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Fall/Winter 2017

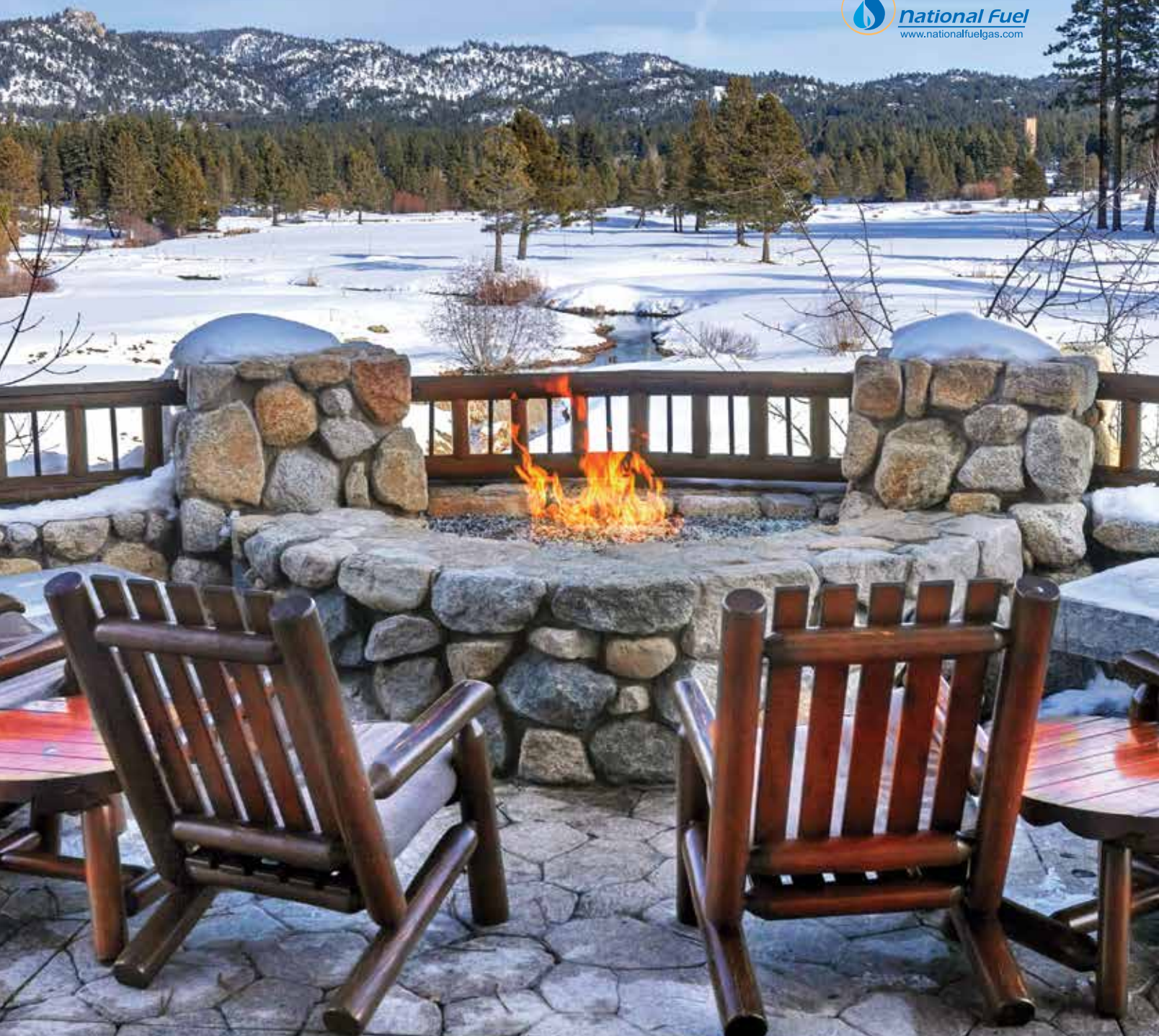
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PRISM Media Group
President: Ray Larson
Editorial Director: Stephanie Anderson Forest
Production Manager: Rachael Larson
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All about the bins

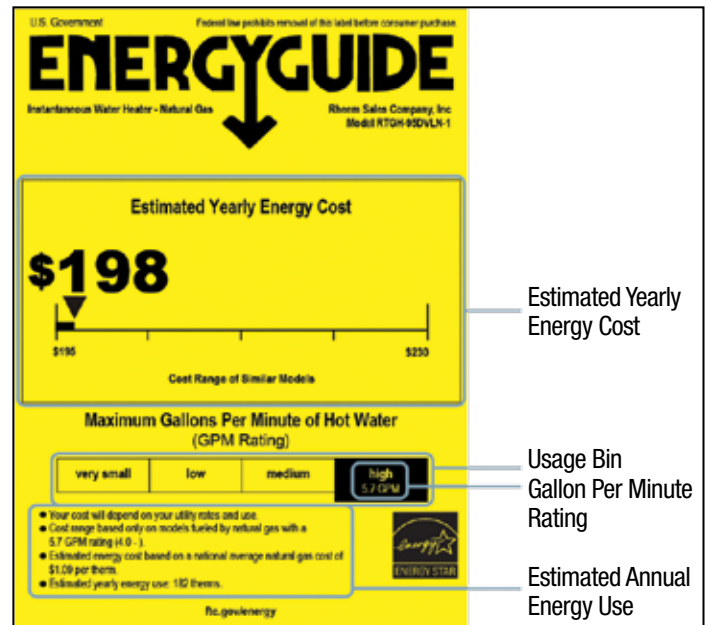
New rating system: Here's all you need to know to compare water heaters.

