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Green Goes Mainstream for New Homes

Net-zero homes that generate much or all of their electricity are moving beyond the 'crunchy-granola types' and attracting more mainstream buyers who want to slash their utility bills; feeling cozy on 5-degree days.

By [CECILIE ROHWEDDER](#)

David and Martha Gurzick bought their new home for its historic neighborhood and closeness to the cafes and antique stores of downtown Frederick, Md.

Seeing Green



Gary Konkol

Naturally Warm: Gary Konkol's house in chilly Hudson, Wis., doesn't have a furnace.

Now they are also warming to the utility bills. The Gurzicks live in a so-called net-zero energy house—a home so energy-efficient that over the course of a year, its electricity consumption is expected to be zero.

The four-bedroom brick house includes energy-eating creature comforts, such as a steam room and an extra-large washer and dryer. But when the sun shines on the solar panels and the Gurzicks are at work, the house produces more energy than it consumes. At those times, the electricity meter is running backward, and the couple is selling energy back to the grid.

The Gurzicks, who paid \$516,000 for the 2,800-square-foot home, moved in last December. "It was never our intention to get a green home, but these features are the icing on the cake," said Mr. Gurzick, who is 35 and teaches management at Hood College.

Related Video



After a long downturn in the housing market, home prices in many parts of the U.S. are showing signs of recovery. MarketWatch' Christopher Noble discusses the hottest housing markets of 2013. (Photo: AP)

Money-Saving Features



Eli Meir Kaplan for The Wall Street Journal

David and Martha Gurzick of Frederick, Md., weren't looking for a green home but are now happy with their home's money-saving features.

Extreme energy efficiency is moving mainstream, becoming standard practice for large home builders, such as California-based [KB Home](#) and [Nexus Energy Homes](#), the company that built the Gurzicks' house last year.

The "green" residential construction market has grown steadily in recent years—even throughout the recession. Green housing projects accounted for 20% of all newly built homes last year and had an overall value of \$25 billion, according to industry-research firm McGraw Hill Construction. As the housing market continues to recover, the researchers predict, this share will grow to between 29% and 38% of new U.S. homes by 2016.

"The green building market has evolved beyond the crunchy-granola, Boulder types," said David Johnston, a Colorado consultant and co-author of "Toward a Zero Energy Home." "We have mainstream builders doing this."

So far, net-zero houses are only a fraction of the green residential movement, but other environmental features are becoming widespread. The government is fueling the trend with federal tax credits for things like insulation that reduces a home's energy loss or geothermal heat pumps. Depending on where they live, homeowners can also claim rebates from their state, town or utility.

Materials and construction costs for clean-energy homes can jack up the price of a new home, but these costs have been dropping. On average, green homes cost between 5% and 10% more than conventional houses, according to Bruce W. McIntosh, chief operating officer of Nexus Energy Homes. In Washington, D.C., architect Robert Bell is building a five-bedroom, net-zero (also called energy-neutral) house that costs only 2% more.

Such houses get built even in extreme climates. Bill Henry, owner of a custom home-building company, designed his own net-zero family residence in Hereford, Ariz. Like all über-efficient homes, it is constructed to lose as little energy as possible while adding renewable energy through solar panels. Mr. Henry and his wife, Patty, spent \$450,000 to build their 2,300-square-foot home, about \$25,000 of which went toward the environmental features. The extra cost, the Henrys calculate, will be offset in the long term by lower utility

Selling Points

Some of the most common green-home terms used in current real-estate listings across the U.S.:

FEATURE	Avg. list price	% of listings	Most common occurrence
Bamboo floor	\$384,850	0.23%	Hawaii
Insulated window	\$232,096	0.09%	Louisiana
Solar panel	\$565,222	0.06%	Hawaii, California (tied)
Energy Star appliance	\$299,874	0.05%	Washington, D.C.
High-efficiency HVAC	\$303,453	0.02%	Kansas, Missouri (tied)

Source: Trulia

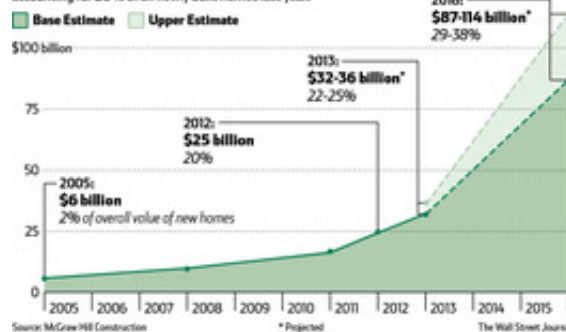
Source: Trulia

With tightly insulated walls to prevent air escaping, a thick foundation and triple-pane windows, the Henrys' four-bedroom property meets one of the strictest environmental building standards in the U.S. The designation, called Passive House, focuses on airtight building, combined with a ventilation system that brings in fresh air without losing heat in the winter or coolness in the summer. Houses built this way need 90% less heating and cooling than normal ones, according to the Passive House Institute US, an Urbana, Ill.-based consulting group that advises home builders on efficiency standards and certifies homes that meet them.

"If you make your house as energy-efficient as possible, you don't need a lot of solar after that," said Mr. Henry.

