Connecticut Home: "Green" for Spring

CPTV PROGRAM GUIDE INSIDE

CONNECTICUT

MAGAZINE
connecticutmag.com

RATING THE SMALL TOWNS

SCHOOLS, CRIME, COST OF LIVING, CULTURE & JOBS

- 20 Cures for the March Blahs
- Crossword Jocks in Stamford
- Restaurants for Lovers

MARCH 2007 $4.50
03>
7 25274 65778 0

Going Green

Connecticut architects, builders and homeowners are finding new ways to reduce energy demand, create healthier living environments and, in the long term, save money.

GREG NICKSON

Solar panels and south-facing expanses of glass are "energy keys" to the Huses' South Norwalk home.

Building a solar-powered house was Henry Huse's longtime dream. An engineer with a string of patents, Huse began delving into alternative energy sources over 20 years ago and longed for a place where he could put his innovations into practice.

Last July, Huse's dream came true. He and his wife, Jessica, moved from the Darien home where they had raised their children to a new, gray-shingled house on an estuary off Long Island Sound in South Norwalk. Gray-shingled with white trim, it resembles many others along the New England coastline, with one exception: Thanks to a series of black solar panels on the south-facing roofs, the Huses anticipate that solar power will meet as much as 85 percent of their energy needs. "The concept of this house is to obtain our heat and electricity from the sun," says Huse, age 80.

The new homeowner intends to count every BTU. "If I can save $700 to $800 a year at current rates, imagine what I'll be saving in five years at the rate electricity is going up," he says.

Across Connecticut, and indeed across America, energy-conscious and environmentally aware Americans like the Huses are building "green," using environmentally friendly construction materials and techniques to minimize their impact on the planet.

The Northeast was slow to catch on to the call for renewable and sustainable building, but inroads have been made, initially in aca-

By Margaret Farley Steele

GREEN MEANS HEALTHY, TOO

There is no shortage of products and materials that can help make your home a healthier place to live.

Because Americans spend on average 90 percent of their days indoors, the threat from indoor pollution is increasing. To reduce the chances of serious health problems, think green when remodeling and redecorating.

Many paints, fabrics and carpets contain volatile organic compounds (VOCs) such as formaldehyde and benzene, carcinogens that can also cause respiratory and eye irritation, headaches and fatigue. By doing your homework before buying, you can avoid bringing these toxins into your home.

Choose low-VOC paint products or paints that are Green Seal-certified. "We have a significant call" for paint products with low VOCs, says David Brandman, president of Brandman Paints, which has seven stores in Fairfield County. House painters aren't requesting them, however; homeowners are. "The homeowner wants low-odor and low VOCs," he says. Brandman is enthusiastic about the new water-based Aura line from Benjamin Moore. Though more expensive than its regular line ($54.95 versus $35 a gallon), it is thick and will cover anything in one or two coats, he says. These are the paints of the future, he believes.

For nonpolluting carpeting, carpet pads and adhesives, look for the "Green Label" or "Green Label Plus" designations from the Carpet & Rug Institute, which signify low off-gassing

Children's furniture, bedding, window shades and myriad other household goods are scrutinized by the Greenguard Environmental Institute and certified as nonpolluting. Check its Web site (greenguard.org) for help finding safe furnishings.

Bamboo flooring, *above*, is a quickly renewable, environmentally friendly product.

Web sites to consult:

epa.gov/ne/greenbuildings
ctinnovations.com/funding/ccef/solar_rebates.php (for solar rebate program)
ctsavesenergy.com
geoexchange.org

Also, check out *E Magazine*'s excellent special issue (February) on green building practices, or the Norwalk publication's Web site at emagazine.com.

demic and commercial construction, more recently in residential. "The new frontier is residential," says Adam Ney, founder and president of AuctorVerno, a green building business marketing services firm in Bethany.

Concerns about energy costs and shortages, global warming and sick-building syndrome have fueled interest in eco-friendly living. A push from Wall Street helped the cause, too. When Goldman Sachs announced in 2005 it would invest only in socially responsible companies, "that sent an important message to all that we need to 'green' our image," says Ney.

"There is a strong interest on the part of a number of builders in Connecticut, and we know there's a growing market for it," says Bill Ethier, executive vice president of the Home Builders Association of Connecticut. "Even the builders who don't know much about it want to learn more."

