



Energy Management Report FY2016 Annual Report To Kentucky Utilities

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Executive Summary

The application in Case No. 2013-00067 identified the primary goal of the Energy Management Program for Schools to “support school districts in utilizing energy more “wisely” with the overall objective for each school district to reduce consumption over time by an annual rate of 2.5% and achieve energy utilization indices (“EUI”) of fifty or lower. The participation goal was for all districts served by LG&E or KU to retain or employ an energy manager through at least FY2015 to maximize district response to KRS160.325. The dollars remaining from the original KU/LG&E grant covering FY2014 and FY2015 were approved in Case Nos. 2014 –00371 and 2014-00372 to extend the energy manager funding through FY2016.

Fayette County is separately reported as they continue a renovation strategy by which they renovate approximately 10% of their buildings each year using “best practice” energy efficient equipment. A part of this renovation strategy involved making a winter fuel mix change from natural gas to electric (geothermal and VRF). While this lowered the overall EUI and the summer demand of the district, it adds to the winter demand. .

From the FY2010 baseline, the KU districts (without FCPS) and FCPS achieved the following:

August Demand Reduction (17.8%) (FCPS 6.5%)

January Demand Reduction (13.4%) (FCPS -15.6%)

Summer Energy Reduction (27.8%) (FCPS 2.2%)

Winter Energy Reduction (14.4%) (FCPS 2.4%)

The August reduction is particularly significant as LG&E-KU is a summer peaking utility. 54 Districts receiving KU electric service participated in the program and 15 have district-wide EUI’s less than 50.

The partnership established between LG&E-KU and KSBA provides a means for the School Energy Management Project (SEMP) to maintain a major presence within schools in Kentucky. During FY2016 four school districts within the LG&E service territory and 54 within the KU service area have benefitted financially and technically from this work.

The School Energy Managers serving these school districts benefit from continuity of employment, technical training and improved skills due to the funding which was provided. They and their schools benefit from the knowledge that has been gained by positioning them on a continuous improvement path. Knowing that an expectation of 2.5% annual reduction provides leverage for energy and demand conservation measures which may not otherwise be undertaken. Future results and further technological upgrades will be impacted.

District Funding

	Total	LGE	KU
Project Management			
SEMP Staff	\$44,055	\$7,003	\$37,052
Outreach	\$25,367	\$4,032	\$21,335
Travel	\$4,914	\$781	\$4,133
Sub Total	\$74,336	\$11,816	\$62,520
District Energy Manager Funding/Support			
Technical	\$90,917	\$14,451	\$76,465
Training	\$45,246	\$7,192	\$38,054
Salary Match**	\$287,073	\$45,631	\$241,442
SubTotal	\$423,235	\$67,274	\$355,961
Total	\$497,571	\$79,090	\$418,481
Note: Indirect Costs @15% on all items except energy manager salary match			
Committed to date	\$1,359,940	\$209,167	\$1,150,773
**Amounts subject to revision upon final processing of district invoices			

Initiatives Implemented

A greater emphasis was placed on PLANS for Energy and Demand Conservation Measures during this year. Appendix A shows a summary of the plans established early in the year to achieve the energy and demand reductions. Most of these plans were or are now being executed. Here is a brief summary of the major aspects of those plans with the details appearing in Appendix A.

Lighting

Most KU/LG&E served districts have begun major lighting renovations. And the switch is on to LED. Though the LED technology has been around for some time, the cost of fixtures has delayed the implementation to lower energy fixtures. As you go through the project list you will see many LED retrofits for Gymnasium, 2X4 Troffers, and Outdoor Lights.

You will also see that many districts have employed a “maintenance strategy” by which as lamps burn out they are converted to LED. Some districts have begun stocking LED replacement fixtures where they once stocked Metal Halide or fluorescent lamps.

Chillers

Because chillers use large amounts of energy and demand several districts including Jefferson County have begun installing “demand shedding” devices which can be throttled back during peak periods.

Control Work

As major renovations are taking place in the districts, controls work continues to be popular. Many districts are upgrading their equipment and using what they have in terms of setbacks and set points. There is a migration to web-enabled controls as major renovations are taking place.

ENERNOC

As districts and buildings develop capability, more and more are enrolling in ENERNOC. Energy Contests

Energy Contests remain popular and are expanding as a way to engage students and staff in energy reductions. The contest costs are paid for from the energy savings that the school garners. So on a year to year basis the school is not out any money but pays for the cost of the energy contest through the savings.

Use of Students for Energy Audits

One of the state’s technical career centers is now using students enrolled in the energy program to perform energy audits in the district’s other buildings.

District Leadership

As seen in the plans, many districts have now incorporated meetings and training with building principals and district personnel to engage them in energy savings.

Renovation and New Construction

Finally you will see that as renovation and new construction occurs in a district, energy is no longer an afterthought. While the state's larger districts have an ongoing renovation plan, the smaller districts only renovate or build new on a periodic basis. Even so, all these districts are using energy savings technologies as a part of their building blueprint.

Energy Utilization Indices

One of the key indicators for measuring energy performance is district-wide Energy Use Intensity, EUI, measured in kBtu/sf/yr. This measure is slightly different from the Building Energy Use Intensity in that the district EUI is a measure of **all** the energy use in the district divided by the square footage of **conditioned** area. The statewide average for district-wide EUI in FY2010 was 64.2 kBtu/sf/yr. By FY2015, the district-wide EUI had dropped to 57.6 kBtu/sf/yr.¹ Lower EUI indicates a more energy efficient condition. The electric only EUI which calculates the EUI based on electrical usage only improved from 44.2 kBtu/sf/yr to 39.7 kBtu/sf/yr.

Table 1, on the following page, shows the data for LG&E and KU funded districts. The table shows that most districts have improved in both their electric and overall EUI.² This table also shows non-participating districts, the number of KU-LG&E served schools within the district and the number of ENERGY STAR schools which will be discussed later.

Statewide and for most districts the EUI has lowered. This can be attributed to several things. The enactment of KRS160.325 and the implementation of KSBA's School Energy Manager Project now supported by LG&E-KU have educated and focused school districts on the importance of valuing best energy management practices. While new school construction and renovation are very energy efficient, presentation of energy conservation measures such as seen in Table 1 by energy managers is leading to significant elimination of energy waste in both new and existing buildings.

¹ EUI's are not adjusted for weather and include all forms of energy use.

² FY2016 EUI Data will not be available until December 1 when all state districts are required to submit through KSBA-SEMP to the Legislative Research Commission and Energy and Environment Cabinet their Annual Energy Management Report.

Table 1, Data on KU served districts

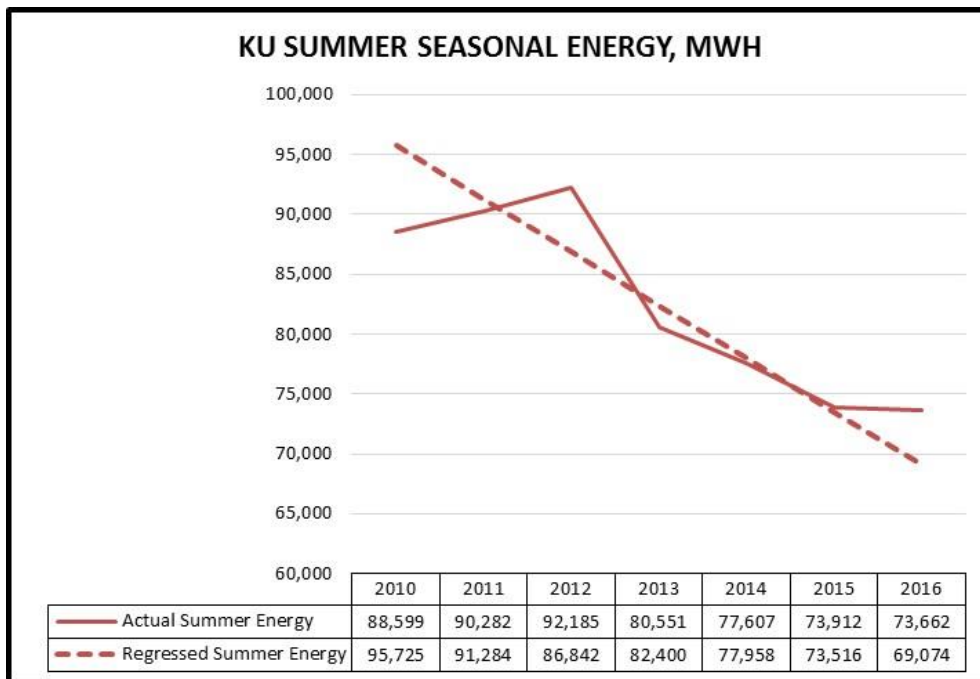
TABLE 1										
School Participation and Energy Data										
DISTRICT	KU K-12 Schools	LGE K-12 Schools	FY2016 SEMP Participation	KU SEMP Schools	LGE SEMP Schools	FY2010 EEUI	FY2015 EEUI	FY2010 EUI	FY2015 EUI	ENERGY STAR SCHOOLS
KU DISTRICTS										
Anderson	6		Y	6	0	38.5	32.3	52.3	42.0	3
Augusta	1		Y	1	0	39.0	37.7	55.6	55.9	
Ballard	3		Y	3	0	52.8	46.6	80.1	67.7	
Barren	2					42.6	46.3	49.8	53.3	1
Bath	3		Y	3	0	49.1	42.7	87.8	68.6	
Bell	7		Y	7	0	75.8	52.2	81.5	57.8	
Bourbon	6		Y	6	0	40.3	40.3	65.0	62.1	2
Boyle	5					47.8	39.2	65.9	55.5	1
Bracken	3					47.9	45.3	55.0	54.2	1
Burgin	2		Y	2	0	47.8	37.5	60.5	46.1	1
Campbellsville	3		Y	3	0	41.0	30.4	76.4	58.2	
Carroll	4		Y	4	0	45.8	37.2	82.9	63.6	1
Casey	5					46.1	40.7	49.5	47.2	
Caverna	3		Y	3	0	45.3	43.6	84.2	72.0	
Christian	1		Y	1	0	45.4	36.3	70.1	55.8	1
Clark	9					41.3	33.6	74.7	50.0	1
Clay	2		Y	2	0	43.6	41.4	63.3	61.1	
Crittenden	3		Y	3	0	41.2	35.2	57.1	54.0	2
Danville	5		Y	5	0	40.5	41.0	64.6	63.7	2
Dawson Springs	1		Y	1	0	39.9	37.7	61.0	53.7	
East Bernstadt	1						40.7		40.7	
Elizabethtown	5		Y	5	0	38.0	39.6	76.9	75.8	
Eminence	2					57.5	55.3	85.3	76.4	
Estill	3		Y	3	0	39.1	39.5	53.4	48.7	1
Fayette	50		Y	50	0	52.3	50.4	78.2	67.4	13
Fleming	3		Y	3	0	44.4	34.2	69.8	48.5	1
Gallatin	4		Y	4	0	51.2	41.9	60.0	44.6	2
Garrard	2		Y	2	0	39.4	45.9	51.5	61.1	
Grayson	5					41.1	40.4	60.0	52.7	4
Green	4					64.3	63.2	88.2	85.4	
Hardin	11		Y	11	0	42.4	36.9	54.3	47.4	3
Harlan County	8		Y	8	0	55.7	57.5	55.7	57.5	
Harlan Ind	3		Y	3	0	50.2	45.4	52.3	46.1	
Harrison	5					32.1	32.9	61.9	61.0	
Hart	6		Y	6	0	49.5	44.3	73.5	69.7	
Henderson	1					48.4	42.4	74.1	68.3	
Henry	5					48.3	32.9	67.7	43.8	4
Hickman	2					48.1	44.7	67.6	66.0	
Hopkins	7		Y	7	0	49.1	42.5	71.7	66.4	
Jessamine	3		Y	3	0	37.1	32.7	50.3	43.8	1
Knox	3					50.7	38.8	64.8	51.7	2

TABLE 1 (Continued)										
School Participation and Energy Data										
DISTRICT	KU K-12 Schools	LGE K-12 Schools	SEMP Participation	KU SEMP Schools	LGE SEMP Schools	FY2010 EEUI	FY2015 EEUI	FY2010 EUI	FY2015 EUI	ENERGY STAR SCHOOLS
LaRue	4					38.8	43.1	55.1	65.5	
Laurel	7		Y	7	0		58.9		68.1	
Lee	2		Y	2	0	52.5	29.9	78.3	52.5	
Lincoln	5					46.7	39.3	70.7	63.0	4
Lyon	3		Y	3	0	33.9	37.0	53.7	54.8	
Madison	12		Y	12	0	45.1	40.7	56.4	53.6	2
Marion	4					49.6	42.1	60.3	50.2	4
Mason	4		Y	4	0	35.6	30.0	59.2	58.3	1
McCracken	4		Y	4	0	39.7	36.2	62.7	59.1	1
McCreary	3		Y	3	0	70.2	69.2	94.8	92.3	
McLean	3		Y	3	0	32.7	32.7	45.9	47.4	3
Meade	1					42.1	33.9	48.7	45.3	
Mercer	3		Y	3	0	51.5	39.9	78.3	61.2	1
Middlesboro	4		Y	4	0	52.6	28.0	97.2	62.2	
Montgomery	7					50.6	50.8	70.2	69.5	
Muhlenberg	9		Y	9	0	46.7	46.4	68.5	62.3	
Nelson	3		Y	3	0	43.8	34.3	51.5	37.8	1
Nicholas	2					46.2	41.8	80.7	60.7	
Ohio	4					43.3	37.2	64.4	53.3	
Pendleton	1		Y	1	0	33.0	36.6	55.9	55.8	1
Pineville	2		Y	2	0	51.3	47.5	58.5	51.0	
Pulaski	7		Y	7	0	43.0	35.3	60.9	51.0	
Robertson	1		Y	1	0	69.0	33.5	114.5	42.8	1
Rockcastle	4					58.4	55.8	59.9	56.7	1
Rowan	2		Y	2	0	44.9	38.3	72.3	58.4	
Russell	4		Y	4	0	65.7	52.7	80.5	52.7	
Science Hill	1		Y	1	0	56.5	49.3	56.5	49.3	
Scott	12		Y	12	0	46.1	33.6	53.3	39.3	11
Shelby	8		Y	8	0	60.9	37.3	71.6	44.6	5
Somerset	3		Y	3	0	47.4	44.0	89.8	79.7	
Taylor	3		Y	3	0	47.8	43.6	64.7	62.2	
Trimble	2					32.6	26.8	52.3	45.0	2
Union	5		Y	5	0	39.1	35.1	69.1	62.1	
Washington	2		Y	2	0	64.7	49.7	83.5	54.5	
Webster	5		Y	5	0	45.2	32.0	75.5	55.2	1
Williamsburg	1					43.6	46.1	54.9	56.1	
Woodford	7		Y	7	0	49.4	38.4	63.5	46.1	4
Totals	361	0	54	275	0					90
	Total Districts		78							

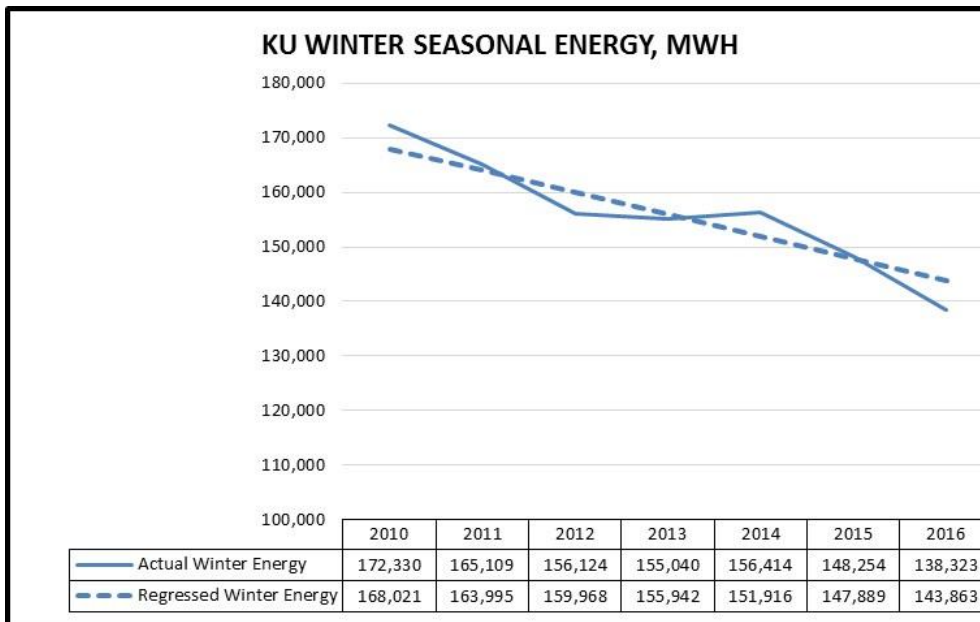
Note: Highlighted districts do not have a participating energy manager

Consumption Reduction and Annual Comparison

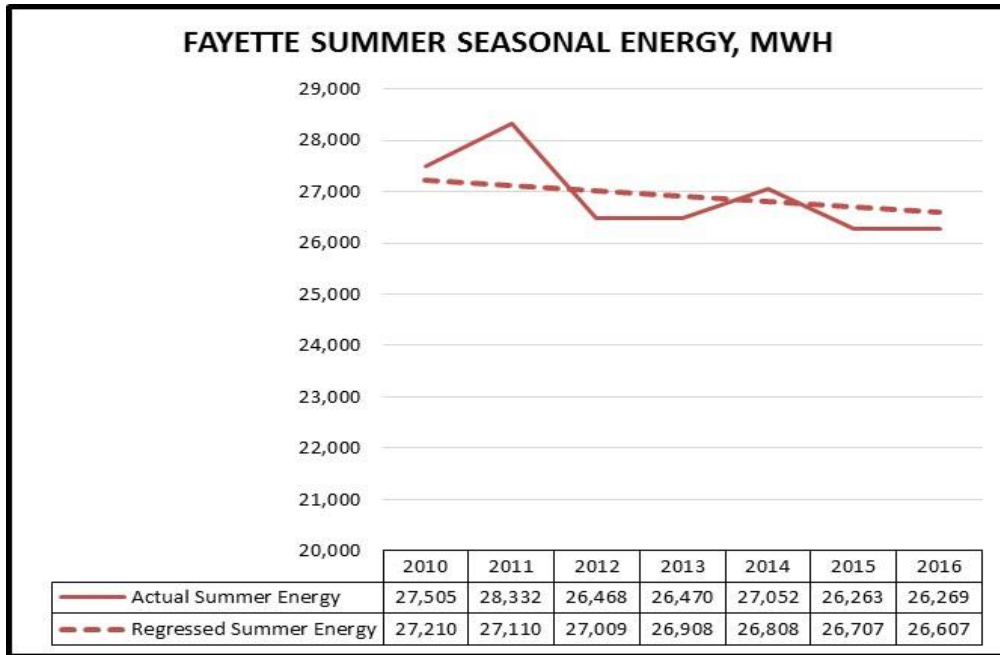
ENERGY REDUCTION (MWH)



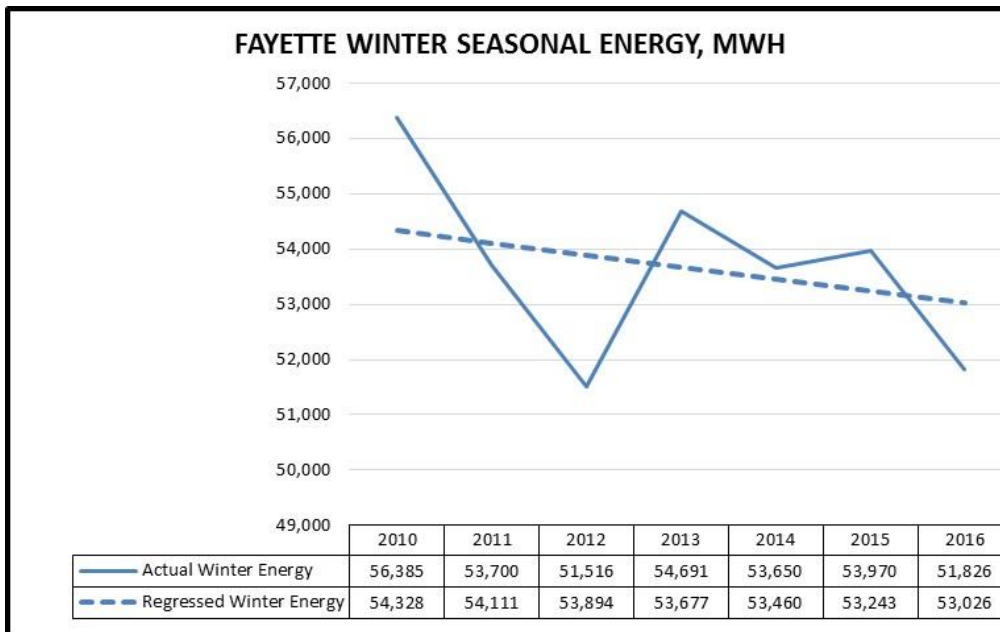
KU(without FCPS) Summer Seasonal Energy Reduction of 27.8% since fiscal year 2010.



