



**INAUGURAL SCHOOL ENERGY SUMMIT**

# Energy Management Report FY2017 Annual Report To Kentucky Utilities



## TABLE OF CONTENTS

- I. Executive Summary
- II. District Funding
- III. Initiatives Implemented
- IV. Participants, Energy Utilization, and Energy Star Schools
- V. Consumption Reduction and Annual Comparison
  - a. Energy
  - b. Demand
    - i. Summer
    - ii. Winter
- VI. Process
  - a. Energy Manager Training
  - b. Outreach and Awareness
  - c. Data Gathering
  - d. Data Scrubbing
  - e. Data Analysis
- VII. Appendix

## 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.

Case Order 2015-00398 approved the Settlement of 2014-00371 and 2014-00372 extended the Energy Management Program for Schools and energy manager funding through FY2018. This is the fiscal year 2017 report.

From the FY2010 baseline, the KU districts achieved the following:

August Demand Reduction (14.9%)

January Demand Reduction (12.3%)

Summer Energy Reduction (15.2%)

Winter Energy Reduction (12.9%)

The August reduction is particularly significant as LG&E-KU is a summer peaking utility. Of the 77 Districts receiving KU electric service 43 districts now 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 five school districts within the LG&E service territory and 57 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	\$20,100	\$3,396	\$16,704
Outreach	\$13,282	\$2,244	\$11,038
Travel	\$3,284	\$555	\$2,729
Sub Total	\$36,666	\$6,195	\$30,471
District Energy Manager Funding/Support			
Technical	\$54,442	\$9,198	\$45,244
Training	\$45,581	\$7,701	\$37,879
Salary Match	\$340,499	\$57,529	\$282,970
SubTotal	\$440,522	\$74,428	\$366,094
Total	\$477,188	\$80,623	\$396,565

\*Indirect Costs @15% on all items except energy manager salary match

## Initiatives Implemented

Also included in the Case Order 2015-00398 was provision for \$1 million in Energy Efficiency Grants for Schools. Funded Energy Managers took the opportunity to obtain those grants to do project work in their schools. These energy grants known as the Special Energy Project Fund (SEPF) are being reported separately. However with the focus on SEPF, most districts spent their time and energy on executing projects which were funded through the availability of the energy grants.

### ENERNOC

As districts and buildings develop capability, 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

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 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 FY2016, the District-wide EUI had dropped to 50.2 kBtu/sf/yr.<sup>1</sup> 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 38.6 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. 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 by energy managers is leading to significant elimination of energy waste in both new and existing buildings.

---

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

Table 1, Data on KU-LG&E served districts

TABLE 1										
School Participation and Energy Data										
DISTRICT	KU Served Schools	LGE Served Schools	FY2017 SEMP Participation	KU SEMP Schools	LGE SEMP Schools	FY2010 EEU	FY2016 EEU	FY2010 EUI	FY2016 EUI	ENERGY STAR SCHOOLS
KU DISTRICTS										
Anderson	6		Y	6	0	38.5	30.6	52.3	38.2	3
Augusta	1		Y	1	0	39.0	34.6	55.6	46.4	
Ballard	3		Y	3	0	52.8	45.8	80.1	65.7	
Barren	2					42.6	43.6	49.8	49.1	1
Bath	3		Y	3	0	49.1	39.1	87.8	58.6	
Bell	7		Y	7	0	75.8	46.4	81.5	48.1	
Bourbon	6		Y	6	0	40.3	38.5	65.0	54.5	3
Boyle	5					47.8	38.0	65.9	45.7	1
Bracken	3					47.9	42.2	55.0	49.3	1
Burgin	2				0	47.8	38.5	60.5	45.0	1
Campbellsville	3		Y	3	0	41.0	28.9	76.4	50.8	
Carroll	4		Y	4	0	45.8	37.0	82.9	55.2	1
Casey	5					46.1	39.5	49.5	45.8	
Caverna	3		Y	3	0	45.3	37.6	84.2	53.4	
Christian	1		Y	1	0	45.4	32.1	70.1	44.2	1
Clark	9					41.3	34.2	74.7	45.6	1
Clay	2		Y	2	0	43.6	42.0	63.3	56.1	
Crittenden	3		Y	3	0	41.2	32.3	57.1	45.9	2
Danville	5		Y	5	0	40.5	44.6	64.6	61.2	2
Dawson Springs	1		Y	1	0	39.9	37.4	61.0	47.3	
East Bernstadt	1						37.8		37.8	
Elizabethtown	5		Y	5	0	38.0	41.2	76.9	69.5	
Eminence	2		Y	2		57.5	50.5	85.3	63.5	
Estill	3		Y	3	0	39.1	35.8	53.4	42.8	1
Fayette	50		Y	50	0	52.3	51.8	78.2	65.9	13
Fleming	3		Y	3	0	44.4	37.3	69.8	48.1	1
Gallatin	4		Y	4	0	51.2	40.1	60.0	42.8	2
Garrard	2				0	39.4	36.8	51.5	45.4	
Grayson	5					41.1	39.0	60.0	49.1	4
Green	4					64.3	57.9	88.2	75.5	
Hardin	11		Y	11	0	42.4	35.3	54.3	43.0	3
Harlan County	8		Y	8	0	55.7	51.6	55.7	51.6	1
Harlan Ind	3		Y	3	0	50.2	40.4	52.3	40.4	
Harrison	5					32.1	32.4	61.9	50.4	
Hart	6		Y	6	0	49.5	48.9	73.5	67.9	
Henderson	1					48.4	44.6	74.1	64.0	
Henry	5		Y	5		48.3	34.8	67.7	44.5	5
Hickman	2					48.1	42.1	67.6	51.5	
Hopkins	7		Y	7	0	49.1	39.8	71.7	54.7	3
Jessamine	3					37.1	31.8	50.3	39.2	1
Knox	3					50.7	37.3	64.8	48.1	2

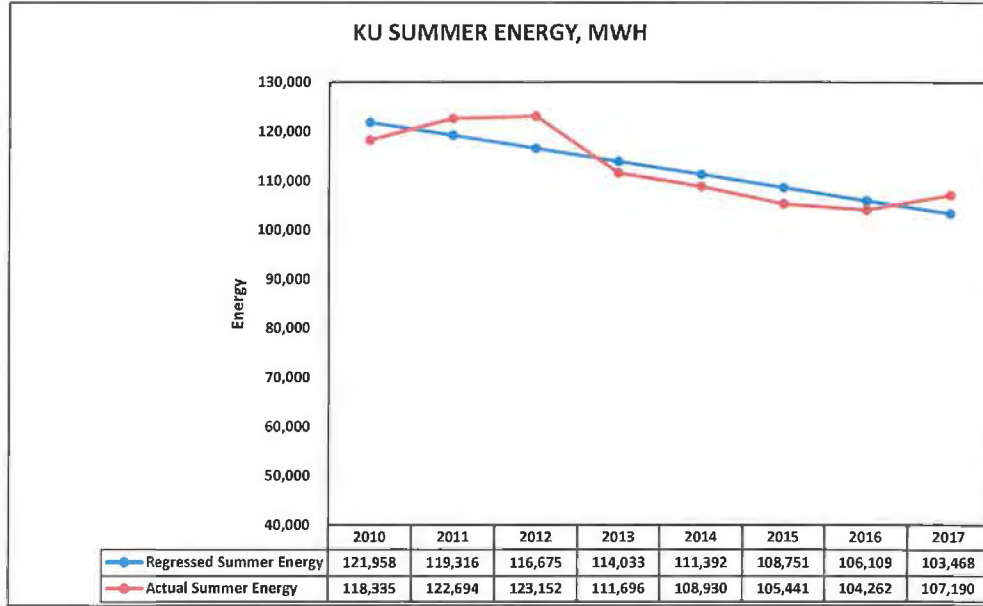
TABLE 1 (Continued)										
School Participation and Energy Data										
DISTRICT			SEMP Participation	KU SEMP Schools	LGE SEMP Schools	FY2010 EEUI	FY2016 EEUI	FY2010 EUI	FY2016 EUI	ENERGY STAR SCHOOLS
LaRue	4					38.8	37.4	55.1	51.8	1
Laurel	7		Y	7	0		51.3		58.2	
Lee	2		Y	2	0	52.5	28.0	78.3	42.4	2
Lincoln	5					46.7	39.3	70.7	50.6	4
Lyon	3		Y	3	0	33.9	34.0	53.7	47.8	
Madison	12		Y	12	0	45.1	41.6	56.4	48.6	2
Marion	4		Y	5		49.6	29.8	60.3	35.3	5
Mason	4		Y	4	0	35.6	29.7	59.2	50.2	1
McCracken	4		Y	4	0	39.7	36.1	62.7	52.0	
McCreary	3		Y	3	0	70.2	65.6	94.8	87.1	
McLean	3		Y	3	0	32.7	29.6	45.9	41.8	3
Mercer	3					51.5	38.0	78.3	52.2	1
Middlesboro	4		Y	4	0	52.6	24.0	97.2	40.9	2
Montgomery	7		Y	7		50.6	58.7	70.2	75.3	
Muhlenberg	9		Y	9	0	46.7	41.9	68.5	53.4	3
Nelson	3		Y	3	0	43.8	31.3	51.5	34.8	1
Nicholas	2		Y	2		46.2	38.0	80.7	53.8	
Ohio	4		Y	4		43.3	36.0	64.4	48.9	1
Pendleton	1		Y	1	0	33.0	28.0	55.9	44.3	1
Pineville	2		Y	2	0	51.3	38.3	58.5	42.7	
Pulaski	7		Y	7	0	43.0	36.6	60.9	50.2	
Robertson	1		Y	1	0	69.0	32.2	114.5	41.4	1
Rockcastle	4					58.4	55.5	59.9	55.7	1
Rowan	2		Y	2	0	44.9	38.2	72.3	53.7	
Russell	4		Y	4	0	65.7	48.0	80.5	51.5	
Science Hill	1		Y	1	0	56.5	44.9	56.5	44.9	
Scott	12		Y	12	0	46.1	32.1	53.3	35.9	12
Shelby	8		Y	8	0	60.9	35.4	71.6	39.2	5
Somerset	3		Y	3	0	47.4	41.0	89.8	66.1	
Taylor	3		Y	3	0	47.8	39.9	64.7	53.0	
Trimble	2		Y	2		32.6	29.0	52.3	44.5	1
Union	5		Y	5	0	39.1	30.4	69.1	50.0	
Washington	2		Y	2	0	64.7	48.9	83.5	54.5	1
Webster	5		Y	5	0	45.2	33.4	75.5	52.5	3
Williamsburg	1					43.6	41.9	54.9	48.4	
Woodford	7		Y	7	0	49.4	36.2	63.5	41.6	7
<b>Totals</b>	<b>360</b>		<b>57</b>	<b>292</b>	<b>0</b>					<b>111</b>

