

Builders Challenge Guide to 40% Whole-House
Energy Savings in the Hot-Dry and Mixed-Dry Climates

Case Study: Pulte Homes and Communities of Del Webb – Las Vegas Division



The Biggest Home Builder in Las Vegas Teams with Building America

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," said Nat Hodgson, Vice President of Construction for the Las Vegas Division of Pulte Homes and Communities of Del Webb. Since July 2008, Pulte Las Vegas has certified more than 780 homes through Builders Challenge.

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® package that incorporates building science technology throughout each home.

In January 2009, Pulte held a grand opening for Villa Trieste, a 185-unit community in northwest Las Vegas. Pulte offered solar PV, LEED certification, and an EFL guarantee standard on each home. The homes are designed to use 60% less energy than the Building America benchmark. DOE provided a research grant to develop the community, which features 1,400 to 1,960 sq. ft. homes starting at \$200,000.

BUILDER PROFILE

Builder's Name:

Pulte Homes and Communities
of Del Webb – Las Vegas Division

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 U.S.
in 2007 (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

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For more information

1-877-EEERE-INF (1-877-337-3463)
buildingamerica.gov



Pulte is the first builder in the Las Vegas valley to accept the DOE Builders Challenge. Pulte has built more than 780 homes to the Builders Challenge criteria since July 2008.

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

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, 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 built 1,550 in 2008 and anticipated building 1,000 in 2009 according to Hodgson.

Meeting the Challenge

When Pulte decided to step up to the Builders 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 1993 Model Energy Code.)

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 below 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, Manual D engineered duct design, location of 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 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.

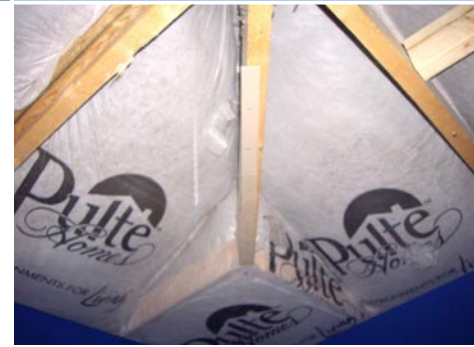
Dollars and Sense

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 buyer’s 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. Homebuyers 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.

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.



Pulte’s unique method of applying attic insulation keeps the blown cellulose right up against the roof line. This insulated attic provides conditioned space at the air handler and ducts at around 80°F instead of the 150°F temperatures found in uninsulated Las Vegas attics.

KEY FEATURES

HERS Index score of 60

Right sized 15 SEER HVAC

Engineered duct design

Ducts located in conditioned space

Conditioned attic 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



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.

Environments for Living

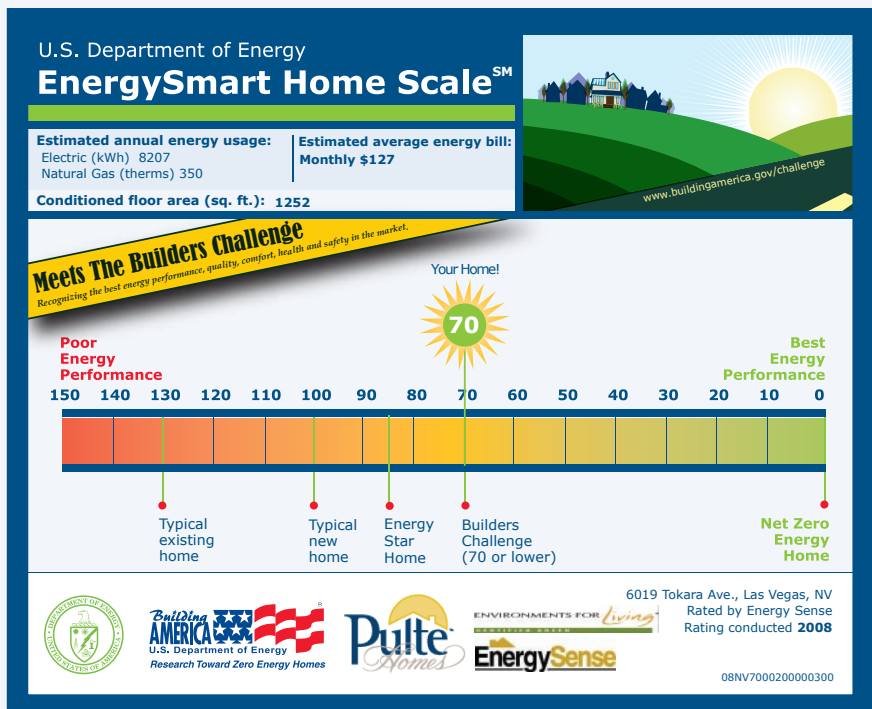
Pulte's Las Vegas Division participates in the Environments for Living Program. Started by MASCO in 2001, the program assists builders in constructing homes using sound building science principles for an end result that is comfortable, durable, and energy efficient. MASCO provides certification and marketing 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 www.eflhome.com/index.jsp?action=fl_guarantee for details.

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.