

Better Buildings Residential

2014 Building Technologies Office Peer Review



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

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Project Summary: Better Buildings Residential (BBR)

Timeline:

Start date: FY11 Planned end date: ongoing

Key Milestones

1. Better Buildings Neighborhood Program, Fall 2010
2. Home Energy Score, 2011
3. Home Performance with ENERGY STAR to DOE, Oct. 2011
4. Better Buildings Residential Network, April 2013
5. Better Buildings Residential Program Solution Center beta, May 2014

Budget:

Total DOE \$ to date (FY11-FY14, non-ARRA):
\$16.228 million

Total future DOE \$: FY15 ~\$5 million requested

Target Market/Audience:

Primary audiences: energy efficiency program administrators and implementers (incl. utilities, state and local energy offices, NGOs, and implementation firms)

Secondary audiences: contractors, energy service providers, financial institutions, manufacturers, marketing professionals, trade associations, real estate industry, policymakers, other government agencies

Key Partners:

BBNP grant recipients	State & Local Governments
HPwES Sponsors	Contractors
Home Energy Score Partners	Utilities
BBRN members	Financial Institutions
NGOs	Green MLS

Project Goal:

By 2020, demonstrate at scale market-based programs offering savings of 20% or more to existing buildings, 25% by 2025, and 50% or more by 2030.

Purpose and Objectives (1)

Problem Statement: Home energy bills—which average about \$2,000 per year, or about 10% of annual housing costs—can be greatly reduced through the continued development of new energy-efficiency technologies and broader adoption of cost-effective, yet under-utilized, technologies that already exist. Modern households are already benefiting from energy-efficiency savings—about \$180 per year on average relative to 20 years ago—due to efficiency gains in lighting, heating and cooling systems, home appliances, and other products from DOE’s development of appliance standards. However, continued concerted efforts can offer an additional 50% in household energy savings by 2030.

Target Market and Audience: Residential energy consumption is approximately 22% of U.S. energy use from 115 million households, accounting for more than 20.83 quad BTUs of energy use. Current technologies and practices could cost-effectively reduce energy use in existing homes by 15 to 30% or more.

Because of the heterogeneity and disaggregated nature of the residential sector, BBR works to induce broader adoption of efficiency in homes through influencers vs. directly with homeowners. BBR targets: energy efficiency program administrators and implementers (utilities, state and local energy offices, NGOs, and implementation firms) and their partners (contractors, energy service providers, financial institutions, manufacturers, marketing professionals, trade associations, real estate industry, policymakers, other government agencies) who work with homeowners.

Purpose and Objectives (2)

Impact of Project: Through innovation and the development of data-driven examples for program design, BBR and its partners will provide models for market-based programs to offer savings of 20% or more to existing homes by 2020 and 50% or more by 2030.

By working with partners to demonstrate that it is feasible to get sizable numbers of homeowners to improve the efficiency of their buildings, more energy efficiency programs will work in the existing homes sector – expanding the number of energy efficient homes.

BBR tracks intermediary progress towards its goals through metrics of:

- Expanding partnerships (BBRN, HEScore, HPwES)
- Partner participation in learning what works (peer calls, use of ‘how to’ materials)
- Partner innovations tested in the market (pilot initiatives, new strategies deployed)

BBR further tracks impacts from its activities by collecting and calculating:

- Homes improved by partners
- Average and total energy savings from home improvements
- Environmental impacts from home improvements
- Economic impacts from federal and partner investments in energy improvements and consumer cost savings
- Contractors trained and working w/program partners

Approach

Approach: BBR has developed a complete suite of solutions for energy efficiency program administrators to be able to expand energy efficiency in existing homes according to their budgets, experience, and goals. These resources provide a combination of advice, tools, and data to overcome market barriers in the residential efficiency marketplace. *(see next slides)*

Key Issues: The challenges and expense of assisting individual homeowners with energy upgrades deter energy efficiency programs from widespread investment in the existing homes sector. Market barriers, such as lack of ***access to compelling information, limited financing, and few qualified workers*** lead homeowners to significantly underinvest in energy improvements.

