

LEED: Home embodies comfort, environmental values

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Tennessee, became familiar with the program when he worked with Acuity Brands in Atlanta. Acuity is a leading provider of lighting products and a LEED partner. Two of its facilities are LEED certified.

LEED is offered through the U.S. Green Building Council. It was originally designed for commercial facilities but became available for residential construction about five years ago.

The Murphys' LEED home on Onion Mountain was completed in June. Their certification, which is pending, will make their residence the first to be LEED-certified in Macon County, said Maggie Leslie of the WNC Green Building Council (WNCGBC). Only a dozen have been certified so far in Western North Carolina, she said, noting that LEED is still a relatively young program.

"It makes me proud," Amy said last week. "It's a fabulous house. We're loving every bit of it... it's comfortable, beautiful, easy to live in."

Brett Murphy (no relation), of Arrowood Construction, built the home, which was designed by architect Tom Ritter.

The process

The LEED process began even before site preparation, with a three-hour meeting in Asheville to go over the plans with a team from the WNCGBC. Involvement with the council continued through the construction phase. Their input led to a few changes in the plan, such as putting insulation between the back-to-back fireplaces (one in the living room, the other outdoors) to prevent losing heat through the wall and redesigning the hot water supply.

This was one of the reasons they built a LEED house, Ken said. "It gave us independent verification that we were 'doing things right.' It helped us with things we might not have thought of ourselves, such as the run of hot water pipes."

The house has a highly efficient dual-system heat pump, which was installed by Franklin Sheet Metal. There are air exchange systems for both the upper and lower levels and, because the house is so tight, a mechanical system that can be used to exchange air with the outside — this is a feature LEED recommends.

Brett said the house had to be subjected to independent testing (a whole-house pressurized test) to determine the air exchange rate per hour. "You have to have a 4.0 to be qualified for LEED," he said. "We had a 2.5. For a house this size, that says a lot to me."

The house has received an Energy Star rating and the Murphys are applying for "N.C. Healthy Built Homes" certification, which is more stringent than Energy Star. LEED is more stringent than either one, going beyond energy efficiency to look at the environmental impact of the construction.

"It's the most encompassing program out there," Brett said.

For example, LEED requires materials used in the project to be as local as possible. This is an environmental requirement rather than an economic one, as it reduces transport requirements — but it does benefit local suppliers.

Even with the restrictions, Amy said, "We still had beautiful choices."

"Locally sourcing is not real hard here," Brett said. The stone came from Macon and Jackson counties. A local supplier, Jeff Johnson Timberframe, provided the

Southern yellow-pine beams, which are used instead of Douglas fir from the Pacific Northwest. The extensive cabinets were made by Liberty Wood Products. The siding, a recycled product that looks like cedar shakes, was made in Georgia. The Marvin windows, which have very high R-factors, were supplied by Franklin Glass.

Another LEED requirement is that construction waste be kept to a minimum.

"A lot of waste is created in building a house, especially one this size (5,500-square feet)," Brett said, but he found that controlling it was "not a huge challenge." For example, the flooring is made of multi-width boards, which creates less waste.

Situating the house to take advantage of passive solar heat is an important consideration in a LEED design. In the Murphys' case, that was easy. The natural siting turned out to be "as close as you can get" to a north-south main orientation — just 1 degree off.

Other LEED design features include natural landscaping and the use of permeable surfaces for paved areas. Almost no trees had to be cut for the Murphy project, which they and their builder see as a big plus. The house also collects rainwater from half the roof, storing it in a 1,000 gallon reservoir. This reduces runoff and the stored water sometimes comes in handy, as it did last summer during a dry spell.

To satisfy LEED standards for indoor air quality, low-VOC (volatile organic compounds) paint is used throughout. The garage is physically separate from the house, with a breezeway connecting the two. This design ensures that CO emissions don't escape into the living quarters.

Steep slope issues

Ken said he was concerned about the potential for landslides, especially as a slide occurred on Onion Mountain a few years ago. Before building, he and Brett checked the Macon County Landslide Hazard Map, which showed a high-hazard slide area at one corner of the house.

They had the site surveyed relative to the landslide maps, and had an engineer look at it. Then they took steps to protect their home from the potential danger. This meant reinforcing the footers on that part of the house and controlling the runoff.

"We did exactly what the steep slope ordinance would have required," Ken said.

Leslie explained that LEED does not address steep slope or landslide issues specifically, but does require that projects identify potential hazards and incorporate ways to prevent them.

Point system

The LEED certification process awards points for achieving various goals. Some are easier to do than others and a large house presents special challenges. But, you can earn points in certain areas to make up for those that turn out to be too difficult or expensive to achieve.

For example, the program awards points for using a certified green landscape designer. The Murphys chose to forego this extra expense and make up the points elsewhere.

Using alternative energy gave them a boost on the home's HERS (Home Energy Rating System) index. They installed a 1-KW wind generator (a vertical design that looks almost like a modern sculpture atop the roof) and a 1.7-KW solar system, which are tied into the power grid. The electrical system uses these sources first if they

are available; any surplus goes to the grid and the Murphys receive a credit.

Ken said it did not cost much more to build to LEED specs. "It's more like thinking things through," he said. Some things, such as the multi-size flooring boards, actually cost less than a standard product.

The benefits of building this way are considerable in terms of energy savings, better indoor air quality, comfort, lower maintenance costs for landscaped areas, etc. LEED certification gives owners independent verification that the house was built according to the stringent standards they wanted. It also increases resale value.

Amy said the big plus for her is knowing that their home is environmentally sensitive and energy efficient.

The builder is happy, too.

"It's not bad from my perspective," Brett said of the building process. "There were some extra steps, but not much more than I would



Photo/Provided

The Murphys lost nothing in comfort or beauty by making environmental choices.

have done if it were not a LEED-built house." The house took 14 months to complete (including a month lost during the brutal winter of 2010) — not bad for a stick-built house of this size and complexity. It came in "pretty close to budget," according to Ken.

Brett says that LEED requirements reflect the best building practices he employs routinely. The certification process requires considerable paperwork as well as extra inspections, but he says it "absolutely" was fun — "a great project."

"I wish they were all


LEED houses," he said. "It means the client is involved in making choices. It means purchasing locally. Working with Ken and Amy made it easy to do the project."

For Amy, the result is "just fabulous." After touring the house, it is hard to disagree.

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