Some people were ahead of the curve. In the Kensington section of Berlin, David Revenaugh renovated his 1820s Federal-style house five years ago with an eye for renewable and sustainable design, while maintaining the look of the early 19th century. The bamboo flooring, for instance, resembles hardwood, but being a grass it renews readily, unlike trees. The roof, a composite resembling slate, while not inexpensive, will never need replacing during his 9-year-old-son's lifetime, he says. Asphalt shingles, by comparison, have a shorter life cycle and accumulate in landfills.

Outside, cement fiberboard siding resembles the original clapboard but holds paint better, isn't flammable and doesn't entail deforestation, says the 56-year-old builder.

Across the street, Revenaugh plans to build a development of 30 eco-friendly homes employing some of the same principles. While offering state-of-the-art technology, the Mooreland Glen houses "are simple in design and meant for people to live in today," says Revenaugh, who was inspired architecturally by the Modernist approach of Marcel Breuer. In an effort to blend the site into the landscape, he plans soft pedestrian paths rather than concrete sidewalks.

Instead of 2-by-4-lumber framing, prefabricated Structural Insulated Panels (SIPs) will make up the envelope of each house. Besides being stronger than stick construction, SIPs insulate better and minimize the greenhouse gas contribution to the environment, propo-

nents say. The heating and cooling systems—radiant heat, conditioned warm air and geothermal cooling—will provide energy savings of up to 50 percent, Revenaugh says. "With more efficient heating, you can have a more open floor plan," he explains. An air exchange system, which introduces fresh air and removes stale air at regular intervals, makes for healthier breathing while protecting against mold.

For the windows, Revenaugh has chosen double-paned glass with argon gas between the panels for improved heat retention. This means large expanses of wall can be made of glass, allowing for "daylighting," the use of natural light instead of electricity during daytime.

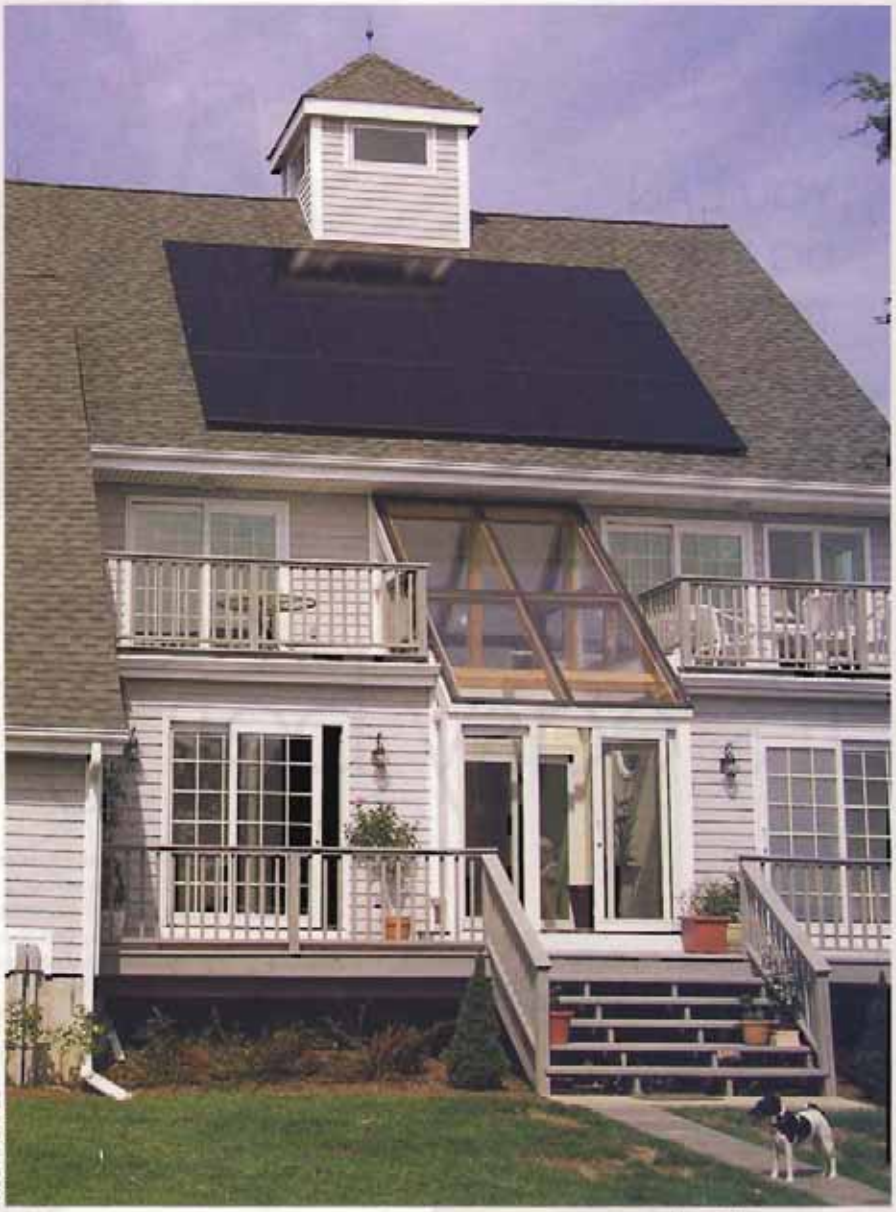
What Revenaugh envisions is high-performance, low-maintenance houses. "You'll see more and more," predicts the builder.