By Drew Robb

The rating mechanism used to compare water heaters has changed yet again. Gone is the old Energy Factor (EF) system. Effective June 2017, all water heaters now have a UEF (Uniform Energy Factor) rating.

“While the water heaters themselves haven’t changed, consumers may notice new numbers associated with the water heaters they are purchasing,” said Madison Phillips, category marketing manager for tankless units, Rheem Manufacturing Co. “The Department of Energy [DOE] developed the new UEF water heater efficiency metric to make sure manufacturers use the same testing procedures and to make it easier to compare appliances.”

Anytime systems change, though, confusion is sure to crop up. Unfortunately, online searches may sidetrack consumers into long-winded



documents covering the fine details of applicable standards. But here’s all you really need to know to help you compare water heaters under the new rating system.

COMPARING BINS

Frank A. Stanonik, chief technical adviser, Air-Conditioning, Heating & Refrigeration Institute explained that water heaters are now rated based on their ability to provide hot water. The new UEF system divides water heaters into four categories of hot water usage and evaluates their performance based on that type of usage. These categories, known as bins, are designated as: very small, low, medium and high hot water usage. The bin is clearly marked near the bottom of the yellow EnergyGuide label placed on each product.

A higher UEF means a water heater is more energy efficient and will cost less to operate compared to other water heaters in the same bin.

“As UEFs can only be compared within the same bin, the need for the consumer to determine the size of the water heater they need is now more important than ever,” Stanonik said.

Consumers, therefore, are cautioned to pay careful attention to the appropriate UEF bin. If they are comparing models within the same bin, they are on steady ground. But if they mistakenly try to compare water heaters in different categories, incorrect choices may result. A high bin water heater with a UEF of 0.95, for example, does not perform exactly the same as a low bin water heater with a UEF of 0.95. Why? Based on the bin in which a water heater falls, a pre-determined amount of hot water usage is applied to determine its annual cost of operation.

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Let's take tankless water heaters, which are assigned a UEF based upon gallons per minute of flow rate (figure). The very small bin is for a daily usage rate of 10 gallons of water per day. The small bin ramps that up to 38 gallons a day. The medium bin covers water heaters using 55 gallons. Water heaters in the high bin can deal with 84 gallons per day. If a particular

BIN	BIN Daily Usage (Gallons)	Max GPM (Tankless Water Heaters)
Very Small	10	Less than 1.7
Low	38	1.7 to 2.8
Medium	55	2.8 to 4
High	84	4 or more

CHOICES AROUND

Ongoing innovation allows manufactures to offer natural gas water heating options for every home.

With winter approaching, many families are considering the purchase of a new natural gas water heater. The good news is that manufacturers such as Rinnai, A.O. Smith, Rheem and Bradford White have a wide selection of products to fit every need. Their continuing innovation means consumers can choose from models which are more energy-efficient and more environmentally friendly than ever.

Here are just a few possibilities:

A.O. SMITH CORP.

A.O. Smith recently launched a new line of high efficiency condensing residential products called the Polaris series. Polaris models are extremely efficient, boasting up to 96 percent thermal efficiency. For comparative purposes, traditional gas water heaters are 75 to 80 percent efficient, and standard tankless models are up to 82 percent efficient. This new A.O. Smith line offers a model range to suit any residential requirements. In many cases, these models can be used for both water heating as well as space heating.

The stainless steel tank and heat exchanger used in Polaris units ensure years of reliable performance and durability. High-demand Polaris models are recommended for larger households that may include specialty showers or whirlpool tubs.



PHOTO COURTESY OF A.O. SMITH CORP.

A. O. Smith Corp.'s new line of highly efficient condensing residential Polaris series boasts up to 96 percent thermal efficiency.

"The high efficiency of Polaris natural gas water heaters translates directly into a lower annual cost of operation," said David Chisolm, vice president, marketing, A.O. Smith. "In periods of high use, these models recover quickly to provide an ample amount of hot water for the homeowner."

A.O. Smith also provides tankless water heaters to efficiently meet the hot water needs of homeowners.

RINNAI CORP.

Rinnai focuses on tankless water heaters. Its Ultra Series RUR98i and RUR98e models have various features to recirculate water. The result: less waiting, less waste and endless hot water wherever and whenever it's needed for showers, sinks and appliances. The Ultra Series is designed to support multiple, simultaneous hot water demands on the same unit.

