

## High Performance Builder Spotlight

# Artistic Homes

Albuquerque, New Mexico



Artistic Homes of Albuquerque, New Mexico, is among the first home builders in the United States to offer true net zero energy construction as an optional upgrade on every home it builds.

“ The HERS rating is the very best measuring stick we can use to see if we are improving. We continually look at what we are doing to see how we can improve our product. We just want to be better than we were yesterday. ”

**TOM WADE**, co-owner of Artistic Homes

Since joining the U.S. Department of Energy's Building America program a decade ago, Artistic Homes has continually sought to refine and improve its home building craft. In September 2008 Artistic became one of the first builders in the country to build a true net zero home. The 1,660 sq ft home completed in Rio Rancho, New Mexico, will produce and conserve more energy than it uses throughout the year for heating, cooling, and plug load. It qualifies for DOE's Builders Challenge, LEED residential platinum level, and ENERGY STAR Indoor Air Quality certifications. The home's calculated annual energy bill is \$153 of which \$150 is utility service charges.

While Artistic's first net zero home was a demonstration project, the builder is determined that net zero will not be an idealistic dream but a

realistic possibility within the grasp of the average home buyer. Artistic is now offering a zero energy package to home buyers on any home it builds, with a net zero energy guarantee for heating, cooling, and plug load. The builder signed its first contract with the net zero upgrade package on December 20, 2008. The upgrade sells for \$42,500 to \$61,900 depending on the square footage of the home. A 1,429 sq ft home with the complete zero energy package starts at \$206,940.

In November 2008 Artistic committed to building all of its homes to meet the Builders Challenge criteria. While Builders Challenge requires a HERS index score of 70 or lower, Artistic has committed to building all of its homes to a HERS score of 60 or lower and LEED silver level or better. The production builder built 150 homes in New Mexico in 2007 and, despite the market slow down, built more than 100 homes in 2008.

Energy efficiency features include R-21 blown insulation in the walls, R-38 in the ceiling (R-50 in ZEH package), and high-efficiency windows. Artistic uses slab-on-grade construction with R10 rigid foam insulation under the slab and R5 rigid foam vertical insulation on the edges of the slab. Advanced framing techniques including 2x6 24 in. on center walls, California (3-stud) corners, and open headers use less lumber and provide more space for insulation in the wall cavity. Air sealing details include gasketing the sill plate and caulking or foam sealing all wiring and piping holes to minimize air leakage. Every home is tested by an independent HERS rater for whole house and duct leakage.

The biggest energy savings probably come from locating the ducts in conditioned space. Most of the home's heating and cooling registers come

Artistic Homes, a New Mexico production builder completed this true zero energy home in summer 2008, the first in the country to qualify for the U.S. Department of Energy Builders Challenge, LEED platinum level, and the ENERGY STAR Indoor Air Quality certifications.

### BUILDER PROFILE

#### Artistic Homes

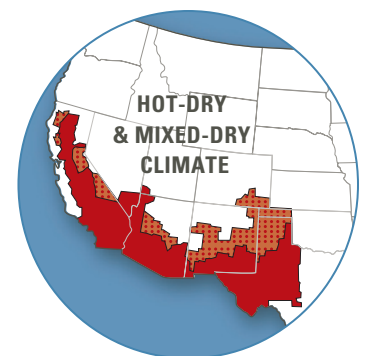
Founded: 1945

Employees: not counting subs, 13

Homes Built: 100 homes across New Mexico, 2008

Size: 1,305-2,905 sq.ft.

Price range: \$160,000 to \$300,000



U.S. Department of Energy

### Energy Efficiency and Renewable Energy

Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

KEY FEATURES

Model home HERS score: 0!