Distinctive Characteristics: BBR is leveraging ARRA funds, inter-agency initiatives, long-standing programming, and entirely new efforts to develop a cohesive set of options and tools for the energy efficiency program administration audience.

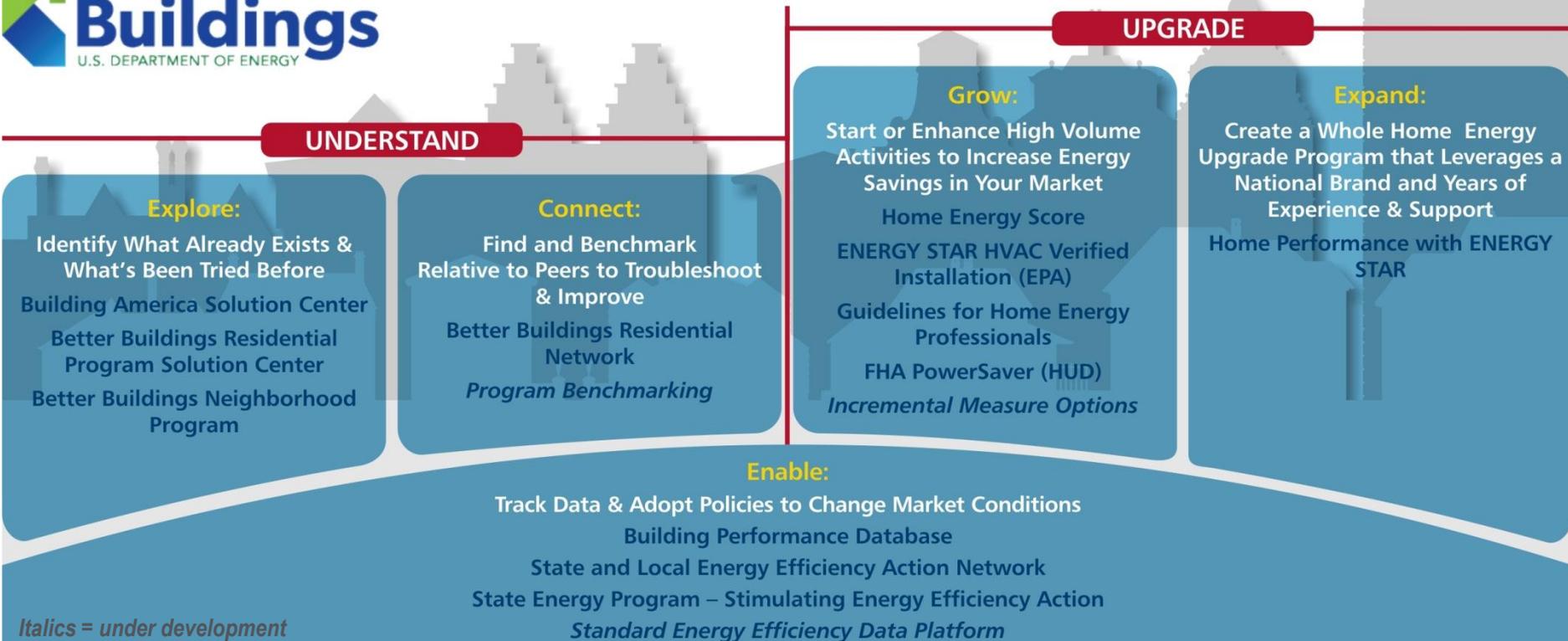
Approach: Better Buildings Residential

Understand
Options &
Resources

Take Action as Appropriate for Your Organization
*Gain experience and/or create an environment
for success in the next stages of maturation*

Support a
Home Energy
Upgrade
Program

Better Buildings Residential Offers Support & Linkages



Approach, Progress, Accomplishments: Explore (1)

The **Better Buildings Neighborhood Program (BBNP)** has demonstrated the feasibility of delivering residential EE programs across the country that averaged 22% energy savings.

