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Can Your Dryer be a STAR?

Natural gas dryers offer savings, energy efficiency and environmental benefits, making them a smart choice for savvy consumers.

By Lindsey Townsend

Over the past two decades, clothes dryers have largely been left out of the energy-efficiency movement that revolutionized other household appliances like refrigerators, air conditioners and clothes washers.

But that all changed in February 2015 when the Environmental Protection Agency (EPA) announced the arrival of ENERGY STAR®-certified clothes dryers at major retailers from a wide variety of manufacturers, including Whirlpool, Maytag, Kenmore and LG. To qualify for the new ENERGY STAR label, dryers have to be at least 20 percent more efficient than conventional models.

“EPA’s ENERGY STAR-certified clothes dryers offer Americans an opportunity to save energy and combat climate change,” said EPA Administrator Gina McCarthy. “The EPA created the program in 1992 with two goals in mind: make it easier for consumers to identify and purchase energy-efficient products that offer savings on energy bills without sacrificing performance, features and comfort; and reduce greenhouse gas emissions and other pollutants caused by the inefficient use of energy.”

NATURAL GAS — SUPERIOR CHOICE

Economics, performance and environmental value make ENERGY STAR-rated natural gas dryers a superior choice over alternative equipment. “In addition to convenience and speed, natural gas dryers save consumers money and help lower greenhouse gas emissions,” says Richard Meyer, manager, energy analysis & standards, American Gas Association.

The cost savings alone is significant. Depending on your utility, drying a load of laundry can cost between 32 to 41 cents in an electric dryer compared to 15 to 33 cents in a gas dryer, according to the Consumer Energy Center.

In a recent analysis that compared energy use, operating costs, and carbon dioxide emissions of home appliances, a natural gas clothes dryer had the lowest operating costs and emissions compared with electric and propane models.

“EPA’s ENERGY STAR-certified clothes dryers offer Americans an opportunity to save energy and combat climate change.”

— Gina McCarthy, EPA Administrator



While gas dryers may cost a bit more up front, they offer savings, energy efficiency and environmental benefits over electric models.

When comparing a gas dryer with an electric model, the gas dryer had 59 percent lower overall energy requirements, 63 percent lower carbon dioxide emissions, and costs 67 percent less to operate. “In other words, the gas dryer was one-third the cost and only one-third the energy and emissions, meaning great value for consumers,” Meyer said.

Natural gas dryers also dry clothes faster than electric dryers because a greater volume of dry, absorbent air passes through the clothes. The shorter drying time is gentler on fabrics.

ENERGY-SAVING FEATURES

Many new models of high-efficiency dryers offer a wide variety of money- and time-saving features, including sensor controls, pilot-less ignitions, de-wrinkling cycles, and microcomputer-based temperature settings for sensitive fabrics. Their most important energy-saving feature is a moisture sensor that detects when clothes are dry and shuts off automatically.

Natural gas is the cleanest-burning fossil fuel, and nearly all of it is produced in North America. When you consider the cost savings, energy efficiency and environmentally-friendly benefits, gas dryers are clearly the smartest choice on the market today for savvy consumers. ■



Converting to Natural Gas, Always a Popular Choice

Natural gas offers value and environmental advantages over other fuels.

By Drew Robb

Around the country, people are switching to natural gas from other fuels. Many are converting their water heaters to gas. Instead of burning wood, using electric or oil, people are turning to natural gas for all their home-heating needs. Many homeowners are undertaking whole house conversions which enable them to run almost everything — clothes dryers, heating, fireplaces, barbecuing, yard lighting and even heating the swimming pool — with gas.

Why are so many making the switch? Laurie Bell, a homeowner at Santa Rita Ranch, near Austin, Texas, is one of many making the move to natural gas. She and other homeowners around the nation are finding when they convert that natural gas is less expensive than electricity, oil or propane, and that it provides other benefits as well.

“Natural gas saves money, is more convenient, safer, more reliable, and adds value to the home,” Bell said.

COMMUNITY GASSES UP

Santa Rita Ranch made the switch to natural gas about a year ago. When the community was originally built, the natural gas infrastructure had not yet reached the area, so the developer had to use propane until gas became available. The area was served by a large propane tank with piping that extended to each home.

Bell had previously lived in a rural neighborhood served by propane.

“There are a variety of inconveniences with propane,” Bell said. “You had to ensure the tanks were filled up or you would run out.”

Fortunately, she only had to deal with propane at Santa Rita for six months. The gas pipeline was extended to the point where it was feasible to convert the neighborhood to natural gas.

