



BUILDING AMERICA TOP INNOVATIONS HALL OF FAME PROFILE

INNOVATIONS CATEGORY:

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

DOE Challenge Home (Formerly Builders Challenge)

Pulte Las Vegas qualified nearly 1,200 homes to the Builders Challenge between July 2008 and May 2012.

Hundreds of leading-edge builders across the country signed on to DOE's Builders Challenge and more than 14,000 homes earned the label. These homes are saving homeowners over \$10 million a year in utility bills. The DOE Challenge Home will build on this progress with a much more rigorous set of guidelines that establish a national definition for Zero Net-Energy Ready performance.



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.

DOE Challenge Home has played a vital role, disseminating proven innovations from Building America research into the market with a voluntary label that recognizes leading-edge builders who apply advanced technologies and best practices.

The U.S. Department of Energy's (DOE) Building America program started the Builders Challenge label in 2008 to encourage and recognize leading-edge home builders who went far beyond code. It required that builders comply with a set of mandatory criteria and achieve a Home Energy Rating System (HERS) score of 70 or lower. This ensured at least 30% energy efficiency over a typical home built to the 2004 International Energy Conservation Code (IECC). Today, hundreds of builders across the country have labeled over 14,000 Builders Challenge homes that are saving over \$10 million annually in utility bills.

Building America issued a new challenge to production home builders in 2012 with the DOE Challenge Home. The goals of this new program are to better align with ENERGY STAR for New Homes and to achieve significant performance improvements in response to the increasing stringency of the IECC. The specifications build upon the ENERGY STAR for Homes Version 3 comprehensive building science requirements, add proven advanced technologies and best practices from Building America research, and mandate a comprehensive package of energy-efficient components. The resulting HERS scores are in the low to mid 50s, depending on home size and region built.

Because of the rigorous air tightness and insulation levels specified, comprehensive indoor air quality requirements were included to minimize the health risks with each Challenge Home. Homes this energy efficient can easily achieve zero net-energy performance since a small renewable energy system can offset most or all annual energy consumption; therefore, solar-ready details were added to the specifications for locations with significant solar insolation. Optional special recognition for water efficiency, disaster resistance, and quality management can also be earned because they are increasingly important attributes for high-performance homes. The DOE Challenge Home is intended to serve as a responsible definition for zero net-energy-ready homes that ensures a broad array of home-performance attributes are effectively addressed before renewable power is installed. (See figure next page).

DOE recognizes that the DOE Challenge Home is an ambitious specification; for the housing industry. However, it also represents a major business opportunity for home builders to provide compelling value propositions for new homebuyers including:

- An easy way to identify leading-edge home builders able to achieve impressive levels of performance.
- Assurance that homes are constructed with advanced technologies and practices advocated by world-class experts in high-performance homes.
- Peace of mind that comes from knowing your new home meets forthcoming codes and won't be obsolete in the near future.
- Freedom from worry about increasing energy costs thanks to an ultra-efficient home that can easily achieve zero net-energy performance with a small renewable energy system.
- Better health protection with a comprehensive package of indoor air quality measures that help minimize dangerous pollutants while providing continuous fresh air and effective filtration.
- New levels of comfort and quiet only possible with rigorous attention to air tightness and effective insulation.
- Greater assurances of quality construction with third-party verification that enforces detailed checklists and performs advanced diagnostics.
- Enduring value that comes with a high-performance home designed to meet or exceed future expectations.



Additional designations builders can earn:

-  **100%** - All homes built to U.S. DOE Challenge Home requirements
-  **WaterSense** - All homes built to EPA WaterSense guidelines
-  **Quality Management** - Builder follows Challenge Home Quality Management Program guidelines
-  **Fortified for Safer Living** - All homes built to the Insurance Institute for Business & Home Safety's Fortified Home disaster resistance guidelines.



The DOE Challenge Home provides a responsible path to zero net-energy performance based on a solid foundation of building science and energy efficiency.

REFERENCES

DOE. 2012. DOE Challenge Home website. U.S. Department of Energy Building America, www.eere.energy.gov/buildings/residential/bc_index.html