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Grid busters: Cache Valley homeowners using variety of methods to improve energy efficiency

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Dewayne Dean drills a hole to install geothermal heating at the home of Anne Hedrich on Nov. 4, 2010. (Eli Lucero/Herald Journal)

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By John Funk | 15 comments

The trend of environmentally friendly building is on the rise in Logan residential neighborhoods.

Whether building from scratch or retrofitting existing homes, many residents are looking to save money and the environment with alternative building techniques and sources of energy.

No green stone left unturned

Sherry Funke and her husband Jim Doward are hoping that their home, currently under construction, will be one of first LEED certified homes in the area. LEED certification, a project of the Washington, D.C.-based nonprofit U.S. Green Building Council, involves a very stringent set of guidelines for energy and water efficiency, sustainable building materials, carbon emissions, and indoor environmental quality.

"We believe that once we get certified — if we get certified, because we don't know, but we hope we're heading in that direction — it will be the first in Cache Valley," Funke said.

"It covers a lot of the design, the construction, and the maintenance of the home once it's working," said Todd Barr of JayDee Barr Construction, the contractor building the couple's home.

"It's a lengthy overall process," Funke added. "Starting with the planning, building, and then the landscaping. Todd's been working a lot on that in the office. It requires a lot of office work."

LEED certification is divided into four levels — Certified, Silver, Gold, and Platinum — depending on the building's score as evaluated by a USGBC-accredited

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inspector.

"I don't think we're aiming for a level. We just want it to be a good house," Funke said. "We did a phone conference meeting (with the certifier) and he came up with around the gold level, but that was just a preliminary thing."

The larger the home, the more difficult it is to reach the higher levels of certification.

Funke's home, built to house three generations of her family, is quite large. "Our lower level is designed to be for our elderly parents," she said. The basement living area will conform to Americans with Disabilities Act standards, and the completed house will be equipped with an elevator.

"The main level is designed for us to live in for a long period of time," Funke continued. "So everything is on one level. And then our daughter is upstairs. But we were penalized for being a little bit too big."

"People who are building smaller homes shouldn't be discouraged or deterred from it, because there would be a lot smaller costs and less documentation involved," said Ray Kitchens of JayDee Construction. "And actually, a lot of these points are geared toward smaller, more economical homes. So anybody can do it."

The home was designed from the ground up to be as energy efficient and environmentally friendly as possible.

"It starts with the foundation," Kitchens said. "All the concrete from the outside to the inside is separated, so you have thermal barriers. Framing is done a little bit wider on center to reduce the number of thermal breaks that you have in the exterior wall. Sherry and Jim went the extra mile and foamed the entire outside of the house, which should do away with any that we have at all, really. There should be no thermal leakage in the walls."

"We're going to be tied to the grid with some solar panels, and we already have hot-water solar installed for radiant floor heating," Funke said.

"The electric solar energy gets fed back into Logan city power, and the homeowner is compensated for that," Kitchens added.

Funke says she looks forward to saving money on electricity via the solar panels but does not expect to make a profit by feeding back into the grid.

"I think it's just whatever we can do," she said. "The reality is that I don't know if that will be possible."

Funke's motivation to build an environmentally friendly home is simple: "Wanting to do the right thing," she said with a laugh. "One of my driving factors for building a new house was the beauty of the valley," she continued. "I loved my neighborhood, but I didn't have a view of the mountains. But my husband has always wanted to build a green home. He's talked for years about it."

"He was the big the factor in us bringing those two theories together," she concluded. "A view, and a green home."

Practicing what he preaches

Ed Stafford, co-director for the Center for the Market Diffusion of Renewable Energy and Clean Technology at Utah State University's Huntsman School of Business, chose to focus on energy efficiency when building his green home.

"Most of the investment in this house went into energy efficiency," Stafford said. "When you talk about green building, you may come across people who will talk about sustainable wood and those types of things. We had a budget that we had to work through, and since I'm more of an energy person I was more focused on energy efficiency than sustainable lumbers and things."

He added, however, that he used some recycled materials in the home.

"We have some tile upstairs that's made out of recycled glass," he said. "We have this thing called PaperStone, which is basically recycled cardboard and some other natural fibers, and it makes a very nice countertop. Almost like a Formica top."

"You have to understand, I'm a professor, and I'm kind of an energy hawk, so I'm very interested in what it's like to live in an energy-efficient home," he continued. "And as a marketer, I'm very interested in how consumers perceive things, and so if I can live what I research and preach ... I can talk with some authority on what works, what doesn't work, that kind of thing."

Unlike Funke and Doward, Stafford chose to forgo LEED certification.

"That is a very expensive process for a homeowner, and it can actually delay you quite a bit," he said. "So the tradeoff there was I would rather put the thousands of dollars for that into the home."