Empty nesters are the clients most committed to green construction, says Russell Campaigne, a partner in CK Architects in Guilford, but not because they are tree huggers. "They may act somewhat from principles, but more so because of the economies, and the awareness that the technologies will pay off," he says. "For a couple on a fixed income, it makes perfect sense."

For John and Karen Dugan, a Glastonbury couple looking to downsize locally, Campaigne recently designed a three-bedroom home under guidelines being evaluated for the Leadership in Energy and Environmental Design (LEED) building rating system. LEED design criteria go beyond construction techniques and performance to management of construction debris and storm water, size of house (they lost points for being too big at 2,400 square feet) and minimal land disturbance. Campaigne was careful to limit lawn size and maintain wildflowers and other native plantings.

Total cost was about $200 a square foot, more than the typical spec house, but long-term savings will offset the higher up-front costs, according to Campaigne. "We're very practical in the decisions we're making," says the architect. By designing a deep overhang and choosing durable materials for the exterior, for example, he will keep maintenance to a minimum.

Ever so slowly, the building industry is heading in that direction. "We have a huge responsibility to design green—and we can," says Diane Harp Jones, executive vice president of the American



PAUL N. ISRAEL

RUSSELL CHAMPAIGNE

"Green" measures are easier to incorporate in new building, as, *above*, in South Norwalk and, *below*, in Glastonbury, but retrofitting new windows or solar panels can make a big difference, too.

Institute of Architects (AIA) Connecticut. Last fall, the AIA and the federal Environmental Protection Agency (EPA) drafted a "memorandum of understanding" to promote green construction and sustainable living in New England. Harp Jones predicts that legislative incentives encouraging green building in the commercial sector will soon extend to residential design and construction.

Meanwhile, soaring electric rates have homeowners thinking green—and converting to solar and geothermal heating, the latter using energy from the ground or water. Since October 2004, when the Connecticut Clean Energy Fund launched its solar photovoltaic (PV) rebate program, 100 homeowners have participated.

"We see a strong interest on the part of people in Connecticut to be part of the solution," says Bryan Garcia, director of energy market initiatives for the Connecticut Clean Energy Fund (CCEF).

Garcia thinks more homeowners would switch from fossil fuels to alternative energy sources if they knew of the financial benefits. CCEF typically picks up 45 percent of the installation costs of an average-size solar PV system, which is 4.3 kilowatts. For a $36,120 system, the average cost, CCEF gives back about $16,000, says Garcia. Users also save about $1,000 a year in electricity costs, with a break-even to the homeowner at about 13 years, he adds. Additional savings are available in the form of federal tax credits of up to $2,000.

Not everyone can run out and install an effective solar system, however. Site selection is critical, and many homes are not oriented toward the sun. Furthermore, to qualify for a rebate a homeowner must have a licensed installer do the job.

