

Save Your Energy

Money

Roll back the high cost of heat and electricity this winter by making your home more energy-efficient

by Sarah Max

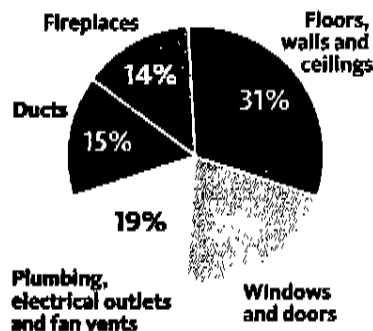
THE EFFICIENT HOME

You've heard the numbers—natural gas up 40%, oil up 30%. Now you're seeing the bills, and the shock of higher energy prices is setting in. All in all, the average American family will spend about \$2,200 on heating, cooling and electricity this year, according to the American Council for an Energy Efficient Economy. The solution: Don't be average. Pick up a caulking gun, program your thermostat, roll out insulation and get much of the price hike back by heating and cooling more efficiently. Junk old appliances and shrink your electric bill by 30%. Simply screwing in a new bulb can save you 75% on lighting costs. Your home is full of ways to fight back, if you know where to look.

WHERE TO START

How Heat Leaks

You may be surprised to learn how heat escapes from your house in the winter (and hot outside air seeps in when the weather is warm). Fan vents, pipes and electrical outlets are nearly as much to blame as doors and windows are.



SOURCE: U.S. Department of Energy.

And How to Keep It In

To learn how to make your house more energy-efficient, you can do online research or hire a professional.

THE BEST OF THE WEB At these sites, you can figure out whether your house is airtight or an energy pit—without ever leaving your drafty home.

- **Energy Star's Home Energy Analysis** (energystar.gov). See how your heat and electric bills stack up against those of similar homes in your area, ranked on a scale of zero to 10.
- **Lawrence Berkeley National Laboratory's Home Energy Saver** (homeenergysaver.lbl.gov). For a detailed critique of your house's energy efficiency, fill out the worksheet here. A new feature on the site will rank the upgrades you should do based on what you'll save.

THE DRAFT DETECTIVES For the most accurate assessment of your home's weak spots, you'll need a professional home energy audit.

How it works Auditors use infrared cameras and what's called a blower door test to pinpoint drafts or inadequate insulation, then suggest the most cost-effective improvements.

How much \$300 to \$400

How to find one Contact your local utility company or state energy office for names of energy raters near you. You can also search the Residential Energy Services Network's database of accredited home energy raters at natresnet.org.

light incense and place it around the house. If the smoke drifts horizontally, you have a draft.

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HOME IMPROVEMENT:

Blanket Your Home

INVEST
\$850
in insulation

SAVE
\$125
a year

Insulation is your single most effective tool for keeping heating and cooling costs at bay, and chances are you need more. "More than half of all homes are not adequately insulated," says Rich Brown, a scientist with the Lawrence Berkeley National Laboratory. "Insulating a poorly insulated house is a project that will pay off pretty quickly." Even with higher oil and gas prices, it can take more than a decade to recoup the cost of a major project like new windows or a furnace. Adding insulation could pay off in about seven years (vs. 10 years before energy prices shot up), less if you qualify for a federal tax credit. The most effective place to insulate is the attic: In the winter, insulation on the attic ceiling (or floor, if it's a crawl space) keeps heat from rising up and out; in the summer, it keeps hot air from drifting down.

Installing insulation requires few tools or special skills. For advice on how to do it, go to the Department of Energy's site at eere.energy.gov/consumer.

How to Buy

- Insulation is graded according to R-value, or resistance to heat flow. The more extreme your climate, the higher R-value you need. In Anchorage that's R-49, in Orlando, R-38.
- Go to simplyinsulate.com and plug in your state to see what's best for your climate. You may be able to take a tax credit for 10% of the cost, up to \$500. For more info, go to energytaxincentives.org.

CHANGE YOUR WAYS

Fast Fixes

You can cut your heat and AC bills with projects that cost less than \$150—or nothing.

