



## Building America Efficient Solutions for New Homes

### Case Study: Imagine Homes

Stillwater Ranch | San Antonio, TX

#### PROJECT INFORMATION

**Construction:** New home

**Type:** Single-family

**Builder:** Imagine Homes  
San Antonio, TX  
[www.imaginehomessa.com](http://www.imaginehomessa.com)

**Size:** 1,751 to 3,668 ft<sup>2</sup>

**Price Range:** \$181,000 to \$289,000

**Date Completed:** 2011

**Climate Zone:** Hot-humid

**Team:** IBACOS

#### PERFORMANCE DATA

**HERS Index:** 52-65

**Projected annual energy  
cost savings:** \$2,067

**Incremental cost of energy-  
efficiency measures:** \$4,800

**Annual mortgage  
payment increase:** \$746

**Annual net cash flow  
to homeowner:** \$1,321

**Billing data:** Not available

Founded in 2006, Imagine Homes of San Antonio has worked with DOE's Building America research team IBACOS to build more than 300 high-performance homes that achieve HERS energy efficiency scores from 52 to 65. Imagine Homes was also the first San Antonio builder to certify all of its homes to both the federal ENERGY STAR program and the Build San Antonio Green program. The local company has sold 77 homes per year over the last 4 years in a market flooded with just-to-code homes by national builders.

To address health, safety, and durability issues in a hot and humid climate, Imagine Homes designed and constructed features that function as a system for the whole house. Central fan-integrated supply ventilation keeps the home slightly positively pressured to prevent hot, humid air from being pulled into the home. The windows and doors are fully flashed with pan flashing, a water-proof flexible sill wrap, corner shields, and extended adhesive flashing tape on the sides and tops of the windows to protect against water intrusion and reduce air infiltration.

Sealed attics (with R-19 low-density foam spray on the underside of the roof decks) create an insulated space for the ducts and air handler. Because the attic environment is cooler and less humid as a result of this insulation system, the 3-ton 15 SEER air conditioner does not work as hard to cool the house.

*(Photo top left)* In 2011 Imagine put a chocolate Easter bunny in the foam-insulated and air-sealed attic of one of its model homes so sales staff could show prospective home buyers that the attic stays so cool the bunny doesn't melt. The bunny in Imagine's 80°F attics has also appeared in ads along with photos of a melted chocolate rabbit in the 130°F uninsulated, vented attic of a competitor. Imagine's sales staff say the ads have really helped sales, which have more than doubled from 70 homes sold in 2011 to 150 sold in 2012.

## KEY ENERGY-EFFICIENCY MEASURES

### HVAC:

- 92% AFUE natural gas-fired furnace; 15 SEER split-system AC unit
- Sheet metal trunk and R-6 flex duct branches located in sealed, insulated attic have <3.5% total leakage
- Central fan-integrated supply ventilation and spot ventilation; ASHRAE 62.2 compliant
- Fresh-air intake ducted to return side of air handler through a MERV 10 filter; return air vents or transfer grilles in each bedroom
- Wiring installed to be solar PV-ready

### Envelope:

- Attic Insulation: R-19 low-density spray-foam insulation
- Wall Insulation: R-13 low-density spray-foam insulation
- Air Sealing: 2.5 ACH50 or less
- Foundation: uninsulated slab-on-grade
- Double-pane, low-e, vinyl windows.  $U = 0.35$ ,  $SHGC = 0.23$

### Lighting, Appliances, and Water Heating:

- 90+% CFLs, ENERGY STAR appliances
- Tankless gas water heater ( $EF = 0.82$ )
- Central manifold plumbing, PEX piping

For more information, please visit:

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



Imagine Homes installs double-pane, low-e, vinyl-framed windows. To resist water intrusion, the builder pays special attention to fully flashing windows and doors including pan flashing, and properly lapping side and top flashing. Other features that resist moisture include slab on grade foundations, fiber cement siding, and taped rigid foam exterior sheathing. Spray foam under the roof and in wall cavities helps keep hot, humid air out of the home.

## Lessons Learned

- Achieving certifications like Builders Challenge, ENERGY STAR, and Build San Antonio Green has helped Imagine sell houses in a market flooded with code-built homes.
- Imagine's owners started their own spray foam insulation and air sealing company when they couldn't find one who would do it right. Later, they sold the company and now contract with it for their insulating and air sealing.
- Foam insulating and air sealing the attic cut heat gain to the homes and provided a cooler place for the ducts and air conditioner, reducing cooling loads so Imagine could downsize the 15 SEER air conditioner by half a ton.
- The filtered outside air intake to the air handler keeps the home positively pressurized to keep hot, humid air from being pulled into the home.
- Imagine Homes pursues quality and safety with a combustion safety test, duct-blast test, blower-door test, and 500-point quality assurance walk-through of every house they build.

"Our warranty costs are almost nothing. We have happy homeowners."

*John Friesenhahn, president, Imagine Homes*