- 41 recipients in 31 states received \$508M (\$482M ARRA + \$26M FY10) in Summer/Fall 2010 to test innovate models to expand the building energy upgrade industry
- >100,000 residential and ~80M sq. ft commercial buildings upgraded through 2013
- Demonstrated quantifiable savings (est. \$730M) and economic benefits (\$746M in sales)
- >30 programs projected to continue into 2014 without grant funds
- Comprehensive independent process, impact, market evaluations underway (due FY15)



Better Buildings Residential Program Solution Center (beta release May 2014) will serve as the entry platform to promote energy efficiency in existing homes to program administrators.

The BBRPSC is built to share lessons learned from upgrade programs operated across the country, particularly the Better Buildings Neighborhood Program grants. It will meet stakeholders needs by providing: case studies, material templates, program examples, step-by-step guidance, tips for success, webcasts, videos, and more. [next slide]

Approach, Progress, Accomplishments: Explore (2)

The screenshot shows the 'Better Buildings Residential Program Solution Center' website. At the top, it features the U.S. Department of Energy logo and navigation links for 'Account' and 'Log Out'. A search bar is located in the top right corner. The main navigation menu on the left includes 'Solution Center Home', 'About', 'Handbook Index', 'Glossary', and 'BROWSE BY: Program Components', 'Program Design Phases', and 'Content Types'. The main content area is titled 'Browse by Program Components' and includes a sub-header 'Explore Program Components'. Below this, there is a grid of six icons representing different program components: Market Position & Business Model, Program Design & Customer Experience, Evaluation & Data Collection, Marketing & Outreach, Financing, and Contractor Engagement & Workforce Development. A section titled 'Look Across Program Design Phases' includes a sub-header and a grid of four icons representing Strategy Development, Planning, Implementation, and Evaluation. On the right side, there are sections for 'RECENTLY UPDATED RESOURCES' and 'MOST POPULAR HANDBOOKS'. The Better Buildings logo is at the bottom right.

Search

About

Handbook Index

Glossary

Browse by Program Components

Browse by Design Phases

Recent Content

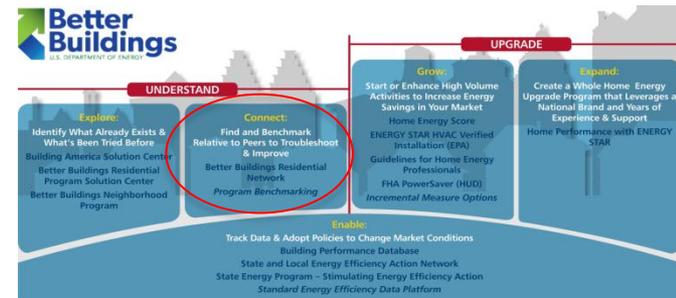
Popular Handbooks

Energy & Environment

Approach, Progress, Accomplishments: Connect

The **Better Buildings Residential Network (BBRN)** is a direct evolution from BBNP that will accelerate success in disseminating lessons learned and generating new data.

BBNP preliminary independent process evaluation report (11/12):
“DOE enabled and facilitated an exchange of grantee experiences that grantees describe as highly valuable and as contributing to their success to date.”



BBRN connects energy efficiency programs and partners to share best practices and lessons learned from one another to increase the number of homes that are energy efficient. Annual reporting of accomplishments is required.

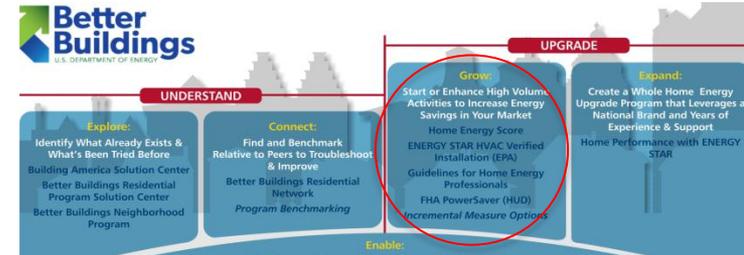
Since announced in April 2013, >65 organizations have joined -- building on a legacy of >2,300 participants on >100 calls in a dynamic network of programs and partners focused on progressing faster together.

