



Wilmington's first passive house

By Miriah Hamrick, Staff Writer



Staff photos by Cole Dittmer



Lucien Ellison has felt a responsibility to live as sustainably as possible since an ecology course opened his eyes in college, but all it took was one beautiful view to inspire him to spend years building a house in line with one of the strictest green building standards in the world.

Ellison and his wife Jane lived only one mile away on Towles Road, but when they saw the property on Quail Run Road for the first time, they were blown away. Private and peaceful with a stunning view of Hewlett's Creek framed by two sprawling, centuries-old live oaks, the couple knew they had to live there — and more importantly, they had to build a house worthy of the view.

Top: The Ellisons' passive house on Hewlett's Creek is tucked under large oak trees like the centuries-old McCoy Oak. Right: The studio to the side of the main living area can be sealed off with sliding wood and glass doors, and features energy-saving features like plentiful ambient lighting and hopper windows. Above: Large open spaces exist throughout the passive house as well as the kitchen with Caserstone quartz countertops, stark-white cabinetry and cypress wood paneled ceilings.

"We bought it because it had beautiful views and beautiful old trees and we wanted to do it justice by building a super green house," Ellison said during a June 5 open house tour.

Ellison began researching the latest green building science and discovered some friends were building passive houses in Chapel Hill, North Carolina. Ellison took architect Kevin Pfirman to tour one of the houses under construction, and the trip inspired the duo to begin working on the Wilmington's first passive home.

Both Ellison and Pfirman were experienced in green building. Pfirman also designed the first LEED-certified house in New Hanover County, built by Konrady and Son Construction. But making the jump to passive house standards was a challenge. Ellison trained for weeks to earn designation as a passive house consultant, while Pfirman focused on reconciling the midcentury modern style the couple wanted, with plenty of windows and a split-level sleeping wing, with the energy demands of passive house standards.

The standards are among the most rigorous in green building, slashing energy use by 70 percent. Unique features like a system of 6,000-psi concrete walls and triple-paned, thermal-insulated windows and doors, along with plenty of insulation, keep Ellison's house airtight and prevent energy leaks.

An added benefit of the concrete walls is durability, especially in a region prone to hurricanes and destructive salty air. Ellison is confident the house will be around for hundreds of years.

To keep the tightly sealed house from becoming stale, an energy recovery ventilation system constantly flushes old air and ushers fresh air in, providing an added benefit of improved indoor air quality.

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"It's much better than a standard home because of the ventilation. People with chemical sensitivities, people with serious allergies, can live comfortably in a passive house," Ellison said.

Solar orientation is also important. A passive house captures enough sunlight in the winter to heat the house while eliminating sunlight in the summer to keep it

cool. Orienting the 5,700-square-foot structure on the property without disturbing the trees was a task that kept Ellison and Pfirman busy.

Pfirman said the house took approximately one year to design and one year to build. Although that is a normal time frame, he said the design demanded 20 percent more work than an ordinary house.

"There was a learning curve. This is my first passive house. I could definitely do it quicker [in the future]," Pfirman said.

Ellison estimated it costs about 15 percent more to build a passive house. His house came in at roughly \$200 per square foot. He said energy savings almost immediately offset the investment. The family moved into the house during March 2014 and Ellison said his energy costs go down month by month as the couple learns how to tweak the systems.

Ellison's wife worked with Robin Stanfield Designs to assure the modern midcentury design continued throughout the home's interior. The emphasis on responsible choices is maintained inside, with everything from the finish on the kitchen cabinets to the carpet padding free of dangerous chemicals commonly found in household products, nothing about the house suggests any sacrifice was made to achieve such demanding criteria.

Ellison and Pfirman stressed that any aesthetic can be achieved in a passive house.

"It's an energy measure. You can get there pretty much any way you want to. Your house can look however you want it to look just as long as it's meeting the energy requirements," Ellison said.

Still, Pfirman said it seems appropriate to give such an innovative house an edgy design.

"If you're going to build a house that's futuristic in terms of energy use ... I think it ought to look progressive," Pfirman said.

Although the house is finished, both Ellison and Pfirman see a beginning instead of an ending. Ellison is ready to bring more passive houses to Wilmington through his business, Ellison Building Company. He said he already has a few interested clients, not to mention a partner.

"I hope we get to do a lot of projects together in the future. That's the plan," Pfirman said.

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