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Mr. Jeff DeRouen
Executive Director
Kentucky Public Service Commission
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April 1, 2010

RE: ***Application of Louisville Gas and Electric Company for an Order Approving a Responsive Pricing and Smart Metering Pilot Program***
Case No. 2007-00117

Dear Mr. DeRouen:

Enclosed please find Louisville Gas and Electric Company's 2009 Responsive Pricing and Smart Meter Pilot Program Annual Report pursuant to the Commission's Order dated July 12, 2007 in the above mentioned proceeding.

Should you have any questions concerning the enclosed, please contact me at your convenience.

Sincerely,

Rick E. Lovekamp

Rick E. Lovekamp

cc: Parties of Record

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF LOUISVILLE GAS AND	**)**	
ELECTRIC COMPANY FOR AN ORDER	**)**	
APPROVING A RESPONSIVE PRICING	**)**	**CASE NO. 2007-00117**
AND SMART METERING PILOT	**)**	
PROGRAM	**)**	

Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company

April 1, 2010

Pilot Overview

On March 21, 2007, Louisville Gas and Electric Company ("LG&E") filed an application with the Kentucky Public Service Commission ("Commission") in Case No. 2007-00117 requesting Commission approval to develop a responsive pricing and smart metering pilot program ("Pilot"). In its application, LG&E stated its hypothesis that "a responsive pricing rate structure consisting of time-of-use and real-time, critical peak pricing components in conjunction with a Demand-Side Management ("DSM") program will likely maximize demand response for residential and commercial customers in a cost-effective manner."[1] To test its hypothesis, LG&E planned to use time-of-use rates and "smart" devices with secure communications to send pricing signals to a test group of customers, allowing them to choose to save money and decrease system demand by shifting their electricity usage away from peak generation system demand periods. The smart devices would also provide information regarding real-time and historical energy usage.

The Pilot was designed so that the Residential Responsive Pricing Service ("RRP") and General Responsive Pricing Service ("GRP") rate structures would be revenue-neutral for the Company. This means that a participating customer with a typical load profile would not experience a change in electricity costs if their usage pattern did not change. However, a customer's electric bill would decrease if usage shifted from higher-cost peak periods to lower-cost off-peak periods.

By Order dated July 12, 2007, the Commission approved the Pilot for an initial term of three years that would serve up to two thousand customers. The Pilot was designed to include up to one hundred customers under Rate RS (residential) and up to fifty customers under Rate GS (commercial) to be enrolled on time-of-use rate structures. To determine if cost savings could be realized by some customers not on the time-of-use rates by using a combination of smart devices, the approved Pilot allowed for up to four hundred customers to be given a combination of such devices to provide the participating customers certain usage information, allowing the customers to change usage to produce cost savings, if desired.

LG&E filed a motion on September 15, 2008 to amend the July 12, 2007 Order to add up to an additional fifteen customers to the RRP rate structure. The additional customers were to be employees of General Electric Company ("GE") located on the same routes as the other Pilot customers. The request was made to cooperate with GE's effort to promote and test DSM-ready appliances in the employees' homes. The smart equipment provided by LG&E to the GE employees was to be identical to the other customers participating in the Pilot. The Commission's Order dated October 7, 2008 granted authority to include the additional GE employees.

[1] *In the Matter of: Application of Louisville Gas and Electric Company for an Order Approving a Responsive Pricing and Smart Metering Pilot Program*, Case No. 2007-00117, Application at 4 (Mar. 21, 2007).

Responsive Pricing Overview

Pursuant to the Commission's July 12, 2007 Order in this proceeding, LG&E filed with the Commission a tariff sheet establishing Residential and General Service Responsive Pricing which incorporated a time-of-use rate with critical peak pricing ("CPP"). These Responsive Pricing Tariff's became effective in January 2008. Responsive Pricing was offered to customers on the six selected routes who had lived at their residences for at least twelve months. Responsive Pricing participation is voluntary and features four pricing periods (low, medium, high, and CPP) as opposed to a standard residential customer's flat rate (Rate Schedule RS). Low and medium pricing periods have rates lower than the standard residential rate and make up approximately 87% of the hours in a year. CPP events can occur during hours of high generation system demand for up to eighty hours per year, implemented at LG&E's discretion. Customers receive at least 30 minutes notice prior to CPP events, which has a rate of approximately five times that of the standard flat residential rate. The rate structure and pricing changes depending on the time of year and is detailed below.

June through September		
Time	**Weekdays**	**Weekends**
Midnight to 10 a.m.	Low	Low
10 a.m. to 1 p.m.	Medium	Low
1 p.m. to 6 p.m.	High	Medium
6 p.m. to 9 p.m.	Medium	Low
9 p.m. to Midnight	Low	Low

October through May		
Time	**Weekdays**	**Weekends**
Midnight to 8 a.m.	Low	Low
8 a.m. to 6 p.m.	Medium	Low
6 p.m. to 10 p.m.	High	Medium
10 p.m. to Midnight	Low	Low

