

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE JOINT APPLICATION OF LOUISVILLE)	
GAS AND ELECTRIC COMPANY AND)	
KENTUCKY UTILITIES COMPANY DEMAND-)	
SIDE MANAGEMENT FOR THE REVIEW AND)	CASE NO. 2013-00067
APPROVAL OF A TWO-YEAR DEMAND SIDE)	
PROGRAM RELATED TO SCHOOL ENERGY)	
MANAGEMENT AND ASSOCIATED COST)	
RECOVERY)	

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APPLICATION

Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”) (collectively “the Companies”) hereby petition the Kentucky Public Service Commission (“Commission”) to issue an Order approving their proposed Demand-Side Management (“DSM”) program related to school energy management and the proposed tariff filed herein that will permit recovery of the costs associated with the proposed two-year DSM program. This application is made pursuant to KRS 278.285 and in compliance with the Settlement Agreement reached in Case Nos. 2012-00221 and 2012-00222. The Companies respectfully request the Commission to issue a final order in this proceeding by May 31, 2013. In support of this Application, LG&E and KU respectfully state:

1. The full name and mailing address of LG&E is: Louisville Gas and Electric Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40232. The full name and mailing address of KU is: Kentucky Utilities Company c/o Louisville Gas and Electric Company, Post Office Box 32010, 220 West Main Street, Louisville, Kentucky 40232. Both LG&E and KU are Kentucky corporations authorized to do business in the Commonwealth of Kentucky.

2. A certified copy of LG&E's Articles of Incorporation is on file with the Commission in Case No. 2010-00204, *In the Matter of: The Joint Application of PPL Corporation, E.ON AG, E.ON U.S. LLC, Louisville Gas and Electric Company and Kentucky Utilities Company for Approval of an Acquisition of Ownership and Control of Utilities*, filed on May 28, 2010, and is incorporated by reference herein pursuant to 807 KAR 5:001, Section 14(2)(a). Likewise, a certified copy of KU's Articles of Incorporation is on file with the Commission in Case No. 2010-00204, *In the Matter of: The Joint Application of PPL Corporation, E.ON AG, E.ON U.S. LLC, Louisville Gas and Electric Company and Kentucky Utilities Company for Approval of an Acquisition of Ownership and Control of Utilities*, filed on May 28, 2010, and is incorporated by reference herein pursuant to 807 KAR 5:001, Section 14(2)(a).

3. LG&E is a public utility, as defined in KRS 278.010(3)(a), engaged in the electric and gas business. LG&E generates and purchases electricity, and distributes and sells electricity at retail in Jefferson County and portions of Bullitt, Hardin, Henry, Meade, Oldham, Shelby, Spencer, and Trimble Counties. LG&E also purchases, stores, and transports natural gas, and distributes and sells natural gas at retail in Jefferson County and portions of Barren, Bullitt,

Green, Hardin, Hart, Henry, Larue, Marion, Meade, Metcalfe, Nelson, Oldham, Shelby, Spencer, Trimble, and Washington Counties.

4. KU is a public utility, as defined in KRS 278.010(3)(a), engaged in the electric business. KU generates and purchases electricity and distributes and sells electricity at retail in the following counties in Central, Northern, Southeastern and Western Kentucky:

Adair	Edmonson	Jessamine	Ohio
Anderson	Estill	Knox	Oldham
Ballard	Fayette	Larue	Owen
Barren	Fleming	Laurel	Pendleton
Bath	Franklin	Lee	Pulaski
Bell	Fulton	Lincoln	Robertson
Bourbon	Gallatin	Livingston	Rockcastle
Boyle	Garrard	Lyon	Rowan
Bracken	Grant	Madison	Russell
Bullitt	Grayson	Marion	Scott
Caldwell	Green	Mason	Shelby
Campbell	Hardin	McCracken	Spencer
Carlisle	Harlan	McCreary	Taylor
Carroll	Harrison	McLean	Trimble
Casey	Hart	Mercer	Union
Christian	Henderson	Montgomery	Washington
Clark	Henry	Muhlenberg	Webster
Clay	Hickman	Nelson	Whitley
Crittenden	Hopkins	Nicholas	Woodford
Daviess			

5. Copies of all orders, pleadings and other communications related to this proceeding should be directed to:

Ed Staton
Vice President, State Regulation and Rates
LG&E and KU Services Company
220 West Main Street
Louisville, Kentucky 40202
(502) 627-4830

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Senior Corporate Attorney
LG&E and KU Services Company
220 West Main Street
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6. On June 1, 2012, the Companies filed their notice of intent to file applications for approval of increases in their electric and gas rates based on a historical test year ending March 31, 2012. On November 19, 2012, LG&E, KU and its case participants in Case No. 2012-00222¹ and Case No. 2012-00221² respectively filed a “Settlement Agreement, Stipulation and Recommendation” (“Settlement”) to address the rate-related issues raised in the two cases.

7. The Kentucky Public Service Commission (“Commission”) approved the Settlement in its Orders issued on December 20, 2012, including the terms pertaining to the Demand Side Management Program Proposal (as outlined in Article IV, Section 4.6). Specifically, the Settlement provides that LG&E and KU will “propose a two-year demand-side management program to help fund energy management programs for schools affected by KRS

¹Application of Louisville Gas and Electric Company for an Adjustment of its Electric and Gas Rates, A Certificate of Public Convenience and Necessity, Approval of Ownership of Gas Service Lines and Risers, and a Gas Line Surcharge. Case No. 2012-00222, Order December 20, 2012.

²Application of Kentucky Utilities Company for an Adjustment of its Electric Rates. Case No. 2012-00221, Order December 20, 2012.

160.325. The annual levels of funding to be proposed are \$500,000 for KU and \$225,000 for LG&E.” LG&E and KU agreed to file an application with the Commission no later than February 28, 2013, seeking approval by May 31, 2013.

8. Pursuant to the Commission’s November 31, 2011 Order in Case No. 2011-00134, the Companies are currently operating a Development and Administration Program. In this filing the Companies are also sharing its intent to utilize the approved Development and Administration Program to support the Fayette County Schools Facility Automation Project.

INTRODUCTION

Under KRS 278.285 LG&E and KU provide cost effective demand-side management programs to provide customers with resources that will support the reduction of energy consumption. This effort will include: (1) a program proposal that will facilitate the hiring and retention of qualified, trained energy specialists by public school districts; and (2) the utilization of previously approved program dollars through Case No. 2011-00134 to support a Schools Facility Automation Project.

The Fayette County Schools Facility Automation Project initiative, to be funded by means of the currently approved Development and Administration Program through Case No. 2011-00134,³ in the amount of \$160,000 allows LG&E and KU to monitor school utilization of energy monitoring equipment that enables energy managers to demonstrate the results of their comprehensive energy conservation programs.

³ In the Matter of the Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Review, Modification, and Continuation of New, Demand-Side Management and Energy-Efficiency Programs, Case No. 2011-00134, Order November 9, 2011.

Energy Management Program for Schools

9. Kentucky School Boards Association Energy Efficiency Program History – The Kentucky General Assembly, in an effort to reduce the rising energy costs straining school budgets, passed KRS 160.325. KRS 160.325 required mandatory participation for all school districts to enroll in the Kentucky Energy Efficiency Program for Schools (“KEEPS”) by January 1, 2010.⁴ KEEPS established the Energy Management Program for Schools and is designed to support facilitation of energy efficiency measures for public and independent schools. Each Kentucky school district under KRS 160.325 and Board policy is required to develop and implement Energy Management Plans. Pursuant to KRS 160.325 each school district’s board of education on or before December 1, 2011 were required to report annually through the Kentucky Pollution Prevention Center (“KPPC”) to the Department for Energy Development and Independence and the Legislative Research Commission on the status of the development of energy management plans by those boards of education and the anticipated savings to be obtained by those plans.⁵ The Kentucky School Boards Association (“KSBA”) initiated the School Energy Managers Project (“SEMP”) in March 2010. This effort coordinated the development of a state-wide energy management infrastructure that has focused on public and independent school districts.

⁴ KRS 160.325 is available online at: <http://www.lrc.ky.gov/krs/160-00/325.pdf>

⁵ The Kentucky School Board Association energy management plan is available online at: https://louisville.edu/kppc/files/keeps/Step-1/KSBA%20EnergyManagementPolicy.pdf/at_download/file

In addition, KSBA submitted and received an American Recovery and Reinvestment Act (“ARRA”) grant enabling SEMP to provide matching funds in FY2011 and FY2012. These funds allowed districts to employ energy managers to assemble information, access technical resources and formulate and implement energy management plans. As a result, both emission reductions and monetary savings have been realized. The initial ARRA funding for SEMP expired on April 30, 2012. A full report submitted to the Department for Energy Development and Independence on the SEMP project during ARRA funding period is attached as Exhibit 1 of this filing.

LG&E and KU have supported KSBA and the SEMP project through the Companies’ Commercial Incentive Program. Through the end of 2012 the program has served 102 Kindergarten through 12th grade schools by contributing a total of \$400,000 toward energy efficiency retrofits.

10. Program Audience - The program will be available to the eighty-three public school districts served by the Companies under KRS 160.325 to develop and implement Energy Management Plans.

11. Program Benefits - The Program will facilitate the hiring and retention of qualified, trained energy specialists by public school districts through FY2014 and FY2015 to lead the continued expansion of energy efficiency improvements within the districts.

12. Program Goals and Objectives - The primary goal of the Energy Management Program for Schools is to support school districts in utilizing energy more wisely. The overall objective of Energy Management Program for Schools is for each school district to reduce

consumption over time by an annual rate of 2.5 percent and achieve energy utilization indices (“EUI”) of fifty or lower.⁶

13. Participation Goals - The participation goal would be for all eighty-three districts served by either LG&E or KU to retain or employ an energy manager through at least FY2015 to maximize district response to KRS 160.325.

14. Program Cost / Benefit Test Results - The Companies performed a cost / benefit analysis according to the California Standard Practice Manual for the Energy Management Program. The calculations for the program were developed using DSMore, a PC based software package developed by Integral Analytics. The data entered in the software model associated with energy and demand savings were provided by KSBA. The Total Resource Cost Test for this program is a 2.2 (“passing” is a value of over 1.0). All of the California Standard Practice Manual tests, assumptions and results are attached as Exhibit 2 of this filing.

15. Implementation Plan - The KSBA will manage and operate the program. On an annual basis, upon KPSC order, KSBA will provide the Companies with a report for LG&E and a report for KU that provides district funding; initiatives implemented; EUI; consumption reduction; preceding and current year peak demand and annual energy use as well as associated energy and demand savings compared to the metrics within this application. Upon the Companies’ review of initial reports, the Companies will note whether interim results are consistent with the program goals and objectives defined within this application.

⁶The benchmark for Kentucky school districts EUI will be based on the 2011 energy utilization indices. The indices range is as follows: National Average-73; Kentucky-63; Energy Star-50; Best Performing Kentucky District-40; and a Net Zero Ready School-18.

16. Annual Program Budget - The annual levels of funding for the Energy Management Program for Schools are \$500,000 for KU and \$225,000 for LG&E for a total of \$1,450,000 for the two year period.

Fayette County Public Schools Facility Automation Project

Fayette County Public Schools (“FCPS”) applied and was awarded grant funding to support completion of the integrated live energy metering project from the Kentucky Department of Energy, see Exhibit 3 for the complete description of the project. The \$335,000 project award comprised live energy monitoring equipment, live data analysis software, and a district-wide public-facing energy and sustainability education portal.

Fayette County Schools state, “Live monitoring of district electrical and natural gas use has the potential to reduce energy consumption by a minimum of 10%-20% through monitoring and awareness alone. The data gathered through live metering will guide the design of future actions to further reduce energy consumption. Not only will tax dollars be redirected from utility companies to the classroom, there will be significant emission reductions through reduced energy demand. The student educational aspects of this component will teach students the importance of thoughtful energy use; this knowledge will spread out from the classroom into students’ homes, expanding the impact of the project.”⁷

To support the FCPS project, KU committed to supporting the purchase and installation of the required Digital Energy Monitoring (DEM) metering for live electric consumption

⁷ Fayette County Schools Grant Application, Tennessee Valley Authority Clean Air Act Settlement Grant, page 1 (Exhibit 3)

monitoring at \$160,000. This is a sub-metering energy efficiency monitoring and management project. KU has committed to DEM meters for approximately 45 FCPS schools in the service territory.

The support of this project provides LG&E and KU experience with sub-metering in support of schools and commercial energy conservation programs and the achievement of overall energy efficiency goals. In addition, the knowledge gained through this initiative will support the Companies' understanding of how providing customer insight to their energy consumption in a real-time environment will encourage them to take control of their consumption and initiate necessary behavioral and operational changes to realize energy savings, thus supporting future program development efforts by LG&E and KU. Pursuant to the Commission's November 31, 2011 Order in Case No. 2011-00134, the Companies are currently operating a Development and Administration Program and intend to utilize approved program funds to support this effort.

WHEREFORE, Louisville Gas and Electric Company and Kentucky Utilities Company respectfully request the Kentucky Public Service Commission, consistent with Article IV, Section 4.6, of the Settlement Agreement attached to and incorporated into the Commission's Orders in Case Nos. 2012-00221 and 2012-00222, to enter an order by May 31, 2013:

1. Approving the proposed energy management program for schools and the associated cost recovery and tariff sheets (Exhibit 4);
2. Granting all other relief to which Louisville Gas and Electric Company and Kentucky Utilities Company may be entitled.

Dated: February 28, 2013

Respectfully submitted,



Allyson K. Sturgeon
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220 West Main Street
Louisville, Kentucky 40202
Telephone: (502) 627-2088



Kentucky

SEP ARRA Final Project Progress Report

I. Project Name:

Partner/Agency: Kentucky School Boards Association

Name of Project Director: Ron Willhite

Title: SEMP Project Director

Email: ron.willhite@ksba.org

Phone: (502)727-6661

Project Period of Performance: March 1, 2010 through April 30, 2012

II. Project Overview

A. Project Summary:

KRS 160.325 required school districts to enroll in the Kentucky Energy Efficiency Program for Schools (“KEEPS”) by January 1, 2010. Pursuant to KRS 160.325 boards of education on or before December 1, 2011 are required to report annually through the Kentucky Pollution Prevention Center (“KPPC”) to the Department for Energy Development and Independence and the Legislative Research Commission on the status of the development of energy management plans by those boards of education and the anticipated savings to be obtained by those plans.

The Kentucky School Boards Association (“KSBA”) through its School Energy Managers Project (“SEMP”) that was initiated in March 2010 has coordinated the development of a state-wide energy management infrastructure that has focused public school districts on fostering intelligent energy choices in new and existing buildings through implementation of energy efficiency projects. SEMP provided matching funds for districts to employ energy managers to assemble information, access technical resources and formulate and implement energy management plans. As a result, both significant emission reductions have occurred and monetary savings have been unleashed to enhance the educational opportunities for the Commonwealth’s 645,000 public school students. Funding for SEMP expired on April 30, 2012.

As SEMP was being introduced, school district’s predominate concern was how do they create a new position when teachers and aides are being released along with other cost cutting. Nonetheless, 130 districts entered into SEMP on the belief that they could achieve similar savings to those of a few districts who piloted energy management programs beginning in 2006.

An initial step in the process was the audit of utility bills. Within five months, this initial step identified some \$270,000 in refunds and over \$1M ongoing annual avoided costs for school districts across the state.

All 174 school districts adopted an Energy Management Policy that called for the creation of a district committee to oversee the development and implementation of an energy management plan. Energy managers identified major opportunities within existing buildings by recalibrating building automation systems, including implementing setbacks for evenings and weekends. This step alone resulted in significant dollar savings which stayed in the school district “general funds.” Other opportunities identified called for replacing inefficient lighting and focusing on computer management.

It was seen early in the project that a culture change would be critical within the school district, if energy management efforts were going to be successful and sustained. Districts and schools that began steps for cultural change saw as much as a 20% impact from behavioral changes on the cost of utilities.

SEMP has set a new standard for a business process in a culture that is student-focused. SEMP has established relationships; tracked utilities; communicated with stakeholders including boards of education, superintendents, faculty, administrators, support staff; and students. All together, significant reductions in operational costs in Kentucky’s school facilities have been captured and, with continued focus on energy management, schools are positioned to capture significant additional savings in years to come.

SEMP has promoted and utilized energy efficiency as a way to achieve sustainability goals to set an example of environmental stewardship for future generations. As such, SEMP has made a profound impact on Kentucky’s schools by improving the learning environment and redirecting public monies to support classroom instruction.

III. Project Timeline Overview

Table: Project Timeline and Milestones			
Project Milestone	# Planned	# Completed	Date/Date Range
Draft & Execute MOA with Department for Energy Development and Independence (DEDI) for operation of the program	1	1	03/01/10
Phase I - Hire Program Director	1	1	03/01/10
Phase I - Finalize program milestones , targets and metrics	1	1	03/01/10
Phase I - Hire program coordinators and			03/28/10 & 7/1/2011

administrative staff	6	6	Auditor hired 2/14/11
Phase I - Define Job Description for Energy Manager	1	1	04/30/10
Phase I - EEC and KSBA develop solicitation for grant awards to school districts	1	1	04/30/10
Phase I - EEC and KSBA select and award grants to school districts	1	41	05/01/10 – 10/31/10
Phase I - Formulate Awards Program (ENERGY STAR School Rating)	N/A	N/A	68 ENERGY STAR – on 4/2010 160 ENERGY STAR – on 5/2012
Phase I - District Agreements	N/A	41	04/30/10
Phase I - Develop Training Program	N/A	N/A	07/01/10 – 04/30/12
Phase I - Formulate energy manager performance and reporting requirements	N/A	N/A	06/30/10
Phase II - Employ Energy Managers	49	35	07/01/10
Phase II - Establish District Teams	130	121	07/01/10 - 06/30/11
Phase II - Implement Communication Plan	130	35	07/01/10 - 09/30/11
Phase II - Conduct Energy Assessments	N/A	N/A	07/01/10 - 06/30/11
Phase II - Review Energy Provider Contracts	N/A	N/A	07/01/10 - 12/01/11
Phase II - Collect other pertinent information	N/A	N/A	Ongoing
Phase III - Establish baseline	N/A	N/A	04/30/10 - 09/30/11
Phase III - Assess ENERGY STAR certification	N/A	160	Ongoing
Phase III - Review operating procedures	N/A	N/A	Ongoing
Phase III - Evaluate savings alternatives	N/A	N/A	Ongoing
Phase III - Draft Energy Management Plans	130	98	04/01/11 – 6/30/11
Phase IV - Finalize and implement Energy Management Plans	130	98	07/01/11 - 09/30/11
Phase IV – Support District Maintenance Staff	N/A	N/A	Ongoing

Phase V – Monitor & Evaluate	N/A	N/A	Ongoing
Phase V – Revise & Update EMP	N/A	N/A	Ongoing
Phase V –Annual Report to DEDI	1	1	07/15/11
Final Funding Report	1	1	05/30/12

Table: TRAINING Timeline			
Project Milestone	# Planned	# Completed	Date/Date Range
SEMP Orientation and Training	1	1	07/07-07/10
SEMP Fall Regional Workshops	4	4	9/27/10 – 10/1/10
SEMP Winter Training/ KSBA Annual Conf	1	1	02/3-2/,5/11
SEMP Spring Roundtables(4	4	04/27/11 – 05/05/11
Certified Energy Manager (CEM) Training	2	2- (35 EMs attending)	07/25-7/29/11 and 08/1-08/5/11
Webinar Quarterly Reporting	2	2	8/14/2011
KSPMA Annual Meeting (Fall Regional)	1	1	10/26-10/28/2011
Winter Regional Workshop	4	4	1/10,1/17,1/19 &1/24/2012
SEMP Training & Recognition	1	1	04/16 &4/17/12

IV. Project Implementation

A. Implementing Partners:

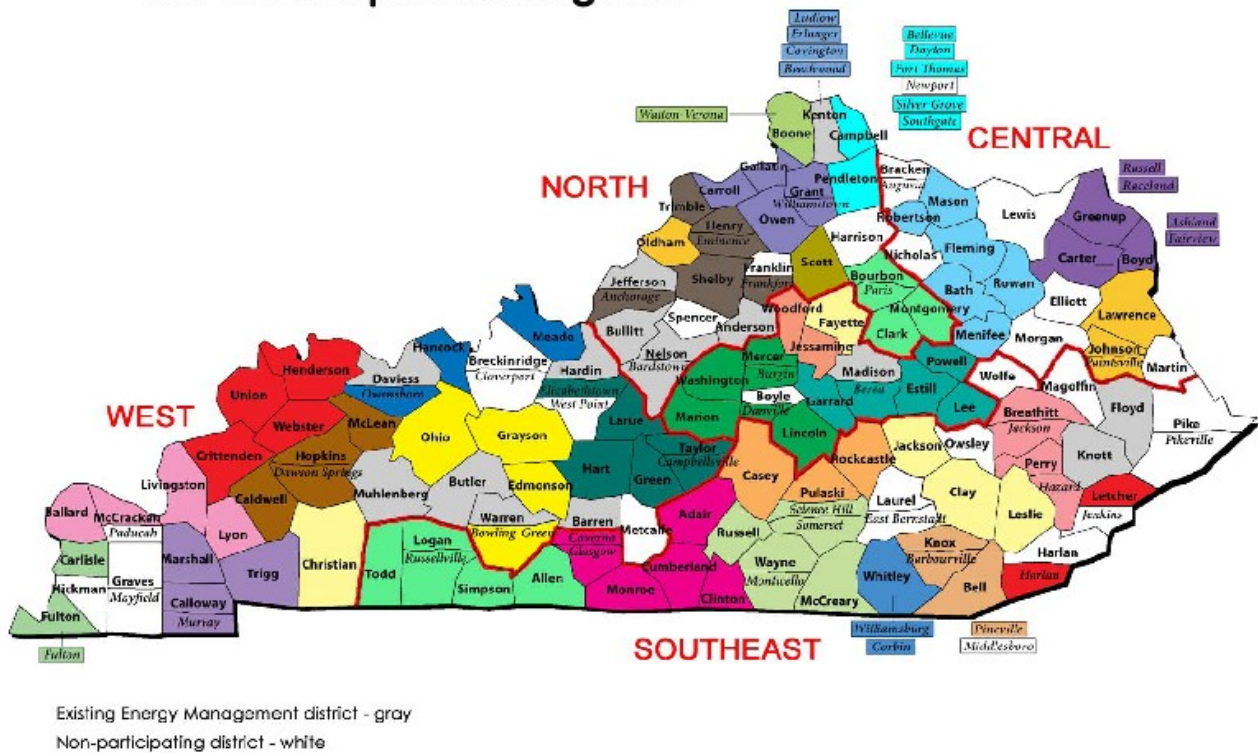
Upon consummation of the March 1, 2010 Memorandum of Agreement with the Energy and Environment Cabinet KSBA initiated formulation and administration of the School Energy Managers Project (“SEMP”). SEMP funding was offered to all 174 public school systems in the Commonwealth of Kentucky and by July 1, 2010 twenty-nine (29) partnerships comprised of neighboring public school districts had been formed leading to employment of thirty-five (35) energy managers. An additional fourteen (14) districts had existing energy managers, five of which are full-time.

