

Kentucky School Energy Managers Project Case Study

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December 2018

Background

In 2008, the Kentucky General Assembly passed legislation (KRS 160.325) which mandates that boards of education adopt energy management policies.² In response to this legislation, the Kentucky School Board Association (KSBA) partnered with the Kentucky Department for Energy Development and Independence (DEDI) to create the School Energy Managers Project (SEMP) with \$5 million in funding provided by the U.S. State Energy Program (SEP) funds from Kentucky.³ SEMP was launched in the 2010-2011 school year with 49 energy managers serving a total of 144 of the 173 school districts.⁴

These energy managers partnered with local boards of education to adopt energy policies and formed 121 district energy advisory teams to help implement energy management plans. Each energy manager worked with two to seven districts, depending on their size.⁵ SEP funding covered 75% of the energy managers' first-year salary and benefits, and 50% of the second-year costs.⁶

The SEP funds expired in April 2012. Recognizing that energy efficiency is also valued by energy providers, SEMP administrators then turned to that sector and in 2013 were successful in facilitating a first-of-its-kind partnership with Louisville Gas & Electric and Kentucky Utilities Company to provide funding for local energy managers. Beginning in July 2014, a similar program was initiated for schools in the Kentucky Power Company service territory. These partnerships continued through June 2018.

The partnerships established between KSBA-SEMP and utility companies provided a means for SEMP to maintain a major presence within 97 of 173 school districts in Kentucky and provide funding for 59 local school energy managers to provide direct services to schools in the utilities' service territory. In addition to the funding for the 97 districts, SEMP provided professional development, technical support, reporting, and recognition for all 173 school districts' energy efficiency successes. The statewide focus on best practices in energy efficiency and waste reduction enabled schools to capture and transfer significant monetary savings into the classroom, which produced an estimated \$225 million in cumulative avoided costs.

Strategies for Savings

The SEMP program utilized a uniform structure for all energy management projects while allowing energy managers to apply different types of energy management strategies to meet the needs of each individual district. School energy managers used the ENERGY

Bullitt County Public Schools reported that in the 2013-2014 school year, the cost of the school district's energy management plan was approximately \$78,000 for the salary and budget for the energy manager. In the same year, the district avoided energy costs of approximately \$563,000. Taking into account that the district budgeted \$460,000 for repayment of an energy service performance contract, the net savings from the SEMP program in Bullitt County Schools was approximately \$216,000.¹

¹ Bullitt County Public Schools. Energy Management Program, 2013/2014 Year End Report.

<http://www.bullitt.k12.ky.us/docs/userfiles/23/my%20files/energy%20reports/bcps%20year%20end%20energy%20report%2013-14.pdf?id=542179>. Accessed August 28, 2018.

² Willhite, Ronald. Testimony before the Kentucky Public Service Commission. March 3, 2017. P. 4

³ Wester, David. Kentucky Schools a national leader in energy efficiency. October 3, 2017. <https://www.kentucky.com/opinion/op-ed/article176850766.html>. Accessed August 6, 2018.

⁴ Kentucky Department for Energy Development and Independence. *2011 Annual Summary*. 2011. Pg. 18.

⁵ 73 districts had four or fewer buildings, while another 73 have between five and eight buildings. Rodriguez, Nancy. Lights out: Students, schools learn valuable lesson about saving energy. *Kentucky Teacher*. February 28, 2012. <https://www.kentuckyteacher.org/features/2012/02/lights-out-students-schools-learn-valuable-lesson-about-saving-energy/>. Accessed August 27, 2018.

⁶ U.S. Department of Energy. Kentucky Launches State-Wide School Energy Manager Program. August 17, 2010. <https://www.energy.gov/articles/kentucky-launches-state-wide-school-energy-manager-program>. Accessed August 6, 2018.

Kentucky School Energy Managers Project

Case Study

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STAR Guidelines for Energy Management⁷ to develop their plans and ENERGY STAR certification to recognize achievements. DEDI coordinated with SEMP to ensure that each certified school was presented with a certificate of achievement signed by the governor.

All participants implemented a standard set of energy management tactics including:

- Appointing an energy committee
- Assessing facilities
- Developing and implementing an energy management plan
- Reporting on the status of energy management efforts each year⁸

Energy managers worked with school districts to identify strategies and projects for improved energy performance. Strategies included behavior change efforts recognized by “Kentucky’s Battle of the School Buildings” energy efficiency competitions, summer schedule changes (e.g., zoned HVAC setback scheduling), facility and equipment upgrades, and the use of energy service performance contracts. SEMP energy managers also identified savings through utility bill review, identifying instances where school districts were incorrectly taxed or charged for unmetered lighting no longer existing in the school district.



