an e·on company

Mr. Jeff Derouen
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April 1, 2009

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 2008 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

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	)	

2008 Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company

April 1, 2009

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 DSM [Demand-Side Management] 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, meaning that a participating customer with a typical load profile would not experience a change in electricity costs if the customer's usage pattern did not change. Such a customer's electricity bill would decrease if the customer's 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 and for 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.

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[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 Responsive Pricing Service ("Responsive Pricing"), which incorporated a time-of-use rate with critical peak pricing ("CPP") and 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

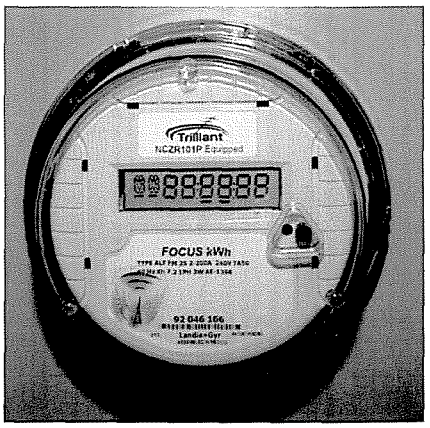
Residential ($/kWh)				
Month/Year	*Low*	*Medium*	*High*	*Critical*
Jan-08	0.0493	0.0615	0.1149	0.3069
Feb-08	0.0494	0.0615	0.1147	0.3059
Mar-08	0.0427	0.0546	0.1070	0.2954
Apr-08	0.0452	0.0571	0.1099	0.2997
May-08	0.0463	0.0582	0.1108	0.2998
Jun-08	0.0466	0.0587	0.1119	0.3029
Jul-08	0.0470	0.0591	0.1123	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

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

Smart Device Overview

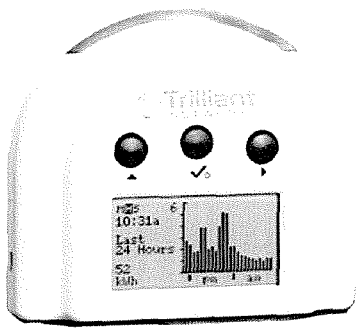
The Pilot was designed to utilize four kinds of smart devices: smart meters; programmable thermostats; in-home energy usage displays; and load control switches.

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.

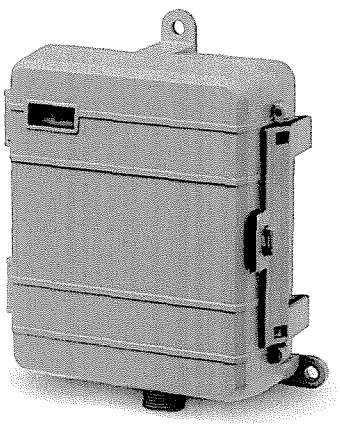


Programmable Smart Thermostat: The thermostat has a simple design with many features and displays rate plan time of use costs ($/kWh). The thermostat has programmable temperature offsets that can automatically react during high pricing periods, but can be overridden by the customer if desired. LG&E has the ability to communicate and send text messages to the thermostat to inform the customer when a CPP event is in effect. 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.

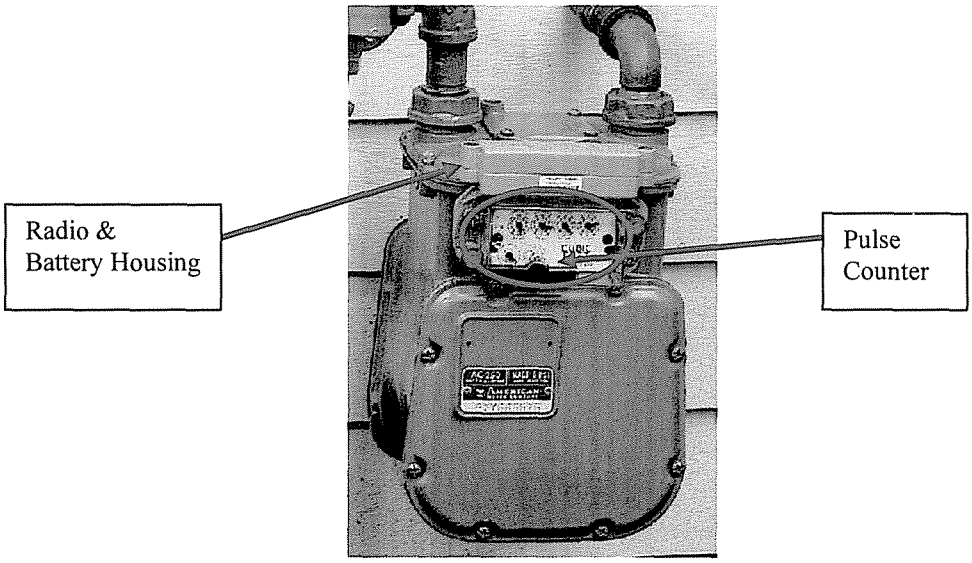
In-Home Display (IHD): The IHD is a table-top device that displays real-time energy usage and the current pricing tier. Also, the top of the IHD has a color wheel representing the pricing tier (e.g., red indicates high-priced periods). Twenty-four-hour and thirty-day historical energy usage and costs 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 and 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

"Customer Variety" relates to energy usage, customer type (residential and commercial) and building size. "Property Size" pertains to 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, LG&E 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 communication gates to accumulate all the metering data. The data collected is sent to a server via internet protocol ("IP"). Multiple gates were installed in each route for redundancy in case of failed operation, which allows for the data to be continually reported through the network. LG&E installed additional signal-repeating equipment where there were long distances between meters and communication gates. This was especially prevalent in the rural route.

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, smart device deployments were delayed due to device delivery issues. With smart metering being an emerging technology and new to both LG&E and our customers, equipment availability and attracting participants proved to be a challenge.

LG&E's marketing effort resulted in 82 RS and 1 GS customers 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.[2]

The primary marketing/educating efforts in 2008 were directed toward filling out the Responsive Pricing customer group. At the end of 2008 this marketing effort turned to the other customer groups. Through the early part of 2009, the remaining customer groups are being filled and in-home equipment is being deployed. LG&E's goal is to have all the customer groups fully subscribed and their equipment deployed prior to June 2009 to facilitate a more comprehensive analysis of customer behavior at the end of this year's summer cooling season.

Delays in equipment delivery from various manufacturers of the natural gas modules and electric smart meters connect/disconnect capabilities led to delayed equipment installations. Natural gas module installation began in September 2008 and continued through the end of the year. The electric connect/disconnect meters arrived in late January 2009, nearly all of which have been installed. As discussed above, manufacturing delays for these emerging technologies led to Pilot deployment delays.

[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 incorporates 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. Some customers residing on the selected metering routes who do not volunteer for Responsive Pricing will still 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.

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	1450				No Rate Control
Total	2015	465	415	315	

Pilot Device Actual

Pilot Participants	Smart Meters	Programmable Thermostat	In Home Display	Load Control Switch[3]	Control Type
Responsive Rate Customer Group	91	94	91	16	Responsive Pricing Rate
GE Customer Group	11	11	11	1	Responsive Pricing Rate
Thermostat and Display Group	47	48	47		No Rate Control
Demand Conservation Group	6	7	3	3	No Rate Control
Display Only Group	21		21		No Rate Control
Control Group	1,589				No Rate Control
Total[4]	1,765	160	173	20	

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

[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 displays if desired.

Device Deployment by Route: # Customers per Category

Route #	Meters			Responsive Pricing	GE Employees	Programmable Thermostat	In-Home Display	Load Control Switch
	Residential	Commercial	Gas					
Route 1	228	13	205	3	1	6	7	1
Route 2	90	43	99	1	0	4	3	0
Route 3	202	29	103	11	0	16	19	0
Route 4	367	7	331	25	4	39	42	0
Route 5	345	31	319	32	5	58	62	0
Route 6	400	10	0	19	1	37	40	19
Total	1,632	133	1,057	91	11	160	173	20

2008 Residential Responsive Pricing Results and Analysis[5]

Technology

Radio communication is an established technology and generally provides adequate signal transmission throughout the pilot service territory. Endpoint device solutions are easily integrated into the network and software can be upgraded without any service interruption. Using this technology can reduce operational costs and improve customer satisfaction through more efficient outage response and more rapid restoration of service. Additionally, the electric meter has reverse flow capability (i.e., it reads energy flow also when installed upside down) and the system will provide notification of tampering events thereby reducing lost revenue. In fact, LG&E has experienced two tampering events to date on smart meters. Both tamperings were immediately flagged in the system and addressed by LG&E personnel.

Operational

Approximately 99% of electric meters and 98% of gas modules report energy usage on a regular basis. Non-reporting meters generally are related to foliage issues, location of meters, and occasional hardware failure. Route 6 has provided valuable insight of rural operations and contains approximately five meters that do not communicate due to their location in the network. The communications for these five meters have significant distances to cover along with dense foliage in some cases. Long term solutions generally will require the deployment of additional signal repeaters to assist with transmission of data. These meters will be manually read until a cost-effective technical solution is implemented.

CPP Event Timing

There were five CPP events initiated during the summer of 2008 for the purpose of testing the CPP operational capabilities. The testing of the CPP events was limited in duration to two hours per event to test and monitor the integrity of the system. Going forward all CPP events will correspond with LG&E's load control events of the Residential and Commercial Demand Conservation Programs. The 2008 events occurred from 4:00 to 6:00 pm on July 18 (92°), July 21 (89°), August 11 (79°), August 12 (81°), and September 4 (86°).

[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.

Weather

Air temperatures in June through September 2008 were normal when compared to the same months in 2005-2007 as measured by cooling degree-days and days above 90 degrees. However, June and July 2008 were slightly warmer than the previous three years, and August and September 2008 were slightly cooler than the previous three years. Also, the warmest days of 2008 (three days at 97°) occurred on weekends or holidays, times in which LG&E does not implement any type of load control.

Winter 2008 was colder than winter 2007. Also compared to winter 2007, winter 2008 contained approximately 15% more heating degree-days and contained approximately 55% more days where maximum daily temperatures were less than 45 degrees.

Third-Party Evaluations

GoodCents' consulting group provided LG&E with an independent analysis regarding the Pilot's 2008 impact. GoodCents evaluated hourly meter data for the summer cooling season of June through September 2008 with the primary goal of determining how customer demand responded to the Responsive Pricing time-of-use rates, focusing primarily on the critical peak pricing ("CPP") events. GoodCents also evaluated hourly meter data for the winter heating season of October 2008 through January 2009. The GoodCents analysis is attached in Appendix B. The analysis utilizes regression modeling and provides significant detail about the Pilot's 2008 operations.

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 time periods reflected that the last CPP event on September 4 resulted in the largest average kWh drop, slightly more than 0.5 kWh per participant. The following table displays average kWh changes per participant for each event.

CPP Event Summary, kWh (Average Load Reduction)

	7/18/2008	7/21/2008	8/11/2008	8/12/2008	9/4/2008
	92°	89°	79°	81°	86°
16:00	0.0332	(0.0922)	0.0472	0.1346	0.5176
17:00	(0.0009)	(0.1594)	0.2320	0.0458	0.5115

Average kWh consumption per participant for the five CCP events ranged from 16% to 43% less compared to the warmest days (97 degrees on 7/20, 8/23, and 9/1) in the summer of 2008. Because load increases as temperature increases (correlation =0.95) and the five CPP events were called in mild to moderate temperatures, full reduction potential likely was not realized; however, based on GoodCents' regression analysis, at 5:00 pm on a 92 degree day, a load reduction of approximately 0.4 kWh per Responsive Pricing participant can be expected. The load reductions experienced in this study are

similar to load reductions for the LG&E's Demand Conservation Program at the same temperature.

The daily load shape for the average Responsive Pricing customer was similar to that of the typical residential customer in June. Generally, not much change was noticed regarding the behavior of customers on the Responsive Pricing tariff in June and July. However, as the program continued throughout the summer, load shapes for the Responsive Pricing customers changed and resulted in daily demand being shifted from high-priced hours to lower-priced hours. Load also shifted from higher-priced weekday hours to the lower-priced weekend.

The winter analysis reflected that no CPP events were scheduled during the months October 2008 through January 2009. LG&E is a summer-peaking utility and CPP events are valued most at that time. 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 the hourly meter data for the October 2008 through January 2009 time period.

Overall, it was not evident that the Responsive Pricing customers changed usage patterns during the winter of 2008. Daily load shapes are generally similar between the two groups. Again, though customers may have changed their energy usage during higher-priced periods, it is not likely there would be significant changes in winter energy usage because a large majority of LG&E's service territory uses natural gas for heating.

The analysis results of the first year of the Responsive Pricing Pilot are positive regarding demand reduction and energy usage shifting, particularly later in summer 2008. Demand reductions during CPP events vary from 0.2 kWh to over 0.5 kWh per participant during high-temperature periods. Results indicate that energy usage decreased slightly in high- and critical-peak priced periods; however, Responsive Pricing customers used more energy overall throughout the summer and winter periods compared to non-Responsive Pricing residential customers. LG&E agrees with GoodCents' recommendation to perform additional program evaluation of the meter data collected during 2009 to build on this analysis.

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 eleven GE employees have been identified as residing on the six routes. Because the GE customers were added at the end of 2008, the first opportunity to evaluate their meter data will be after summer 2009.

Participant Usage and Costs

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). As stated in the GoodCents analysis, revenue implications are not clear from the available data.

SmartRate 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

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 is $197,000 less than plan. The major variance to the planned budget through 2008 relates to the delays in receiving various equipment and the timing of contractual milestones related to the equipment's installation, validation, and testing protocols. LG&E anticipates the Pilot expenses will stay within plan totals for the remaining years as well.

Program Expenses ($000)	2007-2008	2009	2010	2011	Total
Pilot Plan	$1,272	$260	$260	$125	$1,918
Pilot Actuals	$1,076	$0	$0	$0	$1,076

Customer Satisfaction

LG&E utilized Schmidt Consulting Services to complete an independent review of the Responsive Pricing Pilot to assess customer satisfaction. This assessment was completed via telephone and resulted in twenty-five willing participants. Overall customer satisfaction was very favorable with 45% of those surveyed giving the program a "good" rating and another 45% rating the program as "outstanding". Nearly half of the respondents had recommended the program to someone else.

Responsive Pricing customer participation was driven primarily by the opportunity to save money. Other motivations included environmental protection and the opportunity to receive free in-home devices.

There have been five customers removed from the SmartRate: one customer moved from the residence; two customers reported they had difficulties understanding the devices; one customer did not like the thermostat; one customer did not like that the electric and

gas bill had to be separated to participate in the Pilot (issue has been resolved and bills will be combined again by summer 2009).

The full Schmidt Consulting Services report is attached as Appendix C.

Conclusion

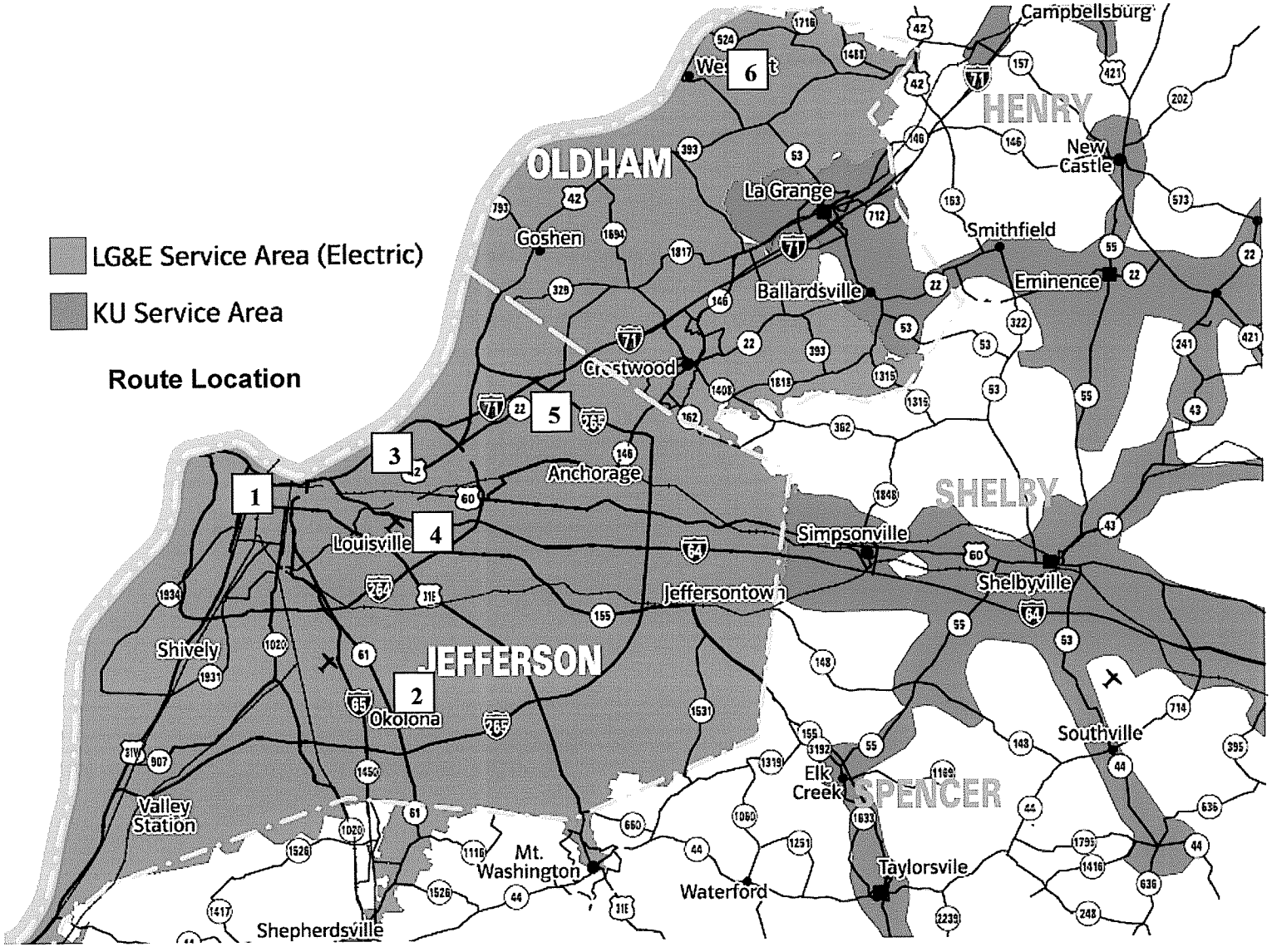
The Responsive Pricing Pilot implementation and operations to date have been successful. The equipment and communication technologies deployed are fully operational and achieving the purposes of the pilot. Customer feedback has been positive and participation was driven by an opportunity for energy cost savings, environmental protection, and energy management devices.

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.

The temperatures during summer 2008, specifically the months of August and September, were unremarkable and did not provide significant data for evaluation. Of the five CPP events performed for testing purposes in the summer of 2008, only the last three provided data that indicated a change in customer behavior. The results were positive and produced demand savings up to 0.5 kWh per Pilot participant. A normal 2009 summer should allow for more CPP events. CPP events will correspond with the company's Demand Conservation Program load control events, allowing for more analysis of customers' changes in electric usage and energy costs.

In addition, LG&E is evaluating the possibility of adding another route during 2009 to achieve the total smart meter installation goal of two thousand. It is intended that any additional route would include the remaining customers authorized to participate on the Responsive Pricing tariff. Participants in the other customer groups would be incorporated on this route as well.

Appendix A


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

Appendix B

Demand Side Management Pilots

M & V CPP Report

A Report

To

LG&E

From

GoodCents

March 2009

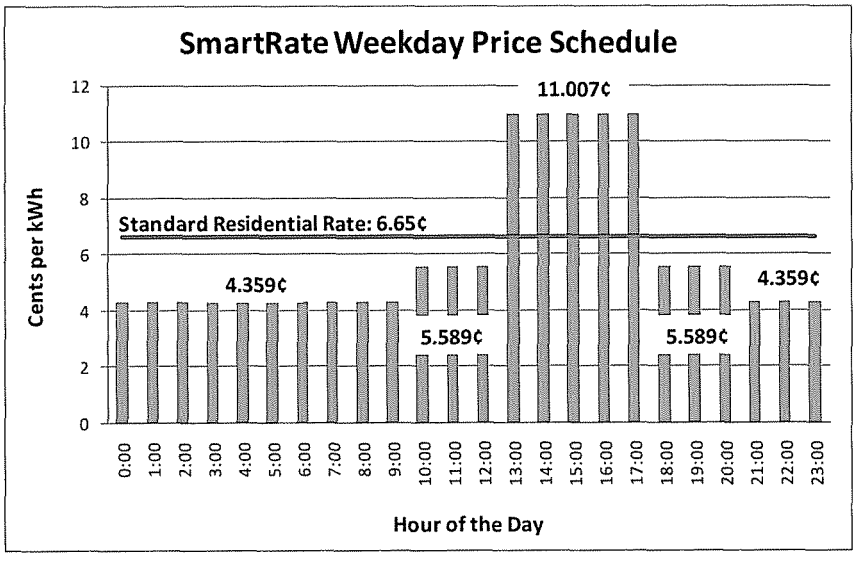
400 Perimeter Center Terraces, NE | Suite 245 | Atlanta, GA 30346 | 800.653.3445 |

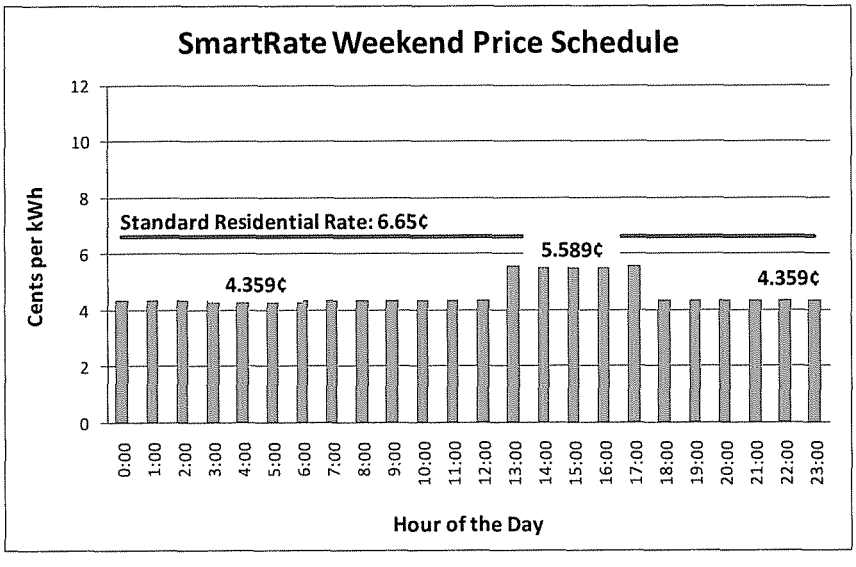
Introduction

LG&E began installing SmartMeter on 2,000 homes and businesses across various regions of their service territory. Those 2,000 customers with SmartMeter became eligible for a new program, SmartRate, designed to provide residential customers a variable rate schedule for their energy usage during the summer of 2008. SmartRate energy costs were lower than the typical energy cost for most hours throughout the year. However, the costs for SmartRate are higher during peak energy usage hours. During peak energy usage hours a critical peak-pricing (CPP) rate was initiated on 5 occasions. The participating SmartRate customers were provided SmartStat and SmartView equipment, as well as professional energy management advice and the ability to pre-program their thermostats settings to respond to the various pricing rates. Most thermostats were programmed for a 2-degree increase at the beginning of the high price tier of the rate (1:00 pm) and the thermostat was increased an additional degree if a CPP event was called.