Bell reports that she never lost gas availability during the project; the conversion to natural gas was simple. The benefits? Bell said her monthly propane bill could be as high as \$100 in cold weather, whereas the natural gas bill has never exceeded \$50.

“I’d recommend to anyone that they move ahead with a conversion project as its better for a community in the long run and cheaper,” Bell said.

GASSING UP THE FIREPLACE — INSTANT AMBIANCE

In the spring of 2015, Jim McCarthy purchased his condo in Portland, Oregon, but never used the wood-burning fireplace. When Jim learned that natural gas was available from Northwest Natural Gas, he jumped on board. He was familiar with the task of chopping, splitting and stacking wood in his earlier homes.

“The thought of the hassle, time involved, mess and inefficiency of burning wood leaves me cold now,” McCarthy said.

His new natural gas fireplace insert, on the other hand, is instantly on and off, and he controls lights, fan and temperature with a remote.

“With the low cost of natural gas today, I can run the fireplace for about 35 cents an hour,” McCarthy said.

DO THE MATH

Marti Sawyer, energy analyst in the energy services department at National Fuel, has seen many customers decide to convert their entire property to natural gas. National Fuel provides natural gas service to more than 738,000 customers in Western New York and Northwestern Pennsylvania where winter temperatures can get pretty cold.

(continued on page 06)

NEXT-GENERATION NATURAL GAS PRODUCTS OFFER IMMEDIATE GAINS

Thanks to technological advances, the latest generation of gas space- and water-heating products are far more efficient and low maintenance compared to alternative sources of heat. Comparing prices of fuels over the past several years, on average, natural gas is the clear winner when it comes to saving money on energy bills.

For example, two-stage, high efficiency furnaces provide two levels of heat output: high for cold winter days and low for milder days. The low setting is enough to meet house-

hold heating demands 80 percent of the time, which means that a two-stage unit runs for longer periods and provides more even heat distribution while using about two-thirds less energy. There are also multi-stage heating systems that provide even more levels of control and responsiveness. According to the U.S. Energy Information Administration (EIA), multi-stage furnaces adjust the flame incrementally; the temperature can vary in small steps according to the

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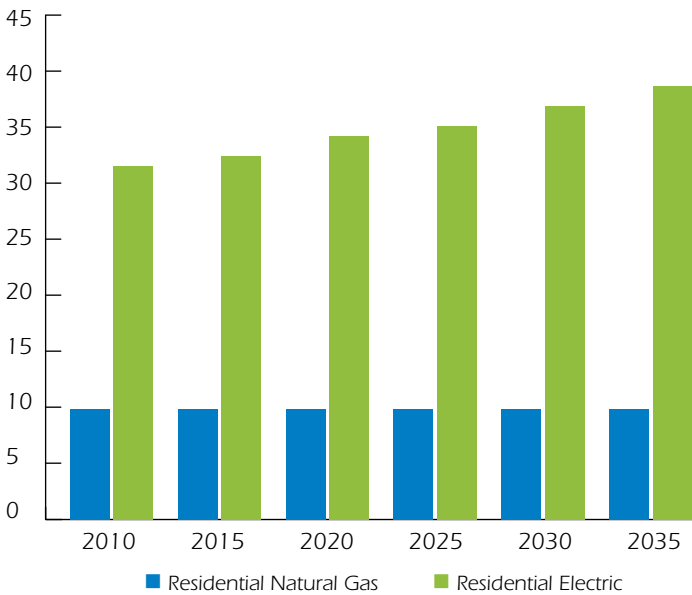
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“There is no denying that natural gas will save customers money when compared to electric, heating oil or propane,” Sawyer said. “As prices vary at any given time and in different locales, customers should calculate their personal savings with the help of online tools and calculators.”

The Energy Solutions Calculator (at http://calculators.myescenter.com/oilpropane/Oil_and_propane_calculator_final.htm) can help individuals determine annual savings and evaluate how many appliances they want to convert, as well as the expected payback time frame.

Proven reserves of natural gas for the next 100 years provide tremendous price stability. The American Gas Association and HIS Cambridge Energy Research Association estimate that by 2035, homeowners relying on electricity for heating and appliances will pay four times the monthly energy costs, on a national average than homeowners using natural gas (Figure 1).

Energy Prices Going Forward FOR RESIDENTIAL CONSUMERS



US Residential Heating Fuel Price Outlook, 2012\$/MMBtu

While economics tend to be the strongest guiding force in the decision process, there are also environmental benefits to natural gas with its ability to lower emissions and greenhouse gasses. There is the security of knowing that 97 percent of natural gas supplies come from right here in North America, which helps to keep prices stable.

