



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
- Operation and Maintenance
- Renewable Energy Technologies
- Financing Building Improvements
- Energy Education



Fairfax County Public Schools

Riverside Elementary School Saves Before Installing New Heating/Cooling System

A strained budget tends to spark creative opportunities. At Riverside Elementary in Alexandria, Virginia, it is becoming apparent that a new heating and cooling system can start saving money even before it is up and running.

The Challenge

The budget for renovating Riverside Elementary was set several years before the facility faced a requisite repair to its heating/cooling system. When the time came, Fairfax County Public Schools (FCPS) was staring a \$750,000 budget shortfall square in the face, due to inflation and higher than anticipated costs. The energy management team set out to find low-cost alternatives to the traditional option of upgrading from the present two-pipe heating and cooling system to a four-pipe system. The four-pipe design is known for its high maintainability and efficiency, but also for its heftier up-front cost.

Finding such an alternative while keeping an eye toward quality, efficiency and maintainability – core values of the district’s energy management team – required research and patience.

Amidst the search, school officials attended a seminar hosted by Rebuild America, where they learned of a special modular two-pipe design conceived by Tom Durkin, principal architectural engineer of Indiana-based Veazey, Parrot, Durkin, and Shoulders. The Durkin system, growing more popular in the Midwest, performs as well as or better than a four-pipe system, saving money in construction, maintenance and utility costs. It did not take long to convince the team that the Durkin design was their best option.

The Solution

Moving forward with the Durkin system at Riverside marks the first installation of its kind on the East Coast. Conventional wisdom says the system will pay for itself over a period of several years, but this one saved the school \$125,000 in construction costs due to lower redesign and retrofit costs.

The projected overall result is that energy usage and utility costs will be cut by a third, from the current 74.1 kBtu/sf/year and \$68,752 to 50.0 kBtu/sf/year and \$46,391. The annual savings will be more than \$20,000.

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Partnership Facts:

Name of partnership:
Fairfax County Public Schools

Targeted buildings:
K-12 schools

Space completed:
81,411 square feet

Riverside Elementary School enrollment:
488

Amount invested in energy-saving project or initiative:
\$750,000

Annual energy cost savings:
More than \$20,000

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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.

Surrounding school systems, such as Montgomery County in Maryland and Falls Church City in Virginia, are joining FCPS in their efforts to reduce energy usage while improving learning spaces. They are calling this effort E5 (Excellence in Energy Efficiency and Environmental Education). This initiative allows the area schools to benefit from collaboration and best practices, ultimately benefiting the most important element of the schools – the students.

With the new system in operation, the community will benefit from greater availability of the school for various after-school, community and adult programs, while continuing to save money, energy and the environment. From start to finish, it's a win-win operation.

Key Technologies

- A 93 percent efficient boiler occupying half the space of the original boiler. The reduced size of the boiler enhances its accessibility and ease-of-use. A revamped control system employs a single valve, versus its counterpart with valves throughout the facility, lowering maintenance costs.
- Full lighting retrofit (optimum spectrum lighting, 65 foot candles)
- Carbon dioxide monitors in each room
- Occupancy sensors that activate lights on an as-needed basis.

What the Future Holds

Following complete installation and successive realized savings and benefits, the FCPS energy management team expects to install more of the Durkin two-pipe system across the district as maintenance upgrades become necessary.

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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