- Building codes
  - **Almost 60% of** states have adopted or made significant steps to adopt latest building codes from **10** in 2009
- State energy savings targets
  - About 50% of states have targets; 18 with savings targets of 1% or more
- Ratepayer funded investment
  - Grown to **\$6.6 B / yr** in 2010, more than double a few years ago

# State and Local Pathways



# DOE Efforts to Address EE Challenges

*Using convening power, recognition for excellence, technical expertise, technical assistance to develop consistent approaches, best practices, objective information*

- **Results-Oriented Business Models**

- Consumer
- Financial Firms
- Program Administrators
- Contractors



**Better Buildings Challenge  
Better Buildings Neighborhoods**

- **Better Information to Engage Consumers**



**Building Energy Asset / Upgrade Tools (MPG ratings)**

- **Improved Access to Financing**



**Best practices (ESPCs, RLFs)**

- **Skilled/Trained Workforce**



**Workforce guidelines, training, credentials**

- **Better evaluation methods**



**Uniform Methods Project**

- **State and local policies aligned with cost-effective EE**



**Building Codes  
CHP Outreach  
State Energy Program  
SEE Action**

# Replicable Business Models

## Better Buildings, Better Plants Challenge

### Goals:

- 20% savings in commercial and industrial buildings by 2020
- Replicable, demonstrated models across different organization types / ownership types / building types

### Challenge:

- Leadership opportunity
- Challenge partners commit to:
  - Set public energy savings goals
  - Announce innovative strategies
  - **Share implementation strategies and results**
- Financial allies commit to provide financing
- Program administrators commit energy use data and multimeasure programs
- DOE supports and recognizes partners



### Program launched Dec 2:

- 60+ Partners and Allies to date

### Commitments Made:

- 1.6 Billion sq ft commercial space
- \$2 Billion in financing through allies
- 300 manufacturing facilities
- Federal facility goal: \$2 Billion in energy investment

Full list of partners and allies at

<http://www4.eere.energy.gov/challenge/>



# Replicable Business Models

## Better Buildings, Better Plants Challenge

Partners / Allies	Decision Frameworks	Barrier Breaking Strategies	Services/ Best Practices	Supporting Resources
Commercial real estate Retail Food service Hospitality Healthcare Government Communities Industry Financial Utilities	Savings targets Energy management Continuous improvement (SEP)	Set-aside funds Metering strategies Executive compensation Facility energy champions Green Leasing	Performance contracting RCx Energy services High efficiency retrofits Lab savings program Utility programs with data access	Training materials Professional certifications Assessment tools Building efficiency scoring tools Design tools Measurement protocols
<b>Next Steps</b>				
Grow partners 50+ Showcase projects 40+ Implementation strategies Track results				

