

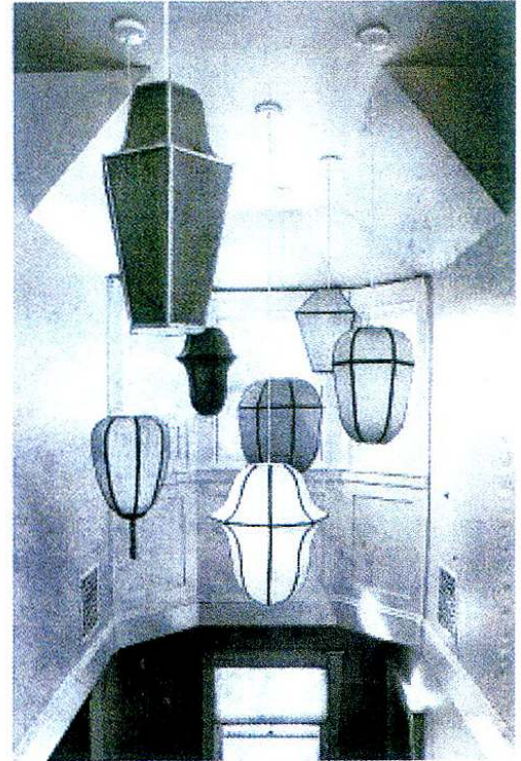
Style & Arts

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The leather on the kitchen chairs is vegetable dyed to minimize harmful chemicals, and the rug under the table is a sisal natural fiber rug. CX Design lighting fixtures hang above. With the help of Laura Trainer of Exquisite Tropicals interior landscapers in Ipswich, Barbara Goldman chose indoor plants, like the tree next to the table, that will help clean the air.



Light fixtures by Cindy Ciskowski hang in the home's open stairwell. All use energy-efficient compact bulbs. Goldman chose Benjamin Moore low-VOC paints throughout the home.



PHOTOS BY WENDY MARZANO/CEE

Goldman chose to have a radiant heat system throughout the first floor. It especially helps to warm the tile floors in the mudroom (shown here) and in the baths. Natural fiber rug.

THE GREEN, GREEN GRASP OF HOME

By Suzanne C. Ryan
GLOBE STAFF

MARBLEHEAD — Barbara Goldman is no garden-variety environmentalist. When she rehabbed her luxury ocean-front home recently, she insisted that it be eco-sensitive from the basement to the rooftop.

That's not an easy assignment when green supplies typically cost more and can be harder to find. But Goldman was not deterred.

Consider her roof (recycled rubber), her kitchen counter (Silestone) and her floors (a domestic walnut harvested from old trees that were about to die). Her Bosch washing machine, depending on the load, can use a mere two gallons of water. Her pipes are cast iron, not plastic.

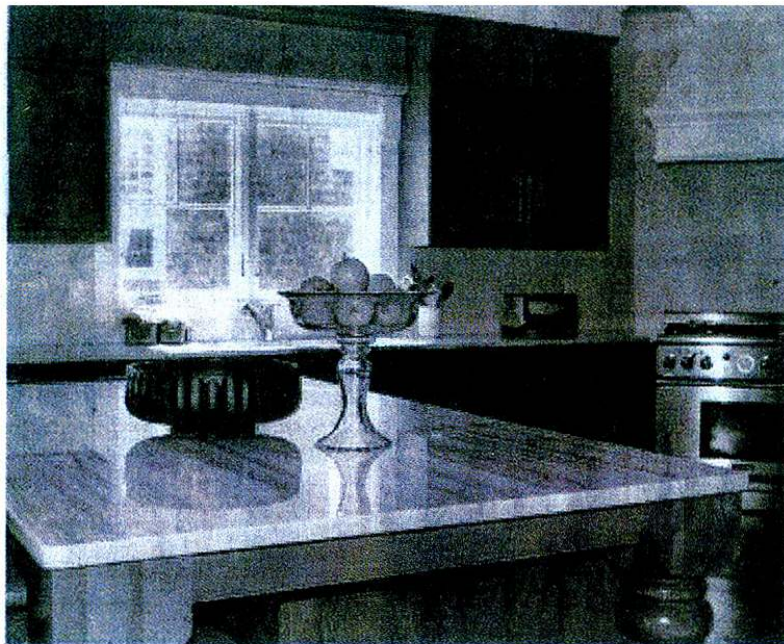
"I don't claim to be a purist," said Goldman, a 45-year-old attorney. "I don't eat all organic. I still wear nail polish. I've just chosen one area of my life, my house, to make a difference. If we can be an example for other projects, that's a great thing."

Eco-friendly construction materials, from solar energy to recycled wood, have been buzzwords since the 1970s. But until recently, green building has been most popular on the commercial level, not so much on the residential side. "There's more opportunity for saving resources when you're dealing with a 50-story office tower than a single home," said Paul Marquis, education coordinator for the NEXUS Green Building Resource Center in Boston, a project of the nonprofit Green Roundtable.

But with today's rising energy costs and environmental concerns, the residential market is coming around.

