



Builders Challenge

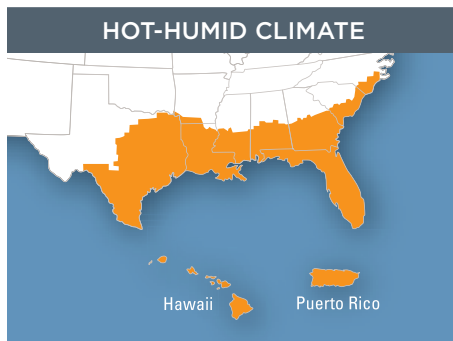
Recognizing Energy Leadership in Homebuilding

High Performance Builder Spotlight

David Weekley Homes

Houston, Texas

David Weekley Homes of Houston partnered with Building America team lead Building Science Consortium to improve the energy performance of its homes.



BUILDER PROFILE

Builder: David Weekley Homes

Founded: 1976

Employees:
636 company wide

Square Footage:
1,500 to 5,500 sq. ft. (in Houston)

Price Range:
\$287,100 (in Houston)



The Builders Challenge Big Winner!

In mid-2009, David Weekley Homes qualified 280 homes—more than any other builder—for the U.S. Department of Energy’s Builders Challenge with Home Energy Rating System (HERS) scores averaging 67. By November 2009 the builder had 700 more homes ready for certification.

Named in May as the number one private homebuilder in America by *Home Builder Magazine*, David Weekley Homes, which operates in 7 states and 18 cities, is committed to energy efficiency. According to Mike Funk, a quality coach for David Weekley Homes, all homes in his Houston, Texas, region are built to meet the Builders Challenge and Environments for Living’s platinum level.

Building As a System

“Our company looks at the whole house as a system, not just adding an energy-efficient feature here and a component there; we engineer the house so you get the most bang for every energy dollar invested,” said David Weekley, company president.

Despite multiple house plans and consumer choice options, the 280 homes share several energy-efficient characteristics. Wood-framed walls are air-sealed then insulated with R-13 unfaced fiberglass batts plus an external covering of R-2 polyisocyanurate rigid foam sheathing. Weekley currently uses 2x4 16-inch-on-center framing but will move to advanced framing in all house designs starting in 2010. Sloped ceilings are insulated with R-19

“The major challenge for any builder is to look at their home as a whole system. This [energy-efficient building] isn’t something that a builder can do just by flipping a switch or spending more money. You have to fail a lot of blower door tests and duct leakage tests first. It took us awhile to get to where we could build our homes as tightly as we needed to, to train up our air conditioning contractors to where their ductwork was as tight as it needed to be, and our insulation contractors to air seal in the way they needed to.”

DAVID WEEKLEY,
president of David Weekley Homes

unfaced fiberglass batts, and flat ceilings are insulated with R-38 paperless batt or blown insulation. A radiant barrier helps keep attics cool. Sill seal serves as a gasket keeping out air, moisture, and bugs between the foundation slab and the sill plate. According to Funk, blower door tests average 0.25 in natural air changes per hour.

Homes are equipped with a Lennox 15 SEER air conditioning system and a 95% efficient gas furnace with a variable speed motor. A fresh air ventilation system with a MERV 11 air filter and jump ducts between bedrooms ensures that clean, conditioned air is distributed evenly throughout the home. Ducts are mastic sealed; testing shows a low average leakage of 2.2%. Vinyl-framed, low-emissivity, double-pane windows have a solar heat gain coefficient of 0.3 to 0.34.

