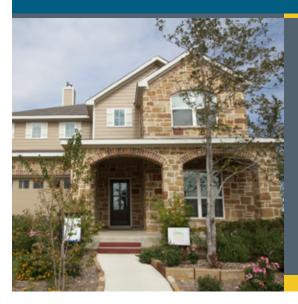


BUILDING TECHNOLOGIES OFFICE



Building America Case Study
Whole-House Solutions for New Homes

Imagine Homes

Stillwater Ranch | San Antonio, TX

PROJECT INFORMATION

Construction: New home

Type: Single-family

Builder: Imagine Homes

San Antonio, TX

www.imaginehomessa.com

Size: 1,751 to 3,668 ft²

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 energyefficiency 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) Imagine Homes of San Antonio, Texas, worked with Building America to design homes with a foam-insulated and air-sealed attic. These attics have average temperatures of 80°F attics instead of the 130°F average temperatures of the uninsulated, vented attics typical in San Antonio.

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



Imagine Homes installs double-pane, low-e, vinylframed 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 homes built to the state's minimum code level.
- 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-blaster 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



Energy Efficiency & Renewable Energy

For more information, visit: www.buildingamerica.gov

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The U.S. Department of Energy's Building America program is engineering the American home for energy performance, durability, quality, affordability, and comfort.