KU (without FCPS) Winter Seasonal Energy Reduction of 14.4% since fiscal year 2010.

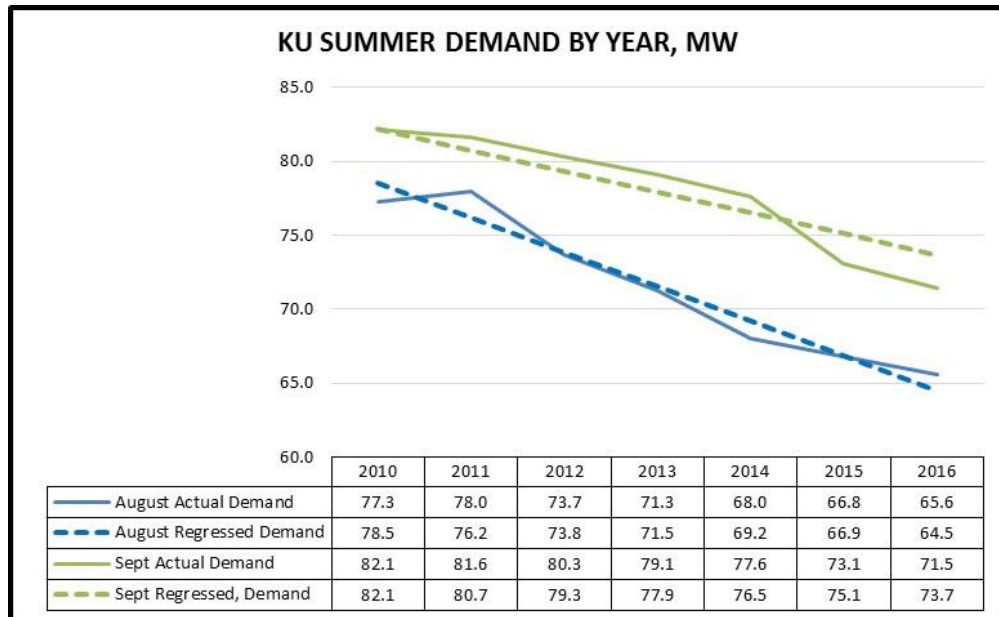


Fayette County Public Schools Summer Seasonal Energy Reduction of 2.2% since FY2010.

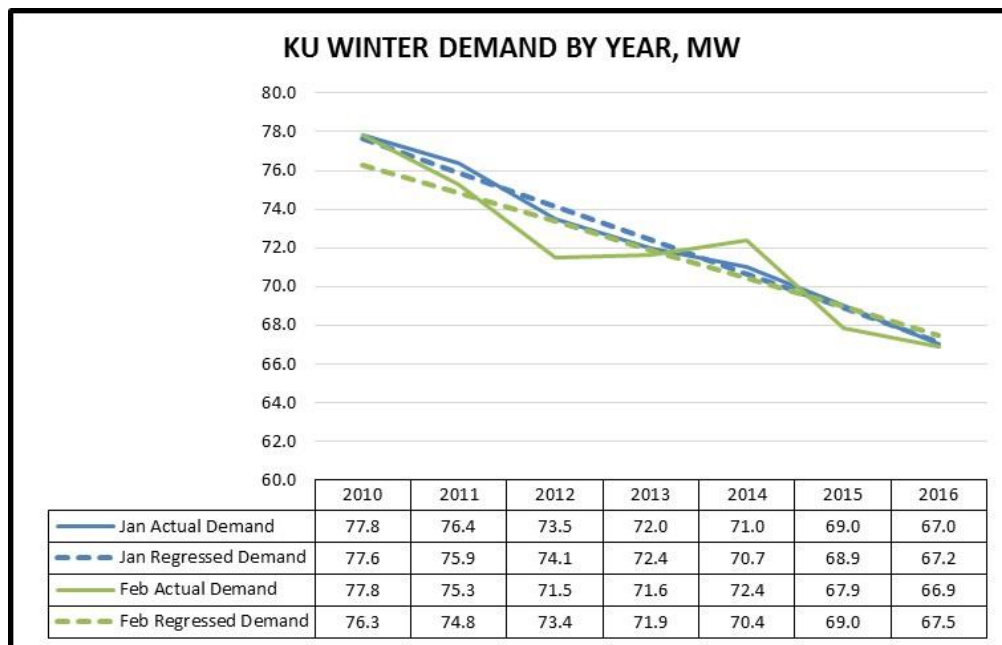


Fayette County Public Schools Winter Seasonal Energy Reduction of 2.4% since FY2010.

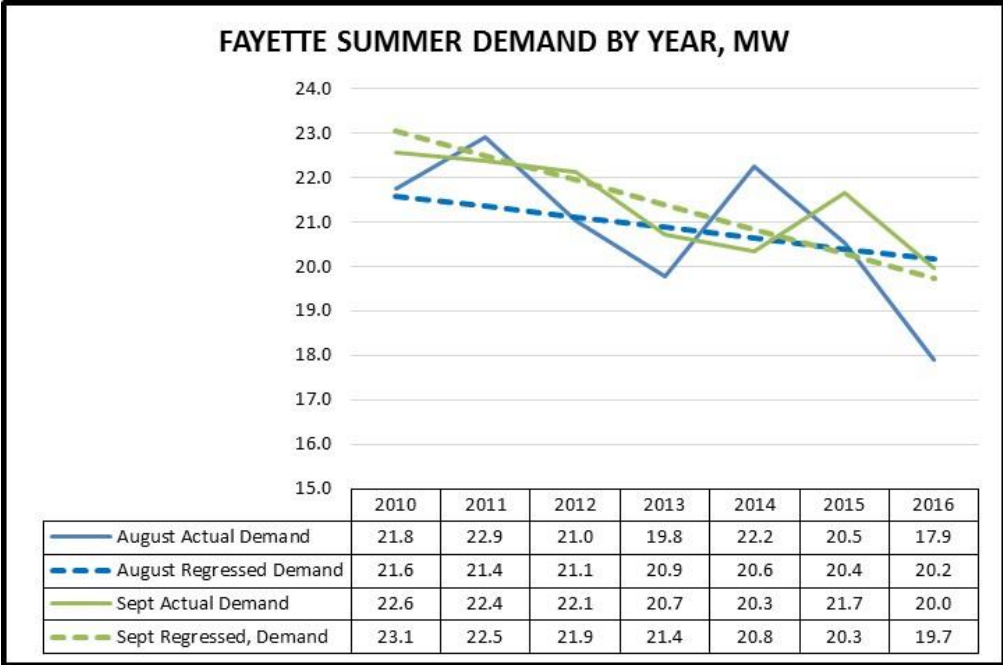
DEMAND (KW) REDUCTION



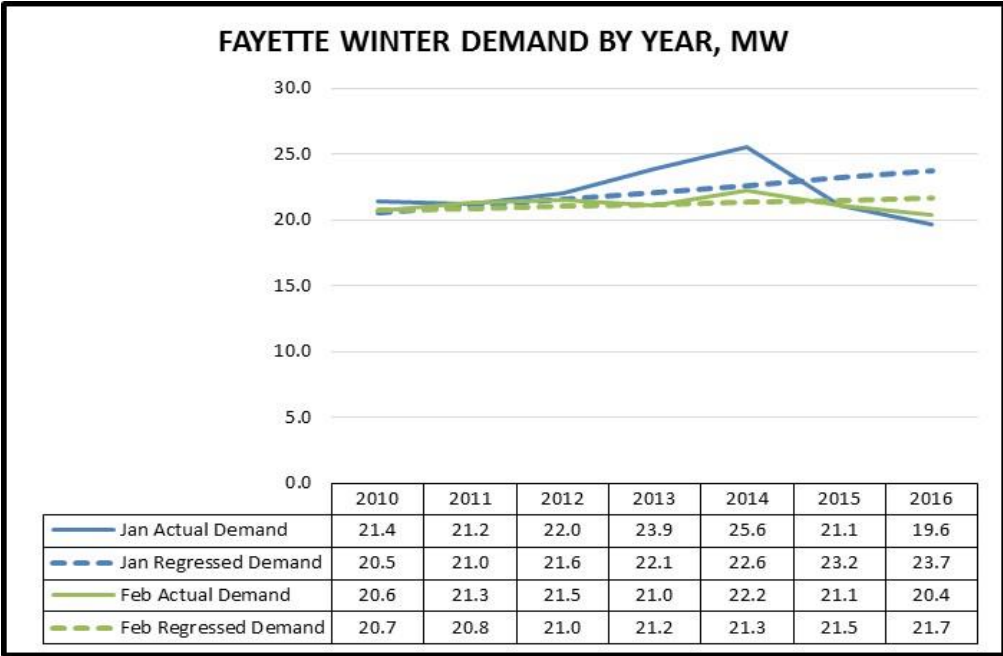
KU (without FCPS) August Demand Reduction of 17.8% since FY2010.



KU (without FCPS) January Demand Reduction of 13.4% since FY2010.



Fayette County Public Schools August Demand Reduction of 6.5% since FY2010.



Fayette County Public Schools January Demand Increase of 15.6% since FY2010.

ENERGY STAR Schools

A major focus of SEMP is district achievement of ENERGY STAR certification for its K-12 schools. While there are many agencies which offer or provide external certification, ENERGY STAR was chosen as a metric because ENERGY STAR certification provides independent verification of actual energy efficiency measures from sound energy management practices and not measures or credits for non-energy related activities. Having a building which is ENERGY STAR labeled is international recognition for energy efficiency and contrary to other certifications such as LEED, ENERGY STAR only acknowledges energy efficiency in their scoring methodology. i.e. ENERGY STAR doesn't give extra scoring if you have a "rain garden" on your property since rain gardens contribute little to energy efficiency. The significance of this number is not just the award but is confirmation by an outside organization of school district stewardship and fiscal responsibility. Currently over 24% of Kentucky's eligible public school buildings are ENERGY STAR labeled. That compares to approximately 10% nationally.

Additional recognition has been given for the districts that have all schools ENERGY STAR labeled. In total there are currently thirteen districts, five of who have a school served by KU. Those five districts are: Burgin Independent, Crittenden County, Pendleton County, Robertson County and Scott County. Figure 1 shows the number of KU served ENERGY STAR labeled buildings has grown steadily since FY2010 indicating greater energy efficiency.

Figure 1

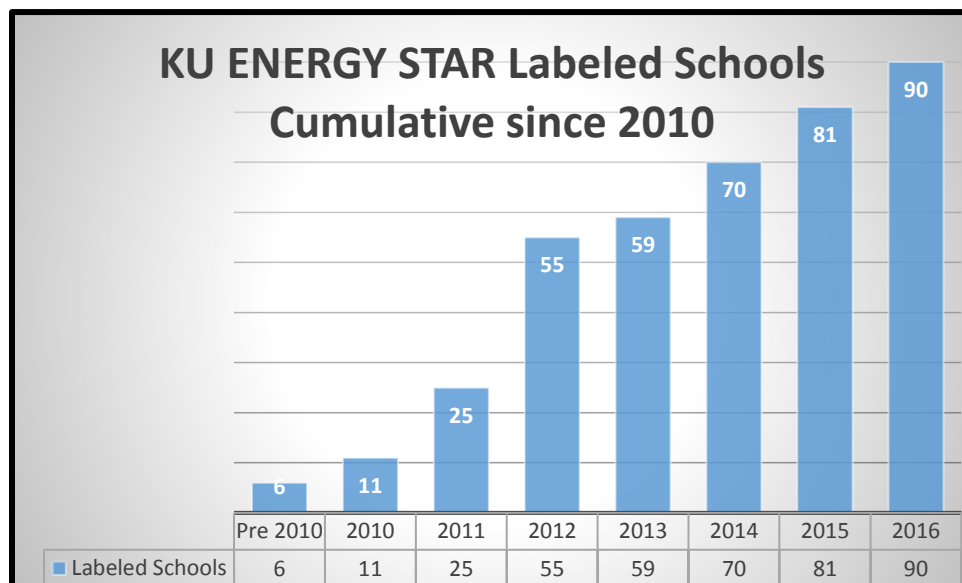
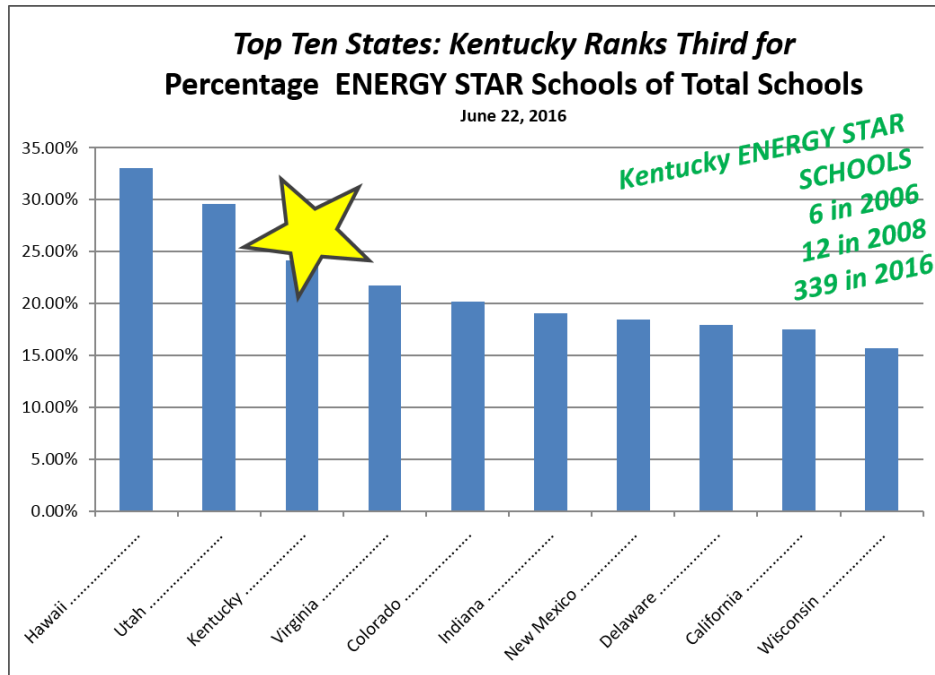


Figure 2 shows that Kentucky now ranks third in the nation in percentage of ENERGY STAR labeled schools.

Figure 2.



Schools in the LG&E and KU service territories account for 43% (145 of 339) of the ENERGY STAR schools in Kentucky. The increased energy efficiency in becoming an ENERGY STAR school has helped several districts in realizing thousands of dollars in operational cost savings.

Participation

The participation goal was for all districts served by LG&E or KU to retain and employ an energy manager to maximize response to KRS 160.325. From a practical standpoint, some districts do not participate because the number of KU or LG&E schools in their district is small leading to smaller grant awards.

Table 2

Participation			
K-12 Schools	LGE	KU	Total
Total	169	361	530
Participating	167	275	442
Districts			
Total	6	78	84
Participating	4	54	58

***1 District in the LG&E Service Territory and 3 Districts in the KU Service Territory did not participate this year due to an energy manager transition.*

Energy and Demand Savings Compared to Application Metrics

The Application in Case No. 2013-0067 (and subsequently in Case Nos. 2014-00371 and 2014-00372) identified the primary goal of the Energy Management Program for Schools to “support school districts in utilizing energy more wisely” with the overall objective for each school district to reduce consumption over time by an annual rate of 2.5 percent and achieve energy utilization indices (EUI) of 50 kBtu/sf/yr or lower.

Demand and Energy Reduction

The SEMP base year is FY2010 and the first reporting year under the KU program was FY2014. The data reported in Section V is for metered energy and demand for continuous accounts from the base year through FY2016. The reported demands are the summation of metered demands for demand billed accounts and calculated demands for the energy only billed accounts and are thus the accumulated non-diversified class demand. Next the accumulated demands were normalized for weather and then as in the Application a seventy five percent coincident factor was assumed for converting the accumulated demands to a system peak demand.

It should be noted that the demand reductions are conservative for two reasons:

1. A 75% coincident peak factor has been assumed for calculating coincident demands the even though the actual factor may be closer to 90%.
2. FY2010 is denoted the base year even though the first year of having energy managers in place was FY2011. Using FY2011 where the data reported is believed to be more accurate as the base year, the percentage improvements would be much greater.

Even with these conservative approaches, the KU districts nearly meet the 2.5% annual reduction target for coincident peak demand reduction in August and greatly exceed the annual energy reduction target.

The following table lists the demand results for August and the annual energy usage by year.

