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## Building Green

*Thinking about greening your home? Here are some buildings and resources for inspiration.*

by Carol Steinfeld

On a hot June day, the Real Goods Solar Living Center in Hopland is an oasis of cool delight. Water mists from an ivy-entwined "drip ring" installed in a dome-shaped trellis above a spiral fountain. Visitors cross the aquaculture pond in Nauticraft pedal boats, and laughing children whirl about in a solar-powered merry-go-round. Wide-eyed shoppers and tourists explore the shelves inside the landmark Solar Living Center, a nautilus-like series of tiered glass-front segments that houses the Real Goods store and headquarters. Built with rice farm waste, it is the largest straw-bale store in the world.

Its natural, curved shape allows sunlight to illuminate the interior throughout the day, so little additional lighting or heating is needed. The building's photovoltaic panels generate more electricity than the building consumes, so the excess is sold to the local power utility. Wood-burning stoves provide backup heat. Manually controlled hemp awnings provide shade in the summer. The thick walls cooling the building during the day capture cool nighttime temperatures. In bathrooms, old toilet tank lids serve as wall tiles while panels of multicolored recycled plastic divide the stalls.

The Solar Living Center was designed by Bay Area architect Sim van der Ryn. Completed in 1996, the building received much fanfare as example of "green" building. But a lot has



### Easy Green at Home

Perhaps the easiest ways to build for lower environmental impact are the simplest:

- Build small or with high density (lots of people using less building).
- Build spare (dispense with non-essential features such as drop-down ceilings, extra finishes, and floor and wall coverings).
- Build close to services to decrease car usage.
- Use locally crafted building materials.
- Rehab an old building instead of building a new one.

Before installing a wind turbine or solar panels, consider these easy steps:

- Older homes in the Bay Area are often poorly insulated. Install gasketing around doors to the outside. Consider blow-in

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changed in nine years. Green Building is no longer a curiosity: it has blossomed into a \$15 billion-dollar industry, according to the Sustainable Buildings Industry Council.

Today, daylighting, natural ventilation, passive solar heating, solar electricity, low-toxic paints, green roofs, low-flush toilets, recyclable floor coverings, and walls made of recycled, reused or easily replenished materials are increasingly common in both public and private buildings.

This transformation has been driven, in part, by the discovery that many conventional building materials and design practices have been linked to health problems ("Sick Building Syndrome"). In addition, they have also contributed to the contamination of air and water by relying on increasingly expensive, polluting and non-renewable oil, coal and nuclear energy. These days, Green Buildings are seen as a badge of commitment to progressive change.

Also mobilizing the Green Building movement is the emergence of a certification program that measures the green components of a building. The LEED program (Leadership in Energy Efficient Design) is now required for all public buildings in San Francisco and a growing number of US cities.

### Local Luminaries

The Bay Area's mild climate and progressive design culture have combined to make Green Building a natural choice. Here are some local examples:

- **Earth Justice**, an environmental law nonprofit, relocated its San Francisco offices to an Oakland building that was rehabilitated in 2000 after sustaining extensive earthquake damage. The LEED Silver-rated building features carpets made of natural sisal fibertacked (not glued) to the floor, bamboo tables and cabinets; shelves and partitions made of Douglas fir salvaged from an Oakland warehouse, flooring made from recycled tires, recyclable furniture, south-facing windows to allow daylighting, motion detectors to regulate lights, and drywall consisting of 15 percent recycled sheetrock. In many areas, concrete walls are left unpainted and floors are simply

insulation.

- Upgrade your furnace to reduce natural gas and oil use. If replacing flooring, consider fast-growing bamboo or mesquite wood over oak and pine.

- Choose water-based paints and finishes over chemical products. These alternatives might cost a few dollars more, but you'll appreciate their lack of headache-inducing fumes and you'll be keeping toxics out of the resource loop.

- Consider linoleum, a wood-based floor covering. Today's updated patterns won't remind you of the avocado kitchen floor you grew up with.

- When replacing appliances, look for the EnergyStar label.

- Choose a front-loading washing machine, which uses less water than a top-loader — that's less water to heat. Even better, wash clothes in cold water with biodegradable, phosphate-free detergents.

- Pull your fridge out of tight, unventilated spaces and away from heat-producing appliances.

- Replace your lawn with low-maintenance, low-water plants. Several books on this approach, called "xeriscaping," are available in bookstores and through the East Bay Municipal Utility District

- Replace your old three-gallon-flush toilet with a 1.6-gallon-per-flush model. Despite what you've heard, most low-flush toilets work

stained.