Optional Program Benchmarking (launch Winter 14/15) will share data collected from the Better Buildings Neighborhood Program to enable programs to measure their progress and compare with others – to be replenished by BBRN members’ data for continuous learning and improvement.

RBI also supports the **Home Energy Pros** online community, connecting more than **3,750 members** -- contractors and program partners -- to share best practices and overcome challenges in upgrading homes

Approach, Progress, Accomplishments: Grow (1)

BBR provides tools to overcome well documented market barriers of: **access to compelling information, limited financing, few qualified workers.** In FY14, BBR is researching new approaches to expand EE savings opportunities through incremental upgrades.



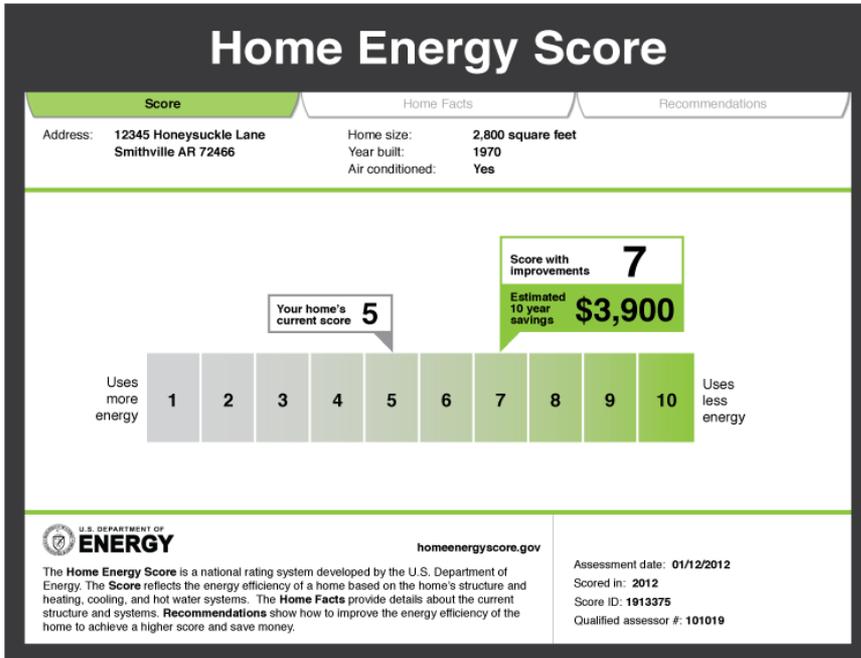
Home Energy Score is a simplified low-cost energy audit tool that allows a trained energy assessor to compare the relative energy efficiency of a home on a scale of 1 to 10 and provide the homeowner with a user friendly report [next slide]

FHA PowerSaver (HUD) offers affordable loans but needs partnerships with existing, high volume residential energy efficiency and renewable energy programs to increase uptake. BBR is promoting and connecting lenders and programs through an Interagency Agreement.

DOE's Workforce Guidelines (WAP) are now final and available; BBR promotes them to industry stakeholders and will consider for BBR partner programs in future

The Incremental Measure Initiative is a new effort to identify and speed adoption of market-ready energy improvements that focus on sub-systems of a home and could be tiered over time to engage homeowners and contractor trades for more program options and greater energy savings over time.

Approach, Progress, Accomplishments: Grow (2)



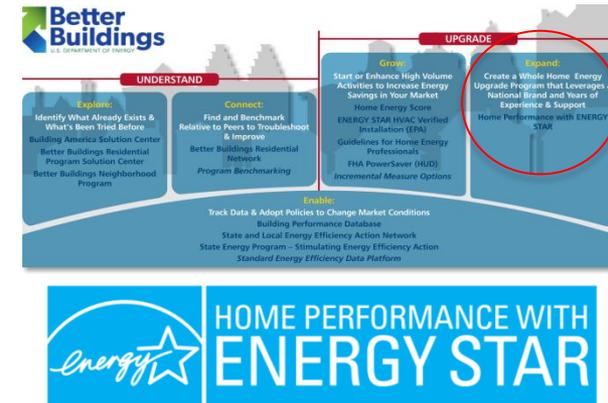
Home Energy Score

- ✓ Low cost service
 - Takes about 15 minutes if in concert with other assessment; less than 1 hour if stand-alone
 - Not intended to replace a full energy audit or diagnostics
- ✓ Thorough development process
 - Significant analysis and pilots underlay the program components
 - Ongoing research/continuous improvement re: consumer reaction and effectiveness as a compelling information tool
- ✓ Growing market interest
 - >10,200 homes scored
 - 188 qualified assessors
 - 30 partners overseeing local delivery



