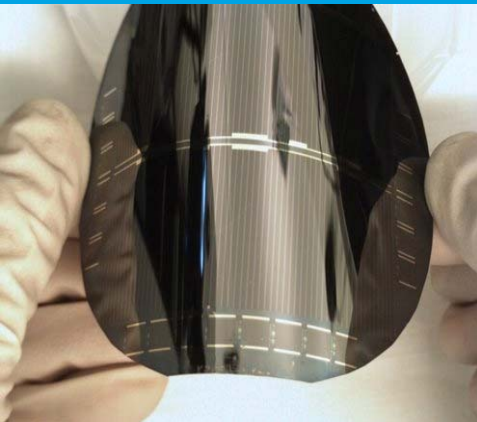


Energy Efficiency: DOE Priorities

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



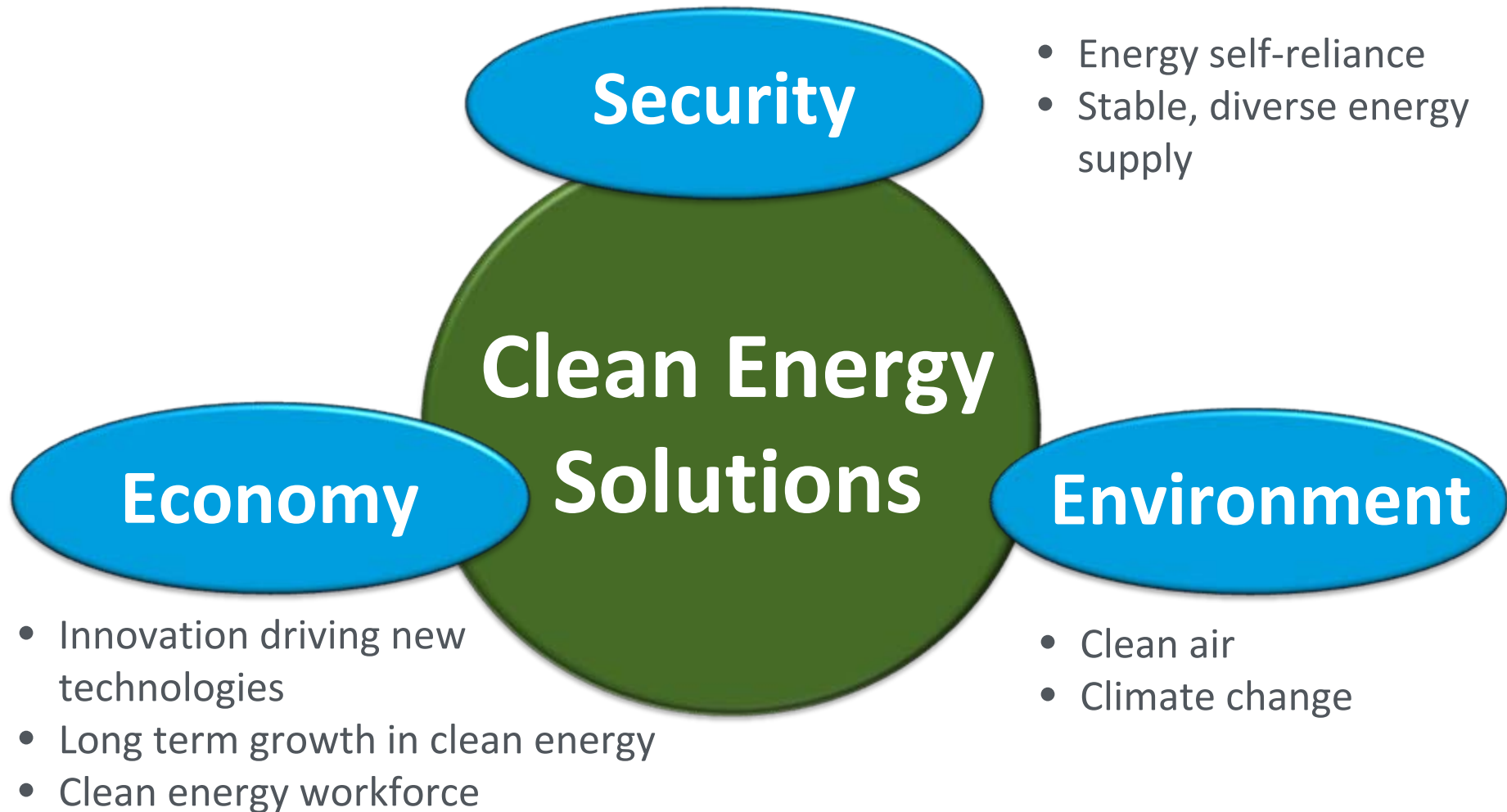
Consortium for Energy Efficiency

September 15-16, 2010

Kathleen Hogan

Deputy Assistant Secretary for EE
Energy Efficiency and Renewable
Energy

Clean Energy: A Top Administration Priority



Improving Efficiency



U.S. Spends **\$1.1 Trillion** per year on energy

If the U.S. became 20% more efficient,
it would:



Save more than ***\$200 billion*** annually

EFFICIENCY IS A RESOURCE.