Ralph Vorse, a National Fuel customer, is from a small town in Pennsylvania and had been wanting to convert his house to natural gas for some time. Things moved into high gear when he saw a new house being built down the road and thought maybe this person would want natural gas, too. He began asking the neighbors if they were interested in natural gas.

Six households got onboard to share the cost of installing a gas main.

Previously, Vorse ran a gas stove, furnace and water heater using propane, and had a wood-burning fireplace. The fireplace was a particular trial for him.

“I don’t have to cut wood anymore, and I’m no longer suffering due to all the wood smoke in my house,” he said. “Natural gas is cleaner and will save me in the long run just on maintenance for cleaning and painting my home.”

He added that he invested \$3,300 for the conversion of the entire house last fall. But as it has cut his fuel bill in half, the payback period will be less than three years.

His advice to others is to do the math! There’s no fuel out there that is economically beating natural gas.

“When you do the math, a natural gas conversion will sell itself,” Vorse said.

History backs up this assertion. Natural gas has historically cost anywhere from 10 percent to 50 percent less than electricity, heating oil or propane over the last several decades. And today, the savings are even greater. According to Sensible Energy Solutions, the average cost of natural gas is 44 percent of that of heating oil for a comparable amount of heat output. It is even cheaper when the comparison is made against electricity — natural gas is almost a third of the cost of electricity for heating a home. That equates to average annual heating bills for the typical American home of \$733 for natural gas, \$1,875 for oil and \$1,758 for high-efficiency electric heating. This is supported by the U.S. Energy Information Administration (EIA), which estimates that electric heating is at least twice the cost of gas heating.

Bell, the Santa Rita Ranch homeowner who also works in real estate, said in communities where natural gas is available, the homes using natural gas enjoy an average appreciation in property resale value of 5 percent to 10 percent over similar homes without gas service. Adding a natural gas furnace and appliances can increase the resale value of a home, she said.

Simply put, she said: “Most people prefer to buy a natural gas home.”

NO TIME LIKE SPRING

Want to convert to natural gas? Spring is the best time to begin planning. The conversion process means installing a natural gas service line (and maybe a gas main as well), which involves digging — and that is naturally easier to do in the spring and summer. Starting in the spring also gives new customers flexibility to meet timelines and appliance delivery schedules without worrying about cold weather being right around the corner. It also may be a smart way to beat the rush.

Utilities, after all, tend to get very busy in the fall trying to meet the demand of new residential and commercial customers who have decided at the last minute to switch because they see winter weather looming and their current energy bill going higher and higher.

“After my home conversion, my boss told me that he had bought many different houses but always prefers to buy one with natural gas,” said Vorse, the National Fuel customer. “It was then that I realized having natural gas will make a difference when I think about selling my house, too.” ■

(continued from page 05)

thermostat's target temperature. As a result, multi-stage furnaces are favored for comfort and energy savings.

It is important to realize that many older gas furnaces have annual fuel utilization efficiency (AFUE) ratings as low as 65 percent. Many of the newer natural gas furnaces have efficiency ratings as high as 98 percent. In dollar terms, that means almost all the energy is being used to heat the home, rather than 35 percent of it being wasted.

Customers are seeing immediate gains when they install next-generation gas products.

"My first winter heating bill was \$265 less than the same time last year," said an Everett, Washington, consumer who recently upgraded to a new natural gas furnace from electric home heating.

Modern furnaces have advantages beyond cost. These include consistent comfort due to the elimination of temperature swings that are associated with a standard furnace; quieter operation; and better air filtration, as running the equipment most of the time at a lower setting means more particulate matter is caught in the filters.

COMING SOON: WI-FI

Even those engaging in a more modest project, such as a fireplace conversion, can reap the reward of advanced technology. The latest gas hearth products, such as fireplace inserts, offer a degree of convenience that is unmatched by other fuels, like wood. Direct-vent fireplace inserts isolate the combustion process from the air in the home. The air for combustion is brought directly from the outside into the firebox, which is sealed completely. The burned gases are then vented directly outside. Heat can no longer escape up the chimney, as in wood-burning

fireplaces, even when the gas fireplace is not on. There is no creosote build-up or threat of chimney fires. There is no worrying about popping coals, ashes, or sparks.

According to the Hearth, Patio & Barbecue Association, masonry fireplaces are less than 25 percent efficient, compared with up to 80 percent for natural gas fireplaces.