Each partnership consisted of a “Lead” district who employed the energy manager that was shared with from one to six neighboring districts. The fourteen existing energy managers participated along with the new energy managers in training and other activities. Each Project Coordinator was responsible for coaching, monitoring and supporting nine positions. The Lead Districts were as follows:

1. Fleming County Public Schools
2. Jessamine County Public Schools
3. Ashland Independent Schools
4. Johnson County Public Schools
5. Estill County Public Schools
6. Fayette County Public Schools
7. Mercer County Public Schools
8. Boone County Public Schools
9. Campbell County Public Schools
10. Covington Independent Schools
11. Grant County Public Schools
12. Oldham County Public Schools
13. Scott County Public Schools
14. Shelby County Public Schools
15. Montgomery County Public Schools
16. Green River Regional Education Cooperative
17. Henderson County Public Schools

18. Hopkins County Public Schools
19. Marshall County Public Schools
20. McCracken County Public Schools
21. Christian County Public Schools
22. Carlisle County Public Schools
23. Letcher County Public Schools
24. Whitley County Public Schools
25. Knox County Public Schools
26. Breathitt County Public Schools
27. Pulaski County Public Schools
28. Somerset Independent Schools
29. Clay County Public Schools

School Energy Managers Project Partnerships and Regions



During this project the “Energy in Education Collaborative” was formed by the Department for Energy Development and Independence (“DEDI”). It included along with

SEMP, the Kentucky Energy Efficiency Program for Schools (“KEEPS”), the Kentucky Chapter of the National Energy Education Development Project (“NEED”) and the Kentucky Green and Healthy Schools Program (“KGHS”). The resources from NEED and KGHS with the assistance of the school energy managers were a significant factor in the engagement of teachers and students in promoting energy efficiency awareness through use of their educational resources.

In total, the SEMP resulted in the employment of forty-eight individuals; seven (7) management staff at KSBA and thirty-five (35) energy managers, two energy curriculum coordinators and four (4) clerks employed by districts. As a result of SEMP and existing efforts, 144 of the Commonwealth’s 174 school districts received the services of an energy manager. SEMP funded seventy-five percent of the new energy manager’s compensation in FY2011 and fifty percent in FY2012. SEMP also provided equivalent optional funding to the districts with existing energy managers for such items as: curriculum coordinators, professional development, educational kits, energy monitoring, energy efficient equipment, tracking software and clerks to assist the energy managers. These same items were available through supplemental funding made possible from remaining unrequested funds from the initial RFP for energy manager funding.

The SEMP Management Team consisted of a Director, four Project (Regional) Coordinators, Grant Auditor and an Administrative Manager. This team met weekly to review and evaluate progress of the project. Pursuant to its MOA, SEMP management staff coordinated and conducted several professional development opportunities using resources provided by the Kentucky School Plant Management Association (“KSPMA”), KEEPS, NEED and the KGHS program staffs, along with various industry experts. In July 2010, a three-day orientation was conducted for the energy managers. Regional one-day training sessions were subsequently conducted.

Introducing a business process in a culture that is totally student-focused and that will touch everyone in the school, presented challenges that required careful navigation. Those challenges ranged from adding an energy manager in a district that had cut teachers, to staff who felt their job would be replaced with the energy manager to maintenance staff who didn’t see the need to change a process for shutdown of facilities. With almost all of the energy managers coming from non-educational backgrounds SEMP Management staff facilitated relationship building between the energy managers and school district personnel, as well as utility service providers.

SEMP staff provided assistance to the districts in monitoring and evaluating the energy managers, pursuant to their individual board policy and procedures. In order to track performance for grant purposes, a Job Description was developed prior to advertisement of the jobs to codify the responsibilities and specific skills required of the position and provide a framework for evaluating employee performance primarily focused on the implementation of the ENERGY STAR Seven-Step Process (“Process”).

B. Eligibility Requirements



Kentucky

SEMP was offered to all 174 Kentucky public school districts. One hundred – thirty districts requested to become part of SEMP, which resulted in the SEMP management staff assisting in the formation of twenty-nine partnerships. Each of the partnerships executed a Memorandum of Agreement with KSBA setting forth the terms and conditions for access to the ARRA funds. The districts were required to adopt an energy policy; establish an energy team and goals for achieving savings; conduct facility assessments; develop an energy management plan; and utilize energy efficiency training provided by KEEPS and SEMP. Attachment 1 is a sample of the MOA

V. Goals and Accomplishments of the Overall Project

The advent of the SEMP could not have come at a better time as districts were dealing with severe budget issues during a time of financial crisis being experienced in the Commonwealth and beyond. The number, quality and ability of the employed energy managers far exceeded expectations. Under the direction of the energy managers Boards of Education with the assistance of KSBA's Policy Service Unit have adopted an energy policy; formed district energy oversight committees; and codified and implemented energy management plans. The energy managers, using tools provided by SEMP management staff, who were experienced in utility tariffs, completed the auditing of utility bills and working with their suppliers corrected numerous tariff misapplications. These early stage savings were essential to program acceptance by superintendents and boards of education.

Many districts subsequently implemented HVAC and computer setback procedures, and are beginning to make investments in energy efficient technologies to facilitate future savings.

Recognizing that students are the future home and community energy managers, the energy managers, with the support of NEED and KGHS, were actively involved with teachers in curriculum modifications that are being implemented to foster energy awareness as envisioned by the Governor's comprehensive energy plan for Kentucky, "Intelligent Energy Choices for Kentucky's Future".

A. Describe Activities Undertaken with Grant Funds

- *Create a statewide network of energy professionals to establish energy performance as a core value in school districts.*
 - From April 2010 through June 2010 the SEMP management team worked with all districts throughout Kentucky to make determinations of whether or not to participate in SEMP.
 - A total of 29 partnerships were formed throughout Kentucky to efficiently and effectively share the services and costs of a full-time energy manager.
 - The SEMP team codified an energy manager job description and performance evaluation template.
 - Job opportunities were posted using the CareerBuilder national website, college contacts, local district procedures and the Kentucky Job Bank. Almost 900 applications were received and evaluated for the 35 positions.
 - The SEMP management team screened applications and provided the local partnership team with up to ten applications for further review and identification of interview candidates.
 - SEMP provided an interview tool and served as the interview facilitator for the partnerships.
 - Candidate selection focused equally on interpersonal and technical skills.

- *Support, coach, monitor and evaluate the development and performance of the energy managers*
 - While energy managers were employees of a school district, support was given by SEMP Project Coordinators to ensure a similar focus on success in energy management.
 - SEMP Coordinators met routinely with their assigned energy managers and assisted them with navigation of district procedures and personnel.
 - Performance goals were established and each energy manager was evaluated on their attainment of these goals.

- *Coordinate timely training and introduction of best energy practices for the energy managers*

- At the onset of the program a three-day orientation and training session was conducted.
 - Quarterly regional training sessions were conducted with the assistance of KEEPS, and utility and vendor representatives.
 - Energy managers participated in training as part of the KSBA 2011 Annual Conference, the 2011 and 2012 KSPMA Annual Conferences, and the 2011 and 2012 High Performance School Conferences.
 - Thirty-five energy managers participated in an intense week long certified energy manager training facilitated by the Southern Ohio Chapter of the Association of Energy Engineers.
 - To cultivate culture change for districts KSBA, began at the top level to educate School Board members during conferences, publications and daily E-News articles.
- *Develop and implement procedures for timely reporting of project results*
 - Energy managers submitted timesheets and daily work activities monthly to SEMP.
 - Energy managers reported monthly, and later quarterly, on the status of implementation of the ENERGY STAR 7-Step process, along with change in energy consumption and avoided costs using procedures developed by the SEMP team.
 - Results was posted on KSBA's website and discussed at SEMP staff meetings

B. Significant Results and/or Key Outcomes

- All 174 districts adopted energy management policy
- Over 400 building energy assessments conducted by energy managers, utilities and KEEPS engineers
- 132 districts become ENERGY STAR partners
- 121 established district energy committees
- Energy savings of 72,000,000 Kwh and 345,000 Mcf unadjusted for weather
- Greenhouse Gas Reduction by 1,574 Metric Tons unadjusted for weather

- Increase of ENERGY STAR Schools from *68 in April, 2010 to 160 in May, 2012*
- Cumulative Avoided Costs of *\$15,900,000 unadjusted for weather*
- 17 energy managers received the CEM or EMIT certification by the Association of Energy Engineers

C. Best Practices

“Best Practices” identified during this project include:

- District energy committee to provide oversight in the development and implementation of an energy management plan
- Monthly tracking and review of utility bills
- Building assessments to identify energy savings opportunities
- Calculating of Energy Utilization Index (EUI) for each of the 144 participating districts. (See Attachment 4 for FY 2011 results)
- Computer and technology shutdown procedures
- Routine verification of building automation system performance
- HVAC temperature setpoint procedures
- Building inspections to confirm operating procedure compliance
- Message board for energy managers
- Regular training and roundtable sessions

D. Conclusions and/or Major Findings

SEMP has established a statewide energy management infrastructure of experienced staff throughout the Commonwealth. All 174 public school boards have adopted an Energy Management Policy which directs the superintendent to appoint a district energy team to develop and implement an energy management plan (“EMP”), to track and monitor the progress in managing and reducing energy costs, and report annually to the Department for Energy Development and Independence and Kentucky Pollution Prevention Center results from plan implementation.

Recognition was given by Governor Steven Beshear for the SEMP at its recognition dinner on April 16, 2012. A citation was given to each energy manager, as well as the SEMP Management Team for:

- Significant contributions to reducing operational costs in Kentucky's school facilities; and
- Promoting and utilizing energy efficiency as a way to achieve sustainability goals; and
- Setting an example of environmental stewardship for generations to come; and
- Making a profound impact on Kentucky's schools and improved the learning environment;

SEMP's impact was best described by Energy and Environment Cabinet Secretary Dr. Len Peters in SEMP's January 2012 *Let's Save Energy* Newsletter:

"Schools are a great place to teach Kentucky's children about energy and resource conservation. Energy is one of the few expenses a school can reduce without sacrificing educational quality. In support of the state's energy plan to increase energy efficiency in Kentucky's public schools, Gov. Steve Beshear authorized \$5.1 million in Recovery Act funds from the U.S. Department of Energy to create the School Energy Managers Project (SEMP). The program could not have been implemented at a better time, when schools are being challenged with increasing cost-cutting measures and reductions in faculty positions.

As part of our Energy in Education collaborative, our partnership with the Kentucky School Boards Association (KSBA) has provided resources for Kentucky school districts, along with their energy managers, to become more energy efficient through high performance, efficient, sustainable construction, operation and maintenance practices. Energy managers are front-line leaders responsible for coordinating energy efficiency and sustainability programs. They are able to reach students, teachers, administrators and parents with hands-on experiential learning while saving money. This program has resulted in dollars being put back into classrooms and instruction.

Efforts such as SEMP have created jobs, saved energy and protected our environment. Few states have made the energy investment in education that our Commonwealth has made and we can be proud of our initiatives as they help shape our future. This project is a model that other states are looking at as a guide because SEMP is making a difference. We are seeing what can happen when Kentuckians join together and work toward a collective goal. We look forward to continued work with our partners to

address the energy challenges that lie ahead of us, and we appreciate the support of KSBA.”

Cultural Redirection

SEMP kept a singular focus of supporting all efforts in the school districts. Attention was given to the importance of creating a school culture that embraced energy management as a core value, and efforts were constantly focused on communicating successes with school board members through on-going training and publications by KSBA. The resources provided by the Energy in Education Collaborative clearly facilitated a redirection of attitudes toward prudent utilization of energy resources and environmental stewardship by public school districts.

Partnerships

The SEMP business model of creating partnerships among school districts to fully utilize the expertise of a trained energy specialist confirmed for districts the value of working together for the benefit of the students of the Commonwealth. The development of an efficient business process that could be sustained in Kentucky School Districts was recognized by Dr. Terry Holliday, Commissioner of the Kentucky Department of Education:

“I am excited about the work being done with energy management in most school districts in partnership with the Kentucky School Boards Association. This model is exactly the type of approach that educators can use in other operational processes.”

Boots on the Ground

While the statewide support provided by the Energy in Education Collaborative was vital to this effort, without energy managers located on-site the program achievements would have fallen far short of energy efficiency becoming a core value in Kentucky’s public schools. SEMP was described by the Kentucky Department for Energy Development and Independence as being *“the boots on the ground.”*

Training

For any program to be successful a strong training component is required. SEMP management staff utilized its extensive experience in management, school administration, facility management and human resource specialists to identify and coordinate training opportunities for the energy managers. SEMP, aided by KEEPS staff, provided energy managers professional development opportunities throughout the program. A major contributor was quarterly regional sessions where other energy

professionals such as architects, engineers and vendors provided timely instruction on relevant energy savings processes and technologies. Roundtable discussions, where energy managers shared successes and problems, were most beneficial. Finally, the Certified Energy Manager training made possible by SEMP and the Southern Ohio Chapter of the Association of Energy Engineers was the most comprehensive and beneficial of all the training made available to the energy managers.

Technology

Utilization of technology was, and is, a key to enhancement of energy management initiatives in the Commonwealth. In the area of communications, SEMP used webinars, message boards and e-news for training and outreach. More importantly, energy managers became familiar with the vast amounts of technology that exists in buildings not only that consume energy, but also to control the use of energy.

E. Other Achievements and Accomplishments

The SEMP spawned a number of other energy related partnership programs by KSBA.

The KSBA/KISTA Energy Improvement Financing Program was formed to provide a funding alternative to implement energy improvement projects typically less than \$500,000. Benefits of the program were tax-exempt interest rates, split of issuance costs among multiple participating districts, repayment term and fund type flexibility. Qualifying projects were HVAC upgrades and replacements, lighting, building controls, commissioning, kitchen equipment, and building envelop improvements.

In partnership with Fellon-McCord KSBA the Kentucky Gas Aggregation Program ("KGAP") was established to provide school districts access to the benefits of pool purchasing of natural gas.

KSBA partnered with Kentucky's Council for Better Education to represent districts in utility rate proceedings before the Kentucky Public Service Commission.

KSBA partnered with the Kentucky School Plant Management Association to enhance facility and energy training for facility directors, custodians and energy managers.

F. Marketing and Outreach

Communication and outreach were focused on educating school board members, superintendents, school administrators, teachers, support staff and students. The SEMP Newsletter, "Let's Save Energy," was emailed monthly to school board members, school administrators and staff, legislators and governmental officials. In addition, daily news stories that were energy related were added to the E-News distributed electronically by KSBA's Member Support Unit. Students were included in as many

events as possible to ensure that the energy management process always kept focus on serving students in the best way possible. Each time a school earned the prestigious ENERGY STAR rating a ceremony was coordinated with the assistance of SEMP staff at a board meeting or event at the ENERGY STAR rated school. Numerous articles were published in KSBA's Advocate, a monthly magazine provided to all school board members, and success stories were reported in local newspapers throughout the Commonwealth.

VI. Monitoring

A. Monitoring Efforts

Project Coordinators met routinely with energy managers and school personnel to ensure work was being accomplished consistent with the established performance goals. KSBA's Finance Department ensured accuracy of all disbursements to each districts. SEMP was audited each year by the Mountjoy Chilton Medley CPA firm.

Energy managers submitted timesheets and daily work activities monthly to SEMP. Energy managers reported monthly and later quarterly on the status of implementation of the ENERGY STAR 7-Step process along with change in energy consumption and avoided costs using procedures developed by the SEMP team. Results was posted on KSBA's website and discussed at SEMP staff meetings. Monitoring visits were made by Project Coordinators to verify services and materials acquired using optional and supplemental funds

B. Findings

There were no findings during monitoring visits.

VII. Post Performance Period

A. Sustainability

The premise of the SEMP business model was for districts to work their way into energy manager cost responsibility, as savings were obtained. As the SEMP comes to an end districts have been incurring 50 percent of the energy manager costs. As SEMP was being introduced, school district's predominate concern was how do they create a new position when teachers and aides are being released along with other cost cutting. These concerns are even more tantamount today and will limit the retention of energy managers without continued matching funds, even with the significant savings that have been achieved in all districts. Districts are currently reviewing budgets for the upcoming school year. Indications are that less than half of the energy managers will be sustained.

It is clear that going forward school districts are going to have to do more with less. This pressure will require continual improvement through implementation of best practices and process enhancements similar to what has begun with SEMP.

Key to the success of SEMP was the willingness of neighboring districts to partner and share in the services and costs of a full time energy specialist. In the future, an energy manager, with the use of technology, should be able to expand the scope of their services to additional districts.

There is an obvious need to bridge technology with operational training and practices. Schools abound with HVAC control systems, but few are fully operated to their potential. This need can best be addresses by ongoing formalized control system training and succession planning for facility and energy managers. Districts also should adopt third-party facility commissioning, as a standard practice for new and existing buildings.

Another opportunity is a single platform to record data and from which to produce reports. Energy managers are using a variety of products for such purposes ranging from self developed spread sheets, to those acquired from KEEPS or vendors. Simply said, there exists a hodgepodge of software products being used that fail to address overall efficiency in data collection and reporting. To effectuate the type of process improvements envisioned by Commissioner Holliday, a statewide electronic auto bill pay and reporting service should be pursued to eliminate the hours of costly inefficient manual manipulation of data.

VI. Other

A. Challenges

Challenges in this project began on first day because of the speed that was required to pull partnerships together to hire an energy manager. This challenge was managed by quickly pulling together key SEMP management team, building on relationships that were already established in the school environment, as well as long-hours of meetings and travel.

Communication regarding approval of Optional and Supplemental Grants was confusing as approval was given to these Grants with an Award Letter and executed MOA at the onset; however, later each individual request had to receive approval again complicating the process.

Additional challenges were experienced with other Collaborative members that did not see that SEMP had a role in working with school districts after energy managers were hired. While this did create confusion in school districts and with energy managers, SEMP continued to focus on the goal of saving money and energy for school districts across Kentucky.

