



The Thoroughly Modern Duplex

By A.G. Chapelle Photos by Scott Johnson, Hawks Photography

Architect Shelby Navarro learned his earliest ecological lessons at the knee of his grandfather. The proof is in Oklahoma's first LEED-platinum certified house, a contemporary

duplex designed by Navarro and located in Tulsa's Cherry Street district.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating SystemTM is a third-party certification program that is the nationally accepted benchmark for the design, construction and operation of high performance green residences and buildings.

Navarro worked with environmentallysensitive builder Micky Payne to construct what was at the time one of only 30 LEED homes in the world.

Not surprisingly, energy efficiency is an important issue for Navarro. This 1,800 squarefoot, two bedroom, two-and-a-half bath – plus outdoor shower – home is equipped with a





geothermal heat pump, which operates 55 to 75 percent more efficiently than regular systems, and LED lighting that will last around 25 years.

"If you put one in when a child is born," Navarro says, "they'll probably graduate college before you have to change the bulb.

The cedar facade is fitted with a rain screen system, which works as a mold preventative. The home is also insulated by structured panels, which are designed to trap in the heat. The structure provides three to five times more sturdiness than a standard frame house.

Buffalo grass, a low maintenance grass that tolerates drought, is used in the yard and on the roof.

"You don't have to mow the roof," Navarro says with a laugh. "That's always the first question. Because it is covered in grass, the roof is not subjected to temperature swings and UV damage."

The house utilizes a 500-gallon cistern that is buried in the backyard. While the rainwater and runoff collected is not for drinking, it can be used for watering flowers and vegetables in the yard or the rooftop deck.

Inside the home, the decor is warm and



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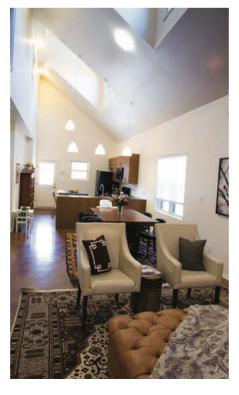




- ↑↑ The master suite boasts a bathroom adorned with recycled glass tiles, tankless hot water heater and water saving dual flush toilet.
- ∧The roof of the home is covered with sod to maintain temperatures and eliminate UV damage. The lowmaintenance buffalo grass requires no mowing.
- The clean lines and appealing design of the Zeecks' bungalow in historic Mesta Park have drawn rave reviews.

Guaranteed Watt Saver

From their national headquarters in Oklahoma City, GWS has been making green happen every day, for everyday people since 1986. GWS engineers, consultants and inspectors offer extensive building science services for new and existing residential and commercial construction. Their comprehensive training program teaches builders, architects and contractors the benefits of energy-responsible and green building. GWS is a national leader in Energy Star certifications with 35,000 homes certified, managing the certification of the first LEED home in the nation in Edmond. For more information, visit www.gwssi.com.



contemporary with Asian influences. The ground floor showcases open truss ceilings.

One of the most noticeable features indoors is the Zen garden tucked under the staircase, which doubles as a water feature focal point. Cubbyholes where visitors and residents place their shoes can be found beneath the stair landing. This keeps everyone from tracking dirt and contaminants throughout the house.

The interior living room floors are made of bamboo and stained a dark, rich color. The room also incorporates a large window that enables cross ventilation.

Kitchen countertops resembling concrete are actually fashioned from specially treated recycled paper that has the hardness and durability of stone. Other wooden counters were milled from trees lost in the 2007 ice storm and a 125-year-old barn.

A tankless water heater instantly heats the home's water, and the interior bathrooms feature vessel sinks and beautiful recycled glass tile. The toilets are dual flush, which saves 6,000 to 8,000 gallons of water each year.

A two-car garage with an upstairs efficiency apartment sits behind the home. Navarro says this can be used for guests or as an office or rental unit.

Navarro explains that selling an environmentally friendly home used to be extremely hard.

"But now, people are getting it," he concludes.

Building a Better Bungalow

By Rebecca Fast Photos by Brent Fuchs, Fuchs Photography

Tracey and Andy Zeeck aren't tree huggers. Instead of giving Mother Nature a squeeze, they're letting her flourish by minimizing their impact on the world. The Zeecks have built an environmentally friendly home that's on its way to receiving a gold-level LEED certification.

As residents of Oklahoma City's historical Mesta Park, the Zeecks resisted urban sprawl and stayed within the inner city on NW 21st Street. They chose to redevelop this location because, simply put, they love the neighborhood – and in turn they earned points.

Tracey and Andy often have points on their mind these days. Nearly every decision that was made while building their new home will be carefully reviewed by the LEED Green Building Rating System. This system awards points based on location, sustainability, water and energy efficiency, materials selection and indoor environmental quality.

Andy, who has been in the construction industry for more than 18 years, has watched





the trend of building green within both the commercial and residential markets grow.

"They're top-quality buildings that are not only better for the environment but are built to drive operating costs down," says Andy.

The Zeecks' previous home averaged \$300 a month in utilities, while their new house costs half as much. The rewards are great, but becoming LEED-certified is not for the faint of heart.

Tracey regularly travels with a large notebook, roughly three inches thick, documenting the house materials in great detail.