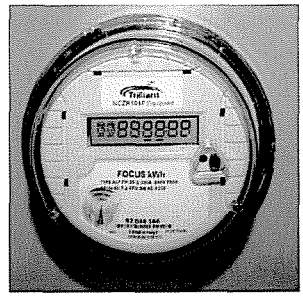
Residential ($/kWh)				
Month/Year	*Low*	*Medium*	*High*	*Critical*
Jan-08	0.0493	0.0615	0.1149	0.3069
Feb-08	0.0494	0.0615	0.1147	0.3059
Mar-08	0.0427	0.0546	0.1070	0.2954
Apr-08	0.0452	0.0571	0.1099	0.2997
May-08	0.0463	0.0582	0.1108	0.2998
Jun-08	0.0466	0.0587	0.1119	0.3029
Jul-08	0.0470	0.0591	0.1123	0.3033
Aug-08	0.0495	0.0617	0.1156	0.3094
Sep-08	0.0493	0.0615	0.1150	0.3076
Oct-08	0.0509	0.0631	0.1167	0.3095
Nov-08	0.0501	0.0623	0.1160	0.3092
Dec-08	0.0461	0.0583	0.1120	0.3052
Jan-09	0.0480	0.0602	0.1139	0.3069
Feb-09	0.0508	0.0632	0.1178	0.3137
Mar-09	0.0519	0.0643	0.1189	0.3150
Apr-09	0.0510	0.0636	0.1191	0.3183
May-09	0.0504	0.0629	0.1180	0.3160
Jun-09	0.0497	0.0622	0.1176	0.3165
Jul-09	0.0504	0.0629	0.1180	0.3160
Aug-09	0.0500	0.0625	0.1172	0.3140
Sep-09	0.0467	0.0591	0.1135	0.3091
Oct-09	0.0475	0.0599	0.1147	0.3114
Nov-09	0.0477	0.0602	0.1152	0.3129
Dec-09	0.0462	0.0587	0.1136	0.3107
Jan-10	0.0487	0.0613	0.1166	0.3150
Feb-10	0.0507	0.0634	0.1191	0.3193
Mar-10	0.0514	0.0640	0.1194	0.3184

Commercial ($/kWh)				
Month/Year	*Low*	*Medium*	*High*	*Critical*
Jan-08	0.0530	0.0677	0.1410	0.3064
Feb-08	0.0528	0.0674	0.1405	0.3053
Mar-08	0.0460	0.0604	0.1324	0.2948
Apr-08	0.0485	0.0630	0.1355	0.2990
May-08	0.0492	0.0637	0.1359	0.2987
Jun-08	0.0496	0.0642	0.1372	0.3019
Jul-08	0.0500	0.0646	0.1376	0.3023
Aug-08	0.0525	0.0673	0.1413	0.3083
Sep-08	0.0523	0.0670	0.1406	0.3066
Oct-08	0.0539	0.0687	0.1423	0.3084
Nov-08	0.0531	0.0679	0.1417	0.3082
Dec-08	0.0491	0.0639	0.1377	0.3041
Jan-09	0.0510	0.0658	0.1395	0.3059
Feb-09	0.0552	0.0702	0.1451	0.3123
Mar-09	0.0563	0.0713	0.1462	0.3136
Apr-09	0.0553	0.0705	0.1467	0.3167
May-09	0.0546	0.0698	0.1454	0.3144
Jun-09	0.0539	0.0691	0.1452	0.3149
Jul-09	0.0547	0.0698	0.1455	0.3144
Aug-09	0.0542	0.0693	0.1445	0.3124
Sep-09	0.0509	0.0659	0.1406	0.3075
Oct-09	0.0517	0.0668	0.1420	0.3099
Nov-09	0.0519	0.0671	0.1426	0.3113
Dec-09	0.0504	0.0655	0.1409	0.3092
Jan-10	0.0526	0.0678	0.1436	0.3130
Feb-10	0.0558	0.0711	0.1476	0.3185
Mar-10	0.0565	0.0717	0.1478	0.3176

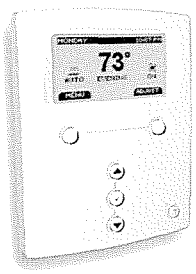
Smart Device Overview

The Pilot was designed to utilize four kinds of smart devices: smart meters; programmable thermostats; in-home energy usage displays; and load control switches. Customers participating in the Responsive Pricing group (including GE) receive all available devices listed above. The remaining Pilot customer groups receive a choice of up to three in-home devices in addition to the smart meter. The customer groups are further defined on page nine and ten of this report.

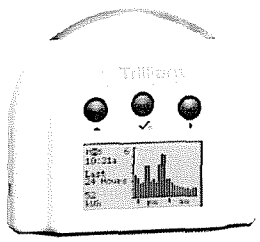
Smart Meter: This is a typical electric service meter equipped with an electronic card that communicates over the secure network. The meter utilizes two-way communication and provides LG&E with real-time usage data.



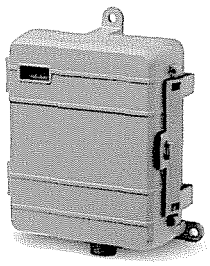
Programmable Smart Thermostat: The thermostat has a simple design with many features, including a display of the rate plan time of use costs ($/kWh). The thermostat has a programmable temperature offset that can automatically react by raising the thermostat setting during high pricing periods, but can be overridden by the customer if desired. LG&E has the ability to communicate and send text messages to the thermostat to inform the customer when a CPP event is in effect. Not only will the text message alert the customer of the CPP event taking place, but will also notify them of the duration of the event. These text messages will remain displayed on the thermostat screen until acknowledged by the customer. The customer can modify some thermostat settings from anywhere by accessing a website.



