



Bullitt County Public Schools Energy Program 2007/2008 Year End Report

Summary

BCPS began our energy conservation program officially in November 2006 through the Kentucky Energy Efficiency Program for Schools (KEEPS). Through the program, basic steps were taken to establish an energy program by hiring an energy manager, creating an energy plan, promoting energy conservation and making low/no-cost changes to reduce energy consumption.

This report summarizes the energy usage for the 2007/2008 fiscal year. Actions used for energy savings and accomplishments are included as well as goals for the upcoming year. District wide, electric consumption has been **reduced by 11%** over the baseline year resulting in a cost avoidance of approximately **\$180,000**. Natural gas usage has been **reduced by 7%** resulting in cost avoidance of approximately **\$26,000**. Propane usage has increased slightly by 1% resulting in a cost increase of approximately \$715.

Utility billing evaluations have resulted in rate changes for Hebron, Central Office, and Bullitt Lick. Combined, these changes will save approximately **\$17,900** annually. Additional savings of approximately **\$11,100** per year will be realized due to identifying and removing unused meters and sales tax charges. Credits to our accounts from the tax charges and billing errors have been **\$11,900**.

Total avoided costs plus credits to our accounts equal approximately \$246,000.

Energy Usage Information

The charts located in Appendix A show the energy usage per school compared to their respective baseline. Energy savings calculations account for changes in the number of days in the billing period, current costs, and heating degree days and/or cooling degree days (weather corrections). The graphs in Appendix B show the district's non-adjusted energy profile per month as compared to weather trends.

The implementation of Phase I of the performance contract has helped to drive the increased energy savings. The following schools have had completed upgrades through the performance contract. These schools are highlighted on the chart in Appendix A.

- Bernheim Middle
- Bullitt East High School
- Bullitt Lick Middle
- Freedom Elementary
- Mt. Washington Elementary

- Maryville Elementary
- North Bullitt High School

Phase II and III of the performance contract will include:

- Cedar Grove Elementary
- Lebanon Junction Elementary
- Nichols Elementary
- Pleasant Grove Elementary
- Shepherdsville Elementary
- Hebron Middle
- Mt. Washington Middle
- Zoneton
- Bullitt Central
- Riverview

Savings from these renovations will begin to be realized in the 09/10 fiscal year.

The following summarizes energy saving measures currently in place and what projects are planned to reduce energy consumption.

Actions Used for Energy Savings

- Energy manager is tracking utility usage and costs monthly.
- Non-school hour energy efficiency HVAC procedures including:
 - Shutdowns over long breaks
 - Temperature Setbacks
 - Outside air units only operating during school hours
- Rate schedule evaluations.
- Replacement of incandescent bulbs with compact fluorescent.
- Replacement of fluorescent and incandescent exit signs with LED exit signs.
- Staff education and awareness such as:
 - Turning off lighting when leaving a room
 - Turning off manually switched exhaust fans
 - Turning off computer monitors at the end of the day
- Energy Star Benchmarking tool (Portfolio Manager)
- Regular school walkthroughs to monitor energy use behaviors and equipment operation.
- Daily monitoring of HVAC control systems to ensure proper equipment operation and scheduling.
- Monitoring of indoor air quality (IAQ)—temperature, relative humidity, and carbon dioxide.

Planned Projects for Next Year

- Restructuring of district energy team to include directors from all departments that affect district operating expenses:
 - Food Service
 - Transportation
 - Maintenance
 - Construction
 - Technology
- Continued staff education and awareness and increased student participation.