"As our most technologically advanced offering, the consumer benefits of the RUR98 include faster hot water provided by its integrated recirculation pump," said Mark Buss, vice president, marketing, Rinnai. "This results in less wasted water and extreme energy efficiency."



PHOTOS COURTESY OF RINNAI CORP.

Rinnai's Ultra Series is designed to support multiple, simultaneous hot water demands on the same unit.



Rinnai Corp.'s Ultra Series RUR98i and RUR98e models have various features to recirculate water. The result: less waiting, less waste and endless hot water wherever and whenever it's needed for showers, sinks and appliances.

model in the medium bin had a slightly lower rating than another water heater in the high bin, the buyer may believe that it was a better fit for the home. Yet, in reality, it may be too large and, therefore, is not the correct selection. The UEF rating system, however, is an excellent way to compare different technologies such as tankless versus tank-based water heaters.

“UEF ratings help consumers compare alternative technologies from

an efficiency standpoint,” said David Chisolm, vice president, marketing, A. O. Smith. “However, consumers should compare products in the same bin such as low use versus low use to ensure that they are making equal product comparisons. This is critical, as the cost of operation is calculated based upon a pre-determined amount of hot water for each product bin.” ■

RHEEM MANUFACTURING CO.

Rheem offers both tank and tankless natural gas water heaters. Rheem Prestige Series condensing tankless gas water heaters include a water savings setting that can save up to 1,100 gallons per year. It achieves this by reducing water flow at the tap until a preset temperature is achieved. Another feature known as the overheat film wrap eliminates the possibility of temperatures rising to dangerous levels. Additionally, hot-start programming maintains the Rheem Prestige in a ready-fire state. Instead of a short period of cold water before the hot water is available, the system provides on-demand water.



Rheem Manufacturing Co.'s Prestige Series condensing tankless gas water heaters include a water savings setting that can save up to 1,100 gallons per year.

PHOTO COURTESY OF RHEEM MANUFACTURING CO.

“In many regions, it is more economical to utilize natural gas to power tank and tankless water heaters, which is why natural gas water heaters are our most popular water heaters,” said Madison Phillips, category marketing manager for tankless units at Rheem. “Made popular by their ability to heat water effectively and efficiently, Rheem has used the power of gas to fuel some great advancements in water heating.”

BRADFORD WHITE CORP.

Bradford White offers a wealth of water-heating options. The High Efficiency Bradford White Infiniti Tankless Water Heater Series, for example, includes a method of pre-heating incoming cold water. The result is a continuous supply of hot water. These water heaters not only supply endless amounts of hot water, but they do so in a way that is good for the environment in

terms of very low emissions.

An easy-to-use digital interface allows the customer to control temperature and monitor the system. The built-in temperature control system uses a microprocessor that constantly monitors burner operation to maintain consistent and accurate water temperature levels. Finally, scale reduction technology (SRT) inhibits the buildup of energy-robbing scale. This ensures longer life and lower maintenance.



PHOTO COURTESY OF BRADFORD WHITE CORP.

Bradford White Corp. offers a wealth of water-heating options. The High Efficiency Bradford White Infiniti Tankless Water Heater Series, for example, includes a method of pre-heating incoming cold water. The result is a continuous supply of hot water.

CHOICES ABOUND

These products represent just a few of the many tank and tankless natural gas water heaters available on the market. Local home improvement stores display a wide range of alternatives, and vendor websites feature dozens more models. But whichever unit you choose, pay attention to its UEF rating (See article on Page 03.) This is a vital factor when you consider how much of overall home energy is consumed by water heating.

“The average water heater accounts for almost 20 percent of a home’s total energy use, so it is an appliance that should be carefully considered,” said Bill Alderson, director of marketing, Rheem.

But regardless of the model selected, natural gas appliances are more than three times cheaper to run than electric models, according to the U.S. Energy Information Administration. It makes sense, therefore, to select natural gas over an electric water heater every time.





Making the switch

Converting to natural gas may
be easier than you think.

By Tonya McMurray

Natural gas is a preferred heating fuel, offering clean, efficient and affordable energy to households throughout the United States. Having a reliable, affordable energy source is important — especially since home heating is the largest energy expense for the average U.S. household, accounting for nearly half of energy bills, according to the U.S. Department of Energy.

Fortunately, switching to natural gas for heating can result in significant savings. While the actual amount of savings depends on many factors — including the efficiency rating of natural gas equipment and local fuel costs — heating with natural gas often costs two to three times less than electricity or propane.

And while heating is often the primary reason homeowners choose to convert to natural gas, once the conversion is made, homeowners can use natural gas for water heaters, cooking appliances and gas fireplaces, saving even more money.

