

Green, by design

One home is efficient and thrifty. The other is stylish and opulent. They both help the planet.

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Building a green lifestyle



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How to do it

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DONNA SIDER painstakingly renovated her 1,000-square-foot Pasadena home to be more energy-efficient as a way to save money and help the environment at the same time.

Jeffrey Eyster built an eco-friendly, 2,200-square-foot dream house in the hills above Laurel Canyon, in tune with his appreciation of fine architecture, superior materials and healthful living.

Eyster's home demonstrates that luxury and cutting-edge design can be integral to environmental construction.

Sider's is proof that going green doesn't require a lot of gold. Their efforts can serve as examples to homeowners who want to fight global warming or trim their household expenses, or both. And the payoffs in both areas are substantial, environmental leaders say.

"Forty percent of America's carbon emissions comes from buildings — almost half — and utility bills are a major factor in household bankruptcy," said Carl Pope, executive director of the Sierra Club. "You can reduce your utility bill by 50% or 60% relatively easily. That's one-fifth of the total carbon emissions today. It's a huge part of what we have to do."

Making those eco-friendly changes at home has become simpler and more affordable.

"Five years ago, the environmentally healthier or higher-performing building materials and products were harder to find. It was still a niche market, and they were more expensive," said Charles Lockwood, a Santa Monica-based environmental real estate consultant. "Now, you see Home Depot offering eco-options.

"This brings it down to everyday Americans. You don't have to go to a special place to find it. It's right there and at a good price."

Home builders and buyers also have a better way of identifying environmentally friendly homes, thanks to the U.S. Green Building Council's seal of approval.

The group's residential Leadership in Energy and Environmental Design Green Building Rating System will be formally launched this fall after a two-year pilot program. It was designed to encourage builders to keep the costs of green homes similar to those of traditional new houses, the council said.

To get the group's most basic certification, a builder would have to spend about 3% more, or \$10,000 on a \$300,000 home, the national average price for a new house. Amortized over a 30-year mortgage, that extra \$70 a month is easily made up in energy savings, said Jay Hall, acting director of the homes program.

"If they cost the same on a monthly basis, which one would you rather have?" Hall asked.

Sider already has answered that one. "I wanted to be a part of doing what I could in my own home to make these changes," she said.

Sider's long road to transforming her two-bedroom home began shortly after she bought it in 1999. With a limited budget, the 49-year-old registered nurse saved up and attacked her projects as she could afford them, doing much of the work herself and enlisting the aid of friends and family.

When she began her energy-saving projects, she paid about \$200 every two months for water and power. When she finished, this summer, her bill had dropped to about \$60.

Eyster, a 36-year-old architect, became a green believer when he was evaluating the costs of building a home on a 5,700-square-foot lot just off Laurel Canyon Boulevard near the Mount Olympus neighborhood. His wife, real estate agent Alla Furman, bought the lot five years ago for \$30,000.

Eyster opted to save money by constructing beams from small pieces of Douglas fir pasted together with environmentally friendly glue. The engineered wood was easily carried up the steep hill, unlike large, old-growth timber, which would have required a crane.

"It didn't start from a philosophical position," Eyster said. "It just made sense."

His bright and airy but compact house is all about making sense. The tiny 6-by-3-foot downstairs powder room with low-flow electric toilet maximizes space and water efficiency; LED track lamps throughout the house will last 40,000 hours, as opposed to old-style 2,000-to-5,000-hour bulbs.

By the time the couple and their two children moved in two months ago, the house's cost had swelled to about \$1.2 million, financed with a \$600,000 construction loan and round after round of refinancing to free up cash for the project.

"I feel better knowing that paying for building and installing green products leads to a healthier lifestyle for my family, the greater community and the environment," Eyster said.

Sider began her eco-renovation with the front yard. A landscape architect friend charged her a couple of hundred dollars to draw a plan that included adding more drought-tolerant plants and putting in trees to better shade the yard and the house.

