

Let's Save Energy

School Energy Managers Project



Budgeting for Priorities

January 2014

As we begin a new calendar year, school boards across Kentucky will be reviewing and giving tentative approval for the FY 2014-15 DRAFT Budget. (KRS 160.470(6)(a)) The annual needs assessment either has or will soon be completed and many questions will be discussed such as:

- Will this budget support our academic goals?
- How much SEEK funding will we receive?
- Will the General Assembly increase funding?
- How are we going to stay within our budget?
- What are our budget priorities for next school year?

Because utility costs are rising faster than projected, it is critical to budget funds for implementing energy conservation measures to offset these costs and/or release funds for other critical uses.

At first, this may appear to be an overwhelming challenge; however, for the 160 districts that compiled and submitted their FY 2012-13 Energy Management Report, an initial step (benchmarking) of energy budgeting has been done. A general rule of thumb is that districts with an Energy Usage Intensity (EUI) of 50 kBtu's per square foot or less are being well monitored and taking solid energy choice actions. Nonetheless, there is still room for improvement, as can be seen from districts with EUI's less than 40 where there is a continual focus on implementing best energy practices. For example, where feasible micro-managing or "micro-zoning" of HVAC equipment and flexible facility scheduling can achieve significant additional annual savings.

If your district EUI is above 50, there are opportunities to significantly reduce your energy consumption, and save dollars for the district (see page 4).

Ask your energy manager for the results of their most recent building assessments to identify the most appropriate energy projects. Along with the assessment would



Students participating in Energy Workshop in Henderson, KY

State analysis of the value of an Energy Manager

Analysis by the Kentucky Energy and Environment Cabinet shows that school energy managers have a "statistically significant association with reduced energy consumption." Average utility costs per district (not including transportation energy) in Kentucky is nearly \$600,000 annually (exclusive of Fayette and Jefferson Counties).

Districts with an energy manager who focused full-time on energy management have seen 6 percent more savings than districts without an energy manager, which equates to some \$30,000 per year per district. Or to put it simply, the typical energy manager, who serves multiple district partnerships with 20 total schools, contributed an average savings of nearly \$120,000 in utility bills each year.

be the estimated return on investment, which would aid in the decision-making process.

If your district does not have a designated energy manager, **those responsibilities fall to the superintendent or her/his designee.** The basic responsibilities include:

- Development of an Energy Management Plan (EMP) - the vision of how energy resources are to be used in the district, which includes guidelines for building operation (i.e., temperatures, schedules, occupied/unoccupied times).
- Implementation and maintenance of the EMP - long- AND short-term work plans outlining actions to be considered in the annual budgeting process and reflected in the district facility plan.
- Annual reporting of the Energy Management Report, which requires monthly tracking of energy resources and is due October 1 of each year to the Kentucky Energy and Environment Cabinet.

The prospect for additional funding continues to expand. KSBA is working with American Electric Power's Kentucky Power Subsidiary to seek approval from the Kentucky Public Service Commission of a demand-side management program. Similar to the Louisville Gas and Electric and Kentucky Utilities Company's programs, this could provide matching funds for school energy managers. Even without funding, KSBA SEMP staff is available to provide assistance with basic energy management questions and issues.

Energy Saving Myth Busters

Until recently, energy costs have not been a great concern for Kentucky schools. The general focus for districts will always be on providing the best education for children, but with the current economic climate, it is critical for districts to become further educated and proactive on energy management. To understand **WHAT** needs to change, it is important to **ASSESS** current behaviors/practices. A few common missteps for districts that struggle with achieving energy cost savings include:

- Technology installation without adequate training (i.e., control system that only the vendor knows how to operate)
- Skilled people leave (retire) and successors are not provided proper training
- Control system is taken off "regular schedule mode" and placed in "override" resulting in heating or cooling the air 24/7. Some examples of these consequences include:
 - ⇒ Multiple incidences where override (24-7 operation) was left on for more than two months. Electric bills nearly doubled during that time frame before it was discovered and fixed.
 - ⇒ Power outage placed control system in override for two years before it was discovered by energy manager, costing more than \$60,000 annually.
 - ⇒ HVAC sensors fail or lose communication with control system
 - ⇒ Reliance on the system itself, without routine operator oversight