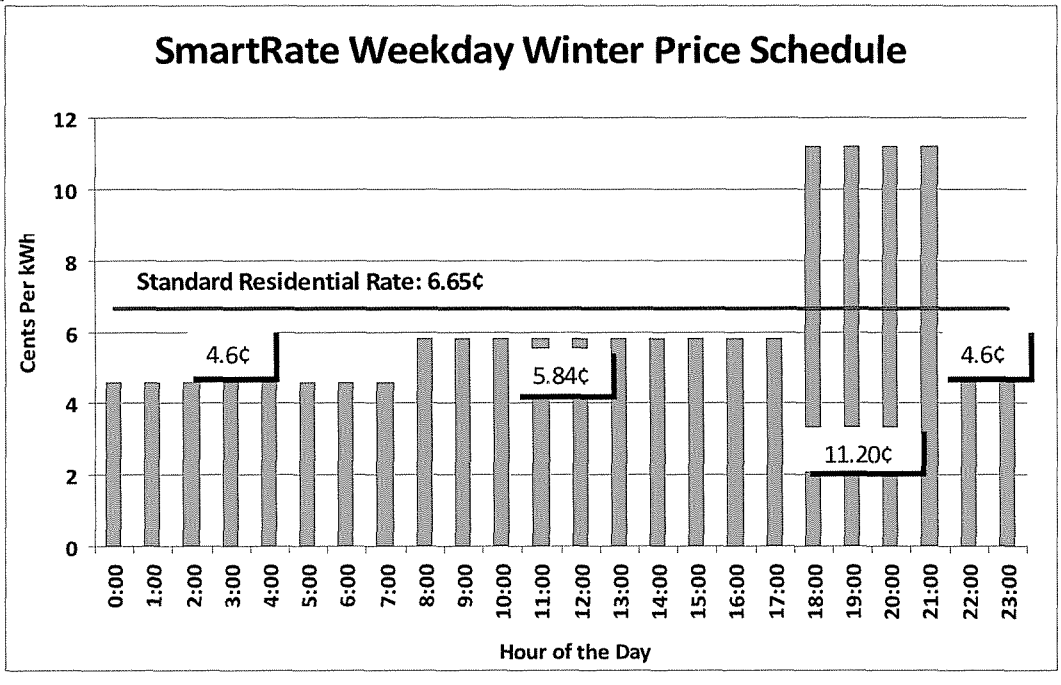
The SmartRate participant group was a self-selection convenience sample resulting from recruitment by LG&E staff from the SmartMeter population. The SmartMeter allowed energy usage data to be collected on an hourly basis for the entire length of the SmartRate pilot. GoodCents received energy usage data for ninety-four SmartRate customers and approximately 1,400 residential customers beginning with the date that the SmartMeter equipment was installed. Energy usage data including both critical priced days and non-critical priced days were available for all customers and were used in the development of the following load impact analysis and model development for the SmartRate pilot. We will compare the SmartRate customer's usage to the residential customers on the SmartMeter program throughout the summer of 2008 and on hot days and CPP days. We will use the SmartRate customers load data on CPP days and non-CPP days at like maximum temperatures to model the load reductions due to the high price tier of SmartRate and due to CPP.

The SmartRate price schedules for weekdays and weekends are shown below. These rate schedules do not include the critical peak rate since the critical peak rate is only initiated during peak hours. The critical peak rate is 30.476¢ per kWh.





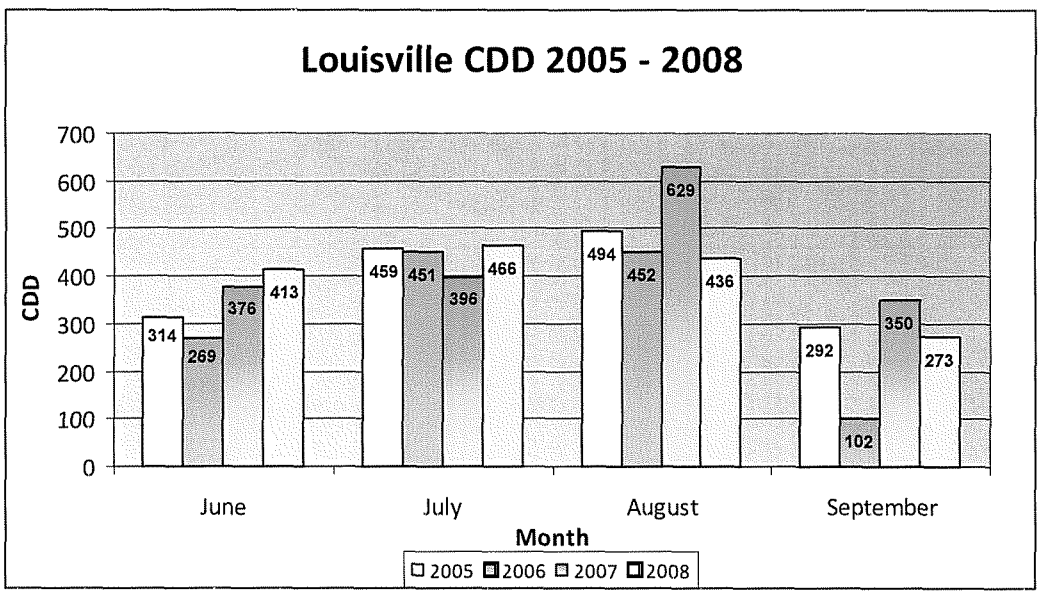
The following shows the price schedule for the winter for weekdays.



Weather Review

Summer 2008 Review

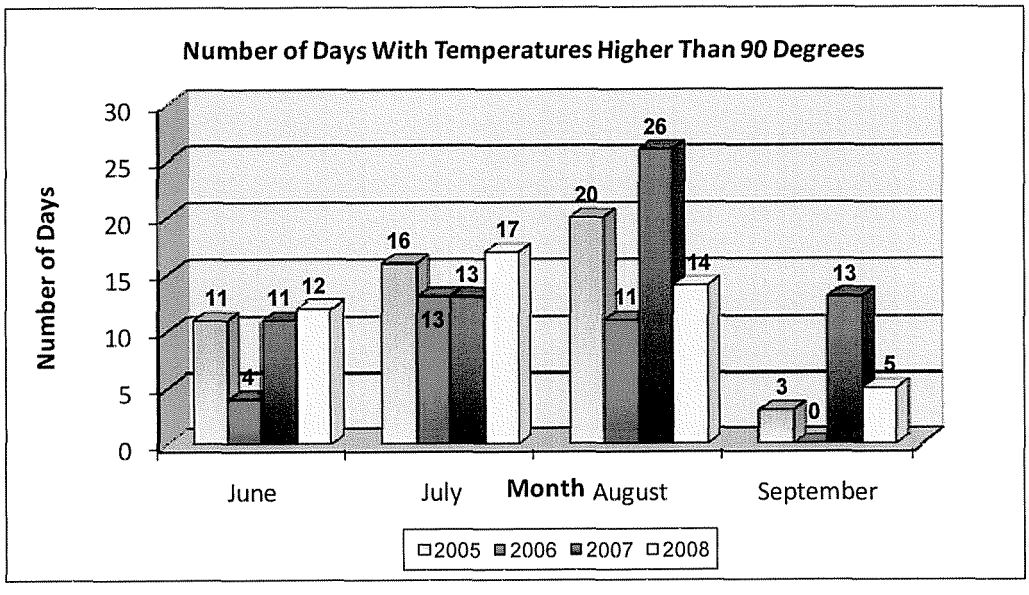
The variation of weather and climate has a great impact on the SmartRate program's effectiveness and the resulting load reductions. The majority of customers participating in the SmartRate program are near the Louisville area. Louisville, Kentucky had a relatively mild summer in 2008 as measured by the total number of cooling degree-days recorded. The graph below displays a comparison of the recorded number of cooling degree-days for the summers of 2005, 2006, 2007 and 2008.



The graph above shows that the number of cooling degree days recorded for the month of June in 2008 was higher than the past three summers. In addition, the number of cooling degree days recorded for the month of July in 2008 was very similar to those in the previous three summers. However, the number of cooling degree days recorded for August and September of 2008 was typically lower than the previous three summers.

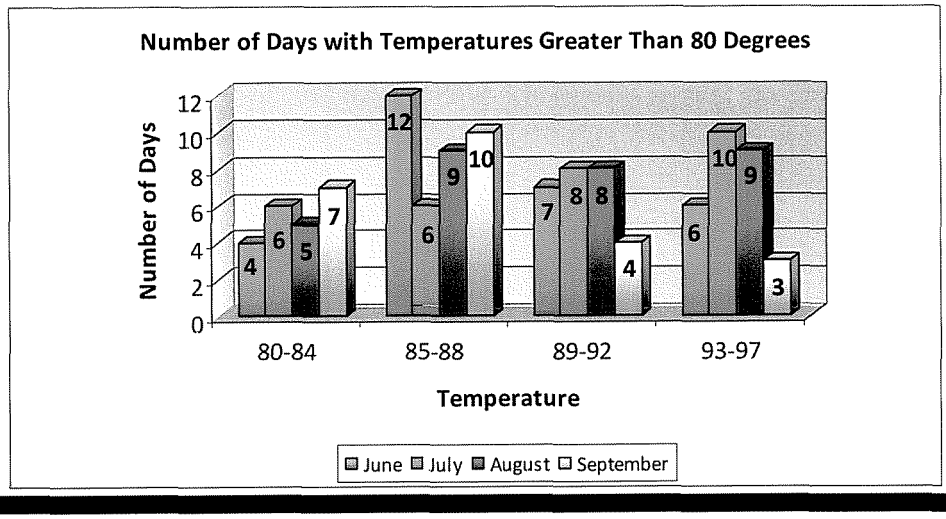
As many as 48 days during the summer of 2008 reached high temperatures of 90 degrees or above; which is only two less than the number of days with high temperatures above 90 degrees in 2007 (50). The highest temperature recorded in 2008 was 97 degrees and was recorded three times: July 20th, August 23rd, and September 1st. These days were weekends or holidays and were excluded from CPP initiation. There were a total of four days with recorded high temperatures above 95 degrees during the summer of 2008. The following

graph shows the number of recorded days with high temperatures of 90 degrees or above for the summers of 2005 through 2008.



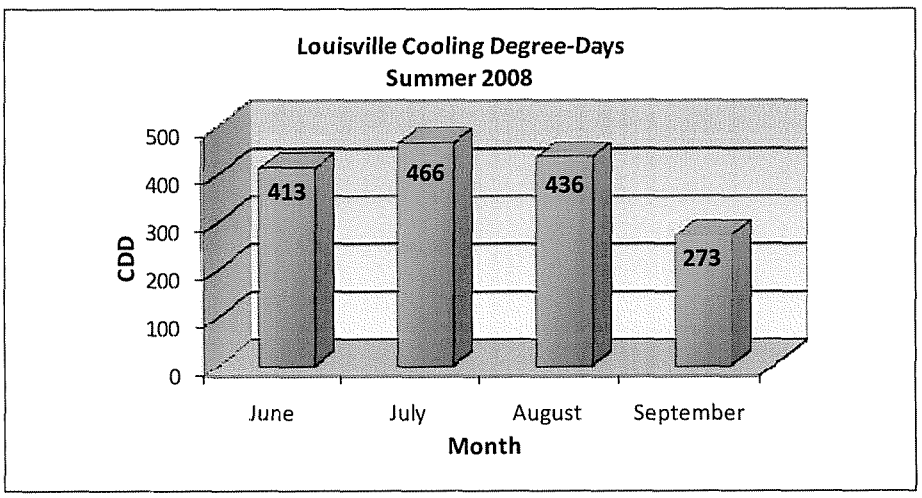
Load reduction estimates incurred from load management and critical peak pricing programs are a function of outdoor maximum temperature. In order to determine load reduction estimates for various temperatures, GoodCents recommends controlling or initiating the critical peak rate on days that vary by temperature.

The graph below shows the number of days recorded during the summer of 2008 with various high temperature ranges, from 80 degrees up to 97 degrees.

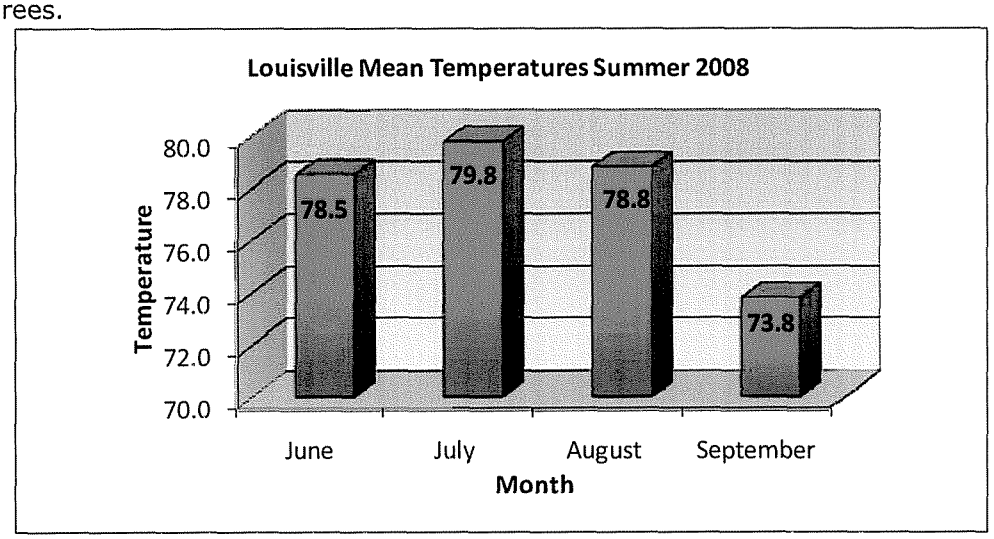


The month of August recorded 17 days with maximum temperatures above 88 degrees. In other words, 54.8% of the high temperatures recorded during the month of August were above 88 degrees.

The graph below shows the number of recorded cooling degree-days for the summer of 2008 only. You can see from the totals below that July had the largest number of cooling degree-days. August of 2007 recorded 396 cooling degree days and August of 2006 recorded 451 cooling degree-days. Therefore, August of 2008 recorded a typical number of cooling degree-days.

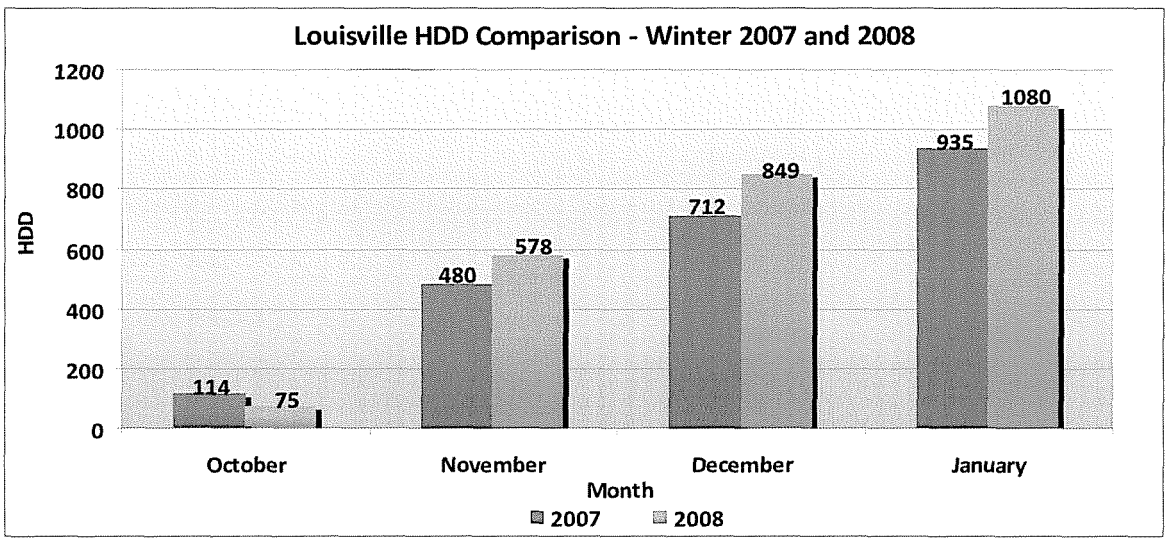


Comparing the cooling degree-day chart above to the average temperature by month for the summer of 2008 (shown below) shows a similar trend of July being the warmest month for the summer of 2008. July recorded the most cooling degree-days and had the highest average temperature, 79.8 degrees. The average maximum recorded temperature for July of 2008 was 89.2 degrees compared to June with 87.9, August with 89.1, September with 84.5 degrees.

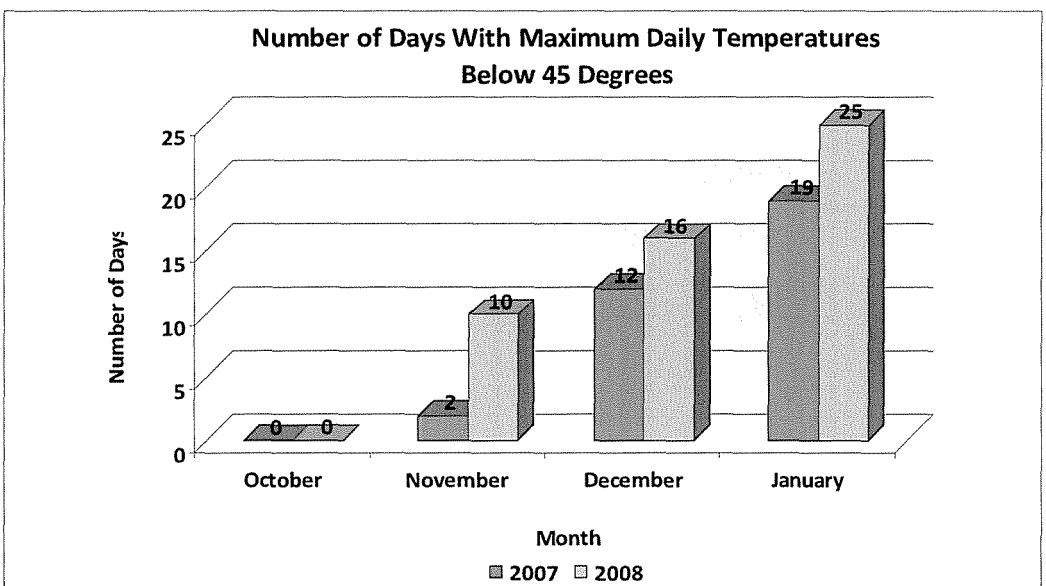


Winter 2008 Review

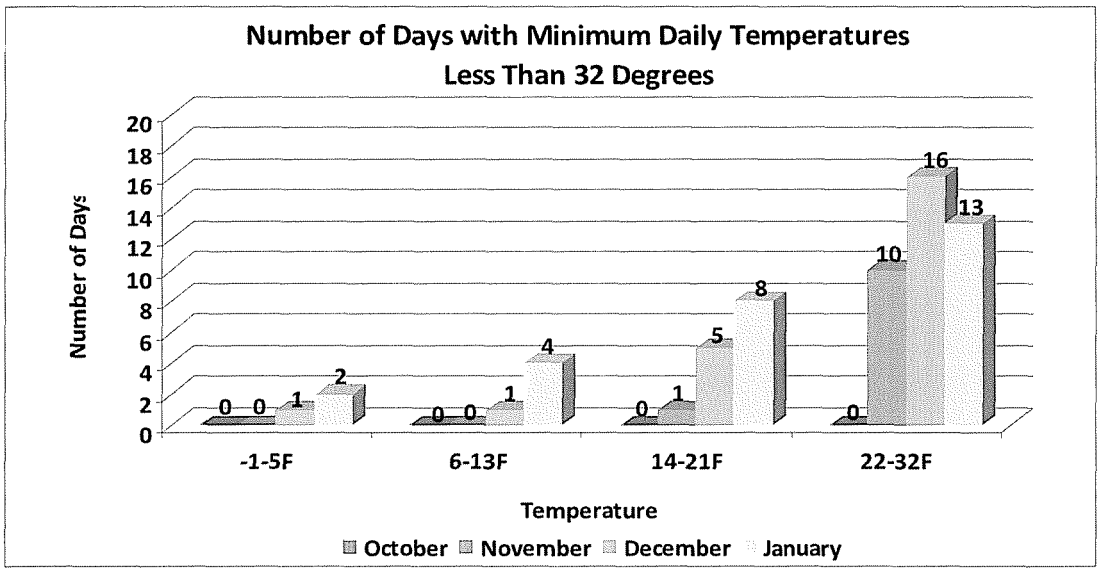
The plot below shows the heating degree-days (HDD) for the winter of 2007 compared to the current winter of 2008. As you can see 2008 was cooler for the majority of the winter in comparison to the previous year's winter by the larger number of HDDs.



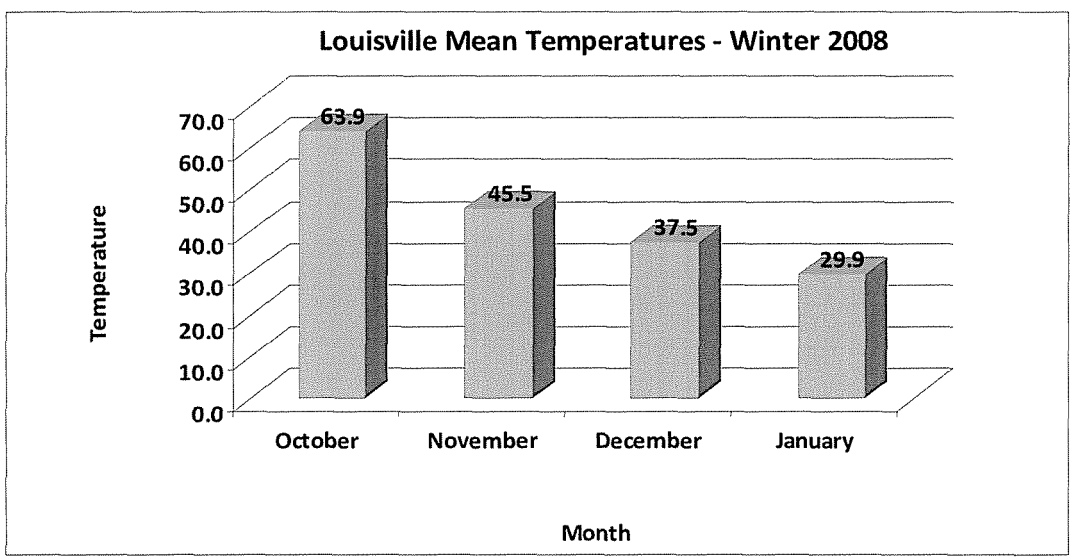
The plot below displays the number of days where the high temperature was below 45 degrees. As the winter continues the number of colder days increases for each month. The month of October does not appear to require much heating or cooling as evidenced by the graphs below and above.



The following histogram displays the number of days in each temperature range by month. January has the highest number of days in the coldest temperature ranges, with temperatures reaching as low as –1 degree Fahrenheit. The –1 degree low temperature was reached on January 16th and it was 23 degrees below normal.



The following chart shows the mean temperatures from October 2008 to January 2009, this once again shows that the coldest temperatures are reached in January and into February. The mean temperature for January was below freezing at 29.9 degrees Fahrenheit.



SmartRate Impact Analysis

CPP Implementation

The critical peak rate was implemented on five days by LG&E throughout the summer of 2008. Thirty minutes prior to the initiation of the critical peak rate, a red light would flash on each participant's SmartView and SmartStat notifying each customer of the critical peak pricing rate. The SmartStat was programmed to adjust the customers heating or cooling thermostat settings during these critical peak periods. However, the customer was able to bypass the settings to manually control their temperature during these critical peak periods. The customers' response to the critical peak rates, as well as the response to other variable rates, will be presented from a load reduction and energy reduction perspective in the following report.