Advancing Energy Efficiency



ACCELERATING APPLIANCE STANDARDS



**STRENGTHENING THE PROGRAM /
DISTINGUISHING TOP PERFORMERS**



CODES: Accelerate Adoption and Compliance



RETROFITS:

- Low Income Weatherization
- Residential Retrofits
- Commercial Building Retrofits



**EECBG
WAP
SEP**



INDUSTRIAL IMPROVEMENTS

STATE and LOCAL POLICIES



SEE Action
STATE ENERGY EFFICIENCY ACTION NETWORK

Accelerating Efficiency Standards

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

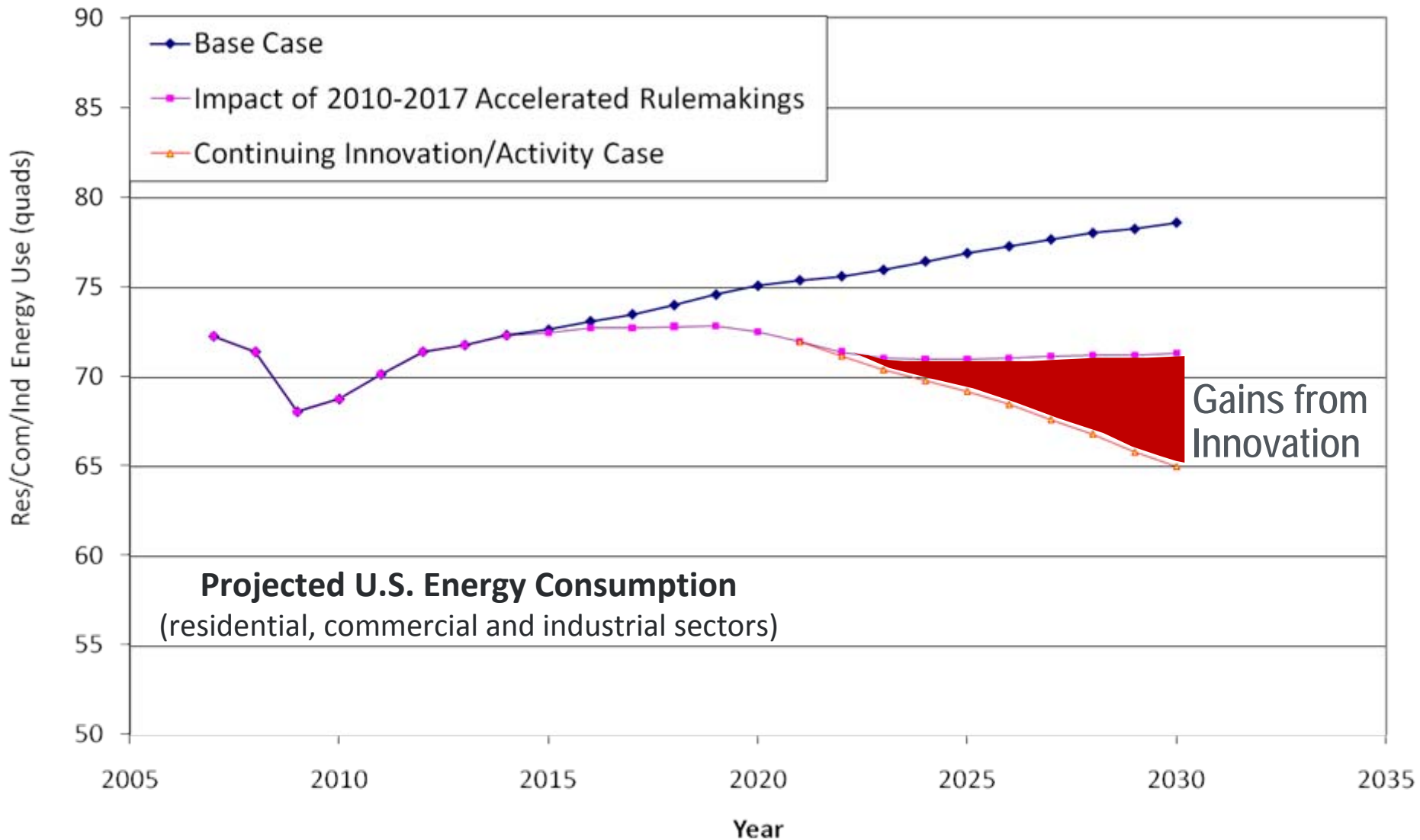
Standards issued in the next 2 years (11 products) could save an *additional* **\$250 – 300 billion**

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



Combined with new reporting and enforcement efforts

Appliance Standards → Innovation → Standards



Accelerated Standards Might Regulate

Industrial equipment that DOE has not fully regulated:

- compressors
- fans
- blowers
- electrolytic equipment
- electric arc equipment
- pumps
- steam boilers
- ovens
- kilns
- evaporators
- and dryers

(See: 42 USC 6311(2)(B))

Other products for which DOE has not set mandatory standards:

