

Let's Save Energy



School Energy Managers Project



The Common Denominator of Energy Management

September 2013

Rapidly rising energy costs coupled with reduced state funding continue to cripple district budgets.

With the School Energy Manager Project again being funded in two parts of the state, a review of districts who have successfully reduced costs and energy have shown one common component. Whether districts construct or remodel buildings employing state-of-the-art energy technologies or partner with an energy management company, having an on-site energy manager is key to maximizing energy efficient building operation.



Chris Baker, Kenton County Energy Manager, with students from Turkey Foot Middle, showcasing their successes.

This issue of Let's Save Energy has three examples of districts that have emerged among Kentucky's leaders in energy management. One district employed an energy manager with SEMP funding and supported the superintendent in implementing a performance contract, an energy cost savings funding for facility improvements with no impact on district bonding capacity, in his district. Another district combined hiring an energy services company to upgrade facilities and equipment with designating the district's technology specialist to be its energy manager. This energy manager expanded their skills, and continues to find significant savings by maximizing utilization of building control technologies. The last district began a partnership with an energy management company whose approach required employment of an energy manager by the district. Subsequently the energy manager began working with various Kentucky partners and implemented his own cultural awareness program.

These districts have been able to save significant dollars with a small part going to pay for the energy manager and the majority used to sustain teachers and services in the classroom.

Leaders in Energy speak-out



Greg Guess, Director
Kentucky Department for Energy Development and Independence

"In the past several years, we have seen Kentucky school districts take incredible strides towards making best energy management practices part of their day-to-day operations. And the energy managers – the district's boots on the ground – are an integral part of a coordinated energy plan. Energy managers have demonstrated cost savings through improved building performance, created a more comfortable and efficient environment for students and teachers, and have helped integrate energy education into the classroom. They are one of Kentucky's most valuable resources."

Successes in Energy Management

a look at three districts

Butler County Schools

With four school buildings ranging in age from eight to 42 years, Butler County was identified as Kentucky's most energy efficient school district during FY2011-2012, based on the mandated Energy Management Report (EMR). EMRs have been required of all districts since 2010.

"It is important to understand that learning how to manage our energy resources did not happen overnight," says Energy Manager Jimmy Arnold. "Energy management for Butler County started in 2004 under then-Superintendent Larry Woods and has continued with Superintendent Scott Howard," he said. "Support for this began with the school board and superintendent and is seen as a priority for everyone in the district."

Starting in 2004, the district utilized a series of performance contracts that led to Building Automation Control Systems (BAS) being installed in each school. Areas of each building were zoned to match occupancy with heating and air-conditioning needs.



Jimmy Arnold, Butler County Energy Manager

These changes also allowed for temperatures in the building to slowly "ramp-up" in the mornings and like-wise "ramp-down" in the afternoon to align energy usage with student, faculty and staff occupancy. Other facility improvements such as installation of efficient lighting were completed.

Originally hired as chief information officer in 2004, Arnold also took on the role as energy manager. He worked to understand the components of the BAS software and learned how to schedule HVAC equipment. Significant savings were found through scheduling, which reduced the energy required to bring the buildings to the desired temperature set-point. Daily review of the school's schedule of events and tweaking the BAS is required, as keeping everyone in the building comfortable has been the priority. "Having the ability to leverage the use of technology to monitor the schools during extreme weather events has resulted in additional savings," said Arnold.

Three years ago, the district implemented new technology of "real-time metering." This has taken the guess-work out of starting up a building and has allowed them to "demand-limit" on a daily basis. This is particularly significant as utility demand rates continue to increase. Managing the amount of energy used by large systems such as chillers, motors and large area air handlers has contributed to actual dollar saving of over \$1.2 million since 2004. Butler County's Energy Use Index (EUI) in 2011 was 40.27 kbtu/ft². As of August 2013, their EUI is 36.7 kbtu/ft². Their goal each year is to reduce their consumption from the previous year, which may also reduce the impact of the rising cost of utilities.

