

naturalLiving

Spring/Summer 2019

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Refresh and Renew



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Going green

Spring landscaping lays groundwork for lush summer lawns.

By Tonya McMurray

Well-managed landscapes help extend the energy efficiency offered by natural gas and complement outdoor living spaces populated by natural gas appliances. Grass is 31 degrees Fahrenheit cooler than asphalt and 20 degrees cooler than bare soil, according to the National Association of Landscape Professionals (NALP). And trees shading homes can reduce attic temperatures by as much as 40 degrees.

“Spring is the perfect time to prepare lawns and landscapes for the warm-weather season ahead,” said Missy Henriksen, vice president, public affairs, NALP.

The first step is to inspect trees and shrubs for broken and damaged branches, she said. Prune dead branches, pull up old annuals and thin perennials. Be sure to check around natural gas meters and appliances to remove branches, leaves or other debris that might block vents or air intakes to ensure safety and maximize energy efficiency. Rake fallen leaves and dead foliage that can smother new plants and foster disease. Fill in and reseed bare spots in the lawn.

After an initial spring cleanup, homeowners should test their soil to determine what nutrients are needed for springtime growth, Henriksen said. Local agricultural extension offices or lawn care and landscape

professionals often offer soil testing.

“In many parts of the country, spring is the ideal time to fertilize lawns, trees and shrubs, but a professional can help determine the best plan for your yard,” she said. Soil with the proper nutrients helps conserve water while laying the foundation for a lush landscape.

“Spring is the best time to start weed control efforts and ensure pre-emergent weed controls are applied,” Henriksen said. “These products create a barrier across the surface of the soil and target weeds.”

Homeowners should also add about an inch of fresh mulch to plant beds and surrounding trees to retain moisture in the soil and prepare roots for the upcoming summer heat, she said. Mulching is also a good way to tidy up a landscape after harsh winter weather.

A well-designed landscape typically saves enough energy to pay for itself in less than eight years, according to the U.S. Department of Energy. A good design can reduce water use and strategically place trees to reduce heating and cooling costs.

Deciduous trees placed near a home help shade it in the summer while allowing sunlight in to help heat a home in the winter. According to the Department of Energy, six- to eight-foot deciduous trees planted near a home will begin providing shade during their first year and will begin shading the roof in five to 10 years.

Henriksen said current trends are for natural and sustainable landscapes.

“Along with a stunning appearance, sustainable landscapes benefit the environment and create drought and disease-resistant spaces that are easier to maintain,” she said. “If you’re looking for a quick and easy way to start an eco-friendly landscape, try utilizing native plants, mulching plant beds to retain moisture or creating a rain garden to reduce runoff.”

When combined with natural gas appliances such as fireplaces, fire pits, grills and lamps, sustainable plants help homeowners create a cozy, attractive and energy-efficient outdoor experience.

For more tips on creating healthy lawns and landscapes or to find a local landscape professional, visit LoveYourLandscape.org. ■

PHOTO COURTESY OF LOVEYOURLANDSCAPE.ORG/GREENLEAF SERVICES INC.



Spring is a great time to develop a landscape plan and begin preparations to prepare your lawn for the summer season.



A clean energy future

Is residential electrification the answer?

By Tonya McMurray

More than 30 U.S. states have adopted plans aimed at reducing greenhouse gases and producing a cleaner energy future, according to the Center for Climate and Energy Solutions. Several other states are still seeking a greener energy supply approach.

One proposal to meet those goals is residential electrification, which seeks to achieve ambitious greenhouse gas emission reductions by generating electricity only from renewable resources and then converting all household energy use to electricity.

That proposal, however, is costly and may ultimately not achieve the hoped-for emissions reductions, said Rick Murphy, managing director, energy markets, American Gas Association.

"We appreciate the need for reducing greenhouse gas emissions and mitigating the impacts of climate change," he said. "But the studies promoting this idea of electrification are not looking at all the implications, including overall costs to consumers."

