

# FEATURED GREEN HOME It's All in the Details

by Lon Gleichman / for The Bulletin



The secret to successfully building green is committing to the details, according to Spencer Krueger.

Krueger and his wife Mary Lefevre have recently completed a "green home" just northwest of Redmond, and while they enjoyed the process, they realize now that being pioneers in using emerging technologies and new materials can be demanding.

According to Krueger, it took dedication to the goal, lots and lots of research, the courage to commit when they weren't sure and the willingness to compromise when it was needed. They started working on designs with their architect in October 2003, broke ground on their project in May 2004, and were able to move in during October 2005, taking two full years to the month to complete their dream house.

"We knew from the very beginning we wanted to build a green home," Krueger said. And they even knew what that meant. To Krueger and Lefevre "green" meant a home that would



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blend in with the environment, minimize waste in construction, use natural and sustainable products, and utilize technologies and materials with the goal of being energy efficient.

It's also the home they'll live in during their retirement years, so it was important that it be comfortable and accessible. And, since they were lucky enough to find two-and-a-half acres

right along the Deschutes River with stunning views of the mountains, it was critical it take advantage of the landscape.

A tall order for architect Cheryl Heinrichs of Cheryl Heinrichs Architecture, but she was definitely up to the test. The first thing she did was site the house just so to take advantage of the views and the southwestern exposure.

"That's the biggest challenge to building green in Central Oregon," she said. "Most mountain views are strongly to the west. Of course people want to site the house to take the greatest advantage of that, but that often minimizes what you can do to capture solar heat and light. This site had the advantage of a clear southwesterly exposure, so it was possible to turn the house 15 degrees and take full advantage of the solar potential. That made all the difference in being able to meet Spencer and Mary's desire for passive and active solar systems, and they still have gorgeous





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views from many rooms.”

Which led Heinrichs to her next challenge, designing the roofline. What she had in mind was a very modern shape that would be visually pleasing and provide the sharp angles needed for the structural insulated roof panels that would serve as the foundation for the KWH photovoltaic system, which would generate electricity for the home. But she wasn’t sure that Krueger and Lefevre would approve of what she called the “scissor look” since they had expressed a desire for something contemporary and southwestern.

She was pleasantly surprised when

they loved it at the first review.

“It was a really interesting look that accomplished a great deal at the same time,” Heinrichs said. Particularly in meeting the green goals of allowing in light, creating natural ventilation, and positioning overhangs at just the right angles to shade the windows from too much summer heat April through September, while allowing as much light and heat as possible into the house October through March, the darker winter months.

“That conversation established a great working relationship right from the start as I realized that we were going

to have a lot of synergy moving forward and could work together to make all the many, many decisions that would be involved,” she said.

Just how many more decisions came to light through the process, according to Krueger. And since they were breaking new ground in Central Oregon in many ways with their green project, it took time to research options, investigate details and make decisions that maintained the integrity of the goals but still fit into the budget.

“It was time-consuming,” said Krueger, who was glad that he took on the project after his retirement rather

than before. “But being so intimately involved in researching and selecting our options means that I really understand how my house works now; how the systems are integrated to function together.

For example, that same “scissor” roof is designed to channel water run-off into an underground network that serves as a natural irrigation system for the xeriscape landscaping around the house. The solar system on the roof not only generates electricity for house (with the excess being sold back to the utility company), it also feeds into the solar water heating system that provides hot





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environmentally-friendly homes in Central Oregon but nothing as green as the Krueger-Lefevre home. "Working as thermal mass, it minimizes heat loss from the house. And because it can be covered directly with stucco on the outside and plaster on the inside, it minimized the need for additional construction materials like drywall, taping and mud."

Everyone is pleased with the final

result, and Davis is now building another green house out of the Durisol blocks in Terrebonne. He values the learning he did on-the-job at the Krueger-Lefevre residence, but when people ask him to compare building a conventional home with the green home, he said he can't.

"It's not like comparing apples with apples," he said. "Building green requires a different set of priorities, a different thought process and different

water for domestic uses.

"And if you want hot water, you have to turn it on first," said Krueger, citing the on-demand hot water with individual switches located near each tap in the house. "We don't think about too much now, but at first it was disconcerting to wait and wait for the hot water to run out of the tap and realize we hadn't turned on the switch."

While Krueger and his wife have gotten used to their new systems and are realizing results from their conservation efforts, guests still take a while to adapt to certain new behaviors like this one.

But the biggest learning curve by far for the team was when they decided to use Durisol blocks made from recycled wood fibers and concrete to structure the frame of the house. This was the first time Heinrichs had recommended this particular material and the first time general contractor Jim Davis of JB Davis Construction had built with it, but both are very impressed with the results.

"The house has an above-grade R-value of 25 as a result of the Durisol blocks and the three-inch rock wool insulation on the outer walls," said Heinrichs, who has designed several



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techniques. As we build more and more of them in the region, we get better at estimating, better at resourcing things and better at working through problems when they arise, but it's still a very new process."

Heinrichs agrees, and can't say enough about Krueger's willingness to make this his full-time project as well.

"They wanted reclaimed and sustainable wood, so he worked hours to find sources. Spencer really wanted to stay within budget, so he took on several projects himself like staining the concrete floors and plastering the

great to see the idea driving the design and the decisions."

Krueger just says it was a lot of hard work, but does believe his involvement will pay off in being better able to manage his new green home.

"When you're living in a home that's different from everyone else's, you have to figure it out when something isn't working quite right," he said. "I guess if I get bored with retirement, I know I can always go work on another one of Jim or Cheryl's projects. I sure know a lot now," Krueger laughed.



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guest bathroom walls," she said. "He wanted to minimize waste, so he sorted all the construction debris himself and hauled it to recycling sites instead of the landfill."

Davis also appreciated Krueger's involvement as he took on all the little details involved with finishing a 2,900-square-foot house, including what kind of windows would work best, where to get low-VOC paint and which floorings, like cork and wool carpeting, would best meet their desire to use natural and environmentally safe materials.

"That much detail takes time and dedication," Davis said. "Everything about the house is green, and it was

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