

PROPANE IN RESIDENTIAL DEVELOPMENTS:

# A GUIDE FOR BUILDERS

# PROPANE

## CLEAN AMERICAN ENERGY

For regional and national builders, propane's versatility makes it an ideal energy solution. You can give homeowners the superior comfort, performance, and reliability of gas energy, even when building outside the natural gas main. And whether you're building one house or a community with hundreds of homes, there's a propane system to meet your needs.

This guide provides the information builders like you need to make smart energy decisions for large-scale residential developments.

- Propane Overview:**  
 Get a top-level look at the benefits and safety features of propane for builders and homeowners.
- Community Propane Systems:**  
 Learn about this scalable, metered energy solution for multi-home developments.
- Propane Energy Pod:**  
 Find out how combining the five major residential energy applications delivers big results for homeowners.
- Propane Construction Incentive Program:**  
 Discover how to get up to \$1,500 per home when you include the Propane Energy Pod.
- Residential Propane Applications:**  
 Explore the vast amenities you can offer in the homes you build.



# PROPANE OVERVIEW



## GET TO KNOW PROPANE.

Whether you're building a custom home or an entire community, understanding the basics of propane is the first step toward offering it as an energy solution for your customers. Propane is an American-made, nontoxic gas produced from natural gas processing and crude oil refining. In the wake of the shale revolution, domestic propane supply has greatly increased, and this fuel can now do even more to advance America's energy security and protect the environment. There has never been a better time to build homes using propane as the primary energy source.

Propane is already being used in over 48 million U.S. households for residential uses, including grilling. It shares the same operating characteristics as natural gas, so when natural gas is not available for your project, or the cost of bringing natural gas to each lot exceeds your project budget, don't make your clients give up on their desire to have the efficiency, comfort, and high performance of gas in their home.

## IT'S CLEAN ENERGY.

Propane emits significantly less CO<sub>2</sub> compared with electricity for key residential applications such as water and space heating. That is because about 30 percent of the electricity in the United States is produced by coal-fired power plants. In colder climates like the Midwest, high-efficiency propane-powered furnaces produce half as many CO<sub>2</sub> emissions as electric air source heat pumps. So, the more propane-powered homes you build, the more of an impact you can have on reducing the carbon footprint in your area. In fact, by using propane in your community developments, you can earn points under green building programs such as the National Green Building Standard and LEED for Homes.

## IT SUPPORTS MODERN LIFESTYLES.

Propane gives you and your customers the ability to choose first-rate gas amenities for any building site. With high-performance appliances in the home and brilliant, modern outdoor applications, propane can turn an average residence into a truly exceptional home. And propane standby generators can provide peace of mind and security for customers in locations that experience rolling blackouts or storm-related power outages.

# OVERVIEW

## PROPANE OVERVIEW

### IT'S BUILDER-FRIENDLY.

With propane, you're not at the mercy of a public utility. And with the option of aboveground or underground storage tanks and central community propane systems, propane professionals can install properly sized propane tanks and connect home appliances and other applications on your build schedule. Propane also provides jobsite flexibility by providing gas energy for portable generators and temporary construction heaters.

### IT'S DESIGNED FOR SAFETY.

Propane is ideal for builders who make safety a top priority. It's typically used in gas form, and is stored and transported as a liquid under pressure. Propane is nontoxic and odorless, so processors add a chemical odorant [ethyl mercaptan] to help users detect leaks by way of an easy-to-identify rotten-egg smell.

### IT'S INSTALLED BY PROS WITH TOP-QUALITY TRAINING.

The propane industry's voluntary Certified Employee Training Program [CETP] helps ensure that propane installation and service personnel are well qualified to handle even the most challenging tasks, making them a great resource and trusted partner for builders. In addition, propane is a well-regulated industry that follows the codes and standards set by the National Fire Protection Association (NFPA), the Department of Transportation (DOT), the Department of Energy (DOE), and various state and local regulatory bodies.



# COMMUNITY PROPANE SYSTEMS

Community propane systems are centralized gas systems that provide a scalable and flexible energy solution from a few homes to a neighborhood with hundreds of houses. The systems distribute propane gas through a network of underground pipes that connect to homes with individual gas meters. This makes them virtually identical to natural gas systems, but with the advantage of being able to be installed almost anywhere in the United States.

In addition to homes, community systems can also power other amenities like standby generators, pools, clubhouses, and gas lamps. This type of versatility makes it much easier to provide gas energy in large developments.

