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## A green home of her own

Heather Ferrier and her building-contractor father plan to prove that an Earth-friendly home can be chic and affordable, too

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HEATHER'S HOUSE Building green in Parker County

An occasional series

Like most 25-year-olds, Heather Ferrier wants a place to call her own. A space on which to put her creative mark. A domicile she can love *and* afford.

Unlike most 25-year-olds, Heather has a dad who's a building contractor. A building contractor on a mission to construct energy-efficient homes.

Could that be more convenient?

About two years ago, Heather and her father, Don Ferrier, put their heads together and decided to build Heather a house. But this project would be more than just a family affair. Instead, Heather's home would be a Ferrier Builders' showcase: a contemporary, environmentally friendly, lower-cost prototype. And it would prove to Ferrier's clients and industry colleagues that affordable "green" building is possible, even for young professionals such as Heather.

What does it mean to be green? Choosing materials and designing structures in a way that minimizes their effect on the Earth's limited resources. Using less wood and eliminating toxic chemical finishes, opting for more locally produced materials rather than those that need to be trucked in from across the country, taking advantage of the natural heating and cooling properties of sun and wind.

Heather's home will do all of that, and it's nearly a reality. After a year of searching for an empty lot and working with an architect on plans, the walls of this Parker County residence are set to go up in a couple of weeks. And the project has become more than a local affair. It was invited to participate in a U.S. Department of Energy national building program and was accepted as a pilot project for a new U.S. Green Building Council ratings system, one of the first in Texas.

"I am totally behind the whole concept" of green building, Heather says, "and how the [mainstream building] industry is kind of bringing some light to the subject."

Which it is. This past January, the influential National Association of Home Builders, a trade group, introduced a new Green Building Initiative and voluntary guidelines for homebuilders. On billboards and in other advertisements, mass builders now tout the fact that their homes meet the federal government's Energy Star energy-efficiency ratings.

Heather's peers are on board, too. "People my age want to take steps toward sustainable living," she says. Plus, when they find out what her average monthly energy bill is expected to be -- \$40 for a 2,028 square-foot home -- "that catches everyone's attention."

### Home economics

"I love it."

Heather and architect Gary Olp had just begun planning the design of Heather's future digs when Heather saw Olp's new Dallas home and uttered those three words. She connected with the open floor plan, the contemporary styling, the abundance of windows and the passive-solar approach to controlling the house's temperature. (As opposed to capturing the sun's energy with solar panels and turning it into electricity, passive solar uses the sun's raw energy to heat the space.)

"Can my house be a smaller version of this?" she asked Olp.

The answer was yes -- with some modifications, of course.

Olp, principal of GGOArchitects, has been designing energy-efficient homes for several decades and has worked with Ferrier Builders in

the past, including on his 3,600-square-foot, three-bedroom home in the Lakewood area of Dallas. The innovative residence, less than a year old, features two whole-house fans that work with the operable windows to move cooling breezes through the rooms. Power-hungry incandescent lighting has been replaced by compact fluorescent or low-voltage technology. Wood cabinetry comes from abundant Texas green ash, finished with a one-time application of organic oil. Paints are low-toxicity, and the downstairs floor is a simple ceramic tile.

This past summer, Olp's highest electric bill was \$65, in August. Last winter, Olp, his wife and two sons never felt the need to turn on the furnace.

How'd he do it? Mostly through passive-solar techniques. First, Olp chose a heavily wooded lot. He positioned his home so that in the winter, when the trees are leafless, most of the sunlight falls through the floor-to-ceiling windows on the south side of the home. The light heats the ceramic tiles during the day. At night the tiles return that heat to the living space, keeping it cozy.

In the fierce Texas summer, those same trees shade the windows. Year-round, an inventive "reversible duct system" works with the physics of air (warm air rises, cold air falls) to keep the house at a comfortable temperature.

But that's not all. The house's first floor exterior walls are constructed from insulated concrete forms, or ICFs. These are foam blocks, stacked and filled in place with concrete, resulting in a 25 percent to 50 percent energy savings over wood-frame walls filled with traditional fiberglass insulation. Plus, the ICFs 10-inch thickness makes for wonderfully deep interior window ledges.

## Building anticipation

Heather's three-bedroom, two-and-a-half-bath home won't have quite as many bells and whistles as Olp's house. Instead of ICFs, her walls will be structural insulated panels, or SIPs, a less expensive alternative but still more energy-efficient than most wood/fiberglass homes. Heather's heating and cooling will be a traditional forced-air system, unlike Olp's pricier reversible ducts. She'll have scored-and-stained concrete floors that will act like Olp's tiles, capturing the sun's warmth and giving it back to the house at night. The metal roof will reflect, rather than absorb, heat. Hot water will be powered by a solar system.

Ferrier and Olp don't need much help building an energy-efficient house; their original plan for Heather's home came in at 43 percent more efficient than the international Model Energy Code standards. But as part of the U.S. DOE's Building America program, they've been able to ratchet that up a few notches. Working with building-science consultants, they modified their blueprints (mostly by eliminating windows) to raise that figure to 50 percent. Additionally, as a partner in the U.S. Green Building Council's pilot program for residential green ratings, Heather's house plans have already scored a win.

Heather's team expects to keep costs under \$100 per square foot. Through Worth National Bank, she received a combined construction loan/mortgage that will run her \$1,600 per month. That's about twice as much as a decent apartment, but she'll be divvying up the payments with two roommates: her sister and a friend.

So far, the most exhausting aspect of the endeavor was finding a viable lot. Heather, a University of Texas at Arlington graduate who works for her father in Aledo, wanted to be close to downtown Fort Worth. But obstacles interfered: the cost of a vacant lot; neighborhood associations or subdivisions that banned small houses and/or mandated the use of certain facade materials, like brick; and charm. Heather wanted a site with character, like mature trees. All this led to her buying the lot in Parker County, just a couple blocks from Lake Weatherford.

There were times when she wanted to give up, thinking, "Maybe it just would have been easier to walk into a tract builder's [model home] and say, 'I want that plan,' " she acknowledges. But most of the time she's convinced that her perseverance will pay off.

"At this point," says Heather, "I'm willing to do whatever it takes for me to hang Christmas lights next year."

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