LG&E notified GoodCents when critical rate prices were in effect throughout the summer of 2008. The critical rate price schedule, including the start time and end time of each critical rate period, and the maximum daily temperature gathered from the local National Weather Service weather station are shown below in the following table.

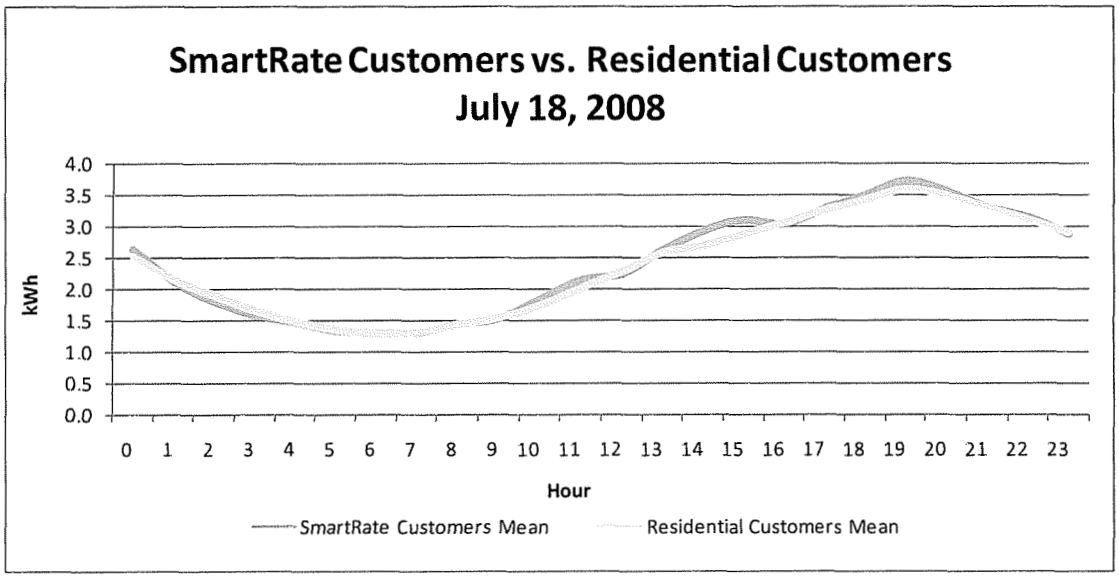
LG&E CPP Implementation
2008

Date	Time	Maximum Temperature
7/18/2008	1600-1800	92
7/21/2008	1600-1800	89
8/11/2008	1600-1800	79
8/12/2008	1600-1800	81
9/4/2008	1600-1800	86

The critical peak price was only initiated once when temperatures were over 90 degrees. In addition, the critical peak price was initiated on two days where temperatures were below 85 degrees. Typically, GoodCents recommends initiating load control or critical peak pricing when temperatures are 85 degrees or higher.

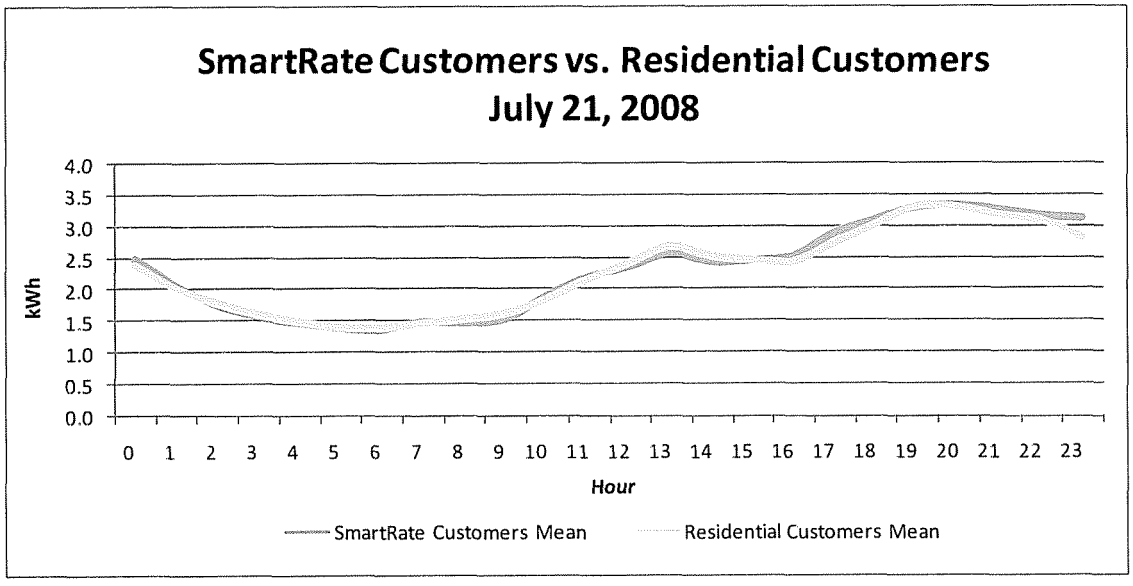
Comparison of Energy Usage on CPP Implementation Days

GoodCents developed average load shapes for all days that the critical peak rate was initiated for both the SmartRate customers and the standard rate residential customers. Each critical peak pricing day is examined in detail below.



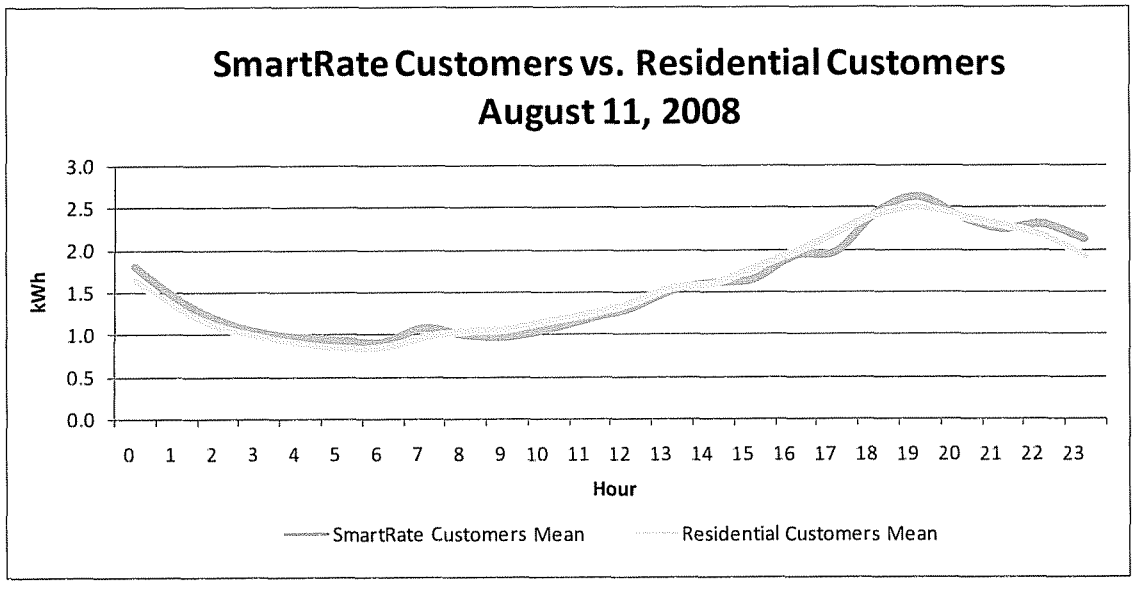
The table to the right shows the premise mean for SmartRate Customers and the premise mean for the residential customers, as well as the very slight difference between the two values. The daily premise energy usage is calculated as well for both the SmartRate customers and residential customers.

CPP vs. Non CPP Day Analysis- July 18th			
Hour	Premise CPP Mean	Premise Non CPP Mean	Difference
0	2.6189	2.5123	-0.1067
1	2.1091	2.1419	0.0328
2	1.7867	1.8889	0.1022
3	1.5758	1.6439	0.0681
4	1.4611	1.4688	0.0076
5	1.3300	1.3381	0.0081
6	1.2899	1.2738	-0.0161
7	1.2970	1.2988	0.0018
8	1.4279	1.4139	-0.0140
9	1.5224	1.5315	0.0091
10	1.8250	1.7226	-0.1024
11	2.1271	1.9996	-0.1275
12	2.2280	2.2689	0.0409
13	2.6007	2.5710	-0.0298
14	2.9099	2.6825	-0.2274
15	3.0844	2.8655	-0.2189
16	3.0175	3.0508	0.0332
17	3.2538	3.2529	-0.0009
18	3.4750	3.4178	-0.0572
19	3.7001	3.5870	-0.1131
20	3.5432	3.4873	-0.0559
21	3.2897	3.2998	0.0101
22	3.1318	3.1049	-0.0269
23	2.8616	2.9037	0.0421
Total kWh	**57.4667**	**56.7260**	**0.7407**



CPP vs. Non CPP Day Analysis- July 21st			
Hour	Premise CPP Mean	Premise Non CPP Mean	Difference
0	2.5037	2.3989	-0.1048
1	2.0765	2.0349	-0.0415
2	1.7781	1.8052	0.0270
3	1.5903	1.6303	0.0400
4	1.4908	1.5076	0.0168
5	1.4030	1.4189	0.0159
6	1.3826	1.4104	0.0278
7	1.4971	1.4846	-0.0125
8	1.4902	1.5516	0.0615
9	1.5465	1.6420	0.0955
10	1.9098	1.8614	-0.0483
11	2.2076	2.1771	-0.0304
12	2.3817	2.4383	0.0565
13	2.5903	2.6986	0.1083
14	2.4531	2.5368	0.0837
15	2.4791	2.4806	0.0015
16	2.5393	2.4471	-0.0922
17	2.9047	2.7453	-0.1594
18	3.1177	3.0302	-0.0875
19	3.3200	3.3272	0.0072
20	3.3452	3.3034	-0.0418
21	3.2796	3.1801	-0.0994
22	3.1856	3.0971	-0.0885
23	3.1444	2.8280	-0.3164
Total kWh	55.6169	55.0357	-0.5811

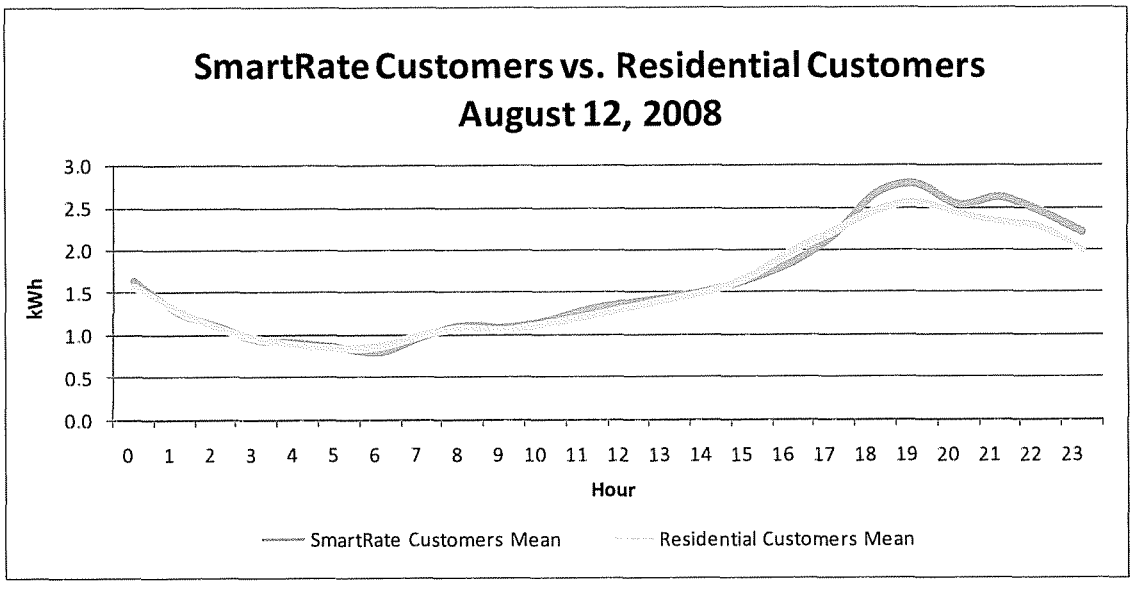
The graph above shows a comparison between residential and SmartRate customers on July 21st. The overall difference between the residential versus SmartRate is smaller than the previous control day as shown in the table to the left.



There is a slight visual difference in energy usage between the SmartRate customers and the residential customers during the critical peak price period.

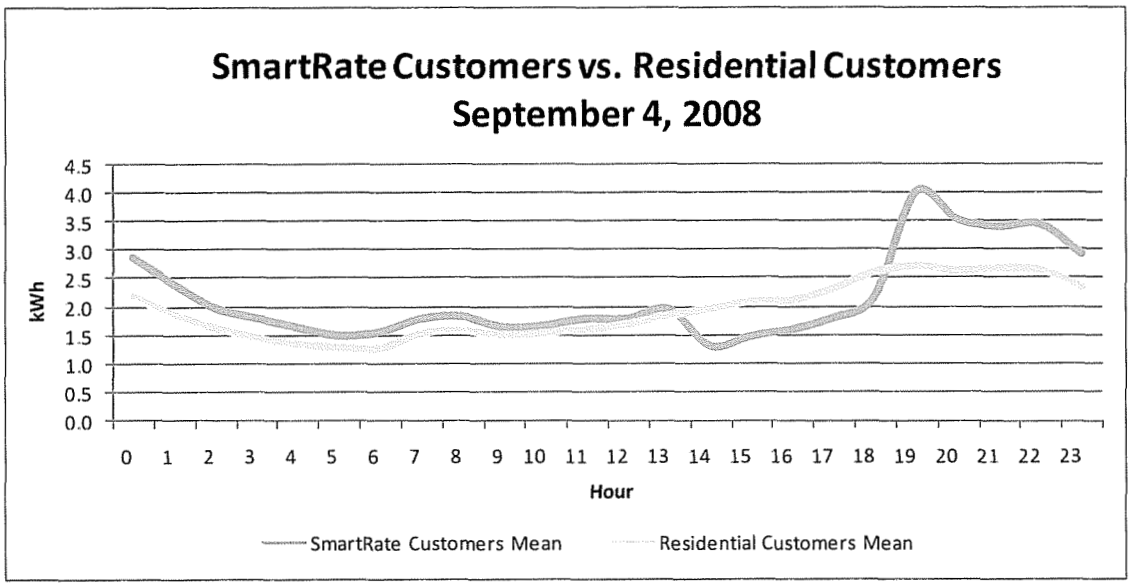
The total premise usage for the SmartRate customers was 37.46 kWh on August 11th while the residential customers' total premise usage was only 37.06 kWh. Therefore, there was only a 0.4069 kWh difference between the residential and SmartRate customer's total premise usage for this peak day.

CPP vs. Non CPP Day Analysis- August 11th			
Hour	Premise CPP Mean	Premise Non CPP Mean	Difference
0	1.7952	1.6296	-0.1656
1	1.4237	1.3036	-0.1201
2	1.1680	1.0827	-0.0852
3	1.0193	0.9609	-0.0584
4	0.9596	0.8751	-0.0846
5	0.9245	0.8259	-0.0986
6	0.8998	0.8360	-0.0638
7	1.0714	0.9537	-0.1178
8	0.9835	1.0295	0.0460
9	0.9618	1.0500	0.0882
10	1.0541	1.1527	0.0986
11	1.1803	1.2337	0.0534
12	1.2973	1.3614	0.0641
13	1.5075	1.5438	0.0363
14	1.6016	1.5916	-0.0099
15	1.6437	1.7799	0.1362
16	1.9208	1.9680	0.0472
17	1.9689	2.2009	0.2320
18	2.4360	2.4220	-0.0140
19	2.6177	2.4959	-0.1218
20	2.3810	2.3947	0.0137
21	2.2350	2.2881	0.0531
22	2.2936	2.1598	-0.1338
23	2.1178	1.9155	-0.2023
Total kWh	37.4619	37.0550	-0.4069



CPP vs. Non CPP Day Analysis- August 12th			
Hour	Premise CPP Mean	Premise Non CPP Mean	Difference
0	1.6387	1.5654	-0.0732
1	1.2893	1.2957	0.0065
2	1.1086	1.0841	-0.0246
3	0.9412	0.9454	0.0042
4	0.9066	0.8685	-0.0381
5	0.8493	0.8318	-0.0175
6	0.8018	0.8595	0.0577
7	0.9792	0.9917	0.0126
8	1.1078	1.0674	-0.0404
9	1.0874	1.0458	-0.0416
10	1.1603	1.1212	-0.0391
11	1.3008	1.2133	-0.0874
12	1.3765	1.3120	-0.0646
13	1.4388	1.4142	-0.0246
14	1.5238	1.5103	-0.0135
15	1.6688	1.6988	0.0301
16	1.8569	1.9914	0.1346
17	2.1743	2.2201	0.0458
18	2.6593	2.4619	-0.1974
19	2.7750	2.5590	-0.2161
20	2.5327	2.4243	-0.1084
21	2.6184	2.3250	-0.2934
22	2.4489	2.2633	-0.1856
23	2.2083	1.9817	-0.2266
Total kWh	38.4524	37.0518	-1.4006

The graph compares energy usage for the August 12th critical day. The table to the left shows the premise usage by hour for both the SmartRate and the residential customers. Thus far, August 12th showed the largest difference in kWh between the SmartRate and residential customers.

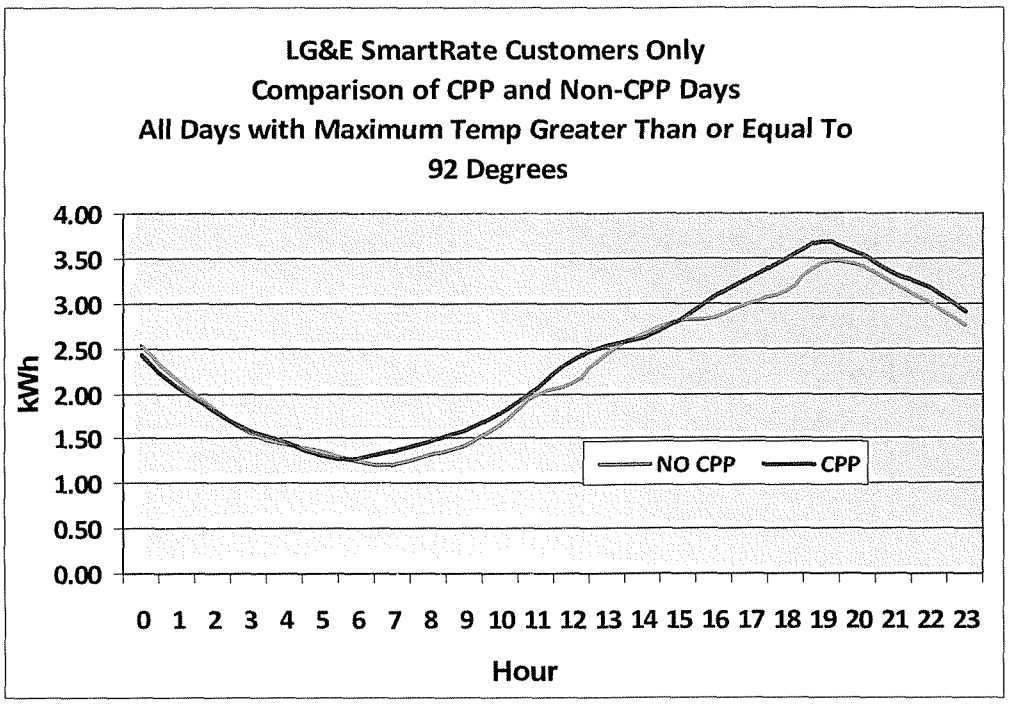


The September 4th critical day showed the largest difference in kWh for the control season. The graph above shows a definite difference between energy usage for the SmartRate and residential customers. The SmartRate customers show more than a 0.5 kW decreases when the critical peak price was initiated at hour 16.

CPP vs. Non CPP Day Analysis- September 4th			
Hour	Premise CPP Mean	Premise Non CPP Mean	Difference
0	2.8778	2.1942	-0.6836
1	2.4157	1.8714	-0.5443
2	1.9884	1.6440	-0.3444
3	1.8121	1.4714	-0.3407
4	1.6467	1.3531	-0.2936
5	1.5033	1.2992	-0.2041
6	1.5635	1.2865	-0.2770
7	1.7974	1.5430	-0.2544
8	1.8416	1.5897	-0.2519
9	1.6448	1.5142	-0.1306
10	1.6774	1.5517	-0.1256
11	1.8001	1.6130	-0.1871
12	1.7933	1.7061	-0.0872
13	1.9650	1.8605	-0.1045
14	1.3127	1.9717	0.6591
15	1.4858	2.0921	0.6063
16	1.6051	2.1227	0.5176
17	1.8079	2.3194	0.5115
18	2.1770	2.6130	0.4361
19	4.0272	2.7195	-1.3077
20	3.5469	2.6366	-0.9103
21	3.4188	2.6823	-0.7365
22	3.4625	2.6436	-0.8189
23	2.9381	2.3485	-0.5896
Total kWh	52.1090	46.6475	-5.4615

Regression Analysis- Load Impact Model

A total of ninety-four customers had critical and non critical day data and were used in the analysis. Some customers became participants in the program after the implementation of the critical peak dates and were not used in the analysis. Comparisons of SmartRate customers' mean hourly load shapes for critical days and non critical days are shown below for days with maximum temperatures of 92 degrees and above. The comparisons indicate a maximum difference of 0.36 kWh.



All days with a maximum temperature of 79 degrees or above were used to develop a regression model of customer load impact during CPP periods by modeling usage on CPP and non-CPP days. The critical rate events were called between 4:00 pm (hour 16) and 6:00 pm (hour 18). However, the graphical analysis suggests that customers responded to the high price tier of SmartRate before the CPP was called at 4:00 pm, actually beginning at 2:00 pm (hour 14). It was decided to develop regression models for each hour during the critical rate periods over the maximum temperature range of 79 to 92 degrees. Customers were grouped into 2 bins or strata based on their mean premise hourly usage, strata 1, 0-3 kWh and strata 2, above 3 kWh.

A variety of models were developed for the load reduction analysis. The model that provided the best statistical results was chosen for the final load reduction model. This model assumes that premise usage is determined by the maximum daily temperature squared, multiplied by the mean premise usage throughout the summer and a base usage in the hour before the critical peak price is initiated. Models were developed for each ending hour during the CPP period, from hours 16 to 18 and hours 14 to 15 of the high price tier.

The model below was developed by hour over the temperature ranges mentioned above:

PREMHEKWH (Hour t, Site J) = A + B * MAXLOADTEMP+ C * MAXLOADTEMPC

+ D* PREMHR13

Where:

A is the regression intercept

B and **D** are regression coefficients determined during the modeling process

C is the load reduction estimate for the premise at hour t and a given maximum daily temperature

PREMHEKWH (Hour t, Site J) is the premise kWh in the hour ending t for site J

MAXLOADTEMP is the premise mean load throughout the summer hours 16-18 and maximum temperature above 85 degrees multiplied by the maximum daily temperature squared. The premise mean load during these hours is meant to serve as a proxy for AC connected load

MAXLOADTEMPC is an indicator variable (1 for a CPP day, 0 for a non CPP day) multiplied by the premise mean load as defined above and the squared maximum temperature

PREMHR13 is the premise kWh in hour 13, which is the hour preceding the high rate tier implementation

The complete regression output for a temperature range greater than or equal to 79 degrees and for critical rate hour ending at 17 is shown on the following pages for each stratum. All statistics are significant and valid, including the regression coefficients, which are significant at the 99^{th} percentile.

