



Demand grows for energy-efficient homes

Building Research and Diagnostics | April 2007

2006 RESULTS

Knowledge outlet

- ▶ 1 publication
- ▶ 13 presentations
- ▶ 4 research reports

Phoenix Homeowner Satisfaction Survey
[report to the State Technologies
Advancement Collaborative]

Healthy Homes [report to U.S. Department
of Housing and Urban Development]

Phoenix Home Energy Efficiency Study [report
to U.S. Environmental Protection Agency]

Temperature and wood moisture performance
of insulation material [report to private clients]

- ▶ 8 out of 10 of Advanced Energy's
most visited buildings web pages

Partnerships

- ▶ In addition to the U.S. Department
of Energy, the U.S. Environmental
Protection Agency and U.S.
Department of Housing and Urban
Development, the following provided
cash or in-kind support to Advanced
Energy's buildings research:

36 Builders
American Aldes
Audubon General Contractor
Dow Chemical Corp.
E3 Energy
Empire Communities
Grounded Electric
Habitat for Humanity, Baton Rouge
Hatch Plumbing
Hilti Corp.
Hurlock Building Products
HVAC installer in Baton Rouge
National Institute of Environmental
Health Sciences
National Pest Management Assoc.
Palm Harbor
Pest Management Systems Inc.
SmartVent
Sostram Corp.
Therma-Stor
Trotter Co.
University of North Carolina at Chapel Hill,
Center for Environmental Medicine,
Asthma and Lung Biology



Rising energy prices, coupled with increased public awareness, have fueled demand for more energy-efficient homes. Many builders have responded by qualifying their new homes for the U.S. Environmental Protection Agency's Energy Star® label. Others have gone beyond Energy Star standards and qualified their new homes for Guaranteed Performance labels, such as Environments for Living®. Advanced Energy's Research and Diagnostics group recently completed two studies examining the effectiveness of these programs in saving energy and meeting the needs of homeowners.

Knowing what consumers want and what works is important for improving existing programs and designing new approaches for even greater energy efficiency. Today's average home uses 10,000 kilowatt hours annually, but it will take new products, materials, designs and building practices to achieve a net zero energy home — a house that generates as much energy as it uses.

Advanced Energy's Applied Building Science team works to change the home construction industry by using building science techniques that builders can adopt in wide scale practice. Advanced Energy's Research and Diagnostics group measures and verifies changes in construction that builders are capable of building and homebuyers want.

Overview

Do guaranteed performance home programs work? Has energy use actually been reduced? Have homeowners been satisfied with the performance of these program homes? Advanced Energy addressed these issues in parallel studies that were published in 2006.

CONTINUED ON REVERSE SIDE



CONTINUED FROM FRONT

The Phoenix Home Energy Efficiency Study, sponsored by the U.S. Environmental Protection Agency, studied the actual energy consumption of more than 7,000 new homes in Phoenix, Ariz. The Phoenix Homeowner Satisfaction Survey was sponsored jointly by the U.S. Department of Energy and by state-based partners and surveyed the satisfaction of more than 700 new homebuyers.

Energy Star homes

In Phoenix, Energy Star® homes are up to 16 percent more energy efficient than comparable baseline, or code built homes.

Guaranteed Performance homes

Guaranteed Performance homes use the least amount of energy. In the past five years, private companies and utilities have begun to sponsor Guaranteed Performance programs across the country.

In Phoenix, Environments for Living® is the leading Guaranteed Performance program. Environments for Living homes sell with energy consumption and comfort guarantees. These homes use more stringent construction and testing techniques, and contractors go through rigorous training.

Guaranteed Performance homes are the most energy efficient homes in the study. They consume up to 33 percent

less energy than comparable baseline homes and up to 20 percent less than comparable Energy Star homes.

Both Energy Star and Guaranteed Performance homes use less energy, and the Phoenix studies demonstrated that investments in energy-efficiency home construction are beneficial. The homeowner saves on energy bills, and the builder sees increased customer satisfaction.

Homeowner satisfaction

Guaranteed Performance homeowners are more satisfied with their new homes. The Phoenix Homeowner Satisfaction Survey found that performance is not just about energy efficiency, but also about comfort, reliability and health. They are more satisfied with each aspect of their

home's HVAC performance. For example, 49 percent said they were completely satisfied with their home's "ability to keep them comfortable year round" compared to 35 percent of Energy Star homeowners and only 27 percent of baseline homeowners.

Future research

Advanced Energy's research and diagnostics group continues to test, verify, initiate, demonstrate and deliver practical knowledge of high-performance buildings in the marketplace.

Long term, the group aims to create a practical bridge between buildings and occupant health and to demonstrate building practices that deliver reduced building-related illnesses.

