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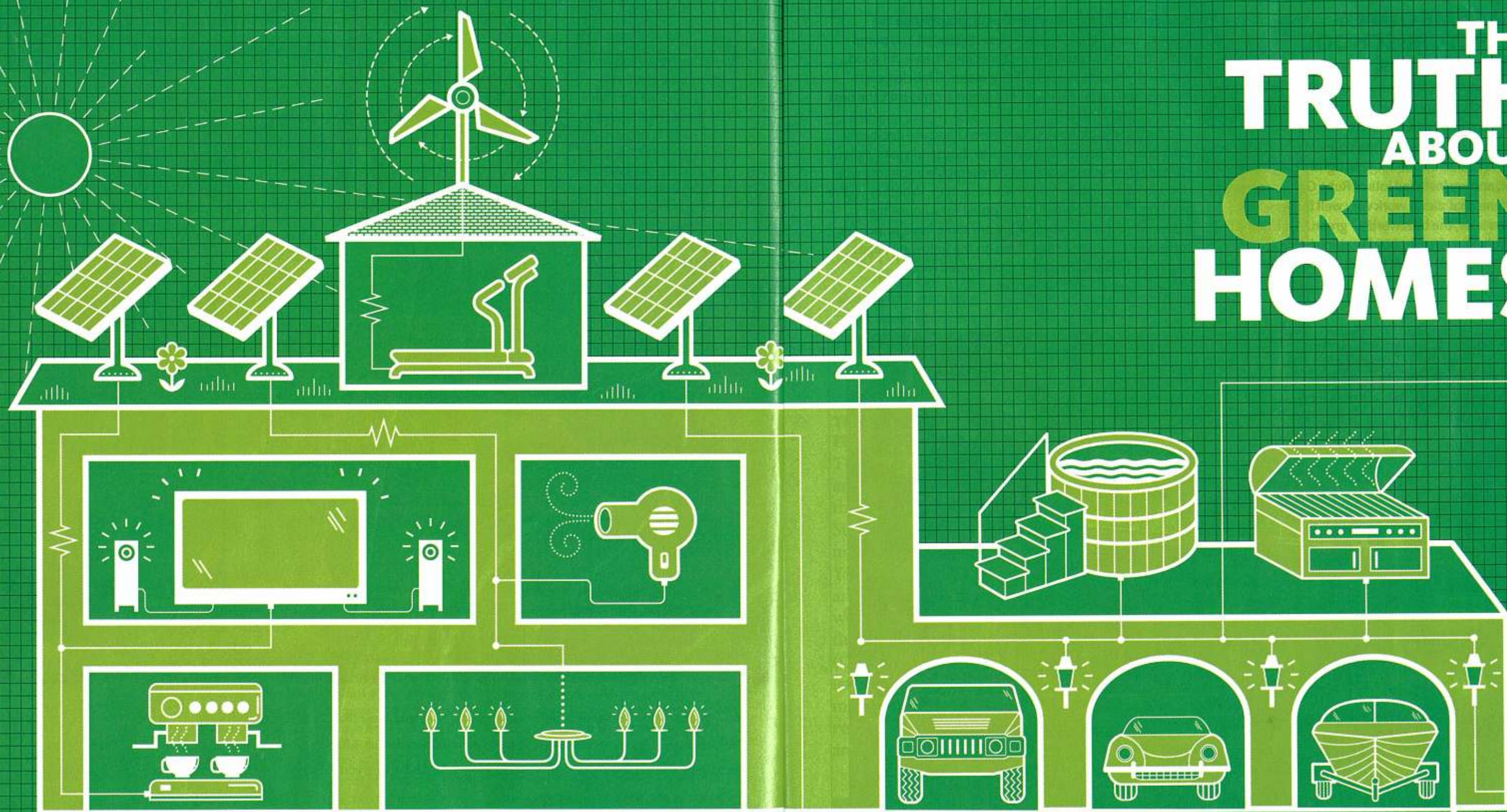


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THE TRUTH ABOUT GREEN HOMES



What good are solar panels and recycled woods tacked on to a McMansion? Fact is, the sustainable homes of the future look a lot like those of the past.