CPP Model Max Temp>= 79

strata=1 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4363
Number of Observations Used	4341
Number of Observations with Missing Values	22

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4277.43848	1425.81283	1190.57	<.0001
Error	4337	5193.95707	1.19759		
Corrected Total	4340	9471.39555			

Root MSE	1.09435	R-Square	0.4516
Dependent Mean	1.93772	Adj R-Sq	0.4512
Coeff Var	56.47603		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.26301	0.05863	-4.49	<.0001
maxloadtemp	1	0.00008155	0.00000371	21.99	<.0001
maxloadtempc	1	-0.00001986	0.00000465	-4.27	<.0001
premhr13	1	0.63227	0.01371	46.10	<.0001

CPP Model Max Temp>= 79

strata=2 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4538
Number of Observations Used	4535
Number of Observations with Missing Values	3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7300.45841	2433.48614	1029.49	<.0001
Error	4531	10710	2.36377		
Corrected Total	4534	18011			

Root MSE	1.53746	R-Square	0.4053
Dependent Mean	3.70694	Adj R-Sq	0.4049
Coeff Var	41.47503		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22370	0.12034	-1.86	0.0631
maxloadtemp	1	0.00008280	0.00000424	19.53	<.0001
maxloadtempc	1	-0.00001194	0.00000348	-3.43	0.0006
premhr13	1	0.52893	0.01305	40.53	<.0001

The load reduction regression coefficients for each hour are shown in the table below. All regression coefficients are significant at the 99th percentile and all other statistical measures (F test for significance of the regression and adjusted R square) are acceptable.

Table R-1

LG&E SmartRate Control Model Maximum Temperature Range 80-92 Degrees									
Strata	Hour	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	Maxloadtemp	Maxloadtempc	Premhr13
1	14	MODEL1	PARMS	premload1	0.825	-0.06583	0.000027041	-0.000011832	0.8024
1	15	MODEL1	PARMS	premload1	0.95689	-0.18077	0.000046998	-0.000013	0.73787
1	16	MODEL1	PARMS	premload1	1.02789	-0.26319	0.000065668	-0.00002027	0.69266
1	17	MODEL1	PARMS	premload1	1.09435	-0.26301	0.000081548	-0.000019862	0.63227
1	18	MODEL1	PARMS	premload1	1.19962	-0.2239	0.000091545	-0.000011645	0.60469
2	14	MODEL1	PARMS	premload1	1.16565	-0.22674	0.000034109	-0.000004843	0.75251
2	15	MODEL1	PARMS	premload1	1.38372	-0.22264	0.000051897	-0.000008596	0.64595
2	16	MODEL1	PARMS	premload1	1.46816	-0.2245	0.000065122	-0.00001345	0.62004
2	17	MODEL1	PARMS	premload1	1.53746	-0.2237	0.000082798	-0.00001194	0.52893
2	18	MODEL1	PARMS	premload1	1.70086	-0.15842	0.000091665	-0.00000512	0.47335

Table R-2

Strata	Premmax	Premmin	Premsum	Premmean
1	2.98805	0.86181	102.022	2.12546
2	6.18337	3.03694	185.277	4.02777

Calculation of Load Reduction during CPP Periods

The CPP load reduction for a given hour and maximum daily temperature is developed by using the appropriate control coefficient (maxloadtempc) from Table R-1 for the hour, strata, and maximum temperature range desired. The control coefficient for the selected hour is multiplied by the premise mean and the squared maximum daily temperature. The premise mean information is shown in Table R-2 above.

A sample calculation for strata 2 and the maximum temperature range above 80 degrees for the CPP pilot at hour 17 is shown below using data from Tables R-1 and R-2 and a maximum daily temperature of 92 degrees.

Control Coefficient (maxloadtempc): -0.00001194

Temperature: 92 Degrees

Premise mean of sample: 4.03

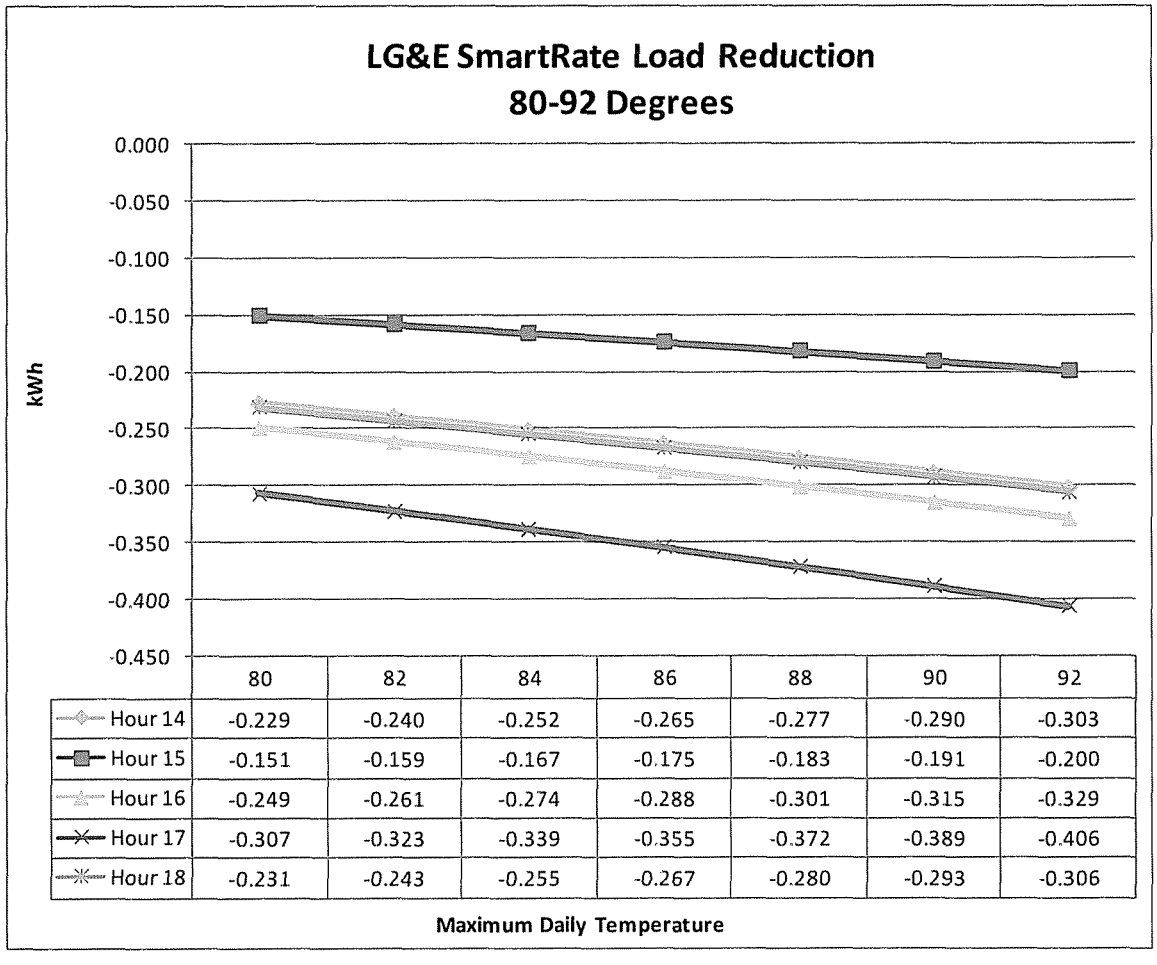
Control Estimate for Strata 2, Maximum Temperature of 92 Degrees

= -0.00001194 * 4.03 * 92 * 92 = -.406 kW

In order for the load reduction estimates to be representative of the overall SmartRate population's usage, the load reduction must be weighted. The weight is calculated by finding the ratio between the strata's population and the total population. The weights calculated from the strata analysis are 48/94 or 0.51 for strata 1 and 46/94 or 0.49 for strata 2.

These ratios are then multiplied by the load reduction estimate for the appropriate strata and the result is summed over the two strata to yield a system weighted load reduction estimate.

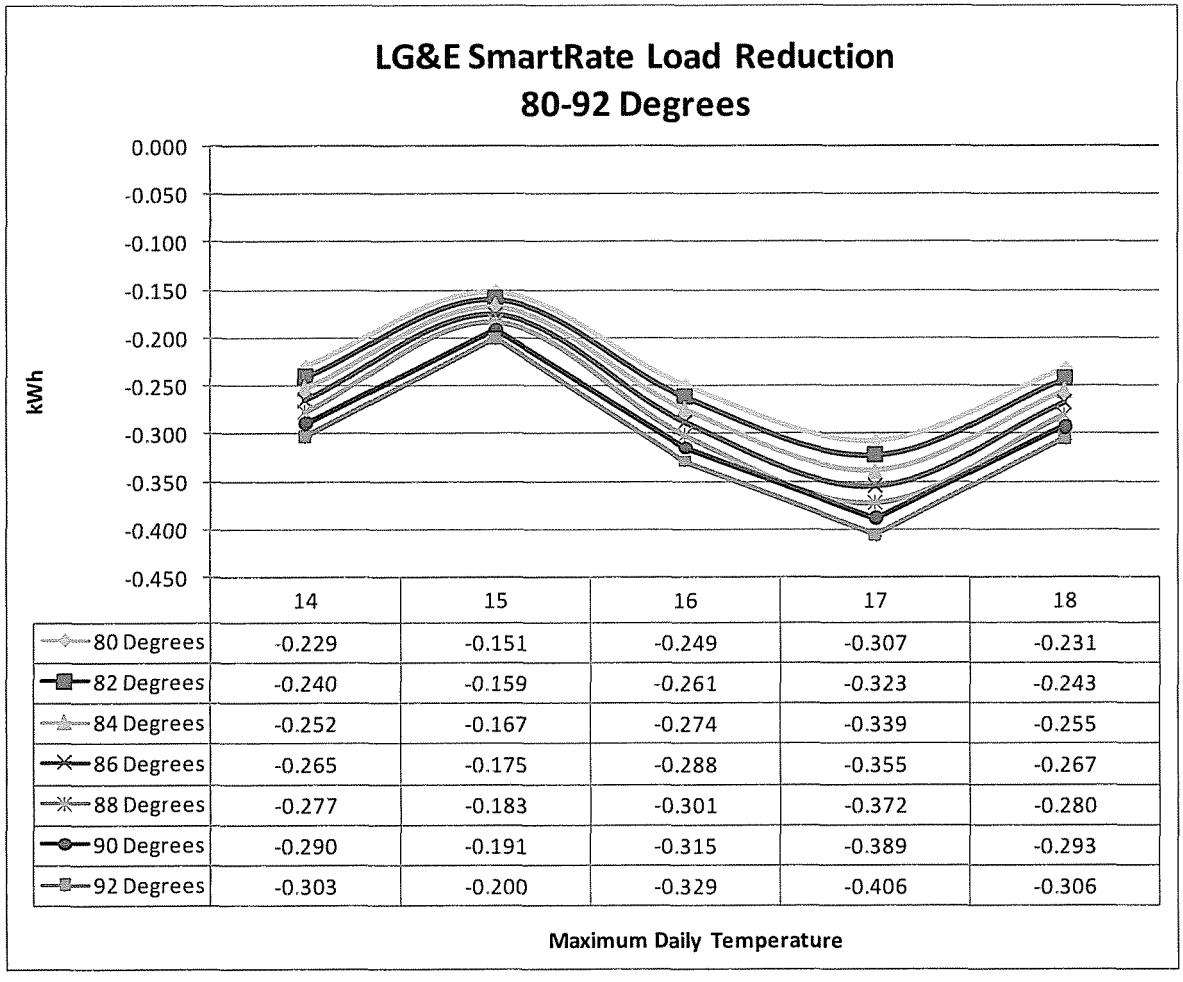
The chart shown below displays the load reduction to be expected at each hour during critical price rate initiation on any day with the indicated maximum temperature for each SmartRate participant.



	80	82	84	86	88	90	92
Hour 14	-0.229	-0.240	-0.252	-0.265	-0.277	-0.290	-0.303
Hour 15	-0.151	-0.159	-0.167	-0.175	-0.183	-0.191	-0.200
Hour 16	-0.249	-0.261	-0.274	-0.288	-0.301	-0.315	-0.329
Hour 17	-0.307	-0.323	-0.339	-0.355	-0.372	-0.389	-0.406
Hour 18	-0.231	-0.243	-0.255	-0.267	-0.280	-0.293	-0.306

The load reduction chart shows the greatest load reduction in hour ending 16 and 17 at all maximum temperatures and the lowest load reductions in hour ending 18. This is perhaps due to a greater use of appliances for cooking etc. as customers return home from work.

The chart shown below displays the load reduction to be expected at each hour during critical price rate initiation on any day with the indicated maximum temperature for each SmartRate participant. This graph shows the same load reductions as shown above, but by temperature, rather than hour of control.

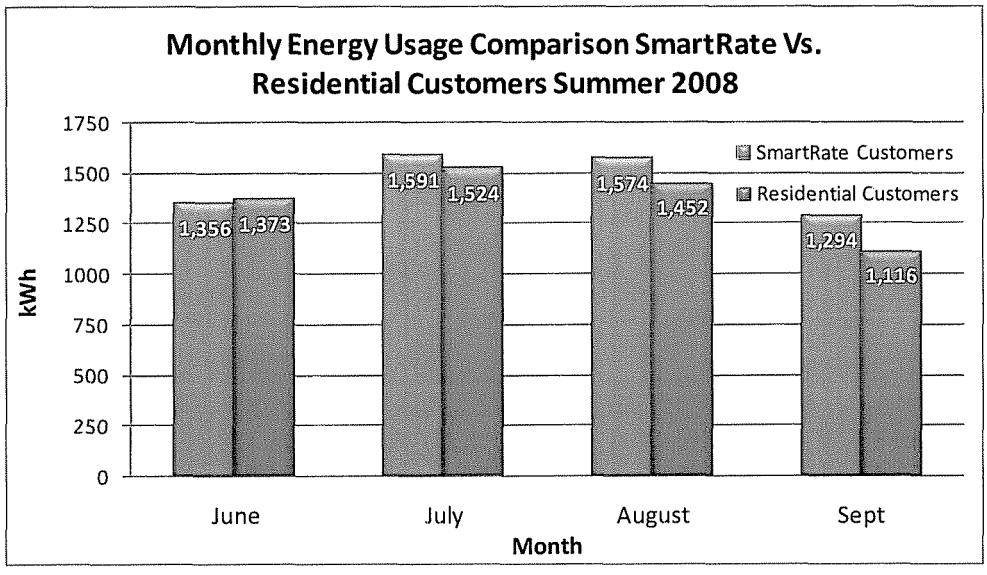


	14	15	16	17	18
80 Degrees	-0.229	-0.151	-0.249	-0.307	-0.231
82 Degrees	-0.240	-0.159	-0.261	-0.323	-0.243
84 Degrees	-0.252	-0.167	-0.274	-0.339	-0.255
86 Degrees	-0.265	-0.175	-0.288	-0.355	-0.267
88 Degrees	-0.277	-0.183	-0.301	-0.372	-0.280
90 Degrees	-0.290	-0.191	-0.315	-0.389	-0.293
92 Degrees	-0.303	-0.200	-0.329	-0.406	-0.306

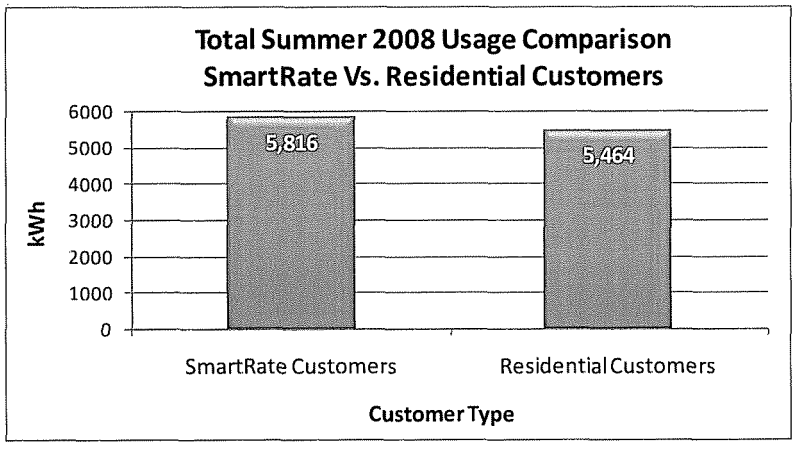
The chart above proves that as the outside maximum temperature increases, the potential load reduction through critical peak pricing initiation increases as well. At 5:00 pm, on a 92 degree day, LG&E can expect a load reduction of 0.406 kWh per SmartRate participant. Recent M&V studies for LG&E's Demand Conservation Load Management Program show that a load reduction of 0.5 kWh to 0.6 kWh per participant can be expected on a 92 degree day via switch control. Therefore, load reductions resulting from the SmartRate program are similar to load reductions developed previously for the Demand Conservation program at these temperatures.

Summer Monthly Energy Usage Comparison

A comparison of daily energy usage between the SmartRate customers and the regular residential customers is shown below for each summer month.



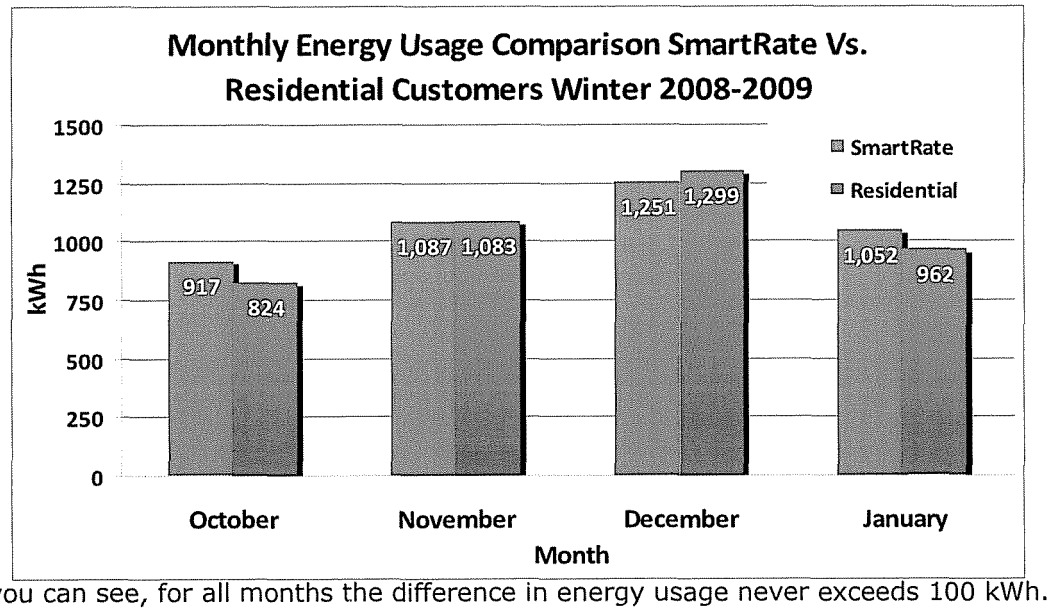
The SmartRate customers do use slightly more energy during most summer months. However, the graph above shows that there is little difference in energy usage between the two customer groups. The month of August shows the largest difference in energy usage, with a difference of 122 kWh. This is in contrast to most of the CPP control days when the daily difference in usage was less than 1 kWh except for the September 4th control event where the difference was over 5 kWh.



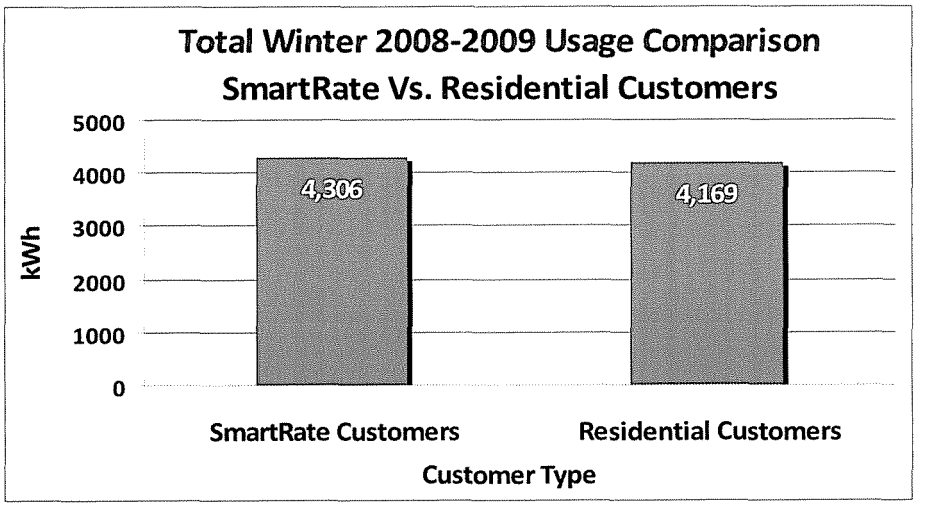
The graph to the left shows the slight difference in total energy usage between the SmartRate customers and the regular residential customers during the summer of 2008. Overall, SmartRate customers did not appear to make significant changes to their usage patterns throughout the summer of 2008.

Winter Monthly Energy Usage Comparison

A comparison of daily energy usage between the SmartRate customers and the regular residential customers is shown below for each winter month from October to January.



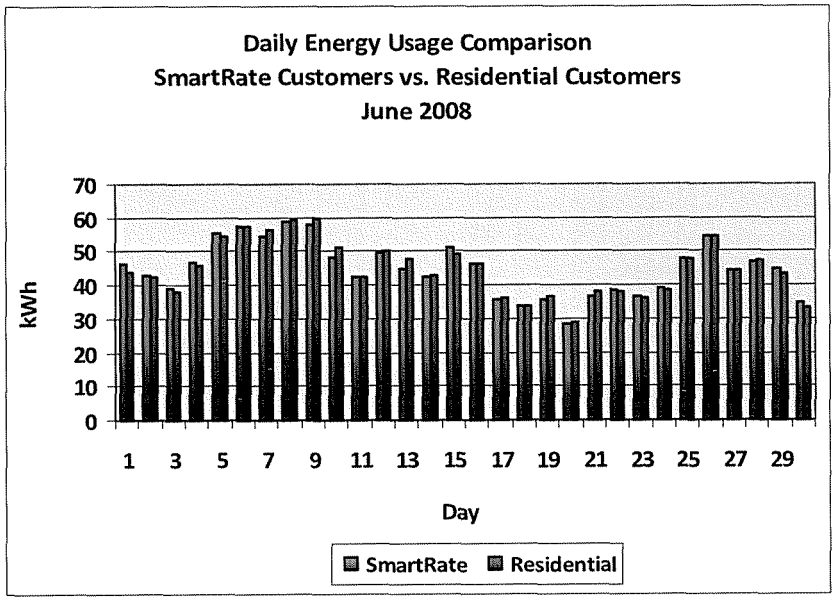
As you can see, for all months the difference in energy usage never exceeds 100 kWh. November has the most similar usages; there is only a 4 kWh difference. The largest difference in usages occurs in October with a difference of 93 kWh.