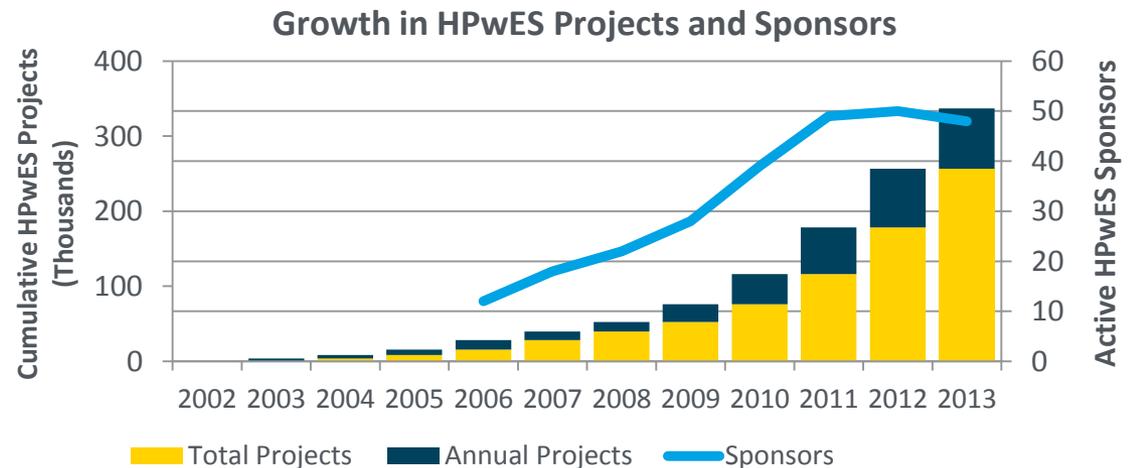
Approach, Progress, Accomplishments: Expand

Since 2002, **Home Performance with ENERGY STAR** has focused on turning building science-based recommendations into solutions for improved, energy-efficient homes. Rate of growth has increased dramatically since 2011.



Home Performance with ENERGY STAR is a public-private voluntary partnership program

- DOE sets the specifications and provides technical and marketing support to third-party sponsors to implement. BBR released an updated Sponsor Guide in March 2014.
- Sponsors recruit trained contractors and provide quality control for their work
- Projects average 25% energy savings per home.
- >300,000 upgrades have been completed since 2002.
- *(For more details, attend HPwES session in next time slot.)*



Approach, Progress, Accomplishments: Enable

Disaggregated program administration across utilities, states, and NGOs have resulted in a dearth of accessible data on multi-location results and performance, which holds back market expansion, replication, and scaling.



Better Buildings Neighborhood Program data release and transfer to Building Performance Database

- RBI will release (June 2014 to OpenEI) data from residential and commercial building energy upgrade programs implemented by 41 BBNP grantees across 31 states, including over 80,000 building records.
- Records include building and upgrade information, cost data, and some include energy consumption.
- Researchers, evaluators, utilities, and others have been clamoring for the data.
- *(For details, attend BBNP Data session in next time slot.)*

Project Integration and Collaboration (1)

Project Integration:

- BBR coordinates across EERE with SEE Action, WIP, and BTO's data initiatives to inform and leverage their activities that touch on residential energy efficiency, advancing financing, enabling policy progress, and streamlining data collection.
- BBR collaborates with EPA's ENERGY STAR programs and HUD's PowerSaver financing team to support their efforts.
- BBR is conducting a detailed peer review of all content in the BBRP Solution Center with external stakeholders.
- The HPwES prime contractor has convened a Stakeholder Working Group to solicit industry feedback on new initiatives for HPwES.
- The Incremental Measures Initiative is soliciting industry stakeholder feedback on the market potential of trade-based efficiency measures.