"In the past six months, interest in green residential homes has really taken off," said Marquis, who has seen 5,000 visitors come to view green samples at his Downtown Crossing reference library since it opened in February 2007. "The market drivers are the soaring costs of energy and a recognition that global warming is a problem we need to address."

For the first time last fall, the nonprofit US Green Building Council established LEED certification (leadership in energy and environmental design) for residential homes. The



The kitchen cabinets are solid maple with a custom low VOC stain and varnish to minimize harmful chemicals. Like all the wood in Barbara Goldman's home, it's formaldehyde-free. The countertops are low-VOC Silestone. The central island top is silver travertine, with a low-VOC seal and polished with industrial scrubbers.

national rating system for green building design and construction has been in place for commercial spaces since 2000.

To date, there are 548 LEED-certified homes in the United States, including 19 in Massachusetts.

Goldman, whose home just received its LEED certification, began the gut renovation of her home shortly after she and her husband purchased their 138-year-old, three-bedroom Victorian home in August 2005. The 6,500-square-foot house, which has five bathrooms and an elevator, overlooks the ocean.

Goldman's top priorities were energy efficiency and indoor air quality. "It was

important for us, if we were going to be on the water, that we felt warm. The previous owners completely obscured their view. The windows were covered and it was dark. In my opinion, it was because it was so cold in here."

Given rising energy costs, the couple pulled out the existing electrical and heating systems. "We figured how could we not explore alternative energy?" she said.

What followed was quite an exploration. She settled on a geothermal heating system, which meant drilling two 500-foot wells in the yard. The heating system has six zones so only the occupied sections of the house are heated. A radiant heating system warms the first floor. The walls are insulated with icy-

nene (a foam insulation that is applied as a liquid and then expands to fill every crevice).

Goldman's insistence on indoor air quality got her thinking about the chemicals in the paint she was using, the glue in the kitchen cabinetry, the varnishes on the floors, and the upholstery on her furniture.

"I am a breast cancer survivor," said Goldman. "I started thinking that if we were insulating the house well, my system might be assaulted by all sorts of chemicals that we were bringing in. So I started asking questions about every single thing I was purchasing."

After meeting with several architecture and interior design firms, Goldman enlisted the help of Boston-based Heather G. Wells Ltd. "I wanted a team approach and she could provide that," Goldman said. "We were operating on two tracks simultaneously, the architecture and the interior design."

The project was a challenge for the firm, which had never before attempted to make a residential home LEED certified. "Evening we touched we had to give some thought to," said Wells, an architect and interior designer.

"We used a lot of our normal vendors but we needed to talk to them about it," she said. "We had to ask: 'What's in this?' They didn't even know. It's not on everybody's consciousness yet. There's stuff out there. You just have to push people."

Janine Dowling, an interior designer for Wells, said she did much of her research for the project on the Internet on sites such as carpet-rug.org, whitelotus.net and staples-cabinetmakers.com.

"I had to educate myself. What are the worst offenders in a house for VOCs (volatile organic compounds that can vaporize and enter an atmosphere)?" she said. "Paint, carpeting, and mattresses. Many mattresses are sprayed with formaldehyde as a fire retardant. Carpeting can be coated in toxins. And we are so used to having the benefits of chemicals in our paint finishes."

The team turned to Benjamin Moore's low-VOC Aura line for paint. It also used the water-based glaze Glacis by Adicolor Inc. for

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cabinets in the master bedroom closet, a bathroom and mudroom. In Goldman's two teenage boys' bedrooms, she used Flor carpet tiles made of natural fibers. To polish up her walnut floors, she used tung oil as a stain.

Despite her best green efforts, Goldman wasn't always successful. The Wells team, for example, was not able to find purple organic mohair for the sofas in the living room at a reasonable price.

"We shopped every vendor looking for the particular shade she wanted," Dowling said. "We could not match what she wanted in her head. When it comes to the tippy-top high end, it's hard to find a green line. Chemicals add a lot of stability in color. As far as I know, there aren't any sustainable mohairs yet."

Dowling could have had it made, she added, but it would have cost about \$400 a yard. They needed 40 yards of fabric. Instead, the team settled on regular mohair, which cost about \$70 a yard. "You can't control everything," she said.

Goldman, who moved into the home in December, couldn't be happier. "I am very proud of the way the house has come out," she said. "It smells good. It feels good."