## BENEFITS TO BUILDERS:

- Build a more attractive, more marketable community.
- Meet green building standards with environmentally friendly energy and installation practices that minimize environmental impact.
- Give customers the energy performance they want.
- Create a scalable, convenient solution for an entire development.

## BENEFITS TO HOMEOWNERS:

- The comfort, performance, and efficiency of gas appliances.
- No propane tanks in the yard.
- Automatic delivery away from homes.
- Individual meters mean only paying for energy as it's used.



# COMMUNITY

## COMMUNITY PROPANE SYSTEMS

### INSTALLING AND MAINTAINING A COMMUNITY PROPANE SYSTEM

A propane provider will work with you to design and install the central tank [or tanks] and piping system. These professionals know the federal and state regulations that must be met to ensure your community system is up to code. They will also typically handle the monitoring and refueling of the central tank, as well as ongoing maintenance of the system. For both builders and residents, maintaining a community propane system is hands-off and worry-free.



#### IS A COMMUNITY PROPANE SYSTEM RIGHT FOR YOUR DEVELOPMENT?

If you say “yes” to one or more of these questions, it might be time to talk to a propane retailer about a community system.

- IS NATURAL GAS UNAVAILABLE?
- IS EXTENDING A NATURAL GAS LINE TO THE AREA TOO EXPENSIVE?
- ARE YOU BUILDING MULTIPLE RESIDENCES?
- DO YOU WANT TO BRING ADDITIONAL VALUE TO THE PROPERTY?
- ARE AESTHETICS IMPORTANT TO THE DEVELOPMENT?
- DO RESIDENTS PREFER GAS APPLIANCES?
- WILL CONVENIENCE BE IMPORTANT TO RESIDENTS?
- IS IT IMPORTANT THAT YOU MEET GREEN BUILDING STANDARDS?

Visit [buildwithpropane.com/communitysystems](https://buildwithpropane.com/communitysystems) to watch the community propane systems video and learn more about how a central tank can benefit your next community development.



# PROPANE ENERGY POD

The Propane Energy Pod is a home energy package that delivers superior comfort and efficiency compared with all-electric homes. When high-efficiency propane gas appliances are installed to meet a home’s major energy needs, they combine to boost performance and help homeowners lower energy costs. For builders, the Propane Energy Pod is a major energy upgrade that provides a significant competitive advantage.

- **Space heating:** Cost-efficient heating with a more comfortable and consistent warmth.
- **Water heating:** Faster hot water with 30 to 40 percent cost savings compared with electric options.
- **Cooking:** The joy and control of cooking with gas just like the professionals.
- **Clothes drying:** Faster drying for up to two-thirds the source energy used with electric.
- **Fireplaces:** Significantly warmer and more energy efficient than electric or wood fireplaces.

## PROPANE ENERGY POD VS. STANDARD HOMES

Newport Partners LLC, an independent third-party research firm, conducted careful modeling analysis of home energy consumption and CO<sub>2</sub> emissions for two homes — one built following the Propane Energy Pod model and one built with standard appliances and systems. In its analysis, Propane Energy Pod homes achieved significant energy and carbon savings over the standard homes.

**DISCOVER THE COST SAVINGS OF PROPANE**

With the PERC Energy Cost and Carbon Calculator, you can do your own comparison of propane-powered space heating or water heating systems against other fuel types at [buildwithpropane.com/energycalc](http://buildwithpropane.com/energycalc). Use the online tool or download the free mobile app from your marketplace.



3,600-Square-Foot Home [cold climate]	Propane Energy Pod Home	Standard Home	Annual Savings
<b>Energy Costs</b>	\$4,873	\$5,409	\$536
<b>Annual Emissions</b> [metric tons CO <sub>2</sub> ]	21.7	32.4	10.7
<b>Home Energy Rating System [HERS] Index</b> <i>The lower the score, the more efficient the home.</i>	64	83	

# PROPANE CONSTRUCTION INCENTIVE PROGRAM

**PROPANE**   
**CONSTRUCTION**  
**INCENTIVE PROGRAM**

The Propane Education & Research Council will pay builders and remodelers up to \$7,500 per year for including the Propane Energy Pod in new construction projects and remodels.\*