- room air cleaners and purifiers
- water coolers
- audio/video equipment
- computers
- cordless phones
- set-top boxes and cable boxes
- imaging equipment
- ventilating fans
- heat/energy recovery ventilators
- luminaires
- small network equipment
- uninterruptible power supplies

Energy Star

- New EPA/DOE MOU
- Strengthens
 - New products
 - Faster revisions
 - Third-party testing and certification
 - Government testing
 - Enforcement
- Top Tier recognition



Appliance	Total Units	Testable Units Delivered	Test Reports Submitted	Referred to EPA
Freezers	24	14	8	2
Clothes Washers	40	38	30	
Dishwashers	11	10	9	
Tankless Water Heaters	12	10	10	
Storage Water Heaters	11	9	8	
Room Air-Conditioners	86	49	21	
Total	266	197	147	2
As of 08/10				

Top Tier Recognition

- 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
 - Not focus mostly on saving money
- Next steps
 - Results of EPA/DOE research
 - Proposal for comment by Sept 30
 - Comments by Oct 31
 - 2011 Rollout



Needs to be Useful Tool for

- Consumers
- Manufacturers
- Program Administrators
- Retailers

Building Codes: Improving Energy Savings

- Improve energy savings

- Increase code stringency
- Speed adoption
- Improve training
- Improve compliance

30% Better Codes

50% Better Codes

90% compliance by 2017

- Recovery Act Funding

- 90% Code Compliance Assessment Pilots and Tools Development
 - 9 states with contracts to be final by Sept. 2010
- Residential & commercial training, and train-the-trainer activities thru technical assistance to States
- New solicitation for States & Municipalities
 - **Adoption, Training, and Compliance Assessment**
 - Open until September 30, 2010
 - Multiple awards of up to \$350K each, total of \$7 million available

Building Codes: Stringency

30% Goal for Model Energy Codes

- 2012 IECC expected to save 30% over 2006 IECC
 - DOE supporting its and other 30% solutions (i.e. ASE, BCAP, etc.)
- ASHRAE 90.1-2010 expected to save 20-25% over 90.1-2004
 - Final publishing – October 2010
 - Preliminary Determination – Spring 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
- Pursuing stretch, outcome-based codes
 - ASHRAE Std.189.1 (High Performance / Green Buildings) and International Green Conservation Code (IGCC)
 - Offer 35% (ASHRAE) to 40% (IGCC) savings

IMAGINE... Efficient Homes

127 million U.S. households

Imagine retrofitting
5-10 million homes each year



Source: U.S. Census

Residential Retrofits: Addressing Market Barriers

Motivate Homeowners and
Improve Supply of High Quality Services & Access to Financing

Consumer Information

Consumers do not have access to straightforward and reliable information.

Worker Certification & Training

Consumers need access to clearly identifiable skilled workers

New Delivery Models

Need residential retrofit programs with faster uptake / lower transaction costs

Financing

Homeowners need access to financing to pursue investments in EE

Innovation / Market Segment Focus

Need to address new technology, low income, multifamily, etc,

Consumer Information

- National Home Energy Score
 - Asset based home assessment
 - Voluntary
- Provides
 - Score based on climate / home size
 - Recommendations for home improvements
 - Estimate of savings from cost-effective improvements
 - Recommendation to get further detail from certified home auditor
- Offered by qualified assessor
- Administered by partnering organization
- Supported by
 - Web site information
- Available for piloting this Fall

Recommendation of the
Vice President's Middle
Class Task Force

Workforce Development: Voluntary National Home Retrofit Guidelines

Key Elements

- **Standard Work Specifications:** Enable programs to strengthen field guides /manuals
- **Job Task Analyses:** Assist training providers with course content and curricula for
 - Energy Auditor, Installer/Technician, Crew Chief, and Quality Assurance Professional/Inspector
- **Knowledge, Skills and Abilities:** A clear set upon which to base worker credentials; increase workforce mobility up career ladders and across career lattices
- **Technical standards reference guide:** Catalogue of standards developed by industry or third-party organizations

Next Steps

- Public comment Fall, 2010
- Deploy through WAP and other grantees (eg “Better Buildings”)

Recommendation of the
Vice President’s Middle
Class Task Force

- Lay foundation for robust worker certification and training program accreditation
- Build confidence with consumers and EE finance community that retrofit work delivers expected benefits

Financing

- Assisting grantees in development of full spectrum
 - Unsecured revolving loan funds;
 - Loan loss reserves
 - FHA Financing demonstration program
 - On-bill utility financing
- Providing TA across full suite
 - Guidance
 - Best practices
- ~ \$600 million of DOE-administered Recovery Act funding supporting financing programs.
 - Revolving loan funds established in ~35 states
 - Estimated to be matched by \$1.5 billion in state or private sector funds

Recommendation of the
Vice President's Middle
Class Task Force

Vision: *Create self-sustaining market for building energy efficiency retrofits*

Grants

- 35 local and state governments (reaching more than 50 communities)
- 3-year awards from \$1.5 million to \$40 million and \$486 million total
- Innovative models for single / multifamily building retrofits; and low income, small business, commercial, farms, and historic buildings

