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Fall/Winter

your home. your world.

The Heat Is On!
Heating and hot
water systems
that are easy on
the wallet

Save
Money,
Save
the
Planet

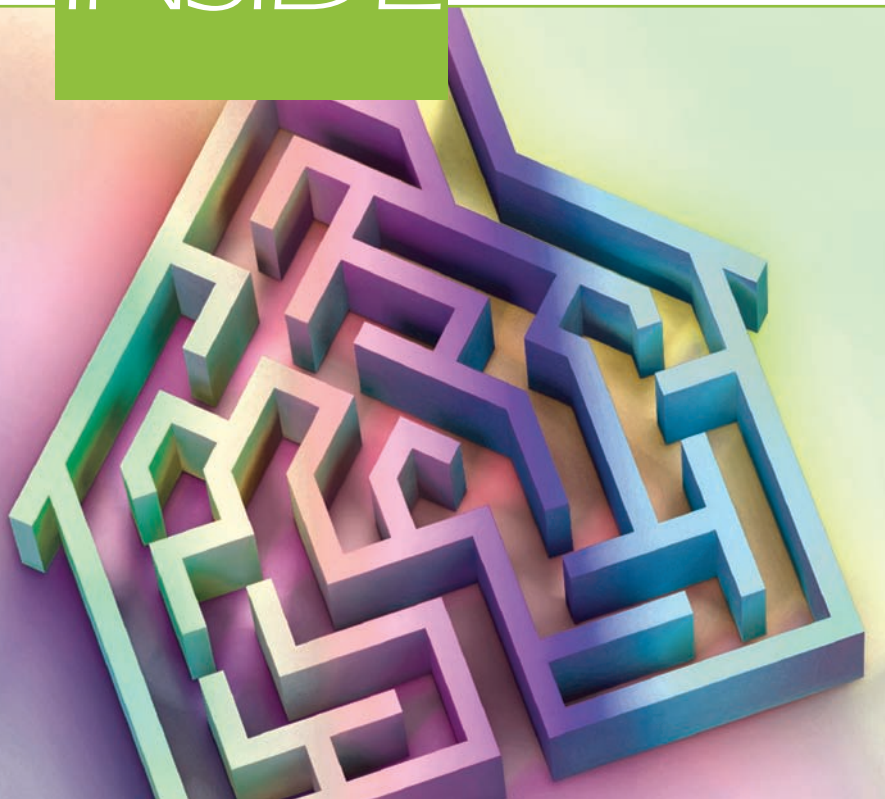
Slash your energy
bills — and help
the earth —
with these
easy tips for
improving
your home's
energy
efficiency

PLUS
The Surprising
Truth about
Fuel Sources

presented to you by



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Saving Energy — and Saving Money

Discover these easy ways to keep your fuel costs down.

Has your home had its 3,000-mile tune-up? “A house is just a big car without wheels,” says Tom Meyer, executive director of the Green Mechanical Council, a Wisconsin-based group that educates contractors in energy-efficiency issues. Consumers know that regular car maintenance or switching to a car with better gas mileage will save them money at the pump, Meyer says. By thinking about ways to save energy in their homes, they can also trim costs from their utility bills.

Buying a new furnace or water heater isn’t inexpensive. But home mechanical systems weren’t cheap even back when they wasted a lot of your heating dollars, and their energy-efficient replacements can carry a bigger price tag now. But look beyond the up-front cost and you’ll find savings that more than offset your initial investment.

If your current system runs on oil or electricity, upgrading to natural gas will provide you with a cleaner fuel and possibly lower operating cost. If you’re an existing natural gas customer, know that new equipment uses fuel far more effectively than old equipment, and operating and maintenance costs are lower. For many consumers, these secondary costs are enough to tip the balance in favor of energy-saving systems. “People like to say, ‘If it isn’t broke, don’t fix it,’” Meyer says. “But they’re converting to energy efficiency now because with oil at more than \$100 a barrel, things are broken.”

Performing the Tune-Up

Just as with cars, though, your first step should be making sure the current model works as it was built to work. While your HVAC service person is there, have him check for leaks in your ductwork that could be compromising your system.