Note: Highlighted districts do not have a participating energy manager

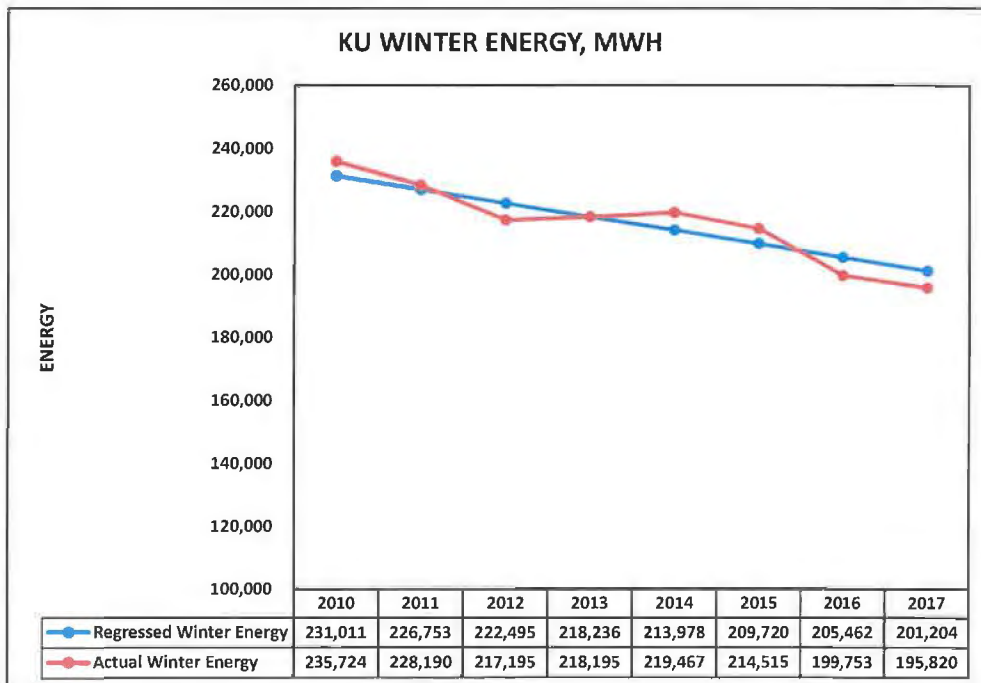


# Consumption Reduction and Annual Comparison

## ENERGY REDUCTION (MWH)

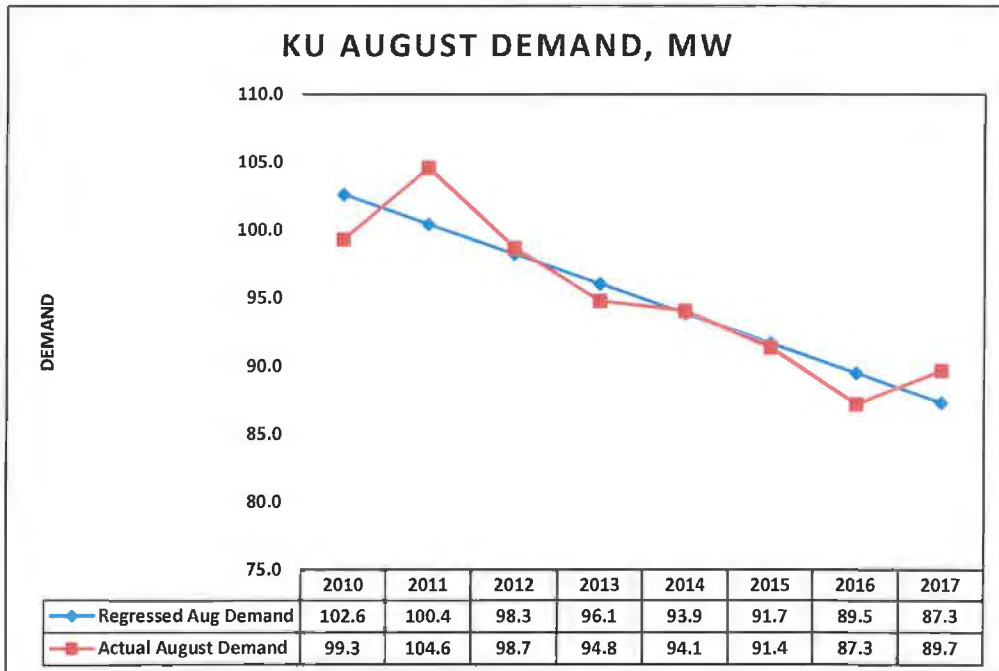


KU Summer Seasonal Energy Reduction of 15.2% since fiscal year 2010.

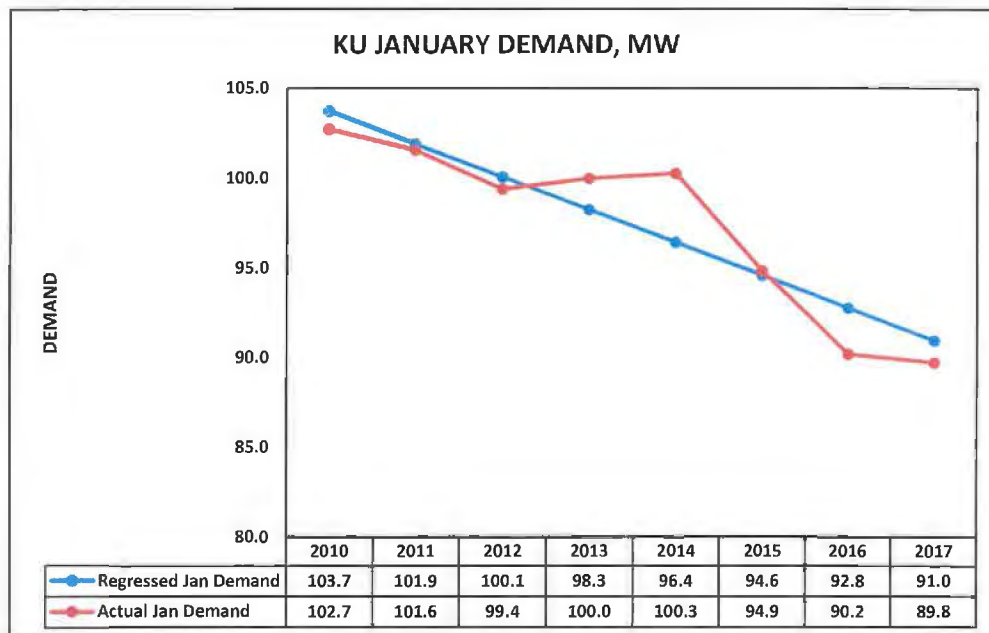


KU Winter Seasonal Energy Reduction of 12.9% since fiscal year 2010.

## DEMAND (MW) REDUCTION



KU August Demand Reduction of 14.9% since FY2010.



KU January Demand Reduction of 12.3% 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 28% of Kentucky's eligible public school buildings are ENERGY STAR labeled. That compares to approximately 11% nationally.

Additional recognition has been given for the districts that have all schools ENERGY STAR labeled. In total there are currently nineteen districts, ten of who have a school served by KU. Those ten districts are: Burgin Independent, Crittenden County, Henry County, Lee County, Marion County, Middlesboro Independent, Pendleton County, Robertson County, Scott County, and Woodford County.

Figure 1 shows the number of KU served ENERGY STAR labeled buildings has grown steadily since FY2010 indicating greater energy efficiency.

