BUILDING AMERICA TOP INNOVATIONS HALL OF FAME PROFILE

INNOVATIONS CATEGORY:

2. House-as-a-System Business Case
2.3 Program Support

ENERGY STAR for Homes Support

GW Robinson, a production home builder in Gainesville, Florida, worked with Building America to build all 290 units at its Cobblefield development to ENERGY STAR criteria. The builder was one of several featured in a series of guides produced by Building America to help builders achieve ENERGY STAR with climate-appropriate energy-efficiency measures (Baechler et al. 2004-06).

ENERGY STAR for Homes has profoundly impacted our nation's housing. In 2011 alone, 30% of all homes constructed earned the ENERGY STAR label. Cumulatively, over 1.3 million ENERGY STAR certified homes have delivered $23 billion in energy cost savings and avoided 210 million tons of green-house emissions. Strong technical underpinnings from Building America have been critical to this success.

BUILDING AMERICA TOP INNOVATIONS

Recognizing Top Innovations in Building Science – The U.S. Department of Energy's Building America program was started in 1995 to provide research and development to the residential new construction and remodeling industry. As a national center for world-class research, Building America funds integrated research in market-ready technology solutions through collaborative partnerships between building and remodeling industry leaders, nationally recognized building scientists, and the national laboratories. Building America Top Innovation Awards recognize those projects that have had a profound or transforming impact on the new and retrofit housing industries on the road to high-performance homes.

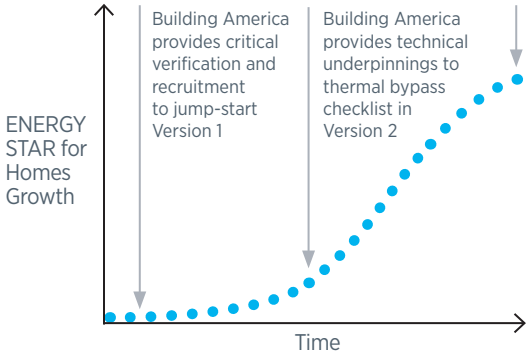
ENERGY STAR for Homes, with critical support from DOE's Building America program, has been transformative, leading the U.S. housing industry to high-performance homes and driving the development of a national Home Energy Rating System (HERS) infrastructure.

ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and DOE, helping U.S. citizens save money and protect the environment through energy-efficient products and practices. Through ENERGY STAR for New Homes, the DOE and EPA have worked to increase the energy efficiency of the nation's new homes (EPA 2012a). More than 127,000 new homes earned the ENERGY STAR in 2011, bringing the total number of certified homes to more than 1.3 million (EPA 2012a).

ENERGY STAR for new homes was first offered late in 1995. At that time, the ENERGY STAR guidelines targeted "low-hanging fruit," improvements such as high-performance windows, improved air sealing, tightly sealed ducts, and efficient heating and cooling equipment. Homes qualified to ENERGY STAR for Homes Version 1 were 30% more efficient than a home built to the 1993 Model Energy Code (MEC). These initial guidelines stayed in effect for 10 years, with some regional modifications to reflect more rigorous local codes or construction practices (EPA 2012a).

The development of a national Home Energy Rating System infrastructure was a major by-product of ENERGY STAR for Homes during the initial Version 1 specification phase. When EPA first introduced ENERGY STAR for homes, the HERS industry had just started and was not ready to support a national program. The Building America Program stepped in to fill this critical gap with much needed technical support by deploying research teams to work directly with the nation's leading builders to develop energy-efficiency innovations. These teams successfully engaged hundreds of builders to join ENERGY STAR for Homes. This early support proved to be the critical jump start needed to build ENERGY STAR's initial momentum while allowing the HERS industry time to mature. Thus, Building America and ENERGY STAR dovetailed perfectly to help transform the building industry to energy-efficient building practices (EPA 2005).

In 2006, EPA developed more stringent guidelines (ENERGY STAR Version 2). The updated guidelines added a Thermal Bypass Checklist, right-sized HVAC systems, and use of efficient lighting and appliances. These guidelines were substantially derived

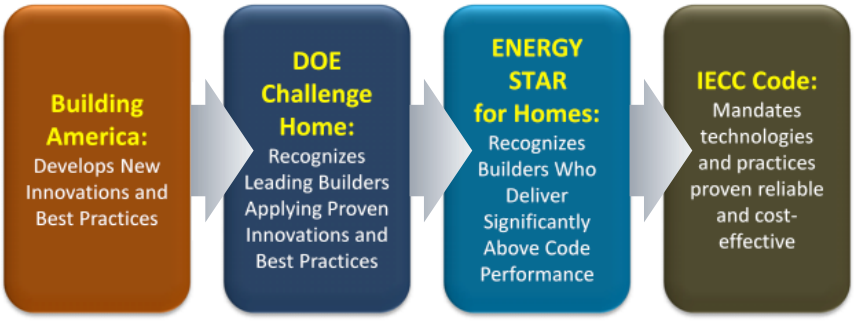


On the road to 1.3 million ENERGY STAR labeled homes, Building America has provided critical technical underpinnings and program support.

from best practices advocated by Building America. They became effective on January 1, 2007, and the Thermal Bypass Checklist soon after was substantially adopted in the 2009 International Energy Conservation Code (IECC).

In response to increasing code requirements and improving construction practices, EPA released a third-generation of guidelines (ENERGY STAR for Homes Version 3) that took full effect on July 1, 2012. Homes built to ENERGY STAR for Homes Version 3 are approximately 15% more efficient than those built to the 2009 IECC. More importantly, these latest specifications ensure comprehensive building science with detailed checklists substantially informed by Building America research. In addition, DOE is teaming with EPA by making the vast expertise of Building America research teams available for ongoing guidance on the wide array of technical issues and questions required to maintain these specifications.

In October 2010, DOE began developing the 2012 specifications for the DOE Challenge Home in coordination with EPA. The goal was to fully align the old Builders Challenge program with ENERGY STAR for Homes to ensure a unified federal government voice and process for promoting advanced building science. DOE envisions the effort as an opportunity to "road-test building science measures targeted for the next new homes specification" while providing an opportunity to "promulgate technologies and best practices successfully established in their Building America research program" (EPA 2010).



Building America, DOE Challenge Home, and ENERGY STAR for Homes provide an excellent example of "good government" program coordination. They work together, creating a highly effective market transformation process that culminates in code adoption of new innovations.

ENERGY STAR HOMES

More than 1.3 million homes nationwide have earned the ENERGY STAR label, as of March 2012.

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DOE Building Technologies Program
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Building America Solutions Center
www.buildingamerica.gov/solutionscenter

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