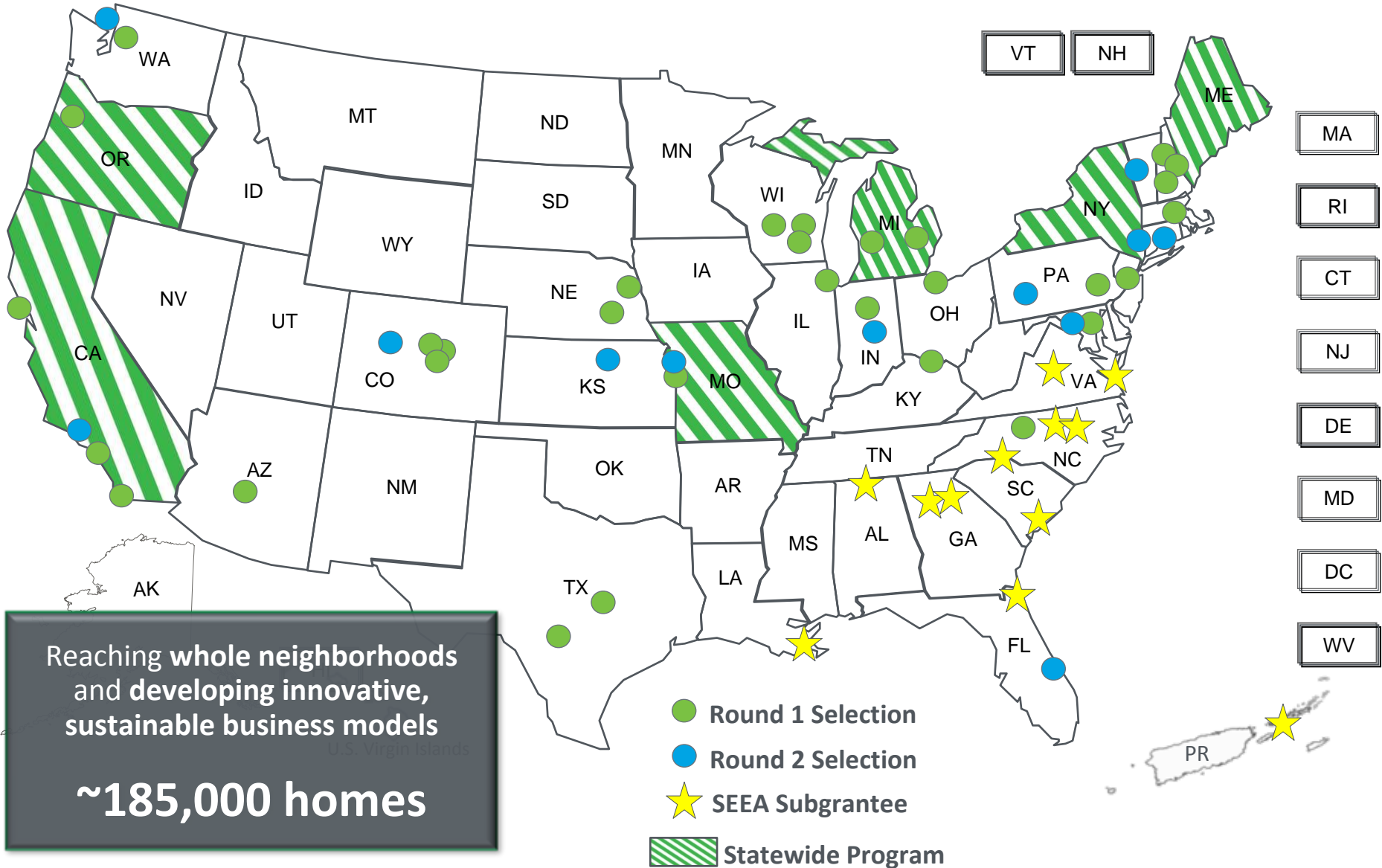
Progress

- Kicked off in July 2010
- Communities developing implementation plans
- Technical assistance being provided, emphasis on financing solutions

Projected Results

- 200,000+ retrofit buildings (majority residential)
- Retrofits of at least 15% energy savings; some >30%
- Data collection to determine effective technologies, measures, approaches
- Capture and disseminate approaches that demonstrate proven models

New Delivery Models



Supporting Low-Income Families

WAP Recovery Act Update (\$5.2 B)

- 25,000+ homes weatherized per month; 200,000+ homes through August 2010
- On target for 275,000 homes by 12/10; nearly 600,000 homes by 3/31/10
- Ramping up Quality Assurance

WAP Innovation Grants (\$30M)

- Pilots to increase the leverage/effectiveness of Federal funding thru traditional and/or nontraditional weatherization providers.
- 16 Selections for 2-year projects – address financing programs for multi-family properties, workforce development, new technologies and behavior interventions, and incorporating Green and Healthy Homes approaches
- Will leverage \$96 million (3.2x) and weatherize over 19,000 homes

Sustainable Energy Resource Grants (\$90M)

- Available from WAP Recovery Act based on EISA 2007 formula
- Adds “renewable and domestic energy technologies” not currently covered
- Funded 27 states, 100 local agencies for technologies including: solar hot water, solar PV, solar home heat, high-efficiency hot water, residential wind, cool roofs, in-home devices, innovative foam insulation