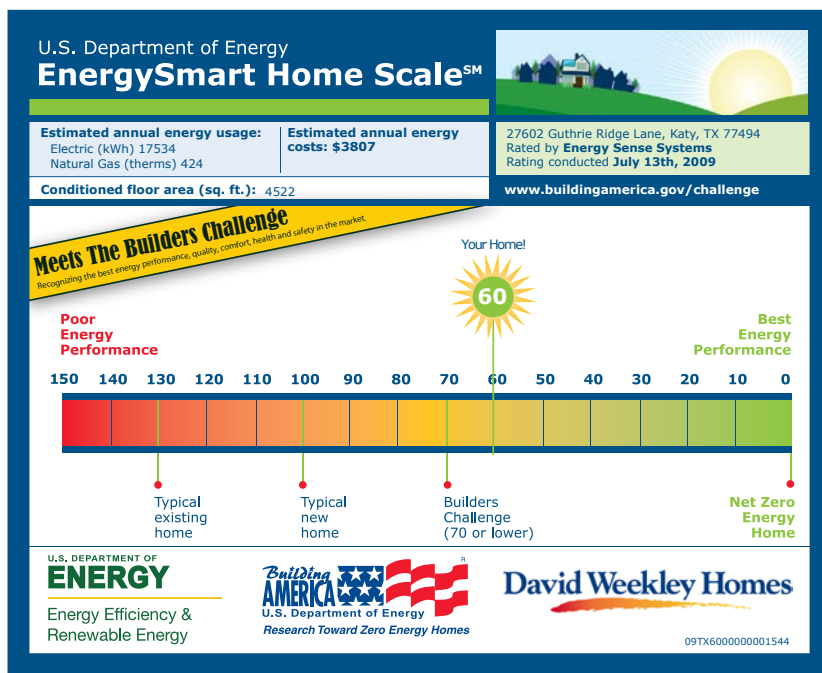
To ensure durability in the highly humid Houston climate, homes are sided with fiber cement siding, and painted with exterior paints containing mildicides; door jams are designed for water and rot resistance; and cement backer board is installed behind tubs and showers. A pest defense system is installed in the walls, and the homes are borate treated for termites.



Rigid foam insulating sheathing is taped to provide an air and moisture barrier, a technique recommended by Building America's Building Science Consortium team.

U.S. Department of Energy Builders Challenge

DOE seeks to give every consumer the opportunity to buy a cost-neutral, net-zero energy home anywhere in the U.S. by 2030. Homes that qualify for this Builders Challenge must achieve a 70 or less on the EnergySmart Home Scale (E-Scale) which is based on the Home Energy Rating System (HERS) index (www.natresnet.org). The E-Scale allows homebuyers to understand—at a glance—how the energy performance of a particular home compares with others.



To learn more about the Builders Challenge and find tools to help market your homes, visit www.buildingamerica.gov/challenge.

Energy-Efficient Features

- **HERS:** 55-70 with an average of 65
- **Walls:** 2x4 16-inch on center, in 2010 converting all homes to advanced framing
- **Attic Insulation:** Not conditioned, R-38 blown-in cellulose, with radiant barrier
- **Wall insulation:** R-13 fiberglass batts, R-2 DOW Super TUFF-R sheathing
- **Roofing Material:** 240-lb asphalt shingles
- **Foundation:** Concrete post-tension slab
- **Ducts:** Jump ducts, tested at maximum 3% leakage, average at 2.2%
- **Air Handler:** In the attic, 95%-efficient furnace with a variable speed motor
- **Air Sealing:** Average testing at .25 natural air changes per hour, seal all penetrations, sill seal between slab and exterior plate
- **HVAC:** Lennox 15 SEER air conditioning
- **Windows:** Vinyl frame, low-e, SHGC .3 to .34
- **Water Heating:** 64% efficient natural gas
- **Ventilation:** MERV 11 with variable speed 15 SEER system
- **Lighting and Appliances:** Minimum 60% CFLs
- **Commissioning/Certification:** Builders Challenge, ENERGY STAR, MASCO Environments for Living Platinum

U.S. DEPARTMENT OF ENERGY

Energy Efficiency & Renewable Energy

EERE Information Center

1-877-EERE-INF (1-877-337-3463)

www.eere.energy.gov/informationcenter

PNNL-SA-69926 December 2009

For information on **Building America** visit www.buildingamerica.gov.

The website contains expanded case studies, technical reports, and best practices guides.