Fireplace, heating and water-heating products have also come onto the market equipped with programmable thermostats. This saves the homeowner money on their natural gas bill by resetting the thermostat when asleep or away from home. The user determines a pre-set schedule, which can consist of repeat multiple daily settings to vary temperatures over the course of the day for maximum comfort and economy. These can be overridden manually without affecting the rest of the daily or weekly program.

Products are also coming onto the market that offer Wi-Fi access to gas water heaters. One of the first of these is from Rinnai America Corp., which introduces Wi-Fi for tankless water heaters. The benefits to the consumer include the ability to operate the appliance from a smart phone or tablet.

"This means easy access and control of their water heater without needing to run wires for additional controllers throughout the house," said James York, vice president of engineering, Rinnai America. "Users can instantly increase water temperature while doing the dishes or lower the temperature while drawing a bath."

This technology is also being built into the Rinnai Ultra Series RUR98 tankless water heater, which includes a recirculation pump to provide even faster hot water. Through the Rinnai app, customers can select the peak usage periods in the morning and at night to ensure the fastest delivery of hot water at the exact temperature desired.

"Our Wi-Fi module and app is the first of its kind and brings gas tankless water heaters into the home automation arena," said Susan Mittelbrun, vice president of marketing, Rinnai America.

It is only a matter of time before this technology finds its way onto gas furnaces, fireplace inserts and other gas appliances. That opens the door to technology such as turning on the heat from your smartphone before you arrive in the house, or turning it off remotely if you forget to shut it down — a new world of natural-gas based home automation.

PHOTO PROVIDED BY RINNAI AMERICA CORP.



Rinnai America Corp. introduces Wi-Fi access to tankless water heaters in products such as its Ultra Series RUR98 tankless water heater. The first of its kind on the market, the Wi-Fi module and app allows consumers to operate the appliance from a smart phone or tablet.





Bringing the Inside Out

Smart, money-saving natural gas-powered products help transform outdoor living spaces.

By Genny Hom-Franzen

Winter may have been cold, wet and dreary in most parts of the country, but now spring is finally here. So, there is no better time to start implementing smart, money-saving designs that will transform a backyard, patio, deck or garden into a beautiful outdoor living space.

And, as homeowners create these outdoor oases, they are increasingly including natural gas products and appliances in their designs.

Just ask builders like Jimmy Rutland, president of Lowder New Homes in Montgomery, Alabama. "More and more of our customers want to bring the inside out," Rutland said. "Through the use of covered patios, screened in porches, or folding door systems like LaCantina Doors, you can connect an outdoor space into part of the home. When you add a fire pit or outdoor fireplace to the backyard area, natural gas is an easy, efficient and clean way for our customers to provide warmth and ambiance in these spaces."

Lowder New Homes has been a trusted and respected home builder in the Montgomery area for 60 years, and has helped thousands of consumers build the home of their dreams. Rutland said using natural gas products are a large part of the company's business.

"More and more consumers are taking advantage of the quality natural gas products and appliances on the market," he said. "Natural gas is always a part of what we do."

Rutland said Lowder New Homes will be showcasing a home using the latest in outdoor design in the Parade of Homes, a local builders' showcase starting in June. The home has an outdoor living space that extends out from the great room. It includes a screened in porch, Isokern fire pit with gas logs, gas lighting and other natural gas appliances. "It really gives a nice extension to an open floor plan," he said.

Whether you prefer modern and contemporary or classic and traditional in your outdoor design, there are plenty of places to get inspiration. There's no shortage of outdoor home shows on

television, and gorgeous outdoor design photos abound on the Internet. Once you've narrowed down your preferences, choosing what to eventually purchase and where to place them in the backyard is also easy, thanks to the thousands of builders, outdoor design kitchen consultants and contractors available in just about every city in the country. They can provide expertise and counsel on options are for natural gas products and appliances such as outdoor stoves, grills, fireplaces, lighting and heaters for every design aesthetic and budget.

"Adding natural gas products to outdoor designs offer an easy, efficient and clean way for our customers to provide warmth and ambiance in these spaces," Rutland said. "When we add natural gas appliances like a gas grill or cooktop, the versatility and function of these spaces are greatly increased by making them perfect for both day-to-day living and weekend entertainment."

(continued on page 10)



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With some research and planning — and by working together with licensed contractors and construction experts — you can make your dream backyard a reality.

