

Freeport's environmentally responsible Harmony House is dramatic proof that it's easy being green.

# The Green House Effect

BY PHIL KAPLAN, AIA, LEED

Less than a year ago, the Foxes found themselves in a position faced by many young Maine families these days. Tim, an emergency room physician at Southern Maine Medical Center, and Jen, a ballet instructor, were living in a 100-year-old house in South Portland. It was the kind of classic but drafty home where you couldn't keep a candle lit in front of a closed window. For over a year they searched for a more contemporary house in Freeport well suited to the needs of their family with three young children. "We wanted," says Tim, "something efficient but not too big," something that wouldn't break the bank.

Not prepared to build from scratch and turned off by so many character-deprived ranch houses and oversized "builder boxes" in their price range, the Foxes thought their options were so limited that "we nearly gave up hope." Then, surfing a realty website, they saw an ad for a "green, efficient home"



60-percent complete. A short time later they were chatting with builder Josh Fedorka of Symphony Construction on-site at the 2,200-square-foot Harmony House, and after a two-hour impassioned walk-through, "we were not only sold, we were converted."

If you've heard even peripherally of the concept of a green or sustainable approach to building a new home but aren't sure

exactly what it is, you aren't alone. Despite a major feature in *Time* and appearances by the godfather of green, the late architect Samuel Mockbee, on *Oprah* and *Nightline* and in *People* magazine, the concept is new but catching on like wildfire.

Green building has been embraced by a large number of municipalities around the country, many actually *requiring* that new

## inside story

publicly funded structures be formally certified by the United States Green Building Council (USGBC) in conjunction with a LEED (Leadership in Energy and Environmental Design)-accredited professional. As the United States prepares for a brand-new LEED certification process for homes in 2006, the building profession is scrambling to ready itself for the push.

Following the green paradigm, Fedorka and his partner, realtor Mony Hang of Keller Williams, hired Chris Briley of TFH Architects to design the house according to three overriding principles: "to leave as small an ecological footprint as possible, to promote healthy building practices by using materials with reduced toxin levels and maximizing occupants access to fresh air and sunlight, and to provide an energy-efficient dwelling that is comfortable, beautiful, and in sync with its surroundings," Briley says.

"We knew a bit about green building going into it," Tim Fox says. "We'd done a lot of research on the web, so we were familiar with the systems. This house has what I'd call a good level of green to function properly. [On the other hand,] we were not looking for something that was 'off-the-grid' [completely independent of public utilities]. We don't want to drop out of society.

"Images of Ted Kaczynski pop into your mind," he laughs.

"Most of the 'green' is hidden, but you just feel better about being inside this house," says Jen Fox, referencing many of

the materials used. "We didn't realize that we could afford a house this nice."

Green sucking up greenbacks is a widespread misconception. But the truth is, Fedorka and associates have managed to offer an attractive, green home at around \$150 per square foot—not only unique in these parts, but downright revolutionary.

Although the house smartly combines charm and architectural features with obvious appeal—radiant flooring throughout, a stone fireplace, copper flashing, a well-designed kitchen with solid surface countertops, large double-hung windows, and an open plan—it's the bottom line that unflinchingly resonates with everyone.

"We spent almost \$300 per month in oil alone in our last house," Tim Fox says, "which was almost 800 square feet smaller than this one."

"Some people around here can spend almost \$700 a month to heat a home," Fedorka joins in. "That's more than what we estimate this will cost in propane in an entire year."

"Combine that with the price of oil these days," says Fox, "and you've got yourself a real deal."

Solar panels on the south roof charge the domestic hot water heater for the entire house. Briley estimates a nine-year cost payback: "Then it's all free hot water after that."

"The unit is designed to kick on when the solar gain is not enough and it's never kicked on since we've owned this house—and with three kids, we take a lot of baths,"



Tim Fox says.

"It's a matter of positioning, too," says Jen Fox. "In March and April the solarium was regularly 78 degrees from the sun alone, and on hot days the air-circulation system has kept us cool. We don't have air conditioning. We don't imagine ever needing it."

"The sun rises and sets every day, giving us free light and heat; we'd be fools not to take advantage of it," Briley says.

Briley also specified a high-efficiency gas boiler to serve all the radiant floors, which operates at 93-percent efficiency compared to 82 percent for standard, oil-fired furnaces. Fedorka says, "If the Foxes use the building as designed they could save up to 70 percent on their total utilities." Add an advanced super-efficient wood-burning fireplace that—combined with the ventilation system—could truly heat the entire house on its own, and insulation levels that increase performance by about 36 percent, and you've got a system that could get you through the winter with only some hard work and a sturdy axe.

"Nothing was wasted in either materials or space," says Hang. It's clear that every square foot is used, and used well. The size helps keep the family close.

It's also clear that Briley's design has been complemented by Hang's discovery of a property that's become very special to the Foxes. "When I pull in my driveway, flanked with blueberries and wild strawberries, I really, truly leave the world behind," Jen Fox says. "It allows me to not think about going to the grocery store or the bank for a while. There's something so wonderful about that."



## Follow the Greenbacks

Overall construction price, 2,200-square-foot green home with a ready-to-finish basement and a ready-to-finish space above the two-car garage: \$341,000.

**Cellulose Insulation:** \$4,600 versus \$3,000 to insulate with fiberglass. The cellulose (90% recycled content) greatly outperforms fiberglass in thermal resistance by a factor of roughly 1.5.

**Advantech Flooring System:** Floor and roof sheathing were equivalent in cost to standard CDX plywood (\$29/sheet) but stronger, more weather resistant, and formaldehyde-free in the wood binders that would otherwise outgas back into the home. The Advantech I-joists are also formaldehyde-free and cheaper than a well-known competitor (\$2.94/lf instead of \$3.56/lf).

**Air Drywall Approach** allows the exterior walls to dry to the inside of the house as well as the outside and reduces the risk of mold or mildew. Extra cost \$400.

**ICF Foundation:** Insulated Concrete Forms cost \$11,500 (compares with \$8,900 for a typical foundation).

**Paperstone Countertops:** At 1-1/4" thick, Paperstone was \$35/sf compared to Fireslate II at \$45/sf, Corian at around \$60/sf and slate or granite anywhere between \$60/sf to \$90/sf or higher.

**Bamboo Flooring:** Prefinished 5/8" Green Beneath bamboo flooring cost \$3.50/sf. Prefinished oak flooring costs \$4.50/sf.

—Chris Briley, TFH Architects

Working together has been so successful that Hang, Fedorka, and Briley (also currently in the process of opening his own architecture firm, Green Design Studio) have formed a partnership called Green Quality Homes. They want to redefine the criteria for choosing a pre-built home and are banking on the assumption that the Foxes' sentiments aren't unique.

"When people shop for a car," Fedorka says, "they're well aware of its estimated miles per gallon, emissions levels, durability, and resale value, as well as comfort and performance. Why do people stop short when looking for a place to live?"

"It's not just about how much granite I can put in my kitchen," Jen Fox says. "We both want to let people know that there's an alternative out here, and it's better. If more homes were built like this, I think the world would be a better place. Now we can't imagine why anyone would build differently. I believe it's the wave of the future. And I'm really proud of it." ■

Phil Kaplan is president of Phil Kaplan Architects in Portland. Design by Chris Briley, TFH Architects, Portland. General Contracting by Symphony Construction, South Portland. Project Management by Green Quality Homes. Photographs by Jim Millay Photography.