

Building America

New Construction

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Building America
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Building America

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Building America
Existing Buildings

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Residential Buildings

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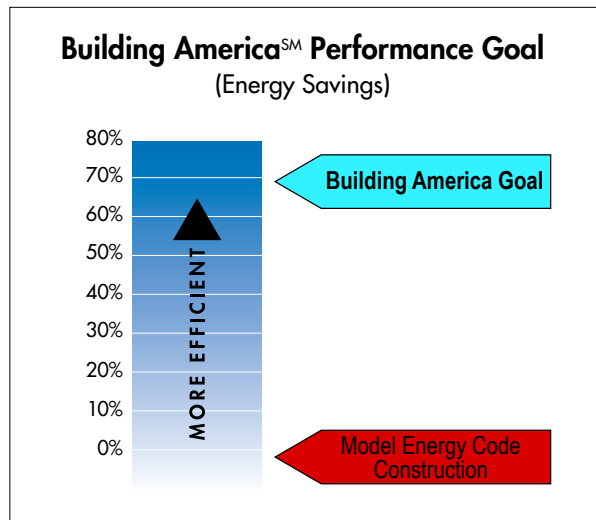
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OFFICE OF BUILDING TECHNOLOGIES
 OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
 U.S. DEPARTMENT OF ENERGY

Building America: Innovation in Home Building

Building America (www.buildingamerica.gov) is a private/public partnership sponsored by the U.S. Department of Energy that conducts systems research to improve overall housing performance, increase housing durability and comfort, reduce energy use, and increase energy security for America's homeowners. Program activities focus on finding solutions for both new and existing homes, as well as integrating clean onsite energy systems that will allow the homebuilding industry to provide homes that produce more energy than they use.



Building America – New Construction

Each Building AmericaSM team is constructing test houses and developing community-scale projects that incorporate its systems innovations. More than 22,000 energy-efficient houses have been built by the five teams to date.

The teams design houses from the ground up, considering the interaction between the site, building envelope, mechanical systems, and other factors, and recognizing that features of one component in the house can greatly affect others. This approach enables the teams to incorporate energy-saving strategies at little or no extra cost: new techniques for tightening the building envelope, for example, enable builders to install smaller, less expensive heating and cooling systems. Savings from the smaller

HVAC system can than be used to purchase high-performance windows that further reduce energy use and costs. System trade-offs like these improve the quality and performance of a home without affecting its costs — to builders or buyers.

Building America – Existing Buildings

There are more than 101 million residential households in the United States today. Approximately 74 million of these households live in single family site-built homes, six million live in mobile homes/manufactured houses and 21 million live in multifamily buildings. Not surprisingly, existing residential buildings represent the single largest source of potential energy savings.

The objectives of the existing homes project of Building America is to establish technology pathways that reduce energy consumption in American homes. The existing buildings project will focus on finding ways to adapt the results from the new homes research to retrofit applications in existing homes. Research activities include a combination of computer modeling, field demonstrations and monitoring to develop integrated approaches to reduce energy use in existing residential buildings. Analytical tools will be developed to guide designers and builders in the selection the best approach for each application.

Building America – Buildings Integrating On-Site Power (ZEH)

New single-family homes are, on average, larger than ever before, and employ many more electrical appliances. More than 50% are being built in the sunbelt where the need for electricity is high because of summertime air-conditioning loads.

Building America's research on the integration of residential renewable and other on-site power systems focuses on identification of system engineering issues that must be resolved before the long term goal of large numbers of cost effective, marketable, zero net energy homes (ZEH) can be achieved.

Research into systems integration of renewable and other on-site power systems such as solar or fuel cells includes evaluation of cost tradeoffs between investments in energy efficiency and on-site power systems, along with evaluation

of net daily, monthly and annual energy contributions from such systems. Another important research area is Building America's monitoring and analysis of data from the growing numbers of homes at the upper end of the home market that are being constructed utilizing solar technologies as options to reduce some of their energy costs. Such research and development is especially necessary to effectively integrate and reduce the energy costs and at the same time increase the energy efficiency of homes being constructed by production homebuilders.

Building America – Residential Codes Research

The U.S. Department of Energy's Building Energy Codes Program (BECP) was established to advance and advocate energy-efficient and environmentally sound buildings throughout the nation. The Program works with other government agencies, state and local jurisdictions, national code organizations, and industry to promote the adoption and implementation of energy codes for residential and commercial buildings in the public and private sectors.

The Program works closely with key stakeholder groups to develop more energy-efficient and easy-to-use energy codes. It includes a strong implementation effort focused on developing easy-to-use code compliance tools and training materials, such as the REScheck (formerly MECcheck) and COMcheck-EZ energy code compliance software.

The Program emphasizes outreach and education activities to inform and educate code officials, designers, builders, and others on developments in energy codes and standards, available compliance products, tools, training and technical assistance available from BECP. Numerous aids are available at the Energy Codes website (www.energycodes.gov), including online technical support (www.energycodes.gov/helpdesk.cfm). The Program also publishes the *Setting the Standard* newsletter, develops training materials and conducts training, supports buildings-related conferences, and provides technical assistance to states.

The Program's extensive infrastructure and industry connections are leveraged to eliminate code barriers to implementing new technologies and to promote Building America and other beyond-code programs to builders.