For more ideas on how to transform your outdoor space, visit the Natural Gas Outdoor Room Designer (at http://www.energysolutionscenter.org/magazines_reports/tools_and_calculators_for_public_access.aspx). Simply upload a photo of your backyard (or choose from several existing stock photos), and then, with the click of the mouse, add lighting, outdoor furniture, louvered roof systems, gas grills, gas-powered fire places and fire pits, and even trees, shrubs or plants. The tool is available for both PC and Apple users. ■



FIRING UP FLAVOR BY LINDSEY TOWNSEND

No doubt about it: Americans love their grills. And thanks to recent technological advances, it's easier than ever for backyard chefs to produce mouthwatering meals previously only available at high-end restaurants.

Once used primarily for hot dogs and brats, today's backyard grills have grown up to become state-of-the-art marvels that can bring nearly any flavorful cuisine to your table. "The luxury grill masters want their grills to do more than just grill burgers and chicken," said Tim Tyler, director of marketing, Viking Range.

In response, manufacturers are now offering such features as grills with multi-cultural influence stations and counter-top ice chests to keep meat fresh and vegetables crisp whether you're making guests Mongolian bowls, steak and sushi, or Thai food.



Improved flavor is the No. 1 reason consumers continue their love affair with outdoor grilling, according to a 2015 survey by the Hearth, Patio & Barbecue Association.

HIGH-END FEATURES REACH MASS MARKET

One of the major trends driving the new appeal of multi-cultural cooking is the increasing popularity of infrared technology using high-octane burners. "They allow grill masters to create anything from wok cooking to fajitas and crawfish boils," Tyler said.

Enthusiasts say infrared technology provides the best of both worlds: the satisfying flavor of a hot charcoal fire, with the precision and control of a natural gas flame. For example, some companies like Viking now offer models with TrueSear™ Infrared burners that create an intense searing heat of 1200+ degree F., caramelizing the outside of food and locking in the natural juices and flavors.

Viking has also released a Gourmet-Glo™ Brazilian Steakhouse Infrared Burner with a three-speed motor, which allows users to cook anything from their favorite South American beef tenderloin to a Thanksgiving turkey with turning precision. Meanwhile, Saber Grills recently unveiled an outdoor kitchen island series that includes a versatile built-in three-burner infrared gas grill with an 18,000 BTU dual-side burner.

And now, grilling is no longer just for the summer months; it's for all four seasons. According to the Hearth, Patio & Barbecue Association (HPBA), about 61 percent of grill owners enjoy using their grill in every season, and 43 percent cook at least once a month during the winter.

To capture that customer, "Manufacturers have intro-

duced grills that let individuals monitor their meats and other grilled foods from indoors using their mobile phones, which helps make grilling a year-round activity, even during the coldest months," said Jack Goldman, president and CEO, HPBA.

With the power to create virtually any type of dinner cuisine now readily available to backyard grillers, the next question is which type of grill is best: natural gas, charcoal or propane?

For many outdoor cooking aficionados, hands down, gas grilling easily wins the battle because of the major advantages it offers: precision control, convenience at the touch of a button, and cost savings.

CLEAN, CONVENIENT, COST EFFICIENT

Unlike charcoal, natural gas grilling requires no wait time to stack, heat and light coals, and no messy cleanup of ashes. Gas grills heat up very quickly — up to 600 degrees in six minutes — resulting in faster cooking times. It's less expensive than both charcoal and propane.

And once the gas grill is connected to the home's gas

system, there's always a steady, unlimited fuel supply, without the hassle of changing out propane tanks.

"Direct use of natural gas for cooking, home heating and hot water is a low-cost, low-emissions energy source for consumers," said Richard Meyer, manager, energy analysis & standards, American Gas Association.



More than a third of U.S. adults plan to purchase a new grill or smoker in 2016, according to HPBA.

PHOTO PROVIDED BY AMERICAN GAS ASSOCIATION

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Gas Mobile Home Furnaces

Model CMA3

- Model CMA3 - High-Efficiency 95% AFUE
- PSC Blower Motors
- 10-Year "Peace of Mind Plus" Warranty Includes Unit Replacement
- 10-Year Parts Warranty
- Quality Heat Exchanger Construction



- Model CMC1 - High-Efficiency 95% AFUE
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- 10-Year "Peace of Mind Plus" Warranty Includes Unit Replacement
- 10-Year Parts Warranty
- Quality Heat Exchanger Construction



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Traveling Further for Less

Natural gas vehicles make economic and environmental sense.