Buy a \$50 programmable thermostat, and you'll never have to remember to dial down the heat or AC. Reduce the heat by 4° when you sleep, and you'll save 4%.

Turn down your hot-water heater. Every 10° reduction saves 3% to 5% on your hot-water costs.

Replace or clean your air filter monthly. "When dirt blocks the filter, your system has to work that much harder," says Kateri Callahan, president of the Alliance to Save Energy. Filters are \$10 to \$25 for 12.

Don't ignore maintenance. Having your heating and cooling systems serviced every one to two years can cut your bills by 3% to 10% (cost: \$60 to \$150 a visit).

Insulate your water heater. This \$20 investment can shave 5% to 10% off your hot-water bill.

Install low-flow showerheads. Buy one for \$50 to \$75 and save \$30 or more a year.

Wash clothes in cold. For most loads, cold or warm water is all you need. Hot washes add \$60 a year.

Shut your fireplace flue after every fire.

Turn off the exhaust. Kitchen and bathroom exhaust fans suck heat out.

NOTES: All project cost and savings figures are based on the national average for a 2,000-square-foot house. If a Web address doesn't work, add www.sourcex.com. SOURCE: Alliance to Save Energy, American Council for an Energy Efficient Economy, Department of Energy, MONEY research.

Money

THE EFFICIENT HOME

HOME IMPROVEMENT:

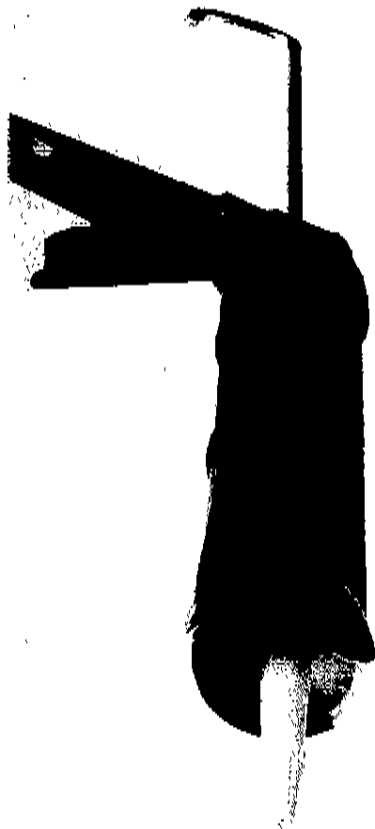
More Panes, More Gain

INVEST \$500
extra to get energy-efficient windows

SAVE \$150
a year

If your windows are in good shape, don't spend \$10,000 to put in new ones just for the sake of the energy savings, says the Lawrence Berkeley Lab's Brown. "It will take decades to recoup the costs." But if you are replacing

windows anyway—you're renovating or you've bought a 100-year-old home—spend 5% to 10% more to buy energy-efficient models. (Installation costs are no higher.) All have a minimum of two panes of glass, but that's just the start (see below). If your old windows are single-pane, you'll cut your heating and cooling bills by as much as 30%, says Kipp Rhoads, program manager of the Efficient Windows Collaborative.



HOME IMPROVEMENT: SEAL LEAKS

End the Drafts

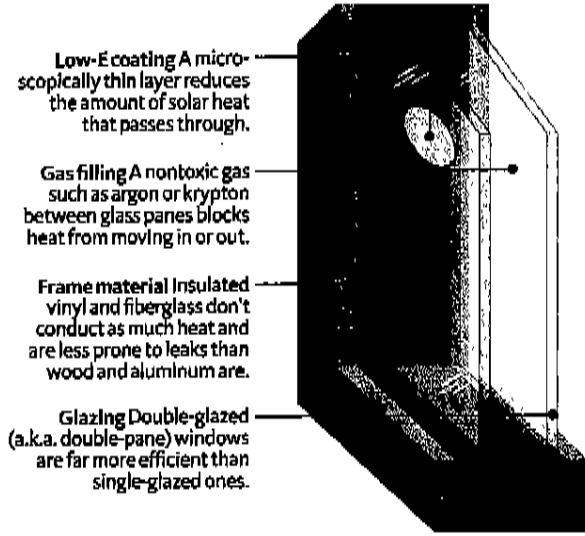
INVEST \$100
in supplies

SAVE \$225

Left unchecked, the tiny cracks and invisible gaps around doors, windows and baseboards are a big source of waste. Seal them and save up to 10% on bills.

