

## The Last Straw

Couple experiments with ways to renovate that will reduce energy use and utility bills

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The neighbors are curious. With its straw-bale walls, Peggy Loftfield's house looks like something out of the "Three Little Pigs." Peggy and her husband Earl were looking for a way to save money after retirement. They moved here from Massachusetts last spring. After a life-time's worth of interest in ecological, sustainable living, the two decided to pour all their knowledge into the grand experiment that will be their North Valley home.

"Basically, it's a shell that's been gutted and rebuilt," Loftfield says of the 800-square-foot home they purchased for about \$150,000. By the time they're finished with all the remodeling, their retirement dream home will have nearly doubled in price, she estimates.

They've done some run-of-the-mill construction to the '50s-era frame-stucco structure, such as completely overhauling the kitchen. But many of their plans go beyond typical. The home was retrofitted with straw, wrapped in a foot's thickness of bales that, when covered in stucco, will look a lot like adobe. With the straw, they were able to add about 200 square feet of additional living space. Paja Construction, the only firm in New Mexico focusing exclusively on straw-bale construction, boasts owner Cadmon Whitty, was able to add the straw right onto the home's exterior.

The transformation will make it one of only two homes in Albuquerque that have been retrofitted with this method, Whitty says. The other is his own. The straw serves as an incredible insulator, Loftfield says, adding, "It's a viable way of making older homes more energy efficient." Whitty estimates his average monthly heating bill is around \$40 or \$50. Not all of the savings are directly attributable to the straw, "but a good portion of it is," he says.

Two solar heater boxes were added to the roof of Loftfield's home, and if their reputation holds true, the boxes will heat the entire house. Air that's heated on the roof to about



Peggy Loftfield sits on the front porch of her "experiment."



Loftfield's home was recently wrapped in straw bales.

110 degrees will come in through two vents and circulate. Motors pull air from the house back onto the roof, where it can be reheated, "like a convection loop," Loftfield says. She took out all the other vents and furnaces. Earl had the idea to pay a mason to build a structure in the

bedroom that would store the heat from the roof, so they could retain the hot air at night.

There's also a glass box housing a black 40-gallon tank on the roof. "It'll get up to 105 degrees," Peggy Loftfield says. "When the hot water heater inside the house starts to cool down, this water will come down and heat it

Whitty's position as a founding member of the New Mexico Straw Bale Construction Association. In 1992, the organization petitioned the state for experimental permits to begin the construction of 30 houses built from straw bales. In 1997, they worked with the state to develop guidelines for the use of straw bales as construction material. The group also initiated a series of lab tests to examine how bale walls stand up to fire.

According to Whitty, once the bales are stuccoed, it takes two hours for "any appreciable heat difference to be felt on the other side of the bales." That's far better than a normal house, he says, adding, "It's a crazy assertion, but I would assert that stuccoed straw bale is less flammable than 2x4s."

Paja Construction charges about \$100 per linear foot. Loftfield's house is about 120 linear feet, so it's going to cost about \$12,000 to retrofit, Whitty says.

## Peggy Loftfield's house looks like something out of the "Three Little Pigs."

up again." The water heater will still use some electricity, but it will be much less than a normal system. When completed, the house won't have any gas-based appliances. Everything will be electric.

Loftfield says she's not concerned about mice or bugs moving into the walls. Good stuccoing should seal it. Similarly, Whitty says the straw walls aren't more flammable than traditional homes. Evidence comes from

Loftfield hopes all the experimenting will pay off. "The fact is, most of our society lives like this, in individual homes," she says. "We have hundreds of millions of homes that are 20<sup>th</sup> century, nonecological homes. My interest is how can we take the average urban home and make it something that you don't have to tear down completely and start over from scratch." ☉