KU Data

(Data is shown in fiscal years)

August MW													
	Actual						Normalized					Norm Class CP	
		incr	%	cum	%			incr	%	cum	%		
2010	77.3						78.5					58.9	
2011	78.0	-0.7	-0.91%	-0.7	-0.91%		76.2	2.3	2.96%	2.3	2.96%	57.1	2.96%
2012	73.7	4.3	5.52%	3.6	4.66%		73.8	2.3	3.05%	4.7	5.93%	55.4	5.93%
2013	71.3	2.4	3.23%	6.0	7.74%		71.5	2.3	3.15%	7.0	8.89%	53.6	8.89%
2014	68.0	3.3	4.57%	9.2	11.96%		69.2	2.3	3.25%	9.3	11.85%	51.9	11.85%
2015	66.8	1.2	1.79%	10.5	13.54%		66.9	2.3	3.36%	11.6	14.81%	50.2	14.81%
2016	65.6	1.2	1.87%	11.7	15.15%		64.5	2.3	3.48%	14.0	17.78%	48.4	17.78%

TOTAL MWH													
	Actual						Normalized						
		incr	%	cum	%			incr	%	cum	%		
2010	260,929						263,746.3						
2011	255,391	5,537.8	2.12%	5,537.8	2.12%		255,278.2	8,468.2	3.21%	8,468.2	3.21%		
2012	248,309	7,081.7	2.77%	12,619.5	4.84%		246,810.0	8,468.2	3.32%	16,936.3	6.42%		
2013	235,592	12,717.9	5.12%	25,337.4	9.71%		238,341.8	8,468.2	3.43%	25,404.5	9.63%		
2014	234,021	1,570.6	0.67%	26,908.0	10.31%		229,873.6	8,468.2	3.55%	33,872.7	12.84%		
2015	222,166	11,854.9	5.07%	38,762.9	14.86%		221,405.5	8,468.2	3.68%	42,340.9	16.05%		
2016	211,985	10,181.2	4.58%	48,944.1	18.76%		212,937.3	8,468.2	3.82%	50,809.0	19.26%		

Fayette County Public School Data

(Data is shown in fiscal years)

August MW													
	Actual						Normalized					Norm Class CP	
		incr	%	cum	%			incr	%	cum	%		
2010	21.8						21.6					16.2	
2011	22.9	-1.2	-5.41%	-1.2	-5.41%		21.4	0.2	1.10%	0.2	1.10%	16.0	1.10%
2012	21.0	1.9	8.32%	0.7	3.36%		21.1	0.2	1.11%	0.5	2.19%	15.8	2.19%
2013	19.8	1.3	5.96%	2.0	9.12%		20.9	0.2	1.12%	0.7	3.29%	15.7	3.29%
2014	22.2	-2.5	-12.51%	-0.5	-2.25%		20.6	0.2	1.13%	0.9	4.38%	15.5	4.38%
2015	20.5	1.7	7.64%	1.2	5.56%		20.4	0.2	1.15%	1.2	5.48%	15.3	5.48%
2016	17.9	2.6	12.87%	3.9	17.71%		20.2	0.2	1.16%	1.4	6.58%	15.1	6.58%

TOTAL MWH													
	Actual						Normalized						
		incr	%	cum	%			incr	%	cum	%		
2010	83,890						81,538.5						
2011	82,032	1,858.5	2.22%	1,858.5	2.22%		81,220.8	317.7	0.39%	317.7	0.39%		
2012	77,984	4,047.9	4.93%	5,906.4	7.04%		80,903.0	317.7	0.39%	635.5	0.78%		
2013	81,161	-3,176.7	-4.07%	2,729.7	3.25%		80,585.3	317.7	0.39%	953.2	1.17%		
2014	80,701	459.2	0.57%	3,188.9	3.80%		80,267.6	317.7	0.39%	1,270.9	1.56%		
2015	80,233	468.3	0.58%	3,657.2	4.36%		79,949.8	317.7	0.40%	1,588.7	1.95%		
2016	78,096	2,137.5	2.66%	5,794.7	6.91%		79,632.1	317.7	0.40%	1,906.4	2.34%		

Process

Energy Manager Training

Because of limited funding, one on one and small group training sessions were held with each energy manager to discuss energy plans, standardized data collection and reporting formats. There were new districts which participated in the funding this year so the training included information for new energy managers as well as training for experienced managers.

- August 2015 – Webinars for newly funded energy managers:
 - Utility Grant Funding Basics
 - Utility Tracking
 - Energy Auditing
 - Converting Utility Tracking to Grant Reporting
 - District Communications
- January/February 2016 – Energy Manager Project Review sessions
- March 2016 - Performance contracting basics

KSBA also had the help of a part-time energy manager on staff who served districts and worked with them to establish and execute energy goals. This service worked well to jump start small districts who were struggling with the concepts of energy management, or districts that were not located such as to participate in the sharing of an energy manager.

Outreach and Awareness

An important deliverable for SEMP is to keep school district board members, leadership and staff; governmental officials; and local communities informed of energy efficiency opportunities and to highlight district success stories. With a district's primary mission of education, and adjusting to the ever-changing educational standards, there is a continual need to educate stakeholders of resources to support the district's mission. Funds provided by LG&E-KU along with other funding made possible presentation, exhibits, and monthly newsletters to fulfill this objective during the reporting period.

Presentations were made to the following:

- July 2015 – Kentucky Organization of School Administrative Assistants (KOSAA) - “My role in Energy Management”
- July 2015 – KSBA Summer Leadership Conference - “Leadership and Energy Management: A Board Member’s Role”
- October 2015 - Kentucky School Plant Management Association (KSPMA) Annual Conference - “Becoming Your School’s Energy Champion” and “Selling State of the Art Lighting”
- December 2015 - KSBA Winter Symposium - “Forewarned is Forearmed”
- February 2016 - KSBA Annual Conference - “Why Districts Cannot Ignore Energy Efficiency”
- February 2016 - Joint Meeting of Kentucky and Tennessee School Plant Management Associations - “What’s Affecting and How High Will Electricity Rates GO?”

- April 2016 - National School Boards Association (NSBA) Annual Meeting - “Leadership and the Energy Management Process –Getting the Bang for Your BTUs”.

Newsletters in FY2016 that included mention of KU/LGE district are included in Appendix B, and noted below:

- Muhlenberg County Schools . . . leaders are convinced that energy management is worth the effort (July 16)
- Savings because of Competition (Hopkins County) and Special Subcommittee on Energy with two KU Energy Managers participating in the reporting. (August 16)
- Taking Energy Efficiency to the Next Level - Student Energy Teams Making a Difference – note Scott County and Bullitt County are recognized (September 16)
- Different Districts, Different Needs – Energy manager takes individualized approach in serving seven districts – focus on Terry Anderson, Fleming County Partnership (October 16)
- Successful Setbacks: A major opportunity to save during holiday breaks – focus on Scott Caslow, Russell County Partnership (November 16)
- Six Years of Energy Savings Totaling \$68 Million (December 16)
- Energy Efficiency . . . Funding Education by Eliminating Waste (Jan/Feb 16)
- Energy Voices from around Kentucky – nine KU/LGE funded Energy Managers contributed to article. Listing of all schools participating in Kentucky’s Battle of the School Building. (March 16)
- Celebrating ENERGY STAR Schools – multiple KU/LGE districts recognized. (April 16)
- Advantages of a Local Energy Manager (May 16)
- “It’s an OLD building so it’s going to be an energy hog - Garth blows that myth...” – Scott County school (June 16)

Data Gathering

Energy Usage and Demand data was gathered by account by month for each district beginning with July 2009 through June 2016.¹ School districts use a range of data collection tools ranging from Purchased Software (EnergyCap, Energy Watchdog, and SchoolDude) to excel spreadsheets. Where historical data was missing from district records, LG&E-KU regional customer support managers were contacted to fill in the required data.

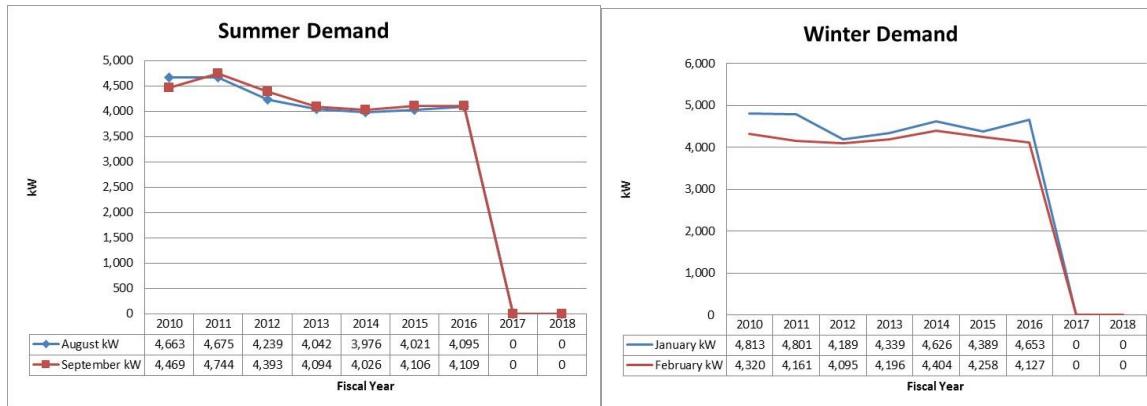
Data Scrubbing

Only those accounts which were present in FY2010 and still remaining today were analyzed. Accounts which have been vacated since FY2010 were eliminated from the data analysis. Accounts which are new since July 2009 are reflected in the overall district EUI but not in the demand or usage results. Accounts which had usage and demand changes due to renovations were either eliminated from the data base or reconciled by square footage calculations.

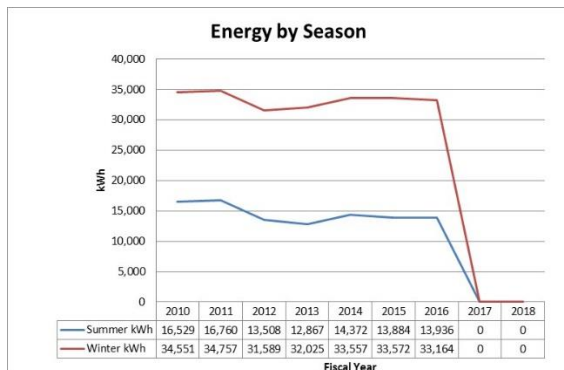
Data Analysis

Following the scrubbing of the data, each district's data was graphed showing the individual performance on energy and demand reductions. For the demand accounts, data was plotted as Summer Demand, Winter Demand and Energy by Season. For the non-demand accounts, a load factor was calculated using the demand accounts and then applied to calculate a demand value for the accounts where demand was not captured. Samples of the district-level non-normalized graphs are shown below.

Finally, all data was rolled-up into an LG&E or KU Summary and weather normalized.



¹ Data is provided to KSBA for analysis and reporting on a quarterly basis. Since June 2016 data as not completely available for all districts at the due date of this report, the June 2015 data was used as a proxy where necessary.



Appendix A ENERGY AND DEMAND REDUCTION PLAN

<u>District</u>	<u>KW REDUCTION PLANS</u>
Anderson	Summer and Break Setback Plans
Augusta	Lighting Retrofits
Augusta	Break Shutdown Schedules
Augusta	LED Gym fixtures with Occy sensors
Augusta	Participate in KU's DSM Program for AC units
Augusta	Install new winds and doors in old section of building
Augusta	Retrofit 105 T12 fixtures to LED
Ballard	Focus on Shutdown during major breaks
Ballard	Focus on setback procedures
Bath	Shutdown guidelines followed for Spring, Fall/Winter, Summer Breaks
Bath	Shutdown football concessions stand during winter months.
Bath	Drain hot water tank so the facility's heat pump can be turned off during these unused months.
Bath	Retrofitted all remaining T12s with LED
Bath	Install timers on bus garage heater blocks
Bath	Install new HVAC in Owingsville Elem.
Bell County	Complete Lighting retrofit at Bell Central MS to LED (\$92k)
Bell County	HS lighting retrofit planned
Bourbon	Install LED lights in Cane Ridge Elementary Gym
Bourbon	(2) Install LED lights in Ag Building
Bourbon	(3) Install LED exit signs in various buildings
Bourbon	(4) Install HVAC control system at Bourbon County Elementary School that now allows setbacks
Bourbon	(5) Convert T12 to T8 at North Middletown Elementary School.
Bullitt	Middle School renovation from Roof Top Units to Geothermal and all LED lights
Bullitt	Mini Contract with TRANE to do Demand Limiting on some equipment. TRANE will monitor and lim
Bullitt	All new lights are LED in gyms/parking areas/wall packs
Bullitt	Also has a window tinting project
Campbellsville	Rezoning and Staging all Buildings
Campbellsville	Heating and Cooling Renovation to be done at HS/MS by July 2016
Carroll	MS Renovation
Carroll	HS Chiller 2015
Caverna	Completed Renovation on HVAC in FY2015
Caverna	Starting to look at Lighting
Clay	Lighting Projects
Clay	KU Middle School Project -- expanded district wide nothing yet
Clay	Also Controls Vendors / Audits
Clay	Possible Performance Contract
Crittenden	Maintenance plan is to replace burned out fluorescents, wall packs and recessed lighting with LED a
Elizabethtown	Rezoning and Staging all buildings
Elizabethtown	New Performance Contract this year w/ controls at HS and Morningside TK
Estill	Install LED exit lights at Estill Springs Elementary.
Estill	(2) Install LED lights at South Irvine

Estill	(3) Install LED lights Estill Springs Elementary
Fayette	Summer Renovations -- Efficiency Upgrades in HVAC and lighting (5 schools)
Fayette	Pilot altered HVAC setpoints & schedules
Fayette	One-on-one campus foreman & associate principal listening/training sessions (in progress)
Fayette	Soft launch of Energy Dashboard (Hosted 1st energy competition Earth week) with a public launch
Fayette	Teacher & student training on energy monitoring software
Fayette	Portable building audits
Fleming	Replace coal-fired boiler and window A/C units with new energy-efficient HVAC system
Fleming	Install HVAC controls to allow for scheduling and night setback during unoccupied periods
Fleming	Replace old windows and doors
Fleming	Replace or Retrofit (153) 2-lamp T12 fixtures with T8 lamps and ballasts or LED fixtures
Fleming	Replace or Retrofit (30) 4-lamp T12 fixtures with T8 lamps and ballasts or LED fixtures
Fleming	Retrofit (26) incandescent bulbs with low wattage CFL or LED screw-in bulbs
Fleming	Replace (4) old exit signs with new LED exits.
Fleming	Replace or retrofit (15) 175 watt metal halide fixtures with low wattage-pulse start metal halide lamps
Fleming	Replace or retrofit (11) 175 watt MH exterior wall packs with lower wattage, pulse-start, ceramic metal halide
Fleming	Retrofit (5) exterior fixtures with energy-efficient CFL or LED screw-in bulbs
Gallatin	Control System Integration
Gallatin	HS Control system
Gallatin	HS Gym Lights
Hardin	Ongoing Performance Contract with TRANE
Hardin	Utilizing Energy Teams at Career Center to do energy audits.
Harlan Co.	Meetings with Principals
Harlan Co.	Building Audits
Harlan Co.	3 Schools enrolled in Enernoc
Harlan	
Independent	New Cafeteria Renovation
Hart County	5 Gym Lighting Retrofits from MH to LED
Hart County	New Renovation at HS Soon
Hart County	Replacing Controls & Timers at MS
Jefferson	3-5 Schools Renovated per year (Gilmore Lane Elem., Schaffner Elem, Fern Creek HS)
Jefferson	Gym Lighting -- LED during renovation
Jefferson	8 Demand Limiting Chilllers Installed
Jefferson	Expanding ENERNOC Program
Jefferson	Domino effect of removal of T8 during renovation used to replace T12 in other parts of district.
Jefferson	13 Schools enrolled in ENERNOC
Laurel County	Installation of automated controls and server to run all building's HVAC from the board office
Livingston	Focus on Shutdown during major breaks
Livingston	Focus on setback procedures
Lyon	Focus on Shutdown during major breaks
Lyon	Focus on setback procedures
Lyon	HS Gym Lighting converted to LED
Madison	3 elementary renovations in KU schools
Madison	"Poor Man's Control System" being installed in some buildings

Madison	Madison Central HS GYM lights T5 to LED
Madison	Parking Lot Lights being converted to LED
Madison	ALL Gyms in district now LED or T5
Mason	STEAM Academy Renovation
Mason	Replace all 8 ft, 2 lamp T12s with LED
Mason	Replace 2x4 4 lamp T12s with LED
Mason	Replace 2x2 2 lamp T12 with LED
Mason	Change EXIT signs to LED
Mason	Install Occy Sensors
Mason	Change HVAC to VRF System
Mason	Install Control System
Mason	Replace 59 CFL Fixtures in HS Gym
Mason	Replace 10 CFL in Commons Area
Mason	Replace 7 CFL Cans to LED
Mason	Replace all remaining T12s
McCracken	District Wide Energy Contest
McCracken	Building Audits
McCracken	focus on shutdown procedures
McCreary	Tighter scheduling of control system for HS
McCreary	Earlier shutdown of chilled water system at Middle School
McCreary	Shorted Occy schedule for Whitley City Elementary and staggered start-up
Middlesboro	Complete Lighting retrofit at HS to LED
Nelson	Performance Contract with CMTA completed in 2015
Nelson	Possible Phase 2 Contract for Bloomfield Elementary and Middle School + New Haven (BMS has pro
Nelson	Phase 2 will also replace old controls at BMS and BES
Oldham	South Oldham Middle Renovation
Oldham	Enernoc Program enrollment
Pendleton	District wide LED lighting plan coordinated with LHI
Pendleton	Buying fixtures first with anticipation of replacing throughout the year
Pendleton	Front End upgrade on controls
Pineville	LED Installation at either the HS or ES
Pulaski	Expanded Set Backs
Pulaski	Future -- All Single Stats shifted to Johnson Controls
Pulaski	Lighting -- replacing burned out wall packs with LED
Pulaski	Pilot LED in Memorial Elementary
Pulaski	Focus on behavior -- Team Leaders do projects w/I schools
Pulaski	Wall Pack LED Replacement Strategy Started
Pulaski	All Schools participated in Energy Learning Project with students
Robertson	Shutdown list emailed for breaks
Robertson	Install new dark window shades for reducing heat transfer in cafeteria
Robertson	Replace 35 faulty ballasts load transfer controls that were leaving lights on when unoccupied
Robertson	Program lighting controls for lights staying on too long
Robertson	Repair multi stack units on Chilled Beam system to improve efficiency
Rowen	Replaced 47 F40T12 4 tube wrap fixtures with 43 (88 watt LED)

Rowen	Replace 5 (100 watt) HPS canopy lights with (36 watt) LED
Rowen	Replaced old window AC units it more efficient units
Russell	Renovation to HS HVAC, lighting and control systems
Russell	Major reduction in runtime at Auditorium and Natatorium
Science Hill	Increased staff communication for staff to do manual shutdown, weekends, holidays, breaks
Scott	Install LED lights in SCHS halls
Scott	(2) Install LED lights in SCHS offices
Scott	(3) Install LED lights in SCHS Parking Lots
Scott	(4) install LED lights in Northern Elementary Gym
Scott	(5) install LED lights in Bus Garage
Somerset	Renovation to Hopkins Elem. Lighting, HVAC and controls
Somerset	Tighter HVAC scheduling at HS
Taylor	Retrofit 2 gyms with 400W and 1000 W MH to LEDs
Taylor	Maintenance Plan to replace MH wall packs with LED
Taylor	2 buildings with new construction
Taylor	Replaced Seller boiler with new AOSmith On Demand for Hot water
Taylor	Now has night setbacks at board office
Union	Retrofitted 4 gyms with T5 fluorescents
Union	Enrolled in ENERNOC Program
Union	New Chiller at Middle School
Union	Major HVAC work at High School -- replacing Pneumatic Controls with an Allerton Control System
Union	300 Ton Chiller is being downsized during renovation (Spring FY2016)
Webster	Performance Contract
Webster	Innovative DEMAND Shedding Project with TRANE
Webster	LED Retrofitting as part of Maintenance Plan
Woodford	Lighting Retrofits
Woodford	Setback Audits
West Point	Lighting upgrade in gym
West Point	Lighting upgrade in office, library, computer lab

APPENDIX B -- Newsletters

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



July 2015

Muhlenberg County Schools

leaders are convinced that energy management is worth the effort

When the last Energy Management Report showed that Muhlenberg County ranked 145th out of 173 districts Eric Bletzinger, the district's finance officer and energy manager, took action. He saw that his district was well above the state Energy Utilization Index* (EUI) average of 60, which translated into significant opportunity for dollar savings. As finance officer, Bletzinger also knew the significant financial issues the district was facing and was looking for any way to reduce district costs.