An even less expensive fix: Buy a programmable thermostat and program it to heat and cool your home only when you’re there to need it. Today’s digital models allow programming not only by time of day, but also by day of week. And while you’re at it, set your thermostat for a degree or two lower (in the winter) and higher (in the summer) than you typically do. According to Energy Star, the government program that rates appliances and equipment for their energy savings, a programmable thermostat can save you up to \$150 a year in energy bills.

If new equipment is in order, there are some basics to know. Though you may be accustomed to Internet shopping for items in your home, it will be difficult to hit the Web for energy systems. There are simply too many installation variables, from the age and location of your home to the configuration of your current system.



Get multiple bids from plumbing or HVAC service providers who believe in the equipment they’re selling; your best price on a tankless water heater, say, is likely to come from an installer who thinks that is better than a storage tank heater.

If you’re buying a newly built home and are offered an energy system upgrade, pay the extra for it. You can probably make up the difference by seeking out a bank that offers a so-called green mortgage, calculated to reflect the fact that a more energy-efficient home will have lower utility bills. And if you’re building a home larger than the national average — about 2,300 square feet — energy efficiency is simply a must.

Money in Your Pocket

The savings from efficiency are real, starting with the fuel. The higher the efficiency of your appliances, the more money left in your pocket from fuel costs. Even if federal tax credits for energy-efficient equipment are in limbo, there are other ways to save. Many local governments still offer tax credits and manufacturers offer incentives.

“Check with your local energy utility for Energy Star promotions,” says Marc Hoffman, executive director of the Consortium for Energy Efficiency, a group that promotes energy-efficient products, technologies and services. “They might help you buy the most energy-efficient system, and certainly more energy efficient than you would have thought.” ■



Big Heat, Small Bills

Heating and hot water systems are marvels of efficiency.

If you haven't been shopping for home heating equipment in a few years, you're in for a pleasant surprise. Space and water heating systems are a lot smaller than they used to be — some are compact enough to fit in the overhead bin of a 747. They've got funky names, like "condensing," "heat pumps" and "tankless." You can call them from your cell phone and tell them to warm things up a bit. Your plumber can dial in and see if they need a repair. And they all have an EnergyGuide (in the U.S.) or EnerGuide (in Canada) sticker that carries the most surprising information of all: how efficient they are compared with the equipment that warms your home and heats your bath now.

Advanced Equipment

According to the U.S. Department of Energy, the heating and cooling of a home accounts for 56 percent of its cost. That means if you truly want to lower your costs of ownership, you've got to take a fresh look at how new technology can make your home warmer and cooler without burning a hole in your wallet.

With a standard-efficiency gas furnace — the kind found in most older homes — a typical homeowner wastes about 20 to 30 cents or more of every dollar spent on energy. Older natural gas boilers have an Annual Fuel Utilization Efficiency (the Energy Department's system of rating how well a device performs over the heating season) of anywhere from 50 to 75 percent, depending on factors such as age, compared with an AFUE of at least 87 percent on the newest models. For instance, according to the American Council for an Energy-Efficient Economy, gas furnaces installed prior to 1992 generally have

pilot lights, not fuel-saving electronic ignitions; the efficiency rating of these older systems is generally about 65 percent.

"You can significantly improve cost savings even for products that are not a decade old," says Randy Scott, vice president of product systems for Trane, a heating, ventilation and air-conditioning company.

Energy Star's 11-page list of recommended gas furnaces contains not a single system with an AFUE rating below 90 percent. Here's what that means for your pocketbook: If your present system has an AFUE of 65 percent and you switch to a system with 95 percent efficiency, you will save \$32 for every \$100 you would spend on fuel.

Other Options

Dozens of companies, both domestic and foreign, are bringing innovations to heating with natural gas at a dizzying pace. Gone are fuel wasters like always-burning pilot lights. They have been replaced by electronic ignitions that activate only when the furnace

As heating equipment models get smaller, they free up more room in a house for living. Photo courtesy of Trane.



“According to the EPA, Energy Star products — there are more than 50 kinds in the market now — helped Americans save more than \$16 billion on their utility bills in 2007.”

needs them.

Today, the most energy-efficient heating equipment is known as “condensing” and has an efficiency rating of at least 90 percent. This includes condensing boilers, furnaces and water heaters. Condensing heaters capture additional heat from combustion vapors, which are otherwise lost through the vent in a conventional system.