Green Growing

Green housing projects have been growing steadily, accounting for 20% of all newly built homes last year.



Despite their home's 4,500-foot elevation, the Henrys didn't need heating this winter. Last summer, when temperatures climbed to the low 100s, they used a small air-conditioning unit—but offset much of its energy use with the solar panels soaking up the Arizona sun.

The sun also provides much of the heat for Gary Konkol's house in chilly Hudson, Wis. Over the winter, special triple-pane windows that capture 64% of the sun's warmth keep the house cozy even on 5-degree days—so cozy that Mr. Konkol had lush indoor herbs, blooming orchids and a lemon tree. Regular window glass deflects the majority of this heat. Mr. Konkol's windows sit in tightly insulated frames and cost between 5% and 15% more than

conventional, locally available triple-pane windows.

"It took a little while for the client to be comfortable with the idea that the heating system would be minute and the sun would provide 60% of the energy," said Tim Delhey Eian, the Minneapolis architect who designed the house. In the end, the house didn't even get a furnace. In-floor electric heat mats provide backup heating when there is not enough sunshine.

One feature Mr. Konkol couldn't have: an open fireplace, because the chimney would require a hole in the thermally sealed house. The cube-shaped, two-story building is so airtight that Mr. Konkol, a 55-year-old family physician who bikes 16 miles every day to his practice, knows it is windy outside only from seeing trees moving through the window.

Since he moved into the three-bedroom house in October 2010, it has produced 1,400 kilowatts of energy more than it consumes every year. Mr. Konkol wouldn't say what he paid for the 1,940-square-foot house but said the price was comparable to other custom homes.

The main reason for the growing demand for low-energy houses, home builders say, is a desire to save on utility bills. Another is an effort to reduce uncertainty around future energy costs, and to gain independence from the power grid.

"The majority of our clients are at or nearing retirement," said Kevin Murphy, construction manager at Anchorage Building Corp. in North Carolina, which specializes in green and passive houses. "One thing they can do is to take the volatility of energy prices out of their fixed income by reducing the amount of electricity they use."

Some houses make their owners more climate-conscious. Frederick residents Geordie Wilson and Pilar Olivo, who moved into a net-zero house near the Gurzicks with their three kids in September, say closely watching their energy use has made them more cautious consumers. Like all net-zero buildings, the Wilson-Olivo house is tightly insulated. To ensure good air quality inside, it has both an air-exchange system and a geothermal system that have filtration. The geothermal system heats and cools using piping that goes deep within the earth, where temperatures are warmer than outside air in the winter and cooler in the summer.

Their green living has had its challenges. It took weeks to set a comfortable temperature in the house; early on, Ms. Olivo was doing jumping jacks in the living room to keep warm. Also, specialty filters for the geothermal system are not available locally and have to be purchased over the Internet. And Ms. Olivo struggled to understand the electricity bills until she realized that provider Potomac Edison was mischarging the family by adding, rather than crediting to the bill, the energy produced by their solar panels.

"There is a lot of education for home buyers with a home like this," said Ms. Oliva, a 46-year-old homemaker. She and Mr. Wilson, who publishes the local newspaper, are proud of their house's energy performance and hope that it adds to its long-term value.

Solar panels have limitations. They require steady sunlight and generally don't work in power outages. Depending how visible they are on a home's roof, the panels can hurt its curb appeal. They also won't offset unlimited energy use. "If you have a sleepover and 15 girls with hairdryers, you're not going to have a net-zero home," said Nexus Energy Homes' Mr. McIntosh.

Still, research suggests that green homes pay off when it comes time to sell. A 2012 study by two professors at the University of California, Berkeley and the University of California, Los Angeles found that homes in California with a green label sell for about 9% more than a comparable, less ecological house. Green certification is awarded by a number

of programs, including LEED for Homes, Energy Star and NAHB Green. To get a LEED certification, for instance, homes collect points for green features, such as energy-efficient light bulbs and water-saving toilets.

When homeowner Ian Kline recently put his home in Bethesda, Md., on the market, the glossy sales brochure noted that house is certified by both Passive House and Energy Star. It also contained four extra pages on its energy efficiency. Mr. Kline originally listed the residence for \$1.59 million, but dropped the price to \$1.49 million after a month. It is currently under contract. Mr. Kline bought the 4,660-square-foot house in October 2011 for \$1.43 million.

In the Washington, D.C., area, environmentally friendly features are less of a selling point than in markets such as Berkeley, Calif., or Boulder, Colo., said Mr. Kline's selling agent, Erich Cabe at Coldwell Banker. Still, he estimates that 40% of those who looked at the house had some knowledge of green homebuilding.

Mr. Kline, who heads a consultancy focused on energy and the environment, said he would have "stayed in the house forever," but is moving out of town to gain space for a set of twins he and his wife are expecting, adding to a son and an existing set of twins. The couple will miss the home's low utility bills, high air quality and the quiet created by the thick walls—as well as the green cred with their children.

"It has been awesome for the kids to be in this house," said Mr. Kline. "Our son is interested in the environment. He thinks his dad is cool—most of the time."

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