

## Buildings designed in cool shades of 'green'

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PORTLAND, Ore. — Step inside a new condominium at The Henry, an upscale residential tower in the chic heart of this city's flourishing downtown.



Natural light and ventilation are in abundance at The Henry, a "green" condominium tower in Portland.

Courtesy Bruce Forester

See the doors and kitchen cabinets made of pressed straw. Notice no new-building smell from paint, glue and carpet. Puzzle at the funny toilets with two flush buttons. Be aware that incandescent lights are nowhere to be found. Stroll down the hall to the handy recycling bins. Turn on tap water heated by exhaust from clothes dryers and ranges. Marvel at the abundance of natural light and ventilation. Tap on hardwood floors cut exclusively from sustainable forests.

Welcome to Portland's newest "green" building — energy-efficient, water-stingy and full of features stressing the natural over the chemical, the recycled over the new and the renewable over the finite. The 123-unit Henry is part of a wave of green projects sweeping the country and revolutionizing the way we design and build.

Whether the tag is "eco-friendly," "sustainable" or "high-performance," green buildings are going mainstream in a big way. In three years, the U.S. Green Building Council has certified 89 office or apartment buildings, manufacturing plants, condos, convention centers, schools and libraries. More than 1,100 buildings have applied for the council's Good Housekeeping-type seal of approval.

"It's not like putting on a hair shirt and moving into a cave," says Dennis Wilde, senior project manager for The Henry. "A green building doesn't look any different than what people are used to."

Once a fringe movement, a legacy of the 1970s energy crisis that never quite caught on, the green building boom is attracting converts as disparate as New York Gov. George Pataki, a Republican, and Chicago Mayor Richard Daley, a Democrat who has vowed to make his city the USA's greenest.

A growing number of cities and states insist on green features in buildings that get tax dollars. The federal government requires its new buildings to meet green standards. Foundations are making green design a condition for grants. Local governments are adding "sustainability" to the job titles of planners and managers. Architecture students are pressuring universities for more courses in green design. Americans distressed by poor indoor air quality and "sick-building syndrome" are demanding fresher environments to live and work in.

### 'Green' design elements

*Many features of The Henry development promote environmentally conscious living. Some examples:*

**Windows:** Specially treated glass and sun shades reduce heat from sunlight in summer. That helps keep the building cool and saves energy.

**Woodwork:** The hardwood floors in The Henry are cut from sustainable forests. Doors and cabinets are made with wheatboard, a product similar to particleboard but without the toxic resins.

**Bike rack:** The development provides secure bike storage to encourage residents to ride instead of drive.

**Plumbing:** Showers, toilets and other fixtures have low-flow designs that save up to 30% of the water typically used.

*Source: Gerding/Edlen Development*

Profit-driven developers and builders are going green because today's sustainable buildings are price-competitive with conventional ones. Manufacturers and suppliers of green building materials are rushing to cash in on an expanding market. The initial cost to go green may be slightly higher, but the payback in energy efficiency, water conservation and worker productivity easily recoups those outlays, experts say.

"To build a green building is only very marginally more expensive, and that margin is decreasing all the time," says Scott Lewis, a green building consultant here.

### The right thing to do

As cost fades as a hurdle, green building is gaining virtually unassailable status as the right thing to do. There's carping from a few critics that standards are sometimes too restrictive. Libertarians grouse when tax credits or grants subsidize

green projects — though that's not what's fueling the trend, nor are such subsidies typically large.

An \$800,000 fund Portland set aside in 2001 to help green projects is nearly spent, and city officials have no plans to renew it. Long a hub of environmental activism and green values, Portland has a sustainable building ethic that is deep-rooted: 44 green buildings totaling 4 million square feet.

The \$48.5 million, 15-story Henry, one of the country's first large residential buildings to go green, is the city's most expensive condo project: Prices range from \$280,000 for one-bedrooms to \$1.3 million for three-bedroom penthouse units. But it also sold out quicker than

any other — the last condo was snapped up nine months before completion. Similarly, all 293 units in the 27-story Solaire green apartment building near Ground Zero in New York rented quickly — most at 4% to 5% above market rates.

"Sustainability was very important to us," says Mary Krueger, a database administrator who with her husband, Phil, bought a two-bedroom Henry unit after selling their four-bedroom suburban house. "I'm real notorious as an avid recycler, just real conscious of what we use and what we do to the environment."

Industry standards and a scoring system, adopted in 2000, brought accountability and accelerated green building. The 4,000-member Green Building Council's Leadership in Energy and Environmental Design program (LEED) has become a benchmark followed by developers, architects and elected officials across the USA. Its sought-after silver, gold and platinum ratings verify the "greenness" of a project.

Just as studies show better test scores by students who learn in well-lighted spaces and higher retail sales in stores with skylights, many experts suspect that worker productivity also improves in eco-friendly offices. Some employers report lower absenteeism and higher retention rates in green buildings.

