

Building Technologies Office Program Peer Review

U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy



Residential Buildings Integration Program

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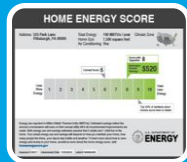
Better Buildings Neighborhood Program



Building America



Challenge Home



Home Energy Score



Home Performance with ENERGY STAR



Solar Decathlon

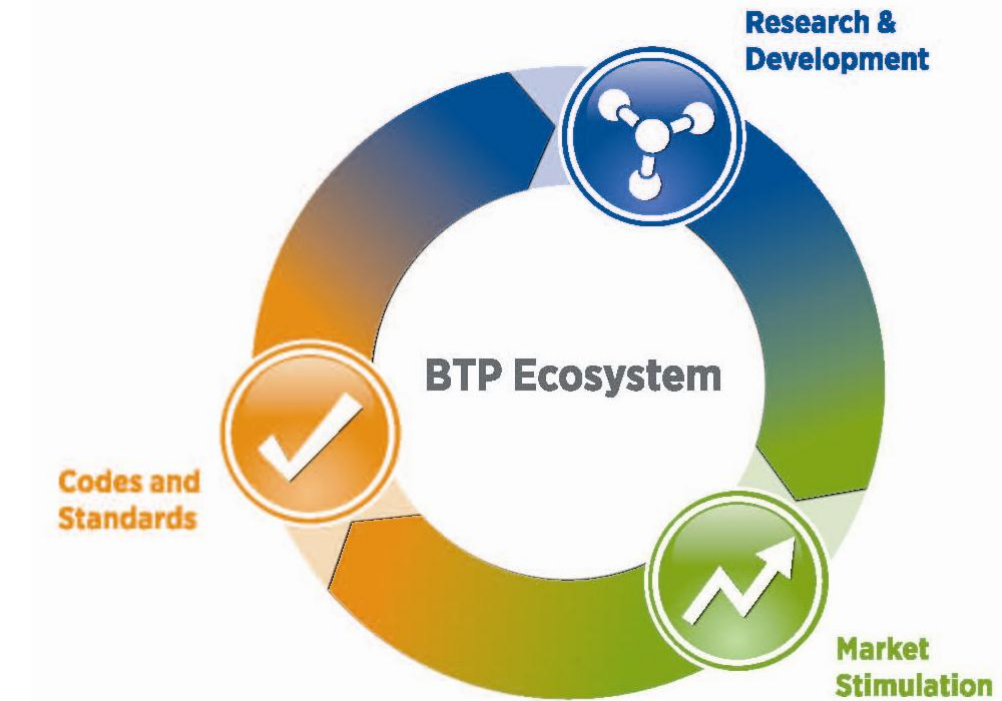
Research & Development

- Develop technology roadmaps
- Prioritize opportunities
- Solicit and select innovative technology solutions
- Collaborate with researchers
- Solve technical barriers and test innovations to prove effectiveness
- Measure and validate energy savings



Market Stimulation

- Identify barriers to speed and scale adoption
- Collaborate with industry partners to improve market adoption
- Increase usage of products & services
- Work through policy, adoption, and financial barriers
- Communicate the importance and value of energy efficiency
- Provide technical assistance and training