During the course of the SEMP effort, the number of Kentucky ENERGY STAR certified schools increased from 12 to 455 in 10 years (2008 – 2018), making Kentucky a leader in ENERGY STAR certified schools, with the third highest percentage of certified schools in the country.⁹ The SEMP program also used the Environmental Protection Agency’s ENERGY STAR® Portfolio Manager® tool for tracking and managing energy use. They operated “Kentucky’s Battle of the School Buildings” competitions to engage school officials and students to identify new savings opportunities and drive behavior change, in addition to providing educational opportunities. Kentucky’s success with SEMP resulted in recognition for the program as an ENERGY STAR Partner of the Year award winner in Energy Efficiency Program Delivery (2014, 2015) and Sustained Excellence (2016, 2017, 2018).¹⁰

Reducing Energy Use

Districts implemented a number of energy management strategies such as lighting upgrades, behavior change programs, and capital improvements to buildings and equipment, funded with bonds or guaranteed energy service performance contracting (GESPC).

Measures used by Kentucky schools to improve energy efficiency included:

- Upgrading to LED lighting
- Adjusting HVAC controls
- Installing geothermal heating and cooling systems
- Running building energy efficiency competitions (“Battle of the Buildings”)
- Implementing behavior change, including understanding existing equipment and proper use of that equipment

In addition to reducing energy use as a cost-saving strategy, school districts identified other opportunities to reduce energy bill expenditures. For example, districts combined their purchasing power to create an aggregated natural gas purchasing program (Kentucky Gas Aggregation Program – KGAP), and KSBA successfully argued for a K-12 school utility tariff before the Kentucky Public

⁷ Read more: <https://www.energystar.gov/buildings/about-us/how-can-we-help-you/build-energy-program/guidelines>.

⁸ Hardy, Eileen. School energy managers: the sustaining power of energy efficiency. Land, Air & Water: Kentucky Energy & Environment Cabinet’s Webzine. July 1, 2016. <https://landairwater.me/2016/07/01/school-energy-managers-the-sustaining-power-of-energy-efficiency/>. Accessed August 6, 2018.

⁹ National Association of State Energy Officials and Cadmus. ENERGY STAR Certified K-12 Schools. December 31, 2017.

<https://naeseo.org/Data/Sites/1/documents/committees/energystar/2018/2017-all-schools-2017-12-31-v3.pdf>. Accessed August 6, 2018. New infographics will show 455 certified schools – 8/31/18

¹⁰ US. Environmental Protection Agency. ENERGY STAR Partner List Results, Kentucky.

https://www.energystar.gov/index.cfm?fuseaction=estar_partner_list.showPartnerResults&partner_type_id=ALL&cntry_code=US&award=Y&award_search=Y&company_name=&s_code=KY&locality_name=All+Cities&award_year=ALL&award_category=ALL. Accessed September 1, 2018.

Kentucky School Energy Managers Project

Case Study

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Service Commission. The new rate recognized school's unique load curve and led to reduced electric rates and demand charges when schools were shifted from the previously used commercial and industrial tariff.

Benefits, Results, and Successes

The program generated \$225 million dollars in savings and brought \$242 million in energy efficiency investments to Kentucky schools using GESPC¹¹. Support and recognition provided by the statewide program from a recognized non-profit organization (KSBA) was key to maintaining a level of knowledge required to make local energy decisions. These savings allowed participating schools to reallocate funding to higher priority needs such as books, computers, and teacher salaries.

ENERGY STAR tools, resources, and partners helped school districts achieve significant energy savings through setting goals, evaluating progress, and recognizing achievement. State support and communication of these resources helped create local district understanding of all ENERGY STAR resources.

Table 1: Case Study Summary

Launched	2010 – 2011 School Year
Years in Operation	2010 – 2018
Cumulative Avoided Energy Site Savings since FY 2009 – 2010	380 million kilowatt hours of electricity ¹² 2.5 million MCF of natural gas
Cumulative Avoided Costs since FY 2009 - 2010	\$225 million ¹³
Districts Served	173 of 173
Number of ENERGY STAR certified K-12 schools	455
Motto:	"Dollars for students, not energy"
Statewide average energy use intensity for K-12 schools	65 in 2010, 50 in 2018 ¹⁴

This case study was developed in collaboration with the National Association of State Energy Officials (NASEO). NASEO is the only national non-profit association for the governor-designated energy officials from each of the 56 states and territories.

Formed by the states in 1986, NASEO facilitates peer learning among state energy officials, serves as a resource for and about state energy offices, and advocates the interests of the state energy offices to Congress and federal agencies.



ENERGY STAR® is the simple choice for energy efficiency. For more than 20 years, EPA's ENERGY STAR program has been America's resource for saving energy and protecting the environment. Join the millions making a difference at energystar.gov.

¹¹ Kentucky Office of Energy Policy. GESPC tracking documents via personal communication. September 18, 2018.

¹² U.S. Environmental Protection Agency. ENERGY STAR Partner of the Year – Sustained Excellence – Energy Efficiency Program Delivery. Kentucky School Boards Association. https://www.energystar.gov/index.cfm?fuseaction=pt_awards.showAwardDetails&esa_id=7534. Accessed September 13, 2018.

¹³ As of July 6, 2018. Kentucky School Board Association. School Energy Managers Project. <http://www.ksba.org/SEMP.aspx>. Accessed August 28, 2018.

¹⁴ As of July 6, 2018. Kentucky School Board Association. School Energy Managers Project. <http://www.ksba.org/SEMP.aspx>. Accessed August 28, 2018.