"In our old space, people complained constantly about bad air," says John Zmolek, executive vice president of Verity Credit Union in Seattle. "We haven't had a complaint in six years."

### **Saving energy**

Because energy is a big-ticket operating cost, saving it is a key green goal. The Henry, with a roof-top "chiller" to cool water for air conditioning, saves an estimated 35% over a conventional building. The Solaire in New York cuts energy use by 67% at peak times, says developer Timothy Carey, president of Battery Park City Authority.

"All things being equal, I can't imagine that you wouldn't make an ethical or moral choice to buy something that had green features," says Henry developer Robert Gerding, whose company has \$1.5 billion in green projects completed or in the works, 90% of its portfolio. "Obviously, I'm a true believer, but this is something that has to happen."

Sustainable building is by no means confined to green bastions such as the Pacific Northwest and California. Pittsburgh has more green buildings than any other U.S. city, including its new convention center, which achieved LEED gold. The nation's highest profile construction project, the Freedom Tower and other buildings around the World Trade Center site in New York, will use green principles.

At least 10 states and 23 cities and counties — Los Angeles; Seattle; San Diego; Dallas; Kansas City, Mo.; San Jose, Calif.; Chicago and Portland among them — require or are considering requiring a LEED rating for all public buildings.

As of October, the General Services Administration, builder of non-military federal buildings, requires LEED certification on structures that cost \$2 million or more. "As an agency, our goal is silver," GSA architect Don Horn says. "Some have taken the challenge and gone for gold."

Green doesn't have to mean exotic. Developers earn points for low-tech basics such as positioning buildings to maximize sunlight inside and to lower the wind's effect on heating needs. Retro ideas such as office-building windows that open to let in fresh air are in vogue. Tall windows with "light shelves" to bounce daylight into interior spaces and motion sensors to shut lights off when people leave rooms trim energy costs.

Green, or planted, roofs that insulate and reduce runoff have made the jump from Europe, as have low-pressure heating and air-conditioning vents that run under raised floors. Directing builders to recycle construction waste earns points. And using recycled and natural materials — adding the coal byproduct fly ash to concrete, for example — is a LEED goal.

Those pressed-straw cabinets in The Henry are wheatboard, similar to particleboard but without the toxic resins. Wheatboard was more expensive than particleboard until Home Depot began stocking it and drove the price down. Paints that don't emit gas from VOCs — volatile organic compounds — once added tens of thousands of dollars to building costs. Now they're price-neutral. Natural-fiber carpets are becoming more competitive with the petrochemical-based standard.

"It's an exploding market," Portland consultant Lewis says. "Many vendors are chasing it."

### **Vying for top rankings**

Some green designs are pushing the envelope. Pittsburgh's convention center, the world's largest green building, purifies sink and toilet water with ultraviolet light and recycles it for flushing and irrigation. Biotech giant Genzyme's headquarters in Cambridge, Mass., has rooftop mirrors and solar panels to direct sunlight inside and light fire-escape stairwells.

Toyota's sprawling new complex in Torrance, Calif., has a solar-energy system that generates up to 20% of demand. Chicago's Center for Green Technology, a renovated former factory, has floors made of recycled rubber tires and an elevator that runs on canola oil instead of polluting hydraulic oil.

During rebuilding of 7 World Trade Center at Ground Zero, all large diesel engines had to have filters and use low-sulfur fuel to cut emissions. New York City later made that mandatory in all public construction. Plans for Freedom Tower include wind turbines to produce up to 10% of the building's electricity.

No sooner had the Audubon Society announced early this year that its Los Angeles center was *the* most environmentally friendly building in the nation — more LEED platinum points than any other — than the Natural Resources Defense Council trumped it. Despite producing all its own energy and touting features such as organic linoleum floors and steel rebar made with melted-down handguns, the society's building came up short to the NRDC's three-story Santa Monica, Calif., offices — 53 points to 56.

As the boom progresses, companies see that in the 50- to 100-year life cycle of a green building, costly upgrades such as solar devices and super-efficient mechanical systems pay for themselves many times over. But speculative developers who must recoup costs more quickly are coming around, too. Gerding, a partner in Portland's Gerding/Edlin Development, is proof of that. He bought a Henry unit himself.

David Miller, a University of Washington architecture professor, says even practitioners of so-called "high design," the superstars of the profession, are integrating sustainable concepts to stay competitive.

But green enthusiasts say that despite remarkable progress in a short time, no one has built a truly sustainable building, one that is a net producer of energy, one that gives more back to the environment than it takes away.

"What we're doing isn't green building and it isn't sustainable — yet," Lewis says. "It makes me wince when someone says they're building a sustainable community. A sustainable community is an Indian tribe in the Amazon."