BY DUO DICKINSON | Illustrations by Headcase Design

WHEN I CAME OUT OF ARCHITECTURE SCHOOL IN THE LATE 1970s, “energy-efficient” was

the hip selling point. Heating oil and electricity prices were shooting sky-high, Jimmy Carter was donning those ugly sweaters, and architects and builders were enthralled by the dazzling promise of new technologies. We didn't always get it right. We sealed up buildings so tightly that some turned toxic, and we installed lots of Rube Goldberg-esque heating systems that didn't work very well for very long.

Thirty years later, the buzzword is “green.” Like homeowners in the '70s, you care about keeping heating and cooling costs down. But the bar has been raised since then.

You also want to shrink your overall footprint on the environment, chopping down less rain forest and pumping fewer tons of greenhouse gases into the air. All good. But simply buying every building material labeled earth-friendly and installing high-tech green gizmos isn't the best way to accomplish this.

In fact, some of the smartest green ideas are decidedly low-tech. Human beings have a few thousand years' experience building houses, and our hardscrabble ancestors worried a lot about conserving finite resources. Whether you're building, remodeling or just shopping for a house that's easier on your conscience, there are some basic principles to keep in mind. You'll find them on the following pages. And none of them involves a sod-covered roof.

IT'S ALL ABOUT EAVES

A roof should overhang walls by at least one foot. That keeps the sun off windows and exteriors, which helps the house stay cool in summer. It also protects siding from the weather, meaning you may be able to go twice as long between repaintings or re-sidings.



YES, SIZE MATTERS

The average new American home occupies about 2,500 square feet, up from 1,700 in 1977. And it's not just the floor plans that expanded: Builders fell in love with double-height ceilings and cavernous, echoing “great rooms.” Fight the urge to go big and high. Not only is a smaller, well-proportioned house easier to heat and to cool, but you'll need to buy less furniture to feel at home in it. And isn't consuming less the whole point? Some specifics to remember:

■ **A kitchen should match how you really cook.** Unless you regularly prepare five-course meals with the help of a sous-chef, you'll likely find it most convenient to work in a kitchen that's no more than 20 feet long, with countertops no more than four feet apart.

■ **Bedrooms are for beds.** The best bedrooms are designed around the spot where you'll sleep, not around the sitting area that you probably won't use as often as you think. Chairs in bedrooms have a way of just collecting the laundry you've been meaning to put away.

■ **More rooms can be better than one giant space.** Instead of a high-ceilinged great room that combines a kitchen, dining room and living room, use the same square footage for a combination of rooms with standard ceilings. Divide them with french doors that you can open out when you want family togetherness. If you're building or renovating, the construction costs can be \$100 per square foot lower than those for a double-height space. By getting rid of all that air overhead, you'll save on energy too.

THINK BEFORE YOU BUILD: IT'S GREEN TO REUSE AND REMODEL

The house you fix up will probably be much greener than anything you build in its place, no matter how cutting edge the new design or how much recycled material you use. Sure, some old houses just can't be saved. But even a building with serious problems can give you plenty to work with. You might, for example, be able to salvage the first floor and build around it. With a total teardown, all the stuff that went into building the old house, including the fossil fuels the original construction crew had to burn, goes to waste. (Construction material is one of the largest contributors to landfills.) And, of course, you'll consume a lot of energy and materials putting up a new structure. **If you choose to remodel, consider expanding up rather than out.** That's an easy way to control your home's carbon footprint.



▲ Inconspicuously Green

A VERY TRADITIONAL HOME CAN BECOME ENERGY- AND RESOURCE-EFFICIENT. When this house in Washington, D.C. was built in the 1950s, most of its windows got direct sun. But then it was remodeled to better suit D.C.'s steamy summers. The new covered porch shelters east-facing windows from morning rays. When the sun moves west, the porch provides a shady, AC-free retreat. The porch columns are not chemically treated to repel rot or harvested from some far-off rain forest. Instead, they're made from the naturally rot-resistant trunks of Eastern Red Cedar trees grown nearby.