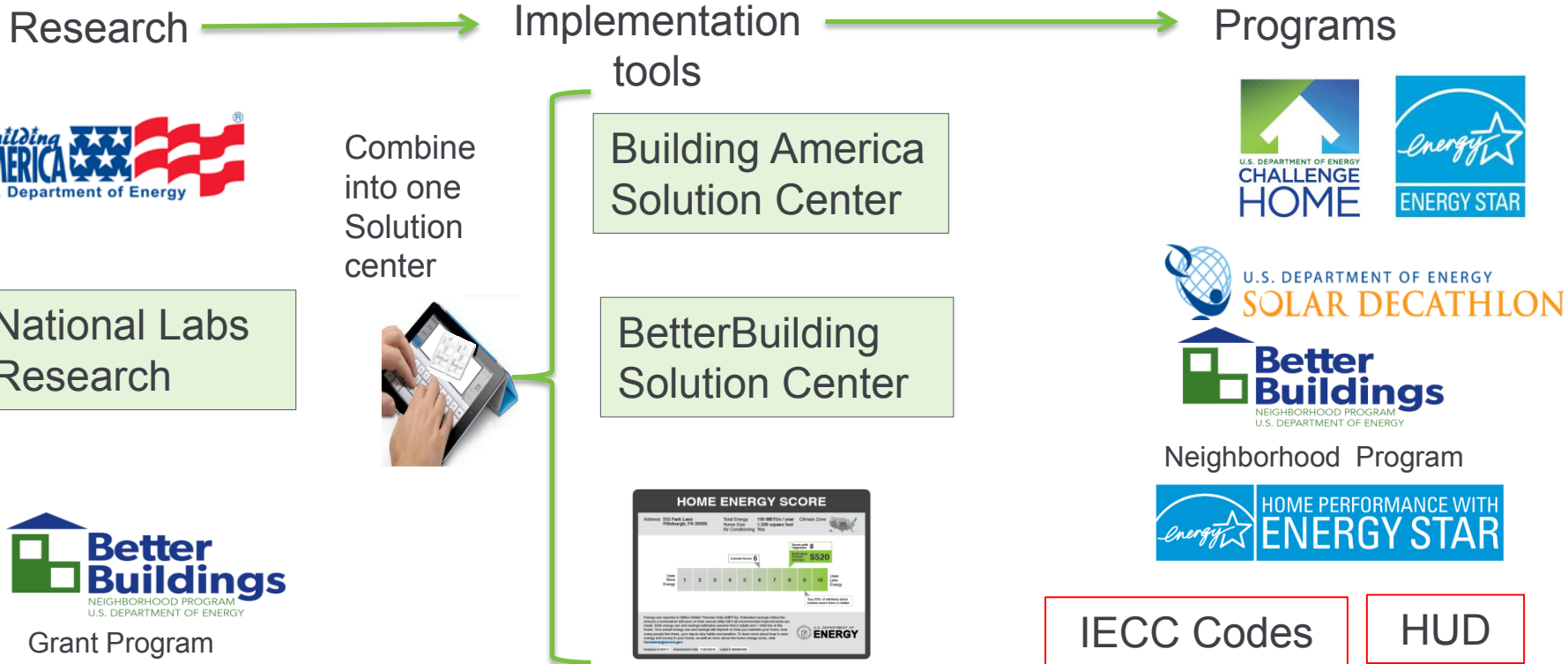


Codes and Standards

- Establish minimum energy use in a transparent public process
- Protect consumer interests
- Reduce market confusion
- Enhance industry competitiveness & profitability
- Expand portfolio of EE appliances & equipment
- Raise the efficiency bar



Overview of the Residential Integration Program



The residential program is grounded on technology and research. Research results are translated into implementation tools that make information accessible to practitioners. Finally, specific projects promote the speed and scale of adoption necessary to successfully transform the market.

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- Through a five year FOA, Building America competitively selected the best building science firms in the country to help solve these problems
- Originally 15 teams. Downsized to 10 teams based on performance
- BTO measures performance by innovations produced, and quality of research .



About Challenge Home

- Challenge Home serves as a marketing platform for Builders adopting the latest technologies and practices from the Building America Program
- Shows technical potential while reducing builder risk
- Top 1% of builders

Challenge Home Requirements

- Comply with ENERGY STAR for Home Version 3 Requirements
- Use high-performance windows that meet ENERGY STAR specifications
- Meet 2012 IECC levels for insulation
- Follow the latest proven research recommendations by installing ducts in conditioned space
- Conserve water and energy through an efficient hot water distribution system that provides rapid hot water
- Accomplish savings on the cost of future solar installations by following key provisions from the EPA Renewable Energy Ready Home (RERH) solar electric guide and checklist and the solar thermal systems guide and checklist



The Solar Decathlon challenges 20 collegiate teams to design, build, and operate the most cost-effective, energy-efficient, and attractive solar-powered homes. **In 2011 BTO changed criteria for homes to be more marketable.**