AGA contracted ICF to conduct an in-depth study of the benefits and costs of mandated residential electrification. The July 2018 report, titled "Implications of Policy-Driven Residential Electrification," assesses what would be required for the electric grid to handle the incremental load associated with converting all fossil fuel residential applications to electricity, as well as estimating the ultimate costs to consumers.

EXPANDING THE ELECTRIC GRID

The ICF report projects that electrifying the entire residential sector would increase electric system demand so much that it could require the size of the U.S. power generation system to almost double by 2035.

"That would result in significant incremental capital costs which eventually have to be passed along to the consumer," Murphy said. "In addition, you also have the costs associated with actually replacing all of the natural gas heating and water heating systems in homes with electric systems. And, there are actual operating cost differentials for a gas system versus an electric heating system. Those are extensive cost increases for consumers."

ICF estimates that the total costs to residential consumers and incremental power generation and transmission would range from \$590 billion to \$1.2 trillion by 2035. Allocating these costs out to the effected households would result in an average increase in annual energy costs of between \$1,060 and \$1,420 per household.

The ICF study also concludes that policy-driven residential electrification would reduce greenhouse gas emissions by between 1 percent

and 1.5 percent in 2035. Based on those estimates, the cost of reducing greenhouse gas emissions through policy-driven residential electrification would be substantially higher than the estimated cost of other options for reducing emissions, according to the report.

DECARBONIZING THE ELECTRIC GRID

Even without policy-driven electrification initiatives, the electric grid is already becoming less carbon intensive. The U.S. Energy Information Administration reports that 17 percent of 2017 electricity generation came from renewable resources, and projects that share will grow to 27 percent by 2035. In addition, natural gas has become a bigger source for electricity generation. The EIA forecast projects the power grid will continue to become less carbon intensive over time.

Natural gas delivers almost as much energy as electricity to the residential sector while accounting for fewer greenhouse gas emissions, according to the ICF report.

"Natural gas has been one of the largest contributors to the country's recent reductions in greenhouse gas emissions," Murphy said. "Having more natural gas in power-generating facilities has displaced much dirtier coal generation. In the Northeast and the Midwest, natural gas has also displaced fuel oil in homes and businesses, which is significantly more harmful to the environment. We have a proven track record of helping to achieve emissions reductions, and we have the ability to provide a more cost-effective approach going forward."

The natural gas industry has historically looked to increase energy efficiency. Murphy said natural gas utility companies invest nearly \$2 billion a year in energy-efficiency programs. The success of such programs has resulted in stable residential demand for natural gas over the last 50 years while the number of customers has grown more than 70 percent. The industry's investments in energy-efficiency programs have also resulted in a decrease of carbon dioxide emissions per household by nearly 50 percent.

Through a combination of more efficient natural gas appliances and new technologies that create renewable natural gas from landfills or sewage treatment facilities, the natural gas industry can continue to offer innovative and cost-effective ways to reduce emissions.

Murphy said the best approach for achieving emissions reductions in a cost-effective manner is through the continued investment in energy technology development for all energy sources.

"Don't eliminate any option that could ultimately achieve the objective," he said. "Let the consumer make the decision on what option best meets their needs." ■

Study Results

Overall, the residential electrification policy assessed in this study would result in the conversion of between 37.3 and 56.3 million households from natural gas, propane and fuel oil space and water heating to electricity between 2023 and 2035. This represents about 60 percent of the total non-electric households in each region where the policy is implemented. This table summarizes the results of the residential electrification cases relative to the reference case.