“When you burn natural gas, water is produced,” explains Kara Rodgers, the senior program manager for natural gas programs at the Consortium for Energy Efficiency, a research group. “In older equipment, it leaves as steam. Newer equipment captures it and puts it to work heating your home and water.”

Condensing equipment needs some extra TLC on installation, but it can substantially raise efficiency. So does power venting, which puts the equipment’s combustion gases back to work. A.O. Smith, one of the stalwarts in the water heating industry, offers two models of power-vent water heaters with thermal efficiency of 90 percent and 96 percent, respectively. Environmentalist and actor Ed Begley Jr. was so impressed with the energy efficiency of A.O. Smith’s Vertex that he had one installed in his own home.

While the Vertex looks much like a standard storage tank water heater, some heaters have shrunk to the size of an electrical panel. Known in the industry as tankless, or on-demand heaters, they heat water only when hot water is needed. There is no storage tank. Common for decades in Europe and Asia, tankless heaters are catching on now in North America, too. Last year, the Arizona division of Centex Homes, one of America’s largest builders, decided to make tankless water heaters standard in most of its homes in the Phoenix area.

Demand for Efficiency

Keith Strickland, the owner of Fayette Mechanical Services, says demand from energy-conscious homeowners prompted him to begin installing tankless water heaters three years ago, though he admits the switch wasn’t easy. “We’d been heating and air-conditioning contractors for 25 years and we always had a one-track mind,” he says. “I had to get away from conventional thinking.”

Now, Strickland installs only tankless water heaters and doesn’t even offer storage tanks as an option. He does about 100 hot water tank conversions a year, and credits some progressive thinking from his local natural gas utility, which occasionally offers rebates on tankless water heaters to homeowners. “That tells you how supportive


they are,” Strickland says.

The efficiency statistics on today’s equipment are rising so high that you might be tempted to think they’re a mistake. The natural gas absorption heat pump from Robur has an efficiency rating of up to 140 percent. How is that possible? The Italian company’s system grabs heat from the air or ground around a home and recycles it back into use, not only for heating, but also hot water. To lower the temperature inside a house on stifling summer days, it cools the house and sends the heat inside back into the ground.

An absorption heat pump can be an attractive option for today’s big homes. Brian Cullinane, a distributor for Robur, saw the advantages in an 11,000-sq.-ft. house. “In large homes, there is much more zoning because of the size of the home,” he says. “This kind of product can handle multiple zones off just one unit. And it’s so efficient in the heating mode that it can pay for the amount of energy consumed in the cooling mode.”

Cullinane says an electric utility in northern New England is doing a pilot program to install the gas heat pumps in electrically heated homes to reduce demand on its grid.

The bottom line: Talk to your plumber or service contractor, or take a look at the high-efficiency boilers, furnaces and water heaters offered by your utility company. If you buy a heating system, the savings you reap will be yours to keep. ■



If you have a system with an **AFUE** of **95** percent, as opposed to 65 percent, you save **\$32** for every **\$100** in fuel, according to the American Council for an Energy-Efficient Economy. Top-of-the-line gas furnaces have AFUE ratings of almost **97** percent.



Your **Energy-Efficient** Home



Learn how to save the planet — and save big on your energy bills.

If you're thinking of building an energy-efficient home or remodeling an old home to use energy more wisely, congratulations — you've just joined one of the fastest-growing movements in North America. The residential market for green building is expected to be worth up to \$20 billion in 2008, or about 10 percent of the total housing market, according to a new study by McGraw-Hill Construction. By 2012, the market is expected to double. And that's before you add in the spending — and the savings — from energy-smart makeovers of existing homes.

"It's official," says Ray Tonjes, chair of the green building subcommittee at the National Association of Home Builders. "Green has gone mainstream."

What Is a Green Home?

There are many different components of a home that's built to be in sync with the environment, from the walls and the windows to appliances, mechanicals, landscaping — even the very land on which it sits. But if you want to get a good idea of what a green home looks like, you might want to start with those created by GreenLife Homes. Chief executive Chris Hall makes sure all his homes meet the stringent criteria set by the Leadership in Energy and Environmental Design (LEED) program.

His homes start with energy-conscious design. "When that pencil first meets paper, we try to keep the footprint as simple as possible," Hall says. "Every time you add a bump-out, you add a complication and make the systems work harder. We look at every component in the home and how it relates to another. We try to make sure the home is going to demand as little of every resource as possible."