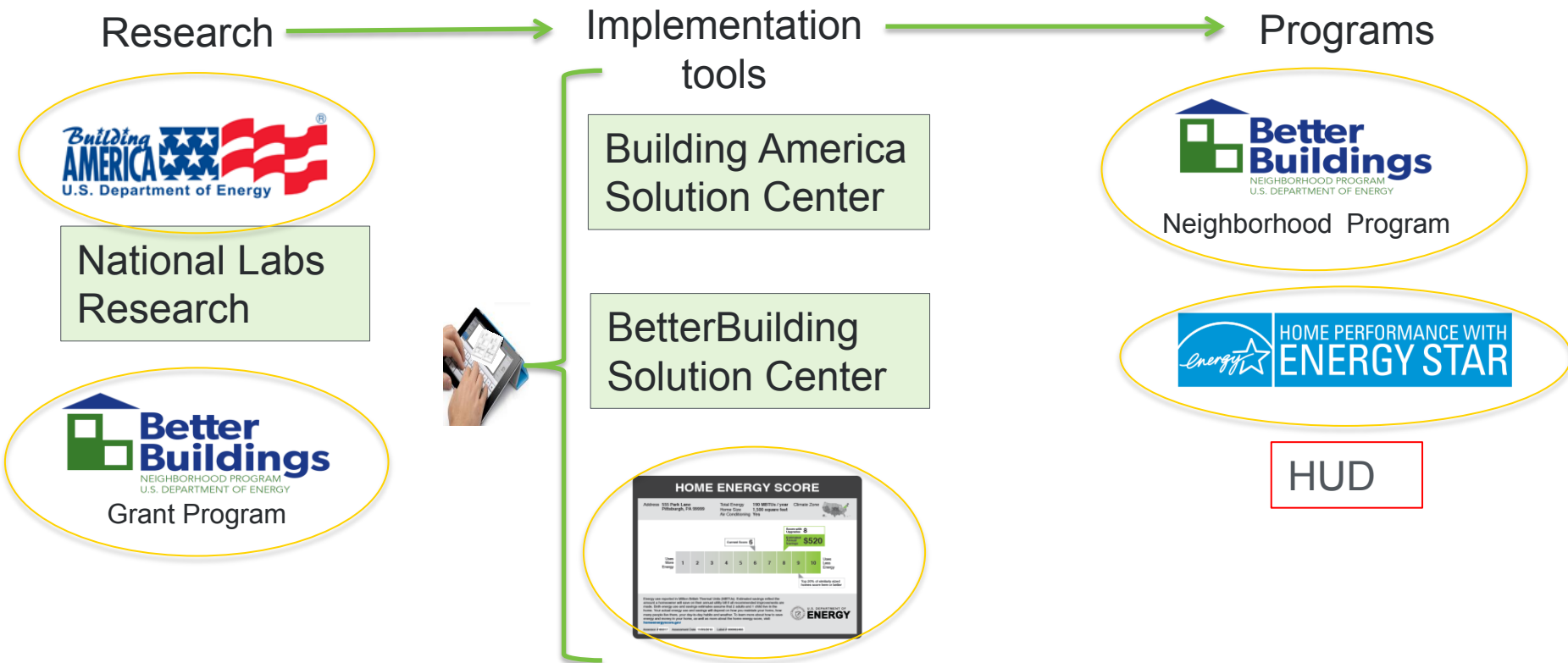
Building America

- Over 100 innovations to date
- 31 innovations that have had or could have significant impact on the residential market
- 22 innovations important to ENERGY STAR and Challenge Home
- 8 have been incorporated into codes