Figure 1

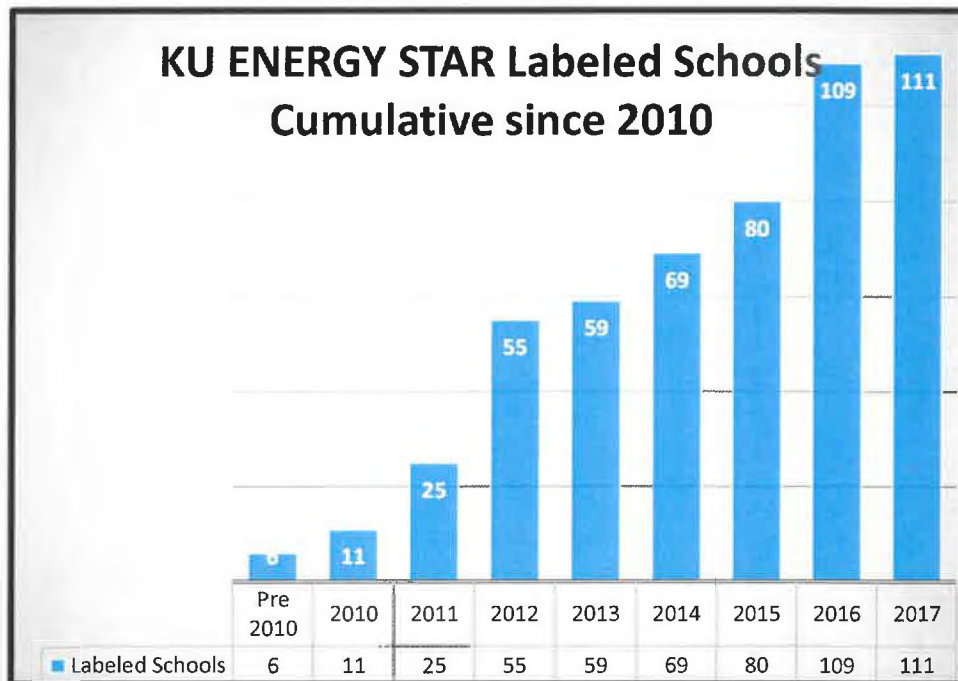
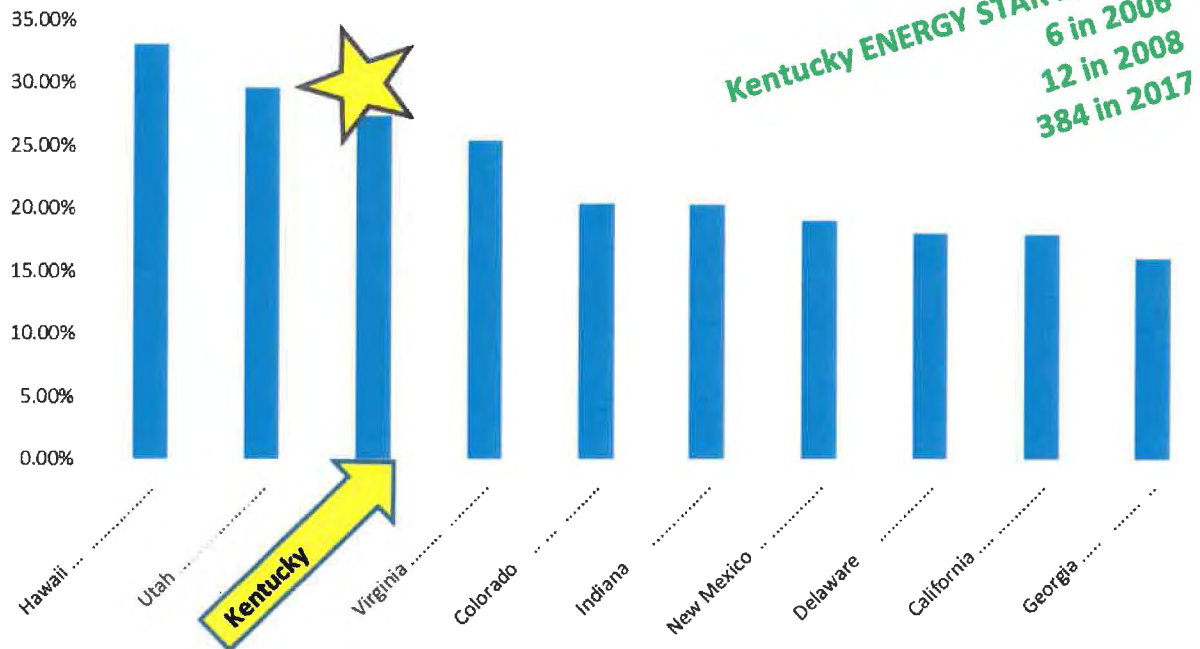


Figure 2.

### Top Ten States: Kentucky Ranks Third for Percentage ENERGY STAR

May 1, 2017



Districts served by LG&E and KU represent 169 of the 384 ENERGY STAR schools statewide.

# 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

<b>Participation</b>			
<b>K-12 Schools</b>	<b>LGE</b>	<b>KU</b>	<b>Total</b>
Total	171	360	531
Participating	169	292	461
<b>Districts</b>			
Total	6	77	83
Participating	5	57	62

## Energy and Demand Savings Compared to Application Metrics

The Application in Case No. 2013-00067 (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 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.

With these conservative approaches, the KU districts are performing at a 2.1% annual reduction for coincident peak demand reduction in August and an overall annual energy reduction of 2.0%.

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 Demand MW											
Year	Actual					Normalized					Norm class CP
	August MW	incr	%	cum	%	August MW	incr	%	cum	%	at 75%
2010	99.3					102.6					77.0
2011	104.6	-5.2	-5.3%	-5.2	-5.3%	100.4	2.2	2.1%	2.2	2.1%	75.3 2.1%
2012	98.7	5.9	5.6%	0.6	0.6%	98.3	2.2	2.2%	4.4	4.3%	73.7 4.3%
2013	94.8	3.9	3.9%	4.5	4.6%	96.1	2.2	2.2%	6.5	6.4%	72.1 6.4%
2014	94.1	0.7	0.8%	5.2	5.3%	93.9	2.2	2.3%	8.7	8.5%	70.4 8.5%
2015	91.4	2.7	2.9%	7.9	8.0%	91.7	2.2	2.3%	10.9	10.6%	68.8 10.6%
2016	87.3	4.2	4.5%	12.1	12.2%	89.5	2.2	2.4%	13.1	12.8%	67.1 12.8%
2017	89.7	-2.5	-2.8%	9.6	9.7%	87.3	2.2	2.4%	15.3	14.9%	65.5 14.9%

January Demand MW											
Year	Actual					Normalized					Norm class CP
	Jan MW	incr	%	cum	%	Jan MW	incr	%	cum	%	at 75%
2010	102.7					103.7					77.8
2011	101.6	1.2	1.1%	1.2	1.1%	101.9	1.8	1.8%	1.8	1.8%	76.4 1.8%
2012	99.4	2.2	2.1%	3.3	3.3%	100.1	1.8	1.8%	3.6	3.5%	75.1 3.5%
2013	100.0	-0.6	-0.6%	2.7	2.7%	98.3	1.8	1.8%	5.5	5.3%	73.7 5.3%
2014	100.3	-0.3	-0.3%	2.5	2.4%	96.4	1.8	1.9%	7.3	7.0%	72.3 7.0%
2015	94.9	5.4	5.4%	7.8	7.7%	94.6	1.8	1.9%	9.1	8.8%	71.0 8.8%
2016	90.2	4.6	4.9%	12.5	12.3%	92.8	1.8	1.9%	10.9	10.5%	69.6 10.5%
2017	89.8	0.5	0.5%	12.9	12.7%	91.0	1.8	2.0%	12.7	12.3%	68.2 12.3%

Total MWh											
Year	Actual					Normalized					
	Total MWh	incr	%	cum	%	Total MWh	incr	%	cum	%	
2010	354,059					352,968					
2011	350,884	3175.5	0.9%	3175.5	0.9%	346,069	6,900	2.0%	6,900	2.0%	
2012	340,347	10536.6	3.0%	13712.1	3.9%	339,169	6,900	2.0%	13,799	3.9%	
2013	329,891	10455.8	3.1%	24167.9	6.8%	332,270	6,900	2.0%	20,699	5.9%	
2014	328,397	1494.0	0.5%	25661.9	7.2%	325,370	6,900	2.1%	27,598	7.8%	
2015	319,957	8440.4	2.6%	34102.3	9.6%	318,471	6,900	2.1%	34,498	9.8%	
2016	304,015	15942.0	5.0%	50044.3	14.1%	311,571	6,900	2.2%	41,397	11.7%	
2017	303,010	1004.4	0.3%	51048.7	14.4%	304,672	6,900	2.2%	48,297	13.7%	

## Process

### Energy Manager Training

Because of the high number of new and replacement energy managers, 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 8 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.

New and Replacement energy Manager Meetings were held at Anchorage Independent, Eminence Independent, Bourbon County, Henry County, Trimble County, Nelson County, Ohio County, Danville Independent, Hart County, Marion County, Jefferson County, Nicholas County, Montgomery County, and Lee County.

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.

In May 2017 KSBA hosted its first Energy Summit with Program Objectives:

- To examine energy and economic trends impacting schools
- To showcase best practices for optimum energy efficiency impacting the bottom line
- To examine future trends that are impacted by technological advances
- To provide professional development for public or private, K-12 and post-secondary schools
- To build partnerships with the school communities to support energy efficiency efforts.

LG&E and KU were very active in the summit by hosting sessions on rebates and the ENERNOC demand reduction program. Additionally, Lisa Keels participated on our event planning board.



## 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 2016 – Kentucky Organization of School Administrative Assistants (KOSAA) - “My role in Energy Management”
- July 2016 – KSBA Summer Leadership Conference - “Energy as a Leadership Activity”
- December 2016 - KSBA Winter Symposium - “Energy as a controllable expense; understanding the finances of energy management”
- February 2017 - KSBA Annual Conference - “Making Superhero Financial Decisions to Control Energy Costs”

Newsletters in FY2017 that included mention of LG&E-KU districts are included in ATTACHMENT A, and noted below:

- Utility-funded reduction could light all Kentucky high school football fields for more than 10 years! (October 2016)
- Don't Miss Out on Funding Opportunities . . . News from Utility Partners (October 2016)
- Consider this project . . . Hickman County Schools (October 2016)
- Woodford County Schools Celebrates 100% ENERGY STAR Schools and Buildings (November 2016)
- District Ranking by Energy Use Intensity for FY2016 (December 2016)
- Managing energy load leads to district savings (LG&E-KU Commercial Demand Conservation Program – January 2017)
- ENERGY STAR Recognitions (Marion County Schools, Muhlenberg County Schools and McLean County Schools – January 2017)
- Consider this project . . . Crittenden County Schools (January 2017)

Eighteen districts recognized for 100 percent ENERGY STAR Schools (Burgin, Crittenden, Henry County, Lee County, Marion County, Middlesboro Independent, Pendleton County, Robertson County, Scott County, and Woodford County - June 2017)

- School Energy Summit – (Electric Utility Executive panel – June 2017)
- Consider this project . . . Clay County Schools (June 2017)

## Data Gathering

Energy Usage and Demand data was gathered by account by month for each district beginning with July 2009 through June 2017.<sup>1</sup> 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.