Which is why, even though the sticker price of Hall's homes may be slightly higher than a home that meets the conventional building code requirements, his homeowners end up paying exactly the same as a traditional home buyer every month. The energy and water savings that GreenLife builds into their homes more than pay for themselves each month.

Building in the savings is key. Dana Brewster, president of Brewster Builders, frames his homes with 2-by-6 lumber instead of conventional 2-by-4s. That allows him to pack in thicker R-21 insulation rather than the standard R-19. Under his rafters, there's a minimum of R-30 insulation, and Brewster will go all the way up to R-38. For furnaces, he starts with models with a 93 percent efficiency rating. "My GreenLife homes go above the code when it comes to energy efficiency," Brewster says.



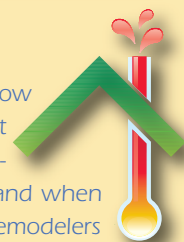
Temperature Control

Your music has gone digital, now how about your heating? One of the first steps to getting control of your heating costs is getting control of how and when you use heat. To many builders and remodelers now, that means installing a digital programmable thermostat.

A basic model will let you make the obvious distinction between a temperature for daytime hours and another for when everybody is in bed. But why stop there? Many digital programmable thermostats now — those that have gotten the government's Energy Star rating — allow you to create four distinct periods in the day; say, one for when everybody is waking up, another for daytime hours when your family might be out of the house, a third for early evening and a fourth for nighttime.

You could take it a step further and install a thermostat that lets you create separate settings for weekdays and weekends, or even a distinction between Saturday and Sunday.

Prices for programmable thermostats start at about \$100, but they will quickly pay for themselves.



Green Home Owners Very Satisfied with New Homes

Satisfaction with new green home versus previous non-green home

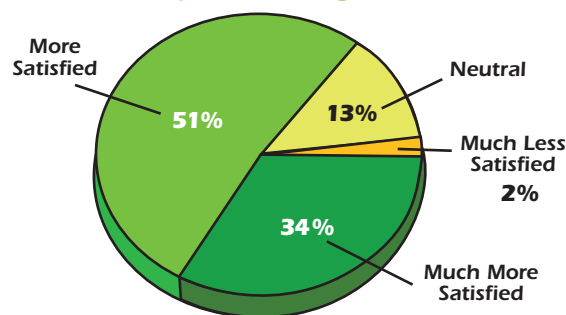
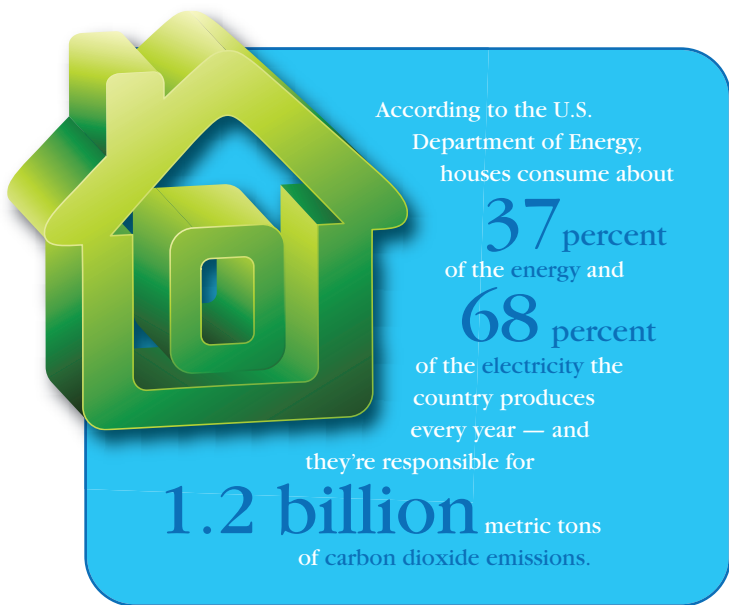


Chart courtesy of McGraw-Hill Construction.



“Have the contractor measure your entire home and take into account the energy-saving improvements from more insulation and better windows and doors, then buy the right heating or cooling equipment for those measurements.”



