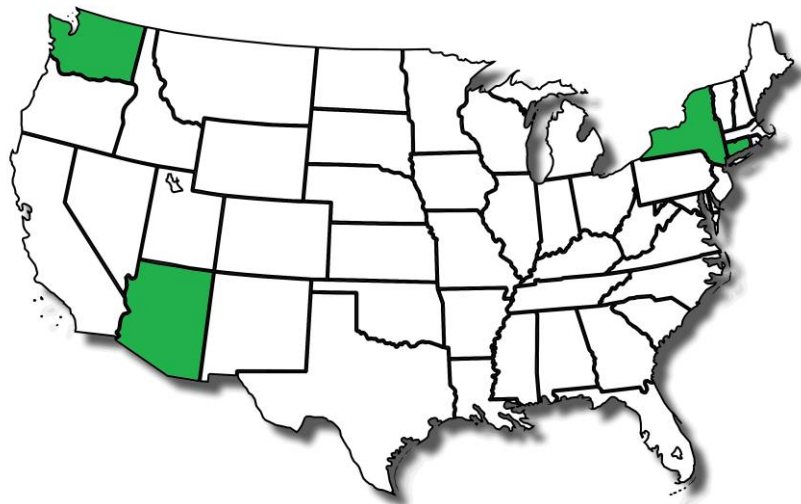


Builder Perspectives On Zero Energy Ready Homes

Although builders aiming to achieve Department of Energy Zero Energy Ready Home requirements will ultimately design high performing homes, their respective design paths will be influenced by regional contexts. GTI spoke to five different ZNE builders in four states about their design considerations, customer preferences, trade support, and the ZNE future as they see it in their regions.



Washington

Builders: Clifton View Homes, TC Legend Homes

Company Background: These companies are father and son-owned, respectively, and both use Positive NRG™ home plans that they design and offer for sale through an additional company, Zero-Energy Plans LLC which has designed about 60 homes across nearly every U.S. climate zone.

Key Design Features: Clifton View Homes largely builds all-electric homes, with some limited gas cooking and gas heating back-up for a heat pump system in interior Alaska. Both companies take a strong stance that all the home energy needs can be met with properly selected appliances and a photovoltaic (PV) system.

“The right way to heat a house (or to heat hot water) is with a heat pump. We have heat pump technology that works quite well down to -15F, and we can supply all the energy we need to an electric heat pump with energy from the sun. Because of this, with few exceptions our homes are 100% electric homes, and we are not interested in compromise. We have no shortage of customers who see this exactly the same way we do.” – Ted L. Clifton, Clifton View Homes, Inc.

Natural Gas Use: Next to none, with limited examples of gas ranges for cooking.





Builder Perspectives On Zero Energy Ready Homes

Arizona

Builder: Mandalay Homes

Company Background: Mandalay Homes builds mostly production homes currently based on a set of 17 master plans that offer a wide variety of options to personalize the design. They also support a custom home division that is working on three to four homes at any given time. Mandalay Homes has completed construction on hundreds of homes in Arizona, predominately in Prescott Valley and surrounding areas, as well as Phoenix and Glendale. They typically build between 120 and 130 homes annually.

Key Design Features: A defining piece of Mandalay Homes marketing is that all their homes are 50 HERS or less. All their homes also meet the following program requirements: (1) ENERGY STAR, (2) Indoor Air PLUS, (3), EPA WaterSense, and (4) DOE Zero Energy Ready.

As much as possible, they strive to standardize the technologies and building design across their home master plans. They begin with performance specifications, such as window ratings, venting, etc., and run these through rater models. Then they make any necessary adjustments to meet their performance requirements.

Buyer Priorities: Buyers are still largely driven to them based on the design and aesthetics of their model complexes. Some buyers reference the energy performance, but it's secondary to the location and building attributes meeting the buyer's needs. Geoff Ferrell, Chief Technology Officer for Mandalay Homes noted that many buyers have viewed these energy performance improvements as an almost expected part of having a newly built home.

Natural Gas Usage: Currently nearly every home they build uses electricity and natural gas, a few outliers with propane. Most homes utilize a gas-fired tankless water heater. Forward-facing items, like the cooking range or dryer, tend to get buyers attention more than the furnace or water heaters.

"From an Indoor Air PLUS standard perspective, we would be interested in using induction cooktops in the homes, but a lot of buyers are used to gas and want gas." – Geoff Ferrell, Mandalay Homes

Long-term ZNE View: Codes are catching up to where they're currently building. All indications are that the 2018 IECC is going to be a huge hurdle to builders that aren't already considering energy efficiency. Geoff Ferrell also gave his personal expectation that municipalities will continue dictating tighter and tighter envelopes, which will come with side effects. Builders will have to consider active ventilation systems, make-up air, and right-sizing of HVAC equipment.





Builder Perspectives On Zero Energy Ready Homes

Connecticut and New York

Builder: BPC Green Builders

Company Background: BPC Green Builders builds exclusively net zero energy homes largely in Fairfield County, Connecticut and now also in Westchester County, New York. They partner with local HERS raters for independent confirmation of their homes performance and through them connect to the local utility for ENERGY STAR home rebates or incentives, if available.

Key Design Features: In the past, all their homes were ENERGY STAR certified and many LEED, as high as Platinum. Two of their homes are passive house certified, and one home won the 2015 DOE Zero Energy Challenge, a national competition.

Buyer Priorities: Buyers main priorities are comfort, performance, and value. Buyers are typically looking for no to low fossil fuel usage, but are often guided by builder recommendations in the end. BPC's professional engineers typically recommend the most energy efficient appliances on the market.

Natural Gas Usage: In the past all of the homes built by BPC Green Builders have been mixed fuel. Currently, about 30% of their homes are all-electric, but it depends on the clients' needs and desires. The principle driver for including gas is based on the availability of efficient low operating cost heating options, which mitigate for possible electricity cost increases, but they cite the increased complexity of gas systems. The principle drivers for all-electric designs are the low upfront cost and simple operation, particularly attractive where rooftop PV is deployed.

Long-term ZNE View: Chris Trolle of BPC Green Builders said:

"I think as thermal envelopes become better due to improved building codes, [the] lowest cost option will rule, which I've shown on my Taft home [...] is all electric. All electric heat pump heating/cooling and DHW with COPs between 2-4.0 and rooftop mounted PV selling power produced on-site back to the grid." – Chris Trolle, BPC Green Builders