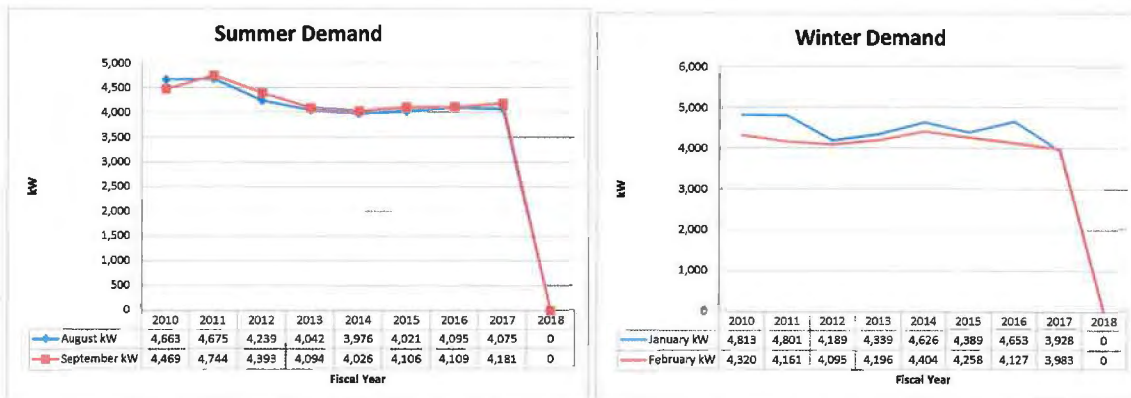
## Data Scrubbing

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

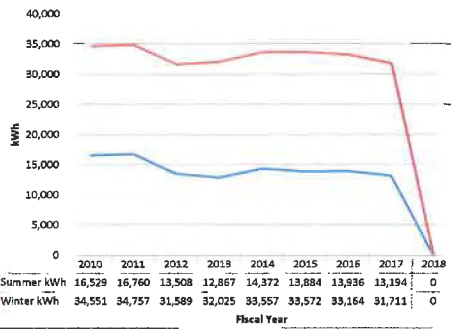
Following the scrubbing of the data, each district's data was graphed showing the individual performance on energy and demand reductions. For the demand accounts, data was plotted as Summer Demand, Winter Demand and Energy by Season. For the non-demand accounts, a load factor was calculated using the 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.



<sup>1</sup> Data is provided to KSBA for analysis and reporting on a quarterly basis. Since June 2017 data as not completely available for all districts at the due date of this report, the June 2016 data was used as a proxy where necessary.

**Energy by Season**



**APPENDIX A -- Newsletters**

# LET'S SAVE ENERGY

## School Energy Efficiency News



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

### ***Utility-funded reduction could light all***

October 2016

### ***Kentucky high school football fields for more than 10 years!***

With the crisp temperatures of fall, football practice and games are occupying time for many students, as well as parents and communities. What would it mean if those football fields could be illuminated at no cost? The amount of energy saved in FY2016 by 75 districts that are participating in utility-funded grants through KSBA-SEMP, is the equivalent to more than 10 years of no-cost energy for this sport!

The reduction in electrical energy, measured in kilowatt-hours (kWh), achieved over the 12-month period as compared to FY2015, was more than enough to light all of Kentucky's high school football fields for practice and games for over a decade. In fact, the energy reduction by those 75 districts would light, heat and cool more than seven high schools for one year.

Energy efficiency and elimination of wasteful practices has become a priority for Kentucky school districts. They are required by statute and board policy to develop energy management plans, and then report annually on the progress of those plans, as well as annual energy consumption. Recent and expected increases in utility costs are also giving districts further incentive to manage energy resources.

Funding from the Louisville Gas and Electric, Kentucky Utilities and Kentucky Power Company assist districts in implementing energy management measures through behavioral and facility improvements. This funding supports local energy managers to help identify, evaluate, implement and monitor energy efficiency measures.

The goal of the utility funding is to reduce energy (kWh) and demand (kW) by 2.5 percent annually. Results for FY2016 are:



*Photo courtesy of Musco Lighting*

#### **Kentucky Power Company (KPC)**

Seventeen out of 23 eligible districts receive funding through the Kentucky Power Company School Energy Management Program. Comparing FY2016 to FY2015, the energy reduction was 6.74 percent. Also important to note is the 9.72 winter peak demand reduction.

#### **Kentucky Utilities Company (KU)**

Fifty-four of 78 districts participate in the KU School Energy Management Program. This funding tracks "summer seasonal energy" (May through September) and "winter seasonal energy" (October through April), using FY2010 as a baseline. Summer seasonal energy reduction achieved is 27.8 percent and winter seasonal energy reduction is 14.4 percent. Significant is the summer peak demand reduction of over 24 percent.

#### **Louisville Gas & Electric (LG&E)**

The LG&E School Energy Management Program also tracks "summer seasonal energy" (May through September) and "winter seasonal energy" (October through April), using FY2010 as a baseline. Four districts participate in this funding. Summer seasonal energy reduction achieved is 4 percent and winter seasonal energy reduction is 7.1 percent. Also significant is the summer peak demand by 18 percent.

# Don't Miss Out on Funding Opportunities

## News from Utility Partners

### **SEMP Utility Funding:**

Utility funding is available to school districts that receive electric service from LG&E, KU and Kentucky Power. This funding supports the requirements in KRS 160.325 and Board Policy 05.23 to focus on rising energy costs that are straining budgets. Training and support of local energy managers by KSBA-SEMP is provided throughout the grant to assist the district in meeting a goal to reduce energy and demand by 2.5 percent annually. There is **limited time to begin funding for FY2017** - contact [ron.willhite@ksba.org](mailto:ron.willhite@ksba.org) for details.

### **Energy Projects and Utility Rebates:**

LED bulbs and fixtures, high-efficiency equipment and HVAC controls may be eligible for utility company rebates. Other projects may also qualify. Districts may be eligible for a rebate if they have replaced outdated devices with energy saving devices in a renovation project. Check with local providers for details. Deadlines are approaching for the 2016 calendar year that will impact availability of the rebates. Here are links to a few provider websites:

[www.lge-ku.com/rebate](http://www.lge-ku.com/rebate)

[www.kentuckypower.com/SaveBusiness](http://www.kentuckypower.com/SaveBusiness)

[www.duke-energy.com](http://www.duke-energy.com)

[www.kaec.org](http://www.kaec.org)



*A unit of American Electric Power*

### **Energy Savings Business Programs The 2017 Program Year is Coming!**

The 2017 Program Year is rapidly approaching and we will be holding 2017 Kick-Off Meetings to review program changes. Come and hear about the 2017 program at:

#### **Nov. 15**

9:30 am - Perry County Public Library - Hazard

3:00 pm - Pikeville Public Library (Lee Ave.) - Pikeville

#### **Nov. 16**

10:30 am - Pikeville Public Library (Lee Ave.) - Pikeville

2:00 pm - Floyd County Public Library - Prestonsburg

#### **Nov. 17**

9:30 am - Boyd County Public Library - KYOVA Mall Branch - Ashland

1:30 pm - Boyd County Public Library - Main Branch - Ashland

No Registration Required!

NOTE: 2016 Program Year Ends on December 16.

Projects must be completed by then!



Schools within the LG&E and KU service territories are learning a valuable lesson - conserving energy not only keeps operating costs low, it can also earn cash rebates. Through the Commercial Rebate Program, schools can earn up to \$50,000 by making energy-saving improvements like upgrades to lighting. Kentucky schools have already earned more than \$3.5 million and much of that rebate money is being used to enrich the education of Kentucky's children. "Let our business partner, *Franklin Energy*, help you along the way. Visit [lge-ku.com/rebate](http://lge-ku.com/rebate) for more information on how your school can apply for our Commercial Rebate Program. "



KSBA-School Energy Managers Project Presents

# Kentucky's Battle of the School Buildings

An ENERGY STAR®  
Battle of the Buildings™ Competition

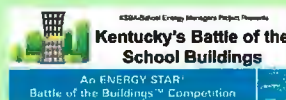


The race is on!

At the July halfway point in Kentucky Battle of the School Buildings, Estill County's South Irvine P/K Center topped the list in energy savings, with Bath County High School nipping at its heels. The chart below shows the top 10 standings at mid-year. The figures stand for the percentage of reduction from the source energy use intensity (EUI) during the first six months of 2015 compared with the same period this year. The yearlong competition is based on a calendar year.

Property Name	Source EUI Reduction
South Irvine P/K Center	24.70%
Bath County High School	22.31%
Safe Harbor	19.40%
Garth Elementary	18.30%
Southside Elementary	17.31%
North Middletown Elementary School	17.19%
Bourbon County Preschool Head Start	17.05%
Bloomfield Middle	16.12%
Fairview Elementary School	14.38%
Mt. Washington Middle School	14.29%

*"The Battle" is not over until the last meter is read!  
Good luck to all competitors!*





### ***Consider this project . . .***

*Hickman County Superintendent Casey Henderson describes the high school gym LED project by saying "These lights will dramatically cut our gym lighting expense."*

## **KSBA ENERGY STAR "Office" Recognition**



Since 2010, KSBA has worked to support energy-efficiency efforts for all Kentucky public school districts. In doing so, KSBA staff began applying strategies to eliminate wasteful practices in their own building and to learn to become an energy-efficient leader in their daily work.

In 2011 KSBA:

- Replaced inefficient HVAC equipment.
- Installed new lighting and programmable thermostats.
- Began using power strips for office equipment with timers.
- Increased insulation levels.
- Included energy reports at staff meetings.