Weatherization Assistance Program: Innovation

Weatherization Innovation - Programmatic Approaches for the 16 Selected Applicants					
	Organization	State	Type (Non-Profit, State, Private, Utility, etc)	Program Structure	Funding Level
Financing Approaches (mostly Multifamily)	Stewards Of Affordable Housing	DC	Non-Profit	Multifamily ESCO approach	\$ 2,590,523
	Energy Pioneer Solutions	NE	Private Company	Private company offering 50% loans to customers, with on-bill repayment	\$ 812,418
	Community Environmental Center Inc	NY	Non-Profit, WAP Subgrantee	Low-rise multifamily approach with on-bill financing	\$ 3,000,000
	Utah Department Of Community And Economic Development	UT	State / WAP Agency	Revolving Loan Fund and Performance Contracting to home owners	\$ 850,000
	Danville, City Of	VA	City	City-wide collaboration with housing agencies for rental multifamily; smart meters; PACE or RLF	\$ 1,015,746
	LEAP: Local Energy Alliance Program	VA	Non-Profit	Multifamily ESCO approach	\$ 1,898,938
	Dept. of Commerce (Washington State)	WA	State / WAP Agency	Multifamily owner loans through CDFI's	\$ 3,000,000
Green & Healthy Homes	The United Illuminating Company	CT	Private, Utility	Green and Healthy Homes Initiative led by Private utility	\$ 3,000,000
	Coalition to End Childhood Lead Poisoning	MD	Non-Profit	Green and Healthy Homes Initiative, led by non-traditional provider	\$ 1,287,598
New Technologies & Techniques	New Hampshire Community Loan Fund, Inc.	NH	State / WAP Agency	Manufactured/mobile housing approach in targeted communities, leverage RGGI grant	\$ 600,000
	University Of North Carolina Charlotte	NC	College / University	Non-traditional provider with new technologies: ductless heat pump, whole house fan, in-home meter (Google/TED)	\$ 2,005,945
	Commission on Economic Opportunity	PA	Non-Profit, WAP Subgrantee	In-home metering	\$ 2,449,607
	Vermont Energy Investment Corporation	VT	Non-Profit	In-home metering and behavioral interventions	\$ 719,380
Workforce Development / Volunteer	Habitat For Humanity International	AL, CA, DC, FL, IA, IL, ME, MI, MN, MS, NC, PA, TN, TX	Non-Profit	Geographically diverse pilots for workforce development and volunteer models	\$ 3,000,000
	YouthBuild USA, Inc.	CT, NY, MN, MD, WV, VA	Non-Profit	Geographically diverse pilots for workforce development and volunteer models	\$ 1,374,020
	People Working Cooperatively (PWC)	OH	Non-Profit, WAP Subgrantee	Standard weatherization with volunteer element and freezers, solar PV technologies.	\$ 1,500,000

IMAGINE... Efficient Commercial Buildings

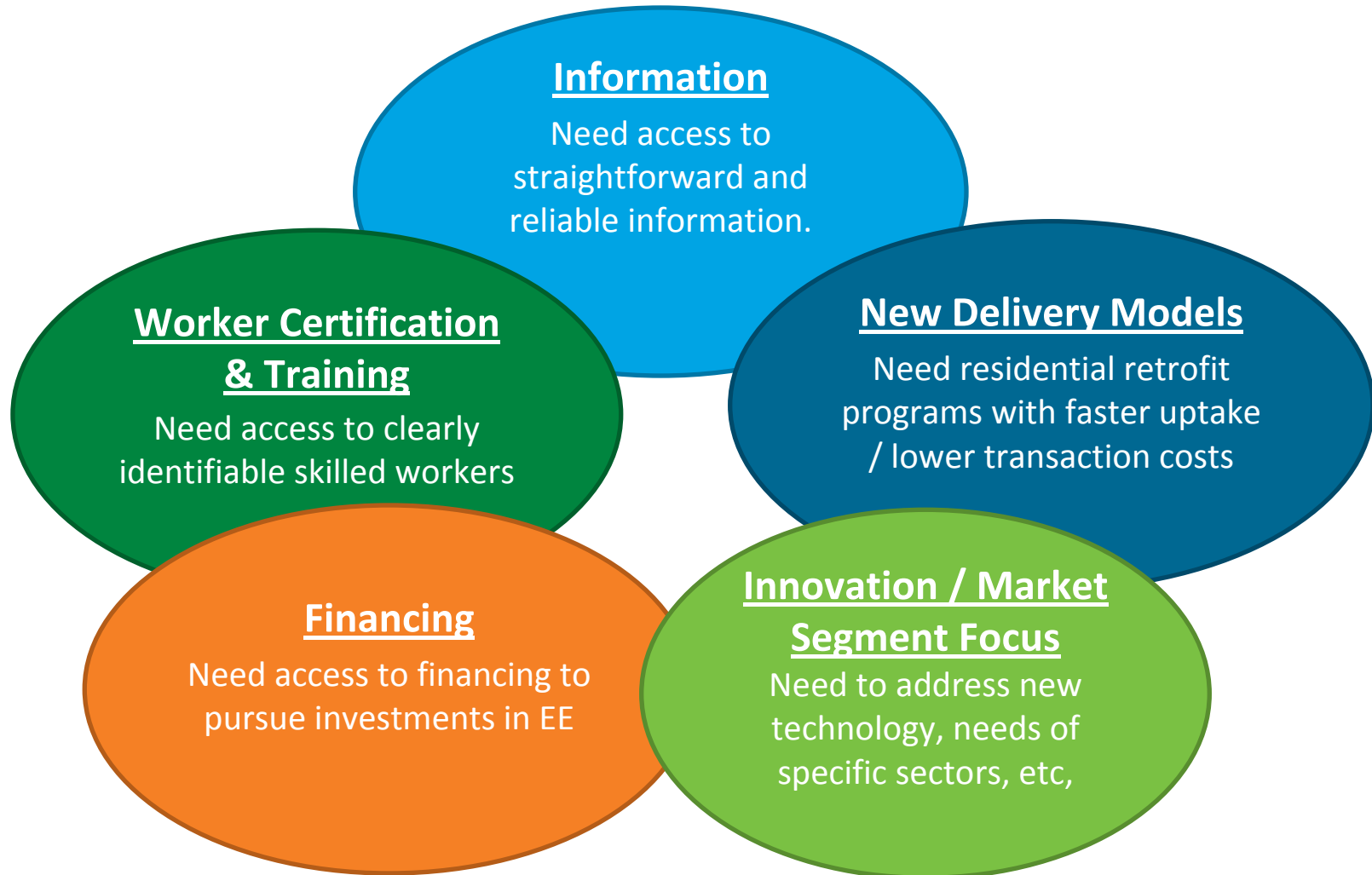
> 5.5 M commercial buildings with >80 B ft² of space