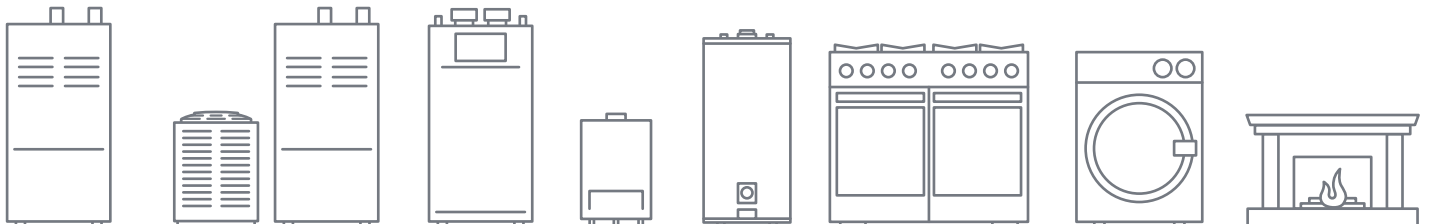
## HOW IT WORKS

Qualifying and selected builders and remodelers receive a financial incentive for building new or remodeling existing homes to the Propane Energy Pod model. The model includes using propane for space heating, water heating, cooking, fireplaces, and clothes drying. There are four levels of incentive for this program.



PROPANE APPLIANCE	PACKAGE 1 \$1,500 FULL COMFORT & EFFICIENCY	PACKAGE 2 \$1,000 ESSENTIAL NEEDS	PACKAGE 3 \$750 STRATEGIC APPLICATIONS	PACKAGE 4 \$500 BASIC PACKAGE
Space heating: any boiler, furnace, or combination system	Required	Required	--	--
Water heating: any tankless, storage, or combination system	Required	Required	Required	Required
Cooking: oven, grill, cooktop, or other installed kitchen appliance	Required	Required	Required	--
Minimum additional propane applications: clothes drying, fireplace, pool heating, outdoor heating or lighting features, cogeneration, renewable backup (off-grid) power, or standby generator	Minimum of 2 other propane applications	Minimum of 1 other propane application	Minimum of 2 other propane applications	Minimum of 2 other propane applications [May include space heating/cooking.]

\*Builders can earn a maximum of \$1,500 per house for up to five homes per state, per year (maximum 10 incentives per builder or remodeler).





# INCENTIVE PROGRAM

## PROPANE CONSTRUCTION INCENTIVE PROGRAM

### EXAMPLES

There are many qualifying combinations for the incentive. Below are examples for each package.

#### PACKAGE 1 (\$1,500)

FULL COMFORT & EFFICIENCY:

- Furnace
- Tankless water heater
- Cooking range
- Clothes dryer
- Fireplace

#### PACKAGE 2 (\$1,000)

ESSENTIAL NEEDS:

- Furnace
- Storage tank water heater
- Cooking range
- Fireplace

#### PACKAGE 3 (\$750)

STRATEGIC APPLICATIONS:

- Storage tank water heater
- Oven
- Fireplace
- Standby generator

#### PACKAGE 4 (\$500)

BASIC PACKAGE:

- Storage tank water heater
- Cooking range
- Furnace

### LEARN MORE

Visit [buildwithpropane.com/constructionincentive](http://buildwithpropane.com/constructionincentive) to learn more, determine if you qualify, and apply for the Propane Construction Incentive Program.



# RESIDENTIAL PROPANE APPLICATIONS

Propane delivers the kind of smart, sustainable energy performance that today's homebuilding environment demands. A wide range of residential propane applications provide homeowners with the ideal balance of performance and cost savings, while also giving homebuilders a unique offering and competitive advantage in the residential market.

## HIGH EFFICIENCY FURNACES

High efficiency propane furnaces deliver significant value and a new level of comfort for homeowners. Easily installed in any home, they can provide space heating for any size floor plan from small residences to large custom homes. These units have best-in-class efficiency, with ratings from 90 percent to 98 percent; and they have a smaller carbon footprint than most other systems. This gives them a considerable advantage compared with electric or heating oil units.

## HYBRID HEATING SYSTEMS

A hybrid heating dual fuel system can protect homeowners from rising utility costs. These systems are a combination of an air source heat pump (ASHP) or ground source heat pump (GSHP) with a gas/propane furnace. They improve ASHP and GSHP performance by relying on a propane furnace (typically a high efficiency unit) during colder winter periods. The overall heating system is more energy efficient, provides greater comfort, and has a smaller carbon footprint. A hybrid system comprised of an ASHP and a high efficiency propane furnace can save nearly \$400/year compared with a standard efficiency ASHP-only system.