- **The Gap Headquarters** in San Bruno is extensively daylit to allow employees to work in natural light, reducing the need for electricity and winter heating. All workstations feature windows looking to the outside or to atriums filled with plants. Movable reflectors direct sunlight where it's needed. According to its designer, renowned architect William McDonough, the building is 30 percent more energy efficient than is required by state regulations. A rooftop garden absorbs stormwater and insulates the roof. All wood is from certified sustainable forests. The effect is a light and airy building with little distinction between indoors and outdoors.

quite well. Install faucet aerators and low-flow showerheads with easy shut-off valves (to stop flow while sudsing up).

Reduce, reuse and recycle. The Bay Area is full of salvage yards such as Urban Ore (see Resources) with great antique plumbing fixtures, as well as doors, windows, and tile. Check these out before heading to the home supply center.

- **2808 Adeline Street.** For a four-unit building in Berkeley, the Leger Wanaselja Architecture firm expanded an existing structure by raising it and adding a floor beneath it. The house's trim and doors did not end up in the dumpster, since care was taken to renew and reuse these elements. Construction materials included slabs of wood retrieved from storm-downed trees (turned into a kitchen counter and tabletops), pendant lights custom-made from French vinegar bottles, and a variety of automobile components — from rear-view mirrors to hatchbacks — incorporated into benches, shelves, railings, and awnings.

- **Chez Tondre.** To eco-renovate his turn-of-the-century Oakland two-family home, budget-conscious community activist Babak Tondre installed certified sustainably harvested maple flooring, fluorescent lights, an extensive solar electric system (subsidized by state grants), a graywater system, a waterless urinal, and a low-flush toilet. Low-VOC (volatile organic chemical) paints and natural finishes were used throughout. Tondre relied on Urban Ore, the local recycling salvage yard, to pick up used tile for countertops, as well as a clawfoot bathtub, sinks, a stove and a refrigerator. California Youth Energy Services conducted a free energy audit on his house, checking for heat leaks and installing low-flow showerheads, a retractable laundry line and fluorescent light bulbs — all free of charge. Tondre replaced the urban monocrop of backyard lawn with a mini-Eden of fruit trees, a tiny duck pond, and chickens that now provide fresh eggs for breakfast. Tondre conducts frequent Green Home workshops at the Ecology Center in Berkeley.

### Location, Location, Location

Some buildings are green by virtue of what they don't include. Sometimes the greenest thing you can do is to minimize heat leaks. The commercial adage "location, location, location" applies to green building, too. The Congress for a New Urbanism reports that a building located close to public transportation, employment, and stores ultimately saves five times more energy than a LEED Platinum-rated building.

"LEED is a checklist that's good for doing things [building designers] wouldn't otherwise do," says Bay Area architect George Loisos. However, he fears that architects are often "designing to the test" and not always looking at buildings as whole systems. Green Building, he says, happens best when we look for opportunities and synergies and measure performance instead of prescribing stock solutions.

"Sometimes the most sustainable thing is to not build at all," Loisos says, chuckling. He notes an early green-building rating system by organic architect Malcolm Wells: "His maximum design goal was wilderness: It's beautiful, it feeds, cleans, and reproduces itself." We need to look at buildings, their contexts and users as a whole system, he says. "Once we do that, our design goals are clear."

*Oakland-based freelance writer Carol Steinfeld is the author of The Composting Toilet System Book, Liquid Gold: The Lore & Logic of Using Urine to Grow Plants, and Reusing the Resource: Adventures in Ecological Wastewater Recycling.*

#### Resources:

- **Urban Ore** 900 Murray St. Berkeley, CA (510) 841-7283. East Bay's largest recycling outlet and eco-park.

- **Build-It-Green** Resources for green remodelers, materials, and suppliers. (888) 404-7336; [www.builditgreen.org](http://www.builditgreen.org)

- **California Youth Energy Services**  
[www.ci.berkeley.ca.us/energy/CYES.html](http://www.ci.berkeley.ca.us/energy/CYES.html)

- **Berkeley Ecology Center** (510) 548-2220; [www.ecologycenter.org](http://www.ecologycenter.org)

Residents in qualifying East Bay communities can receive free energy audits by a team of local youngsters who will check your home for energy leaks and install fluorescent bulbs, faucet aerators, and other conservation devices free of charge. The typical Eco-streme Makeover saves homeowners \$23 a monthly!

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