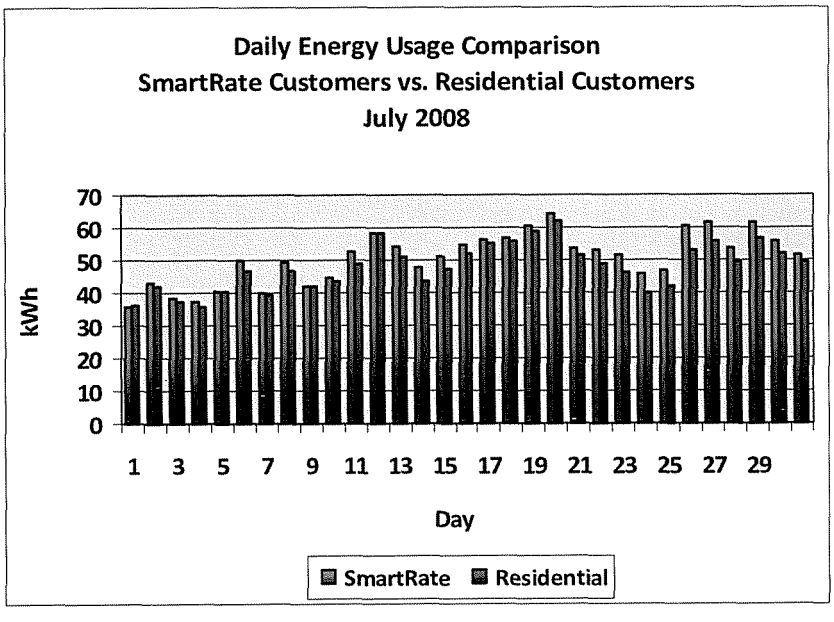


The graph displayed to the left shows the minor difference in total energy usage between the SmartRate customers and the residential customers during the winter of 2008 to 2009. Overall, SmartRate customers did not appear to make significant changes to their usage patterns throughout the winter of 2008 through 2009.

Summer Daily Energy Usage Comparison

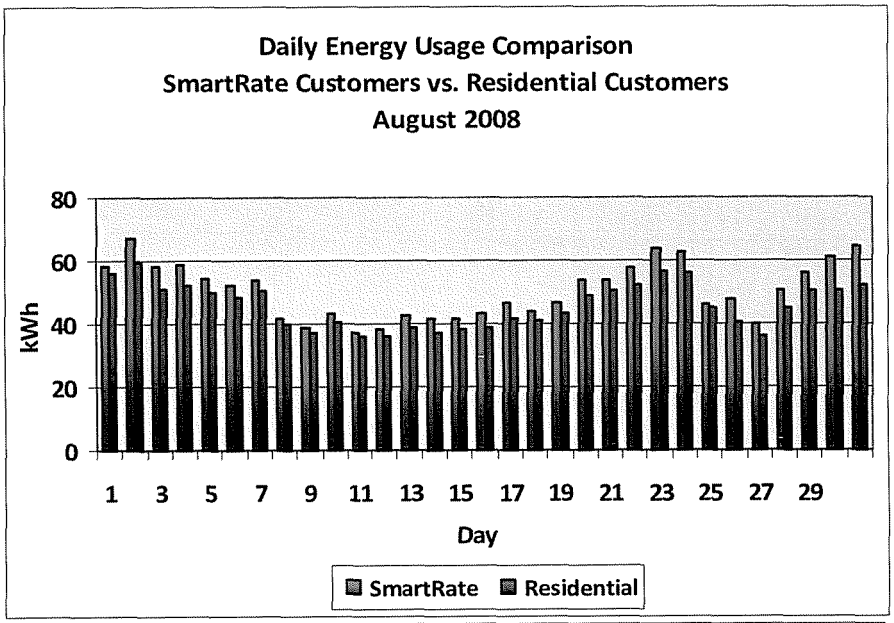
The graphs below show the daily energy usage comparison for SmartRate and residential customers for the months of June and July of 2008.

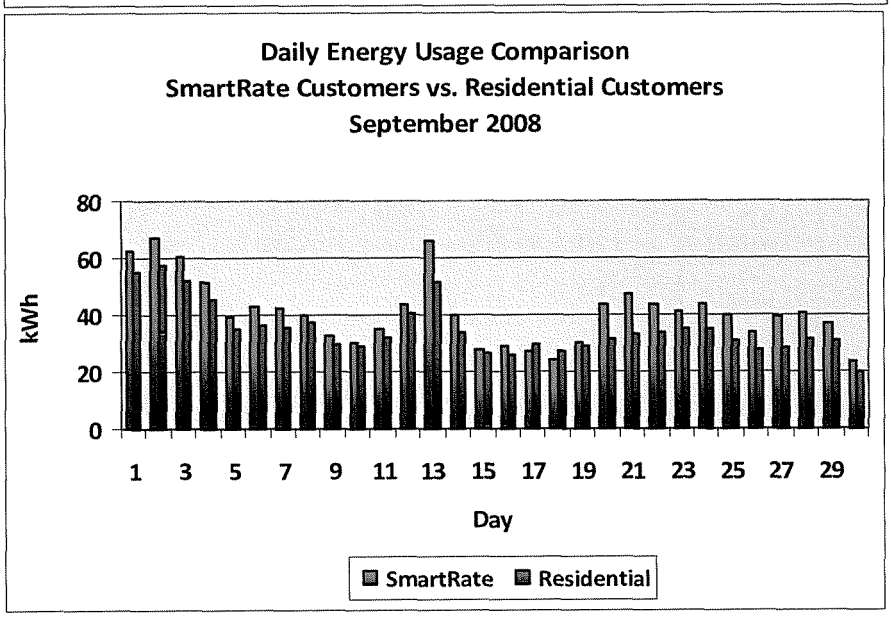




There is very little difference between the SmartRate customers' and the residential customers' energy usage during the month of June and July. The remaining summer months and winter are analyzed on the following pages.

The differences for August and September are much larger with the SmartRate customers using more on an average than the residential customers.

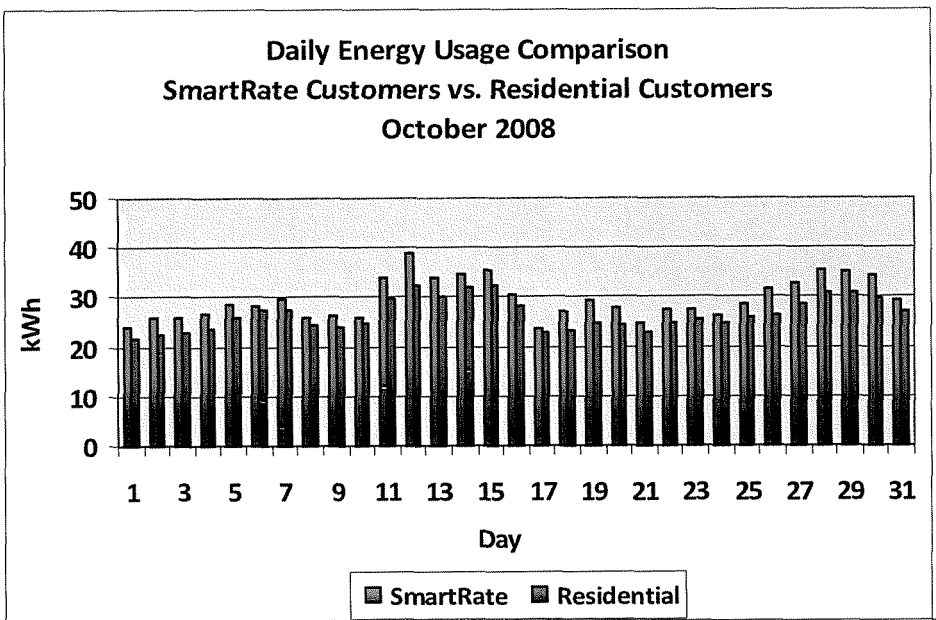


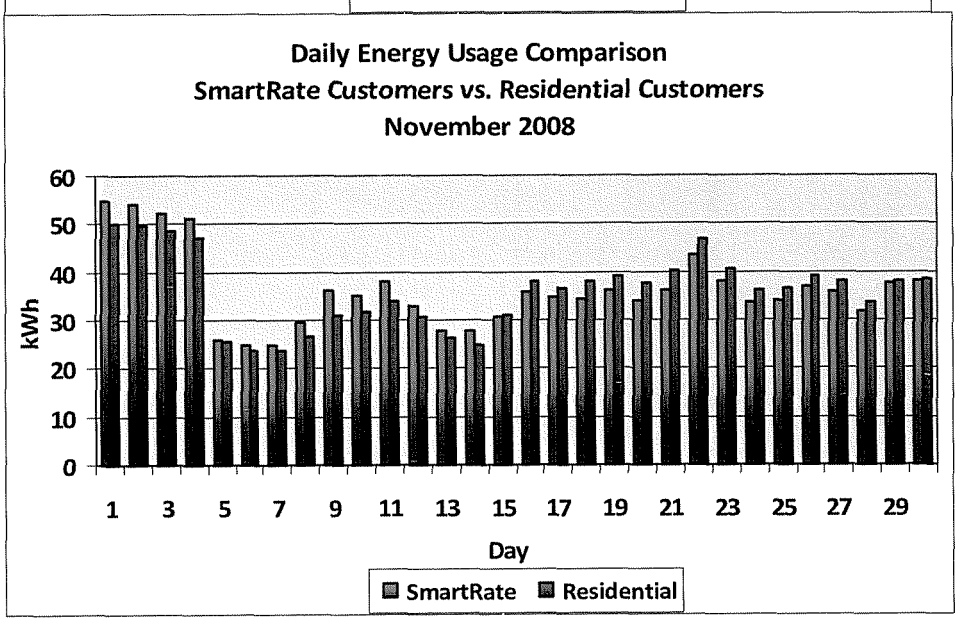


There are a few days in September where the SmartRate customers did use less than the residential customers. Customers may be using more energy during the lower price periods causing their daily usages to be higher than those not on the pricing tiers.

Winter Daily Energy Usage Comparison

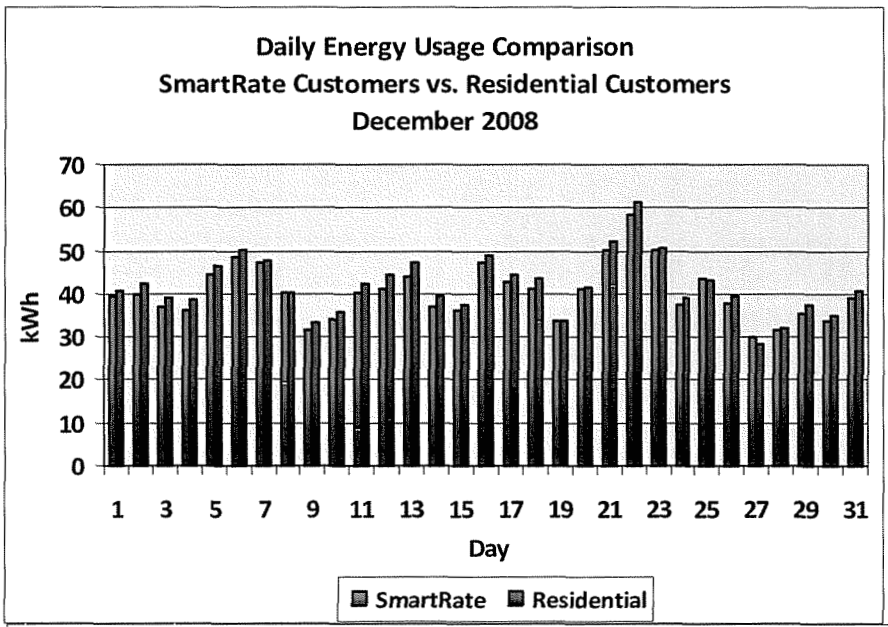
The same pattern is also evident in October. SmartRate customers are using more on average than the residential customers.

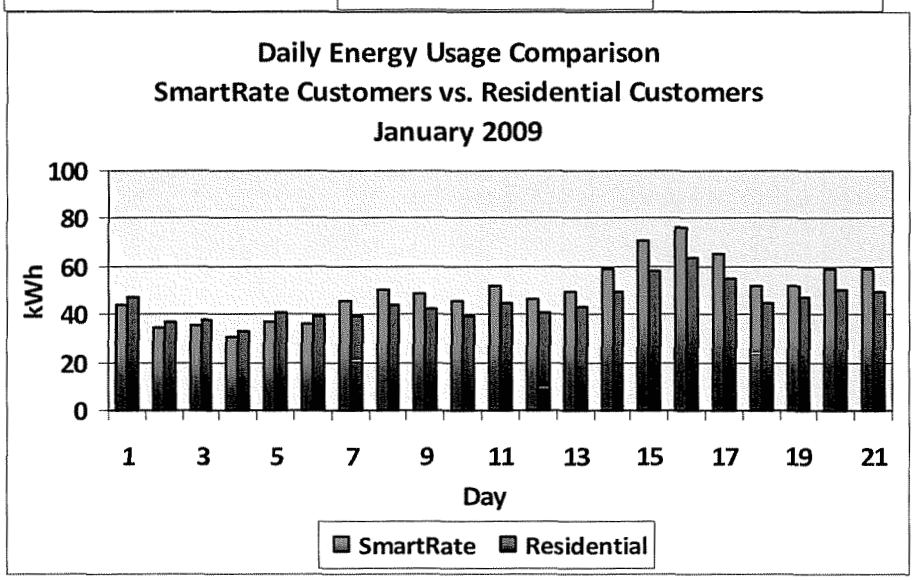




November is similar at the beginning of the month but after the 16th of the month the SmartRate customers begin to use less.

The month of December shows that the two groups used nearly the same amount of energy on average.

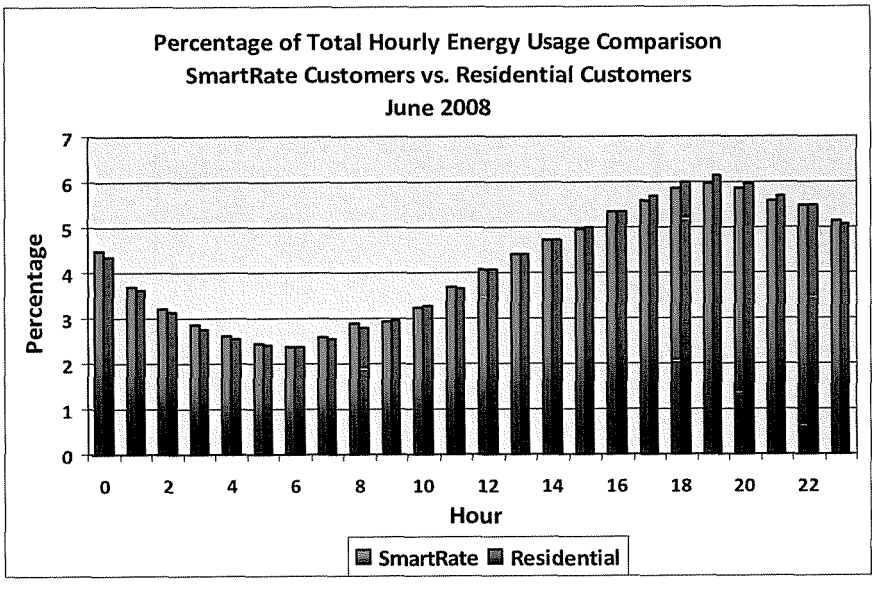




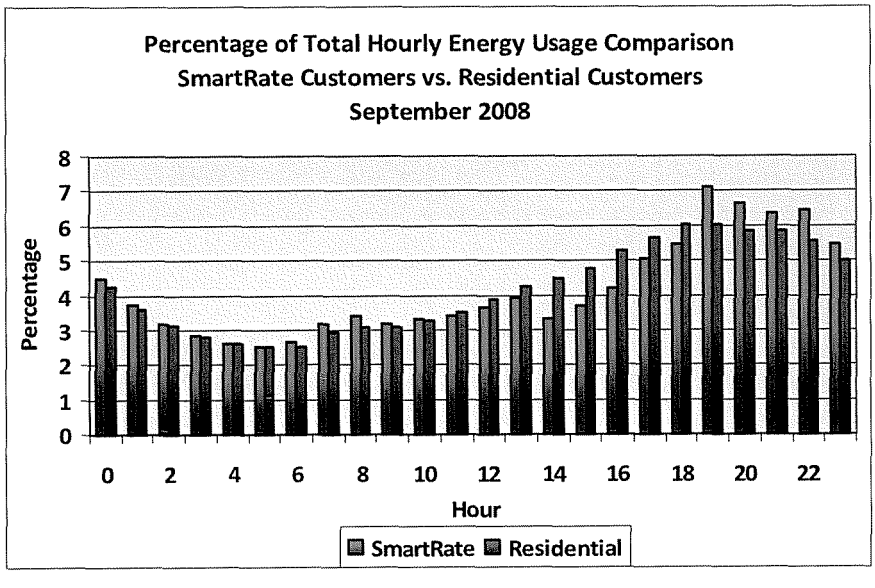
January shows similar usages for each customer group with SmartRate customers using more as the month continues. To truly understand how the pricing tiers affect energy usage it is necessary to analyze hourly usage.

Summer Percentage Hourly Energy Usage Comparison

The graphs below show the percentage of total hourly energy usage for SmartRate customers versus the regular residential customers for the months of June and September of 2008.



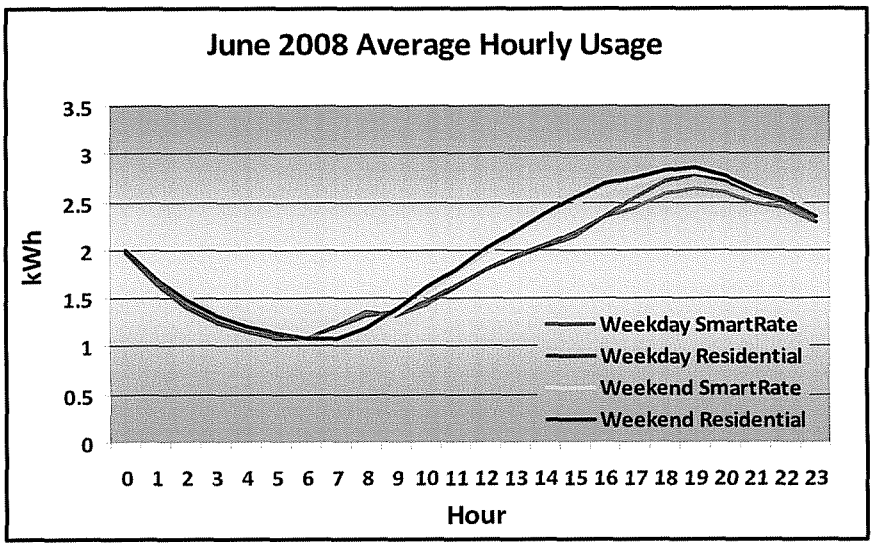
The difference in energy usage between the two types of customers, just as with the daily energy usage, is not significant for the month of June.

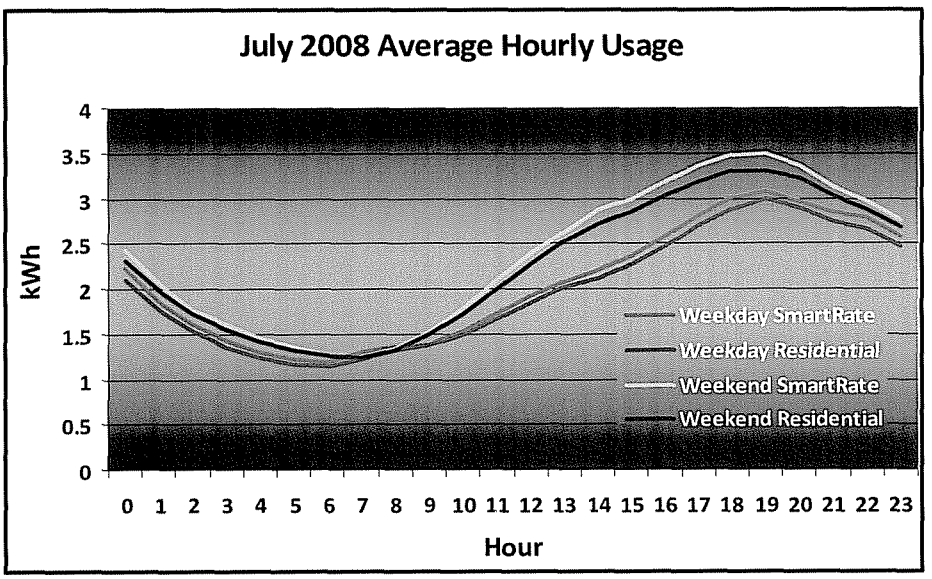


The percentage of hourly energy usage during the month of September does show a decrease in usage, of about 1% to 2% for the SmartRate customers during the high price tier of the SmartRate program beginning in hour 14 and continuing to hour 18.

Summer Weekday Weekend Energy Usage Comparison

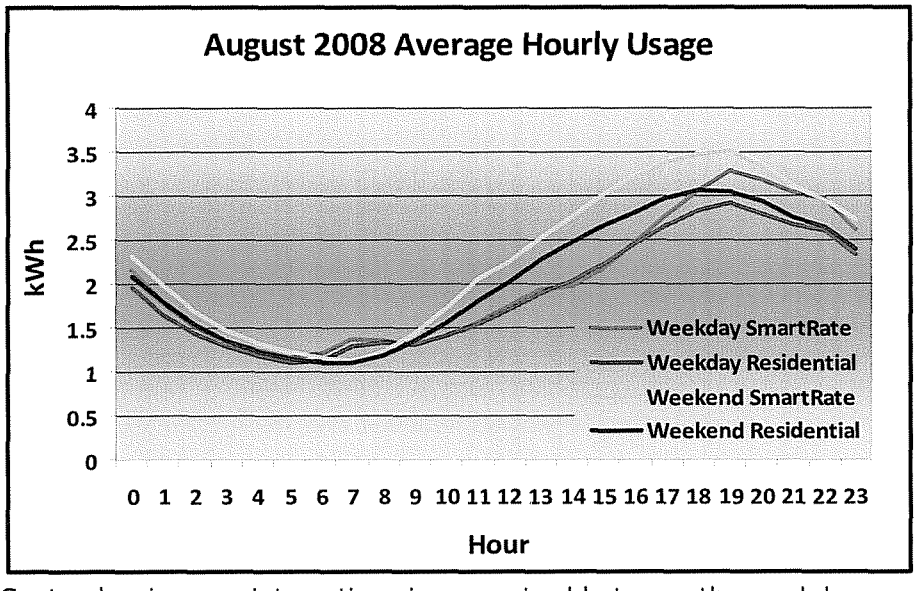
Below is the average hourly usage for both SmartRate and Residential customers, comparing weekend usage with weekday usage. It was decided to compare weekend usage with weekday usage for the two groups too see the customer response to the cheaper weekend rate. For the month of June the weekday and weekend usage is nearly the same for both the Residential and SmartRate groups. GoodCents hypothesized that the rates were not stressed to customers early on in the program and as the summer continued they became more aware of how the rates impacted their electric bills.



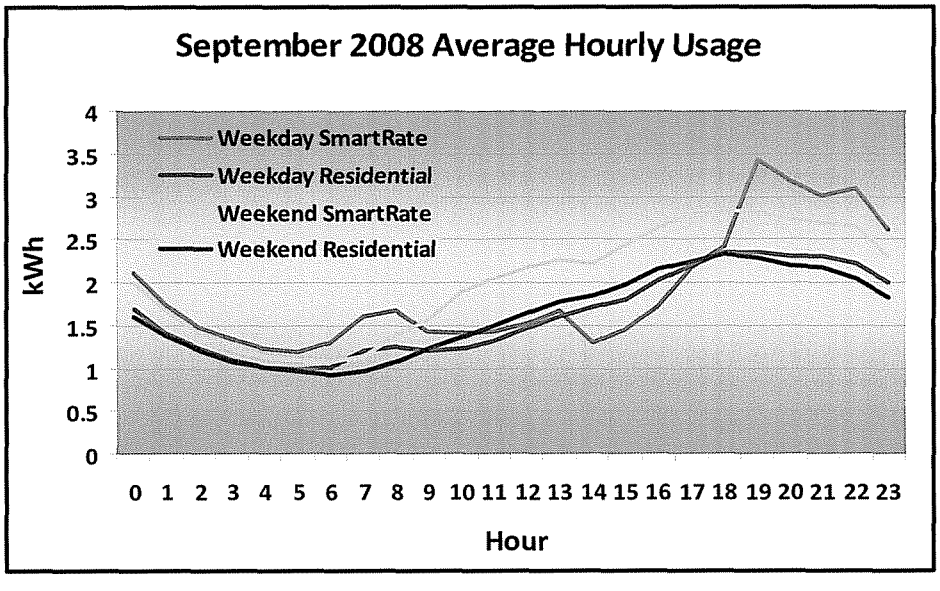


The following graph shows the comparison for the month of July. Once again the usages are nearly the same for each day type and group.