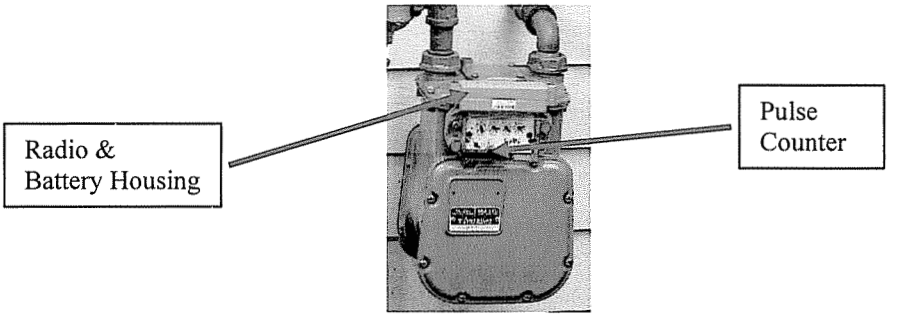
In-Home Display (IHD): The IHD is a table-top device that displays real-time energy usage and the current pricing tier. Also, the top of the IHD has a color wheel representing the pricing tier (e.g., red indicates high-priced periods). Twenty-four-hour and thirty-day historical energy usage and costs are displayable as well. The IHD can be set to update pricing monthly on a predetermined day (e.g., the seventh of every month) to coordinate closely with the customer's typical meter read date.



Load Control Switch: This switch, also known as a remote appliance controller ("RAC"), is placed on an electric water heater that can be programmed to shut off water heater operation during higher-priced periods. RACs can also be installed on pool pumps. Customers have the ability to override such switches if they so choose.



Natural Gas Meter Module: In addition to the above devices, a device that is an add-on module to existing natural gas meters has been incorporated into the smart network. The gas module can be placed into service without removal and re-installation of the existing meter's index, and contains sensors integrated into its cover that act as a pulse counter. The gas module has a battery life in excess of twenty years, and stores data locally. Usage data is reported twice daily over the secure network. Like smart meters, these devices provide usage information for billing purposes and eliminate the need to deploy a meter reader monthly to these locations.



Pilot Implementation

LG&E evaluated potential routes in 2007 and it was decided to incorporate six different routes in an effort to execute the Pilot in areas representative of the entire service territory. The routes were selected to include city and rural environments. Appendix A has a map of the service territory indicating general route locations. A summary of criteria used in selecting the routes is highlighted in the following table.

Criteria	Route 1	Route 2	Route 3	Route 4	Route 5	Route 6
Customer Density	High	High	High	Moderate	Moderate	Low
Foliage Density	Moderate	Moderate	Moderate	Low	Low	High
Terrain Dynamics	Low	Low	Moderate	Moderate	Moderate	High
Customer Variety	Low	Moderate	Moderate	High	High	Moderate
Property Size	Low	Low	Moderate	Moderate	Moderate	High

The "Customer Variety" criteria in the table above relates to energy usage, customer type (residential and commercial) and building size. "Property Size" criteria relates to the acreage of the property.

LG&E contracted with Trilliant, Inc. ("Trilliant") to be the hardware provider for the Pilot. Trilliant was responsible for installing the communications network and provided communications cards for the smart meters, as well as the other smart devices discussed herein. LG&E contracted with GoodCents Solutions ("GoodCents") to install the smart devices. The smart meter communication network construction began in September 2007 and GoodCents began installing smart devices at customers' residences and businesses along the selected routes in November 2007.

On each route, GoodCents installed smart meters on homes and businesses. Communication modules were added to the natural gas meters for those customers who receive those services to allow full automated meter reading capabilities through the communication network. Each route also contains at least two data collectors, known as communication gates. These devices are used to accumulate all the metering data and serve as network coordinators. The data collected is sent to a server via internet protocol ("IP"). Multiple communication gates were installed in each route for redundancy. This allows the data to be continually reported through the network. LG&E and GoodCents installed additional signal-repeating equipment where there were long distances between meters and communication gates. This was especially prevalent in the rural route as the equipment relays messages to and from in-network devices and helps improve overall network performance.

All electric smart meters and the communication infrastructure were installed by the end of January 2008. Upon completion of the installations, a directed marketing effort ensued to attract

customers to participate in the Pilot. The initial efforts targeted customers interested in the time-of-use rate. The goal was to have this group identified, equipment deployed, and customers educated prior to the summer of 2008. The original application suggested that the Pilot would be deployed within six months of approval. However, the challenges of smart metering being an emerging technology, being a new program to both LG&E and our customers, equipment availability and attracting participants ultimately delayed device deployment.

As a result of LG&E's marketing efforts, 82 RS and 1 GS customer were participating in the Pilot by June 2008 (on the RRP and GRP rate schedules, respectively). These numbers grew to 102 RS (including the GE customers) and 2 GS customers by the end of the year 2008. However, by December of 2009 the numbers of residential customers (RS) declined to 94 (including the GE customers). In contrast, the number of GS customers grew to four.[2] Thus nine customers were removed from the Responsive Pricing program due to the following: one customer moved from the residence; two customers reported they had difficulties understanding the devices; four customers did not like the thermostat; one GE customer left the company; one GS customer did not want to continue participating after one year of activity.

The primary marketing and education efforts in 2008 were directed toward developing the Responsive Pricing customer group. Since the filing of the 2009 Annual Report, five separate marketing efforts were deployed utilizing a variety of communication techniques and messaging (i.e. three direct mail campaigns a, one telemarketing effort as well as door-to-door participant recruitment on identified routes). These efforts yielded an overall increase of the number of participants by approximately 140 as compared to last year's results. LG&E's goal was to have all the customer groups fully subscribed and their equipment deployed prior to the summer 2009 cooling season. However, with only moderate customer receptiveness to multiple marketing campaigns, this objective has not yet been fully realized. To address the short fall in the customer enrollments, LG&E continues to evaluate the cost effectiveness of developing additional marketing and communication strategies to enroll the remaining participant groups for the 2010 cooling season.

