

On the House

A kid from SoHo builds the country's first zero-energy development

By Karen Angel

Photos by Norman Y. Lono

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Architect David Toder heads down the steps of David Shepler's net-zero house

Anthony Aebi just wanted to build structurally sound houses that would last. In the process, he ended up creating the first zero-energy, single-family housing development in North America.

Less than 80 miles from New York City, these already-historic houses use solar panels, geothermal heat pumps, triple-pane windows and an airtight structure of concrete blocks coated with Styrofoam to produce more energy than they consume.

Aptly called Green Acres, the development consists of five homes just outside New Paltz. Two more homes are under construction, with a total of 25 planned. In nearby Esopus, Aebi built two more net-zero energy homes at Riverview Estates. Eleven more are planned.

“I’m not a green person – I’m a practical person,” explains Aebi, 41, who grew up in 1970s SoHo, the son of loft builder and artist Ernst Aebi, an investor in both Green Acres and Riverview Estates. “I build houses that make common sense.”



Newlyweds Ryan, 31, and Patty Dannemann, 26, are thrilled they will never pay energy bills.

In 2006, Anthony moved to Esopus to make what he calls “stick-built houses,” wooden structures based on Early American homes. Aebi, his wife and three children live in one of those houses, even though he no longer believes in them.

“I realized ‘stick’ was garbage,” he says, recounting how his travels in Europe helped reinforce that realization.

“Whenever you bust into an old house and do renovations, there’s lots of mold, there’s more damage. The rest of the world looks at American housing as temporary housing. If you live in suburbia, most houses aren’t older than 60 years. You go to the rest of the world, and almost everything is built out of concrete or stone or something more permanent.

“The American style, simply the material choices, is not sustainable, and that’s probably the only green idea I had. It’s not sustainable to build these houses that have to be torn down and rebuilt every 100 years.”

In 2007, for a 15-acre rural Esopus lot, Aebi started researching materials that would last longer. He “stumbled across” insulating concrete forms, or ICF. The Styrofoam-coated concrete blocks, which fit together like Legos, had been around for decades but weren’t widely used in the U.S. The insulation starts at the slab under the basement and extends to the roof.

“The whole outside envelope of the house is insulated,” Aebi says. “Most people just insulate the attic ceiling. I’m keeping all the cold or the heat outside the house.”

He added a heat-recovery ventilator to recycle energy from outgoing air – energy that is lost in conventional homes – as well as an electric water heater and low-flush toilets. Finally, he installed high-end appliances, a Jacuzzi in every bathroom and steam showers in the 4,000-square-foot home.

“You’re not being a granola nut living in this house,” Aebi says. “I wasn’t out to attract environmentally conscious people. I wanted people who wanted bells and whistles in their house. And I was able to show you could do zero energy and have bells and whistles.”

The zero-energy rating came as a surprise to Aebi.

“When the rater finished rating the house for Energy Star,” Aebi says, referring to the federal tax-credit program, “he said, ‘Oh, my God, your house rates zero-energy. It’s the only one in the Northeast,’ and he started getting really excited.”

After finding out he had inadvertently created the only net-zero-energy house in the Northeast, Aebi set his sights high.

“I let it go to my head and probably made a stupid mistake,” he says of putting the house on the market for \$1.05 million and quickly building another, a 5,000-square-foot house that he offered for \$1.2 million. “I stigmatized the house.”

Those houses — which he later discovered were actually the only zero-energy homes in the country and possibly in the world — still haven’t sold, despite lower asking prices of \$795,000 and \$848,000.



Large master bath in David Shepler’s home.

Aebi had better luck with Green Acres, selling the first house there to Air Force veteran David Shepler for \$640,000 just after it was completed. Four more houses, each on one-third-acre lots, have since sold. Aebi credits both the lower price points and higher traffic — the development is just outside New Paltz’s busy downtown retail and commercial strip.

