

# How The New American Remodel achieved zero net energy with propane

SEE HOW HIGH-EFFICIENCY PROPANE SYSTEMS CAN MAKE A POSITIVE IMPACT ON EVEN THE MOST EFFICIENT HOMES.

Even before you consider its energy performance, The New American Remodel showcase home at the 2022 International Builders Show in Orlando was an ambitious achievement.

The *Pro Remodeler* project features more than 2,000 new square feet of living space, nearly doubling the size of the original, including a new gym, expanded primary suite, and a new backyard guest house. It maintains the charm and beauty of its midcentury modern design while adding advanced home automation technology and high-performance systems.

But perhaps most impressive is the home's efficiency. From a HERS Index score of 115 for the original home (meaning it was 15% less efficient than a baseline, code-built house), the remodeled home improved to a score of -28 and the most-efficient Emerald performance level in the National Green Building Standard.

"This is the second most efficient home we've ever certified," says Drew Smith, COO of [Two Trails](#), the project's energy rater and sustainability consultant. "-28 is an astronomically low number." To get there, the design and construction team implemented comprehensive building envelope improvements

and high-efficiency mechanical systems, while still leaving room for luxurious propane-fueled amenities. Here's how the team achieved those ambitious results.

## BUILDING ENVELOPE AND MECHANICAL IMPROVEMENTS

After benchmarking the original home's HERS Index of 115, Smith worked with architect Phil Kean, owner of [Phil Kean Design Group](#), and the house's owner and contractor Eric Gray of [Designer Trade Services](#), to look at upgrading the roof, insulation, windows, and air-conditioning systems to achieve the team's net zero performance goals. The redesigned thermal shell ultimately included exterior masonry walls with injected foam fill insulation and two layers of reflective wall insulation to get the exterior walls to around R-12. An air sealing technology called [AeroBarrier](#) was used to make the home extremely airtight.

The team also redesigned the home's mechanical systems, using high-efficiency equipment with extremely tight ductwork. The home's domestic hot water is provided by five [Bosch](#) propane



The New American Remodel takes a midcentury modern home from a HERS Index of 115 to a projected -22. Photo copyright Jeffrey A. Davis, courtesy Pro Remodeler.

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tankless units, including one at the guest house. “With propane being more affordable, it allows us to increase our efficiency on the electrical side if we don’t have that demand from an electric water heater,” Smith says.

By maximizing the efficiency of the building envelope and using propane instead of electricity for major energy uses such as water heating, the home was able to use a relatively modest 12.8 kW solar photovoltaic array to achieve its net zero goals. In all, the home is projected to achieve extraordinarily low energy costs, projected at less than \$250 a year.

## LUXURY AND RESILIENCE

The New American Remodel showcases a luxury lifestyle as well as impressive energy performance. Several propane-fueled amenities provided the lifestyle Gray envisioned without sacrificing sustainability. Gray had installed his preferred propane cooking when he bought the home 15 years ago, and upgraded to a bold [Thermador](#) cooktop during the remodel, as well a new propane grill outside. A propane spa heater allowed the team to include a spa in the new pool without overloading the home’s electrical system. And while the home’s power is protected by battery backup, the new guest house uses a 20 kW [Kohler](#) propane generator to protect against power outages and enhance resilience.

“In Florida, with the hurricanes, there’s just too many times when we lose power down here,” Smith says. “If you can have a generator that’s automatic and services the most important items you need to maintain, then it’s always a consideration.”

By using systems that enhance luxury and resilience while exceeding zero net energy goals, The New American Remodel serves as a showcase for how efficiency-focused remodeling can radically transform energy usage – even of old, inefficient existing homes.

The New American Remodeled Home features luxury and Energy Star-rated propane appliances such as this Thermador gas stove. Photo copyright Jeffrey A. Davis, courtesy Pro Remodeler.



## THREE KEY TAKEAWAYS

- 1 ZERO NET ENERGY DOES NOT EQUAL ALL-ELECTRIC**  
Upgraded propane amenities didn’t mean sacrificing energy or environmental performance, as evidenced by the home’s numerous green building certifications. “It was important to partner between solar and propane in order to get that kind of an efficiency rating,” says Eric Gray, the home’s owner.
- 2 CONSIDER PROPANE FOR HEAVY ENERGY USES SUCH AS WATER HEATING**  
The New American Remodel’s propane tankless water heater positively impacted the home’s HERS Index and eliminated a large electric water heating load that would have been more than the solar array could supply. In colder climates, propane furnaces and boilers can have a similarly positive impact.
- 3 FOCUS ON EFFICIENCY BEFORE SIZING THE SOLAR**  
Sustainability consultant Drew Smith says using solar panels as the only answer to efficiency is “working backwards.” Instead, he says focus on energy-efficient systems and a tight building envelope first, and then size the solar based on the results. “There’s not that much solar on this home to get this to a -28 HERS index,” he says, “because we started with a very efficient envelope with very efficient products and systems.”