- Energy Watchdog Program
 - Establishment of student energy teams at each school.
 - Recognition and awards for participating schools.
- Green and Healthy Schools Workshop (August 5th at Hebron Middle School)
- Implementation of Performance Contract
- Installation of Lighting Controls (occupancy sensors)
- Further reduction in hours of operation of HVAC systems.
- Address water usage and expand water conservation program.
- Apply for the Energy Star Leader's award

Appendix A

Cost Avoidance Report

Electric Consumption 2007/2008 Compared to Baseline								
Building	Base Year Actual (kWh)	Base Year Weather Adjusted (kWh)	Evaluation Year Actual (kWh)	Use Avoidance Non- Adjusted (kWh)	Use Avoidance Weather Adjusted (kWh)	Change Non- Adjusted %	Change Weather Adjusted %	Cost Avoidance Weather Adjusted \$
Eastside	1,732,287	1,780,249	1,434,624	-297,663	-345,625	-17%	-19%	\$ (17,401)
Lebanon Junction	478,095	503,618	407,253	-70,842	-96,365	-15%	-19%	\$ (5,141)
North Bullitt*	2,523,999	2,697,222	2,200,200	-323,799	-497,022	-13%	-18%	\$ (65,004)
MW Middle	1,429,404	1,534,949	1,279,600	-149,804	-255,349	-10%	-17%	\$ (6,334)
Bullitt Central*	1,785,876	1,905,662	1,616,480	-169,396	-289,182	-9%	-15%	\$ (16,403)
Maint. Garage	67,130	69,399	59,040	-8,090	-10,359	-12%	-15%	\$ (758)
Maryville	964,460	984,272	846,960	-117,500	-137,312	-12%	-14%	\$ (9,549)
MW Elementary	1,330,125	1,405,568	1,222,656	-107,469	-182,912	-8%	-13%	\$ (9,206)
Zoneton	1,519,271	1,574,625	1,370,800	-148,471	-203,825	-10%	-13%	\$ (14,611)
Bullitt Lick	1,178,205	1,212,726	1,075,600	-102,605	-137,126	-9%	-11%	\$ (9,472)
Freedom	1,174,803	1,235,904	1,100,400	-74,403	-135,504	-6%	-11%	\$ (3,351)
Bernheim	1,005,442	1,054,199	946,000	-59,442	-108,199	-6%	-10%	\$ (5,461)
Brooks	479,931	505,067	461,520	-18,411	-43,547	-4%	-9%	\$ (2,234)
Riverview/DT	394,037	412,286	379,040	-14,997	-33,246	-4%	-8%	\$ (1,662)
Bullitt East*	2,088,327	2,200,733	2,025,600	-62,727	-175,133	-3%	-8%	\$ (8,688)
Pleasant Grove	1,165,871	1,229,928	1,147,968	-17,903	-81,960	-2%	-7%	\$ (4,449)
Nichols	230,458	243,182	228,640	-1,818	-14,542	-1%	-6%	\$ (1,044)
Old Mill	602,361	641,810	612,120	9,759	-29,690	2%	-5%	\$ (1,623)
Cedar Grove	595,716	627,321	607,689	11,973	-19,632	2%	-3%	\$ (992)
Shepherdsville	1,035,457	1,071,326	1,041,600	6,143	-29,726	1%	-3%	\$ (785)
Transportation	201,781	211,569	210,000	8,219	-1,569	4%	-1%	\$ (88)
Overdale	419,556	448,912	449,520	29,964	608	7%	0%	\$ 8
Hebron*	1,380,856	1,457,454	1,463,040	82,184	5,586	6%	0%	\$ (2,353)
Roby	453,665	481,023	498,720	45,055	17,697	10%	4%	\$ 1,013
Central Office	441,351	448,381	482,160	40,809	33,779	9%	8%	\$ 2,308
Total	24,678,466	25,937,386	23,167,230	-1,511,236	-2,770,156	-6%	-11%	\$ (183,279)

*Recent improvements to high schools and associated construction activities contribute to reduction in electrical usage