[2] It has been difficult to sign up GS customers, as many of these customers are concerned about the comfort of their own customers during high priced time-of-use periods. LG&E continues to communicate and educate customers on the potential benefits of participating in the pilot.

Pilot Customer Group Goals

The Pilot incorporated several combinations of smart devices to determine whether customers will change their electric and gas usage if provided with various types of tools and energy cost information. Customers residing on the selected metering routes that do not volunteer for Responsive Pricing, are eligible to receive one or more smart devices: up to one hundred fifty customers will receive programmable thermostats and IHDs; up to one hundred fifty customers will receive programmable thermostats and RACs; and up to an additional one hundred customers will receive only IHDs. The following tables summarize device installations for the Pilot.[3]

Pilot Device Goals

Pilot Goals	Smart Meters	Programmable Thermostat	In Home Display	Load Control Switch	Control Type
Responsive Rate Customer Group	150	150	150	150	Responsive Pricing Rate
GE Customer Group	15	15	15	15	Responsive Pricing Rate
Thermostat and Display Group	150	150	150		No Rate Control
Demand Conservation Group	150	150		150	No Rate Control
Display Only Group	100		100		No Rate Control
Control Group	1,450				No Rate Control
Total	2,015	465	415	315	

[3] Load control switch installations on water heaters are less than first anticipated due to LG&E's service territory heavy utilization of natural gas as an energy source.

2009 Pilot Device Actual[4]

2009 Pilot Participants	Smart Meters	Programmable Thermostat	In Home Display	Load Control Switch[3]	Control Type
Responsive Rate Customer Group	88	88	83	17	Responsive Pricing Rate
GE Customer Group	10	10	8	1	Responsive Pricing Rate
Thermostat and Display Group	104	110	104	0	No Rate Control
Demand Conservation Group	22	22	8	9	No Rate Control
Display Only Group	90	0	90	0	No Rate Control
Control Group	1,496				No Rate Control
Total[4]	1,810	230	293	27	

2009 Device Deployment by Route: # Customers per Category

2009	Meters			Responsive	GE	Programmable	In-Home	Load Control
Route #	Residential	Commercial	Gas	Pricing	Employees	Thermostat	Display	Switch
Route 1	275	13	222	5	1	11	15	1
Route 2	90	43	101	1	0	9	9	0
Route 3	201	29	115	10	0	23	40	0
Route 4	367	7	343	22	4	65	78	1
Route 5	348	31	351	31	4	76	92	0
Route 6	396	10	0	19	1	46	59	25
Total	1,677	133	1,132	88	10	230	293	27

[4] Some customers have more than one type of device. For example, customers with two air conditioner units could have two thermostats and in-home display if desired.

2009 Residential Responsive Pricing Results and Analysis[5]

Operational

Approximately 99% of electric meters and 97% of gas modules report energy usage on a regular basis. Non-reporting meters continue to be generally related to foliage issues, location of meters, and occasional hardware malfunctions. Route 6 has provided valuable insight to the operations of network infrastructure in rural areas. In particular, LG&E has learned that network performance can be improved through deployment of additional signal repeating equipment to overcome natural barriers such as foliage and the distance between the meters and communication gates. At the same time, LG&E recognizes that there are areas of identified routes where the costs associated with deploying additional network equipment may not be justified within the scope of the Pilot.

CPP Event Timing

During peak energy usage hours, a critical peak pricing (CPP) period was called on six occasions during the summer of 2009. These CPP events occurred from 14:00 to 18:00 on June 2, June 19, June 24, June 26, July 28, and August 26. The warmest critical day had a high temperature of only 92 degrees, milder than the average high temperatures for Louisville, which typically range between 95 and 96 degrees.

Summer 2008 CPP Event Log		
Date	Time (EST)	MAX Temperature (°F)
July 18, 2008	16:00 - 18:00	92
July 21, 2008	16:00 - 18:00	89
August 11, 2008	16:00 - 18:00	79
August 12, 2008	16:00 - 18:00	81
September 4, 2008	16:00 - 18:00	86

Summer 2009 CPP Event Log		
Date	Time (EST)	MAX Temperature (°F)
June 2, 2009	15:00 - 19:00	89
June 19, 2009	14:00 - 18:00	91
June 24, 2009	14:00 - 18:00	91
June 26, 2009	14:00 - 18:00	92
July 28, 2009	14:00 - 18:00	82
August 26, 2009	14:00 - 18:00	89

Weather

Louisville, Kentucky had a mild summer in 2009 as measured by the total number of cooling degree-days recorded. The number of cooling degree days recorded for the summer of 2009 was approximately 1,100 days, which is lower than the previous four summers (summer of 2008 recorded 1,600 days, summer of 2007 recorded 1,700 days, the summer of 2006 recorded at 1,300 and the summer of 2005 recorded 1,600 days). The warmest months recorded in 2009 were June and August.

Furthermore; Louisville, Kentucky had an unusually cold winter in 2009-2010 as measured by the total number of heating degree-days recorded. The Louisville area experienced 3,608 heating degrees day during the winter of 2009-2010. The 30 year average for Louisville is 3,405 heating degree days from October 2009 to February 2010. During winter 2007-2008 and 2008-2009 there were 3,031 and 3,406 heating degree days, respectively. The winter of 2009-2010 was colder than normal by 203 heating degree days, in addition to being significantly colder than the

[5] Though the Pilot includes residential and commercial customers, too few commercial customers have participated in the Pilot to allow for a separate analysis of their behavior.

two previous winters. The coldest month recorded in 2009-2010 winter period was January, with lowest temperature of 7 degrees recorded on January 3, 2010.