Everyone Appreciates Efficiency

Just as green building means different things to those in the profession, it also means different things for buyers. “Everybody relates energy-efficient to green — this is a given,” says Stephanie Edwards-Musa, a real estate broker with Prudential Gary Greene Realtors.

Edwards-Musa, who is a certified EcoBroker (real estate professionals who complete an education and designation program to learn ways to promote energy-efficient and green features in homes and buildings), says that the people who come to her Web site — as many as 3,000 each month — are more interested in the materials used to build the home, a healthier indoor air quality and efficient water use. They want landscape features like rain gardens, which allow runoff from rain (or, in colder climates, snowmelt) to filter through vegetation, recharging the groundwater supply. “They’re not looking to meet Energy Star,” she says. “They are looking to exceed it.”

Designing a home to the excess, however, is one of the reasons why a home may not be making good use of its energy. Richard

A MODEL OF EFFICIENCY

Jeffrey Lang didn't start out to build the epitome of an energy-efficient home, but that's precisely how things turned out.

Lang — the director of research and development for Dad's Pet Care, a family-owned pet food business — wanted a home that would provide relief for his wife, who suffers from severe mold allergies. His research into construction methods led him to insulated concrete forms, a building-block-like technology that doesn't let outside allergens or moisture in, and doesn't provide an environment for mildew to form.

But the foot-thick forms also provide what green builders say is the essential first step for energy-efficient construction: a well-insulated and sealed building envelope. Tests run by the home's builder, Schlosser Construction, have shown that it leaks slightly more than 1,600 cubic feet of air each minute, compared with 7,000 cubic feet of air per minute for a conventionally built home. Lang's Energy Star-certified home also has radiant heat under its floors, cement siding and a top-of-the-line gas-fired boiler that is 97 percent efficient.

As a result, Lang now spends far less on natural gas to heat his home than people in similarly sized

homes. And this is no hut in the woods: Lang's three-story, 17-room, Victorian-inspired abode measures 4,645 square feet, and he's also heating its 1,100-sq.-ft. three-car garage. Oh, and his family cooks with gas, too.

“I'm tickled,” Lang says of his relatively small natural gas bills. “It's less than I was spending to heat the 1,400-sq.-ft. home I used to live in.”



Jeffrey Lang uses natural gas to heat his Energy Star-certified 4,645-sq.-ft. home and 1,100-sq.-ft. garage for less than most pay in similar homes.



Fertel, the owner of Bornstein Sons Inc., a plumbing, heating, air-conditioning and electrical service contractor, says he sees many older homes with mechanical systems that are bigger than needed. "As people moved from apartments to houses, they wanted to be warm fast," he says. "If they had something that would blast heat, they thought it was great."

Fertel's message to remodelers: Have the contractor measure your entire home and take into account the energy-saving improvements from more insulation and better windows and doors, then buy the right heating or cooling equipment for those measurements.

Don't be surprised by the small size of the equipment your contractor suggests — today's mechanicals are packing a lot more power into smaller frames. In Brewster's homes, he favors tankless water heaters, a device about the size of a carry-on suitcase that heats only the water immediately needed, rather than storing a day's worth of water in a tank. GreenLife's Hall says the smaller mechanicals offer an extra benefit in homes that have been built on slab instead of basements, since these homes have less space for heating and cooling equipment to begin with.

And it might not seem obvious, but you've got to make sure your contractor knows how to install the equipment he is proposing. "A lot of this green equipment is new, and wholesalers will sell to anybody who pays," Fertel says. Good contractors, he adds, are constantly educating themselves in the new systems.

What if your builder or service contractor doesn't provide energy-saving options? Find another. "Some contractors don't make high-efficiency equipment available because they think customers will resist its price," Fertel says. "But a good contractor should never presuppose what a person is willing to spend. People should have the option of saving energy over time." ■

GET WITH THE PROGRAM

Mandatory building codes and voluntary green building guidelines are beating the energy savings drum. Here's a partial list of environmentally friendly construction and remodeling programs:

- **Energy Star**, the government program that began with appliances, now has guidelines for whole-house energy consumption.

- **The National Association of Home Builders** sponsors Green Home Building Guidelines that local builders can utilize. In addition, your local home builders association may have green building guidelines specific for your area.

- **The American Gas Association** is drafting green building guidelines as part of its Residential Green Building program. These guidelines highlight the energy savings and emission reductions a homeowner can realize when installing natural gas appliances. Contact your local gas utility for more details.