# Replicable Business Models

## Better Buildings Neighborhood Program

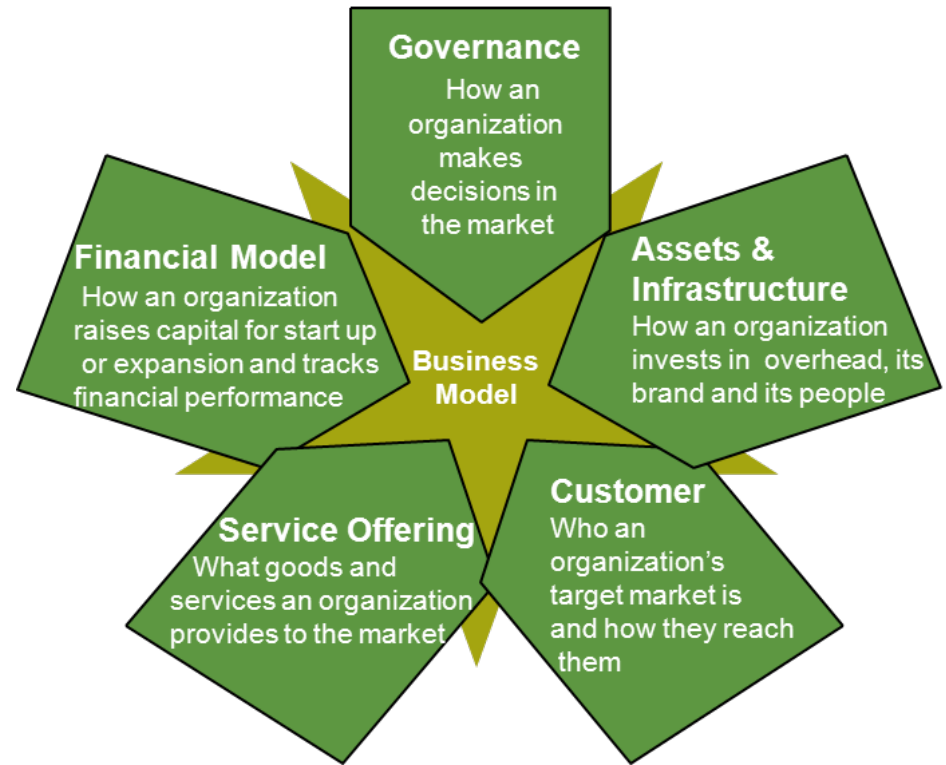


### Overview

- 32 States
- 41 3-year grants of \$1.4 to \$40 million each

### Goals

- **Develop sustainable energy efficiency retrofit programs**
- Retrofit 150,000 buildings (residential and commercial)
- Leverage over \$3 B in additional resources
- Create or retain approximately 30,000 jobs
- Reduce the cost of retrofit program delivery by 20% or more
- Achieve 15-30% energy savings from energy efficiency upgrades
- Save consumers approximately \$65 million per year on energy bills

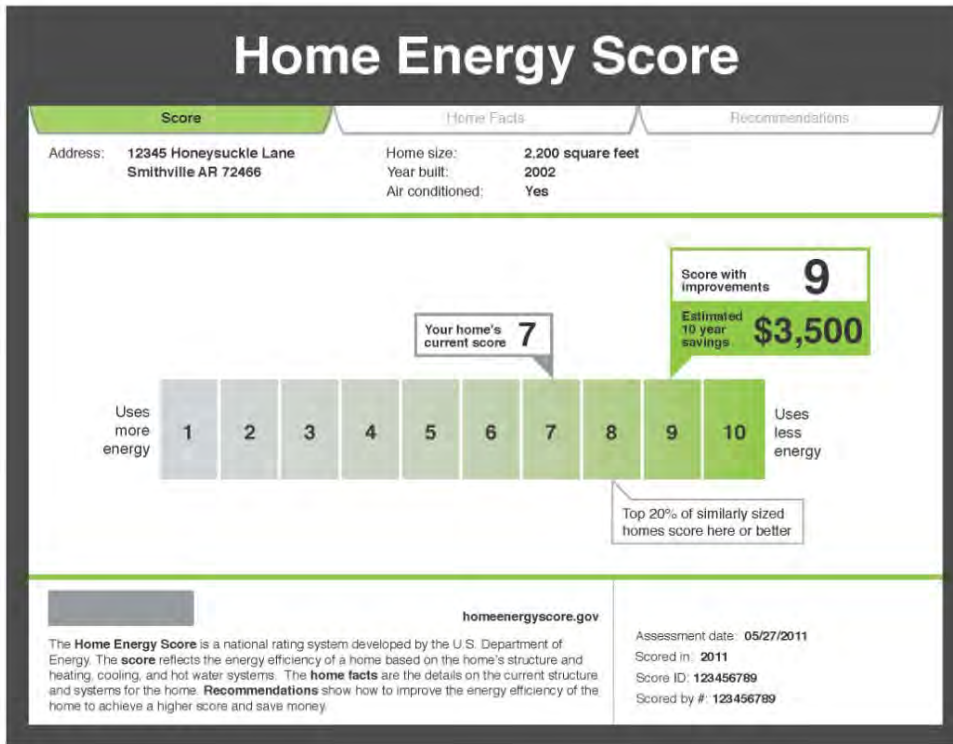


### Next Steps

- Winter 2011-2012: Final Business Models Guide 2011 release
- Spring 2012: Lessons Learned Workshop
- Summer 2012: BBNP Lessons Learned Report

# Home Energy Score

## Better Information for Homeowners



- MPG rating for homes / recommendations for improvement
- Low cost service by partners
  - 15 minutes if in concert with other assessment
  - Less than 1 hour if stand-alone
- Improvements from pilot feedback:
  - Simplified homeowner materials
  - Improved scoring tool
  - Revised assessor training and testing
- National launch Winter 2012
  - Findings from pilot phase will be presented in papers