## HIGH EFFICIENCY BOILERS

High efficiency boilers are lowering costs and adding value to homes across the country. They offer efficiency, space savings, and the versatility to provide heating, hot water, and even snow melt. There are a number of types of heating delivery systems with propane boilers to meet specific home needs. Propane boilers are available in a wide range of heating capacities, with inputs reaching as high as 299,000 Btu/h. Many Energy Star rated propane boilers have an efficiency rating of at least 90 AFUE, and those ranked Most Efficient by the EPA offer up to 19 percent savings over standard efficiency boilers.



# APPLICATIONS

## RESIDENTIAL PROPANE APPLICATIONS

### TANKLESS WATER HEATERS

Propane tankless water heaters provide comfort, versatility, convenience, and efficiency by supplying high volumes of hot water with compact and highly innovative technology. These systems eliminate standby energy losses that occur in storage tank systems because they only heat water on demand. They're compact in size, and wall-mounted to free up floor space, provide superior energy efficiency, and deliver an endless supply of hot water. A tankless system can average a flow rate of about 222 gallons/hour, whereas a standard 50-gallon electric storage tank water heater can deliver only 62 gallons of hot water in the first hour. The notable difference in performance can mean taking a hot shower or a cold shower.

### STORAGE TANK WATER HEATERS

Compact in size and equipped with leading features like electronic ignition and highly insulated tanks, Energy Star qualified propane storage tank water heaters offer superior value to comfort-seeking homeowners. They are a versatile, efficient, and reliable hot water solution, with a wide range of capacities to meet demands for any home. While they are more compact in size than electric units, they are not small on performance: A 50-gallon propane unit delivers the same amount of hot water as an 80-gallon electric unit.



# APPLICATIONS

## RESIDENTIAL PROPANE APPLICATIONS

### RANGES AND OVENS

Propane cooking equipment provides convenience, sharp design, and excellent performance in any kitchen. An attractive, stainless steel gas range that combines a propane cooktop and oven is perfect for space-challenged homeowners. Propane also offers commercial-grade ranges, indoor grills and cooktops, in-wall double ovens, and other gas cooking applications in luxurious custom kitchens. And with gas cooking being the choice of professional chefs, it's no wonder homeowners love the cooking performance and precise temperature control offered in a wide variety of propane cooking equipment.

### CLOTHES DRYERS

Propane clothes dryers offer homeowners an efficient, convenient, and environmentally friendly laundry solution. Compared with electric dryers, a propane unit will dry clothes faster and relax wrinkles better due to hot air with more moisture. They also offer the latest innovations such as steam cycles to de-wrinkle and freshen garments, drum lights to better see into the unit, and LCD control screens for greater ease of use. There are different capacities of propane dryers available, with output levels generally much higher than electric dryers. However, propane dryers can still save about 20 percent annually on energy costs.

### FIREPLACES

Propane fireplaces offer homeowners true versatility. They can be installed indoors or out, and are significantly more energy efficient, environmentally friendly, and easier to install and use than wood-burning models. Plus, an attractive real flame brings warmth and ambience to a living space, increasing its value with buyers. Additionally, many models can operate and continue to deliver heat during electrical power outages. Propane fireplaces offer efficiency ratings of over 90 percent, whereas wood-burning fireplaces are about 15 percent efficient. They also deliver five to six times the heating capacity of electric fireplaces.

### OUTDOOR LIVING

With an array of options, propane outdoor amenities can distinguish a community area by creating unique and inviting environments. Unlike other fuels such as natural gas or electricity, propane offers unrivaled portability and flexibility to quickly adapt outdoor spaces to changing needs. Outdoor applications include kitchens and grills for cooking; fireplaces and fire pits for both heat and aesthetics; patio heaters that provide portable space heating; decorative flame lighting for impressive ambience; and pool and spa heaters for year-round outdoor entertainment.



# TAKE THE NEXT STEP

There are a number of ways you can learn more about the advantages of propane, discover propane-powered products, and keep the conversation going.

- If you haven't already done so, reach out to your local propane provider to establish a trusted relationship.
- Visit [propanetrainingacademy.com](http://propanetrainingacademy.com) to become a propane expert with free, certified online courses and resources.
- Visit [buildwithpropane.com/propane-building-resources](http://buildwithpropane.com/propane-building-resources) to download the *Build with Propane Guide: Residential Edition* and a variety of other resources that dive deeper into the applications and benefits of propane in residential construction.
- Contact PERC for more information:  
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Propane Education & Research Council  
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To learn more about the residential construction market and the Propane Education & Research Council, visit [buildwithpropane.com](http://buildwithpropane.com).

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*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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