Third-Party Evaluations

LG&E contracted with GoodCents Solutions to conduct the evaluation, measurement and verification (EM&V) analysis and determine the potential load reductions associated with the Responsive Pricing Pilot program. GoodCents evaluated hourly meter data for the summer cooling season of June through September 2009 with the primary goal of determining how customers responded to the Responsive Pricing time-of-use rates, focusing primarily on the critical peak pricing ("CPP") events. The analysis utilizes regression modeling and provides significant detail about the Pilot's 2009 operations. GoodCents' fully detailed analysis report can be found in Appendix B.

GoodCents' analysis was based on the 94 Responsive Pricing customers and the approximately 1,400 other residential customers and included energy usage for critical price days as well as non-critical price days. The number of customers evaluated by GoodCents may be different than data reported elsewhere in this report due to different time periods being discussed and customers' move-ins and move-outs.

The analysis of the summer 2009 time periods reflected that the maximum average load reduction was 0.996 kW and occurred at hour 14:00. Tables below display average load reductions over all CPP days for each customer group when compared to control group customers. Hour 18:00 reductions are negative due to bounce-back effect discussed later in the report.

Summer 2009 Average Load Reductions (kW)					
Group	Hour				
	14:00	15:00	16:00	17:00	18:00
Responsive Rate Group	0.996	0.779	0.370	0.266	-0.520
GE Group	1.132	0.976	0.541	0.318	-0.461
Thermostat & Display	0.941	0.828	0.416	0.230	-0.301
Display Only	0.611	0.599	0.639	0.700	0.736

Evaluation, measurement and verification (EM&V) results from GoodCents' analysis shows high-quality load reductions for demand response. Average load reductions resulting from critical pricing periods vary from 0.230 kW to 1.132 kW per hour. On June 26, 2009, the CPP events demonstrated that at 14:00, on a 92 degree day, LG&E can expect a load reduction of 1.354 kW per Responsive Pricing participant. Although data demonstrates that Responsive Pricing customers are curtailing their usage for the first few hours of the critical peak pricing period, they appear to have over ridden their curtailment efforts during the last hour of the CPP events (hour 18:00). Because of this, the data related to 18:00 was excluded from the load reduction calculations. The load reductions found resulting from critical peak pricing periods are slightly higher than the load reductions found in previous EM&V studies of LG&E's Demand Conservation Load Management Program at the same operational temperatures and hour of control.

Demand Conservation vs. Responsive Pricing Load Reductions			
Hour	Demand Conservation	Responsive Pricing	Difference (kW)
15:00	0.536	0.779	0.243
16:00	0.291	0.370	0.079
17:00	0.314	0.266	-0.048
*2006 analysis load reduction for 88-93 degree days			

Each of the customer groups illustrated on page ten of this report, demonstrated load reduction during the CPP periods.

The Thermostat and Display group's largest load reduction was 1.24 kW, which occurred on June 26 at hour 15. Additionally, almost half of this group's energy usage occurs in the low tier of the rate schedule.

The Display group showed consistently lower usage on the CPP days during the summer of 2009 with energy usage lower than that of control group during all hours of the day. June 26 had the largest energy usage difference of 1.158 kW occurring at hour 16:00, which was similar to the other groups. Analysis of the average energy usage during each tier of the Responsive Pricing rate schedule for almost all Display group customers found that approximately half of the customer's energy usage occurs in the low tier of the rate schedule (48%).

Overall the Responsive Pricing load reductions were greatest in the first hour of the critical peak pricing period and then decreased throughout the evening. Customers are beginning to use the appliances before the critical peak pricing period is over during hour 18:00. The daily load shapes for the average Responsive Pricing customers changed and resulted in daily demand being shifted from high-priced hours to lower-priced hours. Based on a comparison of the average hourly energy usage between the Responsive Pricing group and Control group, load was found to shift from higher-priced weekday hours to the lower-priced off-peak and weekend time periods.

In contrast, the winter analysis reflects no CPP events during the months of October 2009 through February 2010 due to LG&E being a summer-peaking utility. Because a significant portion of LG&E's service territory uses natural gas for heating, smaller electric energy reductions would be expected during winter periods. Therefore, it is ideal to implement CPP during summer periods. Nevertheless, the Pilot included low, medium and high time-of-use rates for winter (October through May), and GoodCents analyzed whether customers exhibited reduced demand during the 'high' pricing period. GoodCents' fully detailed analysis report for this period can be found in Appendix C.

The 'high' pricing period under the winter rate schedule is weekdays from 18:00 to 22:00. Based on EM&V analysis conducted by GoodCents, the Responsive Pricing customers showed lower demand during this period in contrast to standard residential customers whose usage peaked during this period. Even though no critical peak pricing periods were called over the winter of 2009-2010, a reduction in kW was seen during the 'high' pricing period. Data shows

Responsive Pricing customers averaged a 0.792 kW daily reduction in demand on weeknights from 18:00 to 22:00 on days when the maximum daily temperature was 32 degrees or below.

No significant load reduction was found from customers within Thermostat and Display group. Data demonstrates that the Thermostat and Display group used more energy during peak hours on the coldest days. This group's daytime demand stayed lower than that of residential customers on weekdays or weekends. The Display Only group showed the least variation of any of the Pilot customer groups. This is not surprising because they were only given an in-home display device and no responsive rate structure. Based on the 2009-2010 usage patterns from the latter two groups, it does not appear that knowledge or equipment created a significant change of behavior without a responsive rate structure during this time period.

The analysis of the Responsive Pricing Pilot's second summer of data demonstrates participating customers have continued to decrease their energy usage slightly in high- and critical-peak priced periods; however, Responsive Pricing customers used more energy overall throughout the summer periods compared to non-Responsive Pricing residential customers.