+ The Latest on Renewable Energy

■ **THE WIND** Let's just say you probably won't be installing a wind turbine in your backyard anytime soon. Even if the homeowners association didn't come after you with torches and pitchforks, the truth is

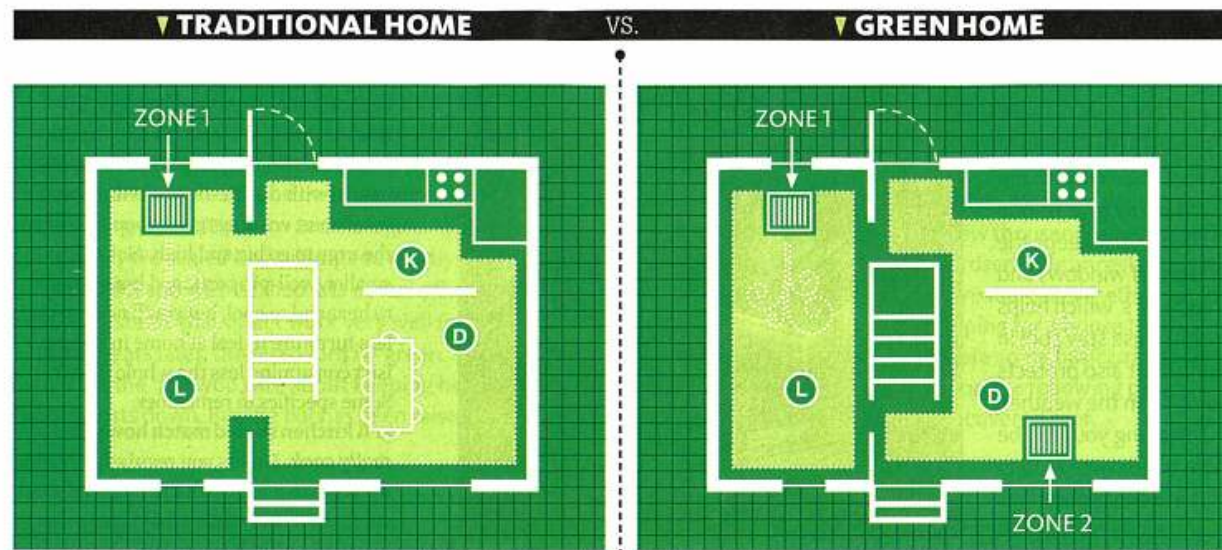
most places aren't breezy enough. But in many areas it is possible to sign up with an electricity provider that gets its juice from renewable sources, often including wind. Your monthly bill may be about \$10 higher, but

you'll be doing your bit for the planet. Go to eere.energy.gov/greenpower to find your local provider.

■ **THE SUN** A solar water-heating system can reduce the fossil fuel you'll

need for showering and washing clothes. Before installing one, determine whether you have a sunny enough location to recoup the up-front costs, which can range from \$3,000 to \$8,000. A solar electricity

system can be pricey too. But if you're building, consider having your home pre-wired for it (for an extra \$1,500 or so). Then you can install photovoltaic panels after they get cheaper (as they undoubtedly will).



Get a Zone Defense

THERMOSTATS HAVE BECOME AS SMART AS YOUR IPOD. You can program them to respond to your use patterns, cutting your energy bills by nearly 10%, according to data from Energy Star, a government program that sets efficiency standards. If you want to get fancy, you can divide your house into multiple climate zones so that you heat or cool only the rooms that need it. In summer you can focus the air conditioning on bedrooms and spaces that get the most sun.

INSULATE, INSULATE, INSULATE...

Upgrading the insulation in your home—including caulking and weatherstripping around windows and doors—can cut your heating bills by as much as 20%. (To learn how to do a home energy audit and find leaks, see energystar.gov.) But you should also pay attention to design features that make insulation harder or easier.