SUMMARY OF RESULTS²

	RENEWABLES-ONLY CASE	MARKET-BASED GENERATION CASE
U.S. Greenhouse Gas Emissions	Annual U.S. GHG emissions reduced by 93 million metric tons of CO ₂ by 2035 (1.5 percent)	Annual U.S. GHG emissions reduced by 65 million metric tons of CO ₂ by 2035 (1 percent)
Residential Households	56.3 million households converted to electricity \$760 billion in energy & equipment costs Direct consumer annual cost increase of \$910 per household	37.3 million households converted to electricity \$415 billion in energy & equipment costs Direct consumer annual cost increase of \$750 per household
Power Sector	320 GW of incremental generation capacity required at a cost of \$319 billion \$107 billion of associated transmission system upgrades	132 GW of incremental generation capacity required at a cost of \$102 billion \$53 billion of associated transmission system upgrades
Total Cost of Policy-Driven Residential Electrification	Total energy costs increase by \$1.19 trillion \$21,140 average per converted household \$1,420 per year per converted household increase in energy costs	Total energy costs increase by \$590 billion \$15,830 average per converted household \$1,060 per year per converted household increase in energy costs
Cost of Emission Reductions	\$806 per metric ton of CO ₂ reduction	\$572 per metric ton of CO ₂ reduction

COURTESY OF ICF AND AMERICAN GAS ASSOCIATION

²These cost numbers do not include all costs associated with these policies. These costs do not include the cost of local electric distribution system upgrades, do not consider potential natural gas distribution company rate increases on remaining gas customers as the number of natural gas customers declines, or the decrease in natural gas commodity prices that would be expected if total natural gas demand decreases.





A backyard oasis

Natural gas delivers warmth, fuel and ambiance for outdoor living spaces.

By Tonya McMurray

With spring's longer days and warmer temperatures, the time is right for enjoying evenings in backyard living spaces.

"Outdoor living spaces are all about creating a personal oasis in your backyard," said Monica Turner, product manager, Hearth and Home Technologies Inc. "Outdoor living spaces are continuing to grow in popularity and are becoming an expectation, not a luxury."

The top three most popular outdoor design elements include fire pits/fireplaces (66 percent), lighting (65.4 percent) and seating/dining areas (64 percent), according to the American Society of Landscape Architects (ASLA). And natural gas offers the perfect fuel for warmth, lighting and cooking.

"Fire is naturally relaxing, from the hypnotic rhythm of the flicker to the warmth it provides its audience," said Patrick Jardini, head of business development, American Gas Lamp Works LLC. "Gas lamps, torches and fire bowls set the scene while providing a comfortable and cozy setting."

BIGGER AND BOLDER

He said outdoor design trends are becoming bigger and bolder, serving as both a reflection of the owner's personality and communal gathering spaces for entertaining and relaxing with family and friends.

"In recent years, we've seen outdoor space design really evolve into an artform for comfort," Jardini said. "Stone features, large-scale fire bowls and beautiful semi-enclosed structures for cooking and cocktails; the more homeowners and landscape architects we work with, the more impressive and grander the plans become."

And if big, bold plans seem a bit intimidating, homeowners can always build up to more elaborate outdoor designs.

"Even if everything isn't installed all at once, you can stage the scene for future additions," Jardini said. "If you're already running a gas line to your outdoor space to power gas products such as grills and pools, it's very easy to tap from that line and add other gas amenities like lamps, torches and fire pits. Build a foundation for your dream space, even if it takes a while to get there."

TENDING THE FLAME

Just as indoor fireplaces offer both heat and ambiance, outdoor fireplaces, fire pits and fire tables provide warmth and set the mood for outdoor gatherings.

"Outdoor fire features are still in huge demand," Turner said. "Fire features provide instant relaxation. They help extend the seasons and provide a focal point in the space just like they do indoors."

Some homeowners opt for fire pits to provide outdoor ambiance. Fire pits provide an ideal place to gather for casual conversation, roasting marshmallows or just enjoying the outdoors.

(continued on page 08)



Hearth and Home's new Courtyard outdoor gas fireplace is a blend of artistry and function, combining traditional styling with a choice of realistic logs or contemporary glass and igniting with the flip of a switch.

PHOTO COURTESY OF HEARTH AND HOME TECHNOLOGIES INC.



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(continued from page 07)

Fire tables offer a mesmerizing centerpiece for meals and gatherings with family and friends. Unlike fire pits, fire tables provide room for meals fresh from the grill.

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.

Unlike wood fires that take time and effort to ignite, gas fire features start with the flip of a switch. There is no hassle of gathering or buying wood or trying to start the fire. And, no need to clean out ashes after enjoying a cozy evening fire.