- The most advanced rules belong to the **U.S. Green Building Council's LEED**. It rates homes as Certified, Silver, Gold or Platinum.

- **The Canada Green Building Council (CaGBC)**, a coalition of companies from the design and building industry, aims to promote green building in Canada. Further, LEED Canada for New Construction and Major Renovations version 1.0 is adapted from U.S. guidelines for Canadian climates, practices and regulations, and the R-2000 housing standard, designed to reduce gas emissions, provides technical requirements that exceed building codes.







Navigating the ENERGY MAZE

Setting out on a journey to improve your home's efficiency — and feeling lost already? This handy guide to the essential concepts and terms will help keep you on track.

If past forays into energy efficiency have left you feeling a bit disoriented, you're probably not alone. After all, heating and cooling equipment looks as if it were created for a trip to Mars, not your utility room — and everything seems to have a sticker on it touting a different measure of how little energy it uses. Some travelers never get much of a guidebook for their adventures, but consider this article your resource for finding your way.

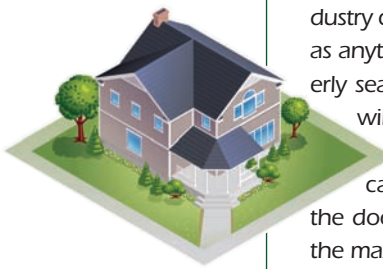
Here, *Natural Living* lists many of the terms and definitions you'll find while researching and shopping for energy-efficient equipment and home-building products.



Annual Fuel Utilization Efficiency (AFUE). A measurement used to calculate how efficiently a furnace converts fuel to energy. You don't need to know the math behind it, but you do need to know that any equipment your service contractor proposes now should have an AFUE that's at least in the mid-80s.



Double glazing. If your windows are not double glazed, you want to put this on your to-do list. Double glazing, sometimes referred to as double- or dual-paned, refers to two panes of glass with airspace between them that's usually filled with an inert gas that can help reduce the amount of solar heat gain. It may sound like a waste of materials at first, but double glazing keeps the warm air in, the cold air out and more money in your wallet.



Building envelope. This is what the construction industry calls the outside of your house, and it's as important as anything you put inside it. If your envelope isn't properly sealed, all your investments in warmth and cooling will be for naught. If you've got an older home, you'll want to boost the insulation, check the window caulking and repair the weather stripping around the doors. If you're looking at new construction, go for the maximum insulation your builder offers, and double- or triple-pane windows.

Carbon dioxide. It's what's created when you exhale, but in its new bad-guy role, it's one of the components of the greenhouse gases that are making the earth warmer. A builder or remodeler may tout his home's "carbon footprint," which is an attempt to measure overall impact on the environment. The bottom line is this: Even if your house is big, your carbon footprint can be small.



Energy Star. Energy Star is a governmental program that identifies products that use less energy and water, and therefore create fewer greenhouse gas emissions. Any energy-consuming appliance you buy for your home should have an Energy Star rating. Plus, some new homes have their own Energy Star rating for the whole home. But don't stop there. Groups like the Consortium for Energy Efficiency (CEE) are pushing companies that make appliances, lighting, electronics, heating and cooling equipment to reach for more than the stars. CEE is also pushing for standards on installation. Go to the Energy Star Web site at www.energystar.gov for more information.



Condensing. The most energy-efficient heating equipment is often known as "condensing" and has an efficiency rating of at least 90 percent. This includes condensing boilers, furnaces and water heaters. Condensing heaters capture additional heat from combustion vapors that are otherwise lost through the vent in a conventional system.



Geothermal. Geothermal systems use a pump to move the heat of the earth into your home, or from your home back into the ground. It's sometimes used in combination with conventional energy sources.



Hydronic heating. In old homes, hydronic heating meant radiating warmth around the periphery of the room through — what else? — radiators. Today, hydronic heating is likely to be accomplished by pumping hot water through coils under the entire floor. That heat warms your toes and, as it rises, your whole body. Where are the savings? Under-floor systems can operate at a lower temperature than a conventional system and still produce the same heating effect because they have a larger surface.

Infiltration. This term may sound like something out of a James Bond movie, but it's not. Infiltration happens when outside air leaks into your home through gaps in the building's construction, or envelope. A healthy home does allow air to be exchanged with the outside, but too much air out or in means extra spending on energy for you.