# Commercial Building Asset Rating

## Better Information for Building Owners

### Building Life Cycle

Design



Build



Ongoing Assessment

### Goals:

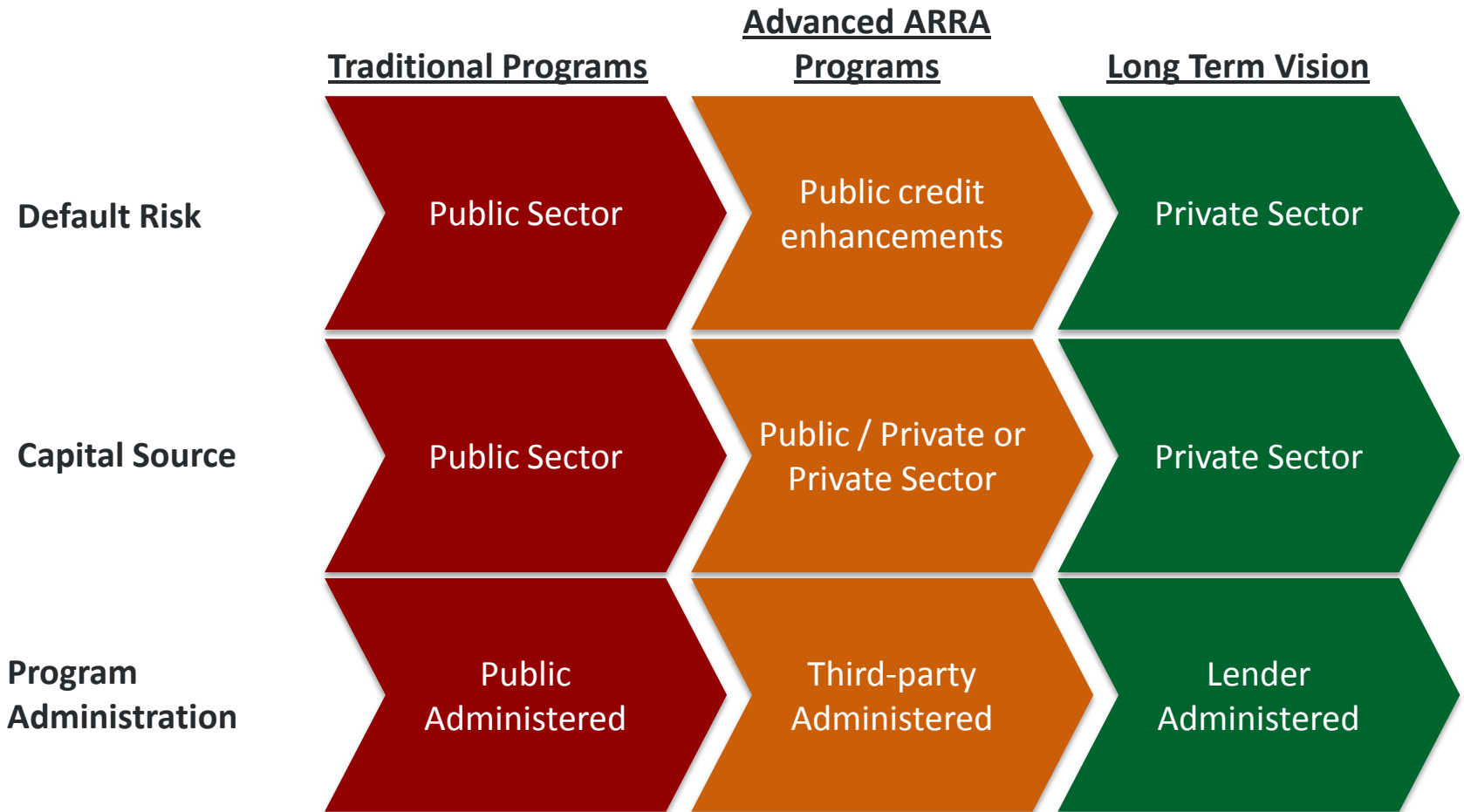
- Low cost, credible method for voluntary commercial building asset rating / opportunities for improvement
- Drive demand for efficiency programs
- Improve targeting of future ee programs