Air handler in utility closet

Ducts in conditioned space

R-21 blown insulation in walls,  
R-38 blown insulation with wind  
baffles at soffit vents in attics

Advanced framing techniques

Gasketing, foam sealing, and  
caulking of all envelope penetrations  
to minimize air leakage

Fresh air inlet and jump ducts for  
positive pressure in home

3<sup>rd</sup> party HERS rater blower door and  
duct blaster testing of every house

15 SEER AC and 9.0 HSPF electric furnace

Heating and cooling energy usage  
and comfort are guaranteed

Low-emissivity, dual pane,  
fibrex frame windows

Borate treatment of studs and bottom plate

Low- and no-VOC products

Job-site recycling

True Net Zero upgrade package includes:

- Roof-mounted photo-voltaic power system (4.2–7.0 kWh depending on home's sq ft)
- Solar thermal hot water heating,
  - R-50 attic insulation
- Energy recovery ventilator for constant conditioned fresh air circulation

directly off a main duct trunk line that runs through a dropped ceiling in the hallway. The airhandler is also located inside conditioned space in a utility room.

The zero energy package includes roof-mounted solar photovoltaic panels, roof-mounted solar thermal water heating, a 15 SEER air conditioning unit, a 9.0 HSPF heat pump, R-50 ceiling insulation, and an energy recovery ventilator which provides steady circulation of fresh conditioned air through the home. The fresh air is cleaned by a HEPA filter and preheated or cooled by the ERV before sending it through the ducts. The ERV system helped Artistic's model zero energy home become the first home in New Mexico and one of the first in the country to meet the requirements of ENERGY STAR's new Indoor Air Quality certification.



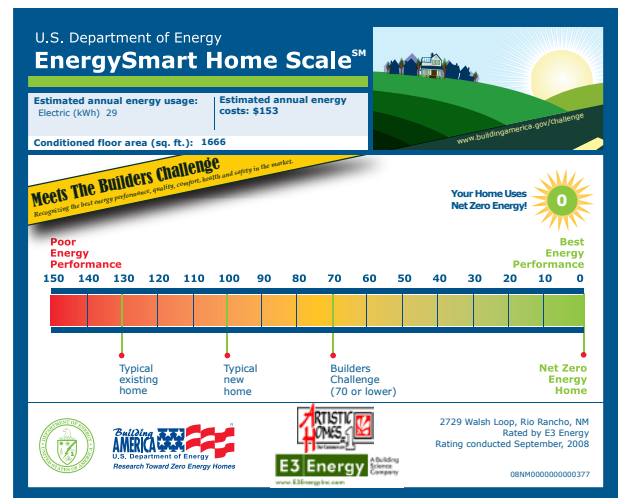
Artistic increases the efficiency of its heating and cooling systems by putting ducts in conditioned space in a central chaise down the main hallway.

U.S. Department of Energy Builders Challenge

DOE has posed a challenge to the homebuilding industry—to build 220,000 high performance homes by 2012. Homes that qualify for this Builders Challenge must meet a 70 or better on the EnergySmart Home Scale (E-Scale). The E-scale allows homebuyers to understand—at a glance—how the energy performance of a particular home compares with others. Through the Builders Challenge, participating homebuilders will have an easy way to differentiate their best energy-performing homes from other products in the marketplace, and to make the benefits clear to buyers.

The figure to the right shows a sample E-Scale for Artistic Home's zero energy house. The E-scale is based on the well-established Home Energy Rating System (HERS) index, developed by the Residential Energy Services Network. To learn more about the index and HERS Raters visit [www.natresnet.org](http://www.natresnet.org).

To learn more about the Builders Challenge and find tools to help market your homes, visit [www.buildingamerica.gov/challenge](http://www.buildingamerica.gov/challenge).



For more information visit [www.buildingamerica.gov](http://www.buildingamerica.gov). The website contains expanded case studies, technical reports, and best practices descriptions.

The Building America Program

Building America is a private/public partnership sponsored by DOE 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. Building America teams construct test houses and community-scale projects that incorporate systems innovations. 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. More than 40,000 energy-efficient houses have been built by the seven teams to date.