LIGHTING THE WAY

From casual tiki torches to elegant brass or copper lamps, natural gas lighting can add the finishing touch and complement any outdoor space.

Lights can be mounted on exterior walls, porch ceilings or on lamp posts. Light sensors and timers can help reduce fuel use by ensuring that lights are only on when you need them.

Whether enclosed or with open flames, outdoor lighting fueled by natural gas offers a reliable light source, even during a power outage.

PHOTO COURTESY OF AMERICAN GAS LAMP WORKS LLC



Natural gas lighting adds the finishing touches to outdoor designs and helps set a cozy and inviting mood for evenings with family and friends.

And, while bugs flock to electric lighting, natural gas lighting does not tend to attract insects.

TIME FOR DINNER

Kitchens and grills remain highly popular outdoor features, named by 58.8 percent and 50 percent of respondents, respectively, in ASLA's recent survey. Outdoor kitchens range from simple to high-tech with full-featured grills, refrigerators, dishwashers, food prep areas and cocktail bars.

Whether modestly sized and freestanding or large, permanent structures, natural gas grills provide an always-ready cooking appliance. With more precise temperature controls than propane or charcoal grills, natural gas grills produce more consistent cooking results and take the guess work out of outdoor cooking.

PHOTO COURTESY OF LOVEYOURLANDSCAPE.ORG./DESIGNS BY SUNDOWN



Outdoor kitchens extend beyond simple grills to include warming drawers, ice buckets, storage and food prep spaces.

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.

TURN UP THE HEAT

Patio heaters can extend the outdoor season by driving away the chill of early spring and late fall. Patio heaters can generally warm a 12-

to 20-foot area. They are most effective when outdoor temperatures are between 40 degrees and 60 degrees Fahrenheit and can be placed almost anywhere.

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.

With cozy warmth from heaters, a gentle glow from gas lamps and fireplaces, and fresh grilled meals, natural gas fuels the ideal backyard oasis. ■

PLUGGED IN: CONVENIENCE OUTLETS OFFER A SAFE, EASY WAY TO CONNECT OUTDOOR GAS APPLIANCES

As more and more homeowners opt to turn their yards into outdoor living spaces complete with lamps, fireplaces and kitchens, gas convenience outlets offer an easy plug-in for connecting outdoor appliances to a home's natural gas line.

The convenience outlet provides a plug similar to an electrical outlet that allows homeowners to simply plug in gas grills, patio heaters, lights and other appliances.

"With a convenience outlet, the homeowner can just go out and purchase an appliance and then come home and plug it in," said Hoss Budde, president, Burnaby Manufacturing Ltd. "No calling a contractor to come out and install it. No having to shut down the whole house while the contractor installs it and then relighting all the appliances once he's done."

A new line of Versatile Gas Plugs™ (VGP) provides several models of plugs enclosed in a small box designed to blend into wood, concrete, brick or rock surfaces. The VGP models conceal unsightly pipes and valves and allow for drainage of surface water through the box.

Budde recommends that convenience outlets be installed in locations where there won't be a lot of foot traffic, so there is minimal risk of someone tripping over a connecting hose or door due to a recessed plug.

With the proper permits, a homeowner who knows how to do gas piping can install the outlet themselves, Budde said. Homeowners who are not comfortable doing the gas piping should contact a contractor or plumber to do the initial installation.

Once installed, the outlets offer significant flexibility in the placement of outdoor appliances. Flexible hose up to

10 feet allows homeowners to move appliances around the patio or yard. Homeowners with multiple gas appliances may want to have several outlets. There are also double outlets available so homeowners can plug in two appliances at the same time.

The outlets also simplify moving and storage, Budde said. If homeowners buy new appliances, they simply unplug the old appliance and plug in the new one without the need for contractors to connect or disconnect gas lines. When winter comes, homeowners can simply unplug the appliance and move it into winter storage. And, if homeowners move, they can take the appliance with them without having to call a contractor to disconnect it from the gas supply.