### Schedule:

- RFI – initial scoping document – received public comment in September
- Stakeholder workshop Dec 8, 2012
- Pilot in Spring 2012, Second Phase Pilot Fall 2012

# Greater Access to Financing

## Financial Market Maturity Continuum



# Overview of DOE EERE Workforce Activities

EE Activity		Residential	Commercial	Industrial	Federal
Building Modeling, Rating, Scoring, Auditing and Diagnostic Testing	Competencies	√	√	√	√
	Training	√	√	√	√
	Credentialing	√		√	
	Work Specifications	√		√	
Building Energy Upgrades/ Installations	Competencies	√	√		√
	Training	√	√		√
	Credentialing	√			
	Work Specifications	√			
Building Operations, Energy Management, Contracting and Procurement	Competencies		√	√	√
	Training		√	√	√
	Credentialing			√	
	Work Specifications				
Building Performance Inspection and Verification	Competencies	√	√	√	√
	Training	√	√	√	√
	Credentialing	√		√	
	Work Specifications	√			

## Residential

- **Work Specifications (to define quality work)**
  - Final public comment period Spring 2011; Publication late Summer 2011
- **Training – Guidelines and Accreditation**
  - Guidelines for effective training (Job Task Analyses) available now, public comment through February
  - IREC training program accreditation open to applicants
  - WAP core curriculum and NTER system available now
- **Certifications for Professionals**
  - 4 new DOE-supported certifications (installer, crew leader, energy auditor, quality control inspector) available from BPI in Fall 2012
- **Implementation pilots** for program administrators available in Fall 2012

## Commercial/Industrial

- Multifamily Standard Work Specifications – Industry Review and Public Comment mid-2012
- Advanced Energy Retrofit Guides - Office and Retail buildings in revision, grocery in development
- Training Programs for Superior Energy Performance Commercial Building credentials – April 2012
- Core Competencies for 6 commercial job categories (with GSA)– Public comment began late September 2011, extended through February 2012

# Better Measurement

## Uniform EM&V Methods Project

**Vision: Uniformity in way states, utilities, program administrators, and evaluators calculate energy savings.**

- Currently, different calculation methods, lack of clarity cause confusion
  - 17 guidance documents (i.e. Technical Reference Manuals) with different savings estimation methods cover 21 states
  - Savings estimates vary by as much as a factor of two to more than 10
- Uniform methods will
  - Facilitate the increased use of energy efficiency as an energy resource
  - Allow for the comparison of similar programs to identify best practices
  - Improve the quality of the data reported which will improve load forecasts

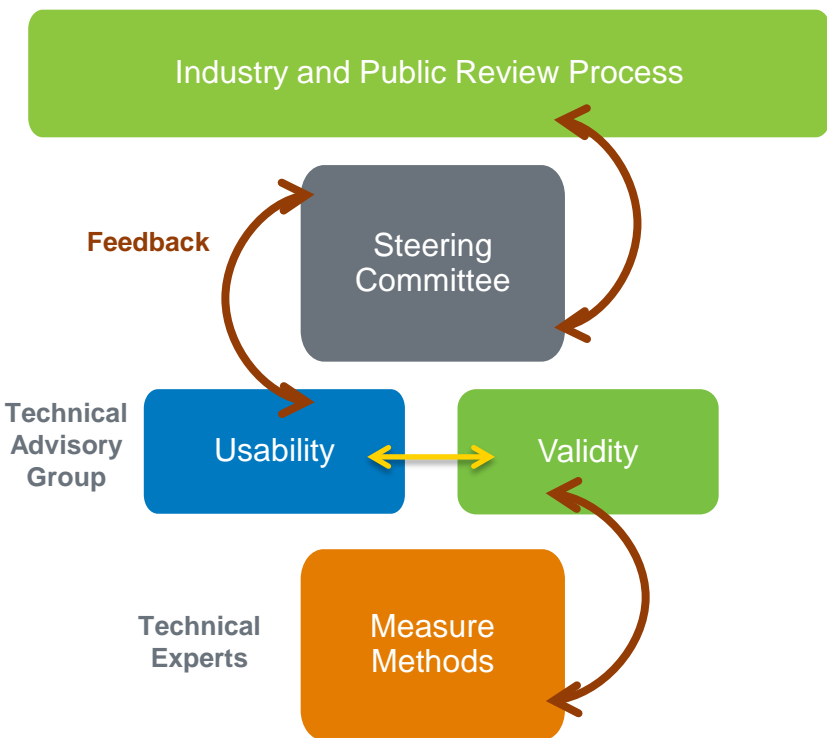
**Goal: Uniform methods for calculating program-level savings for up to 20 measures. Seven underway:**

