

Homeowners pleased with natural heating and cooling systems

by Glynda Phillips

Mississippi Farm Bureau Federation

Ernie Dorrill has long been a proponent of alternative energy. While majoring in Landscape Architecture at Mississippi State University in the 1970's, he studied passive heating and cooling systems and thought they held a lot of potential.

Today, Ernie and his wife Mary use solar and wind energy to help power their Madison County home. Pleased with their lower energy bills, the Dorrills say they hope their work with alternative energy technology will inspire other Mississippians to follow their lead.

"With oil and gas prices like they are today, I think this country will be pushed hard to look for alternative energy sources," said Ernie, a long-time employee of the Natural Resources Conservation Service.

"I believe they are the way and the hope of the future."

Getting started.

A couple of years ago, a friend told Ernie about a grant program through the Mississippi Alternative Energy Enterprise (MAEE) that seeks sponsors for alternative energy technology in homes. He submitted a proposal but figured nothing would ever become of it.

In December 2002, when the Dorrills were in the middle of constructing their home, representatives from MAEE called to say the proposal had been selected.

MAEE experts installed solar panels, a wind turbine and a solar water heater in the Dorrill home and began monitoring the systems to collect information on how well they performed. They set up a modem to analyze the data, and anyone can download the information onto an Excel spreadsheet. Simply dial into the modem at 855-7969.

"Our alternative energy systems are performing extremely well," Ernie said "I believe for a residential or farm-based enterprise they would be really beneficial. I especially recommend a solar water heater.

"About 20 percent of your power usage is in heating water," he explained. "This thing will cut that by 80 percent. You can get a payback in three to four years and, from then on, the hot water is basically free."

Here's how the Dorrills use solar and wind technology as well as other natural heating and cooling elements in their home.

Natural heating and cooling

The Dorrills sited their home atop a 380-foot ridge just off the Natchez Trace to take full advantage of any wind currents that might be stirring. They also oriented their home to maximize natural daylight and warming benefits of the winter sun.

High ceilings act as a natural cooling mechanism while ridge vents along the roof catch cool wind currents that help to cool the roof down during the summer.

Lots of big windows let in plenty of sunlight, and roof overhangs help to control that sunlight so that heat is reduced during the summer months.

The Dorrills have planted deciduous trees on the west and east sides of the house to cut down on sunlight during summer months. Shrubs and trees have been planted to break the wind during winter months.

Thick concrete floors provide a thermal mass that naturally heats and cools floors. The Dorrills say their floors aren't covered with synthetic materials that might release organic gases into the air.

Wind, solar energy

A wind turbine spins industriously near the Dorrill home while a solar panel array lies along the roof of a building that houses six batteries and an electric grid.

The wind turbine and solar panels charge the batteries which are interconnected to the grid.

As long as there's plenty of sunlight, the batteries stay charged enough to contribute to the energy needs of the house. When battery power gets low during prolonged cloudy days, the electric grid switches on and takes up the slack. The batteries switch back on when their power builds up again.

The roof of the Dorrill home holds a plate collector and small solar unit that power the solar hot water heater pump.

While the solar panels "sit there and cook," as Ernie puts it, the wind turbine contributes about half the amount of energy the panels produce.

Ernie points out that a wind turbine is not as well suited to central Mississippi as it might be to the more windy Mississippi Gulf Coast or to many of the Western and Mid-Western states.

"Everything working together provides about 25 percent of the energy we need in our home," he said. "If we added more solar panels, we could approach 80 percent and then, finally, maybe fill all of our energy needs."

For more information

The Dorrills believe that U.S. consumers are beginning to get serious about alternative energy.

"These types of systems will become more affordable as more people begin to use them," Ernie said.

If you are interested in alternative energy systems or if you want to tour the Dorrills' home, call 601-855-7275.