In February 2015, Bletzinger attended his first SEMP training session and learned one of the most efficient school districts in the state was right next door – Butler County Schools. As he listened to discussions about building a successful Energy Management Plan and ways to maximize building automation systems, he wanted to learn more from Butler County Energy Manager and Chief Information Officer Jimmy Arnold. That is where a new partnership began.

Bletzinger and Arnold agreed to walk through the Muhlenberg County buildings on a Saturday to see how the control system was working. "You can have the best systems in the world, but nothing replaces seeing for yourself if the controls were overridden," Arnold said. As the two continued their work together over the next weeks, they talked with custodians, principals and maintenance staff to identify how the buildings were being used.

From there they adjusted the buildings' controls schedule, and recognized how to "ramp-up" the



Eric Bletzinger, Finance Officer & Energy Manager, (right) and Jimmy Fleming, Maintenance Director, review the HVAC controls schedule for Muhlenberg County to ensure efficient schedule for summer maintenance.

building in stages. With those initial steps, they were able to eliminate over 32,000 hours of HVAC runtime, which over a three-month period translated into a savings of over \$60,000.

Those initial results sold Bletzinger on the idea that time spent on energy management will provide an opportunity for saving dollars that can be used for the classroom. On opening day August 5, he plans to ensure that new procedures are in place for scheduling the control system in each building. "Our goal is to seek ways to
(continued on page 3)

SEMP expanded services provided by KSBA



In 2008, state leaders saw nearly a 90 percent increase in non-transportation energy costs for Kentucky public school districts over an eight-year period. House Bill 2 (2008) led to KRS160.325, which supported the Governor’s Intelligent Energy Choices for Kentucky’s Future. That statute and Board Policy 05.23 have led to a new way Kentucky school districts think about managing their energy usage and associated costs.

In 2010, KSBA plunged into energy services, with ARRA (the federal economic stimulus package) funding to assist districts in hiring and supporting local energy professionals. KSBA’s School Energy Managers Project (SEMP) has been instrumental in edu-

cating school board members, providing professional development for district personnel and continued funding for local energy professionals.


With recent utility rate cases, KSBA again was a voice for local school boards in those rate proceedings. An understanding of how and when schools use energy has become a factor in communicating with utility companies, as well as the Kentucky Public Service Commission. Partnering with these key stakeholders to find ways to reduce peak electrical demand becomes a win for all parties.

The result of the KSBA intervention in the just-concluded Kentucky Power Company (KPC) rate case on behalf of 23 districts in that service territory, meant a 35 percent reduction in the rate requested. More importantly, KPC is establishing a “pilot rate” for schools. Because data shows that most school buildings peak at a different time than the utility company’s system peak, KPC agreed to support the school rate, as well as provide \$200,000 a year to support school energy managers in the affected districts.

Similarly, KSBA intervention has resulted in public schools served by Louisville Gas and Electric in six districts seeing no increase in rates, avoiding a requested \$500,000 in additional utility costs. Further, the 78
(continued on page 3)

Steven L. Beshear
Governor

Leonard K. Peters
Secretary
Energy and Environment Cabinet



Commonwealth of Kentucky
Public Service Commission
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David L. Armstrong
Chairman

James W. Gardner
Vice Chairman

Daniel E. Logsdon Jr.
Commissioner


NEWS RELEASE

Contact:
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PSC Approves Settlement in KU, LG&E Rate Cases
No increase in LG&E electric rates; LG&E gas, KU electric rate hikes reduced

Steven L. Beshear
Governor

Leonard K. Peters
Secretary
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PSC Approves Settlement in Kentucky Power Rate Case

In the past month, the Kentucky Public Service Commission has approved settlements in two rate cases that KSBA intervened on behalf of school districts.

SEMP expanded services

(continued from page 2)



districts affected by a Kentucky Utilities rate increase will see that increase reduced by \$1 million, down to \$3.5 million. In addition, unspent funding for energy managers from the current LGE-KU school program will be extended through FY2016. Following PSC approval of a subsequent request, LGE-KU will make available \$2.5 million for school energy managers and projects in FY2017 and FY2018.

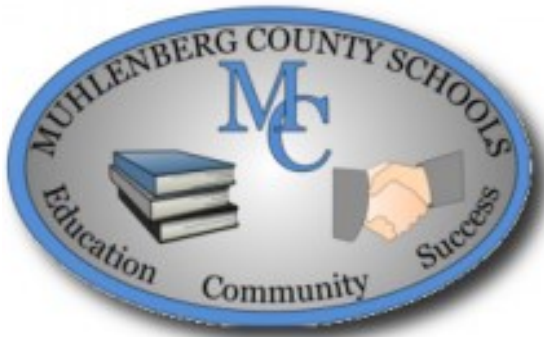
Ron Willhite, director of the KSBA SEMP program, said the outcomes in these rate cases underscore the importance of the financial contribution that local

school boards made to finance the intervention.

“Because of the school boards’ partnership, we were able to bring expert testimony to the table during the PSC proceedings, not only in terms of the impact of the original rate proposal on school budgets, but also about the cost efficiency work that’s already taking place in schools,” Willhite said. “Both the reduced rate impact and efficiency improvements make available funds needed for classroom resources to serve the Commonwealth’s students.”

Muhlenberg County Schools

(continued from page 1)



achieve savings without impacting the teaching and working environment. We will communicate the successes we are having, to help faculty and staff understand the need for scheduling,” said Bletzinger. “We may even consider some friendly competition between the schools to increase the interest to conserve.

“Through our recent performance contract we were fortunate to have had the building automation systems in place. However, because we were operating outside of the recommended parameters, we were not utilizing the systems we had. That resulted in overspending by our district in a time where we couldn’t afford to overspend,” added Bletzinger.

Plans for the partnership continue to evolve. Because energy management requires a hands-on process, Arnold will monitor electric usage with Bletzinger over the next few seasons. In looking to other significant opportunities, limiting electrical demand is a future goal.

Students at Muhlenberg County Career and Technical Center build skills not only in Health Services and Automotive Technology, but also in energy related careers of Industrial Maintenance, Electrical Technology, and Coal Technology.



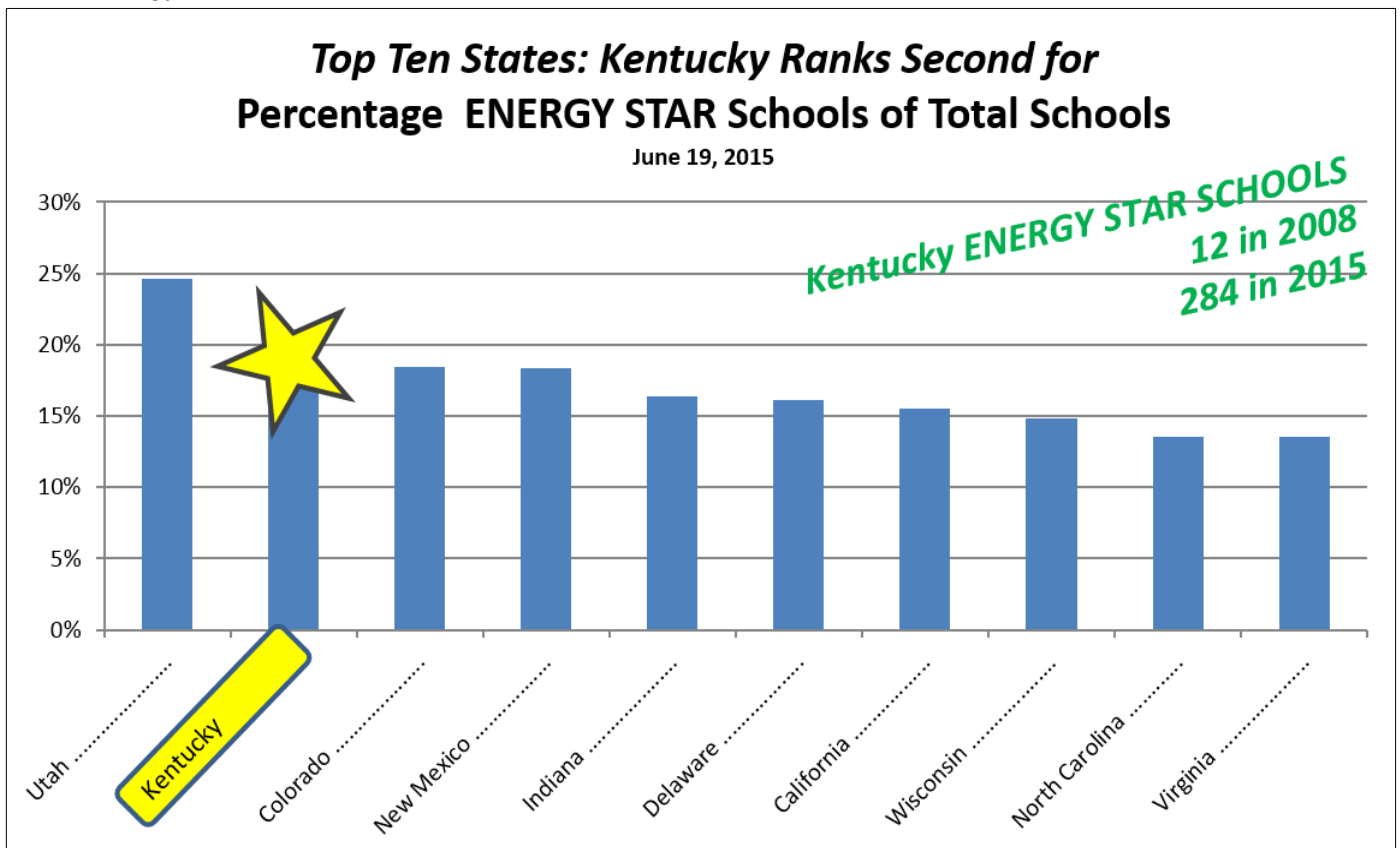
Superintendent Energy Management Reporting Packet to be sent in August

For most Kentucky school districts, August signals a start to the new school year. This is just a reminder that districts should be tracking all of the non-transportation energy used in the district, as well as the progress on the district's Energy Management Plan, to be reported by October 1st. This report is required by KRS160.325 and Board Policy 05.23.

The actual FY2015 EMR report form, and reporting information, will be included in a Superintendent Packet and available online. Webinars will be held in late August to answer questions about completing the form.

Kentucky Ranks Second for Percentage of ENERGY STAR Schools

Over the past two years, KSBA-SEMP has been tracking the number of ENERGY STAR Schools in the nation, and comparing that with data from the U.S. Department of Education on the number of school buildings. In 2013, Kentucky was fifth in the nation in percentage of ENERGY STAR Schools. As of June 19, 2015, Kentucky has moved to second in the nation. This proves that Kentucky Schools are becoming more energy efficient.



LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



August 2015

Federal Power Plant Rules: What's next for Kentucky?

**By: Dr. Len Peters, Secretary
Kentucky Energy and Environment Cabinet**

Energy issues continue to dominate our thinking in Kentucky. This is especially the case for school districts, which are always concerned about the impact of rising energy prices on their budgets. In the Energy and Environment Cabinet, we are often asked about how a particular federal policy, regulation, or court ruling will affect energy prices. We've benefited from affordable, reliable energy for decades, and we are all concerned about what the future holds as the energy picture changes.

Specifically for this newsletter, I was asked to write about the impact of the June 29, 2015, U.S. Supreme Court decision on an EPA regulation that limits mercury and air toxics emissions from power plants (often called the MATS rule). The Supreme Court decision did not strike down the rule—as some people erroneously contend. Rather, the decision sent the MATS regulation back to the D.C. Circuit to decide next steps. This means the MATS rule is still in effect.

The Supreme Court decision said that EPA should have considered costs in its MATS rule, earlier in the rulemaking process than they actually did. Again, it did not toss the rule out, and it did not say EPA does not have the authority to regulate mercury and air toxics from power plants. How the D.C. Circuit will proceed with the rule is not known. In the meantime, however, many people in Kentucky hailed the Supreme Court's decision because they perceived it to be a way to rein in rising electricity costs. We have even heard some people remark that the ruling will allow some coal-fired power plants in Kentucky to come back

online. The reality, however, is that utilities had an April 2015 deadline to comply with the rule (with extensions in some cases), and therefore, the impact on that particular regulation of the Supreme Court decision rule is minimal.

As I was working on this article, a significant event occurred—EPA released its final regulations limiting greenhouse gas emissions (carbon dioxide) from existing and new coal and natural gas power plants. It would be an understatement to say the EPA's greenhouse gas regulations are the most significant energy policies affecting the United States, ever. Yes, I used the word energy, and not environmental, because these regulations will reshape the nation's energy infrastructure.

Many of these changes in the nation's energy mix are already occurring as a result of several different factors—primarily, other regulations (such as the MATS rule); inexpensive natural gas; and decreasing costs of renewable energy technologies like solar and wind. The EPA's 2000-plus-page greenhouse gas regulations will accelerate these changes.

(continued on page 3)



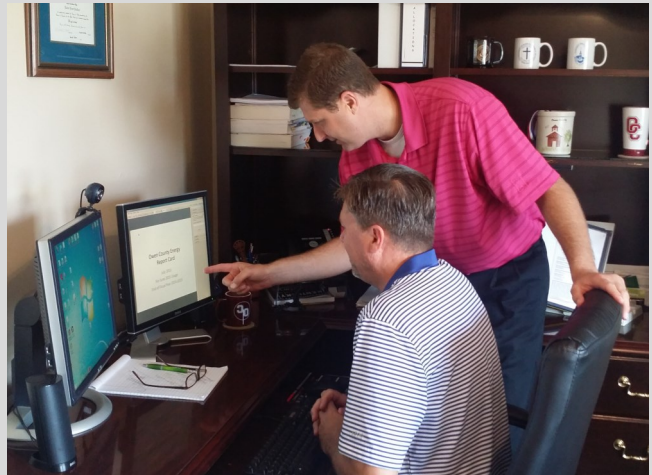


Savings, because of Competition!

Several school districts throughout the state are now using friendly competition to promote higher energy savings with their own version of energy contests. The payouts for these contests are funded through the energy savings.

In Hopkins County Schools, energy manager Bruce Sauer tracks the energy by month and compares against last year's usage. The school having the highest percentage of energy savings receives \$500 and all other schools showing a savings get at least \$100 in credit towards an appropriate school expenditure.

"In fiscal year 2015 we saw over a 12 percent reduction in energy consumption compared to fiscal year 2014. That equated to dollar savings of over \$130,000," said Sauer.



Owen County Superintendent Rob Stafford and energy manager Brian Linder review the June Monthly Energy Report in preparation for an opening day recognition of the schools that reduce the most energy for FY 2014-15.



Energy manager Bruce Sauer presents a certificate and check to Jesse Stuart Elementary Principal Phyllis Sugg for the Hopkins County Energy Reduction School Award.

Did you know that Kentucky Schools increased OVER 5 million square feet, but are using less energy than in 2010?

Opening day for both Owen County and Williamstown Independent districts also recognized individual schools for reducing energy and costs. Energy manager Brian Linder provides monthly energy reports to his boards of education, but uses opening day to recognize the school in each district that have reduced the most energy costs by presenting a check. Linder said, "It is important to show tangible results."

"For Opening Day 15, we will take just a moment to look at energy use and cost for last year. This usually spurs some friendly competition between schools," added Linder.

As your district begins a new year, consider communicating your Energy Utilization Index and any plans to reduce energy consumption. This could help lead your district to saving a little GREEN for FY 2015-16! Even if you don't participate in a contest, the energy savings contribute to the health of your district

What's next for Kentucky?

(continued from page 1)

As many of you know, in Kentucky, our renewable potential is not as strong as it is in other states. Today, we're still reliant on coal for 93 percent of our state's electricity generation. The EPA regulation on existing power plants gives preference to renewable generation over coal, primarily, but also over natural gas. When a federal rule has a primary aim of taking coal out of the generation mix—over time, of course—there is reason for all of us to have concerns.

Did I mention the number of pages? I'm writing this on the day following the release of the greenhouse regulations, and therefore, there is still so much we need to understand. We were very disappointed in the final existing source regulation because coal states like Kentucky are going to have a difficult time meeting the standards. In our comments on the proposed rule, we argued EPA needed to consider potential rate impacts on coal-reliant states. As a major manufacturing state, we are very susceptible to major economic impacts from rate increases.

Of course, rate increases affect us all. The uncertainty alone can be daunting. In the Energy and Environment Cabinet, we will be examining the greenhouse regulations in more detail in the next few weeks and we will be communicating directly with utilities and other stakeholders to try to understand potential impacts on the state. We can all expect legal challenges, from across the country. But it's important to remember that legal challenges can take years to be resolved, and in the meantime, many utilities will continue to make decisions (as they did with the MATS regulations) to comply with the greenhouse gas regulations. We will be doing our best to keep people informed.

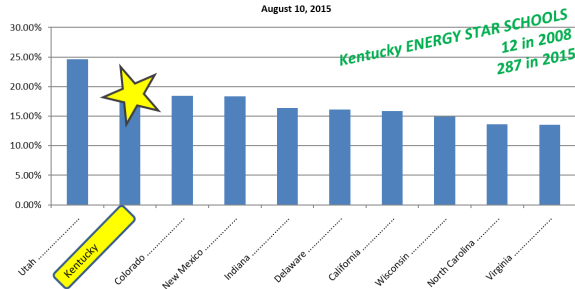
Did you know that over 22 percent of eligible schools in Kentucky are ENERGY STAR Labeled? That compares with approximately 8.5 percent nationally!