The Huses' house uses active and passive solar energy. On sunny days, light streams through the glass-walled living area and a two-story atrium, warming the home as passive solar heat. The steep pitch of the roof—45 degrees—maximizes the amount of energy taken from the sun. "That's optimum for this latitude, where the sun is low in the wintertime," explains Huse. Besides the solar PV panels, another set of panels heats water from an 800-gallon tank in the garage that is pumped to and from the roof for warming, providing domestic hot water and heat. Huse, who owned an engineering company, relies on a heat pump of his own design, which he hopes to mass-produce. A backup boiler and gas fireplaces in the master bedroom and living room provide additional sources of heat when needed. The solar system, installed by Sunlight Solar Energy Inc. of Milford, is tied into the Connecticut Light & Power (CL&P)

grid, and CL&P reimburses them for any excess electricity they produce.

Key precepts of eco-friendly design employed by the Huses include integrating the structures into the landscape, building small, leaving as much land as possible in its natural state and minimizing the need for vehicular traffic. Another noteworthy example is a mixed-use project by the Georgetown Land Development Co. in Redding, which received a "Smart Growth" award from the EPA and is considered a model for other developments nationwide. The pedestrian-friendly project, formerly a wire mill, was cited not only for its green technology—photovoltaics and green roofs —but because it provided for open public spaces and access to public transportation, while using an existing

10 TERMS YOU NEED TO KNOW

Solar photovoltaics:
Solar panels that convert energy from the sun into electricity.

Daylighting:
Utilizing natural daylight to reduce electrical lighting demands.

Fossil Fuels:
Nonrenewable, precious resources such as coal, gas and oil.

Graywater:
Captured rainwater for use in landscaping and car washing.

Energy-Star Rating:
A labeling system devised by government agencies to connote energy-efficient appliances. For more information on energy-saving measures for the home, see energystar.gov or myenergystar.com, or visit United Illuminating's Smart Living Center at 297 Boston Post Rd., Orange, (866) 762-7899.

LEED:
Leadership in Energy and Environmental Design rating system that establishes standards for green construction.

Nonrenewable:
Building materials such as certain kinds of wood that do not easily regenerate.

Sustainability:
Healthy, resource-efficient construction with minimal environmental impact.

Structural Insulated Panels (SIPs):
Alternative to stick framing and Sheetrock touted for their strength and insulation.

Certified wood:
Lumber supplied by firms that adhere to sustainable forestry practices governed by the Forest Stewardship Council.

hydroelectric dam and power plant.

With so much going for it, why has green been so slow to catch on? Some lay the blame on consumers. "It's not always an easy sell to the consumer," says Harp Jones of AIA Connecticut. "Many of our AIA architects can design green. They want to, but often don't have an owner who leans in that direction." The inability of consumers to appreciate long-term payoffs is the major holdup, she maintains.

Not everyone agrees, though. Michael Trolle, partner with his brother, Christopher, in Building Performance Construction Services in Ridgefield, blames contractors. "It's not more prevalent because it involves changing the status quo and change is always hard," says Trolle.

But Ethier of the Home Builders Association of Connecticut sees a change coming. His organization is forming a committee to adapt green building guidelines developed by the National Home Builders Association for use here. It will also be promoting green products and supplies at regional builders' trade shows this month.

Trolle's company, which has won awards for energy-efficient and healthy homes, focuses on the mechanical and performance systems more than what he calls the "sexy" green factors like certified wood. His goals: improved energy efficiency, enhanced comfort (eliminating drafts and moisture, for instance) and improved indoor air quality. Simply put, he builds airtight homes with mechanical ventilation systems. The payoff comes in enhancing personal well-being, he believes. For example, "If the air quality is good, people will feel well more of the time and they'll be more productive," he says.

A high-performance house need not cost more than a conventionally constructed house, says Trolle. On the contrary, some of the priciest homes in Connecticut have second-rate operating and performance systems because, he feels, most homebuyers lack the expertise to evaluate "what goes on behind the walls." Instead, they set their sights on status-y extras like granite countertops and luxury appliances.

Eventually, homes put on the market without state-of-the-art heating, cooling and ventilating systems will suffer a downward valuation, he predicts. So for now, Trolle and other green pioneers persevere, confident that their colleagues will eventually follow in their eco-conscious footsteps. "It's such an exciting time in this field," Trolle says, "and we're excited to be making a difference in the building environment."