MAKING THE CONNECTION

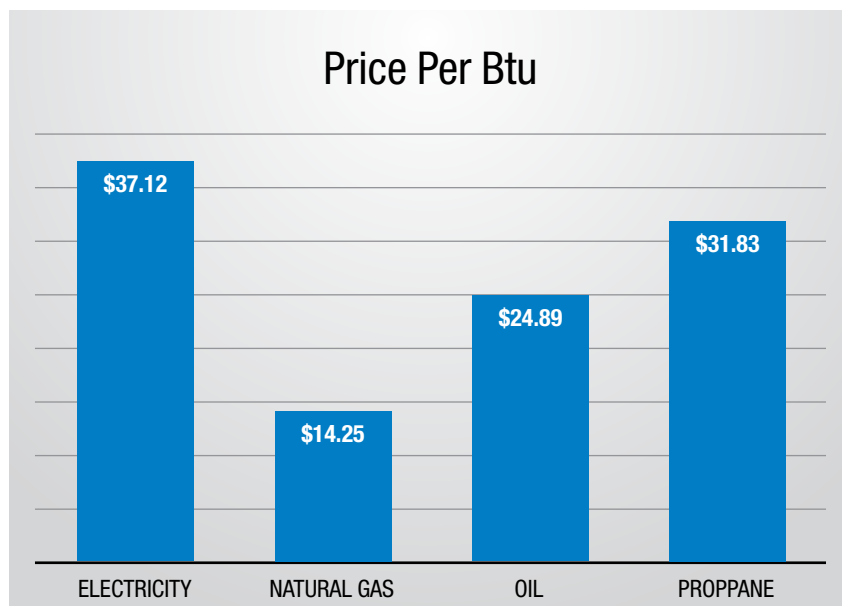
Switching a home to natural gas requires access to a gas main, which is generally available in most urban and suburban areas. With a quick call to the local gas utility, homeowners can learn whether their home is located near a gas main.

If natural gas is available, the local gas utility will run an underground pipe from the gas main to the house where it will install a meter. The cost of bringing the gas line to the home varies depending on a home's location and local utility practices.

Once the gas main is connected to the home, a plumber or heating, ventilation and air conditioning (HVAC) contractor will handle

“If you use oil or propane, you fill your tank up and you get a bill for \$800. With natural gas, you pay just for what you used that month. It can make budgeting easier.”

— Bruce Graham,
technical support specialist,
Carlin Combustion Technology Inc.



Natural gas is the most efficient fuel source with one of the lowest costs per British thermal units.

internal connections, including installing gas appliances, running a gas pipe from the meter to the appliances, and ensuring proper venting through the chimney and flue.

“When switching from oil or propane, homeowners typically choose to remove the existing fuel tanks to free up space, and some localities will require the tanks to be removed,” said Bruce Graham, technical support specialist, Carlin Combustion Technology Inc.

AN ECONOMICAL CHOICE

According to Graham, cost is usually the driving factor in natural gas conversions. Sometimes homeowners need to replace an aging furnace or boiler and decide to convert to natural gas because of the potential fuel savings. Other homeowners, whose existing oil or propane units are newer, may opt to retain the existing oil or propane system, but convert it to natural gas because the fuel savings provide a fairly quick return on investment and result in greater savings over the long term.

“If you're using existing equipment, it will cost around \$2,500, so payback is almost immediate,” Graham said. “Obviously, the more you spend on energy, the faster you're going to recoup your investment and save in the future.”

Not only is natural gas often cheaper than other fuel sources, its cost is also relatively stable compared to other fuels. Oil prices, for example, can vary significantly

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from year to year, averaging between 30 and 50 percent more than natural gas prices each year for the last 15 years, according to the U.S. Energy Information Administration.

North America now produces almost all the natural gas it uses, according to America's Natural

Gas Alliance. Because so much of the nation's natural gas comes from domestic production, it is a reliable fuel source with stable pricing that is not dependent on foreign markets, changes in political alliances, or other disruptions in foreign supply. Recent advances in technology

have also created a robust supply of natural gas, which also helps to keep prices stable.

For homeowners who rely on oil or propane, a switch to natural gas can also mean easier budgeting since gas is billed monthly based on use rather than requiring costly tank refills.

"If you use oil or propane, you fill your tank up and you get a bill for \$800," Graham said. "With natural gas, you pay just for what you used that month. It can make budgeting easier."

A CLEAN, RELIABLE OPTION

Switching to natural gas eliminates the need for oil or propane storage tanks as well as the potential for spills from deliveries or leaking tanks that require costly clean up.

Not only is natural gas a great value for the pocketbook, it also is one of the best energy options for the environment. Natural gas is the cleanest of all fossil fuels, producing half as much carbon dioxide as electricity generated by coal, according to the U.S. Environmental Protection Agency.

"Because gas burns cleaner than propane or oil, less equipment maintenance is required," Graham said. Homeowners won't need to pay for annual flue cleanings; however, units will still need

DON'T TOSS YOUR OLD EQUIPMENT

Retrofitting existing oil and propane burners is an easy way to convert to natural gas.

If you're considering converting your home to natural gas, be sure to talk with a plumbing or heating, ventilation and air conditioning (HVAC) contractor to determine whether you can keep your existing heating equipment.

"For many customers, retrofitting original equipment will be a fairly simple and cost-effective process," said Bruce Graham, technical support specialist for Carlin Combustion Technology Inc.