By Drew Robb

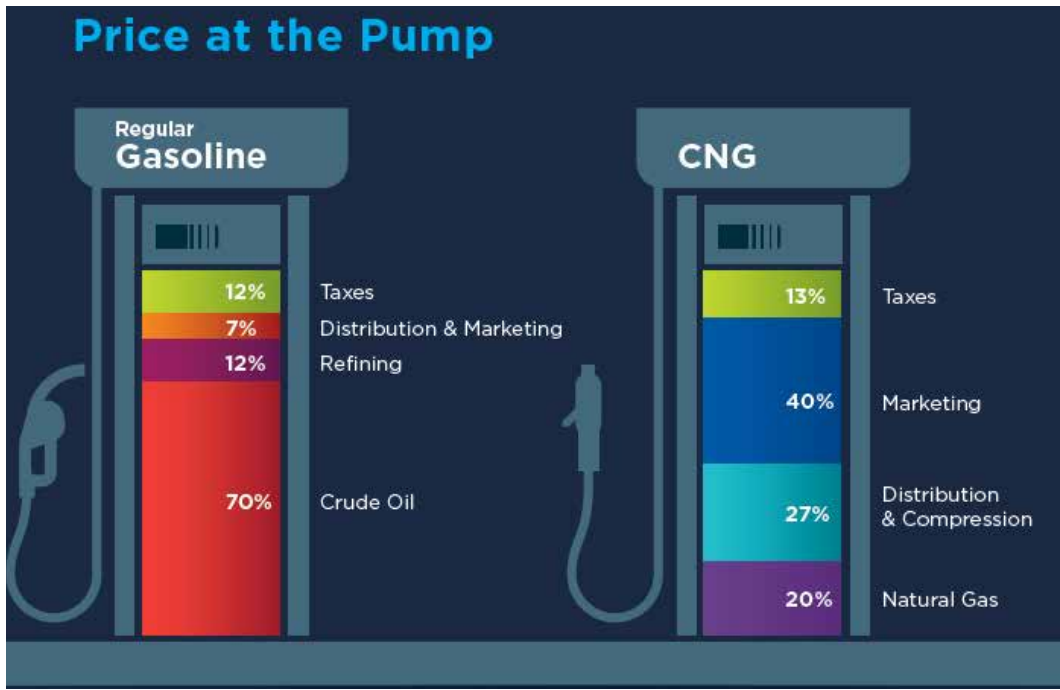
It's well known that natural gas is a cleaner, cheaper and more energy-efficient fuel for home heating, domestic water heating and other household use. What isn't so well known, however, is that it provides those very same advantages for vehicles when powered by what is known as compressed natural gas (CNG).

The natural gas used for these vehicles is exactly the same as the fuel piped to millions of homes for cooking and heating. But as gas occupies more volume than traditional fuels, it has to be compressed, or liquefied, to make it practical for transport applications. Bus, truck, taxi and other fleet-based businesses are finding that CNG allows them to travel further for less money. There are several options available for people

who wish to buy their own natural gas-powered vehicles. These vehicles allow drivers to enjoy lower fuel costs, and the satisfaction of knowing that they are burning a much cleaner fuel than diesel or gasoline.

Refueling of natural gas vehicles (NGVs) takes about the same time as gasoline, but without the spills down the side of your vehicle. All the driver has to do is pull up to a dispenser, switch the engine off and connect the nozzle to the receptacle, just like at a regular gas station. Owners with their own NGV vehicle fleets have done a fine job of building out the infrastructure across their territories to ensure rapid refueling of their vehicles. Meanwhile, progress is being made to add more refueling stations for consumer use. Those installing





The price of natural gas is less dependent on market forces than gasoline, whose prices rely on wild price swings in crude oil prices. Natural gas is a domestic fuel, still largely free from price volatility. Hence, natural gas prices in North America are stable and predictable.

SOURCE: AMERICAN GAS ASSOCIATION

home refueling units, however, note that the process is quite slow. But the potential is there for natural gas to find much wider deployment among residential vehicles.

According to the U.S. Department of Energy's (DOE) Alternative Fuels Data Center, natural gas powers about 150,000 vehicles in the United States, over 14,000 vehicles in Canada and roughly 15.2 million vehicles worldwide. The horsepower, acceleration and cruise speed of NGVs are comparable with those of conventional vehicles.

FIGHTING PRICE VOLATILITY

It's the affordability of natural gas that is attracting many fleets to convert. According to the DOE's Clean Cities Alternative Fuel Price Report (AFPR), the national average retail fuel prices in late 2015 showed CNG at \$2.09 per gallon to be cheaper than diesel (\$2.59) and gasoline (\$2.35). Vehicle fleets that enter into contracts with local CNG suppliers can obtain significantly lower prices. For Canada, gasoline and diesel

“Natural gas is a clean, domestically-produced alternative fuel, so using it in vehicles can improve the country's energy security when compared to petroleum-based fuels.”