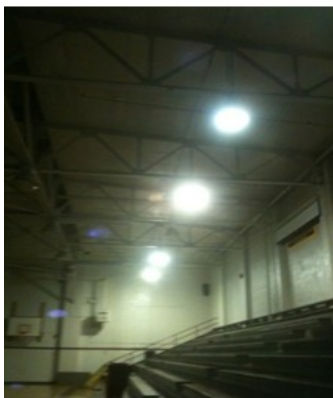
⇒ Staff actions such as: thermostats overridden, doors propped open, or windows open

How do we improve? KRS 160.325 established the steps for improvement: developing and implementing an EMP, tracking utilities and comparing with other districts. With or without an energy manager, a few quick steps can be taken including:

- Training and retraining on control systems, preventative maintenance, and utility bill review & analysis
- Vigilance by control system operators
- After hour walk-throughs **to identify running equipment** that is supposed to be off
 - ⇒ Outside air not shutting down
 - ⇒ HVAC and lighting control systems not allowing shutdown
 - ⇒ Relays and battery backups not allowing shutdown
 - ⇒ Classroom, gym and ball field lights on
 - ⇒ Set-back temperatures and timers not set up correctly
 - ⇒ Electric doorway heaters running 24-7
 - ⇒ Computer monitors, printers, projectors and space heaters not turned off

As your district continues to learn how to manage energy resources, check with KSBA SEMP staff, utility and/or reputable vendor representatives to learn about other options. Consider if the following has been found in your district:

Has this happened in your District?