Related EPA Regulations

- ◆ ***Greenhouse Gas Rules:***
 - ◇ ***Carbon Pollution Standards for New, Modified, and Reconstructed Plants—often referred to as the New Source Rule and the 111 (b) rule (as a section of the Clean Air Act). Establishes emissions targets on new, modified and reconstructed coal or natural gas plants. For coal, the emissions standard is 1,400 lbs of carbon dioxide per megawatt hour of generation. Existing coal units average around 2100 lbs of carbon dioxide per megawatt hour. To meet this standard, a new coal unit would have to employ costly carbon and capture control technology or co-fire with natural gas.***
 - ◇ ***Existing Source Rule—called the Clean Power Plan; also often referred to as the 111(d) rule—establishes state-specific carbon dioxide emissions targets on existing coal and natural gas generating units. Kentucky's emissions target is a 30 percent reduction by 2030 relative to 2012 levels.***
- ◆ ***Mercury and Air Toxics (MATS) Regulations—Released in 2012. Legal challenges to the regulation argued EPA should have considered costs.***

Top Ten States: Kentucky Ranks Second for Percentage ENERGY STAR Schools of Total Schools
August 10, 2015



Because many School Boards have placed energy as a priority, Kentucky continues as 2nd in the nation in percentage of ENERGY STAR Labeled Schools!

Energy Management Report webinars scheduled

Energy Management Report Webinars scheduled: Now that the FY 2015 Energy Management Report Superintendent Packets have been delivered, webinars have been scheduled for August 20 and 25. The training will explain the collection and entering of district utility information in the EMR and also will serve to raise awareness among district administrators of the impact they can have in managing utilities costs. To register, go to www.ksba.org and find the webinars under "KSBA Events."

Special Subcommittee on Energy reviews school energy management status

The Special Subcommittee on Energy recently was briefed on the status of school energy management in Kentucky and heard reports from two districts that have worked and trained together. KSBA School Energy Managers Project Director Ron Willhite reported that while a number of districts have learned that energy is a resource that can be managed, there is still significant opportunity for school districts to implement strategies to save energy and money. "Since 2010, 114 districts have reduced their Energy Utilization Index (EUI) and should be praised for their efforts," Willhite said. "KSBA-SEMP will continue to identify funding partners to support all districts in energy management efforts, and will look to the Energy Cabinet to provide a portion of those funds."

Energy managers Jim McClanahan and Ralph Slone reported on their districts' successes and partnership in reducing their EUI. Keys factors they cited included:

- ◆ Support from school board and superintendent.
- ◆ Buy-in from all –principals, the building leaders.
- ◆ Buy-in from all faculty and staff.
- ◆ Educating students on saving energy.
- ◆ Providing weekly and monthly reports for competition.
- ◆ Identifying energy conservation measures (ECMs).
- ◆ Implementing ECMs.
- ◆ Recognizing achievements.

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



September 2015

Taking energy efficiency to the next level . . .

STUDENT ENERGY TEAMS ARE MAKING A DIFFERENCE

The district is making full use of its HVAC control systems. Exit signs are LED and lighting systems are updated whenever possible. Now, what else can be done to save even more energy? Districts that were involved in early energy management efforts in Kentucky will point you to involving students and teachers. Several programs also offer additional teacher resources for energy education. One that has grown significantly in Kentucky is the National Energy Education Development Project (NEED), a national not-for-profit education organization.

NEED has been providing energy curriculum resources and training for K-12 teachers across the country for over 35 years, and has been active in Kentucky for 20 years. Funding for NEED in Kentucky has been provided by the Department for Energy Development and Independence and three Kentucky utility companies – Duke Energy, Louisville Gas & Electric and Kentucky Utilities Company, and Kentucky Power/American Electric Power. Each sponsor provides a specific level of programming.



Students measure kWh usage of classroom equipment.

Kentucky NEED 2015
ENERGY WORKSHOPS FOR TEACHERS

Date	City
9/22/2015	Elizabethtown
9/24/2015	Prestonsburg
9/29/2015	Covington
9/29/2015	Richmond
10/1/2015	Gilbertsville
10/14/2015	Pineville
10/15/2015	Morehead
10/20/2015	Georgetown
10/22/2015	Bowling Green
10/27/2015	Shelbyville
10/27/2015	Owensboro
10/29/2015	Campbellsville
11/5/2015	Madisonville
11/12/2015	Maysville

Registration at www.need.org under "Upcoming Events"

The three major components of NEED are:

Curriculum: Over 150 free curriculum guides are downloadable, covering all aspects of energy to assist Kentucky teachers in meeting current science standards.

Workshops: Teachers across the Kentucky are invited to attend one-day workshops to introduce the energy curriculum and model hands-on activities to be used in the classroom. (See schedule below.)

Energy Tours: Each year Kentucky NEED hosts an energy tour, giving teachers the opportunity to learn more about energy and energy career opportunities in Kentucky. (continued on page 2)

Teacher resource for Student Teams *(continued from page 1)*

Student Energy Teams

Karen Reagor, director of Kentucky's NEED Project, says there are over 100 active Student Energy Teams in Kentucky. "Teams may begin in a classroom or as an after-school program, but all use the Blueprint for School Energy Teams, a free downloadable tool from NEED." Reagor adds that this tool was developed specifically for the Kentucky program, but is now being used across the nation.



The Blueprint for School Teams is a guide for districts and teachers to use when establishing Student Energy Teams. It provides all the basics a school club advisor would need to teach students how to monitor energy use and develop

a strategy to educate the school community on behaviors that will reduce energy consumption. Find it at: (<http://www.need.org/Files/curriculum/guides/BlueprintSchoolEnergyTeam.pdf>) It contains:

- Teacher Guide*
- Energy Team Checklist*
- Sample Action Plan Timeline*
- Plug Load Worksheet*
- Awareness Ideas*
- Building Monitoring Survey Instructions*
- Building Monitoring Survey*
- Classroom Energy Checklist*
- Energy Shutdown Checklists*

Student energy projects are a perfect opportunity for energy managers to unite classroom education and district energy goals. "We would love to partner with as many teachers as possible, to support reaching district energy goals, along with greater success in teaching the science standards" says Reagor. For more information contact krea-gor@need.org.

Student Energy Teams in

Kenton County School District



Students celebrate "wisdom in saving energy" annually!

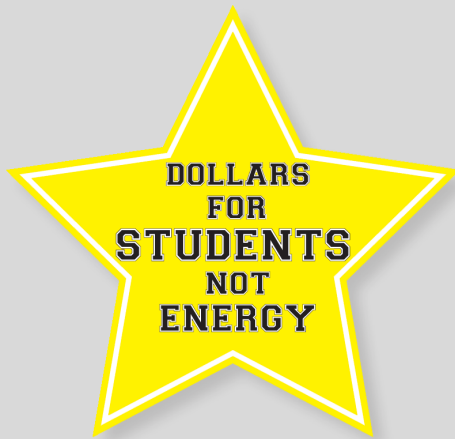
Chris Baker, energy systems coordinator for the Kenton County School District, describes Kentucky NEED as, "an instrumental component of our E=WISE2 program." Kentucky NEED staff have participated on an advisory panel, helping with teacher training and engaging students during student workshops. Baker adds that, "our student energy program has grown to one of the most popular extracurricular activities in the district, with a 'Green Engineering Academy,' being a significant addition to the district curriculum."

Scott County Schools

"Once students understand what energy is, energy conservation starts to make sense," says Jim McClanahan, energy manager for Scott County Schools. "I encourage all teachers who are energy team leaders to attend a NEED workshop where they can learn what to do to get students involved in energy savings. When you get students involved, they will bring the staff along."



Curriculum resources, teacher workshops and energy tours are resources to help guide student energy teams.



Warren County Public Schools

While Warren County Public Schools Energy Manager Jay Wilson had worked on the facilities side of energy management for a number of years, in 2010 he saw a renewed interest as school energy teams were developed. WCPS developed Respect and Conserve Energy (RACE) Program in each school. This program incorporated conservation and sustainability education into student learning, using the resources from Kentucky NEED and the Alliance to Save Energy, a TVA-sponsored program. With the community's interest in car racing because of the National Corvette Museum, the RACE Energy Teams have been well-supported in the community .



North Warren Elementary "RACE Team" presented their projects at the district competition.

With the community's interest in car racing because of the National Corvette Museum, the RACE Energy Teams have been well-supported in the community .

Bullitt County Public Schools

Energy team leaders, especially those who are science teachers, love the [NEED] kits, says Kimberly Joseph, energy manager for Bullitt County Public Schools. "Saving energy and money is great, but people like me are employed because of students. Anything that makes learning fun and makes those science and math connections for them, it's definitely something we all should support."



The Student Energy Teams at Crossroads Elementary teach other students about energy conservation!

Budget impact of rate increase

With new electric utility rates becoming effective July 1, affected districts are now seeing the impact of those increases. While the increases are between 3 and 13 percent, it is important to understand utility companies are partnering with districts in reducing energy consumption and demand and wasteful spending. Louisville Gas and Electric, Kentucky Utilities Company and Kentucky Power Company have provided funding to support district efforts to manage energy resources, as well as future funding for energy projects. KSBA SEMP staff are providing support for all funded energy managers to identify the best ways for their districts to reach those goals.



October is . . .

Energy Awareness Month

Kentucky will celebrate Energy Awareness Month in October. Consider celebrating school energy efficiency efforts and send stories and pictures about your celebrations to martha.casher@ksba.org for inclusion in the November Let's Save Energy newsletter.

Annual reports submitted to LG&E/KU show continued reduction

Annual reports have now been submitted to Louisville Gas and Electric and Kentucky Utilities Company showing a continued reduction in the demand (kW) and energy consumption (kWh).

The LGE districts have achieved the following, compared with their FY 2010 baseline:

- August demand reduction, 15.8 percent
- January demand reduction, 6.6 percent
- Summer energy reduction, 4.5 percent
- Winter energy reduction, 5.2 percent

The KU districts have achieved from a FY2010 baseline the following:

- August demand reduction, 15.9 percent
- January demand reduction, 10.8 percent
- Summer energy reduction, 17.5 percent
- Winter energy reduction, 13.6 percent

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency,
best practices in Kentucky school districts



October 2015

When is losing really gaining?

... When you're in the

Kentucky Battle of the School Buildings!

Many times losing is negative. In the Kentucky Battle of the School Buildings Competition, losing means winning for a school.

The national competition has produced an average savings of approximately 8 percent, amounting to \$20,000 per building per year for commercial buildings. Some competing buildings have reduced energy use by 35 percent and as much as more than 50 percent.


In Kentucky's Battle, schools from across the state will measure and track their monthly energy use for calendar year 2016 using ENERGY STAR Portfolio Manager, an online measurement and tracking tool. Comparisons will be made with the schools' 2015 energy use. KSBA-SEMP will recognize the Top Kentucky School Building, determined by the greatest percentage

-based reduction in energy use achieved from 2015 to 2016. KSBA-SEMP will also recognize schools that reduce energy use by 20 percent or more from 2015 to 2016.

Any K-12 public school can participate by:

- Completing the competition form.
- "Sharing the property" from Portfolio Manager with the SEMP Team.
- Reporting energy usage on a monthly basis.


To enroll in this competition, complete the Competition Form on the next page. Schools that participate in this competition will also qualify to participate in the "National Battle for the Buildings." For more information, contact martha.casher@ksba.org



KSBA-School Energy Managers Project Presents

Kentucky's Battle of the School Buildings

An ENERGY STAR®
Battle of the Buildings™ Competition



ENERGY STAR



KSBA-School Energy Managers Project Presents

Kentucky's Battle of the School Buildings

An ENERGY STAR®
Battle of the Buildings™ Competition



COMPETITION REGISTRATION FORM

The Kentucky Battle of the School Buildings is to recognize:

- The Top School Building that reduces its energy use on a percentage basis over calendar year 2016, as compared with calendar year 2015.
- Any school that reduces its energy use as measured by the weather normalized source EUI (kBtu/sq ft) by at least 20% over calendar year 2016, as compared with calendar year 2015.

Here's all you need to do to participate:

- Complete the competition form below
- "Share the property" from Portfolio Manager with the SEMP Team
- Report the following by dates listed:
 - ◇ 2/15/2016 Benchmark FY 15 data into Portfolio Manager,
 - ◇ 3/1/2016 Listing of energy projects/practices that will contribute to reduction
 - ◇ 5/15/2016 Report 1st Quarter energy usage into Portfolio Manager,
 - ◇ 8/15/2016 Report 2nd Quarter energy usage into Portfolio Manager,
 - ◇ 11/15/2016 Report 3rd Quarter energy usage into Portfolio Manager,
 - ◇ 3/15/2017 Report 4th Quarter energy usage into Portfolio Manager,
 - ◇ 5/15/2017 KSBA-SEMP to communicate and recognize final results.

Complete this form and email to martha.casher@ksba.org by 2/1/2016

School Name: _____ District _____

Sq. Ft. _____ Year built _____ Number of students _____

Address: _____ City _____ Zip code _____

Principal _____ Energy Manager _____

We the understand that we are responsible for tracking all energy used in our school and will enter that information into Portfolio Manager in order for our energy data to show our progress.

Different districts, different needs

Energy manager takes individualized approach in serving seven districts

The basics of energy management are the same for every district. They include appointing a district energy committee, assessing facilities, developing the energy management plan (EMP), and then reporting the status of those efforts annually. When it comes to implementation of the EMP, differences may come into play.

"I have to be flexible to meet the differing needs of my districts," says Terry Anderson, energy manager for the Fleming County Partnership, which encompasses Fleming, Bath, Mason, Menifee, Robertson and Rowan county districts and Augusta Independent.

In one district, the school board chose a performance contract to implement mechanical, HVAC and lighting upgrades to improve existing facilities. Anderson worked with Bath County Facilities Director Burnsy Stewart to help educate others in the district on decisions being made about these energy projects.

In Augusta Independent Schools, Anderson began working with Superintendent Lisa McCane and Facilities Director Barry Caskey to plan the replacement of older gym lighting with new, high-efficient LED lighting. Savings are estimated at 21,709 kWh or \$2,062 annually.

The Mason County district had other energy management needs. As the district looked to expand academic programming to include a STEAM (science, technology, engineering, agriculture and medicine)

Academy, it had an opportunity to renovate a factory building that it had been using as a sports and agriculture facility. One-third of the 81,000-square-foot building now has been renovated, with improvements made to its envelope, to become part of the high school facilities. Classrooms to serve the STEAM classes have been built to include an efficient HVAC system and LED lighting. Another energy project in Mason County resulted in Straub Elementary School reducing energy consumption to become an ENERGY STAR-Labeled School.

The Fleming County school district has also focused on implementing projects to reduce energy consumption. From optimizing HVAC controls to developing shutdown procedures for breaks and implementing occupancy sensors to control the lighting systems, the district has made daily decisions to reduce energy use. The impact of these decisions are reflected in the district having three ENERGY STAR-labeled schools with excellent ENERGY STAR ratings. They are:

- Ewing Elementary School – 83 Rating
- Fleming County High School - 95 Rating
- Hillsboro Elementary School – 83 Rating

Anderson's utility company background led him to identify potential cost savings for his districts. He recognized that four of his districts could benefit by changing their mercury vapor security lighting to updated high-pressure sodium fixtures that would provide better lighting for a reduced cost, so he decided to complete an inventory of the outdoor lights being leased from the utility company. Besides changing the fixtures, Anderson also found out the district had three fixtures on the books that were no longer in existence. Those savings alone amounted to:

- \$972 annually
- \$4,114.76 in refunds for overbilling of nonexistent lights

Having an energy manager who is able to be flexible and responsive to the individual needs of each district is paying off – by both saving money for the districts and reducing demand for utility companies.



Jon Nipple from KSBA-SEMP presents the Governor's Certificate for ENERGY STAR-Labeled School recognition to Ewing Elementary School Principal Michelle Hunt. Also pictured from left are Fleming County Superintendent Brian Creasman, CIO Denise Brown, Energy Manager Terry Anderson and Maintenance Director Greg Dunaway.

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



November 2015

Successful setbacks:

A major opportunity to save during holiday breaks

The use of setback procedures is relatively simple, but so important. "Thousands of dollars a month for each school building can be saved during school breaks by ensuring setback procedures are being implemented properly," Certified Energy Manger Scott Caslow said.

Caslow's 20-plus years as an electronic engineer in the building control industry, gives him a huge advantage in working with his five school districts and their maintenance personnel. He offers a few pointers for board members or district administrators to consider when reviewing setback procedures:

What are the district "setback procedures?"

Energy Management Plans (EMP) required by Board Policy 05.23 should already be approved in your district. Typically included in the EMP are general guidelines for temperature settings for heating and cooling, building resource management, lighting, etc. "Setback procedures include detailed implementation steps such as Board approved winter setback temperatures," Caslow says. (See example of typical setback procedures on page 3)

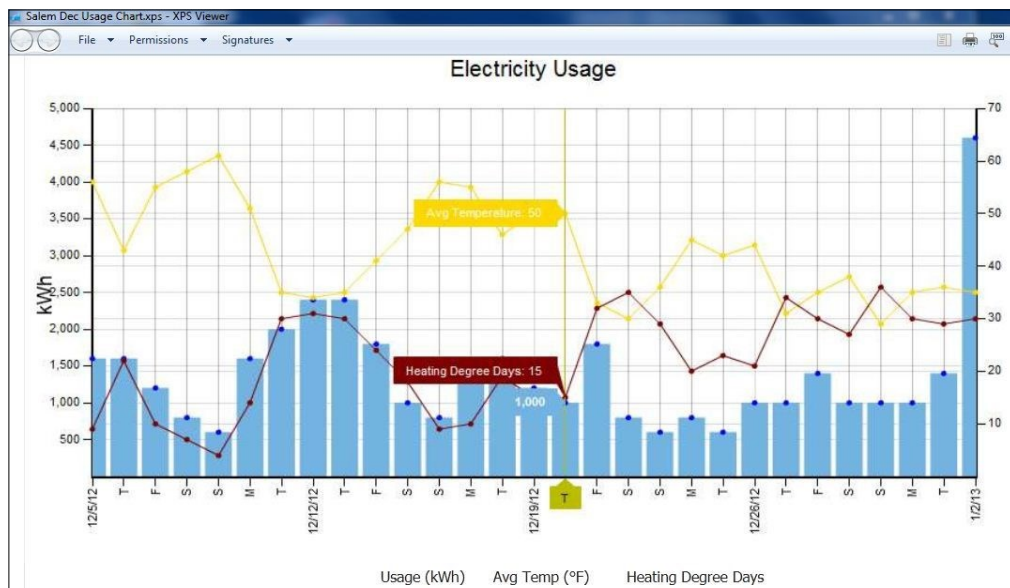
How much energy is used on a monthly basis?

Board members and district administrators should be aware of how much energy is being used on a monthly basis and understand the basic factors that influence the usage. To have more "energy champions" in a district, communicate this information by location so others understand the impact on the budget of setback procedures during breaks.

What temperatures are recommended for winter setbacks?

"I can't emphasize enough to know your heating system," Caslow cautions. "I usually setback to 55 degrees for savings and safety from freezing. With older heat pumps in our schools, a higher temperature of 60 degrees or 65 degrees offers the better option for one of my districts."