GE Employees

Smart device installation for the GE employees began the last week of October 2008 and was completed by mid-December 2008. Fifteen GE employees were approved by the Commission for inclusion into the Pilot as Responsive Pricing customers; however, currently only ten GE employees are participating on the Pilot. The GE Group showed the largest reductions during the CPP periods during the summer of 2009. On average the GE group demonstrated load reductions of 14% higher than the Responsive Rate group. The combination of smart appliances with the Responsive Pricing program allows the customers to significantly reduce demand on the LG&E system and allows the customer to save energy and money.

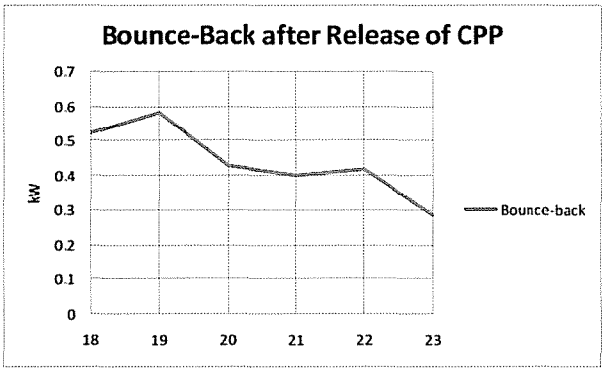
During the winter months of October 2009 through February 2010, GoodCents found that the GE group did not show the same demand reduction during the 'high' pricing period as the Responsive Pricing customers. Customers in the GE group actually averaged a 0.661 kW increase during the 'high' pricing period on days with maximum temperatures 32 degrees or below, despite the increased cost. The majority of this increase is due to the demand spike that this group exhibited during hour 18:00. The sample size of the GE group was only 10 customers so it is difficult to determine if this pattern was due to the equipment and pricing program or simply customer behavior.

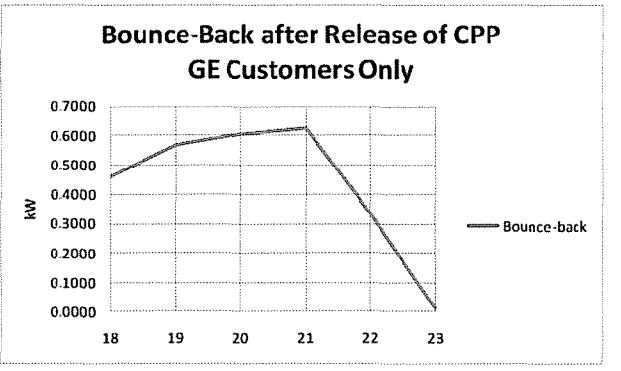
Bounce – Back Effect

When load control or critical rate is released it is imperative not to create a new load peak. This phenomenon can occur when HVAC systems operate to lower or raise the temperature in the premise to a predetermined thermostat setting. This phenomenon is known as a snapback or bounce-back effect. GoodCents analyzed the Responsive Pricing and the GE customers specifically for bounce-back effect after the end of the CPP control period.

The bounce-back for GE customers is more pronounced than Responsive Pricing customers as depicted in the graph below. This is believed to be attributed to all smart appliances coming

back online instantaneously after the last hour of a CPP event. The graph below shows the bounce-back after release of the critical rate for the Responsive Pricing customers and the bounce-back after release of the critical rate for GE customers, respectively.





LG&E is currently evaluating whether CPP events should be called for a longer period that extends further into the evening hours (e.g., should the CPP event end at 7:00PM instead of 6:00PM) to determined whether the bounce-back effect might be impacted. It should also be noted that the CPP events were called on relatively mild days with the maximum temperature on a CPP day of 92 degrees on June 26. Provided that summer conditions in 2010 exhibit average summer temperature highs of 97 degrees, LG&E expects to be able to more accurately model the bounce-back effect.

Participant Usage and Costs

GoodCents compared the energy usage by price tier and then utilized the data to calculate a standard bill and Responsive Pricing Rate bill for the Responsive Pricing participants for the summer of 2009. For the billing cycles of June through September, the Responsive Pricing customers incurred a total bill of $357.12. In comparison, the Responsive Pricing customers would have incurred a total bill cost of $358.75 during the same billing cycles if billed on the traditional residential rate. GoodCents also determined that Responsive Pricing customers used more energy on the low and medium priced weekend rates than on the weekday rates compared to customers on the traditional rate structure. Based on customer billing data comparison between summer 2007 and summer 2009, it is estimated that customers on average saved about 252 kWh during the four summer months on a weather normalized basis by being on the Responsive Pricing.

For the billing cycles that took place between October 2009 and February 2010, the Responsive Pricing customers had a total bill of $446.13. In comparison, the Responsive Pricing customers would have incurred a total bill cost of $475.13 during October 2009 through February 2010 billing cycles if billed on the traditional residential rate. GoodCents also determined that Responsive Pricing customers used more energy on the low and medium priced weekend rates than on the weekday rates compared to customers on the traditional rate structure.

Responsive Pricing customer usage data is detailed in the following table. Pilot participant 12-month historical usage (i.e., usage prior to beginning of Pilot) and Pilot usage are included. The data is displayed in kWh and $ for minimum, maximum, and average per participant. Minimum and maximum values are based on average monthly usage by participant for each specified time period. Costs are total customer electric billed costs. A customer's usage for each period can vary for many reasons and depends on when the customer enrolled in the program (i.e., electrical usage in cooling season will generally be higher than heating season because air conditioners use large amounts of electricity and many customers' heating units primarily use natural gas).