B. Lessons Learned

Lessons learned through implementing SEMP that would be done the same are:

- Locate the grant within an existing K-12 association that already provides services to all school districts.
- Assemble a diverse management team with both education and energy experience
- Hire energy managers who have a combination of technical AND people skills, who are able to quickly build relationships.
- Implement similar recruiting practices with CareerBuilder, college recruiting and use of social media.
- Involve all partnering districts in the hiring process.
- Create a cohort group to provide partnership oversight that influences school culture and creates a team approach to energy management.

Lessons learned through implementing SEMP that would be done differently include:

- Provide technical services from under the same umbrella as the energy managers are hired.
- Create an Advisory Council comprised of architects, engineers, school administrators, utility representatives and school board members.
- Provide CEM training earlier in the process, instead of other elementary training provided by the Collaborative.
- Utilize funds to develop electronic bill pay and reporting system.

SEMP GOALS

- Create a statewide network of energy professionals to establish energy performance as a core value in school districts
- Support, coach, monitor and evaluate the development and performance of the energy managers
- Coordinate timely training and introduction of best energy management practices for the energy managers
- Develop and implement procedures for timely reporting of project results

“Kentucky public schools spend more than \$130 million on non-transportation energy expenses annually. As district budgets dwindle due to state and federal cuts, schools are forced to look for new and ongoing savings. To address rising energy costs, KSBA collaborated with the Kentucky Department for Energy Development and Independence to create the Kentucky School Energy Managers Project. SEMP was funded through U.S. American Recovery and Reinvestment Act and a gradually increasing match from school districts. The voluntary program established for the first time a statewide system of school energy management.”

Bill Scott, Executive Director
Kentucky School Boards Association

SEMP Timeline

- *2008 - Kentucky General Assembly passes House Bill 2 (KRS 160.325)*
 - *Public school districts to respond to rising energy costs by focusing on management of their various uses of energy.*
 - *Local boards of education required to enroll in the Kentucky Energy Efficiency Program for Schools.*
 - *KEEPS producing annual reports on the development of energy management plans and anticipated savings to be obtained by those plans.*
- *Mid-2009 – Gov. Beshear announces \$5.05 million of American Recovery and Reinvestment Act funds available to school districts to employ energy managers.*
- *March 1, 2010 - KSBA enters Memorandum of Understanding with the state Energy and Environment Cabinet to initiate the School Energy Managers Project (“SEMP”).*

- *July 1, 2010 - Management team and 29 partnerships involving 130 districts formed, leading to employment of 35 Energy Managers. Along with 14 existing energy managers, 144 districts benefit from services of a fulltime energy specialist.*

IX. Sub-recipients

A listing of all sub-recipients of the School Energy Managers Project, along with the grant dollars spent for each Lead District is forthcoming as Attachment 5. The Period of Performance was from July 1, 2010 through April 30, 2012. Accomplishments/Successes for each Lead and Partnering District are listed in the District Status Reports in Attachment 3.

X. Attachments

(All attachments are forthcoming.)

Attachment 1: Sample KSBA – School District Memorandum of Agreement

Attachment 2: FY2011 – FY2012 Cumulative Avoided Cost by School District

Attachment 3 District Status Reports

Attachment 4 District Energy Utilization Indexes

Attachment 5 Sub-recipient listing with grant dollars spent

ATTACHMENT 1

Sample
KSBA – Lead District
Memorandum of Agreement

MEMORANDUM OF AGREEMENT

BETWEEN THE

KENTUCKY SCHOOL BOARDS ASSOCIATION (KSBA)

AND

<SCHOOL DISTRICT>

SCHOOL ENERGY MANAGERS PROJECT

THIS MEMORANDUM OF AGREEMENT (the "AGREEMENT") is made and entered into this <date> by and between the Kentucky School Boards Association, 260 Democrat Drive, Frankfort, Kentucky 40601 (hereinafter "KSBA") and <SCHOOL DISTRICT>, <address>, (hereinafter "District").

WITNESSETH:

WHEREAS, Commonwealth of Kentucky schools spend more than \$_____ million per year on energy costs; and

WHEREAS, KRS 160.325 requires school districts to respond to rising energy costs by focusing on the management of its various uses of energy; and

WHEREAS, KRS 160.325 requires boards of education to enroll in the Kentucky Energy Efficiency Program for Schools (hereinafter the "KEEPS") which is administered by the Kentucky Pollution Prevention Center (hereinafter the "KPPC") based at the University of Louisville J. B. School of Engineering; and

WHEREAS, KRS 160.325 requires KPPC, beginning on or before December 1, 2011, to report to the Kentucky Department of Energy Development and Independence and the Kentucky Legislative Research Commission on the status of the development of energy management plans by boards of education and the anticipated savings to be obtained from those plans; and

WHEREAS, KSBA is a nonprofit corporation, governed by a statewide board of directors, comprised of school board members from public school systems in the Commonwealth of Kentucky, and serves school boards and districts in such areas as governmental relations, board member and staff training, facility planning, insurance and risk management, legal, policy, publications, and community relations.; and

WHEREAS, The Commonwealth of Kentucky, Energy and Environment Cabinet (hereinafter the "Cabinet") has been awarded American Recovery and Reinvestment Act (hereinafter the "ARRA") funding for energy projects; and

WHEREAS, KSBA and the Cabinet entered into a Memorandum of Agreement (hereinafter the "MOA") on March 1, 2010, whereby KSBA agreed to coordinate and administer a \$5.05 million grant to provide funding and support for energy management programs at the district level; and

WHEREAS KSBA, pursuant to the MOA, can reimburse districts up to 75 % of the salary and benefits, not to exceed \$41,250, of a new Energy Manager or Energy Curriculum Coordinator position for the period July 1, 2010 through June 30, 2011 and up to 50% of the salary and benefits, not to exceed \$22,900, of an Energy Manager or Energy Curriculum Coordinator position for the period July 1, 2011 through April 30, 2012, or until the end of the MOA period, whichever occurs earlier; and

WHEREAS KSBA, pursuant to the terms of the MOA, can reimburse districts with existing Energy Managers as of June 30, 2010 funds to support other energy management activities: and

WHEREAS, District is a publically funded educational institution, grades 3 – 12, with a District Board of Education, pursuant to KRS 160.160, having the authority to enter into contracts on behalf of District; and

WHEREAS, the District has annual energy costs of \$_____ and recognizes the opportunity to conserve both financially and environmentally by implementing an energy management plan; and

WHEREAS, the District recognizes a successful energy management program requires commitment and a comprehensive plan;

WHEREAS, the expenditure of ARRA funds will be closely monitored and transparent to both federal and state scrutiny; and

WHEREAS, the procurement and reporting requirements imposed by the ARRA apply to all expenditures of ARRA funds, of every size and amount; and

WHEREAS, the District understands and acknowledges that the federal stimulus funding process is still evolving and that new requirements for ARRA compliance may still be forthcoming from the United States Government and the Commonwealth of Kentucky; and

WHEREAS, the District understands and acknowledges that programs supported with temporary federal funds made available through the ARRA may not be continued using state financed appropriations once the temporary ARRA funds are expended.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, and for other good and valuable consideration, the receipt, mutuality and sufficiency of which is hereby acknowledged by the parties to this AGREEMENT, KSBA and the District hereby COVENANT AND AGREE to partner together in the School Energy Managers Project and to participate in the program as follows:

1. OBLIGATIONS OF THE DISTRICT

1.1 The District shall undertake the following obligations:

1.1.1 Employ a new Energy Manager, Energy Curriculum Coordinator or otherwise use the funding provided hereunder to comply with the energy management grant awarded to District by KSBA after June 30, 2010 or within a twenty-two month period thereafter;

1.1.2 Develop an Energy Management Plan ("EMP") and identify anticipated savings as required by KRS 160.325;

- 1.1.3 Provide for its Energy Manager or Energy Curriculum Coordinator to attend KSBA orientation and management training, as required by KSBA;
- 1.1.4 Adopt an energy policy;
- 1.1.5 Establish an energy team;
- 1.1.6 Establish goals for achieving energy savings;
- 1.1.7 Assess energy performance;
- 1.1.8 Utilize Kentucky Energy Efficiency Program for Schools ("KEEPS") approved energy efficiency training;
- 1.1.9 Conduct energy assessments using techniques and calculation tools provided by the "KPPC" and/ or other providers such as utility companies;
- 1.1.10 Consider implementing Kentucky National Energy Education Development (NEED) program;
- 1.1.11 Comply with the applicable requirements of the MOA, including the MOA Appendix A. . The MOA and the MOA Appendix A, which are attached hereto, are hereby incorporated into this AGREEMENT;
- 1.1.12 Comply with all requirements that are later issued for ARRA compliance from the United States Government or from the Commonwealth of Kentucky;
- 1.1.13 District shall retain all records relating to the Project for at least three (3) years after the end of the term of this AGREEMENT;

2. OBLIGATIONS OF KSBA

2.1 KSBA shall undertake the following obligations:

- 2.1.1 Pay the District up to \$_____ over the period July 1, 2010 through June 30, 2011, prorated on a monthly basis, to be applied toward the salary and benefits of an Energy Manager or an Energy Curriculum Coordinator and pay the district

- up to _____ for the period July 1, 2011 through April 30, 2012, or until termination of the MOA, whichever occurs earlier, prorated on a monthly basis, to be applied toward the salary and benefits of an Energy Manager or an Energy Curriculum Coordinator, or pay the District for other KSBA-approved energy management activities as allowed by the terms of the KSBA grant and the MOA;
- 2.1.2 Payment will be made within 30 days of receipt of payroll and experience records from the District;
 - 2.1.3 Pay up to \$130 per quarter for the Energy Manager or Energy Curriculum Coordinator to attend KSBA training and status reporting meetings;
 - 2.1.4 Assist the District with the employment, training, coaching and the establishment, monitoring and evaluation of performance goals of an Energy Manager or Energy Curriculum Coordinator;
 - 2.1.5 Coordinate with KEEPS the planning and scheduling of technical and training services provided by KEEPS;
 - 2.1.6 Assist the District in complying with the requirements of KRS 160.325 and the MOA;
 - 2.1.7 Facilitate development of an Energy Manager Sharing Agreement with other districts, as needed;
 - 2.1.8 Provide quarterly status and training meetings for the Energy Manager or Energy Curriculum Coordinator;
 - 2.1.9 Assist the District with development of an Energy Policy and in setting energy goals; and
 - 2.1.10 Assist the District Energy Manager or Energy Curriculum Coordinator in marketing success to the school administration and the local community.

3. MUTUALITY OF OBLIGATIONS

- 3.1 The obligations imposed upon the parties to this AGREEMENT are for the benefit of the parties and we each hereby agree that timely fulfillment of each and every obligation in accordance with this AGREEMENT is material and necessary. In the event of a material breach by either party to this AGREEMENT, the other party may terminate this AGREEMENT upon notice without further obligation to the other party.
- 3.2 Except as otherwise provided in this AGREEMENT, the parties to this AGREEMENT shall be solely responsible for any costs incurred in fulfilling their obligations under this AGREEMENT, and no party shall have any claim against the other party for reimbursement of such costs.
- 3.3 The District agrees and understands that this AGREEMENT allows for a potential grant funding source which, subject to conditions of the grant and as set out herein, may apply towards certain costs of energy positions and the District further agrees and understands that the District shall be solely responsible for any and all legal, statutory, contractual, and financial obligations (over and above proper application of grant funding) which apply by and between the District and individuals hired by the District in energy related positions. Nothing herein shall be deemed to create an employment or third party beneficiary relationship between individuals hired by the district in energy related positions and KSBA, the Commonwealth of Kentucky, or any agency thereof.

4. TERM OF AGREEMENT

4.1 The term of this AGREEMENT is from May ____, 2010 through April 30, 2012, or until termination of the MOA, whichever occurs earlier.

5. CANCELLATION

5.1 Either party has the right to terminate this AGREEMENT without cause upon thirty (30) days prior written notice to the other party, or for cause at any time upon written notice.

6. NOTICE

6.1 Notice shall be mailed by registered or certified mail, or hand-delivered, to the Superintendent of the District at the address at the beginning of this AGREEMENT and to the KSBA Executive Director at the address at the beginning of this AGREEMENT.

IN WITNESS WHEREOF, KSBA and the District have executed this AGREEMENT as of the date first written above.

AGREED TO BY:

Kentucky School Boards Association

Bill Scott, Director

Date:_____

Board Chair

Date:_____

Attested by: _____
Board Secretary

Date:_____

ATTACHMENT 2

FY2011 – FY2012
Cumulative Avoided Cost
by
School District

Note: Expected FY1011 – FY2012 avoided costs were determined using actual results through March 31, 2012.

PROGRESS REPORT SUMMARY

Q3 FY2012

CENTRAL REGION LEAD DISTRICT AND PARTNERSHIPS	Anticipated Avoided Cost Savings FY2011 - FY2012		
	\$	KWH	MCF
FLEMING COUNTY	\$ 167,552	997,529	121
Bath County	\$ 82,684	96,797	5,954
Menifee County	\$ 15,713	1,249	1,453
Robertson County	\$ 21,204	84,028	-111
Rowan County	\$ 189,704	850,506	1,881
Mason County	\$ 48,589	-568,799	-1,247
JESSAMINE COUNTY	\$ 295,364	2,517,379	4,586
Woodford Co.	\$ 134,144	950,735	5,893
ASHLAND Ind.	\$ 159,715	615,859	1,396
Boyd County	\$ 127,079	576,344	946
Greenup County	\$ 57,750	182,602	-591
FAYETTE COUNTY	\$ 2,160,286	7,052,189	42,083
ESTILL COUNTY	\$ 126,641	68,967	-145
<i>Berea Ind.</i>	\$ 4,758	101,753	694
<i>Garrard County</i>	\$ 113,377	617,045	914
<i>Lee County</i>	\$ 42,155	101,355	-215
<i>Powell County</i>	\$ 108,455	586,705	-1,560
ASHLAND Ind.			
Carter County	\$ 117,178	645,073	3,497
Fairview Ind.	\$ 31,550	-38,083	3,949
Raceland-Worthington Ind.	\$ 47,119	127,320	2,656
Russell Ind.	\$ 169,369	1,014,293	9,727
MERCER COUNTY	\$ 348,308	3,069,136	6,933
Burgin Ind.	\$ 22,511	172,011	525
Danville Ind.	\$ 41,703	-177,569	1,547
Lincoln County	\$ 327,174	1,351,243	8,631
Marion County	\$ 112,592	1,176,580	823
Washington County	\$ 76,223	431,575	3,305
JOHNSON COUNTY	\$ 588,557	2,329,549	3,951
Lawrence County	\$ 40,591	729,348	1,157
Paintsville Ind.	\$ 49,262	19,362	1,827
REGION TOTALS	\$ 5,827,307	25,682,081	110,580

PROGRESS REPORT SUMMARY

Q3 FY2012

Exhibit 1
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NORTH REGION LEAD DISTRICT AND PARTNERSHIPS	Anticipated Avoided Cost Savings FY2011 - FY2012		
	\$	KWH	MCF
	SHELBY COUNTY	\$ 633,390	6,153,268
Anchorage Ind.	\$ 25,832	128,400	603
Eminence Ind.	\$ 27,109	164,412	4,600
Frankfort Ind.	\$ 122,132	1,152,570	854
Henry County	\$ 127,645	628,598	2,584
Trimble County	\$ 120,337	325,627	641
MONTGOMERY COUNTY	\$ 74,703	138,720	3,439
Bourbon County	\$ 30,465	64,157	2,005
Clark County	\$ 63,585	-21,206	4,476
Paris Ind.	\$ 21,750	85,856	1,222
COVINGTON Ind.	\$ 69,626	-720,488	7,232
Erlanger Ind.	\$ (5,284)	-575,398	2,162
Bellevue Ind.	\$ (19,513)	-410,698	757
Ludlow Ind.	\$ 1,482	-212,126	1,980
CAMPBELL COUNTY	\$ (148,600)	-839,630	3,987
Bellevue Ind.	\$ (19,725)	60,313	-46
Dayton Ind.	\$ (56,136)	-290,133	639
Fort Thomas Ind.	\$ (83,842)	550,422	2,573
Pendleton County	\$ 12,032	511,146	3,074
Silver Grove Ind.	\$ (328)	-81,937	-243
Southgate Ind.	\$ (14,843)	38,009	-216
SCOTT COUNTY	\$ 867,248	3,070,426	1,472
GRANT COUNTY	\$ 232,793	139,312	5,451
Carroll County	\$ 55,290	427,422	3,587
Gallatin County	\$ 113,576	283,755	3,036
Owen County	\$ 141,712	1,582,055	0
Williamstown Ind.	\$ 136,559	203,975	623
BOONE COUNTY	\$ 866,799	5,464,803	32,401
Walton-Verona Ind.	\$ 48,305	140,433	228
BARDSTOWN IND	\$ 13,717	-412,998	5,650
OLDHAM COUNTY	\$ 175,867	-329,460	17,567
REGION TOTALS	\$ 3,633,683	17,419,605	114,356

PROGRESS REPORT SUMMARY

Q3 FY2012

WEST REGION LEAD DISTRICT AND PARTNERSHIPS	Anticipated Avoided Cost Savings FY2011 - FY2012		
	\$	KWH	MCF
	MCCRACKEN COUNTY	\$ 149,731	709,530
Ballard County	\$ 40,774	146,163	1,056
Livingston County	\$ 22,159	-75,892	0
Lyon County	\$ 18,257	44,693	451
CARLISLE COUNTY	\$ 106,726	225,612	3,154
Fulton County	\$ 60,546	358,246	1,130
Fulton Ind.	\$ 287,872	13,621	2,837
LARUE COUNTY	\$ 106,925	902,476	-1,529
Elizabethtown Ind.	\$ 95,912	-371,952	3,050
Hart County	\$ 123,245	423,937	1,056
Taylor County	\$ 105,070	1,042,426	2,428
Campbellsville Ind.	\$ 151,206	715,254	3,656
Green County	\$ 58,551	-132,011	620
MEADE COUNTY	\$ 33,619	103,359	3,115
Hancock County	\$ 12,417	-108,471	241
Owensboro Ind.	\$ 148,684	1,708,548	9,503
EDMONSON COUNTY	N/A	N/A	N/A
Bowling Green Ind.	N/A	N/A	N/A
Grayson County	N/A	N/A	N/A
Ohio County	N/A	N/A	N/A
MARSHALL COUNTY	\$ 284,651	26,672	1,474
Calloway County	\$ 103,314	103,673	1,126
Murray Ind.	\$ 57,584	139,295	1,508
Trigg County	\$ 204,002	527,746	2,228
HENDERSON COUNTY	\$ 56,280	-291,131	761
Crittenden County	\$ 56,269	239,381	519
Union County	\$ 8,137	-124,300	613
Webster County	\$ 143,284	126,864	2,707
HOPKINS COUNTY	\$ 81,187	-6,196	2,507
Caldwell County	\$ 198,179	1,320,650	3,286
McLean County	\$ (1,611)	29,805	-1,267
Dawson Springs Ind.	\$ 48,313	188,144	3,114
CHRISTIAN COUNTY	\$ 320,947	1,823,940	17,513
REGION TOTALS	\$ 3,082,230	9,810,082	73,672

PROGRESS REPORT SUMMARY

Q3 FY2012

Exhibit 1
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4/30/12

SOUTHEAST REGION LEAD DISTRICT AND PARTNERSHIPS	Anticipated Avoided Cost Savings FY2011 - FY2012		
	\$	KWH	MCF
	SOMERSET Ind.	\$ 50,098	99,880
Science Hill Ind.	\$ 27,732	140,620	
Monticello Ind.	\$ 51,999	516,535	
Wayne County	\$ 47,746	238,579	
McCreary County	\$ 4,333	-232,890	
Russell County	\$ 506,073	3,663,026	2,563
BREATHITT COUNTY	\$ 28,320	283,772	
Hazard Ind.	\$ 62,782	653,976	
Jackson Ind.	\$ (772)	-7,739	
Perry County	\$ 73,446	735,935	
GLASGOW Ind.	\$ 112,706	621,812	4,095
Caverna Ind.	\$ 688,084	200,062	28
Monroe County	\$ 70,512	5,552	5,628
Clinton County	\$ 139,175	583,777	2,450
Cumberland County	\$ 119,553	496,735	26,302
Adair County	\$ 98,197	1,043,367	-158
RUSSELLVILLE Ind.	\$ 19,707	(84,299)	2,177
Logan County	\$ 117,432	636,953	295
Allen County	\$ 41,472	129,708	-502
Todd County	\$ 50,535	21,941	760
Simpson County	\$ (65,096)	(561,268)	-2,098
WHITLEY COUNTY	\$ 133,227	1,073,776	907
Corbin Ind.	\$ 13,961	-79,211	1,513
Williamsburg	\$ 8,702	97,822	112
LETCHER COUNTY	\$ (52,015)	-348,635	
Harlan Ind.	\$ 19,565	228,191	
PULASKI COUNTY	\$ 107,070	296,755	324
Casey County	\$ 244,869	2,726,935	256
Rockcastle County	\$ (56,584)	-997,618	0
KNOX COUNTY	\$ 170,335	878,197	4,249
Barbourville Ind.	\$ 36,583	266,721	1,345
Bell Co.	\$ 162,517	1,920,305	30
Pineville Ind.	\$ 13,555	104,320	48
CLAY COUNTY	\$ 68,934	1,015,335	-4,584
Leslie County	\$ 172,109	1,712,527	109
Jackson County	\$ 111,715	826,698	0
REGION TOTALS	\$ 3,398,577	18,908,152	46,805
SEMP TOTALS	\$15,941,797	71,819,920	345,414