This has meant \$2,000 in annual savings, which is significant to a small office building. These changes have now resulted in KSBA becoming an ENERGY STAR Office, one of 78 in Kentucky. To be an effective leader, you have to practice what you preach.



KSBA-SEMP Director Ron Willhite (far left) and KSBA Operations Manager Jeff Million (far right) explain the strategies implemented at KSBA's office to reduce the energy use. From left are: Willhite; KSBA Executive Director Mike Armstrong; Kentucky Energy and Environment Cabinet representatives Lee Colton, Eileen Hardy and Rick Bender; and Million.



# LET'S SAVE ENERGY

## School Energy Efficiency News

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



November 2016

## History of Electric Lamps and Lighting and Opportunities to Consider

Lighting long has been a key component of schools. From classrooms making the best use of oil or gas lamps to classrooms designed to use natural light "over the pupil's left shoulder," the evolution of lighting in the classroom has a long, rich history.

During those early days, windows were key to the classroom. Daylighting standards called for specific window area and window-to-floor area ratios, stating that 40 to 50 percent of the total wall area should be windows.

Thomas Edison's first commercial incandescent bulb in the 1870s indicated a potential for electric lighting for schools. However at that point, electric lighting levels were limited, as was the length of illuminating time.

In the late 1800s, a different technology called arc lamps provided improvements in lighting levels and

"burn time." As developments came in power generation, so did the types of arc lamps. The early carbon arc lamps were replaced with other types of discharge lamps like the mercury vapor, sodium and then fluorescent lamps.

Early standards for electrical classroom lighting were published in the early 1900s. Initially, with only expensive incandescent lighting being available, the minimum requirements were "3 foot-candles of artificial light." In the late 1930s, fluorescent lighting was three times more efficient than incandescent and quickly became the choice for schools. The minimum requirements for artificial lighting were raised to 30 foot-candles and then later to 50-70 foot-candles, depending on the classroom subject.

Over the past 50 years, the impact of several energy crises led to further advancements in lighting technology.

Light Emitting Diodes (LEDs) technology was introduced and had been costly until the past few years. As the technology has advanced, LEDs' energy efficiency has increased and cost has been drastically reduced. Given the light quality and long life, coupled with the efficiency, LEDs are here to stay.

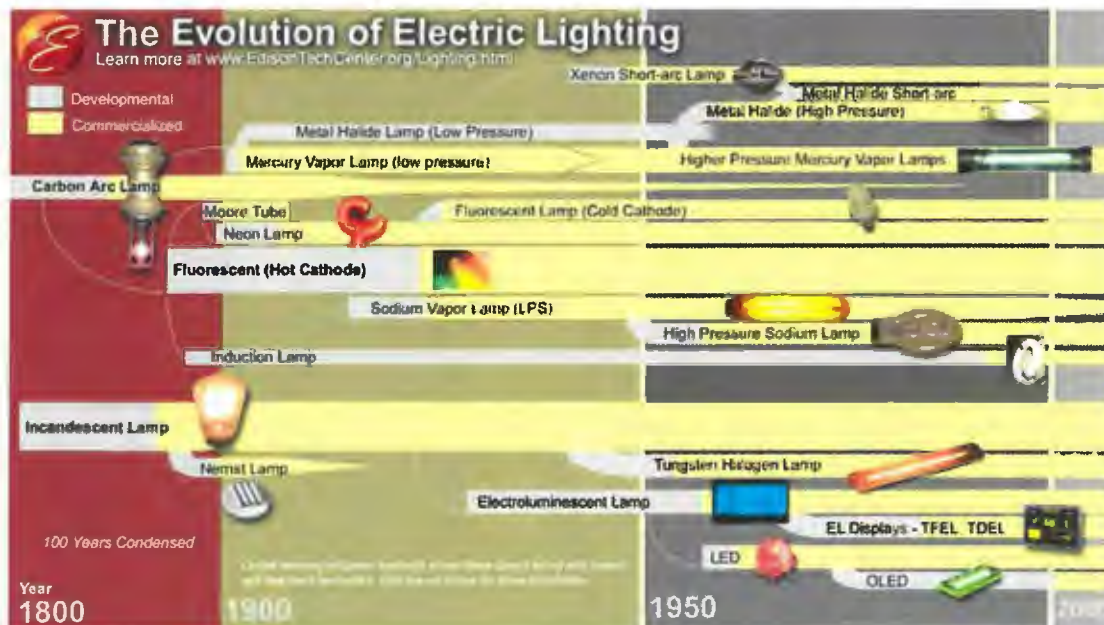
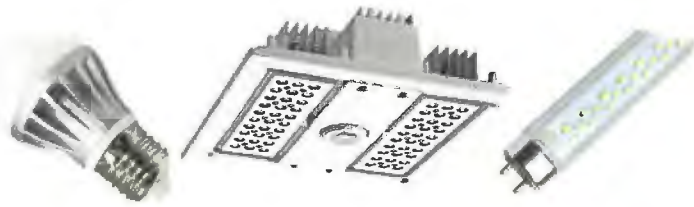


Illustration from:  
[www.edisonc.org/lighting/](http://www.edisonc.org/lighting/)

# Choosing the Best LED Project



There are a number of factors that should be considered before choosing LED lights. Choosing the best option for a specific application will likely include evaluating the following:

- *Lumen output* (compare apples to apples).
- *Color Rendering Index (CRI)* Color quality and appearance. ENERGY STAR requires qualifying fixtures have lamps with a CRI rating above 80.
- *Compatibility* with existing fixtures (warm white, cool white or daylight?).
- *Energy use* (wattage of the light fixture).
- *Luminous efficacy* (lumens per watt). Luminous efficacy is a measure of how efficiently a light source produces visible light. Lamps with higher lumens per watt have higher efficiency.
- *Light distribution and angle of view* (Lighting representative should provide you with a layout showing the foot-candle levels and what is recommended for the application).
- *Rated life (L70)* versus operational time
- *Life cycle cost.* Payback period based on hours of operation and cost of material and maintenance.
- *Warranty* (How long is the warranty and what does it cover?).
- *Dimming characteristics*
- *Are the fixtures rated for damp locations* (bus garages, warehouses, etc.).
- *Can occupancy sensors be installed in the fixture?*
- *Has the fixture been tested and approved by the Design Lights Consortium (DLC).* (PLEASE NOTE: some utility rebate guidelines require the DLC certification to be eligible for a rebate.)

Information provided by Energy Manager Terry Anderson, Fleming County Partnership. Contributing info from Greg Saylor, Arrow Electric



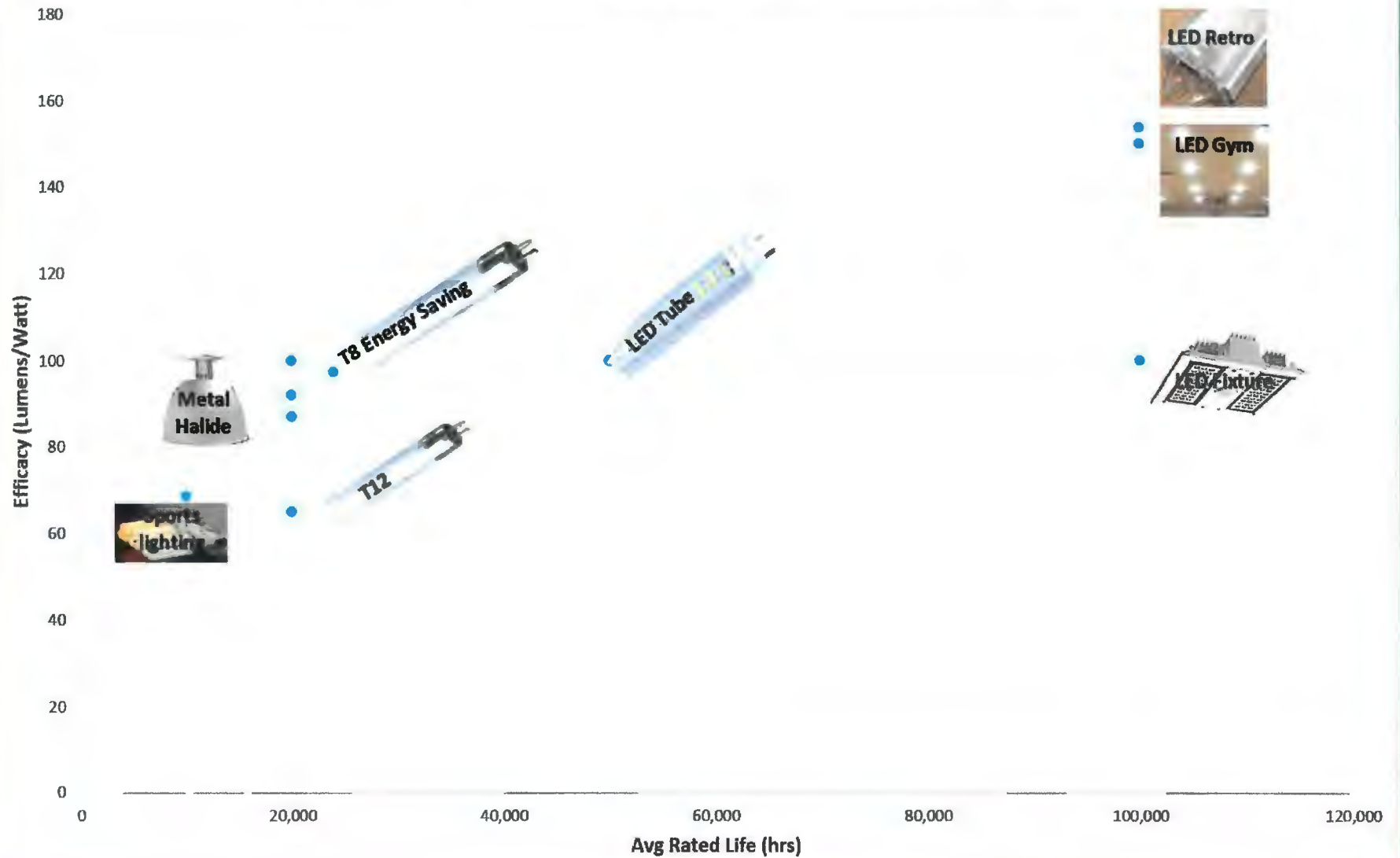
## CONSIDER THIS . . .

