

High-Performance Builder Case Study

Pulte Homes and Communities of Del Webb – Las Vegas Division



The Biggest Home Builder in Las Vegas Bets on High- Performance Homes

Pulte Homes Las Vegas Division may have the fastest ramp up time on record to get a home certified to the U.S. Department of Energy's Builders Challenge. "I first heard about the Builders Challenge from David Rodgers, Deputy Assistant Secretary for Energy Efficiency, in July 2008. Within 10 days we had our first house certified. We hope to have 500 more certified by the end of the year," said Nat Hodgson, Vice President of Construction for the Las Vegas Division of Pulte Homes and Communities of Del Webb.

“Most of our sales are through word of mouth. Home buyers don't always understand the value of what they are getting until they've lived in the home a few months and start seeing their utility bills. Then they can't wait to talk about it with their friends.”

NAT HODGSON, Vice President of Construction for the Las Vegas Division of Pulte Homes and Communities of Del Webb

Passion and Performance

The Pulte Las Vegas division's passion for energy efficiency isn't exactly an overnight phenomenon. They have been a local leader in energy efficiency since 1997 when Hodgson teamed up with Building America's Building Science Consortium to build pilot homes in Las Vegas.

Pulte has built 100% ENERGY STAR homes in the Las Vegas valley since 1999 and builds the most ENERGY STAR-labeled homes nationwide. Pulte Homes Nevada Operations was named an ENERGY STAR partner of the year in 2004. Pulte has continually gone beyond ENERGY STAR, implementing an Environments for Living(R) package that incorporates building science technology throughout each home.

In December 2007 Pulte began construction on two pilot homes it hopes to get LEED certified. This comes just a month after the U.S. Green Building Council officially unveiled the Leadership in Energy and Environmental Design (LEED) for Homes program. Pulte is the first home builder seeking LEED certification in the Las Vegas valley, although several commercial buildings have attained LEED certification there.

Pulte Homes, including its Del Webb brand, has the largest home building volume in metropolitan Las Vegas. The company built and sold 4,600 new homes in 2006 and 2,200 in 2007. They plan to build 1,550 in 2008 and anticipate building 1,000 in 2009 according to Hodgson.

BUILDER PROFILE

Las Vegas Division of Pulte Homes and Communities of Del Webb

www.pulte.com

Founded: Pulte founded in 1950 in Bloomfield Hills, Michigan; Las Vegas division started in 1992

Employees: 36 construction staff, not counting subs, 13,400 nationally (2006)

Homes Built: 2,200 Las Vegas division, 27,540 in US (a 35% drop from 2006)

Development: 23 developments under construction in Las Vegas valley in 2008

Size: 850-5,000 sq. ft., 2-bedroom town homes to 6-bedroom 3-bath single-family detached houses, depends on development

Price range: \$150,000 to \$500,000

This builder is described in Building America's Hot-Dry Best Practices.



U.S. Department of Energy

**Energy Efficiency
and Renewable Energy**

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



Pulte is the first builder in the Las Vegas valley to accept the DOE Builders Challenge. Pulte plans to build more than 500 homes to the Builders Challenge criteria in 2008.

“Our carbon foot print is small. That’s a great side effect of building to Builders Challenge, and something more buyers are paying attention to.”

NAT HODGSON

More than 90% of last year’s homes met Environments for Living criteria. Said Hodgson, “We shoot for 100% but we test every home and, depending on the model, we may have some that score higher and some that score a point or two below.”

Meeting the Challenge

When Pulte decided to step up to the Builder’s Challenge they found that they were already doing many of the things that would help them meet the ambitious goal of 30% energy savings over a Building America baseline home. (The baseline home is roughly equivalent to a home built to meet the energy code requirements of the mid 1990s.)

Builders Challenge homes must score a 70 or lower on the HERS Index score; ENERGY STAR requires a HERS index score of 85 and Environments for Living requires a HERS index score of 80 or less. “When we heard about Builders Challenge we were already consistently getting HERS index scores of 70. Some homes and floor plans are down as low as 56 and 54,” said Hodgson.