— Dennis Smith, U.S. Department of Energy

prices per liter are around 85 cents, whereas CNG costs about 25 percent less, according to Natural Resources Canada.

While gasoline prices have dropped considerably since the end of 2014, the AFPR shows that despite the ups and downs of the volatile and unpredictable gasoline market, CNG has been consistently lower priced than gasoline for the past decade. While the current price gap may be relatively small, between 2011 and 2014 the difference was almost half. Over the long term, then, gasoline averages out to be about 50 percent more expensive than compressed natural gas. The same holds true when comparing CNG and diesel.

“Natural gas tends to be less expensive than gasoline or diesel, and its pricing tends to be much less variable over time,” said Dennis Smith, the DOE's national Clean Cities director. “While prices for gasoline and diesel rose up to more than \$3.80 a gallon between October 2008 and 2015, natural gas prices remained steady just above \$2 a gallon.”

Price volatility can take gasoline from \$2 per gallon to \$4 in a matter of months. That just doesn't happen with CNG, and the reason is simple. The commodity cost of natural gas comprises only about 20 percent of the total cost of price at the pump for CNG. In the unlikely event of a sudden jump in the price of natural gas, the increases in the commodity price would have far less impact on the pump price. Not so for gasoline or diesel, where the commodity price is 70 percent of the pump price. That's why a spike in oil prices translates into such a far larger amount at the pump.

(continued on page 14)



(continued from page 13)

“Natural gas is a clean, domestically-produced alternative fuel, so using it in vehicles can improve the country’s energy security when compared to petroleum-based fuels,” Smith said. “NGVs produce far fewer emissions than older conventional vehicles that run on diesel or gasoline. Because natural gas is cleaner-burning than petroleum-based fuels, natural gas versions of many smaller applications like forklifts and commercial lawn equipment can produce far fewer harmful emissions like hydrocarbon, carbon monoxide, and oxides of nitrogen.”

In addition, CNG vehicles produce fewer greenhouse gases (GHGs) than equivalent conventional vehicles. Based on Argonne National Laboratory’s research studies, light-duty vehicles running on natural gas emit about as much as 11 percent fewer GHGs than gasoline vehicles.

EASY CONVERSION

Sam Abuelsamid, senior analyst at Navigant Research, pointed out that it is a fairly easy to convert a gasoline-based vehicle to CNG. Similarly, automotive assembly lines can be converted quickly to natural gas. He believes CNG has a big future in commercial fleets as well. It is less expensive than gasoline or diesel but provides similar fuel efficiency, leading to lower operating costs, especially for high-mileage accumulating vehicles such as buses and delivery vehicles. CNG-based vehicles are proving far more popular than electric vehicles (EVs) in such applications.

“For medium- and heavy-duty vehicles, too many batteries would be required to achieve a reasonable range on an EV,” said Abuelsamid. ■

VEHICLE TYPE	PROS	CONS
NGV	Cheap fuel, low emissions, abundant domestic supply	Lack of refueling infrastructure, larger storage tank required, higher purchase cost, limited selection of models
Gasoline	Established refueling infrastructure	Volatile prices, higher emissions, dependence on foreign supply
Diesel	Established refueling infrastructure	Volatile prices, higher emissions, dependence on foreign supply
Electric Vehicle	No need to add fuel, environmentally friendly	Lack of refueling infrastructure, very short range, higher purchase cost, limited selection of models, high price of battery replacement, speed of recharging, higher maintenance
Hybrid gas/electric	Improved miles per gallon, low emissions	Lack of refueling infrastructure, short range, higher purchase cost, limited selection of models, high price of battery replacement, higher maintenance

Feel the Heat

Natural gas is heating up additional living spaces.

By Genny Hom-Franzen

Indoor patios. Basements. Enclosed porches. Attics. Bonus rooms. In-law spaces. You name it. Add-on spaces are all the rage among more and more consumers. And, thanks to a variety of natural gas space heaters readily available at a broad price range to meet every budget, keeping those additional living spaces nice and cozy is easier than ever.

Gas space heaters operate independently of the home's existing heating system. Most models have adjustable louvers that help direct the heat where it is needed most.

There are individual room space heaters, freestanding gas heaters, wall-mounted gas heaters, gas logs and even freestanding units that resemble wood stoves. Some gas space heaters require venting to the outside of the home while others are vent-free. Vent-free heaters can be installed just about anywhere in the home, without the need to vent or exhaust gases to the homes' exterior.