Oil and propane boilers are ideal for retrofitting because they can last 30 or 40 years and often hold up well over time, Graham said. High-end furnaces with a longer life expectancy may also be good candidates, he said. Regardless of the current equipment, an HVAC contractor can provide an estimate of costs and the scope of work.

THE NUTS AND BOLTS OF CONVERTING

The first step in determining whether existing equipment can be used in the conversion is to evaluate the

condition of the equipment.

"We don't go strictly by age," Graham said. "It really depends on how well it's been maintained. If someone has a boiler or furnace that's in relatively good shape, then doing the conversion is usually pretty straightforward."

The plumbing or HVAC contractor can help the customer select an appropriate gas burner to retrofit the existing appliance. Carlin Combustion, for example, has an online catalogue that customers can browse or customers can call for a recommendation.

Once the burner is selected, the contractor will clean the equipment and prepare it for the retrofit. Graham recommends that homeowners ask the contractor to make any repairs that might be needed at that time as well.

"If you're going to keep the equipment, this is a good time to get it cleaned up and make sure any leaks or other problems are taken care of," he said. "The contractor is already there, so you might as well take care of

periodic inspections to ensure they are in good working condition.

“It is a mechanical piece of equipment,” he added, “so the contractor should come in and take a look from time to time to make sure everything is still working the way it should.”

With natural gas, homeowners are unlikely to experience gaps in service. Even though most oil and propane companies have programs for automatic refills, those are not foolproof, Graham said. In addition, some customers opt to monitor their own fuel levels, which means they may misjudge when to schedule a delivery. But natural gas is always available because it is piped directly to your home.

PLANNING THE CONVERSION

The first step in converting a home to natural gas is to contact the local gas company to determine whether natural gas is available in your neighborhood and to find out if there will be any costs associated with connecting your home to the gas main.

At that point, homeowners will want to select a reputable plumbing



or HVAC contractor to manage the conversion, Graham said. Most contractors will provide guidance to help select new equipment and will manage all the details of installing the new equipment.

Graham recommends that homeowners “ask the contractor about prior experience with natural gas conversions to ensure that they have the necessary expertise for the project.” Homeowners will also want to make sure the contractor is insured and bonded and that both parts and labor come with a warranty to protect against future problems. Many gas utilities will provide lists of contractors who are experienced with natural gas conversions. ■

whatever needs to be done.”

The contractor will replace the oil or propane burner with the new natural gas burner and install a gas regulator on the flue pipe. The contractor will also install a safety spill switch to protect against a blocked flue. In the event of a blockage, the flue gases spill out of the regulator and trigger the switch, which shuts off the appliance to prevent any buildup of carbon monoxide gases.

After the installation is complete, the contractor will connect the appliance to the gas line, turn it on, and do combustion testing to ensure it is in good working order.

“It is essential that the combustion testing be done so that the unit functions properly and safely,” Graham said. “Customers should make sure the contractor has combustion testing equipment. Some contractors may



For many homeowners, replacing an existing oil or propane burner with a gas burner is a cost-effective way to make the switch to natural gas.

try to skip that step, but it’s an important step.

“The whole process,” he added, “typically takes a day or less and creates minimal disruption for the homeowner.”

PHOTO COURTESY OF CARLIN COMBUSTION TECHNOLOGY INC.

naturallyBetter

Outdoor fireplaces extend the outdoor living season, providing both warmth and ambiance for chilly autumn nights.



Braving the elements

Natural gas fuels outdoor living spaces throughout the fall and winter months.

By Tonya McMurray

As the long lazy days of summer fade into cooler fall nights, natural gas holds the key to maintaining a comfortable outdoor living space throughout the fall and early winter. A recent Houzz Landscaping Trends study found that 56 percent of homeowners are making updates to improve their backyard for entertaining. According to the American Institute of Architects, 70 percent of design and build firms report increased demand for outdoor living spaces.

Many consumers find that natural gas is the ideal fuel for transforming a backyard into a personal resort. Along with comfort and convenience, natural gas is a versatile fuel that can provide the energy needed for outdoor heating, cooking and lighting.

“While homes may have limited indoor square footage, many yards offer additional outdoor space for entertaining, relaxing and playing,” said Monica Turner, product manager, Heat & Glo, a fireplace manufacturer. “Homeowners are embracing those spaces and extending their living areas outdoors.”

And, it makes sense that homeowners want to enjoy those outdoor living areas for as much of the year as possible.

“Outdoor fireplaces provide warmth when the weather is cool, making it possible to enjoy those spaces much longer in to the fall season and also earlier in the springtime,” Turner said. “Depending on the climate where a homeowner lives, outdoor fireplaces can extend use of outdoor spaces for anywhere from a few months to the entire year.”

FIRED UP

A fire feature is the No. 1 design element in outdoor renovations, according to a residential landscape architecture trends survey by the American Society of Landscape Architects.

Homeowners turn to outdoor fireplaces to provide a heating source that offers both warmth and ambiance. Just as indoor fireplaces become part of a home’s décor, an outdoor fireplace offers a focal point for outdoor living spaces. Outdoor fireplaces can be

“While homes may have limited indoor square footage, many yards offer additional outdoor space for entertaining, relaxing and playing. Homeowners are embracing those spaces and extending their living areas outdoors.”