Pulte is so committed to energy-efficient home construction that it offers the Environments for Living package standard on every house it builds. “It’s not an optional upgrade. In the late ‘90s when

we looked into increasing our energy efficiency, we realized every homeowner needs this,” said Hodgson. He went on to explain that meeting the efficiency levels they wanted to reach for Builders Challenge and Environments for Living meant really thinking about the house as a system and making changes at the design stage.

“We are so far above code that I don’t think we could offer it as an option even if we wanted to. To achieve the levels of efficiency we’re getting, it has to be a whole package,” said Hodgson.

That systems approach starts with a Manual J calculation of cooling needs, engineered duct design, locating the ducts and air handler in conditioned space, pressure balancing every room, and meticulous attention to air sealing both the envelope of the house and the ducts. Pulte chose blown cellulose instead of fiberglass batt to insulate the attic and walls because gaps where pieces of batt come together or compressions due to piping and wiring can limit the effectiveness of the batts, significantly compromising insulating values.

One thing that really sets Pulte apart from the competition is its attic insulating technique. Rather than distributing the cellulose insulation along the ceiling deck, Pulte applies it along the underside of the roof line, holding it in place with netting stapled



Pulte's unique method of applying attic insulation keeps the blown cellulose right up against the roof line providing an insulated attic providing conditioned space that hovers around 80°F to house the air handler and ducts instead of the 150°F temperatures found in uninsulated Las Vegas attics.

KEY FEATURES

Right sized 15 SEER HVAC

Engineered duct design

Ducts located in conditioned space

Attic is conditioned space with insulation applied along roof line.

Blown cellulose rather than batt wall insulation for more thorough insulation

Pressure balancing between rooms

Outside filtered air intake

Vinyl-frame low-emissivity windows

Sealing of penetrations in envelope and top and bottom plate and sealing of bottom plate.

Optimum value engineering framing

Continuous air barrier enclosing the conditioned space.

Low-flow toilets, fluorescent lighting, and ENERGY STAR appliances in most communities

Programmable thermostats

Outside vented kitchen and bath fans

Environments for Living package with heating and cooling bill guarantee

Green features vary somewhat by community but include low VOC paints, "smart" irrigation systems, formaldehyde-free cabinets

to the roof struts, providing a conditioned attic space. "We can get temperatures over 105°F several days in a row here in the summer. Unconditioned attics can get up to 150°F. Mine stay about 80°F. It's not rocket science to figure out that if you're sending your ducts through the attic, you are going to have to work a lot harder to cool your living space to 78°F when you've got 150°F attics than when you've got 80°F attics," said Hodgson.

Pulte hires an independent inspector to conduct duct blaster tests and do an extensive visual inspection of each home after the HVAC is installed but before sheetrock is put in. "The visual inspection reports come straight to me. I grade my supervisors on them and their bonuses are based on how well they do on these inspections, not how many houses they crank out," said Hodgson.

"When we started doing conditioned attics, we thought everyone would jump on the band wagon, but they haven't," said Hodgson. "This kind of construction is not that hard, it's just different. For whatever reason, our industry is about the most archaic manufacturing system in the world. Buying a home is the largest personal investment most individuals will ever make and yet the industry still relies on the most archaic means of production. We are just now starting to talk about energy use monitoring equipment in homes. Even

programmable thermostats are considered unusual. Cars have had computerized monitors onboard since 1973," said Hodgson.

Dollars and Sense

Pulte's Las Vegas division actively markets the high performance of its homes. Each sales office has a room Pulte calls the QCC Room (for Quality Construction Center). The room is full of three-dimensional wall displays showing side-by-side comparisons of Pulte construction and code-minimum construction.

"Right now it's a buyers market," said Hodgson. "There is a great deal of pressure to lower our sales prices but we know we are giving buyers a better product. And our buyers tell us this. Most of our sales are through word of mouth. Home buyers don't always understand the value of what they are getting until they've lived in the home a few months and start seeing their utility bills. Then they can't wait to talk about it with their friends."