Imagine retrofitting
4-8 billion ft² each year



Source: EIA Annual Energy Outlook 2010

Commercial Retrofits: Addressing Market Barriers



Efficient Commercial Buildings

DOE Commercial Building Initiative

COMMERCIAL BUILDING ENERGY ALLIANCES

Retail, Real Estate, Hospitals, and more

Technical solutions / golden carrots / bulk purchasing

COMMERCIAL BUILDING PARTNERSHIPS

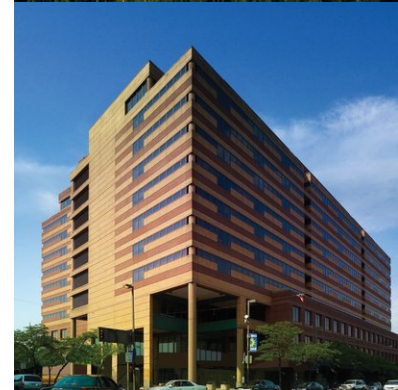
Organizations work with DOE National Labs on retrofits to achieve 30% savings and 50% savings in new construction

NATIONAL LAB COLLABORATIVE ON BUILDING TECHNOLOGIES

5 National Labs Collaborating on RD&D

HIGH PERFORMANCE GREEN BUILDING CONSORTIA

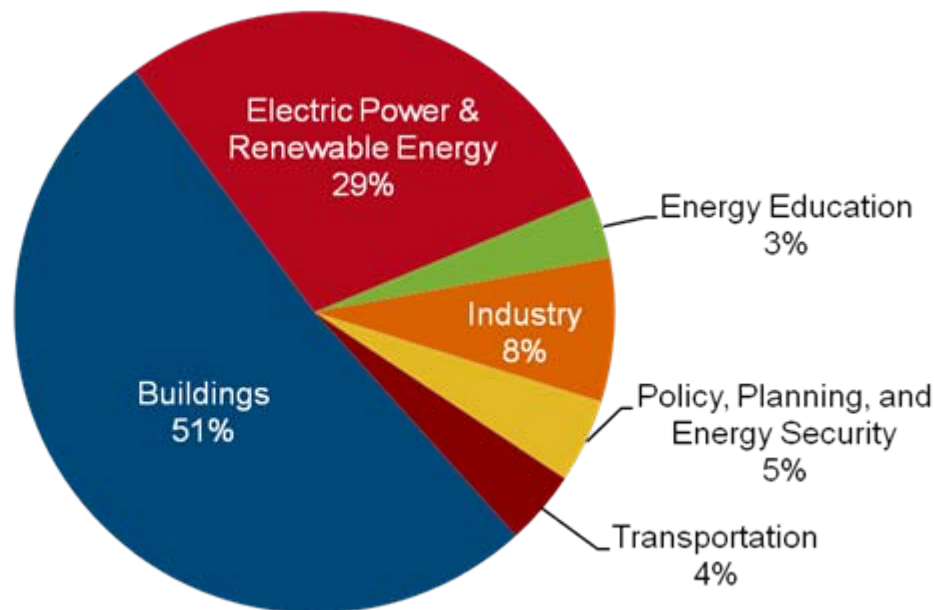
Building industry groups providing and disseminating information and research results