Weatherstripping is your best bet for windows and doors. Use caulk to fill gaps that are less than a quarter of an inch wide and expanding foam sealant for larger holes. If electric sockets on outside walls are the source of drafts, install rubber gaskets or switch sealers behind the outlet cover.

Airtight ducts It's not uncommon for 15% to 20% of the air that passes through heating and cooling ducts to escape. Why pay to heat and cool your attic or crawl space? Seal every seam with duct mastic (and wrap the duct in insulation if it's in a space you don't heat or cool, like the basement). Forget about old-fashioned duct tape, says Jennifer Thorne Amann, a researcher with the American Council for an Energy Efficient Economy. "It just degrades over time."



Low-E coating A microscopically thin layer reduces the amount of solar heat that passes through.

Gas filling A nontoxic gas such as argon or krypton between glass panes blocks heat from moving in or out.

Frame material Insulated vinyl and fiberglass don't conduct as much heat and are less prone to leaks than wood and aluminum are.

Glazing Double-glazed (a.k.a. double-pane) windows are far more efficient than single-glazed ones.

How to Buy
When you shop, look for these three factors. For all, a lower number is better. You can find out what's right for your climate at efficientwindows.org.

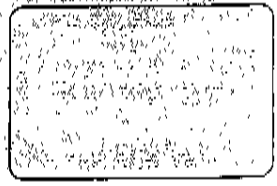
- **Air leakage**
- **Solar heat gain coefficient**
Amount of solar energy that passes through the glass
- **U-factor** How much heat moves through the window

Close your drapes or shades on sunny days when it's hot. In the winter, sun is good, but when it's dark, closed curtains help block drafts.

New Tax Relief

...if you're able to claim a non-refundable credit of up to \$500 if you make energy-efficient improvements. The credit is available for energy-efficient improvements made between 2005 and 2009. For more information, visit www.irs.gov.

Resource For more on federal and state programs, go to the Alliance to Save Energy website at ase.org.



Getty Images; Getty Images (color panels); Bill Frymire/Masterfile (lightbulb)

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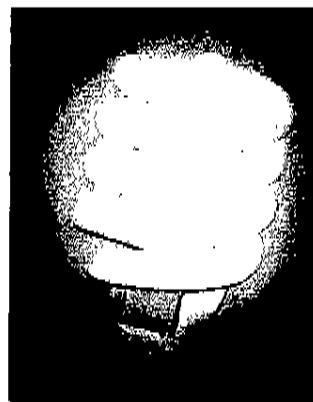
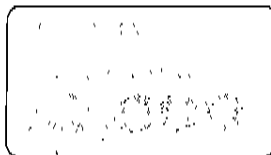


Once you've made your house more energy-efficient, consider the next step: making your own energy. Solar technology has become more efficient and affordable, and state and federal tax breaks can offset part of the cost. The most common types are:

• **Solar hot-water heaters** A 30-square-foot roof panel and water tank set costs \$2,500 to \$4,500, and can produce most of your hot water, says Brad Collins, executive director of the American Solar Energy Society.

• **Photovoltaic systems** With these big \$20,000 to \$40,000 setups, you can power your entire home. In most states, you can connect with the local utility grid and use "net metering" to sell electricity to the power company, and later use what you've banked if your solar electricity falls short.

Resource At findsolar.com, you can get an estimate of how big a solar system you need (and the cost), plus information on state tax and energy-purchase programs.