**Rate change contributes to Hebron's cost avoidance.

Natural Gas Consumption 2007/2008 Compared to Baseline								
Building	Base Year Actual (ccf)	Base Year Weather Adjusted (ccf)	Evaluation Year Actual (ccf)	Use Avoidance Non-Adjusted (ccf)	Use Avoidance Weather Adjusted (ccf)	Change Non-Adjusted %	Change Weather Adjusted %	Cost Avoidance Weather Adjusted \$
Freedom	18,119	18,259	4,047	-14,072	-14,212	-78%	-78%	\$ (15,828)
Bernheim	19,556	19,686	8,652	-10,904	-11,034	-56%	-56%	\$ (11,951)
Bullitt East	30,893	31,820	15,737	-15,156	-16,083	-49%	-51%	\$ (18,313)
Maint. Garage	10,141	9,971	7,836	-2,305	-2,135	-23%	-21%	\$ (2,359)
Lebanon Junction	23,289	23,433	20,308	-2,981	-3,125	-13%	-13%	\$ (3,511)
Cedar Grove	21,673	21,799	19,439	-2,234	-2,360	-10%	-11%	\$ (2,624)
Old Mill	10,432	10,763	9,486	-946	-1,277	-9%	-12%	\$ (1,404)
Maryville	3,212	3,212	2,925	-287	-287	-9%	-9%	\$ (295)
Mt. Washington MS	12,098	12,572	11,378	-720	-1,194	-6%	-10%	\$ (1,349)
Mt. Washington ES	6,691	6,789	6,382	-309	-407	-5%	-6%	\$ (442)
Transportation	3,148	3,251	3,026	-122	-225	-4%	-7%	\$ (211)
Pleasant Grove	8,611	8,760	8,308	-303	-452	-4%	-5%	\$ (530)
Overdale	23,476	23,985	23,484	8	-501	0%	-2%	\$ (621)
Hebron	19,014	19,203	19,084	70	-119	0%	-1%	\$ (185)
Riverview/DT	8,976	9,036	9,432	456	396	5%	4%	\$ 375
Brooks	17,925	18,198	19,394	1,469	1,196	8%	7%	\$ 1,174
Bullitt Central*	43,735	44,382	50,089	6,354	5,707	15%	13%	\$ 5,489
Central Office	225	252	275	50	23	22%	9%	\$ 21
Roby	22,915	23,250	28,027	5,112	4,777	22%	21%	\$ 5,377
Shepherdsville	3,403	3,429	4,164	761	735	22%	21%	\$ 833
Bullitt Lick	9,339	9,423	12,304	2,965	2,881	32%	31%	\$ 3,218
North Bullitt*	12,467	12,814	27,864	15,397	15,050	123%	117%	\$ 16,523
Eastside								
Nichols								
Zoneton								
Total	329,339	334,287	311,641	-17,698	-22,646	-5%	-7%	\$ (26,613)

*Recent construction activities and added equipment contribute to increase at NBHS.

Propane Consumption 2007 Calendar Year Compared to Baseline								
Building	Base Year Actual (gal)	Base Year Weather Adjusted (gal)	Evaluation Year Actual (gal)	Use Avoidance Non-Adjusted (gal)	Use Avoidance Weather Adjusted (gal)	Change Non-Adjusted %	Change Weather Adjusted %	Cost Avoidance Weather Adjusted \$
Roby*	3,198	3,198	1,890	-1,308	-1,308	-41%	-41%	\$ (3,300)
Cedar Grove	1,137	1,137	880	-258	-258	-23%	-23%	\$ (653)
Nichols	20,354	20,656	22,327	1,972	1,670	10%	8%	\$ 4,063
Lebanon Junction	841	841	970	130	130	15%	15%	\$ 605
Total	25,531	25,832	26,067	536	234	2%	1%	\$ 715

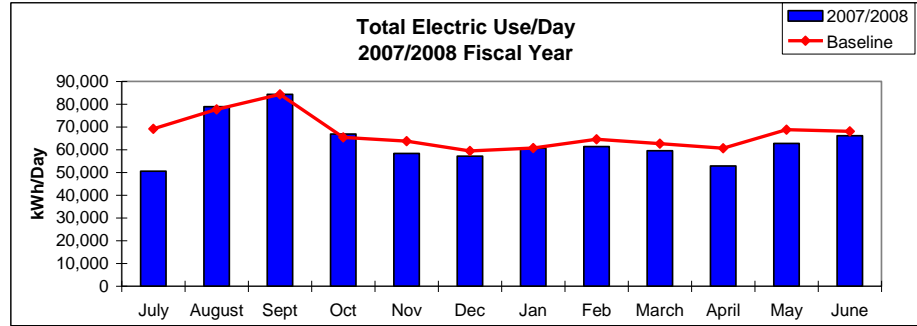
*Service removed when PE building was demo'd

Note: Cedar Grove, Roby, and Lebanon Junction use propane for cafeteria equipment and some water heating and is not affected by weather.

