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Building a home green home

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RALEIGH, N.C.

The brick house in Raleigh's Meredith Woods subdivision looks like thousands of other big new homes in the area.

But this 4,300-square-foot house that Jonathan Philips and his family moved into a few months ago might be one of the greenest mainstream houses in the state, if not the country. It is a showcase for hundreds of environmentally friendly designs that could inspire home builders to try similar features.

At the same time, its resemblance to other nongreen houses on the cul-de-sac is precisely the point.

Cherokee Investment Partners of Raleigh, the nation's largest redeveloper of polluted lands, built the house to show that it is possible to construct an environmentally efficient home without sacrificing the kinds of traditional comforts, even luxuries, that attract home buyers.

"One of the most remarkable things about this house is it's so unremarkable," said Philips, who is senior director at Cherokee. "It blends in. We went the extra length to appeal to the mainstream setting and appeal to conventional builders."

The house, with a tax value of $741,000, is designed to use 50 percent less electricity and water than a comparably sized traditional house. It retains stormwater on site and makes wide use of recycled construction materials, from the recycled glass kitchen countertops to the wide-grained hardwood floors cut from logs dredged from the Cape Fear River.

The bricks used to build it were fired in a kiln in nearby Lee County, powered by sawdust from waste wood. The Sheetrock walls are made of gypsum created as a byproduct from scrubbing air pollutants from power plant emissions in Alabama.

Cherokee invests in environmentally contaminated sites in North America and Europe, which are cleaned up and redeveloped as mixes of stores and homes. The company projects about 400,000 houses will be built in the next 10 to 15 years on those reclaimed sites. Company leaders hope all those homes will share the

virtues of the Meredith Woods model.

"We partner with builders," Philips said. "Our goal here is to really influence them."

The house has one of the largest residential solar power-generating systems of any house in the state. But a casual observer might not notice. The unobtrusive solar panels look like dark slate shingles on the roof.

The 10-kilowatt solar power system, which experts said would cost about $90,000, has been generating about 450 kilowatt hours of electricity on average a month, according to Progress Energy.

The electricity, which would not be enough to fully power the house, is sold directly to Progress Energy through the North Carolina Greenpower Program, which promotes green energy. The homeowner will receive about $1,200 in payments annually from the utility and the North Carolina Greenpower Program.

The house has a geothermal heating and cooling system that takes advantage of the Earth's constant underground temperature of 55 degrees to enhance the efficiency of the house's air conditioning. A heat pump circulates water in 300-foot wells to remove heat from the ground in the winter and put it into the ground in the summer.

Bob Kingery, co-owner of Southern Energy Management, which does home energy surveys, analyzed the house.

"It uses the energy of a house a quarter its size," Kingery said. "They did it right, and it deserves to be held up high."

Just beneath the solar panels is a solar hot water system that uses the sun's rays to preheat water before it goes through a conventional water heater. That saves electricity. Much of the year, no additional heating is necessary.

A 2,600-gallon underground cistern in the front yard collects rainwater from roof drains. Water pumped from the cistern provides water for washing clothes and flushing the low-flow toilets as well as irrigating the yard. The appliances are water-efficient models.

Fred Thornhill, a partner in Corban Homes who built the house, said the project was difficult and time-consuming. Thornhill said he would recommend features such as the rainwater collection system and the rigid foam insulation to clients.

"I think people will look at it and find some of the concepts interesting," Thornhill said. "A lot of it is good solid stuff, and some stuff I'll incorporate into other houses. No sense in wasting that rainwater."

Even the yard is green

The yard is planted with drought-resistant native plants and trees, and emerald zoysia sod that requires little water.

Another set of cisterns under the driveway collects stormwater, allowing the water to seep into the ground gradually, filtering pollutants and recharging the groundwater rather than letting the water run off the property.

The house is large, with five bedrooms, four full baths and two half-baths. Some would say its size is a strike against its environmental friendliness.

"This house is, while not extravagant, a large family house," Philips said. "We're not feeling ashamed of the size of the house. If we're going to ask Americans to give up a lot of luxuries, builders will not embrace green building because they believe the public doesn't really want to buy the houses."

Dana Bres, director of the U.S. Housing and Urban Development's Partnership for Advancing Technology in Housing, a program that promotes information about environmentally friendly design, said there is a lot of reluctance in the home-building industry to embrace green design.

"Cherokee is spending their money to demonstrate the industry can do better," Bres said. "What is not to like about a concept like that? What we're hoping is everybody that looks at a project like that will walk away saying, 'Why can't I do a project like that?'"

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