Energy Utilization Index

By

School District

FY2011

**KENTUCKY SCHOOL DISTRICTS
ENERGY UTILIZATION STATISTICS
FY2011
(kbtu per square foot)**

1	Butler	40.27	49	Shelby	56.90	97	Bourbon	68.64
2	Livingston	42.70	50	Lyon	57.25	98	Todd	68.66
3	Madison	43.17	51	Calloway	57.25	99	Webster	68.92
4	Elizabethtown	44.08	52	Lee	57.30	100	Campbell	70.01
5	Warren	44.16	53	Hancock	57.46	101	Mercer	70.20
6	Hardin	44.94	54	Whitley	57.76	102	Silver Grove	71.23
7	Taylor	45.13	55	Wayne	57.88	103	Muhlenberg	71.33
8	Murray	46.42	56	Owen	58.42	104	Johnson	71.46
9	Carlisle	46.77	57	Carter	58.54	105	Hopkins	71.97
10	Casey	47.24	58	Glasgow	58.65	106	Grant	72.15
11	Oldham	47.65	59	Fulton Ind.	58.91	107	Montgomery	72.27
12	Daviess	48.35	60	Woodford	58.92	108	Letcher	72.39
13	Monticello	48.71	61	Marion	59.24	109	Dayton	72.51
14	Bullitt	48.76	62	Paris	59.43	110	Fayette	72.59
15	Scott	48.99	63	Allen	59.44	111	Simpson	72.69
16	Corbin	49.17	64	Leslie	60.70	112	Henderson	72.69
17	Walton-Verona	49.18	65	Trigg	60.99	113	Bellevue	72.77
18	Meade	49.66	66	Ohio	61.78	114	Marshall	73.51
19	Floyd	49.78	67	LaRue	61.88	115	Covington	73.63
20	Barren	49.91	68	McCracken	62.21	116	Ashland	73.70
21	McLean	50.41	69	Barbourville	62.61	117	Anchorage	73.86
22	Monroe	50.45	70	Frankfort	62.64	118	Russell	74.59
23	Anderson	50.59	71	Lincoln	62.66	119	Hart	74.98
24	Paintsville	51.47	72	Williamstown	62.76	120	Garrard	75.29
25	Dawson Springs	51.55	73	Campbellsville	63.50	121	Ft. Thomas	76.23
26	Pulaski	52.09	74	Pineville	63.74	122	Clark	76.76
27	Jackson Co	52.09	75	Mason	64.11	123	Beechwood	77.94
28	Grayson	52.23	76	Russell	64.55	124	Boone	77.60
29	Clinton	52.36	77	Knox	64.59	125	Eminence	78.12
30	Trimble	53.13	78	Rowan	64.77	126	Fairview	78.47
31	Lawrence	53.21	79	Christian	65.08	127	Owensboro	80.37
32	Nelson	53.34	80	Fleming	65.54	128	Carroll	80.92
33	Jessamine	53.44	81	Jefferson	65.58	129	Bell	81.02
34	Science Hill	53.64	82	Danville	65.69	130	Caverna	81.39
35	Perry	54.15	83	Bardstown	65.69	131	Ballard	81.72
36	Williamsburg	54.33	84	Henry	65.88	132	Powell	84.50
37	Logan	54.36	85	Cumberland	66.55	133	Menifee	87.93
38	Estill	54.46	86	Greenup	66.56	134	Breathitt	87.97
39	Harlan Ind	54.68	87	Clay	66.68	135	Berea	89.73
40	Russellville	55.30	88	Hazard	66.71	136	Somerset	90.22
41	Burgin	55.31	89	Kenton	67.04	137	Morgan	90.89
42	Rockcastle	55.61	90	Raceland-Worthington	67.31	138	Green	92.62
43	Crittenden	55.66	91	Boyd	67.44	139	McCreary	98.56
44	Gallatin	55.84	92	Fulton Co	67.58	140	Ludlow	98.85
45	Edmonson	56.07	93	Bowling Green	67.64	141	Washington	100.15
46	Erlanger	56.32	94	Bath	68.09	142	Southgate	119.74
47	Caldwell	56.60	95	Adair	68.36	143	Robertson	124.47
48	Pendleton	56.81	96	Union	68.41	144	Jackson Ind	153.53

TOTAL SEMP 64.85

TOTAL EXISTING 58.11

TOTAL 62.62

ATTACHMENT 5

**Listing of Sub-Recipient
and
Grant Amount**

KENTUCKY SCHOOL BOARDS ASSOCIATION	
ATTACHMENT 5 - LISTING OF SUB-RECIPIENTS AND GRANT AMOUNT	
JULY 1, 2010 - APRIL 30, 2012	
DISTRICT NAME	GRANT AMOUNT
Ashland Independent Schools	152,970.00
Barren County Schools	9,112.53
Boone County Schools	77,066.20
Breathitt County Schools	75,056.04
Bullitt County Schools	42,158.78
Campbell County Schools	90,256.66
Carlisle County Schools	25,058.46
Christian County Schools	71,711.74
Clay County Schools	60,922.11
Covington Independent Schools	76,400.03
Estill County Schools	72,140.48
Fayette County Schools	175,040.21
Fleming County Schools	76,476.06
Floyd County Schools	35,741.81
Grant County Schools	93,260.12
Green River Regional Education Coop	600,424.66
Henderson County Schools	84,561.00
Hopkins County Schools	65,005.21
Jefferson County Schools	73,673.00
Jessamine County Schools	77,182.44
Johnson County Schools	76,484.99
Kenton County Schools	98,097.41
Knox County Schools	74,744.77
Letcher County Schools	48,885.10
Madison County Schools	66,995.95
Marshall County Schools	76,735.63
McCracken County Schools	69,037.37
Mercer County Schools	70,025.23
Mercer County Schools	2,836.60
Montgomery County Schools	72,251.35
Muhlenberg County Schools	29,402.08
Nelson County Schools	15,168.65
Oldham County Schools	75,679.26
Pulaski County Schools	63,574.62
Scott County Schools	38,257.33
Shelby County Schools	76,687.77
Somerset Schools	63,200.77
Whitley County Schools	37,368.36
Grand Total	3,089,650.78

RIM Test						
Avoided Electric Production	\$4,244,330.63	\$2,012,042.27	\$4,244,330.63	\$4,732,684.68	\$3,917,605.59	\$11,500,794.71
Avoided Electric Production Adders	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Electric Capacity	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06
Avoided T&D Electric	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Ancillary	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Gas Production	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Gas Capacity	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$6,102,841.69	\$3,870,553.33	\$6,102,841.69	\$6,591,195.74	\$5,776,116.65	\$13,359,305.77
Administration Costs	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22
Implementation / Participation Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other / Miscellaneous Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Incentives	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22
Reduced Arrears	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Lost Revenue (Electric)	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16
Lost Revenue (Gas)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16
Net Fuel Lost Revenue (Electric)	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16
Net Fuel Lost Revenue (Gas)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16
Societal Test						
Avoided Electric Production	\$4,244,330.63	\$2,012,042.27	\$4,244,330.63	\$4,732,684.68	\$3,917,605.59	\$11,500,794.71
Avoided Electric Production Adders	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Electric Capacity	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06	\$1,858,511.06
Avoided T&D Electric	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Ancillary	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Gas Production	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Avoided Gas Capacity	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$6,102,841.69	\$3,870,553.33	\$6,102,841.69	\$6,591,195.74	\$5,776,116.65	\$13,359,305.77
Administration Costs	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22
Implementation / Participation Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other / Miscellaneous Costs	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22	\$1,404,291.22
Reduced Arrears	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Participant Costs (net)	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93
Environmental Benefits	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Other Benefits	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Participant Test						
Incentives	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Participant Costs (gross)	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93	\$1,337,575.93
Participant Tax Credits (gross)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Participant Bill Savings (Electric) (gross)	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16
Participant Bill Savings (Gas) (gross)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Total	\$6,155,829.07	\$6,018,467.01	\$6,155,829.07	\$6,155,829.07	\$6,155,829.07	\$6,270,898.16

Cost of Conserved kWh, kW, and CCF		
100% Allocation	\$ / Savings	% Allocation
Total Costs / kW Savings	\$106.51	100.00%
Total Cost / kWh Savings	\$0.02	100.00%
Total Costs / CCF Savings	\$0.00	100.00%
Allocated By Cost-Based Avoided Costs		
Allocated Costs / kW Savings	\$32.44	30.45%
Allocated Costs / kWh Savings	\$0.01	69.55%
Allocated Costs / CCF Savings	\$0.00	0.00%

Participation and Total Participant Costs									
Year	Participation						Total Participant Costs		
	New Participants	New Free Riders	Cumulative Participants	Cumulative Free Riders	Cumulative Participants (net free riders)	Cumulative Participants (net free/persist)	One-Time Investment	Annual Investment	Total Costs
1	169	0	169	0	169	169	\$187,851.72	\$0.00	\$187,851.72
2	170	0	338	0	338	338	\$242,550.00	\$0.00	\$242,550.00
3	0	0	338	0	338	338	\$0.00	\$0.00	\$0.00
4	0	0	170	0	170	170	\$0.00	\$0.00	\$0.00
Totals	338	0	1015	0	1015	1015	\$430,401.72	\$0.00	\$430,401.72

Impacts and Savings																
Year	Per Participant								Cumulative							
	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)
1	8.039	8.039	6.029	6.029	6.029	6.029	23,944.48	23,944.48	1,357	1,357	1,018	1,018	1,018	1,018	4,042,489	4,042,489
2	8.039	8.039	6.029	6.029	6.029	6.029	23,944.48	23,944.48	2,721	2,721	2,041	2,041	2,041	2,041	8,104,276	8,104,276
3	8.039	8.039	6.029	6.029	6.029	6.029	23,944.48	23,944.48	2,721	2,721	2,041	2,041	2,041	2,041	8,104,276	8,104,276
4	8.039	8.039	6.029	6.029	6.029	6.029	23,944.48	23,944.48	1,364	1,364	1,023	1,023	1,023	1,023	4,061,786	4,061,786
Totals							95,778	95,778							24,312,827	24,312,827

Lost Revenue Dollars									
Year	Lost Revenue per Participant			Cumulative Lost Revenue			Cumulative Lost Revenue (Net Fuel)		
	Electric	Gas	Total	Net Free/Persist	Net Free/Persist	Net Free/Persist	Net Fuel	Net Fuel	Net Fuel
				Electric	Gas	Total	Net Free/Persist	Net Free/Persist	Net Free/Persist
1	\$2,012.82	\$0.00	\$2,012.82	\$339,820.07	\$0.00	\$339,820.07	\$339,820.07	\$0.00	\$339,820.07
2	\$2,053.08	\$0.00	\$2,053.08	\$694,887.54	\$0.00	\$694,887.54	\$694,887.54	\$0.00	\$694,887.54
3	\$2,094.14	\$0.00	\$2,094.14	\$708,785.29	\$0.00	\$708,785.29	\$708,785.29	\$0.00	\$708,785.29
4	\$2,136.02	\$0.00	\$2,136.02	\$362,341.22	\$0.00	\$362,341.22	\$362,341.22	\$0.00	\$362,341.22
Totals	\$8,296.07	\$0.00	\$8,296.07	\$2,105,834.11	\$0.00	\$2,105,834.11	\$2,105,834.11	\$0.00	\$2,105,834.11

Utility Program Costs											
Year	Overall Costs					Total Costs per kW, kWh, and CCF Saved					
	Administration	Implementation	Incentives	Other	Total	\$/kW	\$/kW (net)	\$/kWh	\$/kWh (net)	\$/CCF	\$/CCF (net)
1	\$225,000.00	\$0.00	\$0.00	\$0.00	\$225,000.00	\$110.53	\$110.53	\$0.06	\$0.06	\$0.00	\$0.00
2	\$225,000.00	\$0.00	\$0.00	\$0.00	\$225,000.00	\$55.13	\$55.13	\$0.03	\$0.03	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Totals	\$450,000.00	\$0.00	\$0.00	\$0.00	\$450,000.00	\$165.66	\$165.66	\$0.08	\$0.08	\$0.00	\$0.00

Market-Based Avoided Costs (Net Free Riders/Persistence) for Today Scenario									
Year	Cumulative Electric					Cumulative Gas			
	Energy	Adders/Capacity	T&D	Ancillary	Total	Gas Distribution	Gas Fuel	Total	
1	\$321,985.83	\$101,705.47	\$0.00	\$0.00	\$423,691.30	\$0.00	\$0.00	\$0.00	
2	\$658,418.85	\$208,789.95	\$0.00	\$0.00	\$867,208.80	\$0.00	\$0.00	\$0.00	
3	\$671,587.23	\$213,800.91	\$0.00	\$0.00	\$885,388.14	\$0.00	\$0.00	\$0.00	
4	\$343,325.04	\$109,726.71	\$0.00	\$0.00	\$453,051.75	\$0.00	\$0.00	\$0.00	
Totals	\$1,995,316.95	\$634,023.03	\$0.00	\$0.00	\$2,629,339.99	\$0.00	\$0.00	\$0.00	

Cost-Based Avoided Costs (Net Free Riders/Persistence)									
Year	Cumulative Electric					Cumulative Gas			
	Energy	Capacity	T&D	Ancillary	Total	Gas Distribution	Gas Fuel	Total	
1	\$321,985.83	\$101,705.47	\$0.00	\$0.00	\$423,691.30	\$0.00	\$0.00	\$0.00	
2	\$658,418.85	\$208,789.95	\$0.00	\$0.00	\$867,208.80	\$0.00	\$0.00	\$0.00	
3	\$671,587.23	\$213,800.91	\$0.00	\$0.00	\$885,388.14	\$0.00	\$0.00	\$0.00	
4	\$343,325.04	\$109,726.71	\$0.00	\$0.00	\$453,051.75	\$0.00	\$0.00	\$0.00	
Totals	\$1,995,316.95	\$634,023.03	\$0.00	\$0.00	\$2,629,339.99	\$0.00	\$0.00	\$0.00	

Impacts and Savings														
Year	Electric Impacts/Savings								Gas Impacts/Savings					
	Yearly Incremental (Per Participant * Incremental Participants)								Per Participant		Cumulative		Yearly Incremental	
	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)	CCF	CCF (net)	CCF	CCF (net)	CCF	CCF (net)
1	1,357	1,357	1,018	1,018	1,018	1,018	4,042,489	4,042,489	0.00	0.00	0	0	0	0
2	1,364	1,364	1,023	1,023	1,023	1,023	4,061,786	4,061,786	0.00	0.00	0	0	0	0
3	0	0	0	0	0	0	0	0	0.00	0.00	0	0	0	0
4	0	0	0	0	0	0	0	0	0.00	0.00	0	0	0	0
Totals							8,104,276	8,104,276	0	0	0	0	0	0

Participation and Total Participant Costs									
Year	Participation						Total Participant Costs		
	New Participants	New Free Riders	Cumulative Participants	Cumulative Free Riders	Cumulative Participants (net free riders)	Cumulative Participants (net free/persist)	One-Time Investment	Annual Investment	Total Costs
1	375	0	375	0	375	375	\$417,448.28	\$0.00	\$417,448.28
2	377	0	752	0	752	752	\$539,000.00	\$0.00	\$539,000.00
3	0	0	752	0	752	752	\$0.00	\$0.00	\$0.00
4	0	0	377	0	377	377	\$0.00	\$0.00	\$0.00
Totals	752	0	2256	0	2256	2256	\$956,448.28	\$0.00	\$956,448.28

Impacts and Savings																
Year	Per Participant								Cumulative							
	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)
1	8.069	8.069	6.052	6.052	6.052	6.052	24,035.01	24,035.01	3,027	3,027	2,270	2,270	2,270	2,270	9,017,273	9,017,273
2	8.069	8.069	6.052	6.052	6.052	6.052	24,035.01	24,035.01	6,069	6,069	4,552	4,552	4,552	4,552	18,077,590	18,077,590
3	8.069	8.069	6.052	6.052	6.052	6.052	24,035.01	24,035.01	6,069	6,069	4,552	4,552	4,552	4,552	18,077,590	18,077,590
4	8.069	8.069	6.052	6.052	6.052	6.052	24,035.01	24,035.01	3,042	3,042	2,281	2,281	2,281	2,281	9,060,317	9,060,317
Totals							96,140	96,140							54,232,771	54,232,771

Lost Revenue Dollars									
Year	Lost Revenue per Participant			Cumulative Lost Revenue			Cumulative Lost Revenue (Net Fuel)		
	Electric	Gas	Total	Net Free/Persist	Net Free/Persist	Net Free/Persist	Net Fuel	Net Fuel	Net Fuel
				Electric	Gas	Total	Net Free/Persist	Net Free/Persist	Net Free/Persist
1	\$2,011.70	\$0.00	\$2,011.70	\$754,734.19	\$0.00	\$754,734.19	\$754,734.19	\$0.00	\$754,734.19
2	\$2,051.93	\$0.00	\$2,051.93	\$1,543,332.58	\$0.00	\$1,543,332.58	\$1,543,332.58	\$0.00	\$1,543,332.58
3	\$2,092.97	\$0.00	\$2,092.97	\$1,574,199.23	\$0.00	\$1,574,199.23	\$1,574,199.23	\$0.00	\$1,574,199.23
4	\$2,134.83	\$0.00	\$2,134.83	\$804,753.26	\$0.00	\$804,753.26	\$804,753.26	\$0.00	\$804,753.26
Totals	\$8,291.44	\$0.00	\$8,291.44	\$4,677,019.25	\$0.00	\$4,677,019.25	\$4,677,019.25	\$0.00	\$4,677,019.25

Utility Program Costs											
Year	Overall Costs					Total Costs per kW, kWh, and CCF Saved					
	Administration	Implementation	Incentives	Other	Total	\$/kW	\$/kW (net)	\$/kWh	\$/kWh (net)	\$/CCF	\$/CCF (net)
1	\$500,000.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$110.11	\$110.11	\$0.06	\$0.06	\$0.00	\$0.00
2	\$500,000.00	\$0.00	\$0.00	\$0.00	\$500,000.00	\$54.92	\$54.92	\$0.03	\$0.03	\$0.00	\$0.00
3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Totals	\$1,000,000.00	\$0.00	\$0.00	\$0.00	\$1,000,000.00	\$165.03	\$165.03	\$0.08	\$0.08	\$0.00	\$0.00

Market-Based Avoided Costs (Net Free Riders/Persistence) for Today Scenario									
Year	Cumulative Electric					Cumulative Gas			
	Energy	Adders/Capacity	T&D	Ancillary	Total	Gas Distribution	Gas Fuel	Total	
1	\$432,916.58	\$226,866.64	\$0.00	\$0.00	\$659,783.21	\$0.00	\$0.00	\$0.00	
2	\$885,257.71	\$465,731.83	\$0.00	\$0.00	\$1,350,989.54	\$0.00	\$0.00	\$0.00	
3	\$902,962.86	\$476,909.39	\$0.00	\$0.00	\$1,379,872.26	\$0.00	\$0.00	\$0.00	
4	\$461,607.59	\$244,759.02	\$0.00	\$0.00	\$706,366.61	\$0.00	\$0.00	\$0.00	
Totals	\$2,682,744.74	\$1,414,266.88	\$0.00	\$0.00	\$4,097,011.62	\$0.00	\$0.00	\$0.00	