Warren County Public Schools



Dr Len Peters & Jay Wilson, Warren Co Energy Manager

How do you engage 14,000 students and 2,600 faculty in 27 facilities to have similar goals and objectives? That has been the task for Warren County Public Schools as they have become a leader in Kentucky and the nation in sustainability.

This goal began ten years ago as the district saw their utility costs inching higher. With questions surrounding the energy outlook, the board and district administration decided to contract with an energy management company and hired Jay Wilson to work as the energy manager. Early on, benefits were realized by discovering meters that were not needed, billing errors and calibrating HVAC temperature set points.

Analyzing utility bills, ensuring that the Building Automation Control Systems were continuing to work properly, as well as continuous monitoring and review of building schedules and daily operations were the pri-

mary targets. With a new school being built and grant opportunities available in 2010, Warren County was the first district in the nation with a true "Net-Zero" school.

In collaboration with SEMP, National Energy Education Development, Kentucky Green & Healthy Schools, and Kentucky Energy Efficiency Program for Schools (KEEPS) programs, Wilson introduced a program he titled Respect and Conserve Energy (RACE). RACE encouraged competition between schools and created a greater awareness of energy conservation and sustainability throughout the entire district. "The challenge of maintaining a successful energy management program is dependent on every person in the school district, the consistent execution of hundreds of energy saving actions every minute of every day," said Wilson. "We encourage, educate and motivate our people to be part of the solution and have pride in their successes."

The benefit of ensuring the buildings are working properly, coupled with a district where everyone takes ownership in their own energy consumption has netted a cost avoidance saving of more than \$7.9 million.

Lawrence County Schools

During the fall of 2011, Lawrence County Superintendent Mike Armstrong and Energy Manager Terry Salyer were discussing the state of buildings within the district. Many buildings needed improvements but the district lacked the financial resources not only upgrade roofs and structures, but needed many energy saving updates as well. Supt. Armstrong had been introduced to the concept of performance contracting during KSBA's Winter Symposium in 2010. Continued discussions led the district's school board to approve a request for proposals for district-wide performance contracting.

An energy services company (ESCO) was selected to do a preliminary study on energy savings for the district. Due to their findings and savings projections, the school board approved a performance contract. One of the key factors in the board team's approval was having an energy manager in place to be the liaison between the ESCO and the District.

The key factor in the success of this project has been the flow of communication from service contractor to energy manager to the district administration. The school board has been pleased with their return on investment and achieving a 27 percent cost savings from previous year benchmark.



Terry Salyer, Lawrence Co Energy Manager

Compliance with KRS 160.325 and Energy Management Policy

In a letter addressed to Superintendents, Dr. Len Peters, Secretary for the Kentucky Energy and Environment Cabinet, communicated the Energy Management Report form and process for SY 12/13, which is due October 1, 2013.

In an effort to reduce the rising energy costs that are straining school budgets, the Kentucky General Assembly enacted KRS 160.325 effective 2010. This statute required:

- Mandatory participation for all school districts in the (KEEPS) offered by the Kentucky Pollution Prevention Center (KPPC) by Jan. 1, 2010 and,
- Mandatory filing by KPPC of a report for each preceding fiscal year with the Department for Energy Development and Independence (DEDI) and the Legislative Research Commission on the status and development of energy management plans by boards of education and the anticipated savings to be obtained by those plans..

All school districts enrolled in KEEPS and most have developed and are implementing Energy Management Plans resulting in millions of dollars returned to the school districts. However, with staffing and funding changes which have occurred at the KPPC, the annual Energy Management Reports should hereafter be sent directly to the Kentucky Energy and Environment Cabinet, kyenergy@ky.gov. When emailing, use a standard subject heading, **2013 EMR: District Name**.

The template for reporting the 2012/13 Energy Management Report was sent to all School Superintendents late August and be found on the SEMP website at ksba.org/sempr.aspx.
Look for this icon:



EMR form



Celebrating Scott County Schools, "ENERGY STAR—Top Performer" recognition