Convenience outlets come with a variety of safety features. They automatically shut off if the temperature reaches 250 degrees and most require that the manual valve be shut off before the appliance is connected or disconnected. ■



Burnaby Manufacturing Ltd.'s Wood Deck Versatile Gas Plug™ offers easy plug-in convenience for natural gas appliances while concealing unsightly pipes and valves.

PHOTO COURTESY OF BURNABY MANUFACTURING LTD.



'Something unique'

Renewable natural gas: good for the planet, good for the home.

By Drew Robb

Wind and solar energy have gained tremendous ground in recent years as renewable sources of energy. But there is another source of renewable energy that could also play a role in the clean energy economy – renewable natural gas (RNG). If it achieves its potential, RNG could become the most reliable and cost-effective source of renewable energy.

"Adding the various benefits of renewable natural gas together, you get something unique: the clean burning and lowest-carbon fuel available today," said Joanna Underwood, founder and board member, Energy Vision, a nonprofit energy consultancy. "RNG represents a tremendous opportunity to turn waste into energy, meet its climate goals and improve its air quality."

BIOMASS INTO BIOGAS

Biomass is the term for fuel developed from organic materials. Wood, crops, manure and garbage are a few of the many things that can be burned to produce biogas. A gaseous byproduct of the decomposition of organic matter, biogas can be transformed into heat and electricity. To be useful in a home or factory, though, it has to be processed to achieve acceptable purity standards.

RNG is a form of biogas that is completely interchangeable with natural gas. In other words, it can use the same transportation channels,

and can be used in the home for heating, cooking and many other household uses.

REDUCING GREENHOUSE GASES

RNG can be produced in many ways: from waste at landfills, wastewater treatment plants, food processing and dairies, to name a few.

And, RNG has many advantages. It is carbon neutral, versatile and compatible with the U.S. pipeline infrastructure. That makes it an excellent source of alternative fuel for transportation or gas for home appliances.

Natural gas is already a clean and environmentally friendly source of energy. Coal, fuel oil and diesel produce a high amount of emissions and pollutants into the atmosphere. Natural gas, on the other hand, is clean burning. A natural gas power plant produces half the carbon dioxide emissions of a coal plant. A U.S. Department of Energy analysis indicates that powering 10,000 U.S. homes with natural gas instead of coal removes more than 10,000 tons of pollution per year.

REDUCING GREENHOUSE GASES

RNG also boasts extremely low emissions. Methane from animal waste and other biomass sources would normally be released directly into the Earth's atmosphere. By capturing this biomass and converting it into RNG, the volume of greenhouse gases (GHG) reaching the atmosphere is reduced by 21 times, according to the American Gas Association (AGA).

Research conducted by Navigant Consulting highlights RNG's potential. Navigant's study found that by replacing 16 percent of the traditional natural gas supply with renewable gas can achieve GHG reductions equivalent to converting 100 percent of buildings to electric-only energy by 2030. A renewable natural gas strategy, then, works out to about three times more cost effective in reducing GHGs than focusing on electrification, according to Navigant. (For more information on electrification, see Page 04).

"RNG doesn't just slow the accumulation of atmospheric GHG; it can actually help roll it back," Underwood said. "As a transportation fuel, it can cut health-damaging particulate down to close to zero."

PHOTO COURTESY OF AMP AMERICAS LLC

Renewable Dairy Fuels (RDF), a business unit of Amp Americas LLC, opened an RNG production facility at Fair Oaks Farms in Indiana in 2011, which became the first — and largest — dairy biogas-to-transportation fuel project in the country.



BETTER WASTE MANAGEMENT

Another benefit of RNG is in improved waste management. RNG offers a financial incentive to increase the efficiency of the collection and processing of animal waste from agricultural activities. As the resulting gas can be transformed into valuable fuel, collection methods can be streamlined, and waste such as run-off into local waterways or groundwater contamination can be avoided.

American farmers, too, can receive a much-needed boost from RNG. With crop prices falling in many areas, supplementary income from RNG can mean the difference between success and failure. Dairy, hog and poultry farmers, for example, can convert a constant waste problem into a valuable source of additional revenue.