Responsive Rate Participant Usage and Cost		Monthly Energy Usage (kWh)			Monthly Total Billed Cost ($)		
		Minimum	Maximum	Average	Minimum	Maximum	Average
12 Months Prior to Pilot	2007	335	2,942	1,273	31	280	99
Pilot	2008	435	3,631	1,503	33	409	113
	2009	116	3,400	1,296	17	213	93

Program Costs

The program costs versus plan can be found in the following chart. The plan contained expenses starting in 2008; however, some expenses were incurred in 2007 related to Pilot planning. The Pilot actual spend through 2008 was $197,000 less than plan. The major variance to the planned budget through 2008 was due to delays in receiving equipment and continued definition of contractual milestones with the technology vendor. The actual spend for 2009, however was $266,000 over the planned budget. The over spend in the 2009 budget was as a result of extensive customer market research; an aggressive marketing campaign; in-home equipment installations and network equipment service. Based on the performance and associated expenditures of the program in 2009, it is anticipated that the remaining budget of $284,000 will be sufficient to continue pursuing the Pilot goals and planned objectives through 2011.

Program Expenses ($000)	2007-2008	2009	2010-2011	Total
Pilot Budget	$1,272	$260	$385	$1,918
Pilot Actuals	$1,076	$526	TBD	$1,602

Customer Satisfaction and Research

LG&E contracted with an outside market research firm, Horizon InSight, to assess the Smart Meter Pilot with respect to customers participating on the Responsive Pricing program.

The main objectives of this study were to: (1) uncover Responsive Pricing program's key values from a customer perspective, (2) evaluate customer experiences and dynamic behaviors toward the program, and (3) identify key opportunities for ongoing adoption of energy efficiency concepts.

The first phase of the assessment consisted of an online survey conducted across the base of LG&E's Responsive Pricing customers from September 25 through October 11, 2009. Forty-five respondents completed the survey, representing a net response rate of 54%. All respondents were active users of the premise in-home devices.

The second phase consisted of 12 in-home interviews that were conducted among a cross-section of Responsive Pricing customers. Participants were recruited based on their responses to the initial customer survey.[6] Each household participated in a 90-minute interview with a professional consultant from Horizon InSight. Each session consisted of the home energy tour, discussion of program understanding and satisfaction as well as discussion and demonstration of program behaviors.

Based on the assessment findings, the Responsive Pricing program appears to be having a substantially positive effect on the existing base of customers. Program data as well as customer testimony indicate that the program has influenced the following: awareness of home energy consumption; motivation to change behaviors related to energy usage; understanding of ability to control energy consumption behaviors; and willingness to be accountable for home energy usage. Furthermore, the Responsive Pricing program resonates best with a customer base that is already demonstrating a high level of activity and belief in the practice of home energy conservation and efficiency.

The most functional and cited reason for initial enrollment and satisfaction with the program was the prospect of saving money. Therefore, it should not be surprising that a customer's reported satisfaction with the program is highly correlated to their ability to quantify actual savings on their energy bill. Customer satisfaction results ranges include: 62% of customers being "extremely/very satisfied"; 29% of customers being "somewhat satisfied"; and 9% of customers "not very/not at all satisfied". As it relates to saving money on energy bills, while the majority (57%) believes the program has saved them money, there is a notable contingent (43%) that thinks otherwise. When customer perceptions were compared with actual billing data, the reported perceptions were justified. Analysis of the billing cycles of June and September for the

[6] The first customers that responded to participate in the in-home interview process were provided $100 for their time and inconvenience. There were no LG&E employees present during the interview process, which allowed the customers to speak candidly about their experiences.

Responsive Rate customer ($357.12) and the Standard residential rate customer ($358.75), exhibited a nominal difference of $1.63 over the four month billing cycle billing cycle.

While financial savings is a significant focal point of the Responsive Pricing program, providing a sense of "consumer control" may actually be the more powerful motivator for influencing ongoing customer engagement and retention. As noted in the attached full program report, regardless of actual behaviors and tangible cost savings, customers stated that they felt a greater sense of "empowerment" as a direct result of the program. This may explain why attrition from the program is low despite some lingering questions regarding actual tangible savings.

Customers reported their base understanding and the usability of the program was intuitive, but more instruction and ongoing guidance would help customers fully maximize the benefits the program offers. Lastly, Horizon InSight found a significant opportunity for LG&E to enhance the customer relationship by providing a higher level of guidance and direction on how to use the program based on the unique lifestyle of the customer.

LG&E is currently evaluating opportunities and methods of communication, interaction and feedback between the Responsive Pricing customers and the company. Utilizing these opportunities could create a stronger sense of "community" and provide more direction to pilot participants with their energy consumption.

The overall report with complete and detailed findings is attached in Appendix D, depicting Responsive Pricing participants' feedback.

Conclusion

The Responsive Pricing Pilot implementation and operations to date have been successful. The equipment and communication technologies deployed are fully operational and achieving the purposes of the pilot. Customer feedback has been positive and participation was driven by an opportunity for energy cost savings and environmental protection. As demonstrated in the in-home interviews and the Horizon InSight report, providing a sense of "consumer control" was found to be the most powerful motivator for influencing ongoing customer engagement and retention.