(continued on page two)



The chart at right is from Salem Elementary School in Russell County (51,599 sq.ft) where two-thirds of the school is controlled by manually set timers. During the two week holiday break, energy use was reduced by an average of 1250 kWh per day, even with the decreased temperature. Using \$0.09/kWh this equates to over \$1,000 in savings for the 10 days. Data provided by South Kentucky RECC.

Kentucky Gas Aggregation Program provides recommendations

The Kentucky Gas Aggregation Program (KGAP) has been available to school districts in the Columbia Gas of Kentucky and DUKE Energy service territories to competitively secure natural gas supply contracts since 2011. This program is managed by Fellon-McCord, an energy consulting firm based in Louisville.

In late 2013, KGAP made a purchase recommendation to all eligible districts. The districts that participated were able to avoid major price volatility that resulted from the 'Polar Vortex' of 2014. These market extremes otherwise led to high natural gas prices throughout 2014 for any customer that did not have a fixed priced contract.

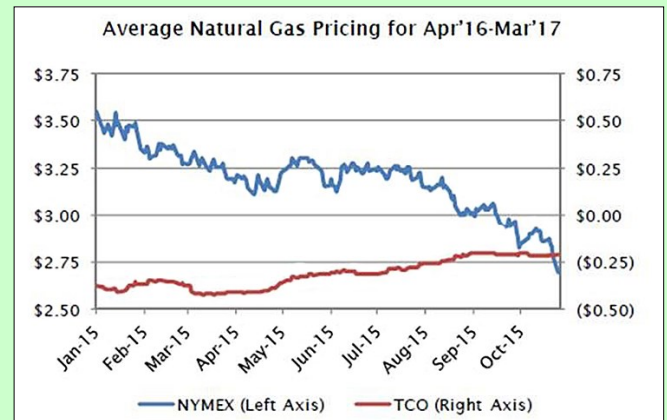
2015 has been a rebalancing year. Record natural gas production and moderate to unseasonably low temperatures have led to decreased domestic demand and an oversupply of the market. Forward pricing reached a new low the week of October 26th as updated forecasts called for a warm winter.

As a result of their ongoing monitoring of these trends, Fellon-McCord, working with KSBA, will issue a purchase recommendation for all districts that are currently participating in KGAP and those interested in participating with natural gas accounts in Columbia Gas of Kentucky and Duke Energy Kentucky.

Over the next week, Fellon-McCord will be confirming

participating school districts and then will issue a formal, competitive RFP to qualified natural gas suppliers to establish the low-cost supplier for schools districts in this low-cost environment. School districts in the program will benefit from aggregate purchase power, expert negotiation and flexible options.

Below is a chart that outlines the 2015 price trend of wholesale financial and physical natural gas pricing. The blue line in the chart highlights the significance of the current opportunity and a 25% drop in pricing of a 12-month term beginning in April 2016, upon the expiration of current district contracts.



NYMEX, represented in blue, is a division of the New York Mercantile Exchange, where energy futures are traded. TCO, represented in red, is the total cost of ownership of all direct and indirect costs for gas during the time indicated.

Successful setbacks: (continued from page one)

What controls, if any, are currently being used?

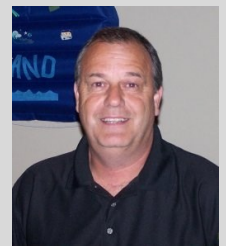
Know what type of control systems are in your district. Are they manual or programmable? Is there a building automation system (BAS)? No matter what type of controls you have, or don't have, setback procedures should be implemented.

For manual controls, it is critical to educate those in each building on the setback temperatures. Because this is the step that could mean thousands of dollars a month in savings, consider double-checking thermostat settings to ensure changes are made. For programmable thermostats, change the schedule to reflect the holiday break. BAS controls can provide an easier and more efficient process for implementing setback procedures; however, attention is required to ensure the system is working and scheduled properly.

What benefits do building automation systems provide?

Building automation systems in the past were cumbersome and required maintenance personnel to have more computer knowledge than they need for systems today. The newer systems do not require an engineer or computer genius to operate and schedule events. "They are much more user friendly with graphics and common-sense type programming that almost anyone can handle," says Caslow. "If you can set your DVR to record a TV show then you can more than likely schedule events in a BAS."

Caslow points out that while all staff in a district are important to energy management efforts, maintenance and custodial staff are likely the personnel who would double-check that all systems are working properly. "Ensure they have the knowledge to make that determination, as it can mean thousands of dollars wasted," he says.



CEM Scott Caslow

**EXAMPLE OF A SCHOOL DISTRICT
WINTER SETBACK CHECKLIST**

Name _____ School _____

Date _____ Time _____

SETBACK ACTION		COMPLETED/NOTES
1.	Turn off electronic whiteboards, projection systems, computer monitors, printers, scanners, etc. Confirm with district IT regarding turning off computers	
2.	Turn off and unplug TVs, DVD players, coffee pots, and any other non-essential classroom/office electronic equipment	
3.	Clean out and unplug personal refrigerators. Leave the door open	
4.	Turn off all classroom lights. Turnoff AND unplug any personal lamps	
5.	Never hang items from ceiling where lighting sensors may be located	
6.	Turn off nonessential exhaust fans	
7.	Set exterior lights to turn off during daylight hours (this should be done at every day, but would be good to confirm)	
8.	Turn off all display case lighting	
9.	Reset controls OR thermostats to recommended setback temperatures	
10.	Unplug chilled-water fountains, except in occupied areas. Check and report any leakage of water fixtures	
11.	If temperatures fall below 20 degrees, plan on inspecting buildings on days when no one is working in the building to ensure proper operation	
NOTES/OBSERVATIONS		



News Notes



“Battle” Watch

Kentucky’s Battle of the School Buildings will begin in 60 days! Schools from across the state will measure and track their monthly energy use for calendar year 2016 using ENERGY STAR’s Portfolio Manager. Comparisons will be made with the schools’ 2015 energy use. KSBA



-SEMP will recognize the Top Kentucky School Building, determined by the greatest percentage-based reduction in energy use achieved from 2015 to 2016 and the schools that reduce energy use by 20 percent or more from 2015 to 2016. An introductory webinar is scheduled for December 9; however, for those who want to quick start their school’s competition, [click here!](#)



KSPMA Annual Conference

The Kentucky School Plant Management Association’s Annual Conference was held in late October. While programming for the overall agenda focused on all facility needs, several energy-related sessions were held. Of particular interest were topics on “creating school energy champions” and internal district energy/facility manager “selling state-of-the art lighting” to district decision-makers. Copies of the presentations are available on the KSBA-SEMP website at www.ksba.org/semp.aspx.

Preliminary EMR Info

All 173 Kentucky School Districts have submitted their Energy Management Report (EMR) for FY2015. The data is being analyzed in preparation for the annual statewide reporting to the Energy and Environment Cabinet and Legislative Research Commission on December 1 pursuant to KRS160.325. A summary of the report will be included in the December issue of Let’s Save Energy and will be available at KSBA’s Winter Symposium. Board members who want to hear more about the energy impacts and trends for Kentucky’s schools should attend “Forewarned is Forearmed” at KSBA’s Winter Symposium.

	2010	2015
National	73	73
Kentucky	65	TBD
ENERGY STAR	50	50
KY’S Best District	43	TBD
Net-Zero Ready	18	18

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



December 2015

Six years of energy savings totaling \$68 million: New report shows 84 percent of school districts have cut energy use

New data shows the success of statewide efforts by public schools to save energy since state law began requiring districts to track energy use six years ago.

The major yardstick for these calculations is energy use intensity (EUI), which measures energy use (kBtu) per square foot. For the base year 2009-10, the statewide EUI index was 65.4 kBtu per square foot. In 2013-14 the EUI index was 60.9. That figure has now dropped to 57.6 kBtu per square foot for 2014-15. Further, the corresponding cumulative avoided cost during that period through consumption reduction, rate corrections, rebates, refunds and utility case interventions is over \$68 million. Also significant is that 84 percent of districts have reduced energy consumption over the same period.

Those findings have been submitted to the Legislative Research Commission and the state Department for Energy Development and Independence in the annual Energy Management Report required by KRS 160.325 and local school board policy. Each year, the report reviews the status and development of energy management plans by local boards of education and the anticipated savings to be obtained by those plans.

Other overall observations and conclusions when comparing 2014-15 with base year 2009-10 include:

- Conditioned square footage has increased 6.3 percent.
- Total energy use (MMBTU) has decreased 6.5 percent even with the addition of over 6 million square feet.
- Total expenditure of energy for public school districts has increased 6.8 percent since 2009-10. These are the contributing factors:
 - ◆ Spending on electricity has increased 9.7 percent.
 - ◆ The cost per kilowatt hour of electricity has increased 16.3 percent.
 - ◆ Spending on natural gas has decreased 32 percent.
 - ◆ The cost per 100 cubic feet of natural gas has decreased 26.7 percent.

Thirty-three districts also reported active energy performance contracts to help them reduce their energy usage and costs.

KSBA's School Energy Managers Project (SEMP) has funded and trained local school energy managers since 2010. This funding currently is in partnership with Louisville Gas & Electric/Kentucky Utilities Company and Kentucky Power Company. SEMP personnel help school districts:

- Break down analytical and technical issues.
- Develop and implement energy management plans.
- Comply with statutory and board policy requirements.
- Track energy usage.
- Coordinate recognition events.
- Consolidate and report statewide energy data to Legislative Research Commission and the Energy and Environment Cabinet.
- Collaborate with the Kentucky Energy and Environment Cabinet, utility companies, and other stakeholders to work on energy-saving activities.

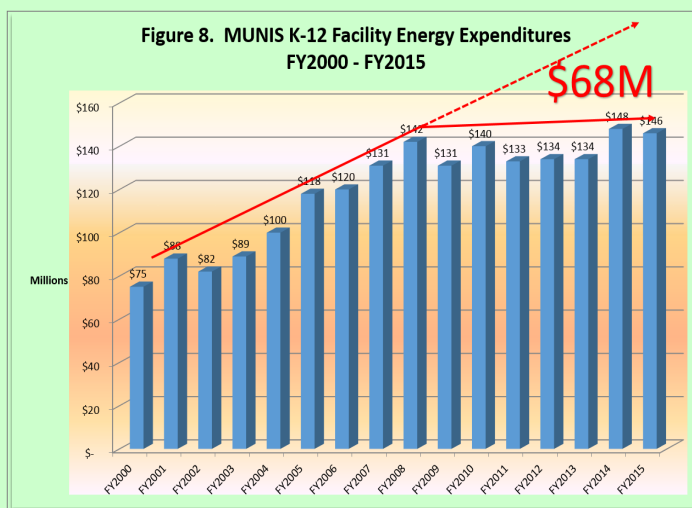


Figure 8 above shows a graph of the MUNIS-reported school energy costs from fiscal year 2000 through fiscal year 2015. This graph shows that these costs had nearly doubled between fiscal years 2000 and 2008. The red lines on the graph illustrate the projected trajectory of costs and the cumulative savings of over \$68 million.

Table 2, FY 2014-15 District Ranking By Energy Use Intensity

Rank	District	2010 EUI	2015 EUI	Rank	District	2010 EUI	2015 EUI	Rank	District	2010 EUI	2015 EUI	Rank	District	2010 EUI	2015 EUI
1	Butler	42.8	32.7	45	Floyd	52.0	49.5	89	Williamsburg	54.9	56.1	133	Carroll	82.9	63.6
2	Owen	62.5	36.1	46	Whitley	57.7	49.7	90	Monroe	48.6	56.4	134	Danville	64.6	63.7
3	Nelson	51.5	37.8	47	Daviess	53.9	49.9	91	Cloverport	72.7	56.5	135	BowlingGre	73.6	63.9
4	Scott	53.3	39.3	48	Paintsville	53.3	50.0	92	Rockcastle	59.9	56.7	136	Jefferson	68.2	64.0
5	Oldham	45.7	40.5	49	Clark	74.7	50.0	93	Calloway	56.2	56.9	137	Todd	70.0	64.0
6	EastBernst		40.7	50	Marion	60.3	50.2	94	West Point		56.9	138	Bardstown	72.9	64.3
7	Corbin	51.6	41.7	51	Edmonson	58.7	50.3	95	Wayne	64.2	57.2	139	Mayfield	60.9	65.1
8	Warren	50.7	41.7	52	Frankfort	80.7	50.6	96	Beechwood	62.6	57.4	140	LaRue	55.1	65.5
9	Anderson	52.3	42.0	53	Greenup	64.1	50.9	97	Harlan Co	55.7	57.5	141	Ludlow	107.9	65.7
10	WaltonVer	44.6	42.3	54	Pineville	58.5	51.0	98	Bell	81.5	57.8	142	Hickman	67.6	66.0
11	Bullitt	53.7	42.3	55	Pulaski	60.9	51.0	99	Campbellsvi	76.4	58.2	143	Hopkins	71.7	66.4
12	Robertson	114.5	42.8	56	Owsley		51.3	100	Mason	59.2	58.3	144	Fayette	78.2	67.4
13	Allen	57.1	43.4	57	Adair	71.1	51.4	101	Rowan	72.3	58.4	145	Ballard	80.1	67.7
14	Henry	67.7	43.8	58	Metcalfe	60.9	51.5	102	Fort Thomas	72.2	58.7	146	Laurel		68.1
15	Jessamine	50.3	43.8	59	Knott		51.6	103	Magoffin	64.7	58.8	147	Henderson	74.1	68.3
16	Gallatin	60.0	44.6	60	Knox	64.8	51.7	104	Silver Grove	69.2	58.9	148	Bath	87.8	68.6
17	Shelby	71.6	44.6	61	Russellville	52.5	51.7	105	Paducah	73.9	59.0	149	Graves		68.9
18	Trimble	52.3	45.0	62	Lawrence	68.6	52.5	106	McCracken	62.7	59.1	150	Montgomery	70.2	69.5
19	Meade	48.7	45.3	63	Lee	78.3	52.5	107	Johnson	78.2	59.5	151	Boone	74.0	69.9
20	Trigg	60.2	45.8	64	Grayson	60.0	52.7	108	Fulton Co	69.4	59.7	152	Barbourville	76.8	70.7
21	Burgin	60.5	46.1	65	Russell	80.5	52.7	109	Franklin	87.3	59.9	153	Breckinridge	72.1	71.4
22	Harlan Ind	52.3	46.1	66	Boyd	81.2	53.0	110	Lewis	65.6	60.2	154	Caverna	84.2	72.0
23	Woodford	63.5	46.1	67	Carter	59.3	53.1	111	Fulton Ind.	69.0	60.3	155	Wolfe		72.2
24	Murray	47.2	47.0	68	Ohio	64.4	53.3	112	Dayton	67.4	60.4	156	Marshall	70.9	74.7
25	Elliott		47.1	69	Barren	49.8	53.3	113	Pike County	64.9	60.6	157	Simpson	73.6	75.1
26	Casey	49.5	47.2	70	Paris	59.6	53.5	114	Morgan	116.8	60.6	158	Breathitt	64.0	75.3
27	Erlanger	56.9	47.2	71	Madison	56.4	53.6	115	Nicholas	80.7	60.7	159	Bellevue	68.4	75.8
28	Hardin	54.3	47.4	72	DawsonSpr	61.0	53.7	116	Harrison	61.9	61.0	160	Berea	75.7	76.3
29	McLean	45.9	47.4	73	Livingston	56.9	53.9	117	Clay	63.3	61.1	161	Anchorage	73.8	76.4
30	Spencer		47.7	74	Carlisle	46.9	54.0	118	Garrard	51.5	61.1	162	Eminence	85.3	76.4
31	Hancock	57.8	47.7	75	Crittenden	57.1	54.0	119	Mercer	78.3	61.2	163	Hart	73.5	77.5
32	Clinton	53.5	48.0	76	Kenton	64.9	54.1	120	RacelandWort	67.0	61.2	164	Campbell	70.2	78.4
33	Newport	44.5	48.1	77	Hazard	87.2	54.2	121	Grant	70.7	61.8	165	CovingtonInd.	80.5	78.6
34	Caldwell	60.7	48.1	78	Bracken	55.0	54.2	122	Ashland	75.1	61.9	166	Elizabethtown	76.9	79.0
35	Glasgow	62.6	48.3	79	Washington	83.5	54.5	123	Perry	67.0	62.0	167	Somerset	89.8	79.7
36	Logan	54.5	48.4	80	Jackson Co	55.2	54.6	124	Union	69.1	62.1	168	Menifee	90.4	83.0
37	Estill	53.4	48.5	81	Lyon	53.7	54.8	125	Middlesbor	97.2	62.2	169	Green	88.2	85.4
38	Fleming	69.8	48.5	82	Owensboro	70.1	55.1	126	Taylor	64.7	62.2	170	Fairview	79.7	85.9
39	South Gate	47.2	48.6	83	Webster	75.5	55.2	127	Muhlenberg	68.5	62.3	171	Powell	97.0	86.0
40	Russell ind	70.3	48.7	84	Boyle	65.9	55.5	128	Pikeville	81.9	62.6	172	McCreary	94.8	92.3
41	Jenkins	0.0	48.8	85	Christian	70.1	55.8	129	Bourbon	65.0	62.6	173	Jackson Ind	117.6	106.5
42	Letcher	62.9	48.8	86	Pendleton	55.9	55.8	130	Lincoln	70.7	63.0				
43	Science Hill	56.5	49.3	87	Cumberlan	71.1	55.9	131	Martin		63.1				
44	Williamsto	63.3	49.5	88	Augusta	55.6	55.9	132	Leslie	69.4	63.1				22

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



January/February 2016

Energy Efficiency . . . Funding Education by Eliminating Waste

The annual task of creating a realistic budget for a school district is challenging. It involves making tough choices and sometimes requires being creative in finding income sources. Elimination of waste is an often-overlooked source of income; overspending on energy is a form of waste. In fact, KRS160.325 and Board Policy 05.23 establish expectations for public school districts to aggressively address wasteful spending on energy.

So what is wasteful energy spending? This list can go on and on, but here are a few of the major opportunities for eliminating wasteful spending.

Using more energy than is required.

- School buildings are occupied only about 25 percent of the time. Energy is being wasted if temperature setbacks are not used the rest of the time.
- Temperature set points are equally important in saving energy. Districts should establish reasonable set points and ask staff and students to dress appropriately for the weather.

Being on the wrong electric or gas rate

- Did you know that not everyone pays the same rate for electricity? Multiple rates may be possible for each building. Knowing your usage history allows you to choose the most beneficial rate, but you must request the rate to get it.
- When utility providers do change rates, many customers do not re-evaluate their rate. This may be a missed opportunity to save money.

Not cashing in on utility-provided rebates

- You've done the work to upgrade equipment to a higher level of energy efficiency – now work with the energy provider to get the rebates you are due.
- Many districts leave thousands of dollars on the table by not completing the rebate forms.

Not upgrading when you have the chance

- Make sure that energy efficiency is considered in any renovations or new construction.
- Choosing energy-efficient equipment during renovations or new construction will pay off for years to come in reduced operating and maintenance costs.

- In fact, KRS 157.455 "strongly encourages districts to meet or exceed efficient design standards and utilize life-cycle analysis in evaluating design alternatives."

