

## Northern Texas Builds Its First Zero Energy Home



Peter Yost, Building Science Corporation/PX13574

Frisco, Texas, 12 miles north of Dallas, is the state's fastest-growing city (more than 60,000 people call it home, compared to about 6,000 in 1990). Frisco is now "home" to a Texas-sized zero energy home—the first in this part of the state. This 3800-ft<sup>2</sup>, four bedroom home is a research project for the U.S. Department of Energy's (DOE) Building America home building program, and shows that energy efficiency is compatible with comfortable living.

The home's high-mass exterior walls—antique brick, R-14 recycled-content Durisol<sup>®</sup> block, and earthen plaster—are systems-engineered for thermal performance, moisture tolerance, and long-term durability. The ColorKlad<sup>®</sup> finish on the metal roofing in Classic Green rejects much of the sun's heat. The house also has a systems-engineered mechanical system that integrates space and domestic water heating with the solar water system and an on-demand hot water recirculation system that means HOT water when you need it anywhere in the house.

This Building America Zero Energy Home includes these other energy-efficient features:

- 8-kW roof-mounted photovoltaic system
- High-performance, architecturally shaded, solar heat gain coefficient windows
- Vented, reflective metal roofing
- Closed-loop two-panel solar hot water assist system and tankless water heater
- Passive heating/cooling/natural ventilation
- Mastic-sealed ducts inside conditioned space
- ENERGY STAR<sup>®</sup> clothes washer, dishwasher, and refrigerator
- 90% of lighting is fluorescent
- High-mass slab floor with 1-inch foam insulation
- Multistaged chilled water cooling system.

### The Building America Program:

- Works on a cost-shared basis with more than 470 industry partners. Partners include leading national and regional builders (who produce about 50% of all new housing), local home building associations, and individual builders. Partners can also be experts in home construction, equipment, architecture, engineering, community planning, and mortgage lending.
- Provides energy research support to a broad range of residential building programs and partnerships.
- Develops residential energy systems that reduce home energy use by an average of 40%–90%, including the integration of onsite power and renewable energy systems.

Because these systems reduce energy loads, the photovoltaic and solar water panels will produce as much energy as the house uses during some months.\* On average it is expected to use 80% less energy than a standard home.

\* Estimated energy performance is based on analysis relative to the Building America Benchmark House ([www.buildingamerica.gov](http://www.buildingamerica.gov)) that uses the EnergyGauge USA energy simulation tool. Assuming that electric energy uses not directly under builder control are also reduced by a proportional amount, it is possible for the home to achieve zero net energy. Actual annual energy use and associated utility bills will vary, depending on differences between the assumptions stated and actual occupant behavior.

## A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

## Research and Development of Buildings

Our nation's buildings consume more energy than any other sector of the U.S. economy, including transportation and industry. Fortunately, the opportunities to reduce building energy use—and the associated environmental impacts—are significant.

DOE's Building Technologies Program works to improve the energy efficiency of our nation's buildings through innovative new technologies and better building practices. The program focuses on two key areas:

### • Emerging Technologies

Research and development of the next generation of energy-efficient components, materials, and equipment

### • Technology Integration

Integration of new technologies with innovative building methods to optimize building performance and savings

For more information contact:

EERE Information Center  
1-877-EERE-INF (1-877-337-3463)  
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U.S. Department of Energy  
**Energy Efficiency  
and Renewable Energy**

An electronic copy of this factsheet is available on the Building America Web site at [www.buildingamerica.gov](http://www.buildingamerica.gov)



## Key Products/Partners

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For more information on this Zero Energy Home and its builder, contact Jim Sargent, Anderson Sargent Custom Builder LP, 3 Sargent Place, Waxahachie, TX 75165, PH: 972-617-3788 or visit the Web site: [www.zeroenergyhomedallas.com](http://www.zeroenergyhomedallas.com).

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