Cost-Based Avoided Costs (Net Free Riders/Persistence)									
Year	Cumulative Electric					Cumulative Gas			
	Energy	Capacity	T&D	Ancillary	Total	Gas Distribution	Gas Fuel	Total	
1	\$432,916.58	\$226,866.64	\$0.00	\$0.00	\$659,783.21	\$0.00	\$0.00	\$0.00	
2	\$885,257.71	\$465,731.83	\$0.00	\$0.00	\$1,350,989.54	\$0.00	\$0.00	\$0.00	
3	\$902,962.86	\$476,909.39	\$0.00	\$0.00	\$1,379,872.26	\$0.00	\$0.00	\$0.00	
4	\$461,607.59	\$244,759.02	\$0.00	\$0.00	\$706,366.61	\$0.00	\$0.00	\$0.00	
Totals	\$2,682,744.74	\$1,414,266.88	\$0.00	\$0.00	\$4,097,011.62	\$0.00	\$0.00	\$0.00	

Impacts and Savings														
Year	Electric Impacts/Savings								Gas Impacts/Savings					
	Yearly Incremental (Per Participant * Incremental Participants)								Per Participant		Cumulative		Yearly Incremental	
	kW	kW (net)	Summer Coin kW	Summer Coin (net)	Winter Coin kW	Winter Coin (net)	kWh	kWh (net)	CCF	CCF (net)	CCF	CCF (net)	CCF	CCF (net)
1	3,027	3,027	2,270	2,270	2,270	2,270	9,017,273	9,017,273	0.00	0.00	0	0	0	0
2	3,042	3,042	2,281	2,281	2,281	2,281	9,060,317	9,060,317	0.00	0.00	0	0	0	0
3	0	0	0	0	0	0	0	0	0.00	0.00	0	0	0	0
4	0	0	0	0	0	0	0	0	0.00	0.00	0	0	0	0
Totals							18,077,590	18,077,590	0	0	0	0	0	0

Losses and T&D Adjustment	
1	Electric Peak T&D Adjustment Factor
5.80%	Electric Losses (%)
3.10%	Gas Losses (%)

Electric Rates	
\$25.00	Flat Charge (\$)
\$0.00365	Fuel Adjustment Rider (\$ / kWh)
\$0.00241	DSM Rider, Other Riders (\$ / kWh)
0.54%	Tax (% of Bill)
1	Include Taxes in Lost Revenues? (1=Yes, 0=No)
6	First Month of Summer (1-12)
9	Last Month of Summer (1-12)

Energy Blocks (\$ / kWh)				
	kWh / kW Steps	Cumulative		
First	0	0		
Second	0	0		
Third	More			
kWh / kW - 1	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.000000	0.000000	More	
kWh / kW - 2	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.000000	0.000000	More	
kWh / kW - 3	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.082400	0.082400	More	

Demand Charges (\$ / kW)			
	Winter	Summer	kW Steps
First	\$0.000000	\$0.000000	0
Second	\$0.000000	\$0.000000	More

Demand Ratchet		Electric Fuel Costs	
0	Use Ratchet? (1=Yes, 0=No)	Fuel costs (\$ / kWh) used for Net	
100%	Ratchet (%)	Fuel Lost Revenue calculations.	
0	Jan	\$0.00	Jan
0	Feb	\$0.00	Feb
0	Mar	\$0.00	Mar
0	Apr	\$0.00	Apr
0	May	\$0.00	May
0	Jun	\$0.00	Jun
0	Jul	\$0.00	Jul
0	Aug	\$0.00	Aug
0	Sep	\$0.00	Sep
0	Oct	\$0.00	Oct
0	Nov	\$0.00	Nov
0	Dec	\$0.00	Dec

Gas Rates	
\$100.00	Flat Charge (\$)
\$0.58349	Base CCF Charge (\$ / CCF)
0.00%	Gas Delivery Adder (%)
\$0.00137	DSM Rider, Other Riders (\$ / CCF)
0.00%	Tax (% of Bill)

Actual Gas Cost Recovery (\$ / CCF)	
0	Status (1=Active, 0=Use Forecasts)
\$0.0000	Jan
\$0.0000	Feb
\$0.0000	Mar
\$0.0000	Apr
\$0.0000	May
\$0.0000	Jun
\$0.0000	Jul
\$0.0000	Aug
\$0.0000	Sep
\$0.0000	Oct
\$0.0000	Nov
\$0.0000	Dec

Avoided Costs - Price Scenarios & Avoided Electric Capacity

Market-Based Scenarios	
LGE	Electric Price Folder (Market Index / Hub)
7	Today's Avoided Electric Costs Scenario
8	Alternate Avoided Electric Costs Scenario
7	Today's Avoided Gas Costs Scenario
8	Alternate Avoided Gas Costs Scenario

Cost-Based Scenario & Avoided Capacity			
7	Cost-Based Avoided Electric Costs Scenario		
100.0%	Coincident Peak kW Savings Adjustment (%)		
1 (Summer)	2 (Winter)	1	Include avoided capacity in market-based results? (1, 0)
\$99.92	\$0.00	Avoided Capacity (\$ / kW Annualized)	
7	1	Coincident Month (1-12, 0)	
16	9	Coincident Hour (1-24, 0)	

Avoided Costs - Electric T&D, Electric Adders, & Gas

Electric		Avoided Electric T&D (\$ / kW)	
	\$0.00		
Peak	Off-Peak		
47.5%	52.5%	Peak vs. Off-Peak Hours (%)	
0.00%	0.00%	Ask Adder above Wholesale + Basis Charge (%)	
0.00%	0.00%	Supply, Load Following, and Risk Management Fee (%)	
0.00%	0.00%	Credits & Uncollectibles (%)	
0.00%	0.00%	Operating Retail Costs Avoided (%)	
0.00%	0.00%	Supplemental Reserve Margin (%)	

Gas		Distribution (\$ / CCF)	
	\$0.00		
	\$0.00	Transmission Capacity (\$ / CCF)	
1	Include Commodity Avoided Costs in Tests? (1=Yes, 0=No)		
	Short-Term Firm (STF) (\$ / CCF)		Peaking (\$ / CCF)
	Reserve Charge	Days / Month	Premium
			Days / Month
Jan	\$0.0000	31	\$0.0000
Feb	\$0.0000	28	\$0.0000
Mar	\$0.0000	31	\$0.0000
Apr	\$0.0000	30	\$0.0000
May	\$0.0000	31	\$0.0000
Jun	\$0.0000	30	\$0.0000
Jul	\$0.0000	31	\$0.0000
Aug	\$0.0000	31	\$0.0000
Sep	\$0.0000	30	\$0.0000
Oct	\$0.0000	31	\$0.0000
Nov	\$0.0000	30	\$0.0000
Dec	\$0.0000	31	\$0.0000

Avoided Costs - Avoided Ancillary Charges			
\$0.00000000	OATT - All Months (\$ / kW)	\$0.00000000	ISO - All Months (\$ / kWh)
\$0.00000000	OATT - Peak Months (\$ / kW)	\$0.00000000	ISO - Peak Months (\$ / kWh)
\$0.00000000	OATT - Off-Peak Months (\$ / kW)	\$0.00000000	ISO - Off-Peak Months (\$ / kWh)

Peak Months for Ancillary Charges	
0	Jan
0	Feb
0	Mar
0	Apr
0	May
0	Jun
0	Jul
0	Aug
0	Sep
0	Oct
0	Nov
0	Dec

Other Benefits

Environmental (Societal)			
\$ / kWh	\$ / CCF		
\$0.0000	\$0.0000	SOx	
\$0.0000	\$0.0000	NOx	
\$0.0000	\$0.0000	PM	
\$0.0000	\$0.0000	CO	
\$0.0000	\$0.0000	CO2	
\$0.0000	\$0.0000	CH4	
\$0.0000	\$0.0000	Total	
Misc			
\$0.0000	Reduced Ratepayer Arrearage (\$ / Participant)		
\$0.0000	Other Household Benefits (\$ / Participant)		

Discount Rate Matrix

Utility (PAC)	TRC	RIM	Societal	Participant	
6.86%	6.86%	6.86%	6.86%		Avoided/Increased Supply Costs - Electric
6.86%	6.86%	6.86%	6.86%		Avoided/Increased Supply Costs - Gas
6.86%	6.86%	6.86%	6.86%		Program Administrator Costs
6.86%		6.86%		6.86%	Incentives
		6.86%			Revenue Losses/Gains - Electric
		6.86%			Revenue Losses/Gains - Gas
	6.86%		6.86%	6.86%	Participant Costs
	6.86%			6.86%	Participant Tax Credits
				6.86%	Participant Bill Reductions/Increases - Electric
				6.86%	Participant Bill Reductions/Increases - Gas
6.86%	6.86%	6.86%	6.86%		Reduced Arrearage
			6.86%		External Benefits

Escalators										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Electric Bills & Lost Revenues	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Gas Bills & Lost Revenues	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Generation Market	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric T&D	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Ancillary Market	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Capacity	1.000	1.024	1.049	1.074	1.100	1.126	1.153	1.181	1.209	1.238
Avoided Gas Supply / Commodity	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Gas Capacity	1.000	1.024	1.049	1.074	1.100	1.126	1.153	1.181	1.209	1.238
Electric Fuel (for Net Fuel)	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195

Escalators (cont.)										
	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Electric Bills & Lost Revenues	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Gas Bills & Lost Revenues	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Generation Market	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric T&D	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Ancillary Market	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Capacity	1.268	1.298	1.329	1.361	1.394	1.427	1.462	1.497	1.532	1.569
Avoided Gas Supply / Commodity	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Gas Capacity	1.268	1.298	1.329	1.361	1.394	1.427	1.462	1.497	1.532	1.569
Electric Fuel (for Net Fuel)	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457

Escalators (cont.)						Growth Factor
	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26+
Electric Bills & Lost Revenues	1.486	1.516	1.546	1.577	1.608	1.020
Gas Bills & Lost Revenues	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Generation Market	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric T&D	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Ancillary Market	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Capacity	1.607	1.646	1.685	1.725	1.767	1.020
Avoided Gas Supply / Commodity	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Gas Capacity	1.607	1.646	1.685	1.725	1.767	1.020
Electric Fuel (for Net Fuel)	1.486	1.516	1.546	1.577	1.608	1.020

Avoided Market Costs & Scenario Probabilities						Log-Logistic Distribution Parameters for Option Values		
Scenario	DSMore Returned	DSMore Returned	DSMore Returned	Probability of Each Scenario Occurring		Electric	Gas	Logistic Drivers Gamma = approximate minimum Beta = shift parameter Alpha = squeeze parameter
	\$/ MWh	\$/ kWh	\$/ MCF	Electric	Gas			
1	\$29.76	\$0.0298	\$3.20	0.000	0.154	0.000	0.154	This distribution creates the probabilities used in calculating the option values in DSMore. see (E96:F116) Cumulative Probabilities
2	\$29.54	\$0.0295	\$3.73	0.196	0.083	0.196	0.237	
3	\$32.29	\$0.0323	\$4.23	0.133	0.081	0.329	0.318	
4	\$35.27	\$0.0353	\$4.73	0.140	0.076	0.469	0.394	
5	\$37.84	\$0.0378	\$5.31	0.103	0.081	0.572	0.475	
6	\$40.87	\$0.0409	\$5.80	0.097	0.061	0.669	0.536	
7	\$43.00	\$0.0430	\$6.31	0.054	0.055	0.723	0.591	
8	\$46.27	\$0.0463	\$6.80	0.064	0.046	0.786	0.637	
9	\$49.77	\$0.0498	\$7.38	0.049	0.047	0.836	0.684	
10	\$53.97	\$0.0540	\$7.87	0.042	0.033	0.877	0.717	
11	\$56.61	\$0.0566	\$8.39	0.019	0.031	0.897	0.748	
12	\$61.80	\$0.0618	\$8.89	0.028	0.025	0.924	0.773	
13	\$64.60	\$0.0646	\$9.48	0.011	0.026	0.935	0.799	
14	\$67.40	\$0.0674	\$9.98	0.009	0.019	0.944	0.818	
15	\$70.33	\$0.0703	\$10.46	0.008	0.016	0.951	0.834	
16	\$73.13	\$0.0731	\$11.35	0.006	0.025	0.957	0.858	
17	\$75.92	\$0.0759	\$12.41	0.005	0.023	0.962	0.882	
18	\$82.59	\$0.0826	\$13.29	0.009	0.015	0.972	0.897	
19	\$90.61	\$0.0906	\$14.22	0.007	0.013	0.979	0.910	
20	\$100.33	\$0.1003	\$15.11	0.006	0.010	0.985	0.920	
21	\$102.33	\$0.1023	\$16.05	0.001	0.009	0.986	0.930	

Losses and T&D Adjustment	
1	Electric Peak T&D Adjustment Factor
6.20%	Electric Losses (%)
3.10%	Gas Losses (%)

Electric Rates	
\$25.00	Flat Charge (\$)
\$0.00084	Fuel Adjustment Rider (\$ / kWh)
\$0.00154	DSM Rider, Other Riders (\$ / kWh)
3.72%	Tax (% of Bill)
1	Include Taxes in Lost Revenues? (1=Yes, 0=No)
6	First Month of Summer (1-12)
9	Last Month of Summer (1-12)

Energy Blocks (\$ / kWh)				
	kWh / kW Steps	Cumulative		
First	0	0		
Second	0	0		
Third	More			
kWh / kW - 1	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.000000	0.000000	More	
kWh / kW - 2	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.000000	0.000000	More	
kWh / kW - 3	Winter	Summer	kWh Steps	Cumulative
First	0.000000	0.000000	0	0
Second	0.000000	0.000000	0	0
Third	0.000000	0.000000	0	0
Fourth	0.083320	0.083320	More	

Demand Charges (\$ / kW)			
	Winter	Summer	kW Steps
First	\$0.000000	\$0.000000	0
Second	\$0.000000	\$0.000000	More

Demand Ratchet		Electric Fuel Costs	
0	Use Ratchet? (1=Yes, 0=No)	Fuel costs (\$ / kWh) used for Net	
100%	Ratchet (%)	Fuel Lost Revenue calculations.	
0	Jan	\$0.00	Jan
0	Feb	\$0.00	Feb
0	Mar	\$0.00	Mar
0	Apr	\$0.00	Apr
0	May	\$0.00	May
0	Jun	\$0.00	Jun
0	Jul	\$0.00	Jul
0	Aug	\$0.00	Aug
0	Sep	\$0.00	Sep
0	Oct	\$0.00	Oct
0	Nov	\$0.00	Nov
0	Dec	\$0.00	Dec

Gas Rates	
\$100.00	Flat Charge (\$)
\$0.58349	Base CCF Charge (\$ / CCF)
0.00%	Gas Delivery Adder (%)
\$0.00137	DSM Rider, Other Riders (\$ / CCF)
0.00%	Tax (% of Bill)

Actual Gas Cost Recovery (\$ / CCF)	
0	Status (1=Active, 0=Use Forecasts)
\$0.0000	Jan
\$0.0000	Feb
\$0.0000	Mar
\$0.0000	Apr
\$0.0000	May
\$0.0000	Jun
\$0.0000	Jul
\$0.0000	Aug
\$0.0000	Sep
\$0.0000	Oct
\$0.0000	Nov
\$0.0000	Dec

Avoided Costs - Price Scenarios & Avoided Electric Capacity

Market-Based Scenarios	
KU	Electric Price Folder (Market Index / Hub)
7	Today's Avoided Electric Costs Scenario
8	Alternate Avoided Electric Costs Scenario
7	Today's Avoided Gas Costs Scenario
8	Alternate Avoided Gas Costs Scenario

Cost-Based Scenario & Avoided Capacity			
7	Cost-Based Avoided Electric Costs Scenario		
100.0%	Coincident Peak kW Savings Adjustment (%)		
1 (Summer)	2 (Winter)	1	Include avoided capacity in market-based results? (1, 0)
\$99.92	\$0.00	Avoided Capacity (\$ / kW Annualized)	
7	1	Coincident Month (1-12, 0)	
16	9	Coincident Hour (1-24, 0)	

Avoided Costs - Electric T&D, Electric Adders, & Gas

Electric		Avoided Electric T&D (\$ / kW)	
Peak	\$0.00	Off-Peak	
47.5%	52.5%	Peak vs. Off-Peak Hours (%)	
0.00%	0.00%	Ask Adder above Wholesale + Basis Charge (%)	
0.00%	0.00%	Supply, Load Following, and Risk Management Fee (%)	
0.00%	0.00%	Credits & Uncollectibles (%)	
0.00%	0.00%	Operating Retail Costs Avoided (%)	
0.00%	0.00%	Supplemental Reserve Margin (%)	

Gas		Distribution (\$ / CCF)			
	\$0.00	Transmission Capacity (\$ / CCF)			
1	\$0.00	Include Commodity Avoided Costs in Tests? (1=Yes, 0=No)			
	Short-Term Firm (STF) (\$ / CCF)	Peaking (\$ / CCF)			
	Reserve Charge	Days / Month	Premium	Days / Month	
Jan	\$0.0000	31	\$0.0000	\$0.0000	0
Feb	\$0.0000	28	\$0.0000	\$0.0000	0
Mar	\$0.0000	31	\$0.0000	\$0.0000	0
Apr	\$0.0000	30	\$0.0000	\$0.0000	0
May	\$0.0000	31	\$0.0000	\$0.0000	0
Jun	\$0.0000	30	\$0.0000	\$0.0000	0
Jul	\$0.0000	31	\$0.0000	\$0.0000	0
Aug	\$0.0000	31	\$0.0000	\$0.0000	0
Sep	\$0.0000	30	\$0.0000	\$0.0000	0
Oct	\$0.0000	31	\$0.0000	\$0.0000	0
Nov	\$0.0000	30	\$0.0000	\$0.0000	0
Dec	\$0.0000	31	\$0.0000	\$0.0000	0

Avoided Costs - Avoided Ancillary Charges			
\$0.00000000	OATT - All Months (\$ / kW)	\$0.00000000	ISO - All Months (\$ / kWh)
\$0.00000000	OATT - Peak Months (\$ / kW)	\$0.00000000	ISO - Peak Months (\$ / kWh)
\$0.00000000	OATT - Off-Peak Months (\$ / kW)	\$0.00000000	ISO - Off-Peak Months (\$ / kWh)

Peak Months for Ancillary Charges	
0	Jan
0	Feb
0	Mar
0	Apr
0	May
0	Jun
0	Jul
0	Aug
0	Sep
0	Oct
0	Nov
0	Dec

Other Benefits

Environmental (Societal)		
\$ / kWh	\$ / CCF	
\$0.0000	\$0.0000	SOx
\$0.0000	\$0.0000	NOx
\$0.0000	\$0.0000	PM
\$0.0000	\$0.0000	CO
\$0.0000	\$0.0000	CO2
\$0.0000	\$0.0000	CH4
\$0.0000	\$0.0000	Total
Misc		
\$0.0000	Reduced Ratepayer Arrearage (\$ / Participant)	
\$0.0000	Other Household Benefits (\$ / Participant)	

Discount Rate Matrix

Utility (PAC)	TRC	RIM	Societal	Participant	
6.67%	6.67%	6.67%	6.67%		Avoided/Increased Supply Costs - Electric
6.67%	6.67%	6.67%	6.67%		Avoided/Increased Supply Costs - Gas
6.67%	6.67%	6.67%	6.67%		Program Administrator Costs
6.67%		6.67%		6.67%	Incentives
		6.67%			Revenue Losses/Gains - Electric
		6.67%			Revenue Losses/Gains - Gas
	6.67%		6.67%	6.67%	Participant Costs
	6.67%			6.67%	Participant Tax Credits
				6.67%	Participant Bill Reductions/Increases - Electric
				6.67%	Participant Bill Reductions/Increases - Gas
6.67%	6.67%	6.67%	6.67%		Reduced Arrearage
			6.67%		External Benefits

Escalators										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Electric Bills & Lost Revenues	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Gas Bills & Lost Revenues	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Generation Market	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric T&D	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Ancillary Market	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Electric Capacity	1.000	1.024	1.049	1.074	1.100	1.126	1.153	1.181	1.209	1.238
Avoided Gas Supply / Commodity	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195
Avoided Gas Capacity	1.000	1.024	1.049	1.074	1.100	1.126	1.153	1.181	1.209	1.238
Electric Fuel (for Net Fuel)	1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195

Escalators (cont.)										
	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
Electric Bills & Lost Revenues	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Gas Bills & Lost Revenues	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Generation Market	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric T&D	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Ancillary Market	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Electric Capacity	1.268	1.298	1.329	1.361	1.394	1.427	1.462	1.497	1.532	1.569
Avoided Gas Supply / Commodity	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457
Avoided Gas Capacity	1.268	1.298	1.329	1.361	1.394	1.427	1.462	1.497	1.532	1.569
Electric Fuel (for Net Fuel)	1.219	1.243	1.268	1.294	1.319	1.346	1.373	1.400	1.428	1.457