Natural gas heaters have several different types of venting systems that work best for add-on spaces. The first option is the gravity-vented heater. These are often small, inexpensively-priced heaters, so they are a popular choice. The term "gravity" refers to a heater that vents naturally without the need for a fan. A gravity-vented heater uses air for combustion, and the warm byproducts rise out the heater through a flue pipe to the outside.

Given the wide array of designs and price ranges available today, there is a natural gas heater to fit everyone's design aesthetic and budget. Natural gas heaters are safe, durable, self-contained, and offer a powerful choice for consumers looking to heat their add-on spaces.

A second venting choice is power-vented. This type of heater is similar to the gravity-vented one, but it has an additional integral flue booster fan. The fan turns on to ensure the byproducts of combustion are vented properly. The booster fan allows for greater flexibility with the flue pipe routing.



Warm up a garage, workshop or other living space with the Dyna-Glo IR12NMDG-1 12,000 BTU Infrared Natural Gas Vent-Free Wall Heater. It's an ideal choice for safe, supplemental heating.

Sealed combustion heaters are the third venting option. While traditional gravity- and power-vented heaters use space air for combustion, separated combustion heaters are sealed from the space. Sealed combustion heaters have two flue vent pipes. The first flue vent pipe draws in air from the outdoors and the second flue vent pipe exhausts the byproducts of combustion back outside. This sealed combustion design eliminates the need to use indoor air for combustion. Sealed combustion heaters are a must in certain spaces like a woodworking area, where fine dust can ignite with an open flame. In addition, sealed combustion heaters are usually slightly more efficient since they do not use the heated air in your space for combustion.

Given the wide array of designs and price ranges available today, there is a natural gas heater to fit everyone's design aesthetic and budget. Natural gas heaters are safe, durable, self-contained, and offer a powerful choice for consumers looking to heat their add-on spaces. ■



Grilled Herb Scallops with Balsamic Syrup

INGREDIENTS

8 fresh or frozen sea scallops
 (about 1 pound total)
 1/4 cup olive oil
 2 tablespoons snipped fresh mint
 2 tablespoons snipped fresh Italian
 (flat-leaf) parsley
 2 tablespoons balsamic vinegar
 1 tablespoon freshly grated Parmesan cheese
 1 teaspoon finely shredded lemon peel
 1 clove garlic, minced
 1/2 cup balsamic vinegar
 2 cups baby arugula

DIRECTIONS

1 Thaw scallops, if frozen. Rinse scallops; pat dry with paper towels. Place scallops in a resealable plastic bag set in a shallow dish. For marinade, in a small bowl stir together oil, mint, parsley, the 2 tablespoons vinegar, the cheese, lemon peel and garlic. Pour marinade over scallops. Seal bag; turn to coat scallops. Marinate in the refrigerator for 2 to 4 hours, turning bag once or twice.

2 Drain scallops, discarding marinade. Thread each scallop onto a 6-inch skewer. (If using wooden skewers, soak in water for at least 30 minutes; drain before using).

3 For a gas grill, grill scallops on the greased rack of a covered grill directly over medium-hot heat for 6 to 8 minutes or until scallops are opaque, turning once halfway through grilling time.

4 Meanwhile, in a small heavy saucepan bring the 1/2 cup vinegar to boiling; reduce heat. Simmer, uncovered, for 4 to 5 minutes or until vinegar is reduced by half.

5 Serve scallops with arugula. Drizzle with the reduced vinegar.



SOURCE: THE TEST KITCHEN

Honey-Sriracha Grilled Chicken Thighs

INGREDIENTS

6 tablespoons sriracha sauce
 2 tablespoons honey
 8 bone-in chicken thighs, skinned
 2 tablespoons fresh lime juice
 2 tablespoons chopped fresh cilantro

DIRECTIONS

1 Whisk together 2 tablespoons of the sriracha sauce and the honey; set aside. Place the chicken in a resealable plastic bag and add remaining sriracha sauce and the lime juice. Seal; turn bag to coat chicken. Let stand 15 minutes.

2 Grill chicken on the greased rack of a covered gas grill directly over medium heat for 30 to 35 minutes or until done (at least 175 degrees F), turning 3 or 4 times. (Or grill over indirect heat for 50 to 60 minutes, turning once).

3 Remove chicken to a platter; brush with honey mixture. Cover and let stand 5 minutes. Sprinkle with cilantro.



SOURCE: THE TEST KITCHEN