States such as California and Indiana are leading the way on RNG. The California Department of Resources Recycling and Recovery estimates that as many as 100 new facilities will be developed in California by 2025 as part of the state's plans to convert 75 percent of its waste organic products to useful energy.

Additionally, a new state law mandates only renewable and zero-carbon resources be used for electricity generation by 2045. Another law known as Senate Bill (SB) 1440 requires the state's Public Utilities Commission and Air Resources Board to consider adopting RNG procurement targets for gas companies in the state. In other words, a portion of all the gas consumed by residential and commercial customers would have to be RNG.



An Amp Americas LLC truck fuels up at an RNG station.

PHOTO COURTESY OF AMP AMERICAS LLC

THINKING BIG

While California grabs the legislative headlines on the promotion of RNG and biogas, Indiana leads the way in terms of facility size. Renewable Dairy Fuels (RDF), a business unit of Amp Americas LLC, opened an RNG production facility at Fair Oaks Farms in Indiana in 2011, which became the first — and largest — dairy biogas-to-transportation fuel project in the country. But RDF's second project has eclipsed it. Located in Jasper County, Indiana, it turns 945 tons of manure per day generated from 16,000 milking cows present on several dairy farms into 100 percent renewable gas. Its output goes into the natural gas pipeline system to be used as transportation fuel.

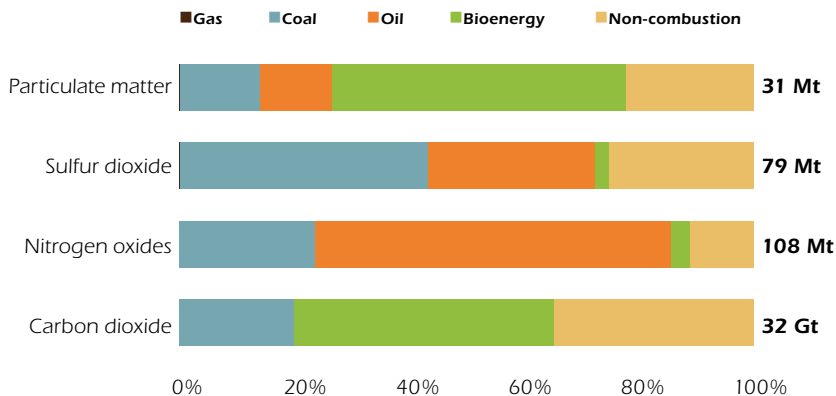
Cow manure from four farms is collected from the barns and delivered to tanks where it is heated. Methane is released, captured, purified and compressed to become pipeline-quality RNG.

"RNG reduces greenhouse gas emissions by up to 100 percent when compared to diesel," said Grant Zimmerman, CEO, Amp Americas. "In addition to improving air quality and sustainability, converting dairy waste into transportation fuel improves farm profitability, creates well-paying rural jobs and saves fleets money." ■

COURTESY OF IEA

Share of natural gas in total energy-related emissions of air pollutants and carbon dioxide

IEA analysis



DATA IS FROM 2015 (THE MOST CURRENT YEAR AVAILABLE): MT = MILLION TONNES; GT = GIGATONNES



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'Everyone wants gas'

Five home improvement projects that are worth doing, and five to avoid.

By Drew Robb

Some home improvements really reap rewards. Others, however, can be money pits that bring little return on investment. In a few cases, such projects add no value to the property. But which is which?

Let's start with upgrades that are well-worth undertaking.



1. HARDWOOD OR TILE FLOORS

Flooring taste varies from place to place, said Archie Robb, Realtor, Silverwood Properties Inc. in Los Angeles, California. Climate also plays a role. In the northern states, carpet is more desirable due to the cold winters. But in southern states, it has become something to avoid. Robb said that in Los Angeles, hardwood floors are king.

"If you have carpet or any other type of flooring, switching to hardwood will add value; not laminate flooring but actual hardwood," he said. "Many older homes have original hardwood under the carpet. Refinishing it is inexpensive and buyers love it."