Escalators (cont.)						Growth Factor
	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26+
Electric Bills & Lost Revenues	1.486	1.516	1.546	1.577	1.608	1.020
Gas Bills & Lost Revenues	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Generation Market	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric T&D	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Ancillary Market	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Electric Capacity	1.607	1.646	1.685	1.725	1.767	1.020
Avoided Gas Supply / Commodity	1.486	1.516	1.546	1.577	1.608	1.020
Avoided Gas Capacity	1.607	1.646	1.685	1.725	1.767	1.020
Electric Fuel (for Net Fuel)	1.486	1.516	1.546	1.577	1.608	1.020

Avoided Market Costs & Scenario Probabilities						Log-Logistic Distribution Parameters for Option Values		
Scenario	DSMore Returned	DSMore Returned	DSMore Returned	Probability of Each Scenario Occurring		Electric	Gas	<i>Logistic Drivers</i> Gamma = approximate minimum Beta = shift parameter Alpha = squeeze parameter <i>This distribution creates the probabilities used in calculating the option values in DSMore. see (E96:F116)</i> Cumulative Probabilities
	\$/ MWh	\$/ kWh	\$/ MCF	Electric	Gas			
1	\$29.76	\$0.0298	\$3.20	0.000	0.154	0.000	0.154	
2	\$29.53	\$0.0295	\$3.73	0.196	0.083	0.196	0.237	
3	\$32.28	\$0.0323	\$4.23	0.133	0.081	0.329	0.318	
4	\$35.25	\$0.0353	\$4.73	0.139	0.076	0.468	0.394	
5	\$37.81	\$0.0378	\$5.31	0.103	0.081	0.571	0.475	
6	\$40.84	\$0.0408	\$5.80	0.097	0.061	0.668	0.536	
7	\$42.96	\$0.0430	\$6.31	0.054	0.055	0.722	0.591	
8	\$46.22	\$0.0462	\$6.80	0.064	0.046	0.786	0.637	
9	\$49.73	\$0.0497	\$7.38	0.050	0.047	0.835	0.684	
10	\$53.93	\$0.0539	\$7.87	0.042	0.033	0.877	0.717	
11	\$56.59	\$0.0566	\$8.39	0.019	0.031	0.897	0.748	
12	\$61.76	\$0.0618	\$8.89	0.027	0.025	0.924	0.773	
13	\$64.54	\$0.0645	\$9.48	0.011	0.026	0.935	0.799	
14	\$67.31	\$0.0673	\$9.98	0.009	0.019	0.944	0.818	
15	\$70.25	\$0.0703	\$10.46	0.008	0.016	0.951	0.834	
16	\$73.07	\$0.0731	\$11.35	0.006	0.025	0.957	0.858	
17	\$75.88	\$0.0759	\$12.41	0.005	0.023	0.962	0.882	
18	\$82.52	\$0.0825	\$13.29	0.009	0.015	0.971	0.897	
19	\$90.56	\$0.0906	\$14.22	0.007	0.013	0.979	0.910	
20	\$100.27	\$0.1003	\$15.11	0.006	0.010	0.985	0.920	
21	\$102.32	\$0.1023	\$16.05	0.001	0.009	0.986	0.930	

The Fayette County Public School (FCPS) District spends approximately \$6 million dollars of taxpayer generated funds on electricity annually. In fiscal year 2010, FCPS facilities used about 83 million kilowatt-hours of electricity, 132 million cubic feet of natural gas and 80 million gallons of water. For fiscal year 2011, the district budgeted more than \$8.86 million dollars for energy expenditures. Tax funds spent on utilities are tax funds not available for direct student programs and services. Achieving a 20% reduction in energy use through live monitoring and efficiency will redirect a significant amount of tax dollars from utility payments into the classroom every year.

The second largest school district in the Commonwealth, the district has nearly 40,000 students and 6,290 employees at 53 schools and 15 special programs. The district occupies and maintains 69 buildings plus an assortment of portables, small garages and sports buildings (e.g. baseball, football, and softball) totaling more than 5.6 million square feet on nearly 900 acres.

The vision of the FCPS Sustainability Plan is: Fayette County Public Schools is dedicated to sustainability and energy efficiency. We believe that energy efficiency and sustainable operations are important to protect our environment, to preserve our natural resources, and to encourage responsible spending of our community's tax dollars. Fayette County Schools will be a national leader in sustainability, energy efficiency and sustainable (environmental) education.

Fayette County Public Schools believes completion of the proposed integrated live energy metering project will result in a sustained electricity savings of 20% annually, over \$1,179,000 in annually saved taxpayer dollars, and an annual reduction of 22,586,885 lbs of carbon dioxide emissions. Savings will be realized through installation of live monitoring equipment, data analysis via software, and the development of a district-wide public facing energy and sustainability education portal.

1. Strength of the application in meeting the objectives of the Consent Decree

This proposed project meets the objectives of the Tennessee Valley Authority (TVA) *Consent Decree* and was developed to address needs identified by the *Fayette County Public Schools Sustainability Plan*. It is also aligned with the goals, objectives and strategies of Kentucky's *Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence* and *Empower Lexington - A Plan for a Resilient Community*.

Live monitoring of energy use

Live monitoring of district electrical and natural gas use has the potential to reduce energy consumption by a minimum of 10 – 20% through monitoring and awareness alone. The data gathered through live metering will guide the design of future actions to further reduce energy consumption. Not only will tax dollars be redirected from utility companies to the classroom, there will be significant emission reductions through reduced energy demand. The student educational aspects of this component will teach students the importance of thoughtful energy use; this knowledge will spread out from the classroom into students' homes, expanding the impact of the project.

The district has just begun the process of live monitoring and one of the district's energy managers has recently participated in training in this process. The process involves measuring the amount of electricity and natural gas coming into the facility. Currently 18 district facilities have live monitoring capabilities although the current software does not have a user-friendly interface for managing the data nor a public interface for education. This is a step up from the current practice of reviewing monthly utility bills; which creates a one to two month delay in reviewing usage as well as assumes accuracy of the bill. Live monitoring allows real time monitoring and real time diagnostics. As an example, a boiler was turned on at one school prematurely; by the time the energy spike was noted (via the paper electricity bill) and the boiler turned off, it had wasted \$12,000 of electricity. Live monitoring would have allowed a much more timely intervention greatly reducing the cost. The addition of a user-friendly district wide software dashboard will facilitate energy monitoring and diagnostics as well as student and community educational options.

Unlike other next-day or live energy metering solutions available, the proposed Integrated Live Energy Metering Project will seamlessly integrate three critical technology components: Building Automation Systems, Energy Data Analysis, and Public Education Portals. All systems will seamlessly communicate with one another for efficient use of energy, real-time data analysis, diagnostics, and a variety of educational components for each individual school.

Moving into live monitoring utilizing the specific software will allow the district to establish new baselines at each facility and provide far more sophisticated monitoring techniques than available using currently available software. The below illustration depicts a five tiered approach to live monitoring (from *Leveraging APOGEE: A Tiered Approach to Submetering in Your Facility* by Siemens Building Technologies, Inc.).

Figure 1

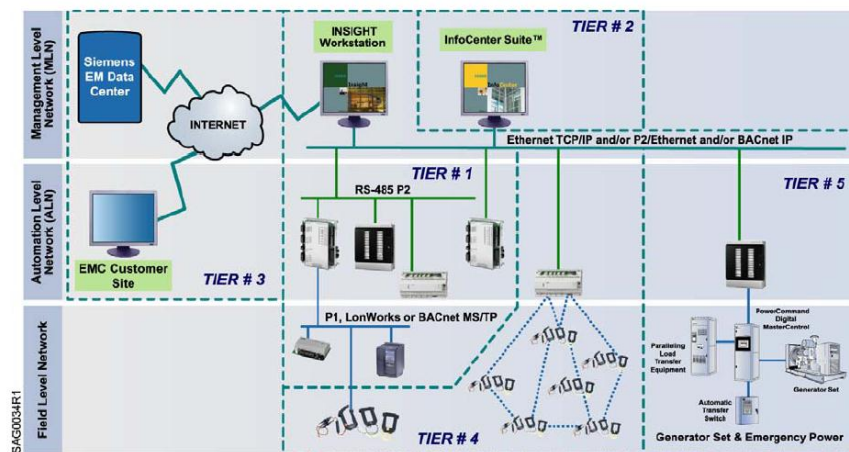


Figure 5. Tiered Approach to Energy Conservation Plan Development.

- Tier 1—Leveraging an existing building automation system already existing within FCPS.
- Tier 2—Addition of database server (InfoCenter Suite) and utility cost management application (Utility Cost Manager).

- *Tier 3*—Addition of on-site internet-based EMC (Energy Monitoring and Controlling) application service for data collection and analysis.
- *Tier 4*—Addition of new sub-metering devices, such as Digital Energy Monitors (DEM).
- *Tier 5*—Integration of third-party power monitoring systems, such as other building automation systems aside from Siemens.

This monitoring process is currently in use at the district's two newest schools; Wellington Elementary and the Locust Trace AgriScience Farm. With internet accessibility, their energy use can be monitored from anywhere, including other district schools, where students can use this as a tool in the district's school-based energy teams program (E=USE²). Each district facility with live monitoring systems will be connected to the Green Building Monitoring (GBM) platform and associated modules, to be developed as a part of the whole framework. The GBM will pull together each school into an innovative, custom public portal to display energy and sustainability information. Features such as live data, historical consumption, energy simulations, social media connections, blogging, and cross-town building competitions will be included. The GBM will also serve as the platform for developing an innovative fault detection and diagnostics system, which has the ability to learn, predict, and adjust to any issues such as component failures that may occur.

The illustration below is a screen shot of the robust green touchscreen monitoring system for Locust Trace; viewers can move among the many selections to observe real time energy use as well as longitudinal history. Siemens describes their Green Touchscreen[®] as “designed to meet customer needs for public facing user interfaces. It is useful for occupant education and public relations, and to drive occupant behavior – all related to high performance green/sustainable buildings.” However, Locust Trace and Wellington have a more robust version of metering than will the schools in this proposal. Their metering, installed during initial construction, includes several different sub-meters which allow monitoring of specifics such as lights, air conditioning and plug loads. The metering option in this proposal will only measure overall electricity use in the selected schools, which is a cost-effective choice with post-construction installation.

Figure 2



<http://ltaf.siemens.greentouchscreen.com/>



The proposed GBM will incorporate live energy data from each school to provide users with insight to their energy consumption in a real-time environment, empowering each facility to take control of their consumption and initiate necessary behavioral and operational changes to realize energy savings on the order 10%, 20%, 30% or more. The saying “*you cannot manage what you cannot measure*” holds very true for energy in a school, and the development of the GBM within Fayette County will allow us to measure, and therefore manage, our energy much more effectively than ever previously possible. Taking energy management to the next level through this project will place Fayette County at the forefront of innovation statewide and nationally. Internally, the stressed education budgets will experience relief in the face of rising energy costs and cuts in funding, as utility expenditures account for the second largest budgetary item for a school district.

The district proposes to install live monitoring equipment at 31 unequipped facilities, some of which will require multiple monitors, with the accompanying software at all 58 facilities.

Successful Case Studies

Fayette County has been wildly successful with their Energy and Sustainability Program since the hiring of Energy Managers Tresine Logsdon and Britney Thompson in mid-2010. Working as a complementary pair, they team had a two-pronged approach featuring both energy and sustainability curriculum via Mrs. Logsdon and technical, data-driven energy management with Ms. Thompson. As a whole, Fayette County Schools reduced their overall energy consumption, based on average energy utilization index (EUI) by 16.2% from FY2009 to FY2012. When schools alone are considered, that reduction was 19.99%. Despite this massive success, there is still much wasted energy to be captured. In FY2009 the school district’s overall EUI was 82.54 kbtu/sqft/yr. In FY2011, 72.59 kbtu/sqft/yr. As of FY2012, this had dropped to 69.17 kbtu/sqft/yr. A statewide comparison of FY2011 overall district EUIs revealed the Kentucky average EUI was 62.48 kbtu/sqft/yr. Districts who had been conscious of energy management for many years prior to Fayette County were at 57.73 kbtu/sqft/yr. Bullitt County, a Kentucky school district which utilizes a wide-spread energy monitoring system, was at a very low 48.76 kbtu/sqft/yr in FY2011– nearly 32% lower than Fayette County at the same time. The potential savings are amplified when one considers that Fayette County is nearly three times larger, based on square footage, than Bullitt County.

The Kenton County School district in Kentucky has illustrated the potential for energy savings due to energy monitoring for a school district that has already been successful in energy management. As of FY2011, their district wide EUI was at 67.04 kbtu/sqft/year. Prior to this year, Kenton County had earned the Energy Star Top Performer Award for a reduction of district wide energy consumption by 20%. Toward the end of FY2011, Kenton County partnered with a company to provide next-day energy information on their facilities. Spring Break 2012 brought a 41% reduction in district electricity consumption over Spring Break 2011 due to the next day energy profile made available from their metering project. After one year, the district as a whole experienced another 15.1% energy reduction beyond previous years of reduction. Fayette County is seeking to install a ‘real-time’ energy management system, with data available every 15 minutes, rather than next day information as found in Kenton County. This information will be a catalyst for large reductions in energy usage for the entire district. Additionally, the Kenton

County program operates on a shared-savings method of payment to pay for the cost of the metering and external energy analysis and support. Fayette County will be able to reap all of the savings from our proposed energy management system and will therefore be in a position to return more funding into the classroom or further energy saving capital investments. Aside from technical support, the majority of energy analysis will be performed in-house by FCPS employees rather than by an out-of-state company, magnifying the impact of proposed grant funds for local economic and intellectual development.



Instructional component

A key element of the Sustainability Plan is the instructional component, the E=USE² initiative (Education leads to Understanding Sustainability, E²nergy and the Environment). E=USE² is a highly collaborative program developed to educate students, faculty/staff and each FCPS stakeholders about sustainable habits and energy efficiency using school facilities as Learning Labs. The program works in conjunction with the Kentucky NEED (National Energy Education Development) project by using NEED energy kits, curriculum and the KY NEED Youth Awards for Energy Achievement program and KGHS (KY Green & Healthy Schools). The E=USE² program provides hands-on, real world STEM (Science, Technology, Engineering & Math) activities for students. Each participating school creates an E=USE² team comprised of students and at least one teacher to implement the 8-step program which includes:

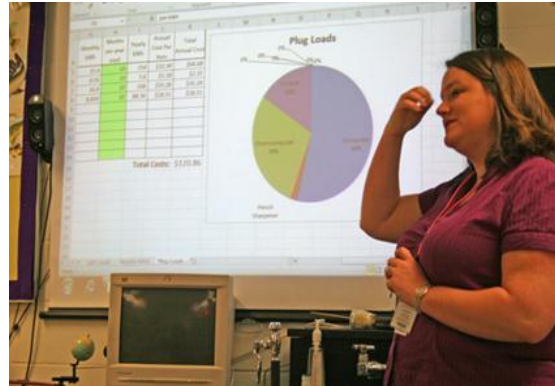
- Conduct a variety of energy assessments including plug load, audit, and light level
- Raise awareness about sustainable and responsible behavior
- Design and implement a school improvement project as part of KY Green & Healthy Schools
- Partner with University of KY for STEM and Our Environment
- Participate in the KY National Education Youth Awards for Energy Achievement
- Develop a School Energy & Sustainability Plan to include school-wide sustainability initiatives, recognitions and goals

Each component of E=USE² is strategically constructivist promoting student-driven innovation and supporting real-world applications to E=USE² instruction. The **student team** component of the proposal will empower our student teams to build on their acquired knowledge through participation in E=USE² by providing financial support to implement their school improvement projects such as LED Exit Signs, Vending Misers, bicycle racks, timed power strips, etc. Our students will serve as the first generation to live, work and play in awareness of ecological, social and economic balance by developing habits and making decisions through a lens of sustainability. They are poised and equipped to join with their parents, teachers and community members for a greener, healthier, more sustainable local and



global community. The potential energy savings exclusively from student-driven behavior and habit modifications is 10% or \$1.2 million.

The district also works closely with the University of Kentucky (UK) in many projects, including USDA funded projects as well as the Lexington-Fayette Urban County Government's (LFUCG) Water Quality, Stormwater, and Environment Sustainability projects. UK is also helping students in the district's E=USE² initiative learn how to interpret and analyze



energy-data use. The photo to the right is from a February 2012 district article spotlighting the initiative. In this photograph, a UK graduate student shows Jesse Clark Middle School's green team (E=USE² team) how pie charts and other graphs can help them analyze and interpret their energy-usage data. From the article, "Williams also introduced the youngsters to the Green Touch Screen technology installed at Wellington Elementary and Locust Trace AgriScience Farm, the two newest schools in FCPS. The interactive program enables students to track energy

usage in real time and take a virtual tour of the "green" campuses."

Instructional Impact of Live Monitoring

The impact on student learning that the live monitoring will have is extraordinary. Digital energy monitoring will provide critical data that E=USE² teams will use to guide and modify their projects and initiatives. Currently, our E=USE² Teams are unable to utilize energy consumption data to effectively direct initiatives because the data is accessible 6-weeks after use. With live monitoring, teachers and students will be able to interpret and analyze their consumption, identify areas of weakness, measure the success of their projects and compare their consumption with rival neighborhood schools. This inherent friendly competition among our schools creates a timely, valuable incentive for improvement. Additionally, students and teachers will utilize the live metering as a communication tool by sharing their progress—or setbacks—with their school community. Live monitoring is a critical component to unleashing our students' intrinsic enthusiasm for improving sustainability at their schools. The GBM will also be custom-designed to allow each school to display their own sustainability information, such as school gardens, class projects, awareness campaigns, and so forth. As the GBM is a custom application to be developed in partnership with FCPS and Siemens over the range of the project, many other innovative educational components will be included.

Following are the project's goals, objectives, deliverables/milestones, outcomes and how it meets the objectives of the Tennessee Valley Authority (TVA) *Consent Decree* and as well as addresses needs identified by the *Fayette County Public Schools Sustainability Plan*. It also aligns with the goals, objectives and strategies of Kentucky's *Intelligent Energy Choices for*

Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence and Empower Lexington - A Plan for a Resilient Community.

Table 1

Goal 1: Fayette County Public Schools will utilize natural resources responsibly via live monitoring of electric and natural gas use in the district's schools and support buildings.

Objective 1.1. The FCPS district will reduce energy consumption by an average of 20% from baseline levels FY2012 by the end of the project period in 2016-2017.

<i>Strategies</i>	<i>Deliverables / Milestones</i>	<i>Outcomes</i>
<ul style="list-style-type: none"> • Install DCM meters at FCPS schools and buildings using a phased-in plan. • Install cutting-edge live monitoring software modules for all metered schools and buildings. • Use data provided by monitoring system to determine most advantageous utility billing rates as well as to identify inaccuracies or errors in billing from utilities. 	<ul style="list-style-type: none"> • By the end of each project year, all schools in that phase will have meters & live monitoring software modules installed. • Develop recommendations and action plans for each site based upon live monitoring data. 	<ul style="list-style-type: none"> • Expands the scope and impact of the TVA settlement consent decree. • Reduction in emissions through reduced energy demand. • Tax dollars redirected from utility companies to the classroom. • Help meet KY goals for achieving energy efficiency and reducing energy consumption. • Help meet KY goal of being a national energy leader

Alignment

TVA Consent Decree Categories of Projects:

C. Projects to conserve energy in new and existing buildings, mobile homes, and modular buildings, including efficient lighting, appliance efficiency improvement projects, weatherization projects, and projects that meet the ENERGY STAR and Home Performance with ENERGY STAR Building qualifications, the Leadership in Energy and Environmental Design (“LEED”) Green Building Rating System or an equivalent energy efficiency program approved by the State, or other innovative building efficiency projects approved by the State and/or appropriate review committee.



Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence:

- Strategy 1: Improve the Energy Efficiency of Kentucky's Homes, Buildings, Industries, and Transportation Fleet

Fayette County Public Schools Sustainability Plan:

- Goal 2: Fayette County Schools will utilize natural resources responsibly.

Empower Lexington:

Industrial/Commercial/Institutional Sector

- Goal: To promote energy efficiency & provide businesses & organizations with the knowledge & tools needed to save energy & money.

Goal 2: Fayette County Public Schools will be a national leader in environmental education.

Objective 2.1. Fayette County Public Schools will engage students in experiential learning regarding environmental & sustainability issues through the E=USE² teams at each school.

