



Rebuild America EnergySmart Schools Success Stories highlight schools and school districts that are making smart choices about energy, reducing energy and raising awareness of energy issues.

- New Building Design
- Existing Building Improvement
- Operations and Maintenance
- Renewable Energy Technologies
- Financing Building Improvements
- Energy Education



Poudre School District

Modeling Budget-Friendly Energy Efficiency And Sustainability

By forging local, state and federal partnerships and creating a team to explore evolving energy-efficient technologies, the Poudre School District in Fort Collins, Colorado, is a leader in school building construction. The district's new Zach Elementary School was designed and built for sustainability.

The Challenge

In the 1990s, the Poudre School District was seeking new and more effective methods for building sustainable and energy-efficient schools. A bond was passed in 1990 to build several new facilities in the district. The population of Fort Collins expanded significantly during the decade, creating demand for new schools in a relatively short period of time. Although many of the new facilities under the bond incorporated energy efficiency, they were not built to take full advantage of the area's dry, temperate climate, according to Fort Collins officials.

The Poudre School District ranks 174th of 176 school districts in state funding. With tight funds and another round of school construction in the works, saving money was critical. Efficiency was the key to ensuring budget demands were met while not compromising on highly-valued educational resources. School officials were determined to scrap the old way of building schools in favor of a new "whole school system" prototype employing simple, effective and advanced materials and technologies, while staying within budget.

The Solution

A "Green Team" was formed in 1999 to address missed opportunities to save energy and to research new methods of building schools. With the help of Rebuild America, its state partnership Rebuild Colorado, local utilities and the Colorado Office of Energy Management and Conservation, the school district explored various materials, systems and design options. The effort involved investigative, nationwide field training, from which the staff learned about, and developed, a systems approach to building schools.

The team ultimately developed new Sustainable Design Guidelines to complement their education and technical specifications. An extensive design competition sparked creative, inexpensive and usable options. As Colorado's first high performance sustainable school, Zach Elementary was built on time and under budget. The facility was built for \$100 per square foot versus the previous standard of \$115 per square foot, and it saves the district over \$11,000 in annual utility costs versus counterpart facilities in the district.

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Partnership Facts:

Name of Partnership:
Poudre School District

Targeted Buildings:
K-12 school

Space Improved:
63,000 square feet

Annual Energy Savings:
\$11,000

Amount Invested in Energy-saving Project or Initiative:
\$6.3 million

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For more information about energy-saving technologies, visit the Business Partners section of the Rebuild America Web site: www.rebuild.gov or contact Rebuild America at: 252-459-4664.

The school itself is billed as a “school that teaches.” It is an educational and awareness tool for students and staff, as illustrated by the donated photovoltaic-powered model wind turbines on display in the main hallway, the exposed structure in various locations and an Energy Rebate Program that gives students and faculty an incentive for saving energy against an established benchmark. These features also make the school a model for other schools in the district.

Key Technologies

- Recyclable and reusable materials, such as shingles made from recycled gaskets and carpeting made from recycled materials
- Day lighting throughout the facility with north and south facing high performance windows
- Sensors that adjust artificial lighting levels based on the amount of daylight in classrooms
- Tubular skylights in offices and restrooms
- Operable windows – insulated with recycled blue jeans – in all classrooms to take advantage of Colorado’s dry, temperate climate
- High efficiency (89 percent) natural gas boilers for the hot water heating system
- Premium efficiency electric motors in all rooftop units and hot and cold water pumping
- Thermal ice storage system, which complements the cooling system during peak electrical use times by making ice at night when the building has little electricity load, then using the ice during the day to eliminate high electricity demand charges
- Automated building system controls for all lighting and HVAC equipment
- Drought-tolerant native landscaping
- Raw water irrigation system using non-potable water for irrigating the exterior landscaping

What the Future Holds

The district is now building an energy-efficient high school with many of the same features used in the construction of Zach Elementary. School planners continue to make use of their partnerships while improving their integrated design approach to building new schools.

To learn more visit: www.eere.energy.gov

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy’s Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

Rebuild America is a U.S. Department of Energy program that focuses on improving communities through energy-saving solutions.



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