- Commercial Lighting
- Commercial Unitary HVAC
- Commercial Lighting Controls
- Residential Lighting
- Residential Furnaces and Boilers
- Whole House Retrofit
- Refrigerator Recycling



# Better Measurement Uniform EM&V Methods Project

## Project Structure



## Participants

### State Officials

- Miles Keogh, National Association of Regulatory Utility Commissioners (NARUC)
- Amy Royden-Bloom, National Association of Clean Air Agencies (NACAA)
- Kevin Gunn, Missouri Public Service Commission
- Nancy Seidman, Commonwealth of Massachusetts
- Dub Taylor, State of Texas
- Diana Lin, Association of State Energy Officials (NASEO)
- Malcolm Woolf, State of Maryland

### Utilities

- Val Jensen, Commonwealth Edison
- Mary Ann Ralls, National Rural Electric Cooperative Association (NRECA)
- Chuck Rea, MidAmerican Energy Company
- Gene Rodrigues, Southern California Edison (SCE)
- Emmett Romine, Detroit Edison (or Bill Newbold Jr.)

### Non-Profit Organizations

- Tom Eckman, Regional Technical Forum (RTF)
- Steve Kromer, Efficiency Valuation Organization (EVO)/ SKEE
- Marty Kushler, American Council for an Energy-Efficient Economy (ACEEE)
- Julie Michals, Northeast Energy Efficiency Partnerships (NEEP)
- Steve Schiller, on behalf of Lawrence Berkeley National Laboratory

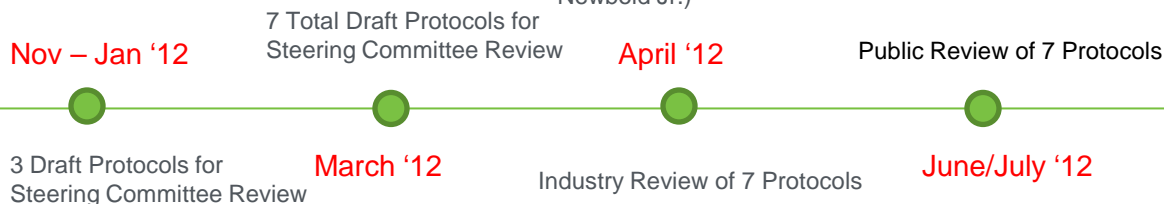
### Observers

- Linda Ecker, AEP Ohio
- Carla Frisch, Department of Energy
- Michael Li, Department of Energy
- Phyllis Reha, Minnesota, Public Utility Commission
- Steve Rosenstock, Edison Electric Institute
- Lisa Wood, Institute for Electric Efficiency

### Efficiency Service Providers/ESCO

- Donald Gilligan, National Association of Energy Service Companies (NAESCO)

## Next Steps:



# State and Local Policies: Building Energy Codes

- Goals:**
- 50% Better Codes for Increased Energy Savings
  - 70% Initiative for Increased Adoption (40 states by 2015)
  - 90% Compliance by 2017

## Research & Development Activities

*Support and guidance for the next model code*

### Commercial Code Development

- Submit code proposals towards 50% goal
- Provide technical analysis to support model code development

### Residential Code Development

- Publish Residential Cost-Effectiveness Methodology to evaluate the energy and economic impacts of codes
- Develop code change proposals to update the IECC to embody the 50% improved code

### Rulemakings

- Issue 2012 IECC Final Determination
- Preliminary Determination for 2012 IECC published in October 2011

## Deployment Support

*Adoption and compliance with codes*

### Adoption - Technical Assistance to States:

- State specific adoption and compliance plans
- Analysis of energy savings from new codes
- Analysis of first cost impacts and cost-effectiveness
- Comparative analysis of future code options
- Development of Resource Guides