■ Cathedral ceilings and flat roofs need extra attention.

In homes with those features, your ceiling may sit directly under the roof, putting the room that much closer to the elements. You'll need to make sure these ceilings are especially

well insulated and carefully vented.

■ Recessed lights can leak.

After all, they basically require you to punch a lot of holes in your ceiling. If you install them under attics or roofs, make sure to use fixtures that are IC rated, which means you can safely pack insulation above and around them. These can cost \$10 to \$20 extra.

■ Dirt insulates.

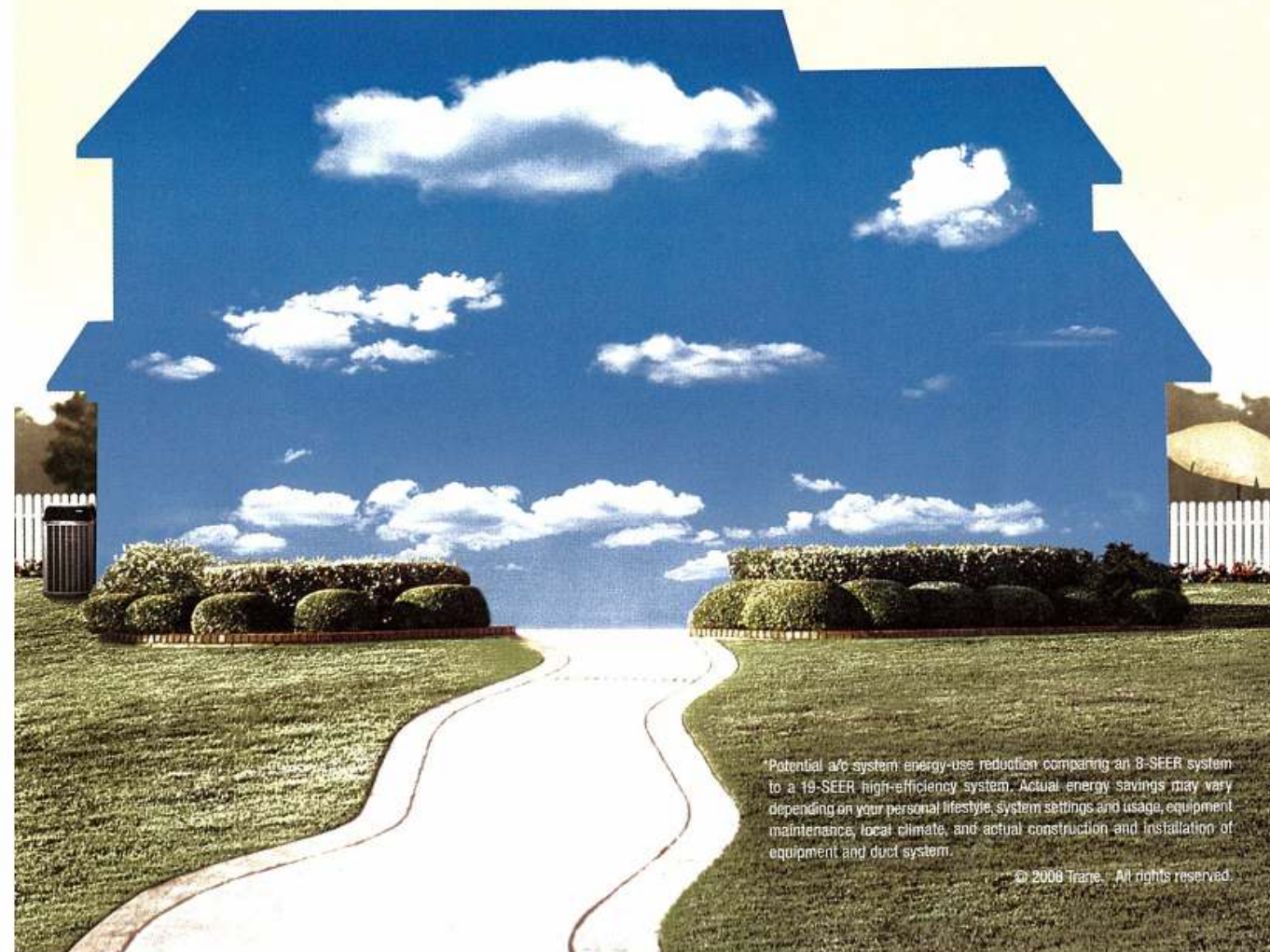
If the site where you intend to build your home is sloped, consider putting a portion of the structure underground. You'll get some natural protection against extremes of both heat and cold.