INVEST
\$40
In five compact fluorescent bulbs

SAVE
\$60

BETTER TECHNOLOGY: PHOTOGRAPHS

Bright Idea

About 20% of your electric bill goes to lighting, according to the EPA. These two products can make a big difference.

New bulbs At the mention of fluorescent lighting, you likely think of a harsh and unflattering glare. The light from today's compact fluorescent lightbulbs (see above) is almost indistinguishable from traditional incandescent bulbs. They cost 10 times more but last 10 times longer and use a quarter of the energy. "One of the biggest stories in energy efficiency is the advancement of CFLs" says energy researcher Amann.

Occupancy sensors These devices, which start at \$40, use heat, motion or sound to determine that a room is empty and the lights can go off. Install them in laundry rooms, bathrooms, closets, children's bedrooms and other places where the lights might otherwise be switched on and forgotten. California has begun to require them (or high-efficacy lights) in bathrooms, laundry rooms, utility rooms and garages in new construction.

BETTER TECHNOLOGY: PHOTOGRAPHS

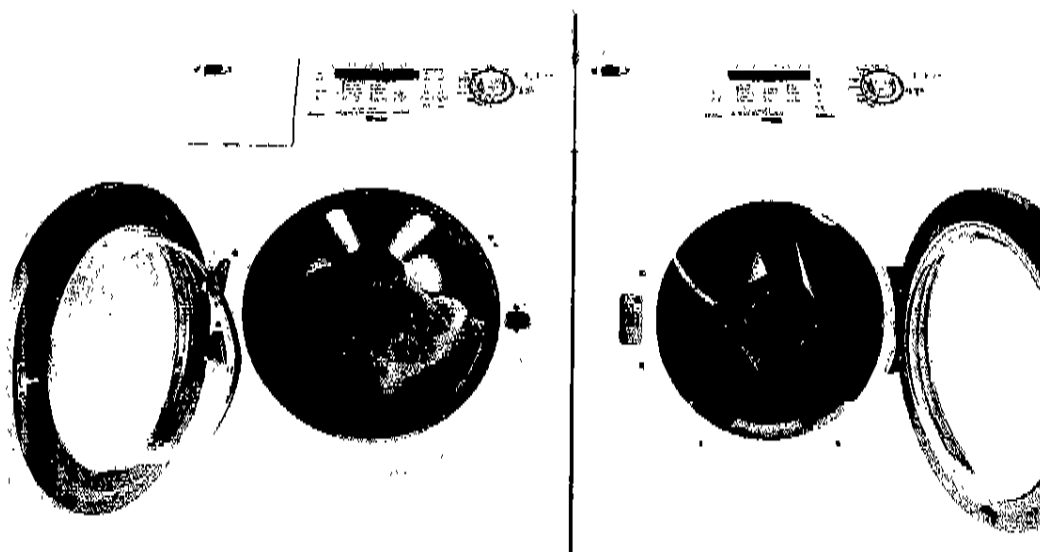
Efficient Machines

INVEST
\$50
more for an Energy Star washer

SAVE
\$60
in water and water

Every appliance has two price tags: What you pay to take it home and the cost of operating it. To save money over the long run, buy a machine with the Energy Star label, the Environmental Protection Agency's seal for top energy efficiency.

Energy Star-rated washers, for one, use half the energy of standard washers. Refrigerators use 15% less. At a minimum, read the yellow Energy Guide label, which tells you an appliance's estimated annual operating cost and how it compares with that of its peers.



Did You Know? Even when they're not in use, cell-phone chargers, power strips, DVD players or any gadgets you never unplug—so-called **energy vampires**—suck up close to 5% of U.S. electrical power, according to Lawrence Berkeley National Lab. A home entertainment system with television, DVD player and cable box or TiVo consumes nearly as much energy as a refrigerator does. Next time you leave home for days or weeks, think about unplugging these energy suckers.

Put your office to sleep. Power down your computer and other office electronics at night and save as much as \$70 a year. \$

CFL images: Corbis Images; (solar panels); Bill Frymire/Masterfile (lightbulbs)