Gym lights on 24/7 even during breaks



Mini-Fridge on for the summer cooling container of applesauce

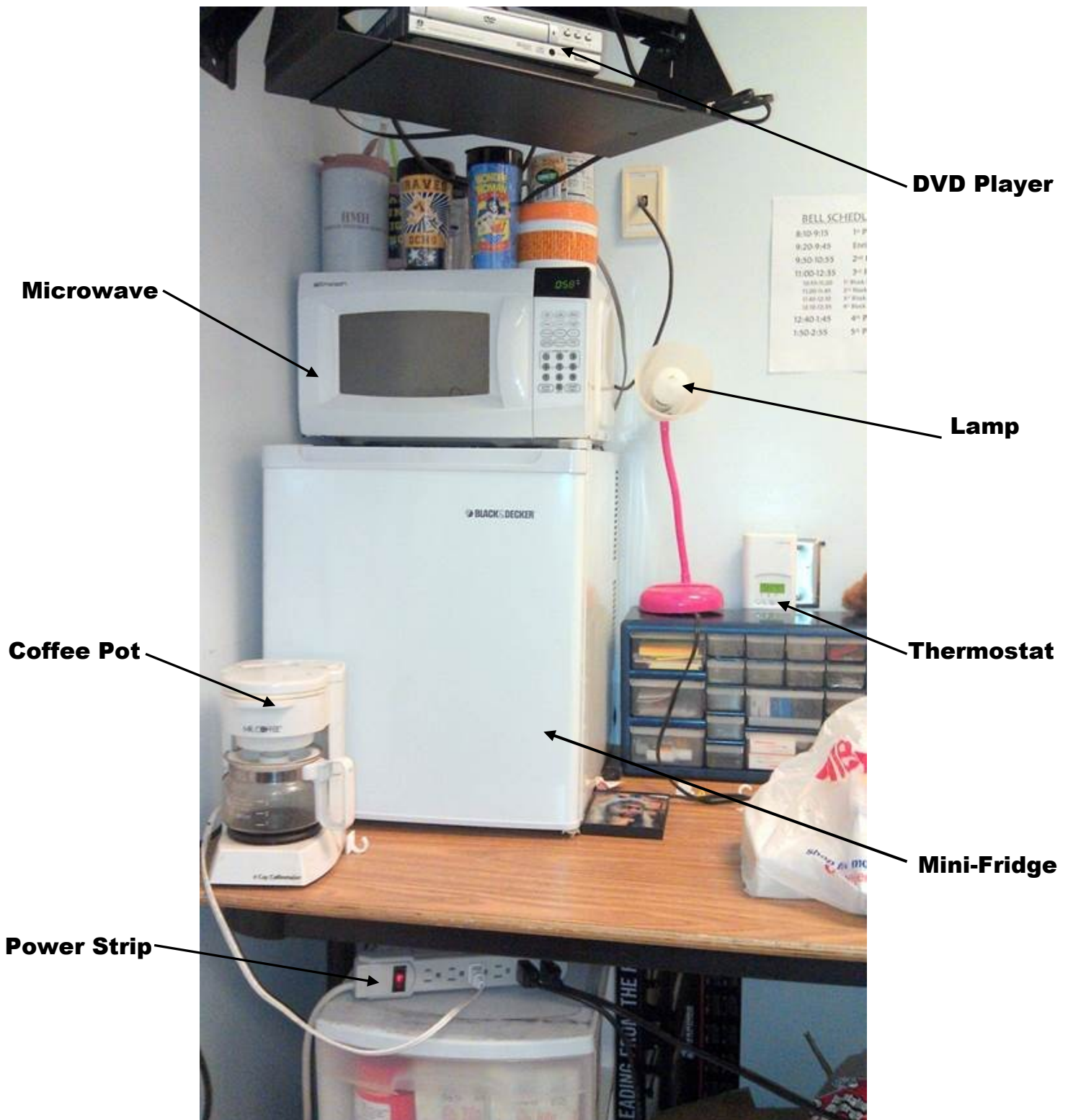


Broken thermostat set for heating & cooling at 72 degrees



Vending machines running 24/7 even during breaks

Have you seen this in your district?



A goal of energy management is also the comfort of faculty, staff and students. When there is a complaint such as; "My room is too cold!" the mechanics of the equipment are reviewed to determine the issue. Can you identify why this classroom may be too cold? (Check the solution on page 4.)

District Ranking by 2013 Energy Utilization Index (EUI)