Later, a landscaper added sod and sprinklers for a total cost of about \$2,500

"Even that happened in stages, for affordability," she said.

With a relatively small, hilly lot, Eyster designed a house that would bring the outdoors in. Twenty-foot-wide accordion glass doors on the north side roll away to give the living room a treehouse feel; a wall of windows on the west side provides a cross-breeze and helps to fill the house with sunlight.

Shades automatically rise and fall along with the sun's placement in the sky to maximize sunlight and minimize heat, part of a \$15,000 automation system.

The house's "brain" — Eyster's favorite eco-feature — also controls the electric lighting and the four-zone heat and air-conditioning scheme so that each is used only when needed.

"It can take some really complex things like exhaust fans, air conditioning and solar shades and juggle all of it when you're not home," he said, "so that the energy savings happen automatically."

Sider's version of power-saving lighting and windows consisted of switching to compact fluorescent light bulbs and double-pane windows — two of the cheapest and easiest green changes.

Fluorescent bulbs use up to 75% less energy, last about 12 times longer, stay cooler and, thanks to technical improvements in recent years, offer the same quality of light as incandescent bulbs.

Retail powerhouse Wal-Mart Stores Inc., which has thrown its weight behind the push for compact fluorescent light bulbs, says they save an average of \$35 in energy over the long term. That means changing 30 bulbs in your house will save more than \$1,000.

For Sider, replacing eight louvered windows in 2002 with energy-efficient dual-pane insulated glass cost \$2,700, not including rebates from Pasadena Water & Power totaling about \$200.

Sider made other changes that were equally at home in Eyster's dream house.

She used the same hot-water technology as Eyster even before he did, adding a tankless heater in 2003 that cost about \$500 at Home Depot. The device heats water as needed, rather than making it hot only to store it in a giant tank. No city rebate there, but Sider thought it was worth it anyway.

"Europe has had this for years," she said. "The price got within range, and it was doable."

Eyster's tankless heater has yet to run out of steam, he said, despite frequent heavy use, such as two showers and a washing machine running simultaneously.

Not all of his cool enviro-features worked out quite so well, he acknowledged.

The drip-irrigation system on his hillside, designed to slowly leak water underground to feed the plants rather than spraying it in the air, has blown through the pipe joints more than 10 times, he said, most likely as a result of high water pressure.

"It's been the biggest headache. The point is to save water, and yet when they explode, they spray water everywhere," he said. "I probably just need to get a better regulator."

Sider has no regrets about her environmental upgrades, which included a "dual flush" toilet, added in 2005. That new generation of commode lets users select one flush level for solid waste and another for liquids — an acknowledgment that some flushes require more water than others.

That change cost Sider about \$320 and earned \$80 from the city utility. She also added a new refrigerator for \$650 and got a rebate of \$150 from Pasadena because of the appliance's Energy Star rating.

Replacing appliances as needed with those granted the Energy Star label by federal regulators is a simple step with dramatic potential upside. A home fully equipped with Energy Star products uses about 30% less energy than a home with standard appliances, the program's administrators say.

Both homeowners also employed cotton-fiber insulation, Sider in her attic and Eyster through his entire house, including underneath the structure and between rooms.

Because the material doesn't contain fiberglass, installation doesn't require protective gloves, a respirator or goggles. So Sider and a friend were able to fit the insulation among her attic's beams themselves. That cost her \$900 but earned a \$130 rebate from Pasadena.

Eyster spent about \$5,000 on his material, as opposed to the roughly \$2,000 it would have cost for traditional fiberglass insulation, he said.

But because he didn't need special protective gear or skills, installation was much less expensive, bringing the total cost roughly in line with what he would have paid to go the standard route, he said.

In at least one area — solar power — the budget-minded Sider is ahead of Eyster.

For most people, the costs of photovoltaic panels are prohibitive, even with generous utility rebates and federal tax credits, said Hall of the Green Building Council.

"There's a huge fad right now for photovoltaic systems, so any luxury home that's considered green almost must have PV on it," Hall said. "The irony is that PV is probably the least cost-effective thing you can do."