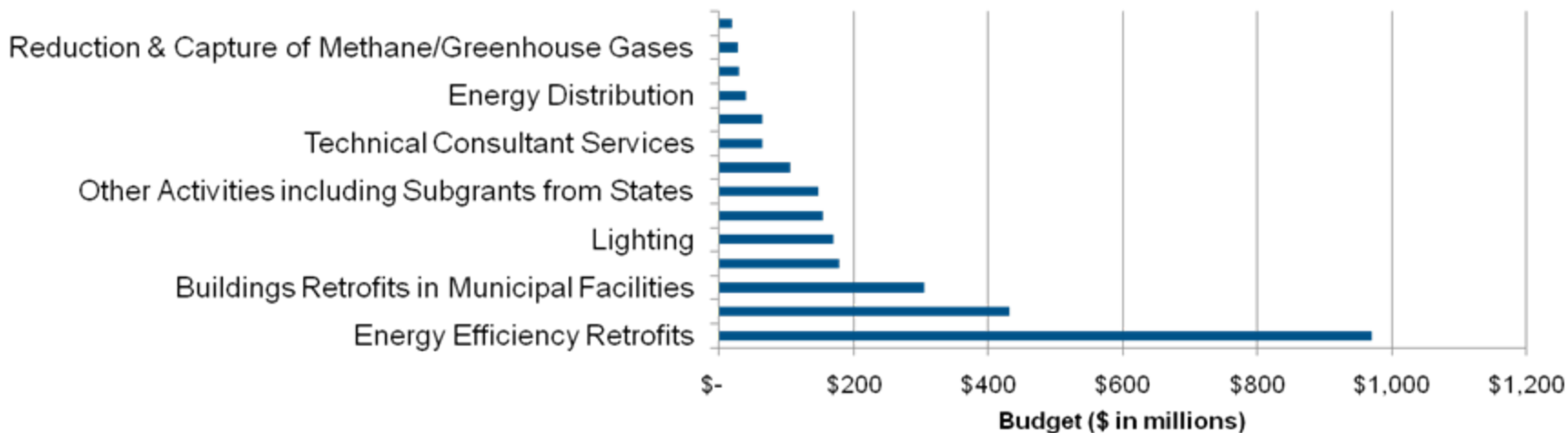
State Energy Program and Energy Efficiency & Conservation Block Grants

SEP Activities

Recovery Act funds are leveraging \$6 billion of private capital



EECBG Activities



Workforce Development: Recovery Act

Building Equipment Technicians

- Development of a Model Energy Conservation Training Program
- Development of a Training Program for Commercial Building Technicians
- Training Program Development for Commercial Building Equipment Technicians
- Building Operator Certification (BOC) For Building Technicians

Building Operators

- Net-Zero Energy Building Operator Training Program
- Benchmark Green: Commercial Building Operator Certificate Program via Advanced Online Instruction
- UT/GTKS Training Program Development for Commercial Building Operators
- Development of a Total Energy, Environment and Asset Management (TE2AM) Curriculum

Building Energy Commissioning Agents/Auditors

- Training Programs for Commercial Building Energy Commissioning Agents/Auditors
- Veterans Commissioning Training Program for Commercial-Healthcare Facilities
- Energy Commissioning Agent/Auditor Training in the New York Metro Region
- Curriculum for Commissioning Energy Efficient Buildings
- Master Curriculum Development for Energy Auditors, Commissioning Agents and Energy Engineer

IMAGINE... Efficient Industry

~28 Quads Used Annually in Industry

Imagine **20% savings**
through energy efficiency by 2020



Sources: EIA. *Annual Energy Outlook 2010* and McKinsey, *Unlocking Energy Efficiency in the U.S. Economy*, 2009

Efficient Industrial Facilities

DOE Industrial Initiatives

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

CHP AND REGIONAL APPLICATION CENTERS

SAVE ENERGY NOW PARTNERSHIPS

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

R&D INITIATIVES

ISO 50001

Components in place:

- Baseline
- Policy
- Plan
- Team/Leader

Superior Energy Performance

Market-based, ANSI-accredited **plant/building** certification program, provides industrial facilities a roadmap for continual improvement in EE and competitiveness.

Goals:

- Drive continual improvement
- Develop a transparent system to validate improvements and management practices
- Encourage broad participation throughout industry
- Support and build the industrial efficiency market and workforce


Strategy:

- Foster corporate culture of **continuous improvement** in EE
- Use **ISO 50001** standard as foundational tool for energy management
- **Tiered program** with entry point for companies at all levels of experience
- Create **verified record** of energy intensity/efficiency improvement.