Solar Decathlon

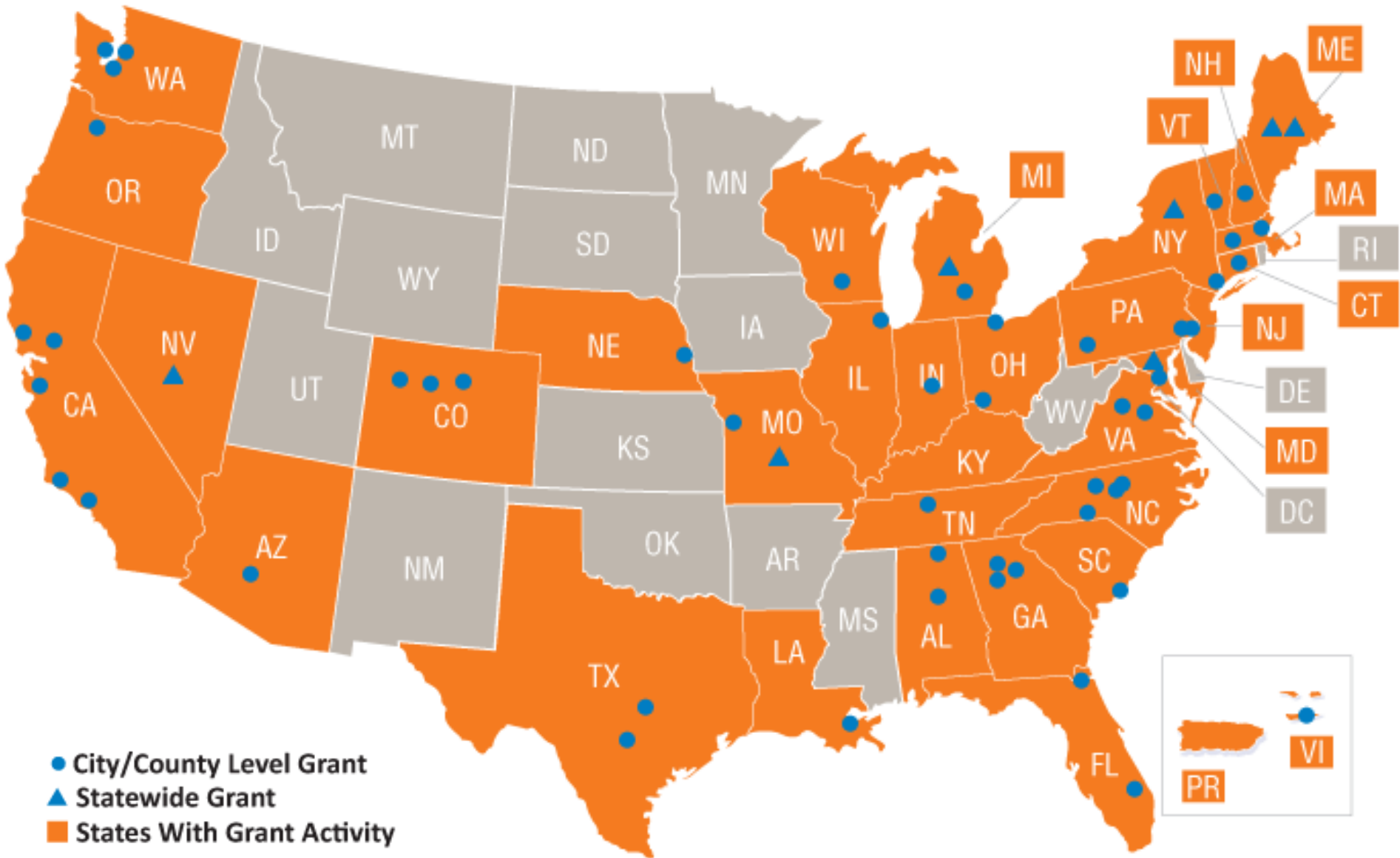
- Educated 91 collegiate teams totaling over 10,000 students
- Evaluation study found that 76% of students found jobs in the clean energy sector
- Established a worldwide reputation as demonstrated by Solar Decathlon events in Europe and China