Not using what you have

- You may not have the latest energy technology in your buildings but make sure you use what you have.
- Make sure doors and windows are closed. Conditioning the open space outside of your buildings is not a good use of your dollars – that chair propping open the gym door is not only an energy waster, but also a security risk.
- If you have a control system, use it; make sure building maintenance personnel are trained and understand its operation.

Since 2010, Kentucky public schools have saved over \$68 million through lower energy use, utility rebates, refunds, rate corrections and rate case adjustments. The opportunity exists to save much more.

The goal for all of us is to provide a healthy and productive environment for students in a building that is efficient to operate. When a district is committed to energy efficiency, opportunities can be found to eliminate waste. Don't miss your chance.



Webster County Schools Superintendent Dr Rachel Yarbrough (center), board members and ESCO representatives were all smiles when receiving a check from David Huff (left of Yarbrough), Director of Energy Efficiency for Kentucky Utilities. The \$34,349 check was a rebate for a variety of energy projects over two years.

District intensifies energy focus, saving \$30,000 in four months

Bourbon County Schools Superintendent Amy Baker and the board of education have seen modest progress in reducing the district's annual energy utilization index (EUI) from 65 to 62.6 since 2010. However, the cost impact of recent electricity rate increases forcefully showed that the speed of their progress was not fast enough to offset rising costs.

"In the past four months we have intensified our efforts as part of our energy management plan," Baker says. "This has resulted in energy, cost, and rebate savings of \$30,000 so far for the 2016 fiscal year."

A district team that included Director of Facilities Jim Cleaver and Energy Manager Jim McClanahan scrutinized the existing energy management plan, doing a walk-through of the facilities to determine how the plan was being implemented.

Results and recommendations were reviewed with district staff. An energy-saving competition began among both schools and non-school buildings (bus garage, central office and warehouse), with new baselines established for each building. Recognition for the first semester went to the Bourbon County Preschool.

The efforts are already paying off with national recognition. North Middletown Elementary and Cane Ridge Elementary have now been verified as ENERGY STAR Labeled Schools, with the former being a "highly-rated" ENERGY STAR school with a rating of 96.



Bourbon County Schools board members and staff were recently recognized for achieving the ENERGY STAR Label for two schools. Shown above (front row) are Chairman Todd Earlywine, Superintendent Amy Baker, (back row) Patty Crider, Randy Sparks, Facilities Director Jim Cleaver, Custodian Clayton Fields, North Middletown Principal Gail Mullins, Thomas Talbot, and Kandice Wells.

"Our district goal is for all of our schools to earn this distinguished award. We owe it to our community of tax-payers to save money when we can by conserving energy. We are also teaching our students the value of energy consumption, which will benefit future generations," Baker says.

"The objective of the Bourbon County Schools Energy Management Plan is to save money on energy consumption so that more money will be available to spend on our students, our primary focus," she adds. "We appreciate the support of our board of education in allowing our district to partner with KSBA for energy manager services. The savings have clearly paid for his work."

The Language of Energy:

Energy efficiency – using less energy to accomplish the same task

ENERGY STAR – a national recognition that requires verified energy performance

ECMs – energy conservation measures that may include energy projects, where a financial investment may be made, AND energy initiatives, where no-cost, low-cost strategies are implemented

EMR – Energy Management Report required annually by KRS160.325

EMP – Energy Management Plan is a plan that focuses a district on eliminating wasteful energy practices.

EUI –Energy utilization index or energy use intensity. Terms are synonymous as a measure of building energy usage. Lower numbers indicate more energy efficient buildings.

kBtu - a measurement of energy

SEMP – KSBA's School Energy Managers Project, implemented in 2010 with federal funding and continuing today with state monies and utility grants



LET'S SAVE ENERGY

School Energy Efficiency News



KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts

March 2016

ENERGY VOICES from around Kentucky

More than ever these days, board members need to find creative ways to get more value for the dollars they spend. In most districts, energy costs are the highest district expenditure, other than salaries. Kentucky school district leaders have come to realize that energy costs are a controllable expense.

So what are the questions you should be asking to get the most from your energy dollars? Energy managers throughout the state have contributed these questions to consider as you are attempting to support projects or initiatives that save energy and maintenance expenses, have a short payback, and improve the environment for students.



Energy managers contributing to this article include: Jim McClanahan, Nancy Wenz, Terry Anderson, Kimberly Joseph, Greg Binkley, Terry Salyer, Kevin Stoltz, David Dobbins, Patrick Owens, Karen Lenihan and Bruce Sauer.

Complying with board policy and state statutes

- Who are the members of the District Energy Team?
- Who is responsible for monitoring and tracking energy consumption?
- Is the District Energy Management Plan updated and reviewed annually?
- When is the annual Board Status Report issued that outlines the progress of the District Energy Management Plan? (This should include annual energy consumption, costs, assessment and implementation of energy projects, and progress toward managing and reducing energy costs.)
- What are the life cycle costs for an energy project and what is the simple payback period?

Progressing with energy management efforts

- What is our progress month-to-month and year-to-year?
- Does our budgeting process include energy conservation measures?
- What is the level of commitment to reducing wasteful spending on energy?

- If we do not make changes in our buildings or how we use them, what will be the impact in the next two years?
- What are our low- or no-cost energy efficiency measures?
- Do we have HVAC controls for our facilities? Are we conditioning buildings when they are unoccupied?

Becoming proficient in energy management efforts

- Is each function from the district represented on the District Energy Team? What is their experience level? Are we just going through the motions?
- How do we instill a culture of energy efficiency and maintain a comfortable learning environment?
- What are the short-term and long-term plans for energy improvements? How are we deciding on the best energy- efficiency project for our investment?

Kentucky's Battle of the School Buildings And the Competition Begins!

We compete on the court, the field, and the track, why not compete at the meter! Kentucky's Battle of the School Buildings is now underway!

Kentucky's Battle of the School Buildings provides the opportunity for recognition for faculty, staff and students who are involved in saving energy . . . and money! Kentucky's P-12 schools have made significant progress in the last five years in eliminating wasteful spending on energy. School boards, staff, and students have become focused on implementing best energy efficiency practices.

Involving staff and students who are in the building most every day leads to greater success in efficient use of energy resources.

Occupants know best if rooms are too hot or too cold, which could point to a potential HVAC savings. They know when rooms are not being used, so that the lights could be turned off. They see the actual opportunities for reducing energy usage. When they realize the cost of that energy, that's when a serious commitment is seen.

KSBA-SEMP will recognize the Top Kentucky School Building, determined by the percentage-based reduction in energy use achieved from 2015 to 2016. KSBA-SEMP will also recognize Schools who reduce energy use by 20 percent or more from 2015 to 2016

The competitors who will face off in Kentucky's Battle of the School Buildings and listed on pages two and three of this newsletter.

ENERGY VOICES from around Kentucky (continued from page one)

Becoming proficient in energy management efforts (continued from page one)

- What energy efficiency investments can the district make that will produce a return over time?
- What process do we use to determine the most appropriate technologies to use for energy improvements?
- Who is completing utility rebate applications to reduce money spent on higher-efficiency options?
- Are our facilities on the most economical rates available? Are our utility bills being monitored for billing errors or incorrect minimum amounts?
- How are our facilities being used on nights and weekends? Are temperature set-points appropriately aligned with building occupancy?
- Is energy use factored into the district building use policy for non-school related activities?
- Do we require ENERGY STAR labeled products for new purchases in our district?

Distinguished energy management efforts

- Is our Energy Management Plan moving in the right direction? Are we achieving that direction fast enough?
- Is energy efficiency a key component when your Local Planning Committee is developing the District Facility Plan?
- What is the impact of having a full-time energy manager?
- When we spend maintenance dollars for lighting repairs are we updating to the latest technology as we make those changes?
- Why would we install updated lighting that is not LED? What is the length of the warranty? 10 years?
- How is this project improving the environment for the students in the classroom?
- How will this project impact not only the energy budget but also the maintenance budget?
- Should we consider working with a retro-commissioning company for existing buildings to find ways to save energy and costs?

KSBA-SEMP supports districts with high-level, technical issues in managing energy resources. A skilled energy manager can transform technical solutions into an understandable energy efficiency initiatives, a priority in reducing the impact of rising utility costs on district budgets.



KSBA-School Energy Managers Project Presents

Kentucky's Battle of the School Buildings

An ENERGY STAR®
Battle of the Buildings™ Competition



District	Schools
August Independent School	August Independent School
Barren County Schools	Austin Tracy Elementary
	Barren County High School
	Barren County Middle School
	College Street Campus
	Eastern Elementary
	Hiseville Elementary
	Bath County High School
	Bath County Middle School
Berea Independent Schools	Berea Community Schools
Boone County Schools	Conner Middle School
Bourbon County Schools	Bourbon Co Central Elementary
	Bourbon County High School
	Bourbon County Middle School
	Brooks Elementary School
	Bullitt Lick Middle School
	Cedar Grove Elementary
	Crossroads Elementary School
	Eastside Middle School
Freedom Elementary School	
Bullitt County Schools	Hebron Middle School
	Lebanon Junction Elementary
	Maryville Elementary School
	Caldwell Co. Elementary School
	Caldwell Co. High School
	Christian County Middle School
	Crofton Elementary School
	Freedom Elementary School
Hopkinsville Middle School	
Crittenden County Schools	Crittenden County High School/Middle
	Dawson Springs Jr.-Sr. HS & Elementary
	Estill County High School
	Estill County Middle School
	Estill Springs Elementary School
	Fairview Elementary School
	North Jackson Elementary
	Park City Elementary
Red Cross Elementary	
ROTC	
Temple Hill Elementary	
Trojan Academy	
Owingsville Elementary School	
Bourbon County Preschool/Headstart	
Cane Ridge Elementary	
North Middleton Elementary	
Mt. Washington Middle School	
Nichols Elementary School	
North Bullitt High School	
Overdale Elementary School	
Pleasant Grove Elementary School	
Roby Elementary School	
Shepherdsville Elementary	
Zoneton Middle School	
Caldwell Co. Middle School	
Caldwell Co. Primary School	
Indian Hills Elementary School	
Pembroke Elementary School	
Sinking Fork Elementary School	
South Christian Elementary School	
School Campus	
South Irvine Kindergarten/Presch	
West Irvine Intermediate School	



KSBA-School Energy Managers Project Presents

Kentucky's Battle of the School Buildings

District	Schools	
Fleming County	Ewing Elementary	Hillsboro Elementary
	Flemingsburg Elementary	Simons Middle School
Grant County Schools	Grant County High School	
Hopkins County Schools	Brownings Springs Middle School	Madisonville North Hopkins High Scho
	Earlington Elementary School	Pride Avenue Elementary School
	Grapevine Elementary School	South Hopkins Middle School
	Hanson Elementary School	Southside Elementary School
	Hopkins County Central High School	West Broadway Elementary School
	James Madison Middle School	West Hopkins School
	Jesse Stuart Elementary School	
Mason County	Straub Elementary School	
McLean County Schools	Calhoun Elementary	McLean Co. Middle School
	Livermore Elementary School	Sacramento Elementary
	McLean Co. High School	
Nelson County Schools	Bloomfield Elementary School	Horizons Academy
	Bloomfield Middle School	Nelson County High School
	Boston School	New Haven School
	Cox's Creek	Old Kentucky Home Middle School
	Nelson Co Early Learning Center	Thomas Nelson High School
	Foster Heights Elementary School	
Oldham County Schools	South Oldham Middle School	
Owen County Schools	Owen County High School	
Perry County Schools	Perry County Central High School	
Robertson County School	Robertson County School	
Rowan County	Rowan County Senior High	
Scott County Schools	Anne Mason Elementary	Royal Spring Middle School
	Eastern Elementary	SCHS/9th Grade/SCMS Campus
	Elkhorn Crossing School	Scott County Preschool
	Garth Elementary	Southern Elementary
	Georgetown Middle School	Stamping Ground Elementary
	Lemons Mill Elementary	Western Elementary
	Northern Elementary	
Shelby County Schools	Clear Creek Elementary	Shelby County High School
	East Middle School	Simpsonville Elementary
	Heritage Elementary	Southside Elementary
	Martha Layne Collins High School	West Middle School
	Painted Stone Elementary	Wright Elementary
Warren County Schools	Lost River Elementary School	
Woodford County Schools	Huntertown Elementary	Southside Elementary
	Northside Elementary	Woodford County High School
	Safe Harbor	Woodford County Middle School
	Simmons Elementary	

LET'S SAVE ENERGY

School Energy Efficiency News



KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts

April 2016

Celebrating ENERGY STAR® Schools

The ENERGY STAR brand has been around since 1992. Its roots were established in the National Energy Conservation Policy Act of 1978. This program grew in spurts and sputters over the years, generally in relation to the price of energy. With low energy prices, people didn't focus on energy costs.

Electric prices in Kentucky historically were among the lowest in the nation, influenced by availability of coal. With recent changes in environmental regulations, however, those costs are steadily increasing, with a corresponding increased focus on rising costs.

An ENERGY STAR Labeled School means the building is operating as efficiently as the top 25 percent of K-12 schools in the nation. The energy data is verified by a professional engineer or reg-

istered architect and the labeling is evidence that taxpayer monies are being used effectively.

The Energy Utilization Index in a typical ENERGY STAR Labeled School is 40-50 kBtu/sf. Nationwide, an average school has an index of 73 kBtu/sf. For a typical middle school of 100,000 square feet, the difference between operating at 73kBtu/sf to less than 50kBtu/sf **represents a savings of \$58,000 annually**. That \$58,000 is money that can now be spent for student needs. That is why SEMP has coined our phrase for energy efficiency, "Dollars for Students, Not Energy."

School energy management was "just a thought" in 2004 when some of the early statewide energy task forces began. In 2006, there were only eight ENERGY STAR Labeled schools. In early 2010, that number had grown to 68.

(continued on page 3)



Districts with 100 percent ENERGY STAR school buildings received additional recognition during KSBA's recent annual conference. District representatives gathered above are, from left, Tony Spence (Pendleton County), Scott Howard (Butler County), Kim Chevalier (Walton-Verona Independent), Lauren Hughes (Robertson County), Donna Major (Burgin Independent), Kevin Kidwell (Scott County), and Jim Palm (Southgate Independent). Districts achieving that honor but whose representatives were not present for picture are Corbin Independent, Elliott County and Frankfort Independent.



Districts recognized at KSBA Annual Conference for energy-efficiency efforts

27 percent of eligible Kentucky schools rated as ENERGY STAR

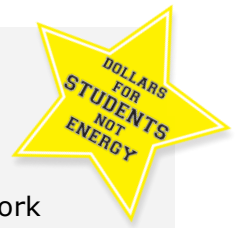
Kentucky is well above the national average when it comes to ENERGY STAR Labeled K-12 school buildings. Twenty-seven percent of eligible school buildings in Kentucky carry the ENERGY STAR designation, compared with the national average of 9 percent for K-12 buildings.

Eligibility for the ENERGY STAR designation applies to K-12 buildings even though other buildings may be owned by the school district. Kentucky currently has 327 ENERGY STAR labeled school buildings.

During the recent 2016 KSBA Annual Conference board members and superintendents with at least one ENERGY STAR Labeled School were recognized with special name tag ribbons. Additional recognition was given to districts with ENERGY STAR ratings for 100 percent of their school buildings. Those districts are:

- | | |
|-----------------------------------|------------------------------------|
| Anderson County Schools | Jefferson County Schools |
| Barren County Schools | Jessamine County Schools |
| Bellevue Independent Schools | Kenton County Schools |
| Boone County Schools | Knox County Schools |
| Bourbon County Schools | Laurel County Schools |
| Bowling Green Independent Schools | Lawrence County Schools |
| Boyd County Schools | Letcher County Schools |
| Boyle County Schools | Lincoln County Schools |
| Bracken County Schools | Logan County Schools |
| Bullitt County Schools | Madison County Schools |
| ★Burgin Independent Schools | Magoffin County Schools |
| ★Butler County Schools | Marion County Schools |
| Calloway County Schools | Marshall County Schools |
| Campbell County Schools | Mason County Schools |
| Carroll County Schools | Mayfield Independent Schools |
| Casey County Schools | Meade County Schools |
| Christian County Schools | Mercer County Schools |
| Clark County Schools | Morgan County Schools |
| ★Corbin Independent Schools | Murray Independent Schools |
| Crittenden County Schools | Nelson County Schools |
| Danville Independent Schools | Ohio County Schools |
| Daviess County Schools | Oldham County Schools |
| ★Elliott County Schools | Owen County Schools |
| Estill County Schools | ★Pendleton County Schools |
| Fayette County Schools | ★Robertson County Schools |
| Fleming County Schools | Rockcastle County Schools |
| Floyd County Schools | Rowan County Schools |
| ★Frankfort Independent Schools | Russell Independent Schools |
| Franklin County Schools | ★Scott County Schools |
| Gallatin County Schools | Shelby County Schools |
| Grant County Schools | Simpson County Schools |
| Grayson County Schools | ★Southgate Independent Schools |
| Greenup County Schools | Trimble County Schools |
| Hardin County Schools | ★Walton Verona Independent Schools |
| Harlan County Schools | Warren County Schools |
| Henry County Schools | Webster County Schools |
| Hopkins County Schools | Williamstown Independent Schools |
| | Woodford County Schools |

Kentucky ENERGY STAR Schools (continued from page one)



Since 2010, districts have developed and implemented energy management plans that have led to over \$68 million in avoided energy costs through June 2015 and, as of April 1, 2016, 327 ENERGY STAR Labeled Schools moving Kentucky past New York into the top ten nationally.

School board decisions around energy have created some significant milestones:

Recognitions

- ◆ August 2011 - 100th ENERGY STAR Labeled School – Millbrooke Elementary, Christian County Schools by First Lady Jane Beshear
- ◆ May 2012 – Twelve Highly-Rated ENERGY STAR Schools (rating between 95-100) by Lieutenant Governor Abramson
- ◆ April 2013 - 200th ENERGY STAR Labeled School – Caneyville Elementary, Grayson County Schools by First Lady Jane Beshear
- ◆ December 2015 – Announcement of 300th ENERGY STAR Labeled School – Southside Elementary School, Shelby County Schools

With tight budgets and rising utility costs, it is critical to implement energy efficiency strategies. Using resources from the ENERGY STAR program provides opportunities to recognize effective use of taxpayer monies, meaning there are more “Dollars for Students, Not Energy.”