<i>Strategies</i>	<i>Deliverables / Milestones</i>	<i>Outcomes</i>
<ul style="list-style-type: none"> • The E=USE² teams will utilize the live monitoring data in their activities; each team will make an action plan / recommendations for reducing energy use at each team's specific school. 	<ul style="list-style-type: none"> • School plans are developed in the project year following the installation of meters/software. Based on student-analyzed data, students and teachers will design and implement customized energy school improvement projects to address their specific energy conservation goals and areas of improvement. Software data will provide the statistics required to allow students to make informed decisions about energy consumption and consistently adapt their plan based on data interpretation and analysis. 	<ul style="list-style-type: none"> • Students learn about environmental and sustainability issues. • Students observe the impact of implementing energy-savings plans • Students participate in constructivist, student-driven, project-based improvement plans guided by weekly data analysis and graphing. • Students will identify key community partners to collaboratively address tailored energy reduction projects. • Teachers will actively and comprehensively integrate software data acquisition and analysis in the curriculum (i.e., STEM education, Science, Practical Living, Math)
<ul style="list-style-type: none"> • Each E=USE² team 	<ul style="list-style-type: none"> • Students will utilize 	<ul style="list-style-type: none"> • Further reductions in the



Projects to conserve energy in new and existing buildings

<p>will have funds to implement sustainability/energy efficiency projects.</p>	<p>energy savings generated by data-driven projects to further develop school-wide initiatives and action plans in cooperation with their school community (parents and community leaders).</p>	<p>amount of energy consumed by district schools and buildings. Tax dollar investments towards utility fees will be redirected to classroom instruction and continued student-driven energy efficiency projects.</p>
<ul style="list-style-type: none"> About 900 students currently serve on their school's E=USE² team in leadership capacities performing assessments, raising awareness, and designing projects. Up to 40,000 students will participate in or benefit from their school's awareness campaigns and data-driven projects. 	<ul style="list-style-type: none"> Students will become acquainted with college & career choices in the renewable energy fields through interactive, engaging software designed by FCPS educators to provide instruction and exploration opportunities of renewable energy sources and applications. 	

Alignment

TVA Consent Decree:

C. Projects to conserve energy in new and existing buildings, mobile homes, and modular buildings, including efficient lighting, appliance efficiency improvement projects, weatherization projects, and projects that meet the ENERGY STAR and Home Performance with ENERGY STAR Building qualifications, the Leadership in Energy and Environmental Design (“LEED”) Green Building Rating System or an equivalent energy efficiency program approved by the State, or other innovative building efficiency projects approved by the State and/or appropriate review committee.

Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence:

- Strategy 1: Improve the Energy Efficiency of Kentucky's Homes, Buildings, Industries, and Transportation Fleet

Fayette County Public Schools Sustainability Plan:

- Goal 2: Fayette County Schools will utilize natural resources responsibly.
- Goal 4: Fayette County will be a national leader in environmental education and provide an



enjoyable, engaging, and celebratory experience for students.

Empower Lexington:

Industrial/Commercial/Institutional Sector

- Goal: To promote energy efficiency & provide businesses & organizations with the knowledge & tools needed to save energy & money.

The following tables align specific project component/activities with the TVA *Consent Decree* as well as with the goals, objectives and strategies of Kentucky's *Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence*, the *Fayette County Public Schools Sustainability Plan*, and *Empower Lexington - A Plan for a Resilient Community*.

Table 2

<i>TVA Consent Decree Project</i>	FCPS Live Monitoring Project Component
<p>C. Projects to conserve energy in new and existing buildings, mobile homes, and modular buildings, including efficient lighting, appliance efficiency improvement projects, weatherization projects, and projects that meet the ENERGY STAR and Home Performance with ENERGY STAR Building qualifications, the Leadership in Energy and Environmental Design (“LEED”) Green Building Rating System or an equivalent energy efficiency program approved by the State, or other innovative building efficiency projects approved by the State and/or appropriate review committee. (p.53)</p>	<ul style="list-style-type: none"> • Reduce energy consumption through live monitoring of electric and natural gas power at district schools and buildings.
<p><i>Intelligent Energy Choices for Kentucky's Future: Kentucky's 7-Point Strategy for Energy Independence</i></p>	<p>FCPS Live Monitoring Project Component</p>
<p>Strategy 1: Improve the Energy Efficiency of Kentucky's Homes, Buildings, Industries, and Transportation Fleet (p.13)</p> <p>Strategy 1 Goal: Energy efficiency will offset at least 18% of Kentucky's projected 2025 energy demand. (p.13)</p>	<ul style="list-style-type: none"> • Reduced electric and natural gas energy demand at FCPS will contribute to the state achieving this goal.
<p>Achieving the goal strategies - Near-Term actions' targets</p>	<ul style="list-style-type: none"> • The district's project goal is 20% reduction on electric & natural gas demand by 2017-18



1. Kentucky will improve the energy efficiency of state-supported facilities...

- By 2015, state-supported facilities will reduce energy consumption by 15% using 2009 consumption as the baseline year. (p.23)

The Energy and Environment Cabinet in collaboration with state agencies, post-secondary schools and K-12 schools will develop a comprehensive energy management plan to achieve the state goals.

- Leverage federal and state funding resources to support procurement of a computer based energy management system that will allow FAC to track and measure energy consumption, develop benchmarks and evaluate progress in state-owned facilities. (p.24)

- The district's application for funding through the EEC's TVA Clean Air Settlement Grant.

2. Establish an Energy Efficiency Resource Standard (EERS) with the goal of reducing energy consumption by at least 16 percent below projected 2025 energy consumption. (p.25)

- The district's project goal is 20% reduction on electric & natural gas demand by 2017-18; this reduction will assist its energy suppliers - Bluegrass Energy Co-op; Columbia Gas, and KY Utilities – in achieving this goal.

3. The EEC, in conjunction with other state agencies and energy service providers, will conduct a vigorous and ongoing public energy efficiency awareness and education program. (p. 26)

- The FCPS energy education component will help provide a population of energy consumers who are knowledgeable of environmental and sustainability issues.

With this action-oriented energy plan, by 2025 Kentucky will accomplish the following:

- Provide 30,000-40,000 new Kentucky jobs as a result of a booming diversified energy sector (p. xii)

- FCPS students will be aware of college & career choices in the renewable energy fields and have the foundation skills to pursue these new jobs.

Fayette County Public Schools Sustainability Plan

FCPS Live Monitoring Project Component

Goal 2:

Fayette County Schools will utilize our natural resources responsibly. We will develop programs to



continually assess and reduce our energy and water usage. (p.1)

Objective #1: Reduce district wide energy consumption 10% below average 2005-2008 levels by July 30, 2012 in all schools and support facilities. (p.18)

- The district's project goal is 20% reduction on electric & natural gas demand by 2017-18

Objective #4: Verify utility rates are correct and advantageous for each facility in FCPS. (p,20)

- Use data provided by monitoring system to determine most advantageous utility billing rates as well leverage data as a way to identify inaccuracies or errors in billing from utilities.

Objective #7: Seek Energy Star Certifications on eligible facilities (p. 23)

- Monitoring data will allow schools to seek energy efficiency, both behaviorally and operationally, and meet the goal of Energy Star certification.

Objective #10: Develop and implement a plan for energy reduction during school breaks and holidays (p. 25)

- Monitoring data will allow schools to effectively perform energy savings shutdowns for school breaks by displaying how much energy is being used when schools are vacant and helping to identify further areas of improvement.

Goal4:
Fayette County will be a national leader in environmental education and provide an enjoyable, engaging and celebratory experience for our students. (p.1)

Objective #1: Increase students' exposure to environmental sustainability issues in Fayette County Schools. (p.30)

- The E=USE2 teams will utilize the live monitoring data in their activities.

Objective #2: Develop a district Sustainability Communications Plan (p. 31)

- Project data will be shared on the Fayette County Schools Green Website.

Empower Lexington

FCPS Live Monitoring Project
Component

INDUSTRIAL/COMMERCIAL/INSTITUTIONAL
SECTOR RECOMMENDATIONS (p.14)



Goal– To promote energy efficiency and provide businesses and organizations with the knowledge and tools needed to save energy and money. (p.14)

Energy efficiency is the easiest, cleanest and cheapest resource available to reduce energy consumption. A sustained energy efficiency program offers balance to energy supply markets by reducing demand, avoiding the need for costly new grid investments (new power plants, transmission lines, etc.), and serves to modernize existing operations, which increases business competitiveness in the global free market. (p.15)

- Project publicity; the educational component; dissemination of information on the website

RECOMMENDATION #1: Develop Aggressive Marketing Effort: The educational component of the *Empower Lexington* plan cannot be overstated. The more that people familiarize themselves with energy efficiency and conservation programs the more likely they will implement the recommendations contained in the plan. Without the education component for the *Empower Lexington* plan there will be little hope of community-wide success. (p. 15)

- Project publicity; the educational component; dissemination of information on the website

1.1. Demonstration of projected emission reductions

According to *Empower Lexington - A Plan For a Resilient Community*, the Bluegrass Region of Kentucky, which includes Lexington/Fayette County, is unique in that most residents agree that the land is the county's most important resource and that the equine and agriculture industry is irreplaceable and unique to anywhere in the world. In fact, the Bluegrass Region was named a world monument at risk, according to the 2006 World Monument Fund Watch List. Reducing the carbon footprint of the Fayette County Public School District will help preserve the Bluegrass. While the electric utility provider for the district pulls electricity from a grid that does not distribute linearly, the majority of the electricity used by the district comes from two power plants, EW Brown in Mercer County in the Bluegrass Region and from Ghent in Carroll County located north of the Bluegrass Region. According to 2006 US EPA data, Ghent produced the second largest amount of carbon dioxide emissions in Kentucky, nearly 13 tons of CO₂. Only the Paradise plant, located in the TVA area, produced more, at nearly 15.5 tons of CO₂.

Table 3 provides the amount of electricity that the district consumed in FY2012 as well as the potential annual reductions in this amount through the implementation of the proposed project. Natural gas consumption is included in Table 3 and Table 5 but not taken into account

for potential annual reductions as part of this project. The proposed EMC and GBM solutions will be capable of handling natural gas data and FCPS intends to seek installation of natural gas monitoring in partnership with Columbia Gas in the future.

Columbia Gas of Kentucky has expressed an interest in partnering with FCPS to explore the scope of work necessary to perform live monitoring of natural gas consumption. While real-time natural gas metering is not a new concept, it has not been implemented on a wide scale in the Columbia Gas of Kentucky territory. Lessons learned from the research and development of the partnership of Columbia Gas and FCPS may open the door to similar projects around the region or state. No monetized value for this partnership has been included in this grant proposal.

Table 3: Consumption and Reduction Equivalencies

	District-Wide Consumption		Potential Annual Reductions from Electricity Savings (KWH) ²		
	Electricity	Natural Gas ¹	10%	15%	20%
Annual Consumption			10%	15%	20%
FY2012 Consumption (KWH)	81,943,684	89,332 (MCF)	7,774,813	11,490,977	15,122,255
FY2012 Energy (kbtu)	279,591,850	91,922,628	26,527,662	39,207,212	51,597,134
FY2012 Costs	\$6,700,018	\$779,796	\$606,435	\$896,296	\$1,179,536
Annual Emissions			10%	15%	20%
Nitrogen Oxides (lbs)	84,826	-	8,483	12,724	16,965
Sulfur Dioxide (lbs)	267,783	-	26,778	40,167	53,557
Carbon Dioxide (lbs)	112,934,426	7,937,049	11,293,443	16,940,164	22,586,885
Equivalencies			10%	15%	20%
Annual Greenhouse Gas Emissions from Cars	10,626	706	1,063	1,594	2,125
CO ₂ Emissions from Gallons of Gasoline	6,075,239	403,608	607,524	911,286	1,215,048
CO ₂ Emissions from Barrels of Oil	126,026	8,373	12,603	18,904	25,205
CO ₂ Emissions from Tanker Trucks Worth of Gasoline	715	48	72	107	143
CO ₂ Emissions from Electricity Use of Homes per Year	6,757	449	676	1,014	1,351

Conversion Source: EPA Clean Energy and Greenhouse Gas Equivalencies Calculators



1.2. Energy reduction through energy efficiency measures

Table 4: FCPS Integrated Live Energy Metering Project Potential Savings

Electricity Reduction	Potential Savings at Completion of Phase One		
	10%	15%	20%
KWH	3,172,494	4,587,499	5,917,618
Dollars	\$247,455	\$357,825	\$461,574
KBTU	10,824,551	15,652,545	20,190,912

Electricity Reduction	Potential Savings at Completion of Phase Two		
	10%	15%	20%
KWH	5,651,784	8,306,433	10,876,197
Dollars	\$440,839	\$647,902	\$848,343
KBTU	19,283,887	28,341,549	37,109,583

Electricity Reduction	Potential Savings at Completion of Phase Three - Project Complete		
	10%	15%	20%
KWH	7,774,813	11,490,977	15,122,255
Dollars	\$606,435	\$896,296	\$1,179,536
KBTU	26,527,662	39,207,212	51,597,134

Notes:

- Each phase takes into account all schools added to the metering project up to and including that phase, rather than only the schools added in that phase.
- Potential Savings at Completion of Phase Three - Project Complete - reflect the potential of sustained savings to be realized each year.
- Electricity Dollars based on blended rate of \$0.078 per KWH
- Electricity KWH converted to KBTU using 1 KWH = 3.412 KBTU



Table 5: FCPS Future Projected Natural Gas Savings

Natural Gas Reduction	Potential Annual Savings from Future Natural Gas Integration		
	5%	10%	15%
MCF	3,751.62	7,503.23	11,254.85
Therms	38,529.09	77,058.17	115,587.26
Dollars	\$37,103	\$74,207	\$111,310
KBTU	3,860,412	7,720,824	11,581,236

Notes:

- Natural Gas dollars based on blended rate of \$9.89 per MCF and consumption for FY2012
- Natural Gas MCF converted to KBTU using 1 MCF = 1029 KBTU
- Natural Gas consumption in MCF converted to therms using 1 MCF = 10.27 Therms

1.3. Generation of renewable energy

As a part of this specific project, the district will not be generating renewable energy. However, renewable energy is a significant focus at the district’s Locust Trace AgriScience Farm (LTAF). Designed to meet LEED Gold Standards, LTAF pursues net-zero energy usage while giving students the opportunity to research the impact humans can have upon the natural land & the animals that inhabit the untouched areas. As a part of its pursuit of being a net-zero facility, LTAF is home to the following green features:

- 574 photovoltaic panels generate about 240,000 KWh & the 168 panel Solar Thermal Array generates 1,000,000 BTUs annually, making LTAF a net-zero facility & feeding renewable energy back on the grid (net-metering). The Solar Thermal array is the 3rd largest in North America
- Constructed wetlands: net zero waste disposal system
- Natural Ventilation: Fans & Louvers minimize air-conditioning in large learning spaces
- Daylight: passive & solar, windows, clerestories & transoms
- Solar Hot Water: domestic & heating
- Geo-thermal Heating & Air-conditioning
- Digital Plug Load Controls minimize energy usage during non-operational hours
- Pervious pavers & engineered gravel roads eliminate runoff



2. Qualifications, Experience, Capabilities, and Scheduling

The FCPS district has the qualifications, experience and capabilities to successfully implement the proposed project. FCPS made serious commitments to sustainability, energy efficiency and mitigating pollution in the belief that energy efficiency and sustainable operations are important; both in protecting the environment while providing a healthy environment for students and staff, and in responsible spending of tax dollars. Tax funds spent on utilities are tax funds not available for direct student programs and services.

In accordance with Federal Acquisition regulation 52.209-5, the Superintendent certifies that he along with any other officers, directors, owners, partners, employees, or agents are not presently debarred, suspended, prosed for debarment, or declared ineligible for an award by any State or Federal agency.

2.1. Relevant experience with the technology or process

The district has adopted a Sustainability Plan that includes goals, objectives, and tactics as well as performance measures and employs two district level Energy & Sustainability managers (originally employed through the School Energy Managers Project (SEMP) grant, now paid using district funds) to oversee efforts in these areas. The Sustainability Council provides guidance to the Board and district staff in achieving the Plan's goals and objectives. FCPS is determined to serve as a national leader in sustainability, energy efficiency and sustainable environments in education. (Website: <http://www.sustainability.fcps.net/sustainability-council1>)

The FCPS Sustainability Council has identified a number of factors critical to achieving its goals and objectives:

- FCPS must set the right goals for reducing energy costs and providing a healthy environment for our students. Close collaboration and good communications with our sustainability team members and outside partners will be critical in establishing baselines, setting meaningful goals and developing the strategies and approaches that will achieve the intended results.
- FCPS and our partners will need the best available scientific, engineering and economic information to establish priorities and make good decisions. Sound engineering, science and technology will help determine which issues pose the best opportunities for operational savings and educational improvements. Reliable economic information will ensure our ability to make cost effective decisions.
- FCPS must collect the information needed to assess where the school system is and where we need to go. Establishing a baseline of current conditions by identifying and monitoring a variety of key indicators can help us not only to set goals and develop strategies but also to assess our progress and evaluate our performance.
- FCPS must plan and continue to explore new and creative ways to achieve our goals. FCPS must look for innovative ways to address high energy priorities, educational opportunities and energy design standards.

Finally, FCPS's future success depends on our ability to develop, train and sustain a highly skilled, adaptable, results oriented workforce. We must ensure that the workforce will be provided with the right mix of training, access to technical expertise, experience and leadership capabilities to achieve our energy and sustainability goals and carry out our educational programs.

The FCPS district and many of its individual schools have received a number of awards and designations since the beginning of the sustainability initiative. The following is a sample of the awards and designations received.

-  EPA Energy Star Certification: Bryan Station Middle School, Arlington Elementary, Athens Chilesburg Elementary, Harrison Elementary, James Lane Allen Elementary, Rosa Parks Elementary, Russell Cave Elementary, Wellington Elementary, and William Wells Brown Elementary
-  KY Green & Healthy School: Wellington Elementary
-  Rosa Parks Elementary has been designated as a Green Ribbon School by the Kentucky Department of Education and was among the initial schools to receive the US Department of Education's 2012 Green Ribbon School Award.
-  FCPS has earned several awards from the Kentucky Energy Efficiency Program for Schools (KEEPS), including the Champion Award, the Stewardship Award, and most recently, the Leadership Award. KEEPS is an American Recovery and Reinvestment Act-funded program that provides training, online resources and technical assistance to help Kentucky school districts reduce operational costs through improved energy performance. KEEPS training, technical services and other resources are based on the ENERGY STAR seven-step Guidelines for Energy Management. KEEPS presents awards to school districts that reach specific milestones in the seven-step process.
-  KY NEED Youth Awards for Energy Achievement: Ashland Elementary, KY Rookie School of the Year 2011; Dixie Elementary KY Primary School of the Year 2011; FCPS, KY Program of the Year 2011; Locust Trace Agriscience Farm, KY Secondary School of the Year 2012; Henry Clay HS, KY Green & Healthy Schools Model School; Jessie Clark MS, KY Green & Healthy School; Bluegrass Youth Sustainability Council, Toyota Environmental Excellence Award; Rosa Parks Elementary, US Green Ribbon School/EBie Award.
-  The Locust Trace AgriScience Farm was a recipient of the 2011 Lexington-Fayette Environmental Commission Award.



Fayette County currently has two schools, Wellington Elementary and Locust Trace Agri-Science Farm, which have live metering installed and integrated into a public interface.



2.2. Strength of team assembled for project (including commitment of key participants) as evidenced by letters of commitment or support

FCPS employs two full time individuals, Britney Thompson and Tresine Logsdon, who work with energy and sustainability within our schools on a daily basis. Britney is a mechanical engineer and has completed the Certified Energy Manager (CEM) training and examination. Tresine is a certified science teacher who works with student energy teams on a daily basis. The acclaimed duo has emerged as a leader in the school energy management scene, receiving multiple awards and sharing best practices and successes with the community regularly. They are eagerly anticipating the award and development of this project to bring the program successes to the next level.

Table 6

Key Project Personnel			
Name	Position	Responsibility	% of Time on Project
Britney Thompson	Energy & Sustainability Manager	Project manager; monitor and analyze data generated through the live monitoring component	40%+ (conservative estimate)
Tresine Logsdon	Energy & Sustainability Manager	Works with school E=USE ² teams (70% of position time allocated for this)	25% (conservative estimate)
E=USE ² teachers			About 2 hours per month

Many other district personnel will be directly involved with the grant; for example each school's E=USE² team will consist of students and at least one teacher. Maintenance personnel are anticipated to use the live monitoring to collect data for diagnostic purposes. The members of the district Sustainability Council will guide implementation of the project and work with district staff to update the Sustainability Plan based in large part on data collected through the *Environmental Mitigation Project*.

