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<http://www.wsj.com/articles/builders-new-power-play-net-zero-homes-1421794129>

## Builders' New Power Play: Net-Zero Homes

By Kris  
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The National Association of Home Builders' 2015 New American Home generates its own electricity through a rooftop solar-power system. That system, combined with energy-efficient doors, windows, appliances and other features ...

The home is designed so that its windows don't get much direct sun exposure, which keeps it from heating up too much in the day. Most of its windows have overhangs that block direct sunlight. *Trent Bell Photography*

Spray-on insulation in the walls and roof cocoon the home, preventing leaks and allowing more efficient temperature control. *Trent Bell Photography*

The home is equipped with energy-efficient LED lights rather than conventional lighting. *Trent Bell Photography*

The home is designed with several water features, including an infinity pool, that add to humidity in the house when its doors and windows are open, helping to cool it naturally. *Trent Bell Photography*

The home has a tankless hot-water system that heats water on-demand rather than continuously keeping big tanks of water hot. *Trent Bell Photography*

The house can be cooled naturally by opening its many sets of large, sliding doors, allowing breezes to flow through the house and bringing in humidity from water features on its patio and in its courtyard. *Trent Bell Photography*

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LAS VEGAS—Net-zero homes are going mainstream, if the home-building industry has anything to do with it.

The homes, which generate more electricity in a year than they use, have long been viewed as a niche product for the affluent who can afford custom homes. The chief problem is that it is expensive to get a home to net-zero status, and many customers aren't willing to wait several years for their electricity-bill savings to cover the thousands of dollars they would have to spend on net-zero features such as solar panels and energy-efficient windows, doors and appliances.

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But some builders, motivated by what they deem as rising demand from home buyers and state and local regulators, are aiming to change those perceptions by designing such homes for the mass market. Such a model home—the latest in the National Association of Home Builders' annual New American Home series showcasing new-home designs—is on display this week in a hillside neighborhood 7 miles from the Las Vegas Strip as part of the trade group's International Builders Show.

The 5,800-square-foot home, designed and built by the trade group and Blue Heron Design/Build LLC, is being shown in a format that will enable other builders to incorporate elements of the design in mass-market homes across the country. The company says it can build similar—but smaller—net-zero electricity homes for about \$700,000. Blue Heron anticipates listing the New American Home for \$2.5 million.



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This year's New American Home at the International Builders Show in Las Vegas aims to show off the viability of creating less-pricey net-zero electricity homes. Photo: Trent Bell Photography

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“We wanted to basically prove through this New American Home project that you can offer the absolute highest level of cutting-edge design, energy efficiency and technology on more of a production scale,” said Blue Heron partner Tyler Jones, who oversaw the home’s design and construction.

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Most net-zero homes generate much of their own electricity through rooftop solar systems, though they are still connected to the public power grid for the times, such as nights, when their system isn’t generating all the electricity needed. At other times, such as intensely sunny periods of the day, those solar systems generate more electricity than a given house needs, so the excess is sent to the public power grid. The homeowner receives credit for the

excess electricity, the amount of which varies depending on the state and the utility company, that typically shows up on their monthly or annual bill.

Achieving net-zero status typically requires builders to install spray-on foam insulation to seal the house of leaks and adding energy-efficient doors, windows, appliances and lighting, among numerous other features. Net-zero homes also need high-performance heating and ventilation systems and other equipment to regulate humidity, air quality and air flow.

So far, in part because of price, net-zero homes remain a fraction of the overall market. In the past year, the U.S. Department of Energy has certified 370 homes as being “net-zero energy ready” under updated guidelines. Before that, it deemed an additional 14,500 as being close to zero-energy specifications.

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This year's New American Home is expected to be listed for \$2.5 million. But the builder, Blue Heron Design/Build, says similar, but smaller, versions can be made for about a \$700,000 list price. Photo: Trent Bell Photography



The hurdles to broader demand are higher in the Northeast and Midwest, where the sunshine—specifically, solar radiation—isn't as intense as in areas like the Southwest. In those less-sunny regions, homeowners have to install more solar panels to generate the same amount of electricity as a home in the Southwest can generate with fewer panels.

Dan Bridleman, a senior vice president at builder KB Home, which has constructed net-zero homes in several states, estimates that it can cost \$6,000 to \$12,000 more for a solar-power system in the Northeast than in the Southwest to achieve the same amount of electricity output.

But some builders say that demand is slowly starting to pick up as the cost of energy-efficient materials and renewable-energy equipment falls. The Solar Energy Industries Association says the average price of an installed solar-power system has declined more than 50% since 2010.

Retirees Robert and Sue Payton bought a new net-zero home in Coupeville, Wash., in 2011 from builder Ted Clifton's Zero-Energy Plans LLC. They spent an estimated \$15,000 extra for the home to achieve net-zero status. They say they now pay no electricity bill. “We knew energy rates were going to go up, and we didn't want that extra burden of energy bills on us,” Mr. Payton said.

Meritage Homes Corp., which builds in nine states, has constructed 50 net-zero homes since 2011 and intends to build 50 this year alone.

C.R. Herro, vice president of environmental affairs at Meritage, says the company can achieve net-zero status in homes costing as little as \$200,000 in certain markets. Thus, the key to more mainstream acceptance, he believes, is not price but informing more home buyers of the benefits of net-zero homes. “Net-zero is technologically and financially solved,” he said. “It's now a matter of the consumer catching up to that potential. That's probably another three years.”

Some builders disagree. Luxury builder Toll Brothers Inc. says it's “not seeing demand” for net-zero homes.

And Lennar Corp., the nation's second-largest builder by closings behind D.R. Horton Inc., prefers to offer energy-efficient homes outfitted with solar power rather than those fully achieving net-zero status. “Net zero is an interesting concept, but it's far from commercially available and far from being financially affordable,” said David Kaiserman,

president of the builder's Lennar Ventures division.

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