

Energy Survey Saves Waupun School District \$234,000

CASE STUDY



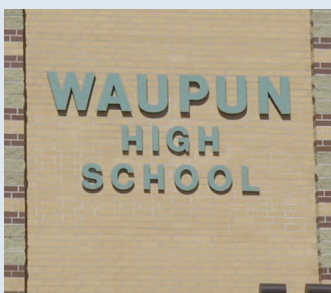
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“Challenging minds, inspiring action and preparing for tomorrow” is the vision at Waupun Area School District. District officials took this motto to heart when deciding how to handle their schools’ growing energy needs—challenging themselves to save energy as well as protect the environment.

The district, made up of four elementary buildings, one middle school and a high school, made energy savings a top priority and took part in the Focus on Energy study, *Energy Benchmarking of Wisconsin’s K-12 Schools*, which tracked energy use at public schools across the state.

The study’s goals were to help school leaders understand how much energy their buildings used compared to other, similar schools; provide quantifiable benchmark data to help them plan energy efficiency improvements; and measure the impacts of energy efficient upgrades. The study includes data from 1,293 schools in 226 districts, representing more than 60 percent of Wisconsin’s K-12 public schools.

Results from the study were reported back to Waupun Area School District so school managers could make fact-based energy consumption forecasts, devise energy-reduction strategies and measure improvement. Most importantly, decision makers could make more informed choices within their tight budgets.



ABOUT WAUPUN SCHOOL DISTRICT

The Waupun School district serves approximately 2,200 students and is made up of the cities of Waupun and Fox Lake and all or parts of the townships of Alto, Burnett, Chester, Fox Lake, Oakfield, Springvale, Trenton, Waupun and Westford.

SURVEY SAYS...

The results showed that compared to other Wisconsin schools, Waupun High School used a lot of energy and ranked in the top 4 percent of energy users among the schools surveyed. On average, the school spent \$1.41 per square foot on energy, compared to the survey average of \$0.87 per square foot.

When looking solely at electric consumption, the school totaled 13.5 kilowatt-hours of electricity per square foot, putting the 240,000-square-foot school in the top 2 percent of electric users surveyed. This meant the school would benefit from a detailed review of its lighting systems and plug loads.

The school's use of heating fuel was also above average, indicating a need to evaluate the heating system as well as the building shell, including doors, windows and the roof. Overall, the school ranked in the top 17 percent of heating-fuel users compared to other schools surveyed.

FINDING SOLUTIONS AT WAUPUN HIGH SCHOOL

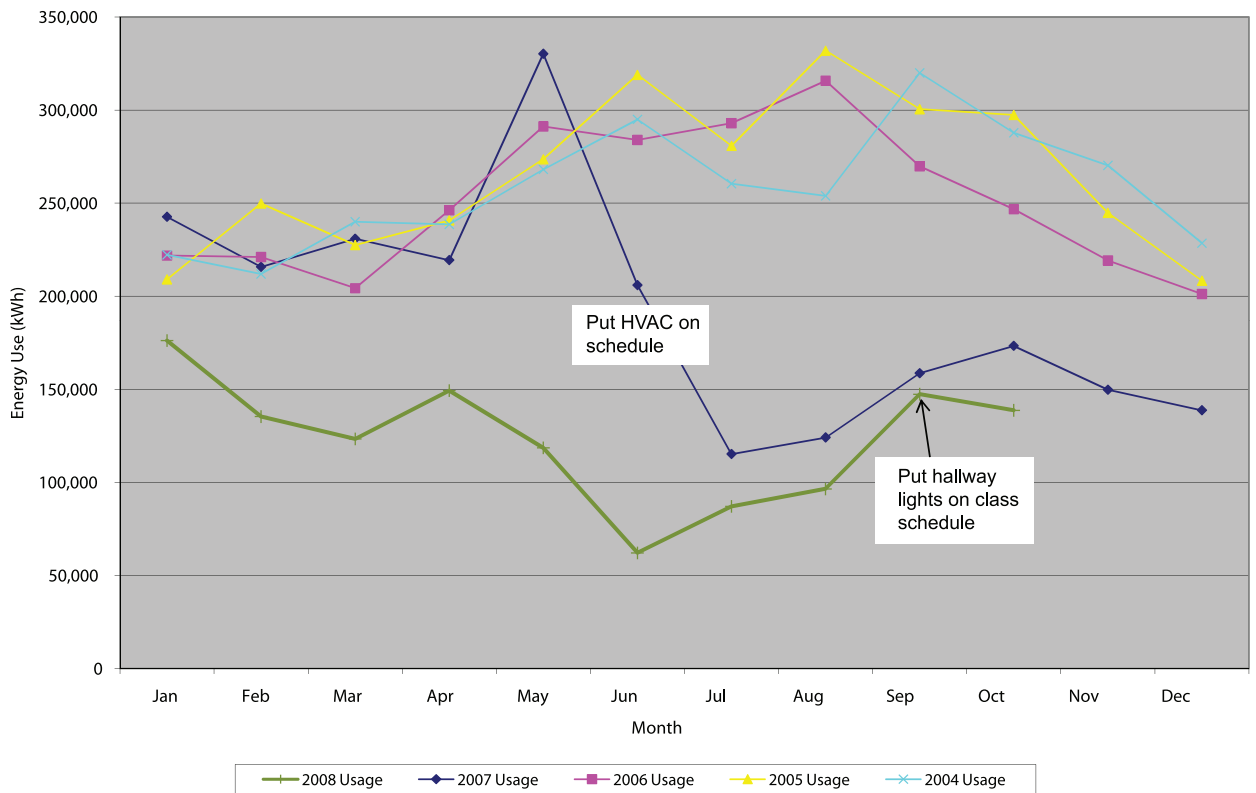
When Waupun High School was built in 2000, the heating and cooling (HVAC) system didn't allow building maintenance personnel to control it based on the school's schedule.

