



## Builders Challenge

Recognizing Energy Leadership in Homebuilding

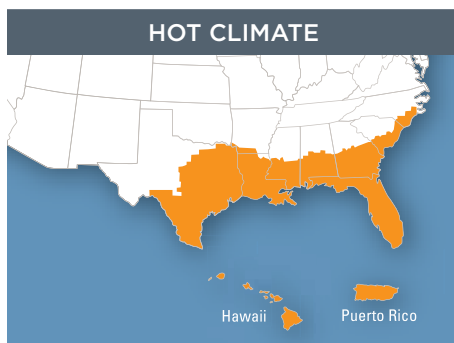
## High Performance Builder Spotlight

# Imagine Homes

San Antonio, Texas

Imagine Homes has worked with Building America to achieve steady improvements in energy efficiency. This model achieves a HERS 48 not counting the photovoltaics.

Imagine Homes, working with the U.S. Department of Energy's Building America research team member IBACOS, has developed a system that can be replicated by other contractors to build affordable, high-performance homes. Imagine Homes has used the system to produce more than 70 Builders Challenge-certified homes per year in San Antonio over the past five years.



## BUILDER PROFILE

**Builder:** Imagine Homes  
San Antonio, TX  
www.imaginehomessa.com  
John Friesenhahn and Jim Bastoni, Partners  
jfriesenhahn@imaginehomessa.com  
(210) 877-5900

**Founded:** 2006

**Average Homes Built Per Year:** 77

**Featured Home:** The Monterrey, \$329,900,  
2 stories, 5 bedrooms, 3½ bathrooms:  
3,670 sq. ft., \$48/sq. ft., completed July 2010

But Imagine Homes' owners, John Friesenhahn and Jim Bastoni, aren't satisfied with staying in Texas. In 2006, Imagine Homes formed a limited partnership with a national builder, Beazer Homes USA, that has applied their ideas to the design and production of energy-efficient homes in more than 200 communities in 16 states.

"We want to change the way homes are built across America," said Friesenhahn. "Beazer is implementing some of our processes as they roll out high-performance homes."

Through Building America, Imagine Homes has had the help of IBACOS' research and modeling to develop specifications for insulation, windows, sheathing, and HVAC and water heating systems.

On the Monterrey model, IBACOS helped the builder determine that a thermal solar water heater would reduce energy use by 2,465 kWh annually and be cost effective. The 3,670-ft<sup>2</sup> Monterrey model also has nine solar photovoltaic panels producing 2 kW of renewable energy, a 93-AFUE furnace, and a 17-SEER air conditioner. The \$329,900, two-story home has a HERS index of 48 without PV and 40 with PV.

The 2x6 24-inch on-center walls are insulated with R-20 blown cellulose and R-3 XPS foam sheathing. The drywall on the exterior walls is glued at the sill, top plate, and corners and around windows and doors. Rim joists and the attic are insulated with R-22 open-cell foam.

Sealing the attic enabled the builder to bring all of the ducts into conditioned space. The tight thermal envelope keeps out San Antonio's hot, humid air. Central-fan-integrated ventilation provides a passive fresh air supply. Other energy-efficient components include low-emissivity vinyl-framed windows, an ENERGY STAR refrigerator, dishwasher, and clothes washer, and 100% CFL lighting.

Imagine Homes holds regular homebuyer seminars in a home under construction to demonstrate its “behind the walls” features. The company has worked to get the buy-in and feedback of suppliers and subcontractors, arranging for them to meet with IBACOS experts.

“You have to have an open mind to do things differently,” said Friesenhahn. “Much care is spent in training our builders, sales team, prospective homebuyers, realtors, and subcontractors. We are focused on the long view, versus how much money we can make today.”

But energy efficiency is also good for business. “Building high-performance homes just makes a lot of sense,” Friesenhahn said, “because our warranty costs are almost nothing and our homeowners are happy.”



The Monterrey home features a thermal solar water heater expected to reduce energy use by 2,465 kWh annually.

## 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](http://www.natresnet.org)). The E-Scale allows homebuyers to understand—at a glance—how the energy performance of a particular home compares with others.

U.S. Department of Energy

### EnergySmart Home Scale<sup>SM</sup>

**Estimated annual energy usage:**  
Electric (kWh) 10971  
Gas (CCF) 258

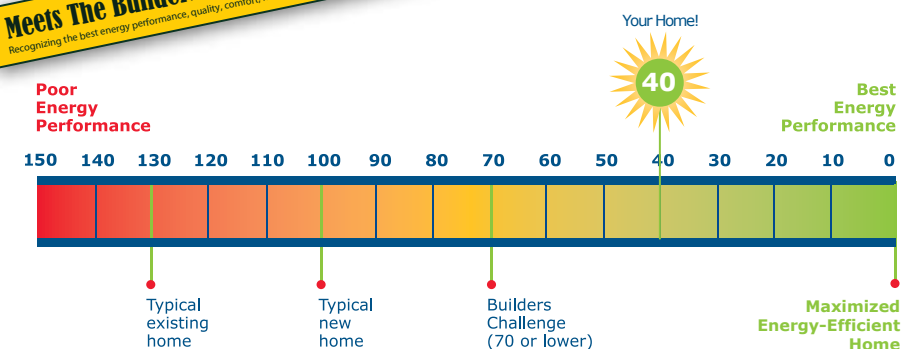
**Estimated average bill:**  
Annual: \$1375

24115 Briarbrook Way, San Antonio, TX 78261  
Rated by **Builders Energy Rater, LLC**  
Rating conducted **July 20, 2010**

**Conditioned floor area (sq. ft.):** 3856

[www.buildingamerica.gov/challenge](http://www.buildingamerica.gov/challenge)

**Meets The Builders Challenge**  
Recognizing the best energy performance, quality, comfort, health and safety in the market.



## Key Features

- **HERS Index:** 48 (40 with PV)
- **Foundation:** Uninsulated slab-on-grade
- **Wall:** 2x6 at 24-inch on-center; 2-stud corners and ladder blocking; R-20 cellulose cavity + R-3 foam sheathing
- **Rim Joist Insulation:** R-22 open-cell foam
- **Roof:** Unvented attic with R-22 open-cell spray foam along roofline
- **HVAC:** AFUE furnace, 17 SEER AC; central-fan-integrated passive fresh air supply
- **Ducts:** Manual D design, all in conditioned space, multizone system
- **Duct Leakage:** 98 cfm total at 25 Pa
- **Blower Door:** 933 cfm at 50 Pa; 1.2 ACH at 50 Pa
- **Solar:** 2-kW photovoltaic system
- **Water Heating:** 54-ft<sup>2</sup> solar thermal collector
- **Windows:** Low-E, vinyl-framed ENERGY STAR windows, U-0.35, SHGC 0.22
- **Appliances:** ENERGY STAR refrigerator, dishwasher, and clothes washer
- **Lighting:** 100% CFLs
- **Energy/Green Building Programs:** Builders Challenge, ENERGY STAR, Build San Antonio Green
- **Awards:** 2010 EVHA Silver winner; 2008 & 2009 NAHB Green Building Award; 2009 City of San Antonio Green Building Award; 2007 & 2008 ENERGY STAR Leadership in Housing Award

U.S. DEPARTMENT OF  
**ENERGY**  
Energy Efficiency & Renewable Energy



**ImagineHomes**

10TX400000003388

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).

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](http://www.eere.energy.gov/informationcenter)

PNNL-SA-76957 January 2011 - 11

For information on **Building America** visit [www.buildingamerica.gov](http://www.buildingamerica.gov). The website contains expanded case studies, technical reports, and best practices guides.