— Monica Turner,
product manager, Heat & Glo

surrounded by granite, tile, stone or other material to fit almost any style home or landscaping.

Fire pits are the modern equivalent of the old-fashioned campfire. Offering a focal point for outdoor gatherings, they are an ideal place to gather for casual conversation, roasting marshmallows or just enjoying the outdoors. Some fire pits even feature grills for cooking.

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Gas fire pits and fireplaces offer reliable warmth and ambiance without the hassle of chopping and carrying wood. There's no need to clean out ashes after enjoying an evening fire. Because there are no sparks or hot embers flying about, gas fire pits and fireplaces are safer and can be located almost anywhere — even close to patio furniture or wood decks.

Some homeowners turn to patio heaters provide additional warmth. While they don't provide the same ambiance as a fireplace or fire pit, they often provide heat to a larger area. Patio heaters can generally warm a 12- to 20-foot area, helping to take the chill out of crisp fall nights. They are most effective when outdoor temperatures are between 40 and 60 degrees F and can be placed almost anywhere.

Natural gas patio heaters can be permanently installed in-ground, deck mounted or hung from a roofline. Other heaters are freestanding and portable to allow for greater flexibility in use.

LET'S EAT

Just because the days grow colder doesn't mean that cooking has to come indoors. Natural gas cookouts cost about one-sixth the cost of cooking with charcoal and one-third the cost of a propane cookout, and homeowners can enjoy that savings throughout the year.

Natural gas grills offer more precise temperature controls than charcoal grills, allowing for more consistent cooking results, and they extinguish immediately once turned off.

Gas grills ignite quickly without the long warmup time required for charcoal grills, and the fuel supply is always available. Unlike propane grills, there's no chance of a tank being low or running out during a cookout. Because natural gas grills connect directly to your home's existing natural gas line, the fuel is always available and ready to go.

The Hearth, Patio & Barbecue Association (HPBA) has launched an initiative to encourage "wintercuing" as a way of extending the tradi-

"Wintercuing is all about encouraging consumers to find their inner warrior to brave the cold and grill."

— Carrie deGuzman,
director - communications,
Hearth, Patio & Barbecue Association



tional barbecuing season. With a pair of heat resistant gloves and a good grill cover to protect from rain, wet leaves, and snow and ice, one can grill throughout the winter. In fact, HPBA

reports that 61 percent of North Americans grill all year long.

"Wintercuing is all about encouraging consumers to find their inner warrior to brave the cold and grill," said Carrie deGuzman, director - communications, HPBA.

HPBA recommends that homeowners position gas grills so the wind is perpendicular to the gas flow and not blowing the flame down the burner tubes. HPBA also suggests homeowners close the dampers more than usual to ensure consistent heat throughout grilling.

Go to www.WinterBarbecuing.com, to learn more about winter barbecuing and find some cold weather recipes.

LIGHT IT UP

The soft glow of natural gas lighting not only illuminates the night, but can help set the mood for entertaining guests or enjoying family. Natural gas lighting fixtures can be mounted on a post, wall or overhang. Tiki torches offer a more casual lighting option.

Whether enclosed or with open flames, outdoor lighting fueled by natural gas is a reliable light source, even during a power outage. Because natural gas lighting is not impacted by power outages, gas lighting can provide additional security during a power outage.

Outdoor living spaces offer versatility and an inviting, enjoyable way to enjoy your home — whether in the warm summer months or throughout the fall and early winter. ■

Home of the future?

DTE Energy is on the leading edge of bringing micro CHP to homes.

By Drew Robb

Over the last few decades, the proven economics of natural gas have led to an increase in its popularity among homeowners. From gas ranges to home heating equipment, and water heaters to clothes dryers to outdoor enjoyment, natural gas can be found fueling just about every aspect of modern living.

“Natural gas is one of the safest, cleanest, reliable and most affordable energy sources,” said Geri Nelson, residential natural gas account manager, DTE Energy Co. “About 85 percent of natural gas used in the United States is produced in our country, the majority of the remaining gas comes from Canada.”

Yet electricity from the grid remains a necessary ingredient. Electric lighting, as well as a host of household gadgets and consumer electronic devices require a source of electricity. Typically, this would be supplied by the local electric utility. But a natural gas-fueled alternative is on the horizon: A home in Michigan is the test case for a program that could see natural gas being utilized to run an entire home.



Rob Gryczon, DTE Energy Co., and Robert Fegan, project manager of the micro CHP unit at the Traverse City, Michigan, home at the time it was installed.

INNOVATIVE TECHNOLOGY

Combined heat and power (CHP) is the means of producing two different forms of energy from a single energy source. Typically, natural gas is used to generate power; the heat from the exhaust is recycled to provide hot water. CHP projects are generally associated with factories, university campuses and large office complexes, accounting for 12 percent of the nation’s annual power generation.