"Building a LEED home is considerably more time consuming and administrative with the amount of paperwork involved," she says. "But it's interesting what can be learned along the way, and it's a goal that is worth the time and energy."

The Zeecks' 2,100-square-foot home is

strategically designed from top to bottom. Large windows placed above the main living area allow the sunlight to bring natural light into the rooms, reducing the use of electricity. All windows are double-paned insulated glass. The window frames are layered with plastic to provide better protection against the outside elements. Soy-based foam insulation fills the walls to help maintain a uniform temperature and the walls are painted with a low VOC (volatile organic compound) paint.

Low-flow faucets and toilets can be found in the bathrooms, and all appliances are Energy Star certified. Bamboo floors are laid throughout the house. While it takes nearly 20 years for a tree to grow back and reach maturity to be used for hardwood floors, bamboo takes a maximum of five years to grow. Beneath the house is a sturdy foundation with a thick plastic sheeting



underneath to prevent moisture from seeping up from the ground.

A point the Zeecks are quick to emphasize is that many of the features that make a house green aren't always visible to the eye. As a stop along the Mesta Park Home Tour in December, the Zeecks' home received rave reviews for its clean lines and appealing design.

"A home doesn't have to be unattractive





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(to be green)," says Andrea Fair, a program coordinator for Guaranteed Watt Saver, a local consultant for LEED and Energy Star certifications.

"Being green is really about best practices in building, whether it's a new house or a preexisting structure. It involves making changes to become more energy efficient."

As a final inspection of the Zeecks' home, Fair's team will set up a blower door to test

how much air is leaking out of the house. Once the house passes, which it's expected to do, Fair will send the Zeecks' information to the U.S. Green Building Council for LEED certification.

"Tracey and Andy have truly captured the spirit of LEED," says Fair. "They chose to rebuild in an older neighborhood and have taken great care to follow the LEED guidelines. They're a wonderful example for others to follow."



What is LEED for Homes?

and operation of high-performance green homes. Developed and administered by U.S. Green Building Council (USGBC), LEED for Homes awards points to projects in seven categories of environmental environmental quality, energy and atmovation and design. The maximum number of points that can be awarded is 69. There are four certification categories: LEED certhat meet 26 to 32 points or 37 percent of the max points; LEED certified silver level is given when a structure receives 33 to 38 points (47 percent of max); LEED certified of max; and the LEED certified platinum level, the highest level, is given when the receiving structure meets 52 to 69 points,

The USGBC is a nonprofit membership organization whose vision is to create a sustainable built environment within a generation. To date, more than 540 homes have been LEED-certified, and over 13,000 have been registered and are under devel opment. For more information, visit www. greenhomeguide.org or www.usgbc.org.







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Making your home more environmentally friendly can begin with small steps.

Greening your home doesn't always require a second mortgage and months of renovations. According to Kelly Parker, president of Guaranteed Watt Saver Solutions, Inc. – an Oklahoma City-based engineering, consulting and inspection firm – homeowners can perform several small tasks to make their homes more energy efficient and environmentally friendly that take minimal effort and won't break the bank.

No/low Cost Energy Saving Measures

- Keep air filters clean. This allows maximum airflow and unit efficiency.
- Keep damper closed when your fireplace is not being used and glass doors shut when using the fireplace, especially if outside air is used for combustion. Heat can escape out the chimney or flue.
- Turn out lights when you're not using them and replace incandescent bulbs with CFLs (compact fluorescent lights), Lighting accounts for about five percent of the average family's electric bill.
- Open blinds and curtains to bring in the sun's heat. Close them at night to help trap in the heat.
- Unplug electronics when not in use. Attach your entertainment system to a power strip to save time.

Little Cost Energy Saving Measures

- Have an energy audit performed on your home. An auditor can determine the amount of air leaking in or out of your home with a blower door test and provide recommendations as to the repairs and changes that will benefit you most.
- Caulk around doors and windows and add weather stripping.
- Fill large gaps around doors and windows with expanding spray foam.
- Seal leaky windows with a special plastic that attaches to the outside with two-sided tape and can be shrunk to fit with a hair dryer.
- Cover roof vents and, on homes with crawl spaces, foundation vents. Leave soffit and gable vents open to allow some circulation for moisture to escape.

Moderate to High Cost Energy Saving Measures

For those who want to make a substantial investment in their homes, Kelly says that while these energy saving measures are more expensive, the benefits are well worth the cost.

- Add insulation in the attic, walls or under floors with crawl spaces.
- Replace older refrigerators, water heaters, furnaces and other appliances with new, high-efficiency models.
- Replace windows and doors with newer versions that conduct less heat and feature low-e-glass.
- Replace heat and air systems with higher efficiency rated models.



Energy Star is a program between the U.S.
Environmental Protection Agency and the U.S.
Department of Energy that is designed to help
households and businesses to save money and
protect the environment through energy efficient
products and practices. Through the program,
Americans saved enough energy in 2007 to
avoid greenhouse gas emissions equivalent to
those from 27 million cars, and saved \$16 billion
on utility bills. Energy efficient choices can save
families about one-third on their energy bill with
similar savings of greenhouse gas emissions
without sacrificing features, style or comfort.