



OFFERING BUILDERS DESIGN FLEXIBILITY FOR CODE AND BEYOND-CODE HOMES

PROPANE CAN DO THAT®

By incorporating high-efficiency propane furnaces and water heaters in their homes, builders can optimize the energy design to meet code and above-code recognition programs.

Nothing is driving greater change in the home building industry than energy efficiency. Even homes that only meet the minimum building code requirements offer energy efficiency features far beyond homes built a mere ten years ago. Then there are the builders striving for “above-code” levels of performance; their homes feature advanced systems and technology — higher levels of insulation, tighter air sealing, improved duct systems, and other improvements — that push efficiency to the absolute limits.

THE BIGGEST CHANGE IN THE 2015 IECC

Prior to 2015, the International Energy Conservation Code (IECC) didn’t address mechanical equipment such as furnaces and water heaters. In other words, the efficiency of the mechanical equipment a builder installed in a home did not count toward IECC compliance, whether they used inefficient electric models or incorporated state-of-the-art systems like a 95 percent efficient propane furnace or a 97 percent efficient propane tankless water heater.

Today, builders have flexibility like never before. The 2015 IECC includes a new compliance path called the Energy Rating Index allowing builders more choices in how to meet the energy code. The ERI path lets builders “trade-off” performance between building elements and mechanical systems. So the builder who includes a propane tankless water heater and high-efficiency furnace can scale back on window efficiency or avoid costly design changes to add thicker insulation.

THE HERS INDEX

Builders can determine how to use propane to their maximum advantage under the ERI pathway by determining their home’s Home Energy Rating System (HERS) Index. This is done using a computer model of a home’s energy performance. The HERS Index predicts the energy performance of a home versus a “typical new home” benchmarked at a score of 100.

Each one percent of annual energy savings compared with the benchmark home is associated with a one-point drop in the HERS Index. A home with a HERS Index of 55 is 45 percent more efficient than the benchmark home. Depending on the climate zone, a HERS Index of 51 to 55 is required to meet the ERI compliance path in the IECC.

HOW PROPANE OFFERS FLEXIBILITY

Let’s take a closer look at how high-efficiency propane equipment provides flexibility in meeting 2015 IECC standards. An independent research firm, Newport Partners, LLC, modeled the efficiency of two homes in warm, mixed, and cold climates (IECC climate zones 2, 4, and 6). The first home was modeled to the IECC’s minimum prescriptive standards, with standard efficiency space heating and water heating.

The second home was modeled to meet the code’s ERI standards, so Newport Partners upgraded the space heating and water heating to a 95 percent efficient propane furnace and a 94 percent efficient propane condensing tankless water heater.



AT A GLANCE

High-efficiency propane equipment gives builders significant advantages.

- Greater flexibility in meeting IECC standards.
- A lower ERI score, meaning greater energy efficiency.
- Additional time to integrate envelope enhancements into existing designs.
- A complete home efficiency package at comparable costs.
- The marketability of gas comfort and efficiency.
- Lower monthly energy bills for customers.
- Can also be used to achieve Energy Star, LEED for Homes, and National Green Building Standard certification.



These two simple changes improved the overall efficiency of the home by nine percent to 14 percent depending on the climate zone. A few added features like locating ducts in conditioned space and efficient ventilation were then added to meet the code's required HERS score under the ERI path.

The Models Also Showed that Builders Would Enjoy Much Greater Flexibility in the Envelope Design, and Could Better Manage Complicated Design Changes:

- In climate zone 4 (mixed), an ERI-compliant energy package including a high-efficiency propane furnace and tankless water heater allowed the use of 2" x 4" wall framing with R-13 insulation instead of 2" x 6" framing with R-21 insulation. This is a complex plan change for builders, affecting floor plan dimensions, internal clearances, foundation dimensions, and more. In other words, high-efficiency propane appliances would give builders more time to integrate 2" x 6" framing into existing plans.
- In climate zone 6 (cold), an ERI-compliant energy package includes high-efficiency propane equipment which allows the builder to use walls without exterior insulation outside of the framing. This is another significant change that affects wall thickness, window and door details, foundation design, etc. Using propane would help builders to meet code while considering how to best incorporate exterior insulation into existing designs.

COMPARABLE COSTS, ADDED BENEFITS

Builders worried about trading one set of expenses for another can rest easy. The total installed costs of a high-efficiency propane furnace and propane tankless water heater are on par with standard models, because propane appliances can be direct-vented through plastic sidewall venting. Compare this with the significant expense of venting a metal chimney stack through the roof. Plus, from a designer's point of view, eliminating that chimney running up through the home opens up the floor plan or can give back precious square footage for a bigger closet or bathroom.

PROPANE PAYS FOR BUILDERS

Propane appliances deliver more than energy efficiency: they can help to make a new home eligible for a Federal builder tax credit. Builders may qualify for incentives through state propane gas associations, utilities, and state energy programs.

To find available incentives visit:

- Propane.com
- dsireusa.org

ABOVE-CODE AND BEYOND WITH PROPANE

High-efficiency propane furnaces and water heaters can reduce a home's HERS Index by anywhere from nine to 14 points. This helps meet IECC standards and it can help builders earn distinction with other above-code and green programs, too.

▪ **Energy Star Homes**

As part of the qualification for the Energy Star Homes, a home must meet a designated HERS score and the combustion equipment within the home's conditioned space must be either direct vented or mechanically drafted. Most high-efficiency propane furnaces and tankless water heaters meet both criteria.

▪ **LEED for Homes v.4 and 2015 National Green Building Standard**

Both high-efficiency propane furnaces and propane tankless water heaters can be key components in earning the LEED for Homes (LEED H) and National Green Building Standard (NGBS) certifications for a home.

LEED for Homes



COMPARED TO A HOME MEETING 2015 IECC PRESCRIPTIVE STANDARDS

CLIMATE	ENERGY SAVINGS REALIZED FROM HIGH-EFFICIENCY PROPANE EQUIPMENT
Warm (Zone 2)	9%
Mixed (Zone 4)	12%
Cold (Zone 6)	14%

FOR MORE INFORMATION

Learn more about the benefits of propane for building to IECC and other above-code energy models at Propane.com.

THE PROPANE EDUCATION & RESEARCH COUNCIL was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.

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