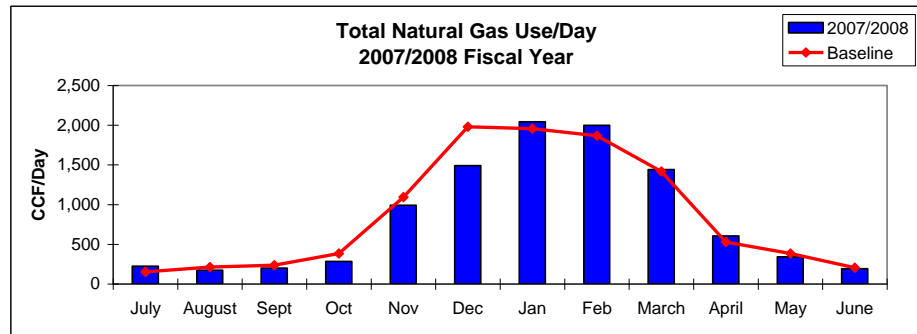
Appendix B

Actual Monthly Usage Data Compared to Weather

Total Electric Use/Day (kWh/Day)				Weather Data			
Month	2007/08	Baseline	% Change	2007/08		Baseline	
				CDD	HDD	CDD	HDD
July	50,542	69,133	-27%	397	0	429	0
August	78,883	77,732	1%	629	0	389	5
Sept	84,295	84,318	0%	350	3	218	17
Oct	66,918	65,407	2%	149	107	47	167
Nov	58,313	63,779	-9%	2	443	4	436
Dec	57,155	59,416	-4%	0	712	0	910
Jan	60,598	60,710	0%	2	935	0	853
Feb	61,361	64,574	-5%	0	776	0	703
March	59,507	62,682	-5%	0	558	9	541
April	52,822	60,651	-13%	30	237	39	205
May	62,738	68,827	-9%	68	64	164	68
June	66,122	68,046	-3%	413	0	352	0
Average/Total	63039	67106	-6%	2040	3835	1648	3902



Total Natural Gas (CCF/Day)				Weather Data			
Month	2007/08	Baseline	% Change	2007/08		Baseline	
				CDD	HDD	CDD	HDD
July	224	153	46%	397	0	429	0
August	173	212	-18%	629	0	389	5
Sept	200	236	-15%	350	3	218	17
Oct	284	384	-26%	149	107	47	167
Nov	992	1,094	-9%	2	443	4	436
Dec	1,491	1,980	-25%	0	712	0	910
Jan	2,042	1,955	4%	2	935	0	853
Feb	1,998	1,867	7%	0	776	0	703
March	1,439	1,418	2%	0	558	9	541
April	606	529	15%	30	237	39	205
May	341	384	-11%	68	64	164	68
June	192	204	-6%	413	0	352	0
Average	832	868	-4%	2040	3835	1648	3902



Total Propane Delivery (Gallons)				Weather Data			
Month	2007/08	Baseline	% Change	2007/08		Baseline	
				CDD	HDD	CDD	HDD
July	430	183	136%	397	0	429	0
August	245	531	-54%	629	0	389	5
Sept	1,219	1,018	20%	350	3	218	17
Oct	550	1,444	-62%	149	107	47	167
Nov	3,649	3,875	-6%	2	443	4	436
Dec	4,472	3,960	13%	0	712	0	910
Jan	4,893	4,196	17%	2	935	0	853
Feb	4,069	3,467	17%	0	776	0	703
March	3,900	3,330	17%	0	558	9	541
April	390	2,089	-81%	30	237	39	205
May	1,994	1,175	70%	68	64	164	68
June	255	263	-3%	394	0	352	0
Total	26067	25531	2%	2021	3835	1648	3902