For newer homes and in hot climates, tastefully done tiling is a possible alternative to hardwood flooring. Replacing carpet with tile doesn't cost much and can increase the sale price on a home.



2. NEW APPLIANCES

Robb recommends new appliances to most of his sellers. If natural gas stoves, heaters, water heaters, dryers and other appliances are more than 10 years old or in poor shape, buying new ones make a home seem fresh and welcoming, he advised.

"Everyone wants gas, and they often ask me if the house has a gas stove. I've never had anyone ask about an electrical stove in all my years or selling."

— Archie Robb, Realtor, Silverwood Properties Inc.



3. UPDATED NATURAL GAS KITCHEN

An updated kitchen is a big plus in a home. Particularly when the appliances are natural gas, new models can really add to a property's allure. Buying a beautiful new gas stove puts the value of natural gas over electricity front-and-center in discussions with buyers.

"Everyone wants gas, and they often ask me if the house has a gas stove," Robb said. "I've never had anyone ask about an electrical stove in all my years or selling."



4. CENTRAL HVAC

A central heating and air conditioning (HVAC) system is another element that can often add value. Warm climates require reliable AC. Cold climates need a robust source of heating. Not only is installing a natural gas-based HVAC system a nice upgrade for any homeowner, but it will prove very popular with prospective buyers and could tempt them into spending more than they would otherwise invest, according to Robb.

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5. REPLACEMENT WINDOWS

Replacement windows are often a project that families avoid as they don't come cheap. Yet this has consistently been near the top of the list when it comes to adding value to a property.

"Replacement windows have an average return on investment of around 90 percent," said Danny Lipford, a Florida-based contractor and home improvement expert. "They make such a difference to how a place looks and can really add curb appeal to a property."

So what projects aren't worth betting on? Here are five projects to avoid.



1. ELECTRONICS AND BUILT-IN AQUARIUMS

Robb said upgrades involving expensive home electronics projects or custom aquariums tend to cost a lot. And, when it comes to buyers, the upgrades do not attract much interest. A beautiful wall-to-wall aquarium or a spare bedroom turned into a state-of-the-art home movie studio, he said, may only be considered desirable by only a small subset of buyers.

"The last thing anyone should do are improvements that reduce the number of prospects when it is time to sell," Robb said. "While a few people may like a built-in aquarium, many don't want one and would be put off to see it in a prospective home."



2. BATHROOM RENOVATIONS

Next to kitchens, bathroom upgrades are among the most common. They should certainly be done if you intend living in the home for many

years. But as a plan to boost home value, they can sometimes be a dismal failure, Robb said. If costs are contained, they may boost the sale value by a small amount. But oftentimes, such projects run into unexpected challenges and costs can soar.



3. ROOM ADDITIONS

Similarly, room additions can run aground on permitting. The price tag for what appeared to be a simple addition can quickly escalate. The bottom line is that many sellers fail to recoup the value they hoped for from a room addition.



4. OVER IMPROVEMENTS

A mansion in Beverly Hills or on a Florida beach can sell for many millions of dollars. Spending \$100,000 on the right improvements may well be necessary to attract high-end clientele. But a more modestly priced dwelling does not merit improvements on that scale. The key point here is limit your spending based on the value of the home.

"Make sure you are not overbuilding for the neighborhood," Lipford said.



5. POOL

Swimming pools are another of those investments that may make sense if you are going to personally enjoy them for many years. But they are a bad idea as an investment, said Lipford. Again, it's all about limiting the number of buyers. Many avoid pools as they cost time and money in upkeep. With a price tag that can rise higher than \$50,000, it is rare that a home's value will rise proportionally. ■

FLAMING HOT: COOKING IS JUST BETTER WITH NATURAL GAS

Anyone who has cooked on both natural gas and electric stoves knows the difference. There is no comparison when it comes to responsiveness: A natural gas flame beats an electric element hands down in terms of ability to increase or decrease heating in fine increments.