With energy and dollar savings in mind, the district retrocommissioned the energy management system, allowing the school's schedules to be actively maintained and saving significant amounts of energy.

Retrocommissioning follows the same principles of new construction but applies the commissioning process to existing buildings through in-depth analysis of operational and maintenance systems. The goal is to optimize building performance by implementing relatively low-cost design, operational and maintenance improvements.

By reprogramming the energy management system, less air needs to be brought into the building for ventilation during unoccupied hours, which requires less energy to heat and cool the incoming air. The HVAC fans also use less energy because they don't run as often during the unoccupied mode.

Energy Use Decreases at Waupun High School



Energy use has dropped significantly at Waupun High School since reprogramming the school's energy management system.

“We’ve also been able to save money on equipment costs,” said Mike Bos, building and grounds supervisor at Waupun Area School District. “There is less wear and tear to the equipment because it runs less and the equipment doesn’t need as much maintenance.”

SAVINGS FROM TOP TO BOTTOM

Since retrocommissioning the energy management system, the high school has saved more than \$129,735 in the first year and has cut its total energy use in half. Waupun High School is now among the bottom 20 percent of energy users from the schools surveyed.

Electric and heating fuel consumption has dropped by 53 percent. Prior to the retrofit, the building used 13.5 kilowatt-hours of electricity per square foot; afterward, only 6.3. The school’s use of heating fuel has dropped so significantly that it is now in the bottom 16 percent of heating-fuel energy users.

“Participating in the energy benchmark survey was the key to all of our energy savings. Once we were compared to other schools our size, it was evident that we were using and spending too much,” said Bill Zeininger, director of business services at Waupun Area School District. “Focus on Energy had similar findings at another school participating in the energy benchmark survey, and knew just where to look to identify where we could save money.”

TAKING EFFORTS ONE STEP FURTHER

The Waupun School District has taken energy savings even further by launching initiatives throughout the district.

In 2007, Washington Elementary School retrofitted its old, inefficient T12 fluorescent lighting to more efficient T8 technology.

In 2008, the high school put the hallway lighting system on the school’s class schedule to further save energy.

The middle school updated one of its boilers with linkageless controls (which enable fuel/air ratios



to be controlled with unmatched precision over the entire operating range of the burner) and reset the temperature controls to maintain day and night settings. The middle school also replaced more than fifty 400-watt metal-halide light fixtures with six-lamp T8 fluorescent high-bay fixtures and added occupancy sensors in two of the gyms.

In addition, the district took advantage of Focus on Energy service buydown incentives for boilers in all of the schools. These incentives help “buy down” the cost of standard maintenance activities. Just like a car, natural-gas boilers need regular tune-ups to keep them running efficiently. A professional tune-up can reduce a boiler’s gas consumption and increase output—saving energy, money and extending the life of the heating system.

BIG RESULTS, BIG PAYBACK

From these efforts, the district has saved more than 1.7 million kilowatt-hours of electricity and 108,000 therms of natural gas annually—enough energy to power 290 Wisconsin homes for a year. The district will also enjoy \$234,047 in energy savings on its energy bills each year.

The annual environmental benefits are equivalent to offsetting the burning of 5,340 barrels of oil—eliminating 4.2 million pounds of the greenhouse gas carbon dioxide (CO₂) from being released into the atmosphere each year.

Focus on Energy, Wisconsin's energy efficiency and renewable energy initiative, provided technical expertise and \$18,866 in financial incentives to help move the energy savings efforts forward.

ENROLL FOCUS ON ENERGY IN YOUR SCHOOL

Focus on Energy can help schools across the state identify and evaluate energy saving opportunities, provide specific recommendations, develop energy management plans, find vendors and arrange technical training opportunities about energy conservation. To learn what Focus on Energy can do for your facility, visit focusonenergy.com or call **800.762.7077** today.