LEED. Short for Leadership in Energy and Environmental Design, this system was created to rate primarily commercial buildings, but it also rates residential construction — both new and remodeled. Buildings that are LEED-rated have been inspected during construction by an independent auditor, who evaluates not only energy and water usage, but also things like the site chosen and building materials used. Your home can be LEED-rated at one of four levels: Certified, Silver, Gold and Platinum. For more information, check out the U.S. Green Building Council's site (www.usgbc.org) and the Canada Green Building Council's site (www.cagbc.org).

Load or demand. These terms refers to how much power or energy you and all the gadgets and machinery in your home consume. Your goal should be to lighten your load by increasing the energy efficiency of new equipment and maintaining old systems in top working order.



Meter. This device measures how much gas or electricity is being consumed by your home. To measure how efficiently that energy is being used, get an energy audit from your local utility or an independent contractor, such as those who participate in the Residential Energy Services Network (www.natresnet.org).

Utilities Answer Nature's Call

The use of natural gas by homeowners and businesses accounts for less than 6 percent of all greenhouse gas emissions in the United States. That alone could be bragging rights for natural gas utilities — but they're doing much more for the environment.

Southern California Gas is the largest natural gas distribution utility in the United States, providing energy to more than 20 million consumers. It is a supporter of the Coalition for Clean Air, a statewide advocacy group, and it is also backing efforts to expand and restore the Ballona Wetlands in Los Angeles County.

In Canada, Enbridge Gas Distribution DSM programs have saved a cumulative 2.9 billion cubic meters of natural gas, which translates into an avoidance of 5.5 million tons of CO₂ making its way into the atmosphere.

National Grid has been recycling scrap copper, aluminum wire, aluminum and lead cables, iron, steel, wood waste and more. But the utility, which provides natural gas to consumers and businesses from New York to New Hampshire, also helps preserve a 306-acre wildlife sanctuary at Salisbury Salt Marsh in Salisbury, Mass.





OEM

Original equipment manufacturer (OEM).

As used in the auto industry, OEM is a term that means the equipment originally designed to be part of your car. But new-home buyers are beginning to see a similar concept as builders offer HVAC systems that will heat and cool their homes as they designed them to be. A smaller, more efficient HVAC system may be the best investment for an older home, since the builder may have originally installed the largest — but not necessarily the most efficient — system in the home. In the past, contractors frequently put in the most powerful system they could fit through the door, even if it was too much for the house. Remodelers also need to think about how their mechanicals will function as a whole, and buy accordingly.

Renewable energy. Builders are increasingly incorporating renewable energy (that which is generated from natural resources like sunlight and wind) into their projects, either as complements to or complete replacements for fossil fuel-based systems. The up-front costs of many renewable energy systems are more expensive than even highly efficient conventional systems.



Seasonal Energy Efficiency Ratio (SEER).

When buying a central air-conditioning unit, focus on SEER, not BTUs. The latter is just an indication of the amount of cooling the unit can produce, and more may not be what your home (or energy budget) needs. Instead, think about what you can save in power costs. Consumers focusing on SEER in the past decade saved some \$50 billion on their energy bills. Buy equipment with the highest SEER that your budget will allow.



R-Value. This is scientific speak for how efficient your insulation is at keeping heat in (or out) of your home. Whether you're in Wisconsin or Winnipeg, it pays to have the highest R-value that your builder offers. If you're buying an older home, ask what code is for new homes in your area, and make up the difference between what your home has and the current standard. You'll reap the savings in your monthly energy bill.



U-Value. This is the rating system used on windows to show how much heat they let in or out of your home. And while you want your R-Value to be high, your U-Value should be low — unless you like the feeling of winter in your living room.



Thinking Green — Without Feeling Black and Blue

Of all the confusing terms that homeowners and home buyers will hear when considering energy efficiency, none is more buffeting than this one simple word: green.