Partners, Contractors:

- BBNP: state and local government grant recipients, New West Technologies, Energetics, Navigant, ERG and subcontractors, LBNL, NREL, PNNL
- BBRN: ERG and subcontractors
- HEScore: SRA, LNBL
- HPwES: SRA
- Incremental Measures Initiative: D&R International
- PowerSaver: NREL and subcontractors

Project Integration and Collaboration (2)

- **Communications:** Recent & imminent events include:

Outreach Venue	Location	Date
Midwest Energy Solutions Conference	Chicago, IL	01-14-14
NASEO 2014 Energy Outlook Conference	Washington, DC	02-07-14
2014 ACI Regional Home Performance Conference	Saratoga Springs, NY	02-11-14
RESNET Building Performance Conference	Atlanta, GA	02-24-14
ACCA 2014	Nashville, TN	03-17-14
ACEEE National Symposium on Market Transformation	Washington, DC	03-30-14
HPwES Partner Meeting	Detroit, MI	04-28-14
ACI National Home Performance Conference	Detroit, MI	04-29-14
HEScore Technical Review Meeting	Detroit, MI	04-29-14
AESP Spring Conference	Baltimore, MD	05-13-14
Alliance to Save Energy – EE Global Forum	Washington, DC	05-20-14

- Additional outlets include: DOE webpages, Better Buildings Network View, BBNP Insider Blast, Home Performance with ENERGY STAR newsletter, Home Energy Score partner emails, EERE Success Stories, EERE blog posts, EERE Progress Alerts, Home Energy Pros website, and others.

Next Steps and Future Plans

Next Steps and Future Plans: Towards goals of demonstrating at scale market-based programs offering savings of 20% or more to existing buildings by 2020 (met), 25% by 2025, and 50% or more by 2030:

Better Buildings Residential (BBR) will serve as the programmatic platform to promote energy efficiency in existing homes by:

- Launching & expanding the **Better Buildings Residential Program Solution Center** to incorporate user submissions, add a decision tool, and survey actual and potential members for feedback.
- Expanding the **Better Buildings Residential Network** to support residential upgrade programs through technical assistance and peer sharing while collecting basic market data.
- Completing and promoting use of **program benchmarking** guide and collecting data submissions.
- Broadening use of the **Home Energy Score** in the existing residential market by incorporating renewables, refining its accuracy, aligning its value with existing homes programs, and examining its effectiveness in motivating homeowners to take action.
- Continuing the Interagency Agreement with HUD to link HUD's **Power Saver Loan Program** with upgrade programs, contractor trades, and manufacturers to promote more upgrades and loans.
- Expanding the use of residential energy efficiency technician certifications based on the DOE-developed **Standard Work Specifications**.
- Promoting **incremental measure** energy efficiency upgrades through utilities and individual trades, such as HVAC contractors and insulation installers.
- Promoting **Home Performance with ENERGY STAR** as the branded residential upgrade program.
- Performing **analyses of BBNP & HPwES data** to fill market gaps around topics such as energy advisors, incentive levels, energy audit strategies, and deep upgrades.

REFERENCE SLIDES

Project Budget

Project Budget: Total DOE \$ to date (FY11-FY14, non-ARRA): \$16.228 million

Cost to Date: \$16.228 million through FY14

Additional & Leveraged Funding:

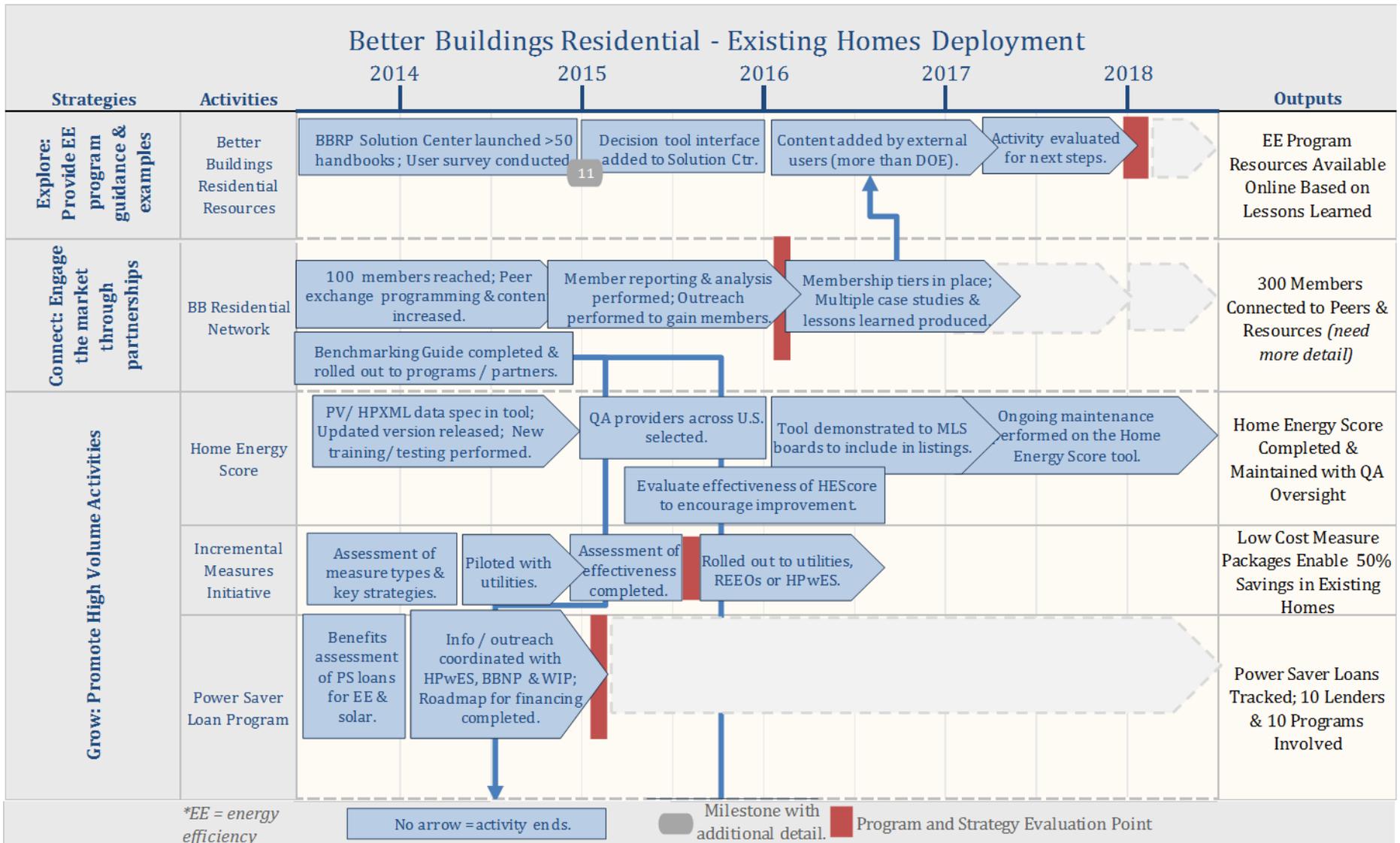
- BBNP one-time ARRA grant awards (\$508M) seeded initial investments and required leveraging of federal funds to attract private sector investment. More than \$1 billion in non-BBNP funds were expended by the grant recipients.
- All other BBR program partners expend their own funds to execute their programs; BBR does not provide direct funding to implementation partners.

Budget History

FY2011 – FY2013, non-ARRA (past)		FY2014 (current)		FY2015 – (planned)	
DOE	Cost-share (leverage)	DOE	Cost-share (leverage)	DOE	Cost-share (leverage)
\$11.278 million	>\$244.4 million*	\$4.95 million	>\$126.5 million*	~\$5 million (requested)	>\$129.25 million*

*HPwES leveraged funds

Project Plan and Schedule (1 of 2)



Project Plan and Schedule (2 of 2)

