

AT HOME

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SECTION H



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KAREN AND JOHN DUGAN'S Glastonbury home, above, uses south-facing solar panels to generate electricity, and sometimes sell it back to the utility company. Such innovations helped the home win energy-efficiency certification from the U.S. Green Building Council.

GREEN...AND GOLD

GLASTONBURY HOME IS FIRST IN STATE TO WIN ECO-FRIENDLY CERTIFICATION

By **NANCY SCHOEFFLER**
COURANT HOME EDITOR

John and Karen Dugan didn't set out to be trailblazers. But the home they built earlier this year in Glastonbury is the first house in the state to meet the U.S. Green Building Council's LEED gold standard.

"It started when we said we wanted to do a geothermal home," says John Dugan, 62, a consulting engineer. He and Karen, 60, who recently retired as a school nurse, were downsizing from a larger home just a few blocks away and looking ahead to the day when they might need a house that was easier to use and less expensive to maintain.

Before long, their architects, Russell Campaigne

and Mary Jo Kestner of Campaigne Kestner Architects in Guilford, suggested that the Dugans try to get their home certified through LEED, which stands for Leadership in Energy and Environmental Design.

Launched seven years ago by a group of architects and building professionals, the voluntary LEED standard for eco-friendly architecture has been a benchmark of green construction — and a major driver of environmental innovation in the building industry. It is a points-based system with independent, third-party tests that rank buildings by such

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criteria as energy and water efficiency, the use of sustainable and recycled materials, waste reduction and indoor air quality.

According to the Green Building Council, about 400 builders representing 10,000 homes across the country have participated in the LEED for Homes pilot program in the past two years. Among the buildings that have been certified, a few have met tougher silver, gold or platinum standards.

But only one of those homes — so far — has been in Connecticut.

The Dugans decided to go for the gold, and thus far, their home is one of only a dozen gold-rated homes in the country.

Back in the 1970s, building "green" frequently

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THE DUGANS, right, moved to their new home anticipating a time when they would want a house that's easier and less expensive to maintain. Energy-efficient windows, left, look out over their small backyard's small lawn and large wild-flower meadow.



THE HOME FRONT

INS AND OUTS OF DESIGN TODAY



meant making concessions, says Campaigne. It is much easier today to incorporate green features in a home of just about any style without compromising on design or lifestyle.

Seen from the front, the Dugans' shingled house is welcoming, with Craftsman-style eaves, drought-tolerant plantings and a detached garage set at a pleasing angle. The walkway and driveway are in crushed stone, and the front step is a handsome slab of granite.

All these elements are appealing in and of themselves, but they also make the house that much greener: While connected with a screened breezeway, the garage is separate from the house, which helps hold down pollutants. The white cedar shingles are a farmed wood. The crushed stone is local. The granite step came from a quarry in town.

Inside the open, flowing home, the rich-looking built-ins and decorative woodwork all are made of American cherry, a sustainable wood approved by the Forestry Stewardship Council. The flooring is bamboo — again, sustainable.

"As you go along, you just start thinking green," John Dugan says.

It was a learning experience, though: In some rooms, says Karen Dugan, they didn't use the right kind of paint.

And, John says, they had picked out their toilets before the LEED program was on their radar screen, so the toilets aren't dual-flush.

Campaigne says LEED provides a useful format to prioritize and organize ideas and help identify where one's efforts to go green will be best spent.

For example, the Dugans knew they would lose some points on the eight-page LEED checklist because their custom-built house is a bit larger than ideal. But, as Karen Dugan notes, they have big families and typically host about 30 people at Thanksgiving and Christmas. The house is 2,350 square feet, not counting the finished portion of their basement.

And though the architects suggested that the Dugans install a cork floor in the finished basement, the couple decided to use carpet, to make it more comfortable for their four granddaughters to play there when they visit. That meant losing a few points because carpeting has to be replaced from time to time and can affect indoor air quality if it attracts mold or mildew.

An Airtight House

Campaigne says there is no foolproof recipe for how to design a green house, but in the Northeast, energy use is a key consideration. The LEED certification process



THE CABINETS, top photo, are made of American cherry, a sustainable wood approved by the Forestry Stewardship Council. The Dugans' front door, above, was tested for leaks as part of the certification process by the U.S. Green Building Council.

involves tests at several different phases of construction, including a blower door test to test the house's envelope, and a pressurized duct test to check for leaks, says Maureen Mahle, a civil engineer with Steven Winter and Associates in Norwalk, which supervises the LEED certification program in several states, including Connecticut. The Dugans' house "was significantly more efficient," she says.

Builder Bob Dykins, who owns Glastonbury Housesmith, says he used construction adhesive to attach the framed walls to the floors, as well as expanding foam, caulk and blown-in fiberglass insulation with a high recyclable content to make the house "as airtight as possible."

The house also has a sophisticated energy recovery system — "the only added piece of equipment you need for a tight house," Dykins says — which replaces all the air in the house 1½ times a day, but recaptures and reuses 80 percent of the heat and humidity that is ex-

hausted out of the house, rather than wasting it.

John Dugan says he and Karen hadn't originally planned to put up solar panels but decided to take advantage of the state rebate program, which covered about half the installation cost.

Dugan says Dykins was able to adapt the plans during construction and slightly widen the roof over a south-facing dormer to accommodate 24 solar panels.

"He was so willing to try everything," Karen Dugan says. "He reacted so quickly," says John.

In the basement, Karen Dugan taps lightly on "Sunny Boy," as they call the meter that shows whether they are generating or using electricity. The morning is a bit cloudy, and the number is low, but John Dugan points out that one month their total utility bill was just \$16.

Campaigne says power usage for the year probably will run about \$600 altogether — far less than for the average, comparably sized home. He says the energy-efficient

features probably added about 5 percent to the Dugans' budget, but the savings in energy and maintenance expenses should repay that in less than five years.

"The technology has legs now," Campaigne says. "Costs have come down drastically in the past five years. These things are now economically feasible. They're not just pet projects."

Mahle says additional upfront costs to build a green home had been running about 3 percent to 5 percent — "though it varies a lot based on what you're starting with" — but now are between 0 and 3 percent as builders have "figured out how to do it."

Mahle says 176 other homes scattered around the state, including a subdivision in Madison and several multifamily projects, now are also working for LEED certification.

Wood Chips, Wildflowers

Dykins says one area where he had to rethink how he typically operates was in minimizing the waste that had to be hauled away from the job site. Leftover drywall was ground up and dispersed under the topsoil — a practice that Mahle says is approved by the U.S. Environmental Protection Agency.

"At every aspect of the construction process," Dykins says, "we had to consider the site impact — how many trees were cut down, how much dirt was disturbed."

The project earned points because so much of the 1.3-acre site was left undisrupted. Dykins says he had all the wood from trees that were cut down chipped and left at the site, and instead of having to bring in hay bales, he used the chips to control erosion and water runoff. A bonus: After the work was done, the chips were used again for brush control.

The landscaping itself won points because only drought-tolerant lawn was used, and there is no lawn in densely shaded areas. Much of the property is a natural meadow of wildflowers, visible from the home's many south-facing windows.

"It's nice to know you can have a green house and still have it be nice-looking," Karen Dugan says. "We just have to pinch ourselves that this worked out the way it did."

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For more on the U.S. Green Building Council's LEED for Homes program, which adopted permanent guidelines as of this week, go to www.usgbc.org. The council also offers an online Green Home Guide at www.greenhomeguide.org.