*From incandescent to CFL to LED, lighting technology has advanced with "warp speed!" Before making major lighting decisions, ensure you know the questions to ask and the terms to understand.*

## Enlightening Terms

<b>Ballast</b>	A collection of electronic parts that regulates the electric current through a fluorescent lamp.
<b>Diffuser</b>	A covering or shade over a light or lamp that generally softens or scatters the light and is usually used to eliminate spots and glare. May be made from glass or plastic.
<b>Efficacy</b>	A description of the efficiency of a light source, as measured in light produced (lumens) per unit of power consumed (watts).
<b>Fixture</b>	A complete lighting unit consisting of a lamp or lamps and the parts designed to distribute the light, position and protect the lamp(s), and connect the lamp(s) to the power supply.
<b>Foot-Candle</b>	A measurement of the intensity of light reaching a surface.
<b>Lamp</b>	In the lighting industry, "lamp" is the term for a light source. Technically, incandescent light bulbs, fluorescent tubes, CFLs, and LEDs are all considered "lamps," and table and desk lamps are referred to as fixtures.
<b>Lumen</b>	Measure of light.
<b>Rated life</b>	A lamp or light bulb's estimated lifetime measured in hours.
<b>Watts</b>	Measure of power, or energy consumed per unit of time.

# Evolution of Efficacy and Avg. Rated Life (ARL)



You can see why we like LED Lighting: You get a lot of light for a low amount of energy (efficacy) and it lasts for a long time



## Woodford County Schools Celebrates 100% ENERGY STAR Schools and Buildings



Five Woodford County schools, as well as the central office were recognized in October for their energy reduction and becoming an ENERGY STAR School OR ENERGY STAR Office Building. From left are: From left to right Southside Elementary – Stacy Rutledge and Pam Shouse; Safe Harbor – Garrett Wells; Northside Elementary – Emma Mulvihill; Woodford High School – Rob Akers; Central Office – Amy Smith; Middle School – Tracy Bruno and Jeff Rhode. Please note that Huntertown Elementary and Simmons Elementary schools are also ENERGY STAR certified, but were presented certificates of recognition at an earlier date.



*A band, chorus, and even a quintet, were part of the district-wide celebration for Woodford County Schools 100% ENERGY STAR recognition. Annual savings achieved are over \$80,000.*



# LET'S SAVE ENERGY

## School Energy Efficiency News

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



December 2016

## \$123 million:

### Total energy savings for seven years, with 98 percent of school districts cutting energy use

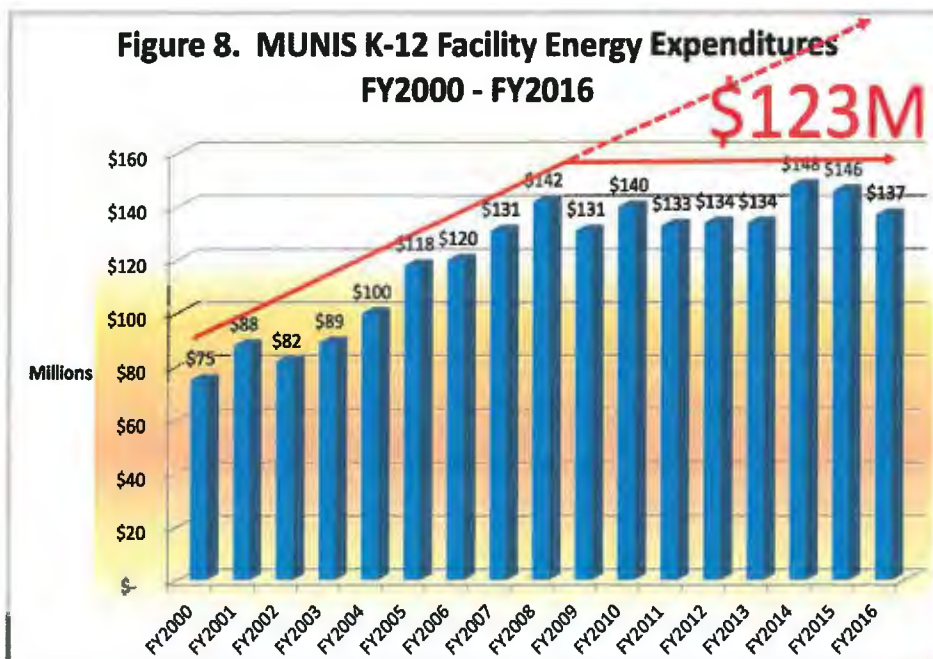
Total energy use in Kentucky school districts continue to decline, while square footage of school facilities continues to increase. Energy costs per MMBTU continue to increase and is expected to continue to rise.

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, and continued dropping steadily, now at 52.0 kBtu per square foot for 2015-16. Further, the corresponding cumulative avoided cost during that period through consumption reduction, rate corrections, rebates, refunds and utility case interventions is over \$123 million. Significantly, 98 percent of districts reduced energy consumption over the same period.

KSBA's School Energy Managers Project (SEMP) has funded and trained local school energy managers

since 2010. Current funding 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** at left shows the MUNIS-reported school energy costs from fiscal year 2000 through fiscal year 2016. 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 \$123 million.

**TABLE 2, District Ranking by Energy Use Intensity for FY2016**

Rank	District	2016 EUI	2010 EUI	Rank	District	2016 EUI	2010 EUI	Rank	District	2016 EUI	2010 EUI	Rank	District	2016 EUI	2010 EUI
1	Owen	33.2	62.5	45	Christian	44.2	70.1	89	Paducah	50.4	73.9	93	Jefferson	56.8	68.2
2	Nelson	34.8	51.5	46	Pendleton	44.3	55.9	90	Newport	50.6	44.5	94	Wolfe	57.1	dnr
3	Marion	35.3	60.3	47	Glasgow	44.3	62.6	91	Lincoln	50.6	70.7	95	Bardstown	57.1	72.9
4	Scott	35.9	53.3	48	Calloway	44.4	56.2	92	Carlisle	50.7	46.9	96	Ludlow	57.5	107.9
5	Oldham	36.1	45.7	49	Henry	44.5	67.9	98	Campbells	50.8	76.4	97	Pikeville	57.8	81.9
6	Walton-Vern	36.2	44.6	50	Trimble	44.5	53.7	94	Livingston	51.0	56.9	98	Mayfield	57.9	60.9
7	Butler	36.5	42.8	51	Williamstown	44.8	63.3	95	Jenkins	51.1	dnr	99	Laurel	58.2	dnr
8	East Berns	37.8	dnr	52	Science Hill	44.9	56.5	95	Owensbor	51.2	70.1	100	Martin	58.2	dnr
9	Trigg	37.8	60.2	53	Floyd	44.9	52.0	97	Wayne	51.3	64.2	101	Bath	58.6	87.8
10	Anderson	38.2	52.3	54	Burgin	45.0	60.5	98	Fort Thom	51.3	72.2	102	Bowling Gre	59.0	73.6
11	Bullitt	38.2	53.7	55	Lawrence	45.1	68.6	99	Adair	51.4	71.1	103	Ashland	59.5	75.1
12	Corbin	39.0	51.6	56	Russellville	45.2	52.5	100	Hickman	51.5	67.6	104	Anchorage	60.2	73.8
13	Jessamine	39.2	50.3	57	Garrard	45.4	51.5	101	Russell	51.5	80.5	105	Raceland- worthingo	60.5	67.0
14	Shelby	39.2	71.6	58	Clark	45.6	74.7	102	Harlan Cou	51.6	55.7	106	Darville	61.2	64.6
15	Erlanger	39.5	56.9	59	West Point	45.7	dnr	103	LaRue	51.8	55.1	107	Berea	61.3	75.7
16	Harlan Ind	40.4	52.3	60	Boyle	45.7	65.9	104	McCracker	52.0	62.7	108	Todd	62.2	70.0
17	Warren	40.5	50.7	61	Casey	45.8	49.5	105	Fulton Ind.	52.1	69.0	109	Cumberland	62.4	71.1
18	Hazard	40.8	87.2	62	Crittenden	45.9	57.1	106	Mercer	52.2	78.3	110	Johnson	62.6	78.2
19	Middlesbo	40.9	97.2	63	Murray	46.0	47.2	107	Webster	52.5	75.5	111	Knott	62.7	dnr
20	Greenup	41.1	64.1	64	Carter	46.0	59.3	108	Taylor	53.0	64.7	112	Breckinridge	62.8	72.1
21	Meade	41.3	48.7	65	Metcalfe	46.1	60.9	109	Letcher	53.0	62.9	113	Covington In	63.2	80.5
22	Fulton Co	41.4	69.4	66	Caldwell	46.2	60.7	110	Caverna	53.4	84.2	114	Eminence	63.5	85.3
23	Robertson	41.4	114.5	67	Augusta	46.4	55.6	111	Muhlenbe	53.4	68.5	115	Henderson	64.0	74.1
24	Woodford	41.6	63.5	68	Monroe	46.6	54.7	112	Rowan	53.7	72.3	116	Boone	64.1	74.0
25	South Gate	41.7	47.2	69	Russell Ind	47.0	70.3	113	Nicholas	53.8	80.7	117	Barbourville	65.0	76.8
26	Paris	41.7	59.6	70	Dawson Sprin	47.3	61.0	114	Lewis	53.9	65.6	118	Ballard	65.7	80.1
27	McLean	41.8	45.9	71	Lyon	47.8	53.7	115	Grant	54.0	70.7	119	Fayette	65.9	78.2
28	Elliott	42.3	dnr	72	Bell	48.1	81.5	116	Franklin	54.4	87.3	120	Somerset	66.1	89.8
29	Lee	42.4	78.3	73	Fleming	48.1	69.8	117	Magoffin	54.4	64.7	121	Bellevue	66.4	68.4
30	Hancock	42.6	57.8	74	Knox	48.1	64.8	118	Boyd	54.5	81.2	122	Hart	67.9	73.5
31	Pineville	42.7	58.5	75	Williamsbur	48.4	54.9	119	Washington	54.5	83.5	123	Simpson	68.0	73.6
32	Gallatin	42.8	60.0	76	Logan	48.5	54.5	120	Bourbon	54.5	65.0	124	Marshall	69.3	70.9
33	Estill	42.8	53.4	77	Madison	48.6	56.4	121	Hopkins	54.7	71.7	125	Elizabethtow	69.5	76.9
34	Hardin	43.0	54.3	78	Ohio	48.9	64.4	122	Owsley	54.8	dnr	126	Campbell	71.7	70.2
35	Jackson Co	43.1	55.2	79	Barren	49.1	49.8	123	Pike Count	55.0	64.9	127	Meriffee	72.1	90.4
36	Frankfort	43.3	80.7	80	Grayson	49.1	60.0	124	Carroll	55.2	82.9	128	Montgomery	75.3	70.2
37	Whitley	43.3	57.7	81	Bracken	49.3	55.0	125	Dayton	55.2	67.4	129	Powell	75.3	97.0
38	Edmonson	43.8	58.7	82	Beechwood	49.8	68.8	126	Leslie	55.2	69.4	130	Green	75.5	88.2
39	Kenton	43.8	64.9	83	Spencer	49.8	dnr	127	Morgan	55.7	116.8	131	Fainview	77.5	79.7
40	Allen	43.8	57.1	84	Daviess	49.9	53.9	128	Rockcastle	55.7	59.9	132	McCreary	87.1	94.8
41	Cloverport	44.0	72.7	85	Union	50.0	69.1	129	Graves	56.0	dnr	133	Jackson Ind	102.0	117.6
42	Silver Grov	44.1	69.2	86	Pulaski	50.2	60.9	130	Clay	56.1	63.3				
43	Clinton	44.1	53.5	87	Mason	50.2	59.2	131	Perry	56.3	67.0				
44	Paintsville	44.1	53.3	88	Harrison	50.4	61.9	132	Breathitt	56.7	64.0				