Gas burners provide immediate heat, offer cooks greater control over temperature and are more energy efficient than their electric counterparts. When a gas stove is turned on, a flame appears instantly. When the stove is turned off, the flame is gone. But with electric stoves there is always a delay in heating up or cooling down. This can play havoc with recipes and food preparation.

"Natural gas is almost always cheaper than electricity," said Rosemary Avance, Ph.D., a researcher with Consumer-Affairs. "Choosing all gas appliances can save you up to 30 percent on your utility bill."

She advocates that those with all-electric kitchens should consider an upgrade to natural gas. Yes, upfront costs are involved. Avance estimates that it may cost anywhere from \$250 to \$700 to reroute a gas line. And then there is the cost of the appliances.

In some areas, though, utilities offer rebates to consumers to make the switch due to the environmental benefits and cost savings that can be realized by making the transition to natural gas.

"Over time, gas will save money on your utility bill," Avance said.

This is an important factor, considering that about a fifth of total household energy is consumed between the kitchen and the laundry room, according to the U.S. Department of

Energy's U.S. Household Electricity Report. Therefore, it makes sound, economic sense to select natural gas stoves and appliances for the kitchen and the home. Spending a few hundred now for an upgrade to natural gas stoves and appliances can save thousands over a lifetime.

Those enjoying the advantages of natural gas cooking may not realize it, but they are also helping the environment. The process of creating electricity from a power plant consumes three or four units of fuel in exchange for one unit of electricity. This is highly inefficient.

The U.S. Energy Information Administration (EIA)'s Johnathan Cogan said there is a lot of energy consumed in mining coal out of the ground, burning it in a power plant to turn it into electricity, sending it long distances along transmission lines and, finally, providing it for home appliances.

In comparison, very little energy is consumed in bringing natural gas to the home. The EIA calculates that natural gas is more than three times more efficient as a source of energy for home appliances than electricity. ■



Theater steak with mushrooms, onions and grilled bread

INGREDIENTS

2 tablespoons neutral cooking oil, such as canola or safflower
 2 (8-ounce) beef filets, preferably 1 1/2-inches thick, at room temperature
 1/4 cup chicken stock or white wine
 4 tablespoons unsalted butter, divided
 1 pound mixed mushrooms, cleaned and sliced
 1 large onion, sliced into half-moons
 4 thick slices good-quality bread (like a French loaf)
 1 cup spicy greens, such as arugula or watercress
 Kosher salt and freshly ground pepper, to taste

DIRECTIONS

1 Preheat oven to 325°F. Line a baking sheet with foil and set aside.

2 Heat two tablespoons of oil in a heavy skillet over medium-high to high heat.

3 Pat the filets very dry and season the side facing up generously with salt and pepper.

4 When the oil is shimmering, place the filets, seasoned side down, in the skillet. Season the top with additional salt and pepper.

5 Cook the steaks without disturbing until a deep, golden brown crust has formed, 3 to 5 minutes.

6 Flip the steaks and allow to cook for another minute or so.

7 Place the steaks on the baking sheet (they should still be on the rare side, about 120°F on an instant read thermometer) and transfer to the oven.

8 Return the skillet to high heat. Add the stock or wine and swirl to remove any caramelized bits from the bottom of the pan.

9 Lower heat to medium and add 2 tablespoons butter. Add the mushrooms and onions and sprinkle with salt and pepper.

10 Cook the mushroom mixture, stirring frequently, until tender, 10 to 12 minutes. Transfer to a plate.

11 Remove steaks from the oven and check their temperature: if they have reached 130°F remove them from the baking sheet and set aside to rest; if not, return them, along with the mushroom mixture, to the oven.



12 Melt the remaining two tablespoons butter in the skillet.

13 Add the bread and cook until toasted and golden brown on each side



14 Remove the steaks and mushroom mixture from the oven.

15 Place about 1/4 cup greens over each piece of bread, followed by 1/4 of the mushroom mixture.

16 Thinly slice the steaks lengthwise and arrange over the bread; pour any juices from the cutting board over the top.

RECIPE COURTESY OF THE SAN FRANCISCO CHRONICLE COOKBOOK