For Stafford, one of the challenges was balancing efficiency with aesthetics. "Some people will walk in here and

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they're shocked that we have brown tile," he said. "We took the different types of tile and let them sit out in the winter sun, and we saw which ones were the warmest, and then that became what we wanted to do on the floors."

"The house is somewhat of a compromise in terms of style. My wife and I went to Italy some years ago and fell in love with Italian architecture," Stafford said. "We wanted this kind of modern Italian feel, but on the same token make it as energy efficient as we possibly could."

Stafford's home features large south-facing windows, designed to capture as much sunlight as possible from the low winter sun. Several of the home's windows are equipped with overhanging passive solar eaves which lower both heating costs on the winter and cooling costs in the summer. Water is heated geothermally for household use and also piped through the floors to provide radiant heat. Energy-efficient appliances such as an induction cooktop stove keep the kitchen green. Dual-flush toilets conserve water. An outdoor tank collects rain and snow melt for gardening. After dark, compact fluorescent bulbs and LEDs light the house.

"And we have Energy Star doors and windows everywhere. These all have argon gas in them to make them super energy efficient," Stafford said. "We have Icynine insulation. It's like an angel food cake. Thicker walls, so you can get thicker insulation. And the insulation was pretty pricey. We could've insulated it with a regular insulation for maybe about \$3,000, but this was close to \$10,000. So there are investments that you have to make."

Stafford describes the process of environmentally friendly building as a apparently endless series of compromises.

"If you're going to actually build a green home, you have to make some hard choices," he said. "Very often the belief of building green is that you should make the house as small and tiny as possible. The flip side is that if you have a small home, you won't be able to sell it, so that is a challenge."

To illustrate his point, he explained his decision to build a home office.

"The tradeoff is that you want to reduce your commute, and that's green," he said. "But then that means you've got to have office space," thereby increasing the size of the home.

"You're building your dream home, you want it green, but at the same time it's got to be functional," he concluded. "And if you have to sell it, you don't want to make it so specialized to fit your idea of green that then you can never sell it."

Not just new homes.

The trend of green homes doesn't include only new building projects. Some Cache Valley residents are retrofitting existing homes with environmentally friendly technology.

Anne Hedrich is having a geothermal heating system installed in her traditional single-family home.

"We're interested in using less energy, especially non-renewable resources," Hedrich said. "We were thinking about doing it down the line, maybe looking at it next year, but our furnace went out. And suddenly we were making the decision more quickly than we anticipated."

"We would have liked to have more time to find out about it," she added. "But hopefully this will help other people find out more about it."

The system pumps warm water from deep underground to heat the home.

"Outside we're drilling four holes 200 feet deep in the ground," explained Dewayne Dean of Palace Geothermal, who is installing the system. "And then we'll bring a line (into the basement), and the water will go through the heat pump and back out again. It'll come out of the ground at 50 degrees, and go back out at 40. The heat pump has the ability to compress that heat into 150 degrees."

The heat is concentrated into a radiator, through which air is channeled and then distributed throughout the house.

"We aren't using any gas or oil or anything to heat our house anymore," Hedrich said. "We are using electricity to run the pump, but it uses a lot less energy than we would for a regular furnace."

She adds, however, that she had a bit of apprehension about being a pioneer for a relatively new technology.

"It always makes me a little nervous, I guess, to be the guinea pig," she said. "But I guess we aren't totally the guinea pigs, because there's a school on the west side of the valley that uses this. I think there's enough people who have done it and have confidence in it that I feel comfortable with it."

Retrofitting an existing home provides fewer options for green technology than building a new home from the ground up, but Hedrich said she does what she can.

"We've been replacing some windows, adding some insulation. We looked at solar, but we have huge trees and our neighbors have lots of trees, and that was out of the question for us," she said. "We got a new fridge, we got a new washing machine that's supposed to use less water and less electricity. New attic insulation, we've improved that."

"We had an energy audit by Questar, and that was really useful," she concluded. "Kind of confirmed some of the things we were doing were the right things to do, but there's still more that we can do."

The popularity of green homes is growing, and homeowners like Funke, Stafford and Hedrich are leading the way.

"I think it's our future," Stafford said. "And I'll tell you, if we could build more green homes, we could drastically cut down our energy use. Buildings are our biggest energy guzzlers. Most people think it's cars. So if we could upgrade our buildings so that way we could have ultra-low energy bills, so we're not guzzling all this energy to try to keep our homes warmed or cooled, simply by designing with properly-sized eaves."

"This doesn't really cost you that much more, but for me, it's just very common sense," he said in closing. "And we just don't do that. You just kind of ignore those kinds of issues, and as far as I'm concerned, it adds thousands of dollars in your living costs in that home."

E-mail:

jfunk@hjnews.com

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CharlesAshurst posted at 2:08 pm on Sun, Nov 21, 2010.



Excellent. Everything is proceeding according to my evil plan.