Overview of the Residential Integration Program



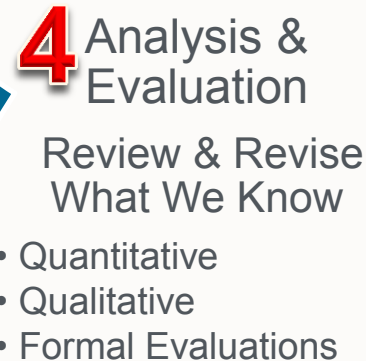
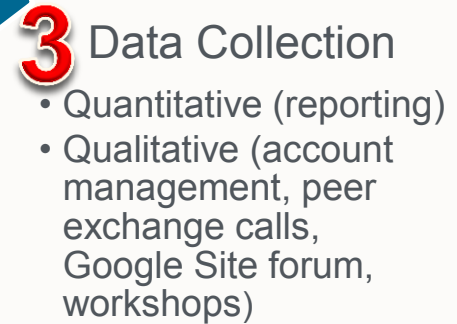
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Better Buildings Neighborhood Program





| Driving Demand | Financing | Data and Evaluation | Workforce Development |
|--------------------------|------------------|---------------------------------|------------------------|
| 22+ Different Approaches | 21+ Combinations | 12+ Evaluations Being Performed | 9+ Models Being Tested |



Requested by Vice President's "Retrofit to Recovery" Effort

- Voluntary MPG rating for homes
- Serves as a nationally recognized standard for assessing a home's efficiency
- Information useful to existing homeowners as well as homebuyers who want to compare homes or invest in improvements as part of purchasing a home

National scoring tool provides credible, comparable score

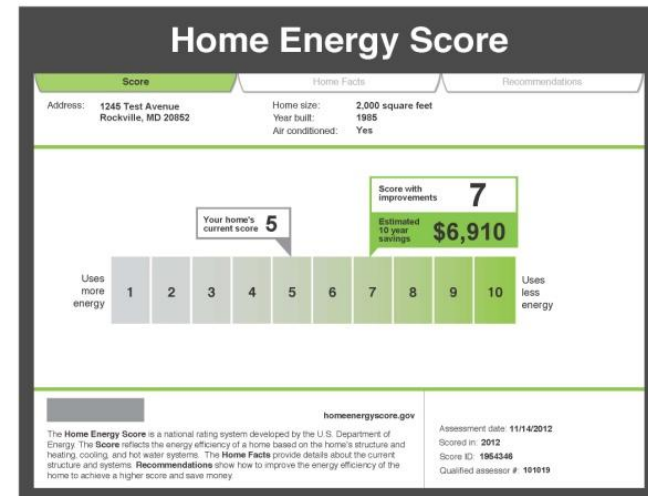
- Also provides recommendations for cost effective energy efficiency improvements
- Free tool; restricted to qualified auditors

Low cost service for homeowners/buyers

- 15 minutes if in concert with other assessment
- Less than 1 hour if stand-alone
- Consequently, significantly cheaper than what's otherwise available in the market

Supporting local jobs focused on energy efficiency

- Energy auditors, home inspectors





About Home Performance with ENERGY STAR

- National voluntary program from the U.S. DOE
- Whole-house approach to improving energy efficiency and comfort using high-quality contractors, while helping to protect the environment
- Since 2002, HPwES has been locally sponsored by utilities, state energy offices, energy NGOs, and 1 financial institution

Recent Successes

- Over 50 Program Sponsors nationwide
- Over 250,000 homes improved since 2002
- Over 1,800 participating contractors
- Added 6 new Sponsors during 2012
- Helped develop 3 regional collaboratives
- Developed the Century Club Web Button for contractors
- Savings range from 20% to 30%



(1) Joint Center for Housing Studies of Harvard University (JCHS), *Improving America's Housing 2007: Foundations for Future Growth in the Remodeling Industry (2007)*

(2) 200,000 retrofitted homes times \$9,000 average retrofit cost equals \$1.8 billion

Better Buildings Neighborhood Program

- \$33M in annual savings
- 2,267,000 MMBTU in energy savings
- 100,000 homes retrofitted by end of FY13
- 1,700 building performance contractors working