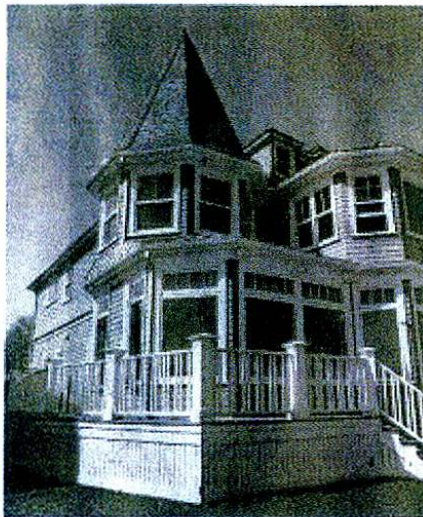
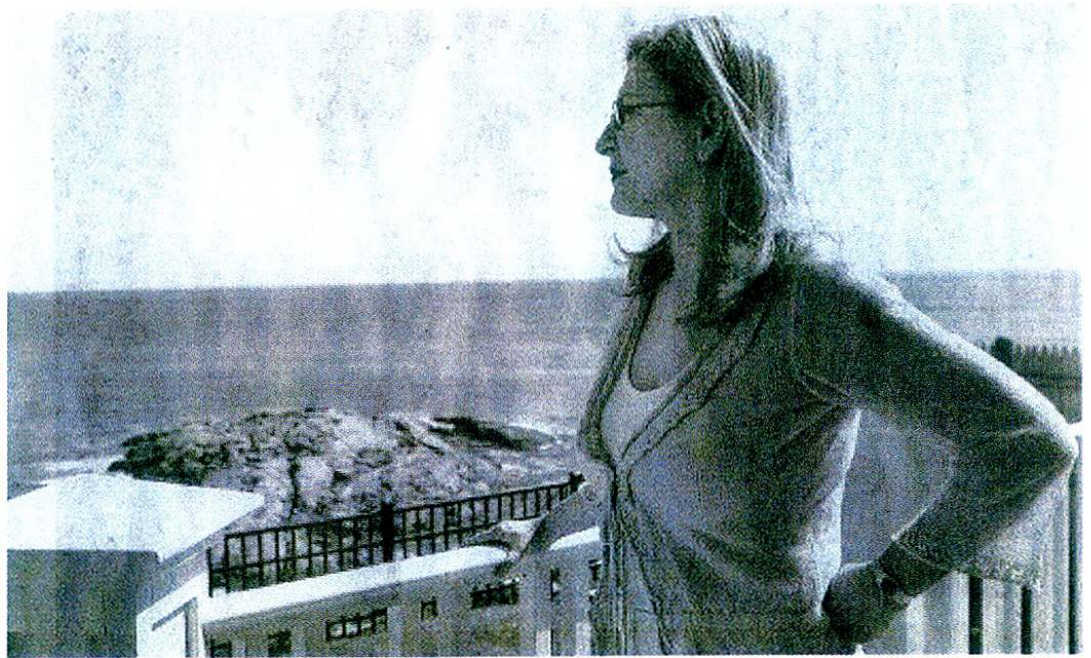
Not everyone is impressed with projects like Goldman's. Paul Eldrenkamp, president of Byggmeister Inc., a remodeling contractor in Newton, said consumers need to be careful about how they define green.

"Any 6,000-square-foot house is going to be a light shade of green. It's too big to be efficient," said Eldrenkamp, who has not seen the Goldman house.

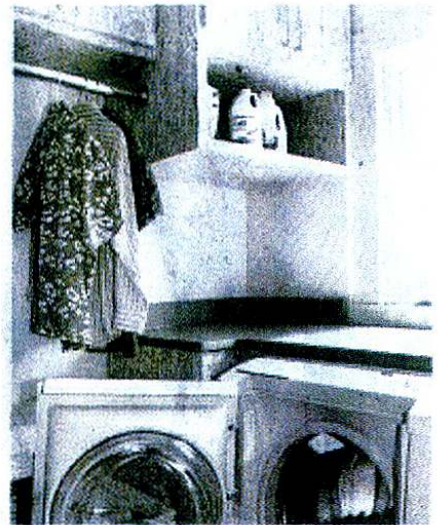
Green features like a deck made of recycled materials or bathroom floors made of natural stone are nice, he said, but 20 years from now energy consumption will have the most environmental impact. "From a carbon footprint perspective, it's most important to minimize the costs required to heat and cool a house," he said.

Still, Goldman says all winter her family only used the first floor's radiant heating system to warm the entire house. They never turned on the geo-thermal blowers. "We were very comfortable," she said.

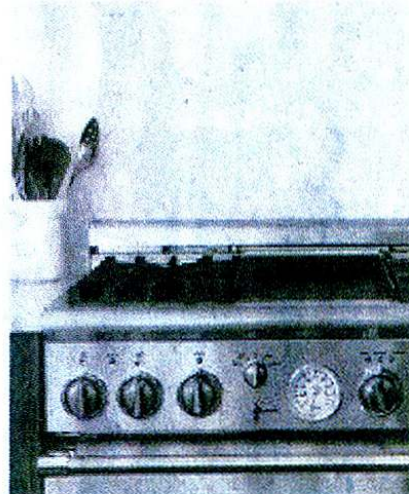
For all her efforts, Goldman doesn't expect everyone to go as green as she has. "Since everything in my home was going to be new and fresh, I figured I had an opportunity," she said. "Everybody has to do what they feel comfortable doing. It is a process."



Barbara Goldman (top) on the deck of her Marblehead home. The house's windows, by Marvin, are Low E and argon filled to hold in warmth in winter and deflect heat in summer.



The laundry room features cabinets made of Kirei board, an environmentally friendly product. The countertop is low VOC Silstone. The water-efficient washer/dryer is by Bosch.



A home cannot be LEED certified without energy efficient Energy Star appliances: Asko dishwasher, Sub Zero refrigerator, range (none are Energy Star rated) by Thermador.