...BUT ALSO VENTILATE AND CIRCULATE

The key to keeping cool in the summer without cranking the air conditioning is to force warm air out of your house as quickly as possible and to have air constantly moving over your skin. Vents in your attic space—combined with insulation in the ceiling below—keep the cool air downstairs from being warmed by the pocket of hot air above. A whole-house attic fan, which pulls hot air from the rest of the house into a well-ventilated attic, can let you turn on the AC less often. (Just make sure you put an insulating cover over the unit in the winter.) When building, place windows and doorways to maximize cross-ventilation so that breezes flow easily through rooms.

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Where to Get Some Extra Green

Lower heating and electric bills are the main payoff for being energy-efficient. But lenders and others can put cash in your pocket to help offset your initial investment in a greener home.

■ **Look for rebates.** Some local utilities offer mail-in rebates if you buy energy-efficient appliances or compact fluorescent lightbulbs, which use less power than ordinary bulbs. And manufacturers often dangle rebates for appliances approved by Energy Star. To find the latest deals, go to energystar.gov.

■ **Get a tax break (maybe).** You used to be able to claim a tax credit for installing insulation, replacing windows and making other energy-saving home improvements. That credit expired last year—but there's a good chance it will be renewed before 2008 is up. So if you're making these improvements anyway, save your documentation and keep an eye out for any tax changes before year-end. (You can still get a tax credit of up to \$2,000 for installing solar electric and water systems.) Many states and cities also offer green tax incentives. Visit dsireusa.org for a listing.

■ **Get a better mortgage deal.** Some lenders offer so-called energy-efficient mortgages for buying, remodeling or rebuilding. You pay for an independent home-energy rater to name specific improvements that will lower your home's energy use (cost: typically less than \$300). You may then be able to qualify for a bigger loan to finance the fixes and even get a break on closing costs. For a full description of the program and a list of participating lenders, go to hud.gov. —HIBAH YOUSUF

BE WISE ABOUT WINDOWS

You can benefit from the most old-fashioned kind of solar power simply by putting windows in the right places. In the northern part of the country, a house with most of its windows facing south will collect more light—and therefore more heat—in the winter. (You'll also be able to keep the lightbulbs off until late in the day.) If you live in warmer climes, it's smart to have most of your windows facing north so your home doesn't bake all year.

In general you want fewer and smaller windows. That's because every window costs: Even the best of them will rot and leak over time. And even deluxe triple-glazed, argon-gas-filled windows will let out more of your home's heat than a wall would. By the way, the super-insulated variety probably won't save enough to pay back the steep premium—maybe twice the price—over the up-to-code double-glazed kind.



▲ Cooling with a Stairwell

A stairwell with windows near the top can act as a natural flue. Open the windows and warmer air will rise up and out of the house.



Adding Up the Bill

If you're building from scratch, good design can get you a long way toward green. But for the most sustainable home, you'll also want to shell out some extra bucks for the right materials and appliances. Those costs can add up fast. Remember that while green appliances will lower your energy bills and upkeep year after year, there's less direct payback from using recycled or salvaged woods and other materials. Your conscience will be your guide here. Prices can differ, but those in the checklist below are the rules of thumb I generally keep in mind.

To insulate an attic with high-performance foam instead of standard material, add:

\$4,000

For a top-flight heating plant and four extra heating/cooling zones in a 2,500-square-foot house, add:

\$6,000

For living room and dining room floors of salvaged wood instead of strip oak, add:

\$3,000