Home Energy Score

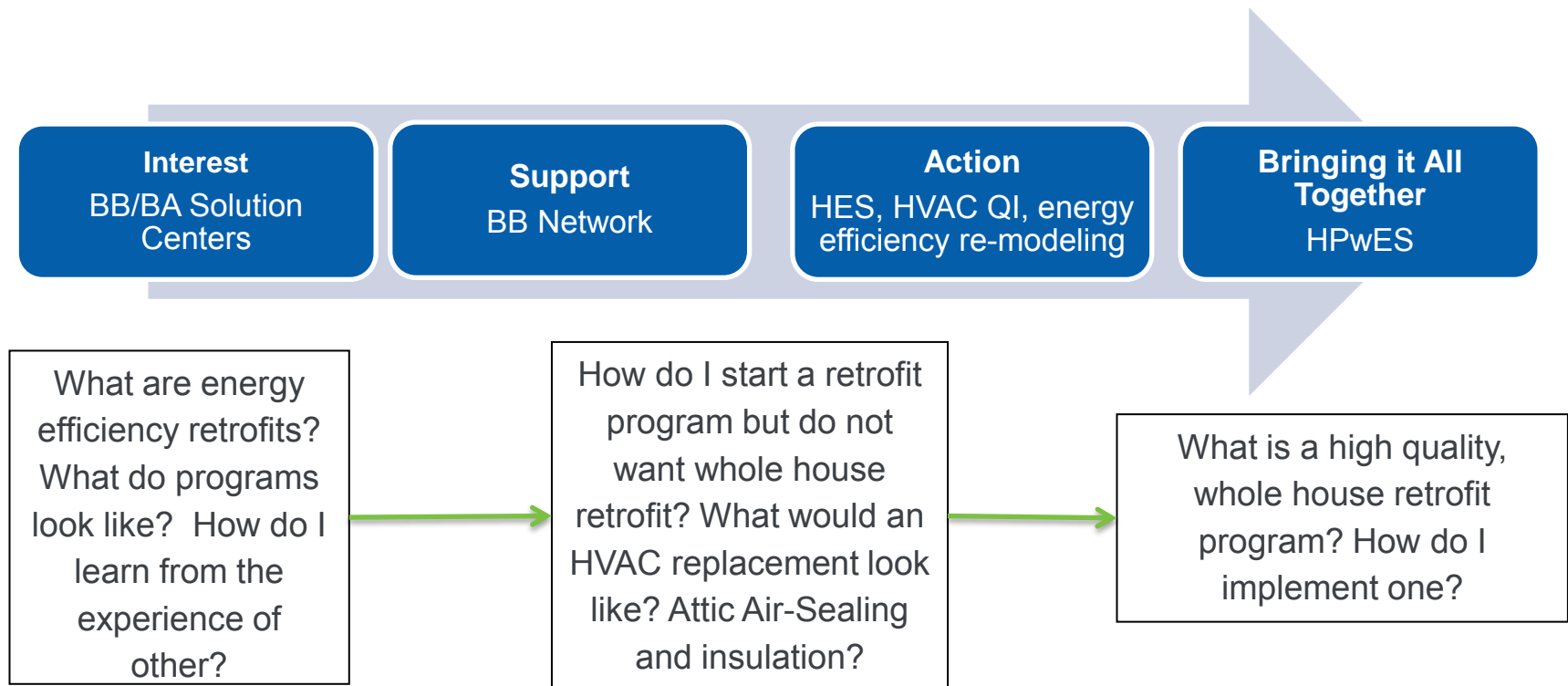
- Over 2,000 homes scored to date under pilot