Retrofitting a house to run entirely on energy from solar panels isn't cheap, about \$40,000 for a 2,000-square-foot property, Hall said.

Eyster designed his roof to accommodate solar panels but is waiting to install them until the price comes down.

But for Sider's under-1,000-square-foot house, the investment in solar was big, but so was the payoff, she said.

Sider's 12 low-profile PV panels take up about one-sixth of her roof. Sider said she paid for only half of the \$12,500 system because she received a \$4,400 city rebate and a \$2,000 federal tax credit.

Now, she said, she uses only about half of the energy the system generates, even after adding a forced-air heating and cooling system to replace an aging, inefficient furnace.

"I have the meter on my back porch, and it's fun to see how much I can save," she said. "I like to see how little I can use."

That's the perfect attitude, said Lockwood, the Santa Monica consultant.

"It is a real disservice to give average Americans the idea that the only way to build an environmental house is in some kind of eco-chic, unattainable, unaffordable way," he said. "That's just not true."

Help online

Some online resources to get you started with home energy and water conservation:

Energy Department's energy savers: Tips on saving energy and money. Go to <http://www.eere.energy.gov> and click on "Consumers."

Flex Your Power: California's energy efficiency marketing and outreach campaign, with links to tips, news, rebates, services, product guides and case studies. <http://www.fypower.org> --

Southern California Edison's energy rebates and savings: Information for home builders and buyers, an online home energy survey and power-saving tips. Go to <http://www.sce.com> and click on "Rebates & Savings."

U.S. Green Building Council's LEED for homes: The industry standard guidelines for environmentally responsible new-home construction, with links to "green your current home." Go to <http://www.usgbc.org> and click on "LEED" and "Homes."

Los Angeles Department of Water and Power: Information and links about energy and water efficiency, tree planting program, rebates and appliance exchanges. Go to <http://www.ladwp.com> and click on "Green L.A."

Energy Star: A joint project of the Energy Department and the Environmental Protection Agency, with information about Energy Star-rated products and practices, a rebate finder and energy bill tax credits. <http://www.energystar.gov>

Be Water Wise: Conservation tips from Southern California water agencies.

<http://www.bewaterwise.com> --

H2OUSE: California Urban Water Conservation Council's site on residential water conservation. <http://www.h2ouse.org> --

TreeHugger: Information on greening everything, including your water and your cleaning. Go to <http://www.treehugger.com> and click on "How to Go Green."

Source: Times research

Household tips

Small changes at home can translate to big savings in energy and dollars. Some examples:

Compact fluorescent light bulbs: Changing 10 60-watt bulbs in your home will save the average Californian more than \$373 over the life of the new bulbs and prevent more than 1,700 pounds of carbon emissions. Changing 10 bulbs of 100 watts will save more than \$622 and prevent almost 3,000 pounds of carbon emissions.

Appliances: Energy-efficient appliances can save \$80 a year for the average homeowner who spends \$1,900 on power bills. If 1 in 10 homes switched to Energy Star-rated appliances, it would be the same as planting 1.7 million acres of trees. For example, a new Energy Star-rated refrigerator uses 40% less energy than a traditional one from 2001.

Heat and air conditioning: A programmable thermostat set 8 degrees lower in winter and 4 degrees higher in summer for eight hours during the day and 10 hours at night will save the average family \$150 a year.

Water heating: Turning down your water heater by 20 degrees can save as much as 10% in energy costs. Many water heater thermostats are preset to 140 degrees even though most households need hot water only at 115 degrees to 120 degrees. Each 10-degree reduction in water temperature will save homeowners 3% to 5% in energy costs.

Indoor water: Turning off the tap while brushing your teeth twice a day can save 240 gallons of water a month. A high-efficiency toilet uses 60% to 80% less water than traditional models, which can save a family of four about \$1,000 over 10 years.

Sources: Environmental Protection Agency, Environmental Defense Fund,

Energy Star, Energy Department, Times research