Buyers receive a number of incentives that offset the solar and geothermal systems’ high cost — about \$80,000, which adds 10% to 15% to the cost of each house. The incentives include a 30% solar and geothermal federal tax credit; a 25% solar state tax credit, capped at \$5,000; a NYSERDA (New York State Energy Research and Development Authority) solar rebate of about \$9,000, and thousands a year in savings on utilities.

The houses are on the electrical grid so the home can draw power the conventional way when occupants’ energy needs are unusually high or solar production is low. At the end of each year of occupancy, the homeowners’ local utility company buys back any surplus energy – but at wholesale rates that are about a third of the retail rates it charges consumers.

When Shepler, an IBM project manager, moved to New Paltz from Texas in 2007 and started house shopping, he was “frustrated by the lack of energy-efficient and green features in the homes,” he says. “No one, until I found Anthony Aebi, brought it all together into one concept. When my Realtor introduced me to him and to the concept he described for the Green Acres community, I was sold.”

Shepler, 40, worked with Aebi and architect David Toder, adding a floating staircase, a flat deck with cable rails above the garage and an upgraded photo-voltaic system that could someday be used to charge an electric car.

The house has lived up to its billing, and the systems are going strong with little to no upkeep, Shepler says. Central Hudson Gas & Electric sent him a check for \$85 after his first year of occupancy and one for \$172 last month. He felt “validated and satisfied,” he says. “The home had realized the zero-energy goal.

“Many people think trying to achieve zero energy is something for the future, that the science isn’t there yet or that it’s prohibitively expensive to do,” Shepler adds. “The technology is definitely there — Tony used off-the-shelf technology; he just put it together in a smart way.

“Yes, there’s definitely an investment up-front to put some of this in place, but when you look at the total equation, because of the zero-energy piece and having no utility bills, the economics work for you.” Aebi takes the concept further: “If New York State is ever as brilliant as New Jersey” — where

consumers get more than \$600 per megawatt hour of energy production on the open market through the state's Solar Renewable Energy Certificates program — “one of these houses would actually be earning an income.”

Ryan Dannemann bought a 2,400-square-foot house at Green Acres for \$519,000 months after Shepler, in August 2009. Dannemann's wife, Patty, 26, a teacher, says at first she and her husband were skeptical. “We thought it was too good to be true,” she says. “Then we sat down and saw the numbers, and they pan out. As a science teacher, I preach this stuff to kids all the time. I believe in alternative energy wholeheartedly, but it's hard to live that way in our world.”

Ryan, 31, a pilot in the New York Air National Guard, says with the energy savings factored in, their yearly expenses are about the same as they would be for a \$400,000 conventional house.

“I paid \$100,000 more than I was planning to, but the concept of this home allowed me to justify a larger down payment because you save so much over the long term,” Dannemann says. “In 20 years, the mortgage is paid off, and the energy is paid off.”

Pointing to a conventional house next-door, he adds, “If I ever have to move into a house like that, it's going to be depressing. All our friends and family who come through and look always have the same question: ‘Why isn't every home built this way?’”

ENERGY SAVERS GET MORTGAGE HELP

Green-building specialists say banks should give net-zero homebuyers a break by taking into account the thousands a year they will save on energy and the \$30,000 they will receive in federal and state tax credits.

Brian Mathews, director of residential mortgage lending at Ulster (N.Y.) Savings Bank, which has underwritten two Green Acres mortgages, says he does exactly that, tacking 3% to 5% onto a prospective homebuyer's monthly income when figuring out how much the buyer can afford to spend. “We understand that buyer won't have the traditional expenses of someone who's heating the house with gas or oil, and we're able to expand the underwriting ratios,” says Mathews, who calls Aebi's houses “state of the art.”

“You may pay more for the house up-front, but over time, you get the benefits in terms of the energy efficiency.”

Salisbury Bank of Lakeville, Conn., offers a green loan program, discounting adjustable-rate mortgages by 50 basis points when green features make up at least 25% of the home's value. That can translate into thousands in savings, says Amy Raymond, Salisbury's vice president of residential lending. Since introducing the discounted rate in 2008, the bank has made about 10 such loans.