With such success in the commercial and industrial sector, it was only a matter of time before CHP manufacturers began making smaller residential units. Known as micro CHP, small-scale systems are available which convert natural gas into heat and electricity.

On the cutting edge of the micro CHP endeavor, DTE Energy is experimenting in a “home of the future,” which uses gas for everything in the household. A micro CHP unit has been installed in a property in Traverse City in Northern Michigan. DTE selected an M-TriGen PowerAire unit, the world’s first hybrid micro power, heat and cooling system designed to provide all the mechanical requirements of a residential or small commercial facility.

“The natural gas engine provides on-demand heating, cooling and electricity,” Nelson said.

The main elements of the unit are a natural gas engine that provides the primary power and an engine heat recovery system for space heat, water heating and other heat-based applications. This includes dehumidification, snow melt, pool heating or cooling.

OFF THE GRID

The more than 3,500-square-foot home in Traverse City has to cope with a wide range of temperatures. Summers can hit the 80s with high humidity. Winter temperatures average in the 20s and 30s, but can plummet below zero at times with very cold wind chills due to its close proximity to the bay.

DTE Energy decided to feature this innovative residential concept in the Parade of Homes, an annual showcase event in Traverse City. Installation of the unit began at the premises in March and was up and running for the event’s commencement in mid-June. Despite record high temperatures, the micro CHP system kept the house cool.

“Attendees mentioned it was one of the coolest houses on the parade route during a very hot day,” Nelson said.

DTE Energy purchased the unit for the home while the manufacturer and Pathway Homes partnered together to study how the unit would function in a Northern Michigan residence.

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Get ready for winter

These maintenance tips will help you manage the cold weather.

By Tonya McMurray

As you enjoy the last few weeks of fall, be sure to spend some time getting your house ready for the winter

STAYING WARM

Be sure your home is ready for the cooler weather ahead:

- If your heating system is fueled by natural gas, winter preparation is fairly simple. Because natural gas burns cleanly, you'll have less need for chimney cleanings and equipment often requires less maintenance. However, it's a good idea to have chimneys and flues inspected to make sure there are no blockages that could lead to the buildup of carbon monoxide gases.
- You'll want to have the boiler, furnace or heat pump inspected to ensure it's in good working order. Because natural gas is "always on," there is no need to plan for the purchase of winter fuel as with other homes heated by propane or fuel oil.
- Check to see if your ceiling fans have a reverse switch; if so, switch the fan to a reverse clockwise direction after you turn on your heat so the fan will push warmer air back into the room.
- Check to see if gaps between siding and windows or door frames are bigger than a nickel. If they are, the American Society of Home Inspectors recommends reapplying exterior caulk. Silicone caulk is best for exterior use because it doesn't shrink, and it can withstand the elements.
- Check weatherstripping around windows and doorframes and replace it if needed to prevent heat loss.

If you have a natural gas grill, consider moving the grill closer to the house or to an area that provides some shelter from the wind so you can continue using it throughout the fall and winter months.



- Replace screen doors and windows with storm doors and windows.
- Check your insulation, especially in the attic, basement and crawl spaces.
- Clean and replace dirty or old furnace filters.

OUTDOOR MAINTENANCE

Take advantage of nice fall days to finish up outdoor chores to prepare your property for the winter.

- If you have a natural gas grill, consider moving the grill closer to the house or to an area that provides some shelter from the wind so you can continue using it throughout the fall and winter months. Alternatively, you may want to build a wind block from plywood to place around the grill. Be sure to invest in a good grill cover to keep rain, wet leaves and ice from damaging the grill.
- Clean gutters to prevent water from backing up and causing leaks and ice dams. Repair any missing or damaged gutters.
- Disconnect all garden hoses, shut off all exterior faucets, and drain water from outdoor pipes, valves, and sprinkler heads to protect against burst pipes.

- Mow leaves instead of raking them. Studies at the University of Michigan and Purdue recommend cutting dry leaves into dime-sized pieces that will fall among grass blades where they will decompose and nourish your lawn over the winter.
- Inspect outdoor lighting to make sure it is properly functioning. Good light will minimize the risk of accidents on icy walkways at night. Replace any missing or damaged roof shingles to prevent leaks.
- Cover all outside vents and openings to prevent insects, birds and rodents from crawling inside to nest. Trim trees and remove dead branches. Heavy snow and ice or strong winds can cause weak trees and branches to break and damage surrounding property.
- Pack away your summer gear to prevent rust or damage.
- Remove the fuel from your lawn mower. Leaving the fuel in the mower while it sits unused for several months can cause damage to the mower.
- Optimize drainage around your home to ensure that water runs away from your home to prevent leaky basements or damage to the home's foundation.
- Take a look at walkways, driveways and steps, and fix any damage to prevent them from becoming a hazard with cold weather and ice.

BE PREPARED

Make sure you're ready for the first snowfall and for unexpected weather-related events.

- Consider investing in a natural gas generator to power your home during power outages. Because natural gas is delivered to the home via underground pipelines, it is less susceptible to weather disruptions, so a natural gas generator can provide a reliable secondary energy source for your home.

