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## Home green home: Couple converts energy hog to net zero user

**Mark Collins** For the Camera  
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For the month of January 2008, Jeff and Rachel Hohensee paid a \$500 energy bill and used 150 gallons of propane to heat their home west of Jamestown.

How much was the Hohensee's heating bill last month?

"We don't have those bills," says Jeff, sitting in a Boulder restaurant.

Come again?

"We don't pay electric bills," he repeats.

Nowadays, a couple of pieces of pine in the woodstove can keep the Hohensee's home -- nestled at 8,500 feet, and boasting a classic Colorado mountain view -- cozy for an entire winter's day.



(Courtesy Jeff and Rachel Hohensee)

"We don't notice when the wind blows so much anymore because the house is so tight," Jeff says. "And when it gets down below 0 (degrees) now we don't really notice."

That's thanks to a nearly two-year project to "seal the envelope" of the home that was constructed in the 1970s.

"When we bought the house, it was an energy pig," Jeff says.

The couple purchased and moved into the home in 2007. A few months later, as winter hit the mountain burg 15 miles northwest of Boulder, Rachel Hohensee put on her winter coat and hat. She never seemed to take it off the rest of the winter, even inside the house.

Then after consuming a whopping 3,300 kilowatt-hours of energy in a single month to heat their home, Jeff started feeling a little guilty. He works for Natural Capitalism Solutions, a non-profit based in Hygiene, as a consultant on sustainable-living topics.

"What I was advising clients to do was one thing, and what I was living in my life was another," he says.

He crunched some numbers, exploring what it would cost to turn the energy pig into a net-zero home -- one that generates more energy than it uses. Then he approached Rachel with the idea for a remodel that focused on maximum energy efficiency.

Despite a strong dislike for the indoor chill, Rachel wasn't sold, at first.

"When Jeff proposed the idea, I thought he was really crazy," she says. "I just wanted a nice-looking kitchen."

Nonetheless, the couple soon began the process of making their home energy efficient with an energy audit. That included a blower-door test and infrared pictures to discover where more air than desired was leaking from the home.

"It tells you the big rocks you need to start to move," Jeff says, of an energy audit.

The couple used caulk and insulation foam to block leaky areas. They rented an insulation blower and tripled the amount of insulation in their attic space.

"It was really easy," Jeff says.

Another energy audit, this one a REAP audit from the Conservation ReSource Center in Boulder, followed. That revealed more, smaller air leaks, which the couple worked to fix.

Eventually, they hired insulators to add materials to the home's walls. Jeff says they took the process to a higher level by hiring someone from Standard Renewable Energy to follow the insulators with an infrared gun. The infrared photos would show areas where the initial insulation was too sparse, and more was added.

"The insulators told me (using the IR gun) doubled the amount of insulation they usually put in," Jeff says.

In addition, the Hohensees fixed an outdated -- and inefficient -- passive-solar design in the home, by adding two

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inexpensive fans to a ventilation system. It now moves warm air created from the sunlight in one part of the home, through most of the house.

They changed from incandescent to CFL bulbs throughout and replaced their toilets and showerheads with low-flow versions.

All the home's appliances were upgraded to Energy Star-rated models. (The new refrigerator has twice the capacity of the old one, and uses less energy, Jeff notes). They replaced old propane stoves with wood-burning stoves and added a solar water-heating unit to pre-heat water going into their water heater.

The most visible change is the addition of a large array of solar panels on the home's exterior. The final part of the project was to replace the exterior doors and windows with high-tech, energy-efficient versions made by Serious Materials in Boulder. The final window was installed in November.

The couple plans one final energy audit in the near future, and will tweak any issues they may discover, Jeff says.

Though it's been a two-year project, the energy pig turned into a net-zero home several months before it was completed.

"Our electric meter spins backward," Jeff says. "In a year and a half, we have put 2,000 kilowatt-hours back onto the grid."

The Hohensees used \$35,000 out of pocket, a ClimateSmart loan for roughly \$25,000, and tax breaks and rebates to finance the retrofit project, which cost \$125,000, according to Jeff.

And what about Rachel's new kitchen? It's still in the works.

"It'll come," Rachel says, "from the savings that we'll have from the energy efficiencies."

Contact Mark Collins at 303-473-1369 or [BDCTheater@comcast.net](mailto:BDCTheater@comcast.net).

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What a great example a complete, "whole building" approach to energy saving retrofit, and the ROI that can come for it. We are very happy that the Hohensee's are a customer of [www.SeriousWindows.com](http://www.SeriousWindows.com)!

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