Rank	District	2010 EUI	2013 EUI	Rank	District	2010 EUI	2013 EUI	Rank	District	2010 EUI	2013 EUI
1	Butler	42.8	35.2	55	Garrard	51.5	51.8	109	Grant	70.7	62.3
2	Corbin	51.6	36.3	56	Lawrence	68.6	52.0	110	Mason	57.9	62.5
3	Walton-Verona	44.6	39.7	57	Paris	59.6	52.3	111	Ashland	75.1	62.6
4	Robertson	114.5	40.2	58	Pulaski	52.4	52.4	112	Jefferson	68.2	62.6
5	Casey	49.5	40.3	59	Spencer	DNR	52.5	113	Dayton	67.4	62.8
6	Anderson	52.3	40.8	60	Marion	60.3	52.5	114	Mayfield	60.9	62.9
7	Owen	62.5	41.3	61	Boyd	81.2	52.5	115	Eminence	85.3	63.2
8	Scott	53.3	42.1	62	Campbellsville	76.4	52.6	116	Lewis	60.7	63.3
9	Murray	47.2	42.2	63	Caldwell	60.7	52.8	117	Knott	DNR	64.0
10	Oldham	45.7	42.3	64	Metcalfe	60.9	52.8	118	Graves	DNR	64.2
11	Monticello	58.0	43.0	65	Nelson	53.0	53.0	119	Elizabethtown	72.9	64.3
12	Hardin	54.3	43.7	66	Bracken	55.0	53.1	120	Adair	71.1	64.7
13	Bullitt	53.7	43.7	67	Edmonson	58.7	53.3	121	Letcher	62.9	64.9
14	Warren	50.7	44.0	68	Russell	80.5	53.4	122	Johnson	78.2	65.5
15	Burgin	60.5	44.5	69	Cumberland	71.1	53.5	123	Caverna	84.2	65.9
16	Grayson	60.0	44.6	70	Whitley	57.7	53.6	124	Ballard	80.1	66.3
17	Nicholas	80.7	45.0	71	Lee	78.3	53.8	125	Washington	83.5	66.4
18	Taylor	64.7	45.5	72	Kenton	64.9	54.2	126	Marshall	70.9	66.5
19	Wolfe	DNR	45.6	73	Livingston	56.9	54.2	127	Hickman	67.6	67.0
20	Jessamine	50.3	45.9	74	Williamsburg	54.9	54.5	128	Laurel	DNR	67.0
21	Gallatin	60.0	46.1	75	Silver Grove	69.2	54.6	129	Carroll	82.9	67.2
22	Trimble	52.3	46.2	76	Lincoln	70.7	55.0	130	Union	69.1	67.2
23	Dawson Springs	61.0	46.7	77	Carter	59.3	55.2	131	Boone	74.0	67.3
24	Clinton	53.5	46.8	78	Logan	54.5	55.2	132	Montgomery	70.2	67.7
25	Fleming	69.8	47.0	79	Christian	70.1	55.4	133	Berea	75.7	67.8
26	Wayne	64.2	47.1	80	Knox	57.0	55.8	134	Campbell	70.2	67.9
27	Erlanger	56.9	47.1	81	Calloway	56.2	56.4	135	Bell	104.3	68.5
28	Science Hill	56.5	48.1	82	Rockcastle	59.9	56.7	136	Danville	64.6	68.8
29	Jackson Co	57.4	48.3	83	Boyle	65.9	57.1	137	Muhlenberg	68.5	68.9
30	McLean	45.9	48.4	84	Raceland-Worthington	67.0	57.3	138	McCracken	62.7	69.4
31	Crittenden	57.1	48.5	85	Rowan	72.3	57.3	139	Morgan	116.8	69.9
32	Williamstown	63.3	48.6	86	Pineville	54.7	57.4	140	Pikeville	81.9	70.6
33	Lyon	53.7	48.6	87	Woodford	63.5	57.5	141	Simpson	73.6	71.4
34	Meade	48.7	48.9	88	Madison	56.4	57.9	142	Anchorage	73.8	71.5
35	Martin	DNR	49.1	89	Cloverport	72.7	58.0	143	Hopkins	71.7	71.8
36	Floyd	52.0	49.1	90	Clark	74.7	58.3	144	Bellevue	68.4	72.0
37	Pendleton	55.9	49.2	91	Monroe	48.6	58.3	145	Henderson	74.1	72.2
38	Shelby	71.6	49.2	92	Webster	75.5	58.6	146	Covington Ind.	80.5	72.5
39	Hancock	57.8	49.5	93	Harrison	61.9	59.1	147	Beechwood	62.6	73.2
40	Daviess	53.9	49.5	94	Clay	65.4	59.2	148	Hart	73.5	73.2
41	Newport	44.5	49.9	95	Elliott	DNR	59.6	149	Fayette	78.2	73.9
42	Carlisle	46.9	49.9	96	Menifee	90.4	60.0	150	Barbourville	76.8	74.7
43	Allen	57.1	50.0	97	Jenkins	0.0	60.1	151	Bath	71.8	74.9
44	Magoffin	64.0	50.1	98	Owensboro	70.1	60.4	152	Middlesboro	DNR	76.7
45	Barren	49.8	50.1	99	Henry	67.7	60.4	153	Somerset	89.8	77.1
46	Trigg	60.2	50.2	100	Mercer	78.3	60.5	154	Ft. Thomas	72.2	77.7
47	Russellville	52.5	50.3	101	West Point	DNR	60.5	155	Breathitt	64.0	79.6
48	Southgate	47.2	50.6	102	Hazard	87.2	60.6	156	Powell	97.0	82.8
49	Glasgow	62.6	50.7	103	Breckinridge	71.2	60.8	157	Green	88.2	87.6
50	Estill	53.4	51.1	104	Bardstown	62.8	60.9	158	McCreary	94.8	89.0
51	Paintsville	53.3	51.1	105	LaRue	55.1	61.7	159	East Bernstadt	DNR	89.7
52	Russell Co.	70.3	51.1	106	Bourbon	65.0	61.8	160	Jackson Ind	117.6	118.6
53	Augusta	55.6	51.5	107	Bowling Green	73.6	61.8				
54	Frankfort	80.7	51.5	108	Franklin	87.3	62.3				

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Solution to the picture on page 3-Consider the heat sources around the thermostat and the impact on HVAC