### Compliance-

- Develop custom training materials for state codes
- Web-based and in-person training on the national model codes and state codes
- State-specific energy codes in [REScheck](#)
- State-specific energy codes in [COMcheck](#)

# State Energy Program

- Mid Month FOAs
- Priorities
  - Public building improvements
  - State / local partnerships
  - State policies

# Resources for State and Local Decision Makers: State and Local Energy Efficiency Action Network

- **Goal: Achieve all cost-effective energy efficiency by 2020**
- 200+ Leaders: State/local governments, utilities, NGOs, businesses – in eight working groups
- NASEO co-chairs
  - EM&V, Industrial EE/CHP, Residential Retrofits, Commercial Retrofits
- EPA/DOE facilitated
- Provide model policies, best practices, and recommendations - based on past success
  - Blueprints finalized
  - Many materials to be final this spring/summer
  - Summary for State Officials
  - Outreach underway
- Detailed Technical Assistance on many programs/policies



[www.eere.energy.gov/seeaction](http://www.eere.energy.gov/seeaction)

# Combined Heat and Power

## Benefits of CHP

- High efficiency; up to 75-80% efficient versus 45% efficiency from producing heat and electricity separately
- Cost savings to user; assisted by low natural gas prices
- Emissions reductions
- Improved grid reliability; distributed in location

## Policy Issues

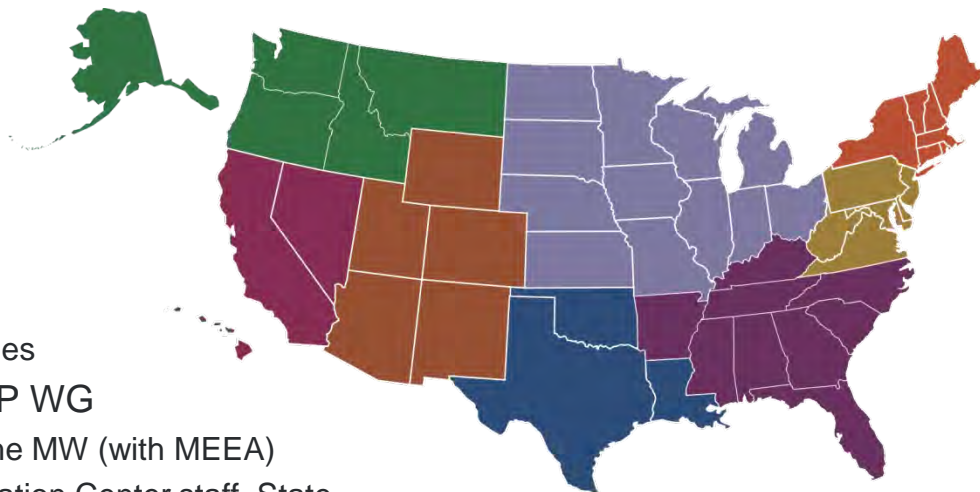
Significant state policy barriers exist, requiring cooperation between: regulators, utilities, environmental stakeholders, and end-users

40 gigawatts of new, cost-effective CHP by 2020 would yield:

- 1 quad savings
- 150 mmt CO2 savings
- 75% of McKinsey CHP economic potential

## Federal Resources

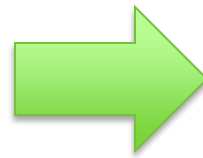
- 8 Regional Clean Energy Application Centers
  - Help evaluate state policies and impact on CHP
  - Share best practice policies from other states,
  - Identify manufacturing facilities with CHP potential
- EPAs pending Boiler MACT rule compliance:
  - 14,000 major source boilers may be affected
  - DOE will provide technical assistance to these facilities
- SEE Action Industrial Energy Efficiency and CHP WG
  - Two regional workshops – for SE (with SEEA) and the MW (with MEEA)
  - Attendees will include Regional Clean Energy Application Center staff, State regulators, utilities, industry



# Looking forward

Energy efficiency is top priority energy resource  
Savings, jobs, competitiveness, economy, environment

- Leverage ARRA
- Continued Progress
- Growing Partnerships



**Growing energy  
efficiency  
industry**