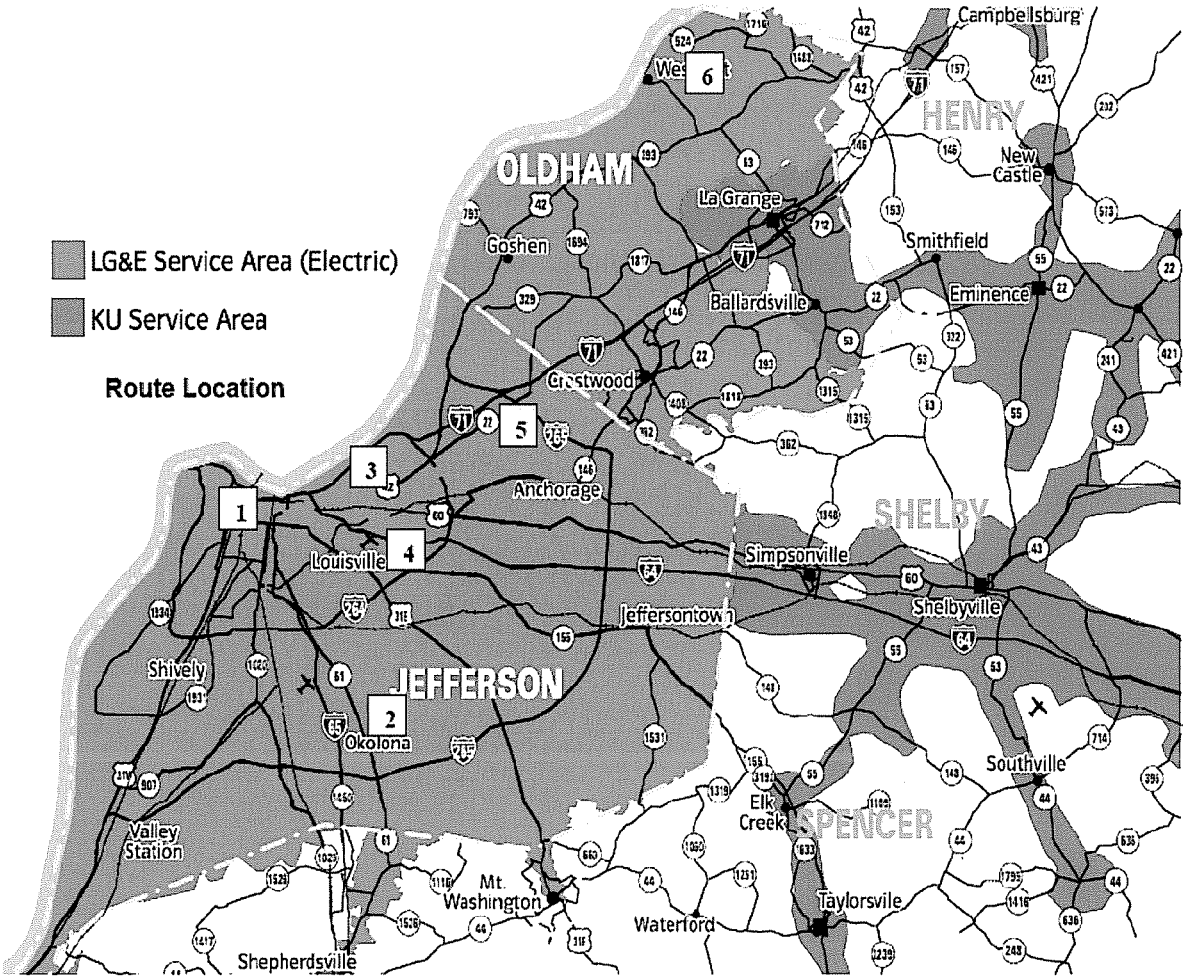
The findings to date indicate that load reductions can be achieved through implementation of time-of-use pricing and CPP events. Moreover, customers on the Responsive Pricing Tariff are receptive to pricing signals as evidenced by the shifts in their energy usage. In addition, customers are willing to receive information and communication to inform them on the impact of their existing behaviors and areas for improvement.

The temperatures during summer 2009, specifically the months of July and August, were unremarkable and did not provide significant data for evaluation. Despite this, the results were positive and produced demand savings up to 1.35 kW per Pilot participant. A normal 2010 summer should allow for more CPP events to be exercised and evaluated. Moreover, the timing of CPP events and their corresponding explore bounce-back impact will be evaluated.

In response to customer feedback captured through in-home customer interviews, LG&E plans to launch a web site forum specifically designed for Responsive Pricing participants. This tool will enable the customers to attain information and guidance from LG&E that will optimize the customers' energy consumption on an individual basis. The other aspect of the tool will allow the customers to share their experiences and feedback with other Responsive Pricing program participants. The resulting impact of the tool will create a sense of "community" between the customer and LG&E.

Marketing efforts for the Program will continue in 2010. LG&E plans to continue evaluating and developing marketing and communication strategies to enroll the remaining participant groups. For example, marketing efforts may need to be customized with neighborhood specific information. LG&E expects that this customized approach will further instill a sense of community between existing and potential customers. As a result enrollment of additional customers may ensue, filling the remaining residential Pilot groups.

Appendix A


LG&E Service Area (Electric)
KU Service Area
Route Location
1
2
3
4
5
6
OLDHAM
HENRY
SHELBY
JEFFERSON
SPENCER
Campbellsburg
La Grange
Goshen
Ballardsville
Smithfield
New Castle
Eminence
Crestwood
Anchorage
Louisville
Simpsonville
Shelbyville
Jeffersontown
Shively
Okolona
Valley Station
Mt. Washington
Waterford
Elk Creek
Taylorsville
Southville
Shepherdsville

Appendix B

An electronic version of this document is provided on the enclosed CD.

Appendix C

An electronic version of this document is provided on the enclosed CD.

Appendix D

An electronic version of this document is provided on the enclosed CD.