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Developers Compete In CT Zero Energy Challenge



The interior of the new energy efficient home built in Essex is completely lined with Agribalance soy-based open cell spray foam which turns the house into a virtual thermal envelope allowing for efficient heating and cooling and energy savings. Bill Freeman, owner of Celebration Development Group, stands in an unfinished second floor storage space which shows the foam on every surface of the walls and ceilings. This 3,000 sq. ft. home uses green technology including a geothermal heating/cooling system and should save the homeowner up to \$4,000 per year in energy expenses.

William Freeman was on a mission when he built an energy-efficient spec house on Heron Pond in Essex. He wanted to demonstrate that building green doesn't require sacrificing luxury or looks.

"What I tried to do here was combine function with aesthetics," Freeman says while standing in the kitchen with its modern pendant lights and sparkling black granite counters.

The Heron Pond home, which sits in a 14-home subdivision built by Freeman's Celebration Development Group, has all the amenities a high-end homebuyer might require, including a first-floor master-bedroom suite with a luxurious master bathroom, a full-house sound system, a media room and a kitchen with the latest stainless steel appliances.

But it's the guts of the house of which Freeman is most proud. That's where you'll find the geothermal heating and air-conditioning system, the sprayed-in foam insulation, the manifold water system and the on-demand water heater.

"What we've done here is taken a well-designed house and incorporated all the items that you get the most return for," Freeman says.

The Essex house is more than just a challenge for Freeman, though. It's one of 18 projects across the state competing in the CT Zero Energy Challenge, a design-and-build competition for single- and multifamily homes between May 2009 and December 2010.



The competition, a CT Energy Efficiency Fund program administered by [Connecticut Light & Power](#) and United Illuminating, asked builders to create homes that come as close as

possible to using a net of zero energy, says Justin Lindenmayer, program administrator for residential new construction at CL&P, who spearheaded the program.

"The purpose was to demonstrate that homes that greatly exceed code were feasible and possible. They weren't futuristic," Lindenmayer says. "The time to start to build these homes is today."

When the projects are done, a home energy rater gives each home a HERS (Home Energy Rating System) score that compares it to a similar home built to code. The home built to code has a 100 rating, so a net zero energy home would achieve a score of zero.

With seven of the homes reporting their testing so far, Lindenmayer says, "we've had one home that's below zero, we've had a few in the 5-15 range, and more in the 20-30 range."

Joseph Swift, an operations supervisor at CL&P, says the 17 projects in CL&P territory and one in UI territory represent a wide variety of approaches.

"Some of the homes in the challenge are relatively modest, so we're seeing a full spectrum of different types and price ranges," Swift says. "It clearly helps demonstrate that this is not a high-priced option that people can't afford."

Avon Challenge Home

Another of the firms participating in the CT Zero Energy Challenge is Sunlight Construction Inc. of Avon, which is building a 5,000-square-foot home in its West Hills subdivision in Avon.

Sunlight's president, Bill Ferrigno, says he decided to participate in the challenge mainly to learn the new energy-saving technologies.

"It's smart for us to be where the action is and to understand that the buying public is now interested in this," Ferrigno says.

Sunlight took plans it already had for an upscale house and incorporated geothermal heating and cooling, LED lighting, a "very sophisticated insulation system," as well as a 5-kilowatt photovoltaic system on the back of the house, which faces due south.

"The goal was to try to not distinguish the look of the house, and with one notable exception, we've been able to do that," Ferrigno says. "This house is going to have a solar array on the back, up high."

Ferrigno says the house, which will eventually be listed at about \$1.25 million, has energy-saving features that added \$45,000 to \$50,000 to the cost of construction. But he points out that numerous tax credits are in place, including federal credits for the geothermal and solar systems.

Ferrigno also estimates that the house will save the homeowner between \$6,000 and \$8,400 dollars a year in energy costs.

"It probably will not win the contest," he says. "For us, it was to get our company on the cutting edge of this stuff and kind of immerse ourselves in the technology."

On Heron Pond

Freeman doesn't expect the Heron Pond house to win the CT Zero Energy Challenge either, in part because orientation of the lot meant he couldn't install solar panels. Still, he's proud of the home's energy-saving features, which he estimates will save a homebuyer almost \$4,000 in energy costs annually.

The spray foam insulation is one of the huge energy savers, Freeman says, because it creates a complete envelope that keeps the temperature much more constant than in a typical home. The air temperature in the attic in winter, for example is only about 5 degrees lower than in the rest of the house, he says.

Two gas fireplaces with thermostats also will allow the future homeowner to add heat to the family room and a sitting area off the kitchen, rooms that are more frequently occupied.

"When you have a house that's this well insulated, you can keep the temperature a little lower," Freeman says.

Freeman also points out that the house was painted with clean, no-VOC paints, has Energy Star appliances and has a low-maintenance exterior made of fiber cement siding. He also recently installed more LED lighting because it's quiet and doesn't put off heat.

"People don't realize when they're cooling their house in the summer, they're also cooling their lights," he says.

The Heron Pond house, which has four bedrooms and 2 1/2 baths in about 3,000 square feet, is on the market for \$949,000. Freeman hopes it will attract a buyer who appreciates the effort put into saving energy as well as the look and feel of the house.

"When you go to sell your house in 10 years, what you spent [on energy saving measures] will only come back," Freeman says.

Lindenmayer, of CL&P, agrees and says the Zero Energy Challenge points Connecticut builders in the right direction.

"We had 18 people sign up for the challenge. We thought that was incredible and it shows how the market is clearly shifting to this type of building," he says. "It's starting to hit the mainstream."

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