

Western Kentucky School District Shows That Going Green Conserves Energy And Money

Tom Eblen - Herald-Leader columnist RICHARDSVILLE —

This rural community near Bowling Green looks like a tableau of 20th-century Americana, down to the stone-covered WPA school. But the week after next, the 500 students and teachers of Richardsville Elementary will leave their 1930s building for a new one next door that is the latest in environmentally friendly 21st-century design. It will be the first school in Kentucky, and one of the first in the nation, to be "net-zero" — generating as much energy as it consumes.

Expect to see more like it. That's because this 77,000-square-foot school cost about the same to build as a conventional one but will be substantially cheaper to operate. "The important thing this school shows people is that you don't have to spend a lot of money to have a sustainable building that saves energy and money," said the architect, Ken Stanfield of the Lexington firm Sherman Carter Barnhart.

Richardsville might seem like an unlikely place to be on the vanguard of "green." But this school is the result of years of collaboration between Sherman Carter Barnhart and a forward-thinking Warren County school system. The fast-growing county has built and renovated many schools in recent years, and each has experimented with energy-saving materials, design and construction techniques.

Thanks to those experiments, Warren County has saved \$5.3 million on its utility bills since 2003, said Jay Wilson, the school district's energy manager. That's enough to pay a year's salaries and benefits to 79 teachers, he said. Richardsville Elementary brings together all of those energy-saving lessons: **It will consume only 26 percent of the energy used by a conventional school its size.** The building is oriented with the sun, and windows are strategically placed, including an insulated clerestory window that runs across the center of the roof to let sunlight into the interior gymnasium and lunchroom. Mirrored tubes reflect light from the roof into the school's second-story classrooms and hallways. Automated systems balance natural and artificial light throughout the day, but teachers can override them when necessary.

The school's Insulated Concrete Form walls — in which concrete is poured into polystyrene forms — were economical and efficient to build, and they produce superior insulation. And because they can withstand winds of 250 mph, "you're looking at a safer structure for the kids to be in during a storm," Wilson said.

Most floors are stained and polished concrete, which will save substantially on janitorial costs, Wilson said. The gymnasium floor is made of fast-growing bamboo rather than hardwood.

The geothermal heating and cooling system saves electricity, as does the lunchroom kitchen. In a typical school this size, Stanfield said, the kitchen consumes about 22 percent of the entire building's energy. That will be dramatically reduced by using energy-efficient ovens and steam cookers. "We've been trying so many things over the years that building a net-zero school wasn't pie in the sky," Stanfield said. "It was the next logical step."

That next step involved installing two kinds of solar panels to generate electricity: a thin film attached to the roof with industrial-strength Velcro and 1,200 square feet of panels in one corner of the parking lot. The school will feed excess power into the Tennessee Valley Authority's grid on sunny days, drawing it out on cloudy ones.

State guidelines say new schools should cost no more than about \$200 per square foot to build, Stanfield said. Richardsville Elementary cost \$156, and the solar-panel system was an additional \$39, for a total of \$195 per square foot. The solar-panel system will pay for itself in 14 years but is warranted for 20 years, he said.

For all of its practicality, the school also is attractive, especially considering that "it's really just a two-story box," Stanfield said. The building is filled with light and space, and it has architectural elements and interior stone trim that echo the 1930s school. (The old school will be demolished, and the rubble will be recycled as fill for a new ball field.) Richardsville Elementary is designed to be good for the environment and the school district's bottom line, but it also will be a conservation lesson for students. The solar panels' performance will be shown on video screens in the front hallway, and the school's design and other systems will be incorporated into the curriculum.

"Not every school district is going to want to run out and put solar panels on the roof tomorrow, but everything else we did here is really simple," Stanfield said. "The big thing is convincing people you don't have to step out of your comfort zone too far."

Article can be found at: <http://scbarchitects.com/news/2010/08/25/tom-eblen-new-elementary-school-saves-energy-and-money>