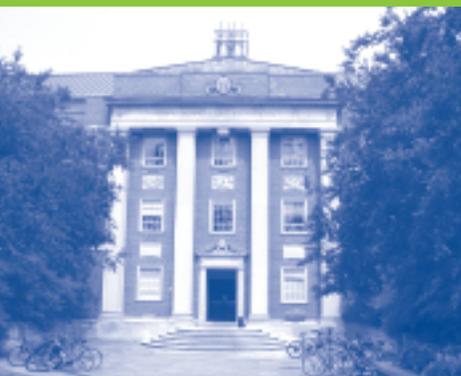


Rebuild America Success Stories highlight partnerships working to improve communities by practicing energy awareness and investing in energy-saving measures.

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



Duke University

Improving the Campus While Saving Energy

Duke University's sports teams have won numerous national championships over the years. One of the school's biggest victories didn't involve athletics, but rather defeating energy waste on campus. Using a step-by-step approach, the Rebuild Duke University Facilities partnership reduced energy and water consumption that is saving \$800,000 to \$900,000 each year, while improving the university's learning environment.

The Challenge

Duke University's Facilities Management Department (FMD) was interested in saving energy and water on campus, but faced several challenges: limited time and access to install improvements in certain research facilities; organizing the different facilities personnel on campus; and demonstrating to the university the value of energy-efficiency retrofits.

The Solution

To overcome these challenges, FMD implemented improvements one step at a time by working with building occupants, developing a team approach and demonstrating success on the initial projects.

Flexibility

When the department needed to install improvements in research facilities that were occupied during the day - and often into the night - they maintained flexibility and shared information with building occupants. "We carefully explained our program and the benefits they stood to gain," explains Bob Friedman, energy manager. "Meanwhile, we offered to work whenever possible to accommodate their schedules. Our willingness to be flexible often elicited a similar response from building occupants and actually simplified our scheduling tasks."

Team Work

To tackle the challenge of bringing together various experts on campus needed for the energy-saving efforts, FMD created an "Energy Team." With engineers, project managers, building coordinators and others on board, the team was charged with identifying opportunities to save energy while ensuring proper implementation of energy-saving projects.

Demonstrating Value

Although FMD knew that energy-efficiency projects would reduce costs while improving the campus, they needed to convince the university to fund the retrofits. Starting with small energy projects, the department demonstrated that they could save money for the university. By publicizing the projects to the university and its officials - through newsletters, presentations, and local and campus media - the department was able to secure funding for bigger energy-saving projects.

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Partnership Facts:

Name of Partnership:
Rebuild Duke University Facilities

Targeted buildings:
Colleges & Universities

Space completed or improved:
3.2 million square feet

Annual energy savings:
\$800,000 - \$900,000

Amount invested in energy-saving project or initiative:
\$3.5 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.

Beyond the financial value, the energy projects also improved the learning environment. Thirty-four watt lights - installed years earlier to save energy in classrooms and libraries - were replaced with T8 fluorescent fixtures that use less energy while providing better illumination. Upgraded and optimized HVAC systems also contribute to a more comfortable indoor environment for building occupants.

Additionally, the department completed plumbing retrofits to save water campus-wide. One thousand sinks were fitted with aerators and low-flow valves were added to toilets and urinals. The university is also recycling water used to cool lasers in laboratories. In the past, the water was dumped down the drain. Now, three research buildings use closed loop systems, recycling the water by sending it to cooling towers.

These energy-saving and water conservation achievements were recognized with numerous awards including two Rebuild America Energy Champion Awards; an Award of Excellence from the Association of Higher Education Facilities Officers (APPA); and induction into the ENERGY STAR® Building Honor Society.

Key Technologies

- T8 fluorescent lamps
- Electronic ballasts
- Compact fluorescent lights
- Metal halide lights
- Occupancy sensors to control lighting
- Light Emitting Diode (LED) exit signs
- Low-flow valves on urinals and toilets
- Low-flow aerators on sinks
- Variable speed drives for HVAC systems
- Variable air volumes systems

What the Future Holds

According to Friedman, FMD is exploring several new projects to save more energy. Proposed projects include new software to optimize operation at a 10,000 ton chilled water plant; replacing or upgrading older chillers; building control system audits and calibration; and more. The new projects could save the university around \$460,000 each year - with an 8-year payback period - adding to the energy-saving projects already completed.

“Because much of our retrofit was campus-wide, we were able to address a large audience with the message of energy and resource conservation,” says Friedman. “We are hopeful that our conservation message will be amplified throughout the university community and become a benefit for all.”

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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