Home Performance with ENERGY STAR

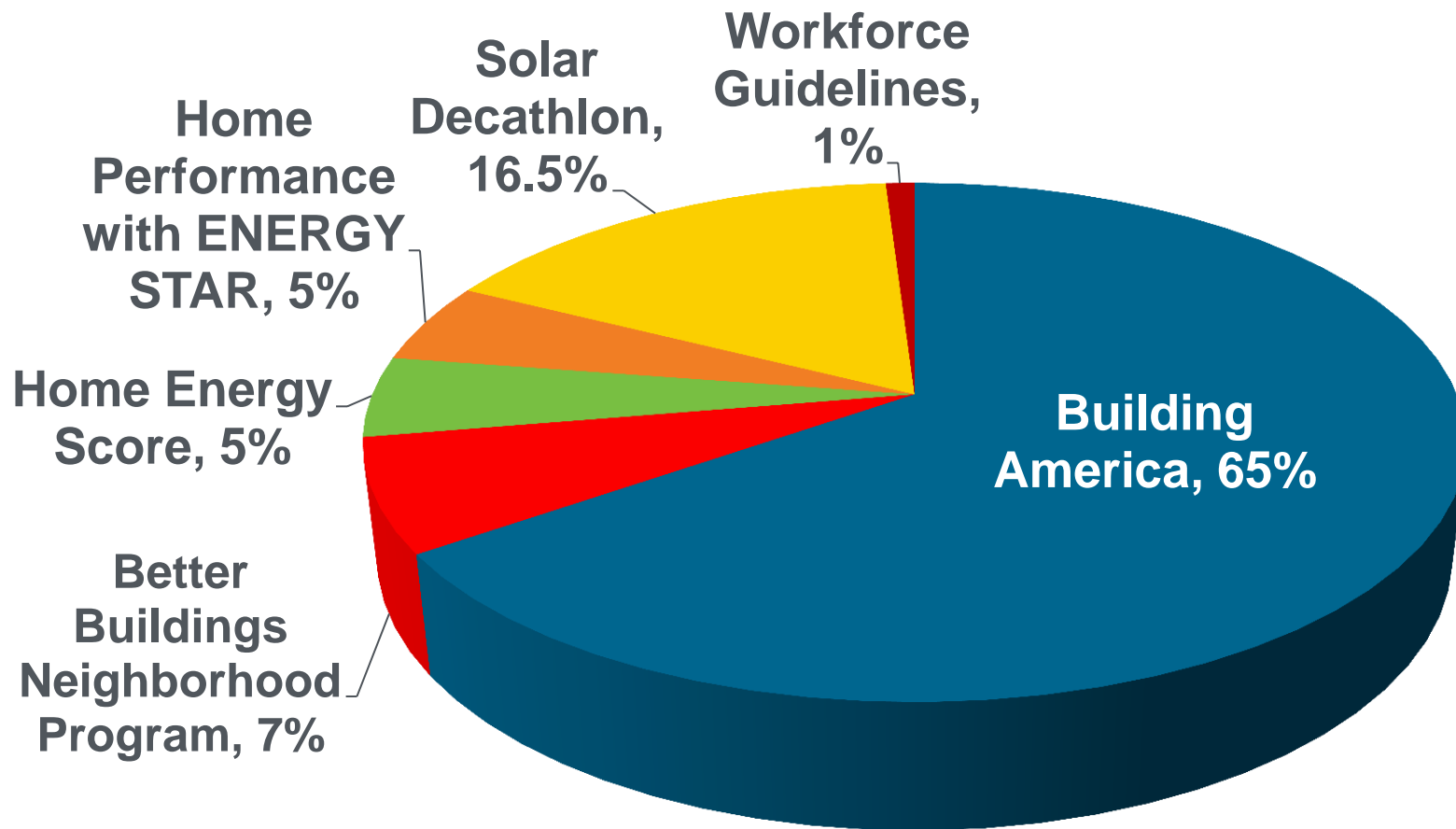
- Over 250,000 homes retrofitted to date
- 51 state and local sponsors
- Over 75,000 homes retrofitted in 2012 calendar year

Existing Homes-Putting It All Together

- The programmatic format viewed as a continuum from interest in energy efficiency to the development of a whole house retrofit program such as Home Performance with ENERGY STAR
- The BetterBuilding Neighborhood Grant Program becomes the BetterBuilding Neighborhood Program that encompasses all four blocks



Program Spending



FY13 Budget: \$27.99M



Better Buildings Neighborhood Program



Building America



Challenge Home



Home Energy Score



Home Performance with ENERGY STAR



Solar Decathlon

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