In August the SmartRate customers use slightly more on the weekends than the weekdays. At 2 pm there is a difference of nearly 0.75 kWh. The residential customers use slightly more on weekends than weekdays. This could be due to the customer's usage pattern.

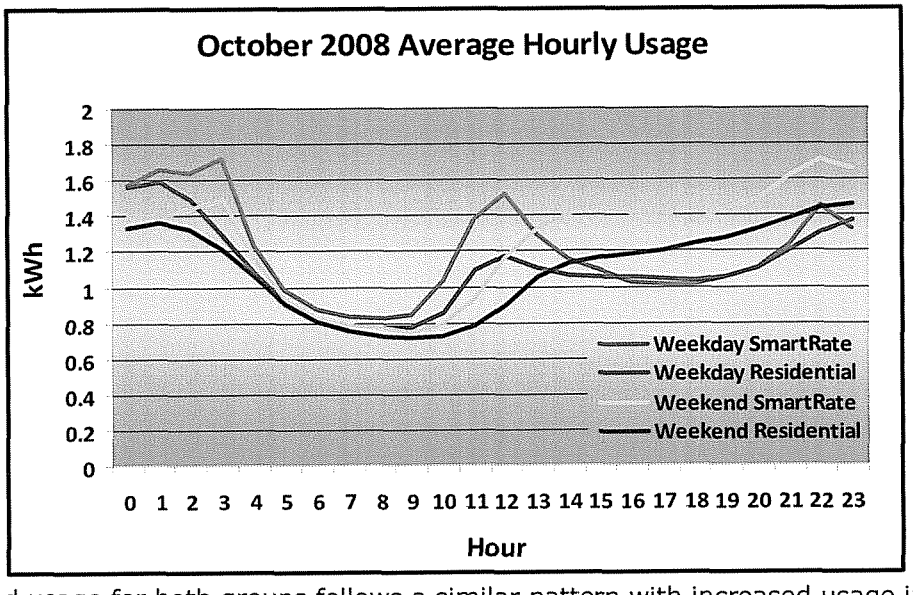


Usage for September is more interesting since one is able to see the weekday morning peak for the SmartRate customers and another peak in usage at 7 pm after the high price period ends. The residential usages do not vary by much. There is a morning peak for the weekdays at 7 am, as one would expect.

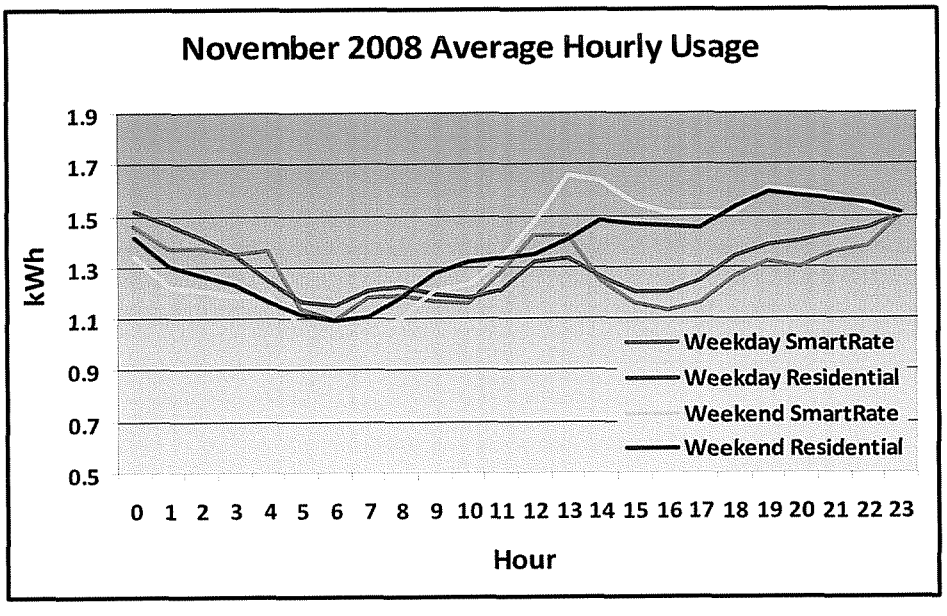


Winter Weekday Weekend Energy Usage Comparison

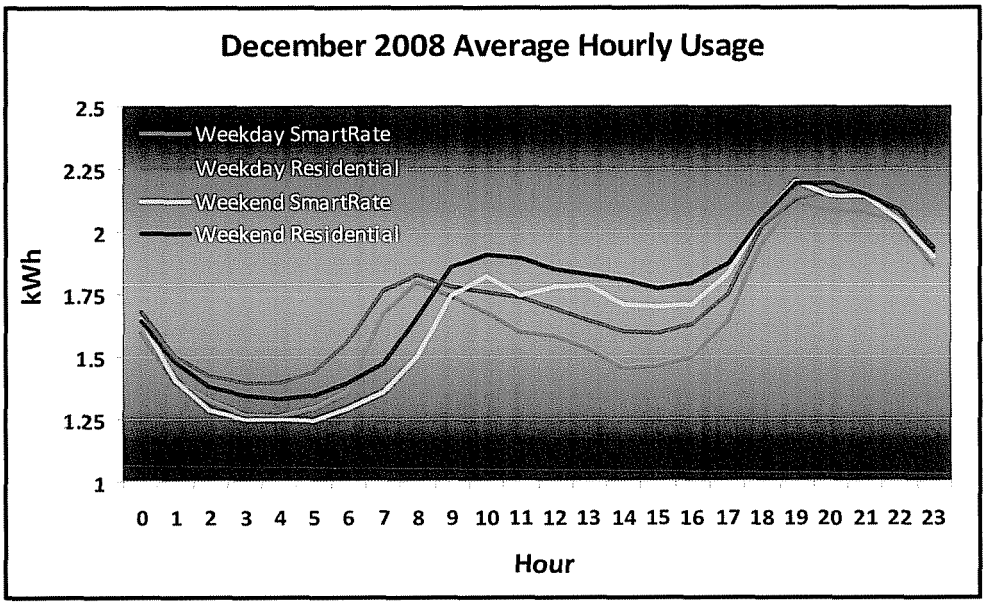
For the month of October there is a peak at noon for the SmartRate customers on weekdays. This is during the medium price rate. The weekend usage for the SmartRate is also higher than weekday usage.

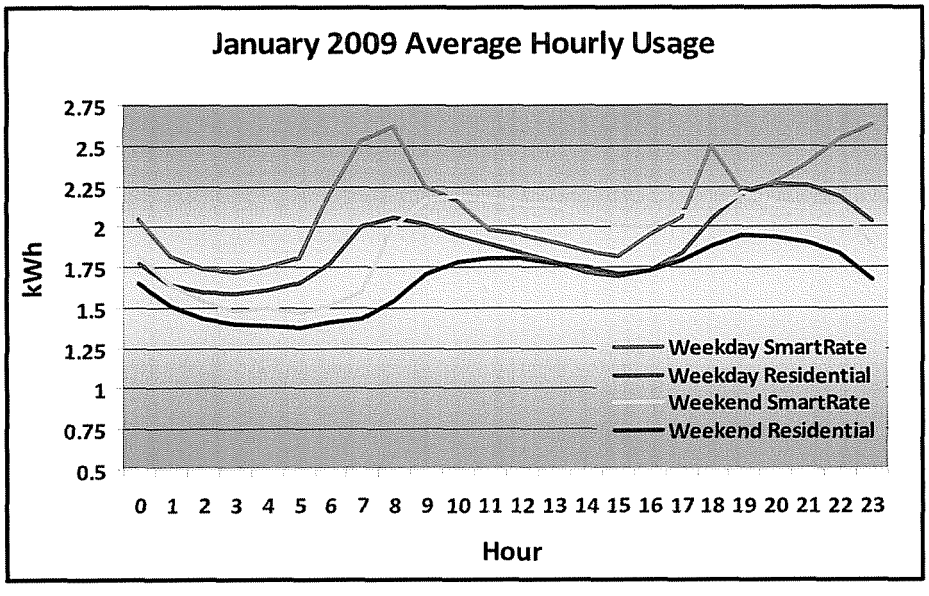


The weekend usage for both groups follows a similar pattern with increased usage in the afternoon compared to the weekday usage for both groups.



Usage patterns for the month of December are relatively similar across the groups. All groups and time periods have a peak at 7 pm. The SmartRate weekday morning peak (8 am) occurs a few hours earlier than the weekend morning peak (10 am). The residential customers follow the same pattern. In addition, usage drops to 1.5 kWh at 3pm during the medium price tier on weekdays versus 1.75 kWh during weekends.



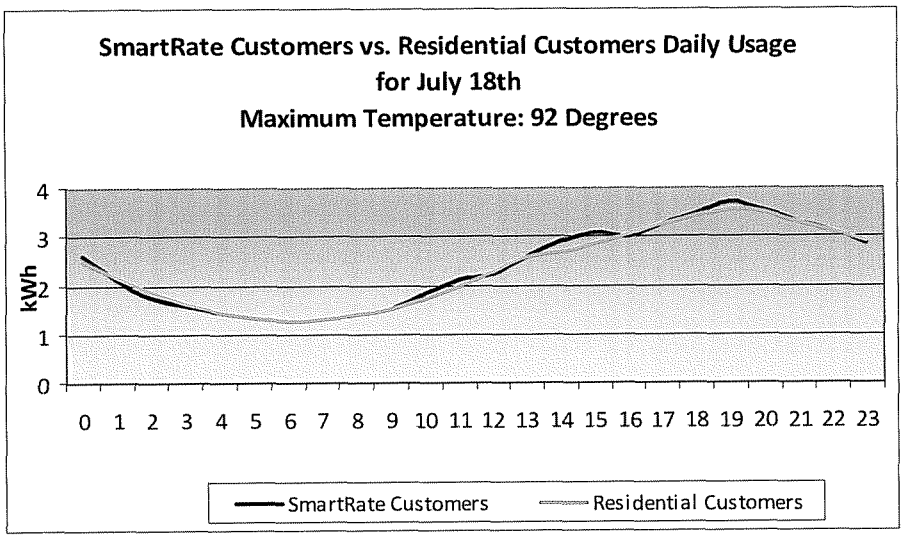


January's usage patterns are not as consistent, possibly due to colder weather seen by Louisville. Weekend SmartRate usage is higher than the weekday afternoon usage, but only by approximately a quarter of a kWh.

Summer Energy Usage Comparison for Hot Days

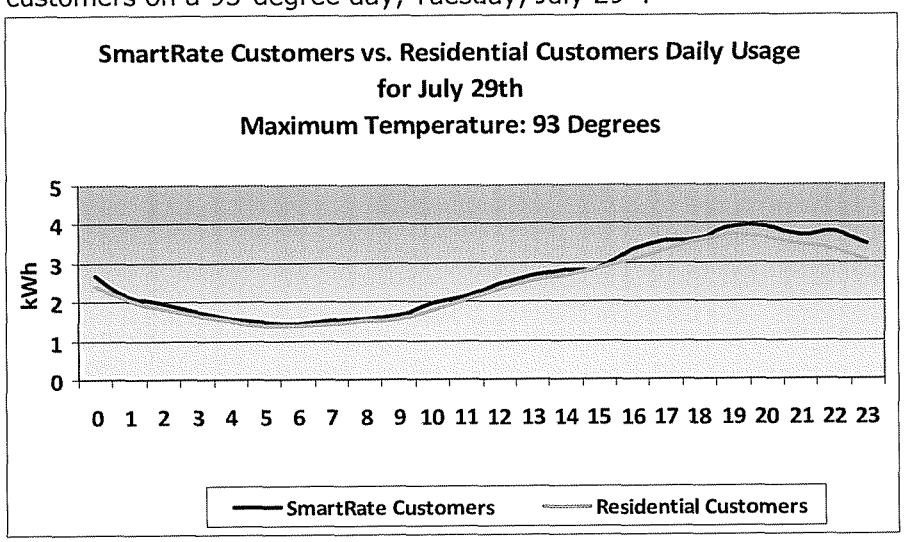
The SmartRate customers should show a decrease in energy usage between the hours of 1:00 pm and 6:00 pm when the high-energy price is in place. The following graphs compare energy usage between SmartRate customers and regular residential customers on warm, but not critical, days throughout the summer.

The graph below shows energy usage for both the SmartRate customers and the residential customers on a 92-degree day, Friday, July 18th.



The graph to the left shows that there is a very slight decrease in energy usage for the SmartRate customers at 13:00. However, there is still virtually no difference in energy usage between the SmartRate and residential customers.

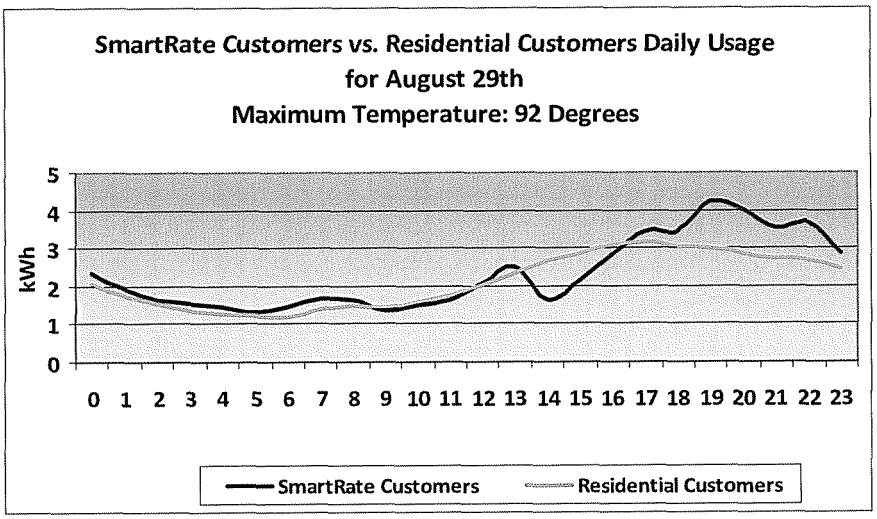
The graph below shows energy usage for both the SmartRate customers and the residential customers on a 93-degree day, Tuesday, July 29th.



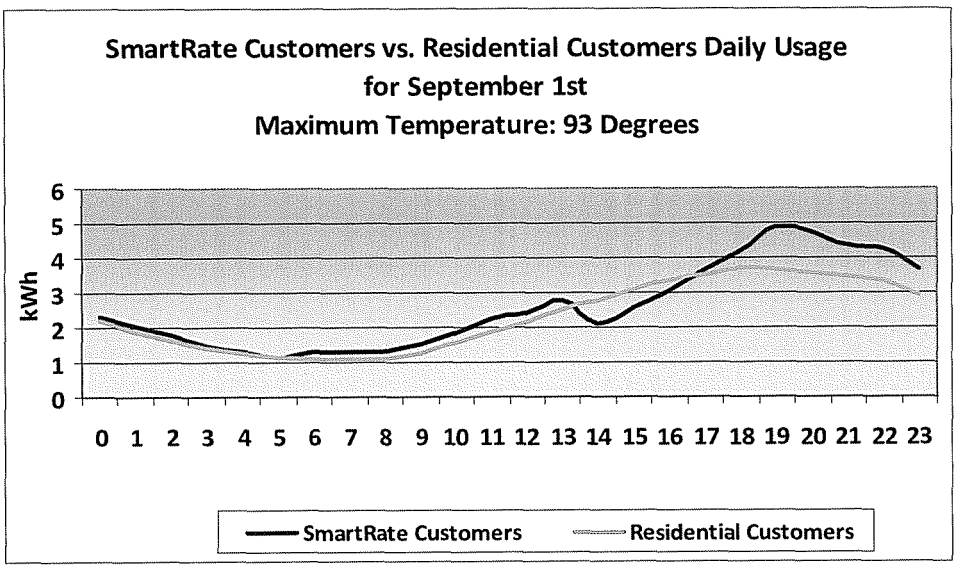
Again, the graph to the left shows that there is virtually no difference in energy usage between the SmartRate customers and the residential customers.

The graph below shows energy usage for both the SmartRate customers and the residential customers on a 92 degree day, Friday, August 29th.

The graph to the left does show a difference in energy usage between the SmartRate customers and the residential customers. The SmartRate customers' energy usage drops during hour 14:00 to be significantly lower than the residential customers' energy usage. In addition, the graph to the left shows a snapback effect once the high pricing period concluded.

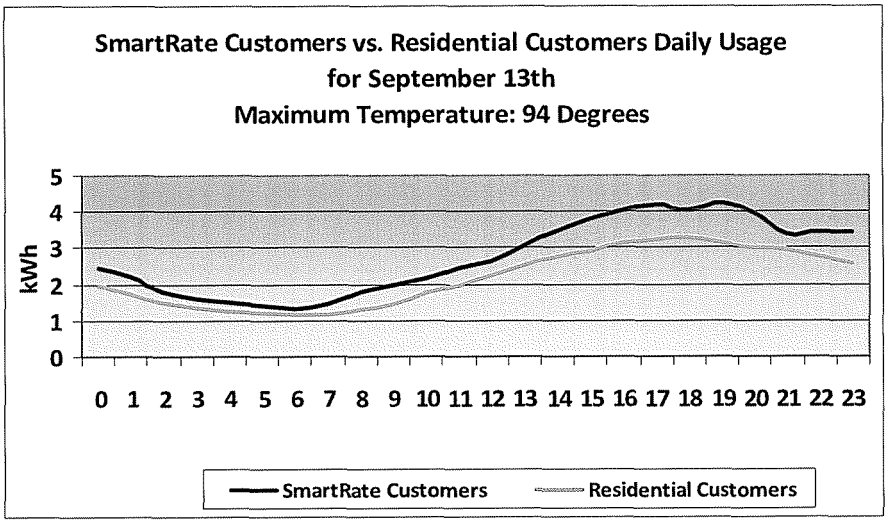


The graph below shows energy usage for both the SmartRate customers and the residential customers on a 93 degree day, Monday, September 1st.



The graph to the left also shows a significant decrease in energy for the SmartRate customers during hours 14:00 and 15:00, as well as a snapback once the high pricing period concluded. This graph does show a difference in energy usage between the two customer groups.

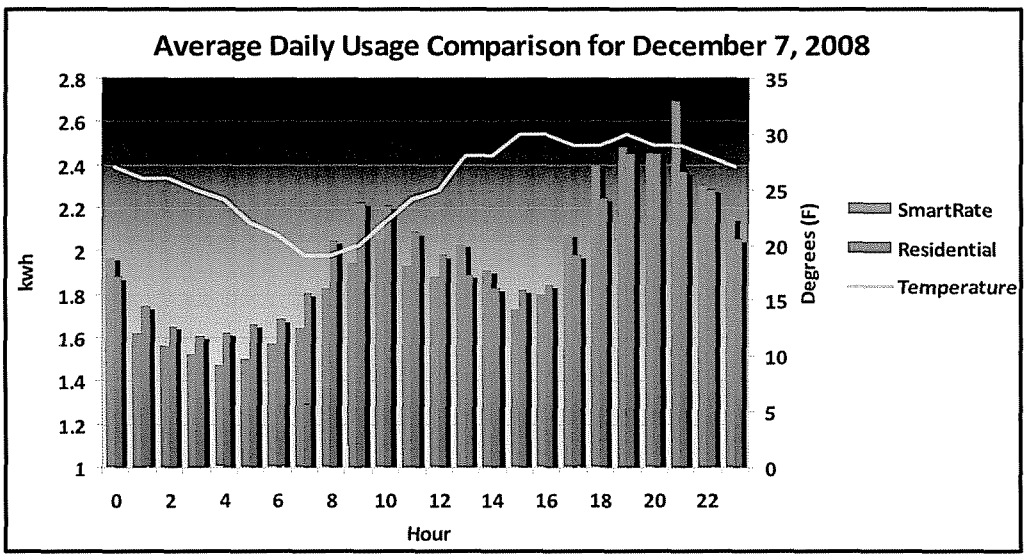
The graph below shows energy usage for both the SmartRate customers and the residential customers on a 94-degree day, Saturday, September 13th.



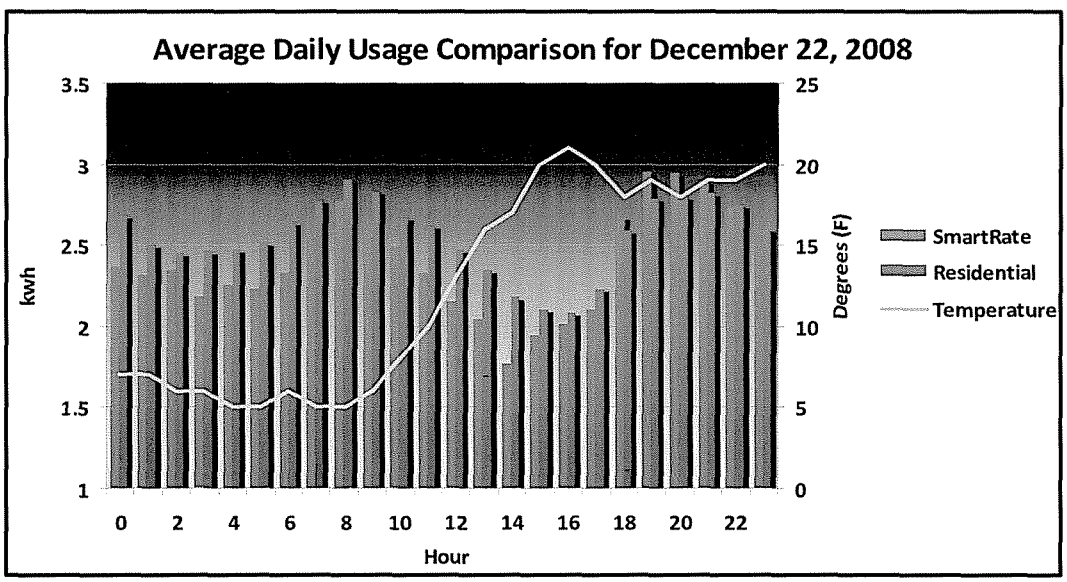
The graph to the left does show an energy difference between the two customer groups. These differences are due to the fact that SmartRate customers have a low price schedule during weekends, and therefore are encouraged to use energy on weekends rather than weekdays. The graphs above show that on some warm days in August and September, there is a clear decrease in energy for SmartRate customers during the higher priced period in the afternoon. However, on some warm days in the month of July, no decrease in energy usage is apparent. This analysis shows that some SmartRate customers appear to be making adjustments to their energy usage in response to the higher priced tiers, especially in the latter summer months, and are clearly using more energy on the low priced weekends.