ENERGY STAR Recognitions throughout Kentucky



November, 2015

*Dishman-McGinnis Elementary—Bowling Green Independent Schools
Facilities Director Rickey Shive, board member Michael Bishop, Former Supt. Joe Tinius,
State Rep. Jim DeCesare, board member Christine Dressler, Tim Geegan (Alliance), Ron Murrell (RossTarrant),
Matt Wade and Jonathan Stewart (CMTA), Principal Michael Wix, and Supt. Gary Fields*



November, 2015

*West Irvine Intermediate—Estill Co Schools
L-R, Superintendent Jeff Saylor, board members Jon Bicknell, Chair Robbie Starling and Patty Hood, with
Asst. Principal Toni-Garrett Hall*

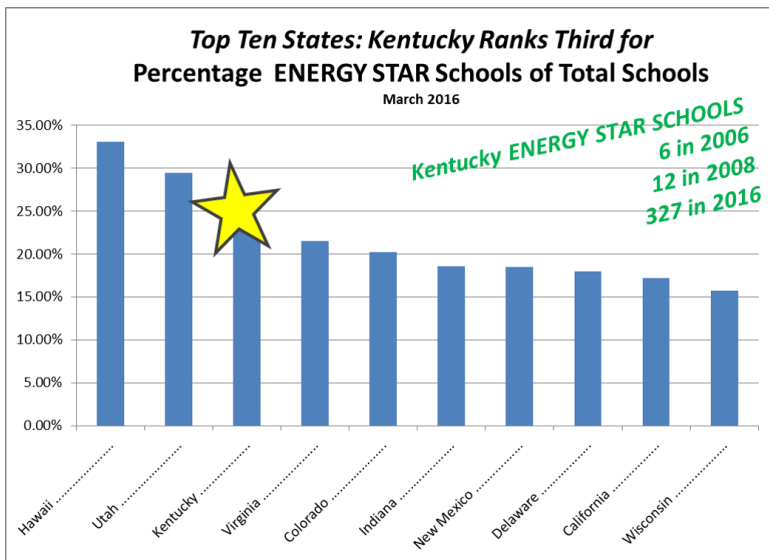
ENERGY STAR Recognitions

Kentucky ENERGY STAR Facts (as of April 1, 2016)

- ◆ 327 ENERGY STAR Schools
- ◆ 26 million sq. ft. ENERGY STAR rated
- ◆ 27% KY public schools are ENERGY STAR
- ◆ Contributed to over \$80 million saved
- ◆ Third in nation for percentage
- ◆ Top-ten in nation with actual numbers



February 2016
100% ENERGY STAR
Butler County Schools.
L-R, Superintendent Scott Howard, board members
Debbie Hammers, Amy Hood, Charles Price,
and Delbert Johnson



February 2016
100% ENERGY STAR
Corbin Independent Schools.
L-R, Board members Angela Morris, Kim Croley,
Carcille Burchette, and Superintendent David Cox

February 2016
100% ENERGY STAR
Robertson County Schools
L-R, Superintendent Sanford Holbrook and board members
Chassica Sutton, Lauren Hughes, Angie Knarr, Vice Chair
Marsha Jones, and Chair,
Dr. John Burns



March 2016
Cane Ridge Elementary—Bourbon County Schools.
L-R, KSBA rep Martha Casher, board member Kandice
Wells, Superintendent Amy Baker, Principal Dana Hill
and State Rep. Sannie Overly, stand with
Cane Ridge students

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency, best practices in Kentucky school districts



May 2016

Advantages of a Local Energy Manager

KSBA-SEMP providing energy manager services to several districts

Energy management is not a one-time program, but an ongoing assessment of current use, needs and options. The availability of funding from utility companies has given districts the option to continue partnering with one another for services from a trained energy manager or assigning the additional responsibility to an existing employee. Identification of various energy projects or initiatives is an important step in the process of energy management. The energy manager presents no-cost/low-cost initiatives and a listing of energy projects with the estimated payback, to the district. Continuous utility tracking is provided to ensure all opportunities for saving are identified.

This past year energy manager services have been available to a few districts directly through KSBA. With KSBA-SEMP staff providing services to Bourbon County, Estill County and Fairview Independent school districts these districts quickly adopted or renewed natural gas contracts with an annual savings between 6 percent and 20 percent. Additional savings were identified through state sales tax refunds, removal of unmetered outdoor lighting no longer in the district, and completion of utility rebate applications. All these steps required knowledge of utility billing and rebate options. The three districts had participated in the original SEMP funding; however they did not have a trained energy manager for three years, during which time there were utility rate changes, as well as new accounts added.



Supt Amy Baker

Bourbon County Superintendent Amy Baker and Director of Facilities Jim Cleaver were pleased with options for a replacement lighting project. "Identification of maintenance projects that also impact our energy consumption is allowing our district to make the most out of our maintenance dollars," Baker says.

Both Estill County and Fairview Independent assessments identified unmetered outdoor lighting that was no longer provided. "This is a common billing error because it is an unmetered service from the utility company," says Ron Willhite, KSBA-SEMP Director. "Utility company tariffs require ratepayers communicate service changes to the utility company." This definitely points out the importance of having a trained energy manager in every district.



Supt Jeff Saylor

"Receiving a \$3,940 refund check for unmetered lights that were no longer in existence, as well as an unexpected natural gas contract savings of \$12,000, certainly was good news during a tough budget cycle," Estill County Superintendent Jeff Saylor says.

"We are a small district and every penny counts," says Fairview Independent Superintendent Michael Taylor. "We also had a few outdoor lights that the utility company sent a \$500 refund for, but I would say the most important savings opportunity that was found was a jump in our demand, which identified an HVAC issue. That has now been corrected with an estimated 6 percent savings in energy costs over FY15."



Supt Michael Taylor

"As our district has been making strategic decisions for facility planning, we have also been provided information regarding potential utility impacts. Every penny counts."

School facilities and utility tariffs change. What is your district doing to ensure energy management plans are also being updated as those changes occur?

ENERGY STAR recognizes three Kentucky School Districts and KSBA as 2016 ENERGY STAR Partner of the Year

The 2016 ENERGY STAR Award Winners were recognized in Washington, D.C. on April 13. Three Kentucky Districts and KSBA were among the award winners. They are featured below:



Kentucky School Boards Association Sustained Excellence

From left are Executive Director Mike Armstrong; Acting Director-Climate Protection Partnerships Jacob Moss; and SEMP Director Ron Willhite



Kenton County Schools Sustained Excellence

From left are Director of Support Services Rob Haney; Superintendent Terri Cox-Cruey; Director-Climate Protection Partnerships Division Carolyn Snyder; School Board Chairperson Karen Collins; and Energy Manager Chris Baker



Scott County Schools Sustained Excellence

From left are Energy Manager Jim McClanahan; Board Chairman Robert H. Conway; Director-Climate Protection Partnerships Division Carolyn Snyder; and Energy Committee Member Ron Willhite



Celebrating 100 percent ENERGY STAR Schools

Crittenden County Schools verified proof of energy efficiency

Over the past five years, Crittenden County Schools has kept a clear focus on energy efficiency. From board decisions regarding facility needs to maintenance strategies for equipment use/replacement, to involving students in the middle school as a student energy team, all efforts have led to a more energy-efficient district. That is now being recognized, as the district is now 100 percent ENERGY STAR Labeled Schools.

Superintendent Vince Clark compliments the Board of Education by saying, "members of our board have worked together to understand the business needs to make the best decisions for using all resources wisely."

Facilities Director Greg Binkley has been a leader in school facilities for a number of years. "During recent renovations, we have ensured use of the most current technologies in running our facilities. Updating our HVAC control system has allowed us to schedule our schools to 'unoccupied settings,' when school is not in use."

Binkley describes a maintenance decision made last year to purchase LEDs to replace T12 fixtures and wall packs: "It made sense to use the precious maintenance dollars wisely and upgrade to new technology!" he says.

Participation in SEMP encourages districts to identify ways to involve students in the process. Crittenden County Schools has made use of the classroom curriculum from the National Energy Education Development program. Supported by NEED



Celebrating the district 100 percent ENERGY STAR status are: Quinn Templeton, Benny Shirley, teacher Carol Davis, Natalie Hutchings, Kyonna Ross, and Chloe Weathers. All are members of the Crittenden County Middle School Energy Team.

Regional Coordinator Sue Parrent, CCMS eighth-grade science teacher Carol Davis has led the student energy team for three years. She says students now have a clearer understanding of how their actions impact the learning environment, as well as the reasons for making wise decisions on energy use.

Using a three-pronged approach of board decisions, maintenance strategies and student involvement, have led a district that was already energy efficient to being a 100 percent ENERGY STAR district!



Bullitt County Public Schools 2016 Partner of the Year

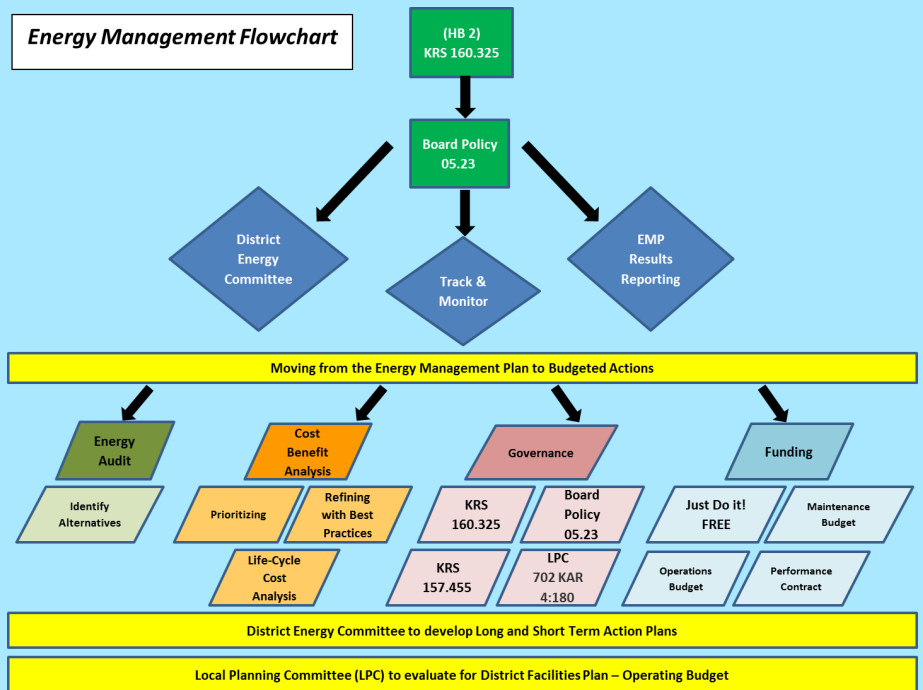
From left are: Acting Director-Climate Protection Partnerships Jacob Moss;
Energy Manager Kimberley Joseph; and
Superintendent Keith Davis



What is your district process for saving energy and dollars?

As districts continue to identify ways to reduce their budget, they should consider utility spending. A few common issues contribute to energy waste and unnecessary spending:

- Not changing filters of HVAC units.
- Not keeping someone in the district trained on use of the newer technologies installed in the newer schools.
- Not adjusting the automatic timers for outdoor lighting as the "time" changes.
- Allowing outside air units to run 24/7.
- Windows and doors left open, allowing unconditioned air into the building, thus heating/cooling the outdoors.
- Gym lighting being left on after school, and through the night.



To reduce waste, it is critical to implement an energy management plan and make changes as needed.

Jefferson County recognized by Louisville Energy Alliance First award given for Partner of the Year

The Louisville Energy Alliance is a 501(c)(3) nonprofit that promotes energy efficiency and conservation in the River City, through ENERGY STAR programs and certifications. In 2009 the Alliance launched the Kilo-watt Crackdown to recognize the most efficient building in the area, as well as those making the greatest energy improvements.

Jefferson County Public Schools (JCPS) joined the competition the first year and has continued participation each year it was held. This year there was a special recognition as JCPS was awarded the first-ever Louisville Energy Alliance Partner of the Year Award. The district tracks the energy usage of its 169 buildings in ENERGY STAR's Portfolio Manager, with 34 buildings currently being ENERGY STAR Labeled.



Pictured at left are JCPS Chief Operations Officer Dr. Michael Raisor, JCPS Energy Auditor Kevin Stoltz, JCPS Cane Run Elementary Principal Kimberly Coslow and JCPS Environmental Coordinator Joe Irwin.

LET'S SAVE ENERGY

School Energy Efficiency News

KSBA-SEMP ... Cultivating energy efficiency,
best practices in Kentucky school districts



June 2016

"It's an OLD building so it's going to be an energy hog!"

Garth Elementary blows that myth by being first in K-12 category for Kentucky in National Building Competition

In just about any conversation about school energy use, you will hear, "Our buildings are too old to do anything – they are just going to use a lot of energy."

It is true that with older buildings there will be challenges in daily operation. And some believe that starting all over with a brand new school is the only way to have a significant impact on energy use. Yet, board decisions made a number of years ago led Scott County School District to renovate one of the oldest schools in the nation. That school is now being recognized in the 2015 National Building Competition as being first in Kentucky for energy reduction, as compared to 2014.

Garth Elementary School was opened in 1926. With enrollment currently close to 500, it served first as a community school for first through twelfth grades. Recent renovations included:

Installation of an Automated Logic HVAC Control System (2003)

Conversion of T12 Light Fixtures to T8 with Electronic Ballasts and Energy Saving Lamps (2010)

Installation of LED Lights in Gym and Media Center with Occupancy Sensors (2013)

Installation of high-efficiency cooling tower and boiler system (2014)

The renovations have been completed with the most energy efficient equipment for the building, with the goal of low cost operation and maintenance.

In 2013 when Suzy Armishaw became principal at Garth, she had some knowledge of school energy



Steve Peyton, Jon Saylor and Suzy Armishaw, team together with students to further reduce their energy use and become #1 in Kentucky in the National Building Competition!

management from her previous school in Oklahoma. What impressed her at Garth was the involvement from students and staff. "Without everyone joining our team to turn-off lights, projectors, document cameras and, most importantly monitoring doors at arrival and dismissal times, we would not be as efficient as we are," says Armishaw.

At that time, energy use measured at 44.8/kBtus/sf, and Garth was already an ENERGY STAR School. Armishaw pointed to the additional involvement of teacher Jon Saylor and custodian Steve Peyton for reducing energy use to 27.9/kBtus/sf.

Saylor was amazed that the school had saved over \$7,000 as compared to last year and pointed to the

(continued on page 3)

KSBA/KISTA

Funding for School Construction (Energy Improvements)

The Kentucky School Boards Association (KSBA) and the Kentucky Interlocal School Transportation Association (KISTA) continue to provide a funding alternative to implement energy improvement projects. To date, the program has funded over \$6,500,000 of energy improvement projects.

The KSBA/KISTA program provides an economical funding mechanism for small energy improvement projects. The program allows school districts with smaller energy improvement re-



Owen County Facilities Director Dan Logan and SEMP Project Manager discuss actual energy savings from a recent LED gym project.

lated projects to participate in a combined tax-exempt financing and be able to take advantage of lower interest costs with the same costs of issuance as school districts with larger projects.

Some benefits of the program include:

- Tax-exempt interest rates;
- Prorated costs of issuance among districts;
- Repayment flexibility with terms from 2 to 20 years; and,
- Flexibility in the designated fund for repayment (unrestricted, restricted or guaranteed savings).

The program is structured through the issuance of tax-exempt certificates of participation. All projects must receive standard construction project approval from the Kentucky Department of Education (KDE) prior to funding. Through the KDE District Facilities Branch, all projects adhere to a detailed approval process allowing oversight from planning to implementation.

Many different types of energy projects qualify for the program. This includes HVAC upgrades and replacements, lighting, building controls, commissioning, kitchen equipment and envelope improvement including windows, doors, insulation and roofs.

For more information on the KSBA/KISTA funding program for energy improvements, please contact:

- ♦ ron.willhite@ksba.org OR
- ♦ steve.smith@ksba.org.

Garth Elementary . . . First in K-12 Category

(Continued from page 1)

everyday work that Peyton has done. "Even when we as teachers, try to keep things off we're not always in the room. He, (pointing to Peyton), he is the one that makes it happen."

"All I do is turn-off lights or a projector when no one is in a room," says Payton. "That has become such a habit, that I do that whether I am at work or at home!"

Peyton went on to say that changes made to the HVAC system had significant impact on reducing energy use. Armishaw reemphasized the impact of monitoring the doors at arrival and dismissal. "We were losing a lot of energy during bus loading, by keeping the doors open when no one was entering or leaving the school."

"Every school can be a pioneer for energy conservation, no matter the age of the school or number



Garth Elementary – built 1926. Current Energy Utilization Index (EUI) – 27.9/kBtus/sf

of students," adds Armishaw. "We are proud of this recognition!"

Scott County Schools is currently the fourth most energy efficient district in the state, behind Butler, Owen and Nelson Counties. With continued focus on reducing waste and improving energy use, Scott County expects to challenge Butler County for the top spot for FY16.



What is the district maintenance strategy for replacing T12 fixtures?

What improvements are being made this summer?

Consider these:



Incandescent in the auditorium?
Consider installing LED!



Replacing metal halide fixtures in the gymnasium saves between \$40 and \$55 annually PER FIXTURE!

Energy Projects

. . . Bottom-line opportunities

Board members govern the activities of the school district by setting policy and providing resources to improve achievement for each student in the district. What do these responsibilities have to do with energy projects? The answer is everything!

Resources are stretched to the point that it requires careful leadership to ensure all are used appropriately. This not only includes people resources, but also facility and energy resources.

There are three questions to ask:

1. Where does the district rank in energy efficiency?
2. Is our district moving in the right direction?
3. What can we point to that has made a difference?

The most efficient district has an Energy Utilization Index (EUI) of 32.7/kBtu/sf. The state average is 57.6/kBtu/sf. District rankings can be located online at: <http://www.ksba.org/Downloads/Dec%202015%20updated.pdf>

If there has been improvement over the previous year, what actions were taken in the district? If there has NOT been improvement, ask to review the District Energy Management Plan. Consider the progress in implementing this plan and the process for updating the plan.

A few basic steps can be taken by facilities staff OR a Professional Engineer to identify the opportunity to reduce. A few questions to consider include:

- ◆ What type of lighting is in the hallway? Classroom? If it is incandescent, or T12 fluorescent, this is a significant opportunity.
- ◆ Are the EXIT signs still using incandescent bulbs?
- ◆ What about the gymnasium lighting? If the older 450 metal halide, again a significant opportunity.
- ◆ Are doors propped open for bus/car unloading and loading? ("unconditioned" air, costs \$\$\$\$ to be "conditioned.")



With our Utility Partners, many school districts are saving energy and reducing "demand" by 2.5% annually!

- ◆ During evening hours, what is the temperature of the school? (This provides a clue to whether or not the HVAC control system is working.)
- ◆ How long are lights "left-on" during the evening?

Gathering this information will enable the district to then develop a listing of potential energy projects. Identification of the watts reduced by project, will then enable calculations to be completed to determine the potential "payback" for each of the energy projects.

Identifying the most efficient use of any resource will have an impact on the bottom-line. Developing short-term and long-term plans to implement various energy projects will have a growing impact on that bottom-line, as utility rates continue to increase. KSBA-SEMP staff are available to answer general questions to support this effort.

Don't forget to submit Utility Rebates for energy projects!

Many utility companies have rebate programs for installing higher efficiency equipment! Don't forget to confirm, and then complete the application process! Your district name could be on the next check!

KU
a PPL company

DATE 4/27/2015

PAY TO THE ORDER OF Webster County Board of Education \$ \$34,349

Thirty four thousand, three hundred and forty nine dollars DOLLARS

MEMO Commercial Rebate Program Kentucky Utilities Company