



INNOVATION | ZERO NET ENERGY

DUAL-FUEL ZNE HOMES WITH NATURAL GAS

MORE APPEALING TO CONSUMERS AND MORE COST-EFFECTIVE FOR BUILDERS THAN ELECTRIC-ONLY

As California moves closer and closer to the goal of achieving Zero Net Energy (ZNE) in residential new construction by 2020, figuring out how to get there becomes increasingly important for home builders.

While ZNE as a concept is fairly basic – the total amount of energy used by a building on an annual basis is roughly equal to the amount of energy generated on the site – in practice, it's a bit more complicated.

In California, additional considerations such as the Time Dependent Valuation (TDV) are also factored into the equation and must be taken into account when looking at how to build to ZNE.

TDV includes the cost to provide energy based on time-of-use and the primary source of that energy (natural gas, coal, nuclear, hydroelectric, solar, wind, etc.) as well as other variations in cost due to climate and geography.

Builders must offset the prospective home's energy consumption on a TDV basis by balancing on-site energy production and cost-effective energy-efficiency measures.

In order to measure the value of a dual-fuel approach to ZNE, SoCalGas® commissioned Navigant Consulting, Inc., to prepare a Technology Report that evaluated dual-fuel (natural gas and electricity) and electric-only ZNE homes against a baseline electric-only home compliant with the upcoming 2016 California Title 24 building codes.²

Their analysis revealed that single-family ZNE homes using natural gas appliances offer several key technical, economic and regulatory advantages under the TDV definitions.

One finding was that dual-fuel ZNE homes always have lower incremental costs to the homebuilder and the homeowner. For example, dual-fuel ZNE homes require smaller solar photovoltaic (PV) systems, reducing the up-front cost by an average of over \$2,000 (9 percent) compared to electric-only designs. The lower up-front cost contributes to quicker payback periods.

The report also notes that dual-fuel ZNE homes will need to incorporate solar PV systems and a variety of building envelope, HVAC and water heating efficiency measures.

In addition, a smaller solar PV capacity requirement allows homebuilders greater flexibility with roof design, orientation, etc. These benefits appear to support past research showing homeowner preferences for improved roof aesthetics, lower ownership costs and incorporating gas appliances for cooking, water and space heating, and other end-uses.

In recent Customer Insight Panel surveys of SoCalGas residential customers, 83 percent preferred a dual-fuel ZNE home if given the choice between electric-only or dual-fuel (natural gas and electricity).¹

In category after category, the majority of customers expressed their preference for natural gas for cooking (90 percent), water heating (82 percent), space heating (80 percent) and clothes drying (74 percent).³

Only 6 percent of respondents preferred an electric-only ZNE home.¹

Residential ZNE will be the standard in California soon. SoCalGas is committed to helping builders get there efficiently and cost-effectively while satisfying home buyer expectations.

1. SoCalGas Residential Customer Insight Panel October, 2015; base: 644 respondents

2. Navigant Consulting, Inc.; Strategy and Impact Evaluation of Zero-Net-Energy Regulations on Gas-Fired Appliances; July, 2015

3. SoCalGas Residential Customer Insight Panel November, 2015; base: 1,524 respondents

Learn more at www.socalgas.com.