2.3. Schedule, milestones, and deliverables of project.

Phase 1: Spring 2013 to Spring 2014

- Integrate electricity data into the Siemens Energy Monitoring and Controlling (EMC) Smart Building Cloud Platform for the long term storage, analysis and reporting with the 30 Fayette County schools that have an existing metering solution. Siemens will



incorporate the existing Digital Energy Monitors (DEM) into the EMC Solution for access to live energy data.

- Start integration of electricity data in the Green Building Monitoring (GBM) platform.
- Begin development of the interactive occupant and public facing application modules and the integration with the Siemens EMC solution to provide live data to users.
- Award of 'mini-grants' to school student energy team for improvement projects.

Phase 2: Spring 2014 to Spring 2015

- Install 20 DEMs in 12 additional Fayette County Public Schools.
- Interlock new wiring from the DEMs into the nearest existing Siemens controller to pull data into the network for analysis within EMC and display on GBM platform.
- Continue development of the GBM interactive occupant and public facing application modules and integration with the EMC platform.
- Award of 'mini-grants' to school student energy team for improvement projects.

Phase 3: Spring 2015 to Spring 2016

- Install 27 DEMS in the 19 remaining Fayette County Public School buildings.
- Interlock new wiring from the DEMs into the nearest existing Siemens controller to pull data into the network for analysis within EMC and display on GBM platform.
- Continue development of the GBM interactive occupant and public facing application modules and the integration with the Siemens EMC solution to provide live data to users.
- Award of 'mini-grants' to school student energy team for improvement projects.

3. Ability to leverage (match) funding to enhance overall project objectives

FCPS is continually performing renovations to upgrade our facilities to a state-of-the-art learning environment. Many of these renovations include innovating energy savings features. In anticipation of an integrated live energy metering project, as proposed, FCPS has entered into an agreement with InnerSpace Strategies, Incorporated, to provide metering and sub-metering equipment at five facilities during their renovation over the next two years. The FCPS match for this segment of the project is \$83,300. A letter of match verification is attached.

Kentucky Utilities will provide the 46 DEM sub-meters for our TVA Grant project. Based on an approximate cost of \$3,500/meter, this represents a contribution to the project from the utility of \$157,500. This money would be coming into the project during Phase 2-2014 and Phase 3-2015. A letter of match verification is attached.

Siemens Industry, Incorporated, has agreed to partner with FCPS in the development and installation of the proposed integrated live energy metering project. Siemens has agreed to invest a total of \$254,000 into this project over the three phases of development. A letter of match verification along with project details is attached.

FCPS is committed to providing adequate personnel to complete the project as proposed. Salaries for Britney Thompson (40%) and Tresine Logsdon (25%) have been monetized for a total value of \$68,020 and \$51,899 over the three phases, respectively. This match is verified in the detailed budget and attached Superintendent's support letter.

The total monetized value of matching funds for this project is **\$686,920**.

4. Projects located within the TVA service area

While the Fayette County Public School District is not located within the TVA service area, the proposed project addresses the TVA consent decree and will expand the impact of the consent decree. As part of this project, FCPS intends to identify a school district(s) within the TVA territory to share energy management best practices and provide mentorship on potential integrated metering projects within TVA district. This project will serve as a pilot and example to many across the state and FCPS intends to tout the benefits and results locally, regionally, and nationally. FCPS will be assisted in obtaining a TVA school district by two of FCPS' Sustainability Partners, Smith Management Group and Ross Tarrant Architects.

5. Reasonableness of budget

The Fayette County Public School District requests **\$337,921** in funding (over a three-year project period) for its proposed *Environmental Mitigation Project: Integrated Live Energy Metering* proposal. The budget is directly aligned with the project; all costs are essential to implementing the activities outlined in the technical proposal. Perusal of the budget will show that all costs are reasonable in relation to the stated goals and objectives and advance the mission of both the district's Sustainability Plan and the Tennessee Valley Authority's (TVA) settlement with the US Environmental Protection Agency (EPA).

The Fayette County Public School District's 2011-12 working budget is \$448,018,420. District personnel follow established accounting procedures using the state mandated accounting software MUNIS. All funds flow through the district finance office, with the grant accounting department overseeing all grant funds. The Grants Management team is certified in Grants Management and trained in compliance with all OMB circulars. Budget managers are established for each grant Purchase orders (written by budget managers and approved by administration) are used to make purchases and invoices are paid through the district's finance office.

The district employs a grant compliance officer as well as a grant accountant and grant



budget analysts to assist project staff on all grants as well as to ensure fidelity of implementation in both programmatic and financial areas. Supporting departments include human resources, budget and staffing, finance, payroll, facilities, and technology, etc. The district has an Office of Data, Research, and Evaluation that will work closely with project staff, school personnel and the appropriate partners in collecting and analyzing evaluation data.

The Fayette County Public Schools district has had extensive experience in successfully implementing federally funded grant programs. Along with formula grants such as Title 1, the district has been awarded numerous federal grants by the US Department of Education, the National Science Foundation, the US Department of Agriculture and the US Department of Justice. These include multiple Smaller Learning Communities grants, multiple Carol M. White Physical Education Program grants, multiple Foreign Language Assistance Program grants, an Information Technology Experiences for Teachers & Students (ITEST) grant, multiple CSREES grants and multiple Secure Our Schools grants.

In addition, the district has had extensive experience in successfully implementing grants awarded through the Kentucky Department of Education. These include multiple Math & Science Partnership grants, multiple Reading First grants, and multiple McKinney-Vento Homeless Program grants. Other state grants include a state Agricultural Workforce Development grant

The vast majority of the district's operating budget is allocated for fixed expenses, such as teachers and paraeducators (according to the district's and individual School Council staffing policies), building maintenance, transportation and food service. Once these fixed expenses are allocated, there is little left over for other projects, especially when the level of state funding for teacher/paraeducator salaries (the SEEK formula) is likely to be cut again over the next two years. State level budgets for other state initiatives, such as the Family Resource & Youth Services Centers (FRYSC), Extended School Services (ESS) and Safe Schools have had sharp cuts over the past few years and are likely to be cut again. The old axiom, "To make money, you have to spend money" is true and it follows that, "To save money in the long term, you have to spend money in the short term." Funding the district's proposal will result in tax dollars being redirected from utility companies to the classroom every year. However the initial cost of the project is such that it is not feasible for the district to fund it when facing the prospect of significant reductions in state funding.

A comprehensive progress report, including documentation will be included with each invoice for reimbursement.

Project work will not begin prior to receiving notification that the Cabinet has approved the Contract.

State and district purchasing policies and procedures will be utilized for all purchases. As appropriate, items will either be put to bid or qualify for a sole source determination. Project personnel will work with district purchasing personnel to determine the appropriate method of purchase.

Below is a summary of requested grant funds.

Personnel:

Grant management supplement requested: \$6,984 at \$2,328 per year.

Fringe Benefits:

Thompson and Logsdon: \$1,233

Travel:

A small amount of funds will be included for travel to state/national conference, not only to learn but for project dissemination as well. \$14,157 over three years at \$4,719 each year.

Equipment:

No funding for equipment is requested as part of this project.

Supplies:

Funds are allocated for general consumable supplies – \$4,500 (\$1,500 per year) - will be allocated for other needed materials and supplies.

Grant funds are allocated for each school's E=USE² team to receive a small "mini-grant" to implement data-based energy saving projects. Elementary schools (34) will receive \$500 each; middle schools (12) will receive \$1,000 each; high schools (5) will receive \$1,500 each; and special programs (7) will receive \$1,000 each, totaling \$43,500 @ 3 years = \$130,500

To supplement curriculum and educational resources, an additional \$3000 is requested, at \$1000 per year.

Contractual:

Grant funds are also allocated for the development of the live monitoring software modules for 58 facilities, licensing and support for the three year project period. This is estimated to cost \$150,990 after taking advantage of matching funds.

These items will either be put to bid or qualify for a sole source determination. Project personnel will work with district purchasing personnel to determine the appropriate method of purchase.

Construction:

No grant funds are allocated for construction.

Other:

No grant funds are allocated for 'other'.

Indirect Costs:

Indirect — These funds are not considered state or federal dollars, but rather private. There is a limit of 15% indirect, which is above our approved restricted rate, but below our unrestricted rate, so we will take the 15%. Indirect is not calculated on equipment or on contractual. Indirect costs requested at \$24,056, at \$8,019 per year.

Total grant funds = \$335,421

The required Attachment B budget summary is on the following page.

Budget			
The grant budget line-item amounts below shall be applicable only to expense incurred during the Applicable Period			
BEGIN: Spring 2013	END: Spring 2016		
OBJECT CLASS CATEGORY	GRANT CONTRACT	MATCH	TOTAL PROJECT
Personnel	\$6,984	\$119,918	\$126,902
Fringe Benefits	\$1,233	\$69,701	\$70,934
Travel	\$14,157		\$14,157
Equipment			
Supplies	\$138,000		\$138,000
Contractual	\$150,990	\$497,300	\$648,290
Construction			
Other1			
Indirect Charges2	\$24,056		\$24,056
GRAND TOTAL	\$335,421	\$686,920	\$1,022,341

1 Applicable detail follows this page is line-item is funded.

2 Indirect Charges are limited to 15% of direct charges. Contractual isn't included in direct charges.

GRANT BUDGET LINE-ITEM DETAIL

OTHER	AMOUNT
Personnel: Supplemental Duty	\$6,984
Fringe Benefits	\$1,233



Projects to conserve energy in new and existing buildings

Travel	\$14,157
Supplies and Materials	\$138,000
Contractual: Siemens Metering & Software	\$150,990
Indirect funds	\$24,056
TOTAL	\$335,420

Thank you for the opportunity to apply for the TVA Settlement Grant funds. Please notify us if you have any questions or need further assistance.



Exhibit 4

Louisville Gas and Electric Company

P.S.C. Electric No. 9, Second Revision of Original Sheet No. 1.1
Canceling P.S.C. Electric No. 9, First Revision of Original Sheet No. 1.1

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DATE OF ISSUE: February 28, 2013

DATE EFFECTIVE: April 1, 2013

ISSUED BY: */s/* Edwin R. Staton, Vice President
State Regulation and Rates
Louisville, Kentucky

Louisville Gas and Electric Company

P.S.C. Electric No. 9, Second Revision of Original Sheet No. 86.10
Canceling P.S.C. Electric No. 9, First Revision of Original Sheet No. 86.10

Adjustment Clause

DSM

Demand-Side Management Cost Recovery Mechanism

Monthly Adjustment Factors

Residential Rate RS, Volunteer
Fire Department Rate VFD, and
Low Emission Vehicle Service Rate LEV

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00168 per kWh
DSM Revenues from Lost Sales (DRLS)	\$ 0.00098 per kWh
DSM Incentive (DSMI)	\$ 0.00008 per kWh
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00096 per kWh
DSM Balance Adjustment (DBA)	\$ (0.00070) per kWh
Total DSMRC for Rates RS, VFD, and LEV	\$ 0.00300 per kWh

General Service Rate GS

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00081 per kWh	
DSM Revenues from Lost Sales (DRLS)	\$ 0.00116 per kWh	
DSM Incentive (DSMI)	\$ 0.00004 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00003 per kWh	
DSM Balance Adjustment (DBA)	\$ (0.00004) per kWh	
Total DSMRC for Rate GS	\$ 0.00200 per kWh	

Commercial Customers Served Under Power Service Rate PS

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00030 per kWh	
DSM Revenues from Lost Sales (DRLS)	\$ 0.00042 per kWh	
DSM Incentive (DSMI)	\$ 0.00002 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00009 per kWh	
DSM Balance Adjustment (DBA)	\$ 0.00001 per kWh	
Total DSMRC for Rate PS	\$ 0.00084 per kWh	

Commercial Customers Served Under Time-of-Day
Secondary Service Rate TODS and Commercial
Time-of-Day Primary Service Rate CTODP

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00027 per kWh	
DSM Revenues from Lost Sales (DRLS)	\$ 0.00032 per kWh	
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00001 per kWh	
DSM Balance Adjustment (DBA)	\$ (0.00004) per kWh	
Total DSMRC for Rates TODS, and CTODP	\$ 0.00057 per kWh	

DATE OF ISSUE: February 28, 2013

DATE EFFECTIVE: April 1, 2013

ISSUED BY: /s/ Edwin R. Staton, Vice President
State Regulation and Rates
Louisville, Kentucky

Louisville Gas and Electric Company

P.S.C. Electric No. 9, Second Revision of Original Sheet No. 1.1
P.S.C. Electric No. 9, First Revision of Original Sheet No. 1.1

GENERAL INDEX Standard Electric Rate Schedules – Terms and Conditions

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Energy Curtailment and Restoration Procedures	107	08-01-10

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ISSUED BY: /s/ ~~Edwin R. Staton~~, Vice President
State Regulation and Rates
Louisville, Kentucky

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Public Service Commission in Case No. ¶
2012-00222 dated December 20, 2012¶

Louisville Gas and Electric Company

P.S.C. Electric No. 9, Second Revision of Original Sheet No. 86.10
 Canceling P.S.C. Electric No. 9, First Revision of Original Sheet No. 86.10

Adjustment Clause **DSM**
Demand-Side Management Cost Recovery Mechanism

Monthly Adjustment Factors

Residential Rate RS, Volunteer
 Fire Department Rate VFD, and
Low Emission Vehicle Service Rate LEV

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00168 per kWh
DSM Revenues from Lost Sales (DRLS)	\$ 0.00098 per kWh
DSM Incentive (DSMI)	\$ 0.00008 per kWh
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00096 per kWh
DSM Balance Adjustment (DBA)	\$ (0.00070) per kWh
Total DSMRC for Rates RS, VFD, and LEV	\$ 0.00300 per kWh

General Service Rate GS

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00081 per kWh	Deleted: 0.00073
DSM Revenues from Lost Sales (DRLS)	\$ 0.00116 per kWh	Deleted: 0.00108
DSM Incentive (DSMI)	\$ 0.00004 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00003 per kWh	
DSM Balance Adjustment (DBA)	\$ (0.00004) per kWh	
Total DSMRC for Rate GS	\$ 0.00200 per kWh	Deleted: 0.00184

Commercial Customers Served Under Power Service Rate PS

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00030 per kWh	Deleted: 0.00027
DSM Revenues from Lost Sales (DRLS)	\$ 0.00042 per kWh	Deleted: 0.00039
DSM Incentive (DSMI)	\$ 0.00002 per kWh	Deleted: 0.00001
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00009 per kWh	
DSM Balance Adjustment (DBA)	\$ 0.00001 per kWh	
Total DSMRC for Rate PS	\$ 0.00084 per kWh	Deleted: 0.00077

Commercial Customers Served Under Time-of-Day
 Secondary Service Rate TODS and Commercial
Time-of-Day Primary Service Rate CTODP

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00027 per kWh	Deleted: 0.00023
DSM Revenues from Lost Sales (DRLS)	\$ 0.00032 per kWh	Deleted: 0.00029
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00001 per kWh	
DSM Balance Adjustment (DBA)	\$ (0.00004) per kWh	
Total DSMRC for Rates TODS, and CTODP	\$ 0.00057 per kWh	Deleted: 0.00050

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 State Regulation and Rates
 Louisville, Kentucky

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Kentucky Utilities Company

P.S.C. No. 16, Second Revision of Original Sheet No. 1.1
Canceling P.S.C. No. 16, First Revision of Original Sheet No. 1.1

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Special Terms and Conditions Applicable to Rate RS	100	02-06-09	
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State Regulation and Rates
Lexington, Kentucky

Kentucky Utilities Company

P.S.C. No. 16, Third Revision of Original Sheet No. 86.10
Canceling P.S.C. No. 16, Second Revision of Original Sheet No. 86.10

Adjustment Clause

DSM

Demand-Side Management Cost Recovery Mechanism

Monthly Adjustment Factors

Residential Service Rate RS, Volunteer Fire Department Service Rate VFD, and Low Emission Vehicle Service Rate LEV

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00161 per kWh
DSM Revenues from Lost Sales (DRLS)	\$ 0.00070 per kWh
DSM Incentive (DSMI)	\$ 0.00008 per kWh
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00066 per kWh
DSM Balance Adjustment (DBA)	\$(0.00040) per kWh
Total DSMRC for Rates RS, VFD and LEV	\$ 0.00265 per kWh

General Service Rate GS

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00085 per kWh	I
DSM Revenues from Lost Sales (DRLS)	\$ 0.00093 per kWh	I
DSM Incentive (DSMI)	\$ 0.00004 per kWh	I
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00002 per kWh	
DSM Balance Adjustment (DBA)	\$(0.00006) per kWh	
Total DSMRC for Rates GS	\$ 0.00178 per kWh	I

All Electric School Rate AES

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00029 per kWh	I
DSM Revenues from Lost Sales (DRLS)	\$ 0.00029 per kWh	I
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00012 per kWh	
DSM Balance Adjustment (DBA)	\$(0.00008) per kWh	
Total DSMRC for Rate AES	\$ 0.00063 per kWh	I

Commercial Customers Served Under Power Service Rate PS, Time of Day Secondary Service Rate TODS, and Time-of-Day Primary Service Rate TODP

Energy Charge

DSM Cost Recovery Component (DCR)	\$ 0.00028 per kWh	I
DSM Revenues from Lost Sales (DRLS)	\$ 0.00033 per kWh	I
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00005 per kWh	
DSM Balance Adjustment (DBA)	\$ 0.00001 per kWh	
Total DSMRC for Rates PS, TODS, and TODP	\$ 0.00068 per kWh	I

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State Regulation and Rates
Lexington, Kentucky

Kentucky Utilities Company

P.S.C. No. 16, Second Revision of Original Sheet No. 1.1
 Canceling P.S.C. No. 16, First Revision of Original Sheet No. 1.1

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Standard Electric Rate Schedules – Terms and Conditions

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 Lexington, Kentucky

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Kentucky Utilities Company

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 Canceling P.S.C. No. 16, Second Revision of Original Sheet No. 86.10

Adjustment Clause **DSM**
Demand-Side Management Cost Recovery Mechanism

Monthly Adjustment Factors

Residential Service Rate RS, Volunteer Fire Department Service Rate VFD, and Low Emission Vehicle Service Rate LEV

	<u>Energy Charge</u>
DSM Cost Recovery Component (DCR)	\$ 0.00161 per kWh
DSM Revenues from Lost Sales (DRLS)	\$ 0.00070 per kWh
DSM Incentive (DSMI)	\$ 0.00008 per kWh
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00066 per kWh
DSM Balance Adjustment (DBA)	\$(0.00040) per kWh
Total DSMRC for Rates RS, VFD and LEV	\$ 0.00265 per kWh

General Service Rate GS

	<u>Energy Charge</u>	
DSM Cost Recovery Component (DCR)	\$ 0.00085 per kWh	Deleted: 0.00071
DSM Revenues from Lost Sales (DRLS)	\$ 0.00093 per kWh	Deleted: 0.00079
DSM Incentive (DSMI)	\$ 0.00004 per kWh	Deleted: 0.00003
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00002 per kWh	
DSM Balance Adjustment (DBA)	\$(0.00006) per kWh	
Total DSMRC for Rates GS	\$ 0.00178 per kWh	Deleted: 0.00149

All Electric School Rate AES

	<u>Energy Charge</u>	
DSM Cost Recovery Component (DCR)	\$ 0.00029 per kWh	Deleted: 0.00023
DSM Revenues from Lost Sales (DRLS)	\$ 0.00029 per kWh	Deleted: 0.00025
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00012 per kWh	
DSM Balance Adjustment (DBA)	\$(0.00008) per kWh	
Total DSMRC for Rate AES	\$ 0.00063 per kWh	Deleted: 0.00053

Commercial Customers Served Under Power Service Rate PS, Time of Day Secondary Service Rate TODS, and Time-of-Day Primary Service Rate TODP

	<u>Energy Charge</u>	
DSM Cost Recovery Component (DCR)	\$ 0.00028 per kWh	Deleted: 0.00022
DSM Revenues from Lost Sales (DRLS)	\$ 0.00033 per kWh	Deleted: 0.00028
DSM Incentive (DSMI)	\$ 0.00001 per kWh	
DSM Capital Cost Recovery Component (DCCR)	\$ 0.00005 per kWh	
DSM Balance Adjustment (DBA)	\$ 0.00001 per kWh	
Total DSMRC for Rates PS, TODS, and TODP	\$ 0.00068 per kWh	Deleted: 0.00057

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