Superior Energy Performance will be launched nationwide in 2011 for commercial and industrial facilities

Industrial EE Market Benefits

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



Utilities

- Highlights a plant-wide, systems-oriented approach to programs
- Helps verify facility savings, including permanent operational changes, to contribute to industrial EE program investments

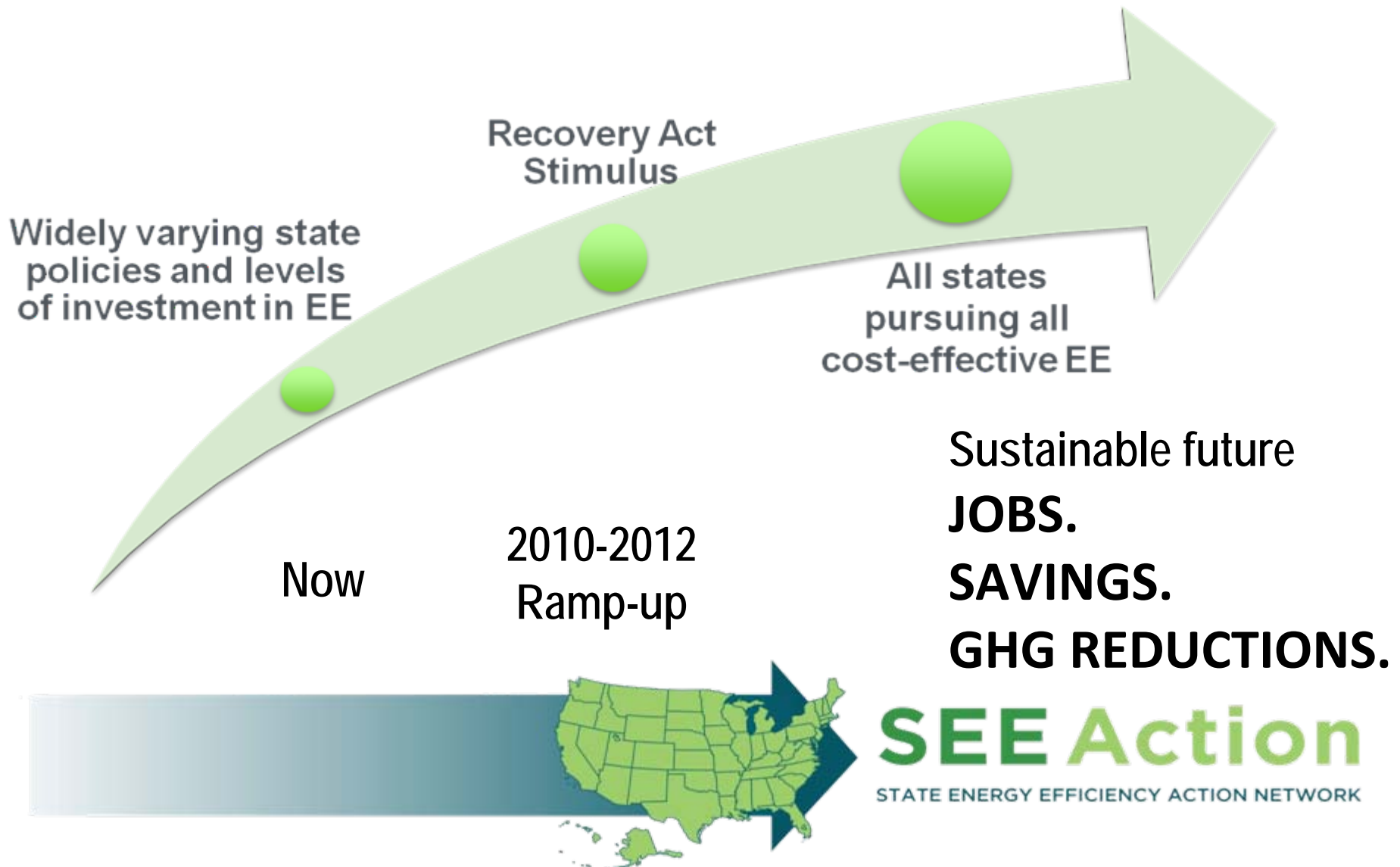
ESCOs

- Builds greater credibility with industrial customers and a stronger business case for providing third-party EE services and off-balance sheet capital investments

Supply Chains

- Provides a pro-active turnkey program for major OEMs and retailers to request their suppliers to meet the program requirements

IMAGINE... All Cost-Effective EE



State Energy Efficiency (SEE) Action

- All cost-effective EE
- Address key barriers
- Structure
 - Executive Group
 - Working Groups
- Supporting pieces
 - Ongoing TA
 - Coordination across key grant programs
- Facilitated by EPA/DOE
(builds upon National Action Plan)

Path to all Cost-Effective EE

- Strong Commitment / Policy
- Best Programs
- Financial Solutions
- Accountability
- Customer information
- Learning / sharing

SEE Action Network - WGs

SEE Action Working Groups



Challenges

- Post-Recovery Act funding / financing
- Robust data on energy efficiency savings
 - Convince financing organizations
 - Convince regulators
- Engage the consumer
 - Market appeal for EE
- State and local regulations in full support of EE

Recap

We are...

- Making a >\$12 **downpayment** on energy efficiency
 - Funding >7700 energy efficiency projects
 - Creating >17,000 good, skilled energy efficiency jobs



Over 20 years, the Weatherization Assistance, State Energy, and Appliance Rebate Programs will save an estimated...

- ~ \$30 billion
- ~ 180 billion kWh
- ~ 300 million metric tons CO₂e