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"This is the first step toward my goal of creating sustainable, net zeroing custom homes that are completely off the grid," said Pathway Custom Homes CEO Gary Jurkovich.

When the test period is over, DTE Energy is considering the possibility of marketing the product to residential builders.

MICRO CHP ECONOMICS

Micro CHP involves higher upfront costs, but Nelson puts this in perspective by noting how much a homeowner would pay to purchase a home generator, an air conditioner unit and a high efficiency furnace. One micro CHP unit encompasses all of these functions.

"When you take into account everything that micro CHP provides



- Stock up on cold weather essentials, including salt or ice melt and windshield washer fluid.
- Move your shovel to a place that will be easy to access after the first storm.
- Prepare your snow blower for the first snowfall by changing the oil and replacing the spark plug.
- Prepare an emergency kit with flashlights, bottled water, nonperishable food items and blankets so you are prepared in the case of a loss of power that lasts for an extended time.
- Do a home safety check including testing smoke and carbon dioxide monitors, inspecting fire extinguishers and reviewing (or creating) emergency escape plans. ■

to the home, it brings the cost more in line with what the consumer would normally pay," said Nelson. "Meanwhile, the manufacturer is working on a smaller product to make it more affordable for the average homeowner."

Nelson noted that the modern consumer is no longer willing to put up with power outages during severe weather or grid unreliability. They demand a reliable system to keep all their electronics and household appliances up and running 24/7.

"More and more new homeowners are letting builders know they want micro CHP," Nelson said. "When costs are high to get electricity to a new development, micro CHP may become the answer for builders."

For more information on micro CHP and CHP, go to www.understandingchp.com. ■

Grilled Pork Chops with Apple-Bourbon Glaze

INGREDIENTS

2 tablespoons dark brown sugar
 1 1/2 teaspoons kosher salt
 1 teaspoon freshly ground black pepper
 1 teaspoon garlic powder
 1/2 teaspoon paprika
 4 (12-oz.) bone-in pork rib chops
 2 tablespoons olive oil
 1 (12-oz.) can frozen apple juice concentrate, thawed
 1 cup bourbon
 3 tablespoons dark brown sugar
 1 tablespoon Dijon mustard
 1/2 teaspoon kosher salt
 1/2 teaspoon dried crushed red pepper

DIRECTIONS

1 Stir together first five ingredients. Brush pork with olive oil, and rub both sides with sugar mixture. Place pork in a 9- x 13-inch baking dish; cover and chill 12 to 24 hours. Remove pork from refrigerator, and let stand at room temperature 30 minutes. Meanwhile, prepare glaze.

2 Preheat grill to 350° to 400° (medium-high) heat. Grill chops, covered with grill lid, six to eight minutes on each side or until almost done. Brush chops with glaze; turn and brush other side with glaze. Grill, covered with grill lid, two minutes.

3 Repeat process, without grill lid and turning chops every 10 seconds, until glaze thickens and chops are cooked through.

Apple-Bourbon Sauce

INGREDIENTS

1 (12-oz.) can frozen apple juice concentrate, thawed
 1 cup bourbon
 3 tablespoons dark brown sugar
 1 tablespoon Dijon mustard
 1/2 teaspoon kosher salt
 1/2 teaspoon dried crushed red pepper

DIRECTIONS

1 Stir together first five ingredients in



SOURCE: SOUTHERNLIVING.COM

a medium saucepan. Bring to a boil over medium-high heat. Reduce heat to medium, and simmer, stirring occasionally, 13 to 15 minutes or until mixture has thickened and is reduced to about 1 cup. Stir in red pepper.

Homemade Oven-Baked Stuffing with Fresh Sage

INGREDIENTS

8 slices bread (about 4 cups or 230 grams), cut into half-inch dice
 1/2 cup chopped onion
 1/2 cup chopped celery
 1/2 stick butter
 2 tablespoons chopped parsley
 1 tablespoons chopped sage, thyme and/or marjoram
 1 cup chicken stock or turkey stock
 Optional: 1 cup chopped walnuts, hazelnuts, or slivered almonds and/or raisins or diced apples

DIRECTIONS

1 Preheat oven to 400F. Spread the diced bread on a baking sheet

and bake for 10 minutes or until lightly golden. Give the pan a shake midway through so the cubes brown evenly. Remove pan, and let the bread cool.

2 Melt the butter in a heavy-bottomed saucepan over medium heat. Sauté the onion and celery until the onion is slightly translucent. Remove from heat and let cool.

3 Transfer the toasted bread, chopped herbs and the cooked celery and onions to a large bowl. Add any nuts or fruit at this stage, too. Give it all a toss to combine.

4 Now, drizzle a bit of the stock over the bread cubes and gently mix. Repeat until all



SOURCE: THE SPRUCE.COM

the bread is moistened but not soggy. Now, add the egg and toss until all the ingredients are coated.

5 Butter a baking dish, transfer the dressing to the dish and bake for 25 to 30 minutes or until the top is crispy. Serve hot.