

# The green load effect

Habitat for Humanity's ultra-efficient new homes save families money — and may spark a new wave of green housing for all

**BY TONY ILLIA**

**PHOTOGRAPHY BY CHRISTOPHER SMITH**

**HABITAT FOR HUMANITY HELPS** put budget-strapped families into affordable homes — but that dream can suffer a few dents when those families later face \$500 power bills in the notoriously hot Vegas summers.

But now Habitat, a nonprofit that sells homes at-cost to families earning less than 80 percent of area median income, plans to help families save even more — with an ultra-sustainable house.

Think monthly power bills that cost about as much as two tickets to the movies, carbon emissions slashed by a third and even a rainwater collection system that encourages families to grow their own vegetables. Habitat officials hope to clone their recently completed Henderson prototype home to spread the green — and the savings — to other candidate families throughout the valley.



Habitat for Humanity's prototype home earned a rare platinum LEED rating.

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“We wanted to see how sustainable we could make a home while still making it affordable,” Habitat for Humanity Las Vegas President and Chief Executive Officer Guy Amato says. “It’s twice as energy-efficient as a normal house.”

He’s being a bit modest. Completed in September, the one-story, three-bedroom home at 1808 Merze Ave. landed a rare, platinum-level Leadership in Energy and Environmental Design certification from the U.S. Green Building Council. LEED is a building sustainability report card that awards points for air quality, recycling and energy efficiency. (Platinum is the equivalent of an A plus.)

And there’s a local hero in this story, too. Rick Van Diepen, an associate principal with architecture firm PGAL, gave up his weekends and spare time to design the roughly 1,200 square-foot home. Van Diepen knows green. He served as the Green Building Council’s 2010 Las Vegas chapter president.

“I volunteered for Habitat for Humanity while I was in high school,” Van Diepen says. “I always liked their mission. This is a lifelong dream for me.”

## GREEN INSIDE AND OUT

**The modest-looking home** is a dream for its owners’ pocketbook, too, with money-saving features that lower utility bills while reducing impact on the environment. Light-colored reflective concrete roof tiles and low-energy windows, compact fluorescent lighting and a solar-powered, tankless hot-water system trim electrical costs. There are also tubular skylights in the hallway and bathroom for bright and lamp-free interiors.

“We opened up the living area to let in more natural light, making the space feel larger than it really is,” says Van Diepen. “It also creates natural ventilation to move through the house from east to west.”

The residence is sealed up airtight with caulked joints and rigid, Styrofoam insulation that keeps heat from escaping through the building’s wood frame. It works similar to the way a Styrofoam cup keeps coffee warm. The result is high-efficiency air conditioning and heating that doesn’t bust the wallet.

“We suspended insulation from under the roof tile, which moves the building envelope up to the roof,” Van Diepen explains. “The mechanical



Reflective roof tiles and a solar-powered hot-water system trim energy consumption by 30 percent.

equipment consequently operates at near-ambient temperature, thereby reducing the system needs by a ton.”

The green thinking ventures outside as well. The home also reduces water use through drought-tolerant landscaping, and low-flow showerheads and faucets. A rooftop collection system, meanwhile, gathers rainwater for planted fruit trees and a vegetable garden that lets homeowners grow their own. As a result, the prototype design trims water use by 40 percent. And as long we’re talking stats: Compared to an average home, the Habitat house cuts carbon emissions by 35 percent, solid waste by 70 percent and energy consumption by 30 percent. But for homeowners, those stats translate into bottom-line savings.

“Habitat wants to help people help themselves by become more financially stable,” says Van Diepen. “That becomes possible when utility bills are lower and homeowners can grow their food.”

## WHAT ABOUT EVERYONE ELSE?

**Construction of a similar home** might be pricier, since the project attracted 50 civic-minded sponsors who donated time and

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# THE GREEN KNIGHT

Who will bring eco-friendly living to the masses? This guy with the \$20 power bill might be the one

**Rick Van Diepen** wanted to become an architect since he was 5. “I liked drawing, so I thought architecture would be a cool job,” he explains. He’s achieved that dream — and then some. Today he’s an associate principal with PGAL, the architecture firm designing McCarran International Airport’s \$2.4 billion third terminal building. It’s a far cry from Van Diepen’s first job after college, designing an office building for a nonprofit radio station in Ecuador. The pro-bono project lasted only three months, but his passion for civic-minded projects still persists — and his modest but quietly marvelous home is a fertile lab for common-sense approaches to making our homes more environmentally friendly.

Van Diepen’s inspiration comes from architects such as Glenn Murcutt, who’s known for his simple, vernacular architecture that focuses on nature. Pritzker Prize-winning Australian architect Murcutt is a sole practitioner known for economical and multi-functional work that takes cues from the environment, resulting in innovative and technical architecture that is nonetheless forthright and honest.

“Murcutt lets the site and climate govern the design, which is often modern and clean but still rooted in the land,” says Van Diepen, who served as 2010 local president of the U.S. Green Building Council. “He believes in touching the earth lightly.”

Van Diepen’s own architecture follows a similar philosophy. And he has the perfect laboratory for it: His 1,723-square-foot Las Vegas home.



Rick Van Diepen gets some of his greenest ideas by experimenting on his own home.

“We try to do one or two major upgrades a year,” he says. “Our power bill is \$250 a year, which makes people’s jaw drop. It makes us feel good. Some homes spend that much in a month.”

Van Diepen began piecemeal improvements to the 33-year-old, semi-custom home near Flamingo and Pecos roads in 2001. He began with cheap, quick upgrades such as weather-stripping and new insulation before taking on bigger projects such as placing 15 photovoltaic panels atop the roof. The home, which generates 2.1 kilowatts of solar-powered electricity, also has an evaporative cooler and an attic ceiling fan for high efficiency operation that slashes energy consumption.

And let’s not forget about the Solatubes — think skylights on steroids. The roof-mounted tubes capture and magnify daylight for brightly lit interiors that trim the need for lamps and cut the energy bill.

“The Solatubes were our best dollar-for-dollar investment,” says Van Diepen, whose home has been featured on HGTV. “Our hallway is a long, picture-lined corridor that previously required turning on a light. Now, it’s a nice gallery that feels much more pleasant with natural daylight.”

Van Diepen’s comfy yet practical home is also a comfy yet practical lab that enables him to field-test green building products. For example, he experimented with flooring in three different areas; he tried stained concrete (which scratched easily), bamboo flooring (which dented) and recycled carpet tiles. That trial and error gives Van Diepen firsthand industry knowledge while creating a fun and functional home.

“You’re saving energy and it’s more attractive,” Van Diepen said. “Community and environmentally friendly design is a passion of mine.” — *Tony Illia*

cash, materials and labor. Kitchen cabinets, for instance, were built and installed by Sierra Vista High School wood shop students using reclaimed materials.

“This house had a lot of sponsors because we went for the LEED certification. So, people viewed it as a sustainable showcase opportunity,” Amato says. “We want to get the most bang-for-the-buck and incorporate those design elements into future homes.”

Habitat built a mirror image of the prototype on the lot directly behind at 1809 Berden Ave. The two residences share a fenceless and communal backyard. Although both homes have since sold, more are on the way. Habitat bought six residential lots across the street with future plans for duplicating the super-green scheme. Prices are expected to run about \$140,000 to \$150,000. Habitat helps qualified

buyers with financing. The Henderson hamlet could consequently become the country’s first LEED platinum neighborhood.

“It’s a very community-minded project,” says Van Diepen. “I always felt, as an architect, that energy efficient, high quality homes could be built for around the same as standard tract homes.” And now, much more earth-friendly. DC

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