# LET'S SAVE ENERGY

## School Energy Efficiency News

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



January 2017

## Managing energy load leads to district savings

Utility energy-saving programs continue to evolve. Most utility companies have rebate programs to encourage high efficiency to be part of the equipment purchasing decisions. Some utility companies also have demand conservation programs, which means that a school district will be paid for reducing demand at peak times, called "events."

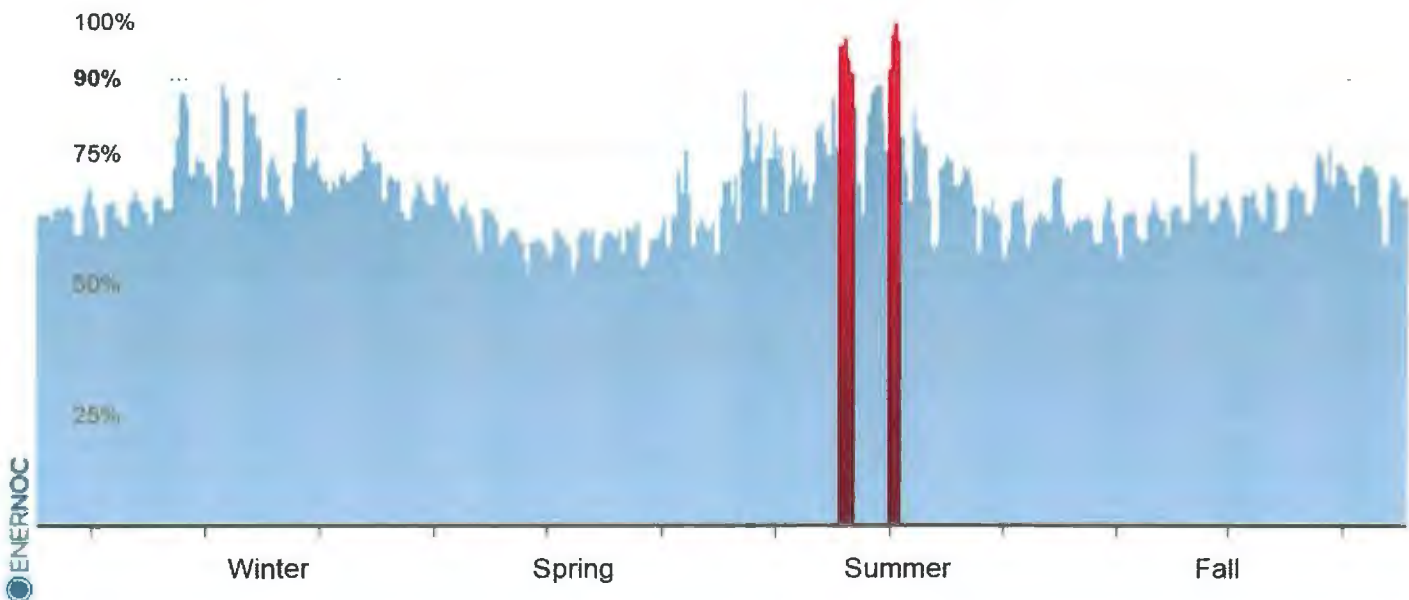
On the graph below, notice that the demand is not constant but rather fluctuates as the temperature changes throughout the year. Most of these changes are driven by customer desire for more warmth or cooling during extreme temperatures. During these peak times, power plants must either be "called on-line" to generate more electricity OR customers "called on" to reduce their electric consumption, thus lowering the instantaneous demand on the system. For those commercial customers who have the capability to respond and reduce demand during an event, the financial reward can be significant.

One such program is the Commercial Demand Conservation Program from Louisville Gas & Electric and Kentucky Utilities through a partnership with EnerNOC – a provider of energy intelligence software and demand response solutions.

In Scott County Schools, 13 of its 14 schools are served by KU. All 13 participate in KU's Commercial Demand Conservation Program. The district not only has been a leader in reducing energy consumption, but also a leader in reducing electric demand during peak time events.

"Success in participating in this program is a two-step process," says the district's energy manager, Jim McClanahan. "First, having an HVAC control system is a must – this allows us to automatically setback our equipment to meet the electric load reduction requested. Second, we communicate to faculty and staff that we are going to 'unoccupied mode' a little earlier than normal."  
*(continued on page 4)*

Annual Electricity Demand As a Percent of Available Capacity





# ENERGY STAR Recognitions

With the cumulative avoided energy cost for Kentucky schools now totaling over \$123 million, and the state energy utilization index dropping to 52 kBtu/sq. ft., the number of ENERGY STAR schools in the state continues to reflect that progress. As of January 4, 2017, that number is 375.

District efforts to make wise decisions on building and operating schools, and eliminating wasteful energy practices, should be recognized. ENERGY STAR is a recognized brand that provides an excellent recognition.

During December, a number of school districts across Kentucky were recognized with the Governor's Certificate for this achievement.



(L-R): Energy Manager Bruce Sauer, Caldwell County Schools Superintendent Carrell Boyd, Facilities Director Sam Haulk, and Energy and Environment Cabinet representative Eileen Hardy.



(L-R): Superintendent Taylora Schlosser, West Marion Elementary Principal Robby Peterson, S Charles Middle Principal Buffy Mann, Marion County High Principal Tom Brown, Lebanon Middle Principal Millie Blandford, Lebanon Elementary Principal Donna Royse, Glasscock Elementary Principal Angie Akers, Calvary Elementary Principal Sara Brady, and District Transportation/Maintenance Director Scott Spalding.



(L-R): Consulting engineer Baccus Oliver, Energy and Environment Cabinet representative Eileen Hardy, McCracken County High School Principal Michael Ceglinski, and Energy Manager David Dobbins.





Muhlenberg County School students celebrate having their first ENERGY STAR Schools. Greenville Elementary, Central City Elementary and Muhlenberg High School-East Campus became ENERGY STAR-certified in December 2016.



Photo at left are Muhlenberg County Superintendent Randy McCarty and Energy and Environment Cabinet representative Kenya Stump.



L/R: Todd County Schools Superintendent Wayne Benningfield, KSBA representative Martha Casher, Maintenance Supervisor Troy Winders and Facilities Director Ed Oyler.



(L-R): KSBA representative Martha Casher, Livermore Elementary Principal Carrie Ellis, McLean County High School Vice Principal John Gray, Board Chairman Bill Lovell, Board Member Otis Griffin, Calhoun Elementary School Principal Amy Bell, Superintendent Terry Hayes, Energy and Environment Cabinet representative Eileen Hardy, Sacramento Elementary Principal John Farley, Board member Joyce Sutton, Board Vice Chairman Wendell Miller, Board member Kelly Baird



Standing with the Bourbon Central Elementary Energy Team are L/R: State Sen. Stephen West, Principal Keith Madill, Bourbon County Judge-Executive Mike Williams, Bourbon Fiscal Court Magistrate Don McCarty, and State Rep. Sannie Overly.

## Consider this project . . .



Crittenden County Elementary School students recently learned from Facilities Director Greg Binkley that replacing 60 T8 fixtures with 60 LED retrofit kits could save the school over 14,000 kilowatt hours annually, with a \$1,400 savings. That is a four-year “payback” on this project. This is just one of the many energy projects that districts are choosing to implement.