Winter Energy Usage Comparison for Cold Days

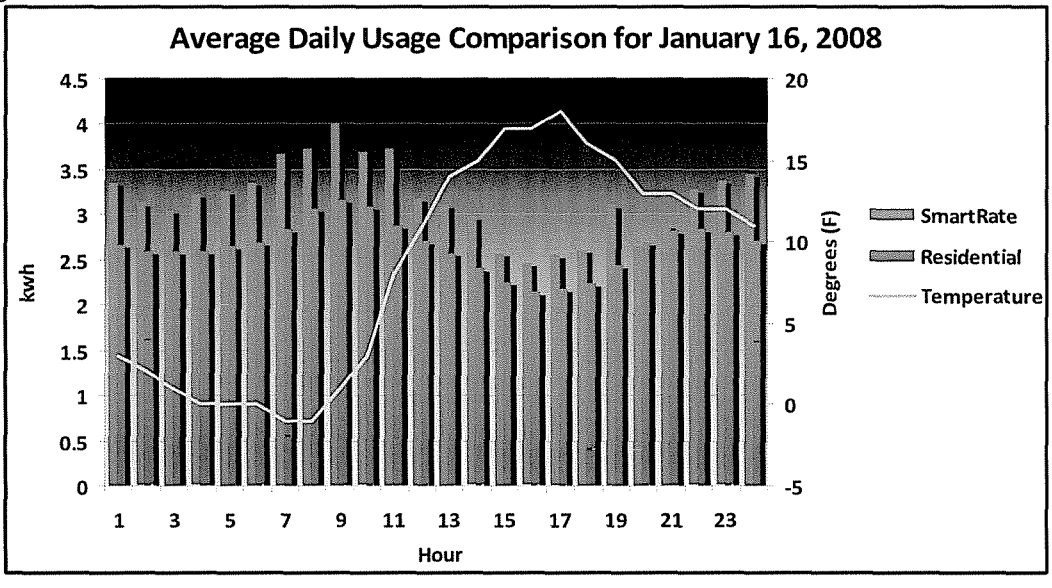
The following graph shows the daily usage for the SmartRate customers and residential customers for December 7, 2008 as well as the hourly temperature.



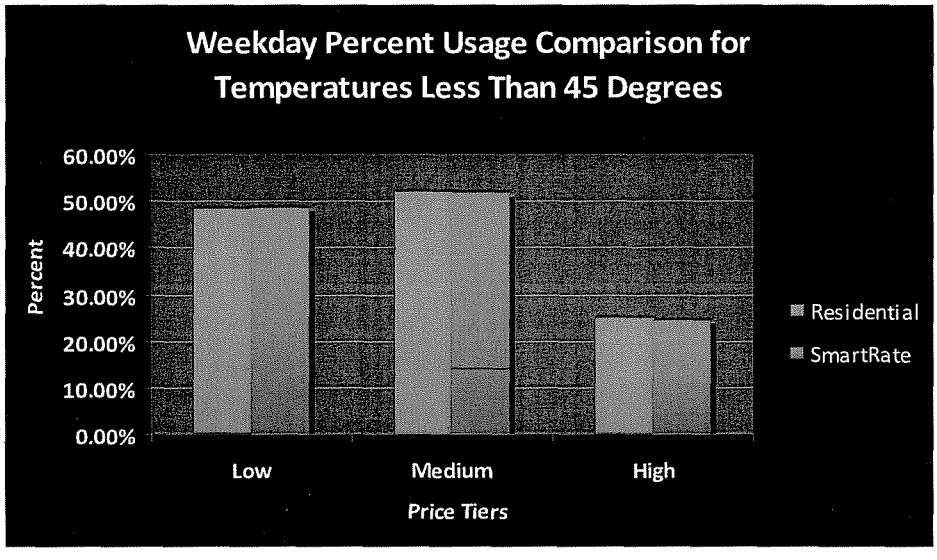
The SmartRate customers used less than the residential customers on December 22, 2008. The temperatures dipped to 5 degrees in the early morning hours and reached a high of 21 degrees Fahrenheit. The previous plotted day shows that as the temperatures decrease the energy usage increases regardless of the customer group.



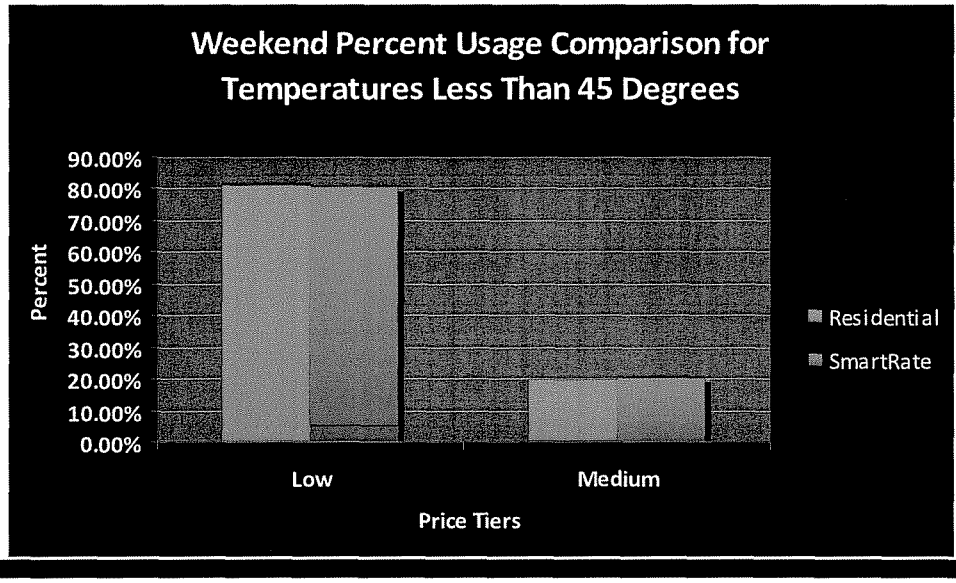
The graph below displays another cold day during the winter, this plot displays usage and temperatures for January 16, 2008. Temperatures reached a low of -1 degree Fahrenheit at 6-7 am. SmartRate customers used considerably more for this day than those not on the pricing schedule.



The following graph shows the percentage of energy for each pricing tier for weekdays where the temperature was less than 45 or equal to degrees. This was calculated by taking the average energy usage of all hours in the low winter price tier for weekdays with the temperature less than or equal to 45 degrees and then again for the medium and high prices. As one can see there is a very minimal difference, within a percent for each price level.



The following graph shows the percent of energy usage for weekends for temperature less than or equal to 45 degrees. The difference in usage is within a half percent for the weekend time frame. As we have previously noted we can see that overall the SmartRate customers did not substantially change their energy usage.



Conclusions

The analysis of the LG&E SmartRate Pilot shows good results from a demand and energy standpoint especially in the latter part of the summer. The demand reductions during the critical price implementation periods vary from 0.2 kWh to almost 0.5 kWh during high temperature periods with the exception of hour ending 18. The load reductions found resulting from critical peak pricing periods are similar, although slightly less, than the load reductions found in previous M&V studies of LG&E's Demand Conservation Load Management Program at the same operational temperatures. Analysis shows a slight decrease in energy usage when high priced periods and critically priced periods were initiated. However, overall SmartRate customers are using more energy than regular residential customers and this may be due to differences in demographics or equipment that was not explored in this initial study. This is also the case during the winter months. Analysis was also conducted comparing the price tier usages when temperatures were below 45 degrees Fahrenheit. As concluded above there were very minimal differences between SmartRate and residential groups for each price tier when temperatures were below 45 degrees Fahrenheit for both weekends and weekdays. The percent difference for weekdays was within one percent and within a half percent difference for the weekends when comparing the price tiers. Typically weekend usage for the SmartRate group is higher than the weekday usage as seen in the comparisons by month. The residential group's usage is very similar but is higher on weekends than weekdays. The revenue implications of CPP are not clear from the initial analysis, given the mild weather conditions that existed during the summer of 2008 and especially the lack of high maximum temperature weekdays when the CPP could be initiated. We recommend further study during the summer of 2009.

Appendix

Regression Model Output

CPP Model MAx Temp>= 79

Obs	strata	_TYPE_	_FREQ_	premmax	premmin	premsum	premmean
1	1	0	48	2.98805	0.86181	102.022	2.12546
2	2	0	46	6.18337	3.03694	185.277	4.02777

CPP Model MAx Temp>= 79

strata=1 hour=14

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4365
Number of Observations Used	4355
Number of Observations with Missing Values	10

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4995.26671	1665.08890	2446.41	<.0001
Error	4351	2961.39950	0.68063		
Corrected Total	4354	7956.66621			

Root MSE	0.82500	R-Square	0.6278
Dependent Mean	1.52196	Adj R-Sq	0.6276
Coeff Var	54.20628		

CPP Model MAx Temp>= 79

strata=1 hour=14

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.06583	0.04407	-1.49	0.1353
maxloadtemp	1	0.00002704	0.00000278	9.72	<.0001
maxloadtempc	1	-0.00001183	0.00000351	-3.37	0.0008
premhr13	1	0.80240	0.01026	78.21	<.0001

CPP Model MAx Temp>= 79

strata=1 hour=15

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4361
Number of Observations Used	4347
Number of Observations with Missing Values	14

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4620.91364	1540.30455	1682.23	<.0001
Error	4343	3976.59466	0.91563		
Corrected Total	4346	8597.50831			

Root MSE	0.95689	R-Square	0.5375
Dependent Mean	1.62926	Adj R-Sq	0.5372
Coeff Var	58.73157		

CPP Model MAx Temp>= 79

strata=1 hour=15

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|

Intercept	1	-0.18077	0.05119	-3.53	0.0004
maxloadtemp	1	0.00004700	0.00000323	14.53	<.0001
maxloadtempc	1	-0.00001300	0.00000407	-3.20	0.0014
premhr13	1	0.73787	0.01194	61.81	<.0001

CPP Model MAx Temp>= 79

strata=1 hour=16

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4361
Number of Observations Used	4345
Number of Observations with Missing Values	16

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4520.23082	1506.74361	1426.09	<.0001
Error	4341	4586.50779	1.05656		
Corrected Total	4344	9106.73860			

Root MSE	1.02789	R-Square	0.4964
Dependent Mean	1.77154	Adj R-Sq	0.4960
Coeff Var	58.02225		

CPP Model MAx Temp>= 79

strata=1 hour=16

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.26319	0.05501	-4.78	<.0001
maxloadtemp	1	0.00006567	0.00000348	18.88	<.0001
maxloadtempc	1	-0.00002027	0.00000437	-4.64	<.0001
premhr13	1	0.69266	0.01288	53.79	<.0001

CPP Model MAx Temp>= 79

strata=1 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4363
Number of Observations Used	4341
Number of Observations with Missing Values	22

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4277.43848	1425.81283	1190.57	<.0001
Error	4337	5193.95707	1.19759		
Corrected Total	4340	9471.39555			

Root MSE	1.09435	R-Square	0.4516
Dependent Mean	1.93772	Adj R-Sq	0.4512
Coeff Var	56.47603		

CPP Model MAx Temp>= 79

strata=1 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.26301	0.05863	-4.49	<.0001
maxloadtemp	1	0.00008155	0.00000371	21.99	<.0001
maxloadtempc	1	-0.00001986	0.00000465	-4.27	<.0001
premhr13	1	0.63227	0.01371	46.10	<.0001

CPP Model MAx Temp>= 79

strata=1 hour=18

The REG Procedure

Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4364
Number of Observations Used	4344
Number of Observations with Missing Values	20

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4258.38348	1419.46116	986.36	<.0001
Error	4340	6245.66729	1.43909		
Corrected Total	4343	10504			

Root MSE	1.19962	R-Square	0.4054
Dependent Mean	2.10277	Adj R-Sq	0.4050
Coeff Var	57.04968		

CPP Model MAx Temp>= 79

strata=1 hour=18

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22390	0.06427	-3.48	0.0005
maxloadtemp	1	0.00009155	0.00000406	22.53	<.0001
maxloadtempc	1	-0.00001165	0.00000510	-2.28	0.0225
premhr13	1	0.60469	0.01503	40.23	<.0001

CPP Model MAx Temp>= 79

strata=2 hour=14

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4550

Number of Observations Used 4549
Number of Observations with Missing Values 1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	10391	3463.65049	2549.16	<.0001
Error	4545	6175.47107	1.35874		
Corrected Total	4548	16566			

Root MSE	1.16565	R-Square	0.6272
Dependent Mean	2.87170	Adj R-Sq	0.6270
Coeff Var	40.59096		

CPP Model MAx Temp>= 79

strata=2 hour=14

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22674	0.09106	-2.49	0.0128
maxloadtemp	1	0.00003411	0.00000321	10.63	<.0001
maxloadtempc	1	-0.00000484	0.00000264	-1.83	0.0667
premhr13	1	0.75251	0.00988	76.14	<.0001

CPP Model MAx Temp>= 79

strata=2 hour=15

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read 4538
Number of Observations Used 4536
Number of Observations with Missing Values 2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	8494.66431	2831.55477	1478.87	<.0001
Error	4532	8677.28962	1.91467		
Corrected Total	4535	17172			

Root MSE	1.38372	R-Square	0.4947
Dependent Mean	3.10880	Adj R-Sq	0.4943
Coeff Var	44.50968		

CPP Model MAx Temp>= 79

strata=2 hour=15

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22264	0.10828	-2.06	0.0398
maxloadtemp	1	0.00005190	0.00000381	13.61	<.0001
maxloadtempc	1	-0.00000860	0.00000314	-2.74	0.0061
premhr13	1	0.64595	0.01174	55.00	<.0001

CPP Model MAx Temp>= 79

strata=2 hour=16

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4537
Number of Observations Used	4535
Number of Observations with Missing Values	2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	8479.94691	2826.64897	1311.37	<.0001
Error	4531	9766.50606	2.15549		
Corrected Total	4534	18246			

Root MSE	1.46816	R-Square	0.4647
Dependent Mean	3.42505	Adj R-Sq	0.4644
Coeff Var	42.86530		

CPP Model MAx Temp>= 79

strata=2 hour=16

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22450	0.11490	-1.95	0.0508
maxloadtemp	1	0.00006512	0.00000405	16.09	<.0001
maxloadtempc	1	-0.00001345	0.00000333	-4.04	<.0001
premhr13	1	0.62004	0.01246	49.75	<.0001

CPP Model MAx Temp>= 79

strata=2 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4538
Number of Observations Used	4535
Number of Observations with Missing Values	3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7300.45841	2433.48614	1029.49	<.0001
Error	4531	10710	2.36377		
Corrected Total	4534	18011			

Root MSE	1.53746	R-Square	0.4053
Dependent Mean	3.70694	Adj R-Sq	0.4049
Coeff Var	41.47503		

CPP Model MAx Temp>= 79

strata=2 hour=17

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.22370	0.12034	-1.86	0.0631
maxloadtemp	1	0.00008280	0.00000424	19.53	<.0001
maxloadtempc	1	-0.00001194	0.00000348	-3.43	0.0006
premhr13	1	0.52893	0.01305	40.53	<.0001

CPP Model MAx Temp>= 79

strata=2 hour=18

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Number of Observations Read	4542
Number of Observations Used	4534
Number of Observations with Missing Values	8

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	6601.32421	2200.44140	760.63	<.0001
Error	4530	13105	2.89293		
Corrected Total	4533	19706			

Root MSE	1.70086	R-Square	0.3350
Dependent Mean	3.89455	Adj R-Sq	0.3345
Coeff Var	43.67290		

CPP Model MAx Temp>= 79

strata=2 hour=18

The REG Procedure
Model: MODEL1
Dependent Variable: premload1

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.15842	0.13313	-1.19	0.2341
maxloadtemp	1	0.00009167	0.00000469	19.55	<.0001
maxloadtempc	1	-0.00000512	0.00000385	-1.33	0.1840
premhr13	1	0.47335	0.01444	32.78	<.0001

CPP Model MAx Temp>= 79

Obs	strata	hour	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	maxloadtemp	maxloadtempc	premhr13	premload1
1	1	14	MODEL1	PARMS	premload1	0.82500	-0.06583	.000027041	-.000011832	0.80240	-1
2	1	15	MODEL1	PARMS	premload1	0.95689	-0.18077	.000046998	-.000013000	0.73787	-1
3	1	16	MODEL1	PARMS	premload1	1.02789	-0.26319	.000065668	-.000020270	0.69266	-1
4	1	17	MODEL1	PARMS	premload1	1.09435	-0.26301	.000081548	-.000019862	0.63227	-1
5	1	18	MODEL1	PARMS	premload1	1.19962	-0.22390	.000091545	-.000011645	0.60469	-1
6	2	14	MODEL1	PARMS	premload1	1.16565	-0.22674	.000034109	-.000004843	0.75251	-1

7	2	15	MODEL1	PARMS	premload1	1.38372	-0.22264	.000051897	-.000008596
0.64595	-1								
8	2	16	MODEL1	PARMS	premload1	1.46816	-0.22450	.000065122	-.000013450
0.62004	-1								
9	2	17	MODEL1	PARMS	premload1	1.53746	-0.22370	.000082798	-.000011940
0.52893	-1								
10	2	18	MODEL1	PARMS	premload1	1.70086	-0.15842	.000091665	-.000005120
0.47335	-1								

SmartRate Customers – July Output

CPP-No CPP Day Analysis- Max temp>= 85

Obs	accountnumber1	_TYPE_	_FREQ_	_STAT_	premload1
1	1000152698004	0	744	N	744.000
2	1000152698004	0	744	MIN	0.229
3	1000152698004	0	744	MAX	12.595
4	1000152698004	0	744	MEAN	3.052
5	1000152698004	0	744	STD	2.218
6	1000241470002	0	744	N	744.000
7	1000241470002	0	744	MIN	0.000
8	1000241470002	0	744	MAX	8.426
9	1000241470002	0	744	MEAN	1.779
10	1000241470002	0	744	STD	1.814
11	1000248706001	0	744	N	744.000
12	1000248706001	0	744	MIN	0.189
13	1000248706001	0	744	MAX	10.847
14	1000248706001	0	744	MEAN	2.386
15	1000248706001	0	744	STD	2.213
16	1000579138003	0	744	N	744.000
17	1000579138003	0	744	MIN	0.485
18	1000579138003	0	744	MAX	9.596
19	1000579138003	0	744	MEAN	3.540
20	1000579138003	0	744	STD	1.446
21	175547001	0	1	N	0.000
22	175547001	0	1	MIN	.
23	175547001	0	1	MAX	.
24	175547001	0	1	MEAN	.
25	175547001	0	1	STD	.
26	2000197154003	0	744	N	744.000
27	2000197154003	0	744	MIN	0.041
28	2000197154003	0	744	MAX	3.987
29	2000197154003	0	744	MEAN	0.719
30	2000197154003	0	744	STD	0.800
31	2000199886003	0	744	N	744.000
32	2000199886003	0	744	MIN	0.476
33	2000199886003	0	744	MAX	10.141
34	2000199886003	0	744	MEAN	3.600
35	2000199886003	0	744	STD	1.571

36	2000225152001	0	744	N	744.000
37	2000225152001	0	744	MIN	0.000
38	2000225152001	0	744	MAX	4.253
39	2000225152001	0	744	MEAN	0.577
40	2000225152001	0	744	STD	0.829
41	2000274404002	0	744	N	744.000
42	2000274404002	0	744	MIN	0.122
43	2000274404002	0	744	MAX	5.909
44	2000274404002	0	744	MEAN	0.923
45	2000274404002	0	744	STD	0.876
46	2000367232001	0	528	N	528.000
47	2000367232001	0	528	MIN	0.422
48	2000367232001	0	528	MAX	7.085
49	2000367232001	0	528	MEAN	2.399
50	2000367232001	0	528	STD	0.888
51	2000367313001	0	744	N	744.000
52	2000367313001	0	744	MIN	0.292
53	2000367313001	0	744	MAX	8.626
54	2000367313001	0	744	MEAN	2.179
55	2000367313001	0	744	STD	1.777
56	2000370712002	0	744	N	744.000
57	2000370712002	0	744	MIN	0.428
58	2000370712002	0	744	MAX	13.046
59	2000370712002	0	744	MEAN	3.103
60	2000370712002	0	744	STD	1.931
61	2000536749002	0	744	N	744.000
62	2000536749002	0	744	MIN	0.197
63	2000536749002	0	744	MAX	10.144
64	2000536749002	0	744	MEAN	3.513
65	2000536749002	0	744	STD	2.238
66	2000565342002	0	744	N	744.000
67	2000565342002	0	744	MIN	0.023
68	2000565342002	0	744	MAX	5.816
69	2000565342002	0	744	MEAN	1.812
70	2000565342002	0	744	STD	1.326
71	2000651524002	0	744	N	744.000
72	2000651524002	0	744	MIN	0.222
73	2000651524002	0	744	MAX	10.174
74	2000651524002	0	744	MEAN	1.808
75	2000651524002	0	744	STD	1.893
76	2000659447001	0	744	N	744.000
77	2000659447001	0	744	MIN	0.881
78	2000659447001	0	744	MAX	10.688
79	2000659447001	0	744	MEAN	4.016
80	2000659447001	0	744	STD	1.761
81	2000723990005	0	744	N	744.000
82	2000723990005	0	744	MIN	0.245
83	2000723990005	0	744	MAX	7.432
84	2000723990005	0	744	MEAN	2.964
85	2000723990005	0	744	STD	1.407

86	2000735221003	0	744	N	744.000
87	2000735221003	0	744	MIN	0.057
88	2000735221003	0	744	MAX	7.912
89	2000735221003	0	744	MEAN	1.685
90	2000735221003	0	744	STD	1.302
91	2000787053001	0	744	N	744.000
92	2000787053001	0	744	MIN	0.000
93	2000787053001	0	744	MAX	7.856
94	2000787053001	0	744	MEAN	2.188
95	2000787053001	0	744	STD	1.412
96	2000819702002	0	744	N	744.000
97	2000819702002	0	744	MIN	0.322
98	2000819702002	0	744	MAX	8.818
99	2000819702002	0	744	MEAN	2.469
100	2000819702002	0	744	STD	1.457
101	2000977457003	0	744	N	744.000
102	2000977457003	0	744	MIN	0.424
103	2000977457003	0	744	MAX	8.522
104	2000977457003	0	744	MEAN	2.847
105	2000977457003	0	744	STD	1.415
106	222014006	0	1	N	0.000
107	222014006	0	1	MIN	.
108	222014006	0	1	MAX	.
109	222014006	0	1	MEAN	.
110	222014006	0	1	STD	.
111	3000225018001	0	744	N	744.000
112	3000225018001	0	744	MIN	0.250
113	3000225018001	0	744	MAX	8.728
114	3000225018001	0	744	MEAN	2.333
115	3000225018001	0	744	STD	1.669
116	3000248683001	0	744	N	744.000
117	3000248683001	0	744	MIN	0.055
118	3000248683001	0	744	MAX	6.454
119	3000248683001	0	744	MEAN	1.005
120	3000248683001	0	744	STD	1.314
121	3000248741001	0	744	N	744.000
122	3000248741001	0	744	MIN	0.368
123	3000248741001	0	744	MAX	9.062
124	3000248741001	0	744	MEAN	3.638
125	3000248741001	0	744	STD	1.757
126	3000251763002	0	744	N	744.000
127	3000251763002	0	744	MIN	0.304
128	3000251763002	0	744	MAX	10.976
129	3000251763002	0	744	MEAN	2.231
130	3000251763002	0	744	STD	1.493
131	3000367304001	0	744	N	744.000
132	3000367304001	0	744	MIN	0.019
133	3000367304001	0	744	MAX	8.042
134	3000367304001	0	744	MEAN	1.984
135	3000367304001	0	744	STD	1.440

136	3000367366001	0	744	N	744.000
137	3000367366001	0	744	MIN	0.062
138	3000367366001	0	744	MAX	10.817
139	3000367366001	0	744	MEAN	2.607
140	3000367366001	0	744	STD	2.031
141	3000367461001	0	744	N	744.000
142	3000367461001	0	744	MIN	0.251
143	3000367461001	0	744	MAX	6.814
144	3000367461001	0	744	MEAN	1.844
145	3000367461001	0	744	STD	1.344
146	3000704585001	0	744	N	744.000
147	3000704585001	0	744	MIN	0.000
148	3000704585001	0	744	MAX	8.173
149	3000704585001	0	744	MEAN	0.547
150	3000704585001	0	744	STD	1.122
151	3000834558001	0	744	N	744.000
152	3000834558001	0	744	MIN	0.145
153	3000834558001	0	744	MAX	7.814
154	3000834558001	0	744	MEAN	1.129
155	3000834558001	0	744	STD	1.190
156	3000842488001	0	744	N	744.000
157	3000842488001	0	744	MIN	0.000
158	3000842488001	0	744	MAX	4.915
159	3000842488001	0	744	MEAN	1.013
160	3000842488001	0	744	STD	1.050
161	3000946951002	0	744	N	744.000
162	3000946951002	0	744	MIN	0.167
163	3000946951002	0	744	MAX	11.035
164	3000946951002	0	744	MEAN	2.464
165	3000946951002	0	744	STD	2.536
166	3001082851001	0	744	N	744.000
167	3001082851001	0	744	MIN	0.829
168	3001082851001	0	744	MAX	12.260
169	3001082851001	0	744	MEAN	3.557
170	3001082851001	0	744	STD	1.916
171	303609003	0	1	N	0.000
172	303609003	0	1	MIN	.
173	303609003	0	1	MAX	.
174	303609003	0	1	MEAN	.
175	303609003	0	1	STD	.
176	305243003	0	1	N	0.000
177	305243003	0	1	MIN	.
178	305243003	0	1	MAX	.
179	305243003	0	1	MEAN	.
180	305243003	0	1	STD	.
181	336482002	0	1	N	0.000
182	336482002	0	1	MIN	.
183	336482002	0	1	MAX	.
184	336482002	0	1	MEAN	.
185	336482002	0	1	STD	.