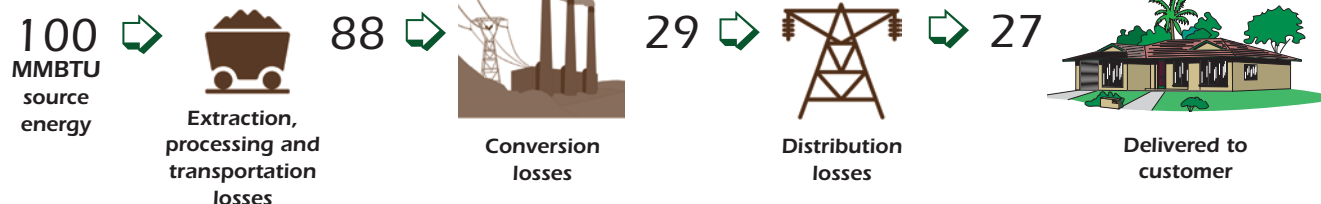
One builder may assert that his project is “green” if he cuts down only a handful of trees in readying the lot for construction. But another wouldn’t dream of using it unless every aspect of the project, from the site chosen to the building materials used, was in concordance with nature.

If someone touts a home or energy equipment as “green,” ask for specifics, like the R-value of its insulation, the AFUE rating of the mechanicals, or independent certification from the Residential Energy Services Network (www.natresnet.org) or LEED (www.usgbc.org/leed). That should keep the bruising to a minimum.

Site vs. Source Emissions

The truth about efficiency — and what the labels don't tell you.

ELECTRICITY



NATURAL GAS



Thanks to lower conversion losses, three times more energy reaches the customer with natural gas than with electricity.

To most of us, electricity is what happens when we hit the light switch. But we don't get electricity just by pumping it out of the ground — it has to be produced by using something else as a fuel source. That could be coal, oil, nuclear power or natural gas. And while that process can generate a lot of power, it also generates a lot of waste — and it wastes a lot of energy.

How much is wasted? According to the Energy Information Administration (EIA), of all the energy put into the production of electricity in America, only 30 percent makes it to the end user. The rest is what the industry calls “conversion losses” — a simple reckoning that you can't just put 100 pounds of coal into the hopper at your local utility and get 100 pounds of electricity out. That remaining 70 percent is essentially lost, due in part to the transmission method, making it a major factor in the greenhouse gas emissions that are affecting the earth's climate.

With natural gas, there are also some energy losses, but nothing on the scale of what happens when producing electricity. Ac-

cording to the EIA and other energy sources, the overall efficiency of natural gas from when it is pumped out of the ground and piped to your home to fuel your appliances is a stunning 90 percent.

Further, natural gas is the cleanest-burning fossil fuel. Coal and oil release a higher level of carbon emissions, nitrogen oxides and sulfur dioxide. On average, a homeowner using natural gas instead of electricity for heating, water heating, cooking and clothes drying has a carbon footprint of about 8,500 pounds of CO₂ per year vs. 16,000 pounds per year or higher for all electric appliances. So does that mean that if you're a natural gas customer, you can be satisfied that you've done your bit for the environment? Hardly. You still need to be conscious of the age of an appliance, as newer ones are more efficient — and the operational savings can help offset the investment. The easiest way to compare two appliances is to check out the EnergyGuide/EnerGuide label, which gives information on estimated energy consumption and estimated yearly operating costs. ■





10 Keys to a Green Home

- 1. Dress the part.** Pull on a sweater and turn the thermostat down a notch in winter, and wear lighter apparel and turn up the thermostat in the summer.
- 2. Tune up.** Have a licensed professional inspect your heating and cooling systems seasonally.
- 3. Button down.** Break out the caulk and weather stripping to make your windows and doors close snugly. Wrap your water heater and water pipes in insulation.
- 4. See the stars.** When you purchase new mechanical systems, appliances or even a home, buy the highest Energy Star efficiency rating you can.
- 5. Get stuffed.** Extra insulation will make your house warmer in winter and cooler in summer.
- 6. Get light.** As your incandescent bulbs burn out, replace them with compact fluorescent lights.
- 7. Plant green.** Add deciduous trees on the southwest side of your house. They'll block the strong summer sun, but after they drop their leaves, winter's rays will warm your house.
- 8. Stay clean.** Keep your heating and air-conditioning filters free of dust, which can rob your systems of their peak efficiency.
- 9. Get with the program.** Buy a programmable thermostat that regulates temperatures based on when you're home and awake.
- 10. Save the planet.** Every step you take for energy efficiency is a leap for the overall health of the earth.