Special Energy Project Funding was made available to 79 districts in the LG&E and KU service territories; of those, 59 districts submitted proposals. Energy projects were submitted and approved to be implemented during 2016-17 for 316 schools in those districts.

Those districts together will save an estimated \$500,000 annually based on projected consumption savings of nearly 5 million kWh and energy savings of 1.7 MW per month.

## Managing energy load *(continued from page 1)*

“KU will call early in a week when they see an extreme weather event coming, so we can ensure our control systems are all working properly,” adds McClanahan. “They will then call an hour before we need to implement unoccupied temperatures, thus reducing our load for brief periods of time.”

Because the response is called during June, July, August and September, and typically from 2 p.m. through late afternoon, the impact on the school day has been minimal. The financial return to the Scott County Schools, however, has been nearly \$16,000 for 2016, with four called events from KU. In addition to the financial return, participants also gain access to EnerNOC’s Energy Intelligence Software platform, which provides real-time visibility

into how much energy and demand they are using. This insight helps participants optimize their performance during events and identify opportunities to run more efficiently throughout the year.

LG&E and KU offer the Commercial Demand Conservation Program at no additional cost to large commercial customers that have the ability to reduce electric load when requested. This generally requires school districts to have the ability to set-back HVAC when requested.

Over the past year, 97 schools in 17 school districts have participated in LG&E and KU’s Commercial Demand Conservation Program. As districts continued to understand how the program works, success similar to that experienced by Scott County Schools is possible.

# LET'S SAVE ENERGY

## School Energy Efficiency News

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



June 2017

## Eighteen districts recognized for 100 percent ENERGY STAR Schools



Why do Kentucky schools focus on ENERGY STAR? It is simple. ENERGY STAR recognition is a key measure indicating a school district is using taxpayer money efficiently.

Currently, 18 school districts in Kentucky have 100 percent ENERGY STAR Labeled schools. Those districts include:

Burgin Independent  
Butler County  
Caldwell County  
Corbin Independent  
Crittenden County  
Elliott County  
Frankfort Independent  
Henry County  
Lee County

Marion County  
Middlesboro Ind  
Pendleton County  
Robertson County  
Scott County  
Southgate Independent  
Walton-Vernon Ind  
Williamstown Ind  
Woodford County

(continued on page 3)



Districts with 100 percent ENERGY STAR school buildings received additional recognition during a recent KSBA conference. District representatives gathered above are, front row from left, Becky Barnes (Frankfort), Taylora Schlosser (Marion County), Robert Story (Walton-Verona Independent), Nancy White (Elliott County), JoAnna Fryman (Scott County), Jim Evans (Lee County). Back row from left, Jeremy Winters (Williamstown Independent), Tony Whaley (Henry County), Greg Duty (Southgate Independent), Anthony Strong (Pendleton County), Steve Martin (Middlesboro Independent), John Burns (Robertson County), Bill Asbridge (Crittenden County), Mike Traylor (Caldwell County), Bob Clark (Burgin Independent). Districts achieving that honor but whose representatives were not present for picture are Butler County, Corbin Independent and Woodford County.



# School Energy Summit

Over a year ago when KSBA considered hosting a School Energy Summit, a dream attendance goal was set at 200 attendees, along with a realistic goal of 150. Now that the inaugural event has been held and 206 people were in attendance, plans are already in progress for the 2018 School Energy Summit.

School energy management requires involvement from many stakeholders. Board members, district administrators, faculty/staff, and vendors agree that a well thought-out process is important for success in reducing energy consumption and saving dollars. The Summit integrated those stakeholders with the end result of professional development for all.

Three general sessions were held during the Summit that featured leaders from all stakeholder groups. Senior leaders discussed current policy, industry changes and economic factors. Participant comments included such phrases as "Stellar Panel," "Best Session," "Best Q&A I have been in for a while," and "Loved seeing the top executives here."

Breakout sessions included two facility tours, an extended session on energy management basics and 12 different breakout sessions. Comments and evaluations were excellent for all sessions.

Learning objectives for the Summit included:

- Examine the energy and economic trends impacting schools.
- Showcase best practices for optimum energy efficiency impacting the bottom line.
- Examine future trends that are impacted by technological advances.
- Provide professional development for public or private, K-12 and postsecondary schools.
- Build partnerships with the school communities to support energy-efficiency efforts.

Nearly half of the written evaluation comments focused on the positive aspects of the networking that occurred among energy managers, vendors and other stakeholders. The challenge now is to turn the learning and networking into day-to-day savings. As one participant said, "Can't wait to see what you will do next year!" We can't wait to see, either!



Jeffersontown High School senior Lyric Hill opens the School Energy Summit with the national anthem, while the school's award-winning Color Guard presents the flag.

SEMP Program Manager Jon Nipple moderates the Electric Utility Executive panels with Chuck Session, vice president of DUKE Energy Kentucky; David Huff, director, Customer Energy Efficiency/Smart Grid Strategy Louisville Gas & Electric-Kentucky Utilities; Ranie Wohnhas, managing director, regulatory and finance, Kentucky Power; and Chris Perry, president of the Kentucky Association of Electric Cooperatives. One attendee wrote "Stellar Panel! Excellent to hear from leadership across the state."



# CONSIDER THIS PROJECT:

## SEPF projects to pay-back in less than three years

Clay County Schools has been working for several years to reduce energy use, but like most school districts, it was hampered by insufficient funds to make improvements. That didn't stop the District Energy Team from developing a list of recommended energy projects – at the time considered dream projects. The list included lighting needs that would eliminate an ongoing maintenance nightmare.



The majority of classroom lighting at the Clay County Middle School was the older

*Superintendent William Sexton was part of the crew checking to be sure the lighting lens covers were secure in classrooms.*

T12 fluorescent technology. Because of the age of the units, the light levels had degraded and components were being replaced as they failed.

When the Special Energy Project Funding became available in June 2016 through KSBA-SEMP, the district was immediately ready to apply for the funding. Since the "dream" energy savings projects had already been identified, district leaders had a plan to implement them over a six-month period. That plan replaced over 300 T12 lights in the classrooms and hallways, with installation accomplished by district maintenance and administrative staff during fall and winter breaks. Total cost for the project was around \$26,000, with \$12,000 of that coming from the SEPF.

With a reduction in usage of nearly 188,000 kWh, the annual saving is projected around \$18,000. "Our focus is always on creating success for our students. This funding has allowed us to significantly improve the learning environment, as well as capture energy savings to be used for our students," said Clay County Schools Superintendent William Sexton.

## **Eighteen districts recognized** *(continued from page 1)*

The designation of ENERGY STAR is significant because a professional engineer or registered architect must affix a seal verifying facility data, energy data, and air quality levels provide a healthy environment. An ENERGY STAR Labeled school is operating as efficiently as the top 25 percent of K-12 schools nationwide.

The number of Kentucky ENERGY STAR Labeled schools has increased nearly 500 percent (from 68 to 388 schools) since 2010, when Kentucky public schools were required by KRS160.325 to begin reporting annual energy consumption and costs.

Historically, electricity prices in Kentucky were among the lowest in the nation, influenced by availability of coal. With recent changes in environmental regulations, those costs are steadily increasing. Schools have responded with a corresponding increased focus on being efficient.

A school's operating costs are directly related to its energy usage. As energy usage goes down, costs go down. The difference between operating at a national average energy usage versus an energy-efficient level can be tens of thousands of dollars annually for a single school. That is why the Kentucky School Boards Association's School Energy Managers Project coined the phrase "Dollars for Students, Not Energy." That focus has resulted in a cumulative savings of

over \$123 million for districts to use in meeting other educational needs.

With tightened budgets and rising utility costs, it is more critical than ever to implement energy efficiency strategies. Resources from the ENERGY STAR program provide opportunities to recognize effective use of taxpayer money, translating to "Dollars for Students, Not Energy."

*School board decisions around energy have created some significant milestones:*

*August 2011 - 100th ENERGY STAR Labeled school – Millbrooke Elementary, Christian County Schools May 2012 – Twelve Highly-Rated ENERGY STAR schools (rating between 95-100)*

*April 2013 - 200th ENERGY STAR Labeled School – Caneyville Elementary, Grayson County Schools*

*December 2015 – Announcement of 300th ENERGY STAR Labeled School – Southside Elementary School, Shelby County Schools*

*February 2016 – Recognition of 10 100 percent ENERGY STAR School districts at KSBA's Annual Meeting*

*February 2017 – Recognition of 18 100 percent ENERGY STAR School districts at KSBA's Annual Meeting*

# School's out . . . what do your buildings look like?

## Summer setbacks should have an impact

Have you considered strolling through a school during the summer? It may be well worth the time as the impact of your district energy management plan can be easily reviewed. Below is an example of a summer setback checklist to help in your evaluation.

### EXAMPLE OF A SCHOOL DISTRICT SUMMER SETBACK CHECKLIST

Name \_\_\_\_\_ School \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Setback Action	Completed
1. Turn off and unplug computers, TVs, DVD players, coffee pots, and any other non-essential classroom/office electronic equipment.	
2. Turn off electronic whiteboards, projection systems, computer monitors, printers, scanners, etc. Confirm with district IT regarding turning off computers.	
3. Clean out and unplug personal refrigerators. Leave the door open.	
4. Turn off all classroom lights. Turn off AND unplug any personal lamps.	
5. Turn off all interior lighting unless specific area is being occupied for a period of time.	
6. Set exterior lights to turn off during daylight hours (this should be done at every day, but would be good to confirm).	
7. Turn off nonessential exhaust fans.	
8. Never hang items from ceiling where lighting sensors may be located	
9. Turn off all display case lighting.	
10. Check summer schedule for school use. Reset controls OR thermostats to recommended setback temperatures.	
11. Unplug chilled-water fountains, except in occupied areas. Check and report any leakage of water fixtures.	
12. Remove all animals and plants, including fish aquariums, during summer break.	

Notes/Observations