Hodgson said higher energy performance and the higher quality that goes along with it have set his product apart in the Las Vegas valley and he believes the Builders Challenge label will help drive the message home for buyers.

Environments for Living

Pulte's Las Vegas Division participates in the Environments for Living Program. Started by MASCO in 2001, the program assists builders in constructing homes using sound building science principles for an end result that is comfortable, durable, and energy efficient. MASCO provides certification and marketing materials. Builders who want to get their homes certified for Environments for Living can contact MASCO at 1-866-912-7233, or via e-mail at EnvironmentsForLiving@mascohq.com to obtain a list of local Master Certified Contractors (MCCs) who can help builders fill-out the Plan Input Sheet. The input sheet and house plan(s) are sent to EFL's Plan Review Center. EFL conducts a diagnostic analysis of the plans and compares the performance of a home built to specifications to one built using the EFL program features. Costs, heating and cooling usage, and carbon emissions reduction calculations are also provided. For homes that are built to EFL recommendations, EFL guarantees heating and cooling energy usage. For gold, platinum, and diamond-level homes, EFL will also give a comfort guarantee—that the temperature at the thermostat will not vary more than 3 degrees from the center of any conditioned room in the thermostat's zone. See http://www.eflhome.com/index.jsp?action=fl_guarantee for details.



Pulte markets its energy-efficient features in information rooms that show potential buyers side-by-side displays of Pulte building science technology versus code minimum techniques.

Hodgson appreciates the new Builders Challenge label, which prominently features the E-Scale based on the Home Energy Rating System (HERS). The E-Scale uses an index of 0 to 100 with 0 being the ultimate goal, a net zero energy home. A code minimum house would score 100, Builders Challenge homes must score 70 or lower. “Buyers understand it because it’s like miles per gallon for a car. It’s a simple way to compare one home to another, only in this case, the lower the score, the better,” said Hodgson.

The Bottom Line

“I want to make all of the houses built in the U.S. more energy efficient, because there is something in it for all of us. I like to be the leader, don’t get me wrong. But I want to help other builders get this,” said Hodgson.

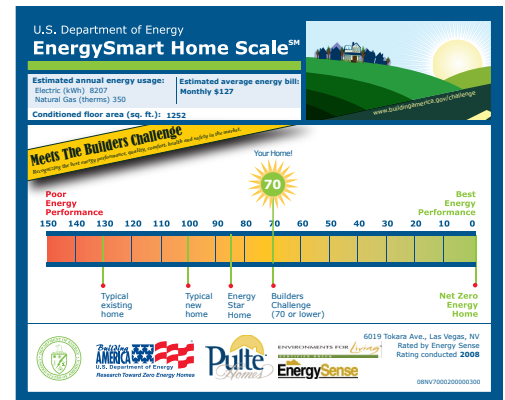
“People ask me ‘why did you choose to build this way?’ I say ‘why *wouldn’t* you build this way?’ Consumers tell us they want it. Energy costs are continuing to go up. This is the best tool we have to fight back. As an industry, we need to do this,” said Hodgson.

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 an E-Scale for Pulte Homes and Communities of Del Webb. 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.

To learn more about the Builders Challenge and find tools to help market your homes, visit www.buildingamerica.gov/challenge.



2008 JD Powers and Associates New-Home Builder Customer Satisfaction Study

- Pulte Homes operations ranked highest in customer satisfaction in 11 of 26 U.S. markets, more than any other U.S. builder. Pulte Homes' market operations earned top rankings for new-home quality in seven markets, tied for the most among all builders, and earned the most top rankings for new-home design with top scores in six markets.

Pulte Homes' Nevada Operations was named 2004 ENERGY STAR® Partner of the Year.

Pulte Homes received the first-ever **Platinum Award for Excellence in Customer Service**, for New-Home Builder Customer Satisfaction from J.D. Power and Associates, 2004.



For more information visit 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.