186	353412003	0	1	N	0.000
187	353412003	0	1	MIN	.
188	353412003	0	1	MAX	.
189	353412003	0	1	MEAN	.
190	353412003	0	1	STD	.
191	4000143984003	0	528	N	528.000
192	4000143984003	0	528	MIN	0.125
193	4000143984003	0	528	MAX	5.452
194	4000143984003	0	528	MEAN	1.116
195	4000143984003	0	528	STD	0.893
196	4000225023001	0	744	N	744.000
197	4000225023001	0	744	MIN	0.644
198	4000225023001	0	744	MAX	9.908
199	4000225023001	0	744	MEAN	3.687
200	4000225023001	0	744	STD	1.955
201	4000225127001	0	744	N	744.000
202	4000225127001	0	744	MIN	0.034
203	4000225127001	0	744	MAX	12.176
204	4000225127001	0	744	MEAN	2.230
205	4000225127001	0	744	STD	1.899
206	4000226871002	0	744	N	744.000
207	4000226871002	0	744	MIN	0.000
208	4000226871002	0	744	MAX	5.153
209	4000226871002	0	744	MEAN	1.096
210	4000226871002	0	744	STD	1.232
211	4000242796002	0	744	N	744.000
212	4000242796002	0	744	MIN	0.000
213	4000242796002	0	744	MAX	6.159
214	4000242796002	0	744	MEAN	0.489
215	4000242796002	0	744	STD	1.068
216	4000267712002	0	744	N	744.000
217	4000267712002	0	744	MIN	0.214
218	4000267712002	0	744	MAX	6.652
219	4000267712002	0	744	MEAN	1.468
220	4000267712002	0	744	STD	1.109
221	4000327026002	0	744	N	744.000
222	4000327026002	0	744	MIN	0.152
223	4000327026002	0	744	MAX	6.008
224	4000327026002	0	744	MEAN	1.858
225	4000327026002	0	744	STD	0.983
226	4000367246001	0	744	N	744.000
227	4000367246001	0	744	MIN	0.000
228	4000367246001	0	744	MAX	9.510
229	4000367246001	0	744	MEAN	2.576
230	4000367246001	0	744	STD	2.053
231	4000367396001	0	744	N	744.000
232	4000367396001	0	744	MIN	0.278
233	4000367396001	0	744	MAX	10.265
234	4000367396001	0	744	MEAN	3.099
235	4000367396001	0	744	STD	1.849

236	4000445049002	0	744	N	744.000
237	4000445049002	0	744	MIN	0.395
238	4000445049002	0	744	MAX	7.831
239	4000445049002	0	744	MEAN	2.807
240	4000445049002	0	744	STD	1.565
241	4000543264003	0	744	N	744.000
242	4000543264003	0	744	MIN	0.223
243	4000543264003	0	744	MAX	7.987
244	4000543264003	0	744	MEAN	1.855
245	4000543264003	0	744	STD	1.247
246	4000684326005	0	744	N	744.000
247	4000684326005	0	744	MIN	0.165
248	4000684326005	0	744	MAX	5.743
249	4000684326005	0	744	MEAN	1.018
250	4000684326005	0	744	STD	0.904
251	4000720485001	0	744	N	744.000
252	4000720485001	0	744	MIN	0.154
253	4000720485001	0	744	MAX	6.514
254	4000720485001	0	744	MEAN	1.558
255	4000720485001	0	744	STD	0.990
256	412739002	0	1	N	0.000
257	412739002	0	1	MIN	.
258	412739002	0	1	MAX	.
259	412739002	0	1	MEAN	.
260	412739002	0	1	STD	.
261	5000021599002	0	744	N	744.000
262	5000021599002	0	744	MIN	0.861
263	5000021599002	0	744	MAX	12.849
264	5000021599002	0	744	MEAN	4.590
265	5000021599002	0	744	STD	2.218
266	5000243239002	0	744	N	744.000
267	5000243239002	0	744	MIN	0.173
268	5000243239002	0	744	MAX	6.360
269	5000243239002	0	744	MEAN	1.444
270	5000243239002	0	744	STD	1.060
271	5000248089004	0	744	N	744.000
272	5000248089004	0	744	MIN	0.109
273	5000248089004	0	744	MAX	4.860
274	5000248089004	0	744	MEAN	1.138
275	5000248089004	0	744	STD	0.886
276	5000287987002	0	744	N	744.000
277	5000287987002	0	744	MIN	0.518
278	5000287987002	0	744	MAX	10.735
279	5000287987002	0	744	MEAN	2.467
280	5000287987002	0	744	STD	1.896
281	5000340052002	0	744	N	744.000
282	5000340052002	0	744	MIN	0.352
283	5000340052002	0	744	MAX	8.134
284	5000340052002	0	744	MEAN	2.527
285	5000340052002	0	744	STD	1.385

286	5000367318001	0	744	N	744.000
287	5000367318001	0	744	MIN	0.269
288	5000367318001	0	744	MAX	6.244
289	5000367318001	0	744	MEAN	2.452
290	5000367318001	0	744	STD	1.370
291	5000456062004	0	528	N	528.000
292	5000456062004	0	528	MIN	0.300
293	5000456062004	0	528	MAX	6.281
294	5000456062004	0	528	MEAN	1.683
295	5000456062004	0	528	STD	1.122
296	5000525460001	0	504	N	504.000
297	5000525460001	0	504	MIN	0.284
298	5000525460001	0	504	MAX	6.354
299	5000525460001	0	504	MEAN	1.546
300	5000525460001	0	504	STD	1.107
301	5000676865002	0	744	N	744.000
302	5000676865002	0	744	MIN	0.281
303	5000676865002	0	744	MAX	8.564
304	5000676865002	0	744	MEAN	1.622
305	5000676865002	0	744	STD	1.286
306	5000845902001	0	744	N	744.000
307	5000845902001	0	744	MIN	0.274
308	5000845902001	0	744	MAX	7.398
309	5000845902001	0	744	MEAN	2.530
310	5000845902001	0	744	STD	1.251
311	511651004	0	1	N	0.000
312	511651004	0	1	MIN	.
313	511651004	0	1	MAX	.
314	511651004	0	1	MEAN	.
315	511651004	0	1	STD	.
316	568033001	0	1	N	0.000
317	568033001	0	1	MIN	.
318	568033001	0	1	MAX	.
319	568033001	0	1	MEAN	.
320	568033001	0	1	STD	.
321	572753001	0	1	N	0.000
322	572753001	0	1	MIN	.
323	572753001	0	1	MAX	.
324	572753001	0	1	MEAN	.
325	572753001	0	1	STD	.
326	6000113752002	0	744	N	744.000
327	6000113752002	0	744	MIN	0.087
328	6000113752002	0	744	MAX	4.946
329	6000113752002	0	744	MEAN	1.190
330	6000113752002	0	744	STD	0.916
331	6000148185005	0	744	N	744.000
332	6000148185005	0	744	MIN	0.000
333	6000148185005	0	744	MAX	4.268
334	6000148185005	0	744	MEAN	0.475
335	6000148185005	0	744	STD	0.731

336	6000206598002	0	744	N	744.000
337	6000206598002	0	744	MIN	0.673
338	6000206598002	0	744	MAX	10.724
339	6000206598002	0	744	MEAN	3.439
340	6000206598002	0	744	STD	1.572
341	6000226772002	0	744	N	744.000
342	6000226772002	0	744	MIN	0.146
343	6000226772002	0	744	MAX	12.544
344	6000226772002	0	744	MEAN	2.617
345	6000226772002	0	744	STD	2.431
346	6000238019003	0	744	N	744.000
347	6000238019003	0	744	MIN	0.133
348	6000238019003	0	744	MAX	7.721
349	6000238019003	0	744	MEAN	1.774
350	6000238019003	0	744	STD	1.360
351	6000367392001	0	744	N	744.000
352	6000367392001	0	744	MIN	0.237
353	6000367392001	0	744	MAX	6.440
354	6000367392001	0	744	MEAN	1.530
355	6000367392001	0	744	STD	1.073
356	6000367404001	0	744	N	744.000
357	6000367404001	0	744	MIN	0.182
358	6000367404001	0	744	MAX	5.103
359	6000367404001	0	744	MEAN	2.066
360	6000367404001	0	744	STD	1.438
361	6000414102003	0	744	N	744.000
362	6000414102003	0	744	MIN	0.194
363	6000414102003	0	744	MAX	9.273
364	6000414102003	0	744	MEAN	3.286
365	6000414102003	0	744	STD	1.908
366	6000417043002	0	744	N	744.000
367	6000417043002	0	744	MIN	0.167
368	6000417043002	0	744	MAX	5.861
369	6000417043002	0	744	MEAN	0.863
370	6000417043002	0	744	STD	0.818
371	6000442333002	0	744	N	744.000
372	6000442333002	0	744	MIN	0.237
373	6000442333002	0	744	MAX	7.664
374	6000442333002	0	744	MEAN	1.826
375	6000442333002	0	744	STD	1.514
376	6000588030003	0	744	N	744.000
377	6000588030003	0	744	MIN	0.078
378	6000588030003	0	744	MAX	6.592
379	6000588030003	0	744	MEAN	1.748
380	6000588030003	0	744	STD	0.997
381	6000778730002	0	744	N	744.000
382	6000778730002	0	744	MIN	0.000
383	6000778730002	0	744	MAX	6.490
384	6000778730002	0	744	MEAN	1.746
385	6000778730002	0	744	STD	1.089

386	6000975304002	0	744	N	744.000
387	6000975304002	0	744	MIN	0.051
388	6000975304002	0	744	MAX	8.223
389	6000975304002	0	744	MEAN	0.959
390	6000975304002	0	744	STD	1.598
391	6001011674001	0	744	N	744.000
392	6001011674001	0	744	MIN	0.157
393	6001011674001	0	744	MAX	4.317
394	6001011674001	0	744	MEAN	0.687
395	6001011674001	0	744	STD	0.817
396	660962003	0	1	N	0.000
397	660962003	0	1	MIN	.
398	660962003	0	1	MAX	.
399	660962003	0	1	MEAN	.
400	660962003	0	1	STD	.
401	7000168618002	0	744	N	744.000
402	7000168618002	0	744	MIN	0.411
403	7000168618002	0	744	MAX	7.580
404	7000168618002	0	744	MEAN	1.811
405	7000168618002	0	744	STD	1.469
406	7000225026001	0	744	N	744.000
407	7000225026001	0	744	MIN	0.047
408	7000225026001	0	744	MAX	5.725
409	7000225026001	0	744	MEAN	0.712
410	7000225026001	0	744	STD	1.110
411	7000248735001	0	744	N	744.000
412	7000248735001	0	744	MIN	0.050
413	7000248735001	0	744	MAX	9.119
414	7000248735001	0	744	MEAN	1.885
415	7000248735001	0	744	STD	1.251
416	7000367168001	0	744	N	744.000
417	7000367168001	0	744	MIN	0.496
418	7000367168001	0	744	MAX	5.812
419	7000367168001	0	744	MEAN	2.058
420	7000367168001	0	744	STD	1.020
421	7000367295001	0	744	N	744.000
422	7000367295001	0	744	MIN	0.196
423	7000367295001	0	744	MAX	8.255
424	7000367295001	0	744	MEAN	2.262
425	7000367295001	0	744	STD	1.527
426	7000533356005	0	744	N	744.000
427	7000533356005	0	744	MIN	0.000
428	7000533356005	0	744	MAX	8.659
429	7000533356005	0	744	MEAN	1.270
430	7000533356005	0	744	STD	1.165
431	7000807834002	0	744	N	744.000
432	7000807834002	0	744	MIN	0.307
433	7000807834002	0	744	MAX	5.795
434	7000807834002	0	744	MEAN	1.635
435	7000807834002	0	744	STD	1.037

436	7000949856001	0	744	N	744.000
437	7000949856001	0	744	MIN	0.233
438	7000949856001	0	744	MAX	6.188
439	7000949856001	0	744	MEAN	2.404
440	7000949856001	0	744	STD	1.268
441	7001080871001	0	744	N	744.000
442	7001080871001	0	744	MIN	0.000
443	7001080871001	0	744	MAX	8.416
444	7001080871001	0	744	MEAN	1.766
445	7001080871001	0	744	STD	1.721
446	741653004	0	1	N	0.000
447	741653004	0	1	MIN	.
448	741653004	0	1	MAX	.
449	741653004	0	1	MEAN	.
450	741653004	0	1	STD	.
451	8000027240002	0	744	N	744.000
452	8000027240002	0	744	MIN	0.451
453	8000027240002	0	744	MAX	6.461
454	8000027240002	0	744	MEAN	2.121
455	8000027240002	0	744	STD	1.753
456	8000367261001	0	744	N	744.000
457	8000367261001	0	744	MIN	0.351
458	8000367261001	0	744	MAX	11.765
459	8000367261001	0	744	MEAN	3.356
460	8000367261001	0	744	STD	1.998
461	8000584441001	0	744	N	744.000
462	8000584441001	0	744	MIN	0.356
463	8000584441001	0	744	MAX	11.326
464	8000584441001	0	744	MEAN	2.065
465	8000584441001	0	744	STD	1.286
466	8000968154002	0	744	N	744.000
467	8000968154002	0	744	MIN	0.674
468	8000968154002	0	744	MAX	11.695
469	8000968154002	0	744	MEAN	3.261
470	8000968154002	0	744	STD	1.894
471	8001107844002	0	744	N	744.000
472	8001107844002	0	744	MIN	0.220
473	8001107844002	0	744	MAX	9.829
474	8001107844002	0	744	MEAN	2.290
475	8001107844002	0	744	STD	1.426
476	9000224917002	0	744	N	744.000
477	9000224917002	0	744	MIN	0.070
478	9000224917002	0	744	MAX	9.374
479	9000224917002	0	744	MEAN	1.620
480	9000224917002	0	744	STD	1.427
481	9000224931001	0	744	N	744.000
482	9000224931001	0	744	MIN	0.318
483	9000224931001	0	744	MAX	10.124
484	9000224931001	0	744	MEAN	2.605
485	9000224931001	0	744	STD	1.828

486	9000281782002	0	744	N	744.000
487	9000281782002	0	744	MIN	0.331
488	9000281782002	0	744	MAX	7.810
489	9000281782002	0	744	MEAN	2.337
490	9000281782002	0	744	STD	1.312
491	9000367490001	0	744	N	744.000
492	9000367490001	0	744	MIN	0.135
493	9000367490001	0	744	MAX	6.490
494	9000367490001	0	744	MEAN	1.018
495	9000367490001	0	744	STD	1.033
496	9000367534001	0	744	N	744.000
497	9000367534001	0	744	MIN	0.269
498	9000367534001	0	744	MAX	7.034
499	9000367534001	0	744	MEAN	2.361
500	9000367534001	0	744	STD	1.702
501	9000384221002	0	744	N	744.000
502	9000384221002	0	744	MIN	0.743
503	9000384221002	0	744	MAX	10.088
504	9000384221002	0	744	MEAN	3.414
505	9000384221002	0	744	STD	1.748
506	9000441773003	0	744	N	744.000
507	9000441773003	0	744	MIN	0.055
508	9000441773003	0	744	MAX	6.645
509	9000441773003	0	744	MEAN	1.320
510	9000441773003	0	744	STD	1.064
511	9000468008002	0	744	N	744.000
512	9000468008002	0	744	MIN	0.113
513	9000468008002	0	744	MAX	6.824
514	9000468008002	0	744	MEAN	1.801
515	9000468008002	0	744	STD	1.731
516	9000833673002	0	744	N	744.000
517	9000833673002	0	744	MIN	0.287
518	9000833673002	0	744	MAX	8.275
519	9000833673002	0	744	MEAN	2.647
520	9000833673002	0	744	STD	2.001
521	9000858699004	0	744	N	744.000
522	9000858699004	0	744	MIN	0.112
523	9000858699004	0	744	MAX	9.415
524	9000858699004	0	744	MEAN	0.898
525	9000858699004	0	744	STD	1.511
526	9000987060003	0	744	N	744.000
527	9000987060003	0	744	MIN	0.000
528	9000987060003	0	744	MAX	4.027
529	9000987060003	0	744	MEAN	0.831
530	9000987060003	0	744	STD	0.660

SmartRate Customers – August Output

CPP-No CPP Day Analysis- Max temp>= 85

Obs	accountnumber1	_TYPE_	_FREQ_	_STAT_	premload1
1	1000152698004	0	744	N	744.000
2	1000152698004	0	744	MIN	0.012
3	1000152698004	0	744	MAX	8.949
4	1000152698004	0	744	MEAN	1.549
5	1000152698004	0	744	STD	1.785
6	1000241470002	0	744	N	744.000
7	1000241470002	0	744	MIN	0.000
8	1000241470002	0	744	MAX	9.104
9	1000241470002	0	744	MEAN	0.497
10	1000241470002	0	744	STD	1.367
11	1000248706001	0	744	N	744.000
12	1000248706001	0	744	MIN	0.246
13	1000248706001	0	744	MAX	10.540
14	1000248706001	0	744	MEAN	3.656
15	1000248706001	0	744	STD	2.503
16	1000579138003	0	744	N	744.000
17	1000579138003	0	744	MIN	0.415
18	1000579138003	0	744	MAX	7.742
19	1000579138003	0	744	MEAN	2.608
20	1000579138003	0	744	STD	1.441
21	175547001	0	1	N	0.000
22	175547001	0	1	MIN	.
23	175547001	0	1	MAX	.
24	175547001	0	1	MEAN	.
25	175547001	0	1	STD	.
26	2000197154003	0	744	N	744.000
27	2000197154003	0	744	MIN	0.173
28	2000197154003	0	744	MAX	10.064
29	2000197154003	0	744	MEAN	1.935
30	2000197154003	0	744	STD	0.739
31	2000199886003	0	744	N	744.000
32	2000199886003	0	744	MIN	0.428
33	2000199886003	0	744	MAX	7.921
34	2000199886003	0	744	MEAN	2.840
35	2000199886003	0	744	STD	1.638
36	2000225152001	0	744	N	744.000
37	2000225152001	0	744	MIN	0.253
38	2000225152001	0	744	MAX	10.841
39	2000225152001	0	744	MEAN	1.595
40	2000225152001	0	744	STD	1.102
41	2000274404002	0	744	N	744.000
42	2000274404002	0	744	MIN	0.118
43	2000274404002	0	744	MAX	4.871
44	2000274404002	0	744	MEAN	0.912

45	2000274404002	0	744	STD	0.994
46	2000367232001	0	139	N	139.000
47	2000367232001	0	139	MIN	0.000
48	2000367232001	0	139	MAX	10.000
49	2000367232001	0	139	MEAN	1.608
50	2000367232001	0	139	STD	2.055
51	2000367313001	0	744	N	744.000
52	2000367313001	0	744	MIN	0.284
53	2000367313001	0	744	MAX	7.585
54	2000367313001	0	744	MEAN	3.281
55	2000367313001	0	744	STD	1.743
56	2000370712002	0	744	N	744.000
57	2000370712002	0	744	MIN	0.043
58	2000370712002	0	744	MAX	13.000
59	2000370712002	0	744	MEAN	3.479
60	2000370712002	0	744	STD	1.793
61	2000536749002	0	744	N	744.000
62	2000536749002	0	744	MIN	0.134
63	2000536749002	0	744	MAX	6.596
64	2000536749002	0	744	MEAN	1.443
65	2000536749002	0	744	STD	1.457
66	2000565342002	0	744	N	744.000
67	2000565342002	0	744	MIN	0.017
68	2000565342002	0	744	MAX	9.052
69	2000565342002	0	744	MEAN	0.427
70	2000565342002	0	744	STD	0.997
71	2000651524002	0	744	N	744.000
72	2000651524002	0	744	MIN	0.000
73	2000651524002	0	744	MAX	8.947
74	2000651524002	0	744	MEAN	1.874
75	2000651524002	0	744	STD	1.604
76	2000659447001	0	744	N	744.000
77	2000659447001	0	744	MIN	0.301
78	2000659447001	0	744	MAX	9.002
79	2000659447001	0	744	MEAN	3.509
80	2000659447001	0	744	STD	1.598
81	2000723990005	0	744	N	744.000
82	2000723990005	0	744	MIN	0.000
83	2000723990005	0	744	MAX	8.260
84	2000723990005	0	744	MEAN	2.691
85	2000723990005	0	744	STD	1.433
86	2000735221003	0	744	N	744.000
87	2000735221003	0	744	MIN	0.058
88	2000735221003	0	744	MAX	7.171
89	2000735221003	0	744	MEAN	1.085
90	2000735221003	0	744	STD	1.188
91	2000787053001	0	744	N	744.000
92	2000787053001	0	744	MIN	0.000
93	2000787053001	0	744	MAX	4.216
94	2000787053001	0	744	MEAN	1.046

95	2000787053001	0	744	STD	0.788
96	2000819702002	0	744	N	744.000
97	2000819702002	0	744	MIN	0.429
98	2000819702002	0	744	MAX	12.394
99	2000819702002	0	744	MEAN	3.140
100	2000819702002	0	744	STD	2.017
101	2000977457003	0	744	N	744.000
102	2000977457003	0	744	MIN	0.244
103	2000977457003	0	744	MAX	7.532
104	2000977457003	0	744	MEAN	2.496
105	2000977457003	0	744	STD	1.455
106	222014006	0	1	N	0.000
107	222014006	0	1	MIN	.
108	222014006	0	1	MAX	.
109	222014006	0	1	MEAN	.
110	222014006	0	1	STD	.
111	3000225018001	0	744	N	744.000
112	3000225018001	0	744	MIN	0.000
113	3000225018001	0	744	MAX	8.567
114	3000225018001	0	744	MEAN	2.047
115	3000225018001	0	744	STD	1.961
116	3000248683001	0	744	N	744.000
117	3000248683001	0	744	MIN	0.219
118	3000248683001	0	744	MAX	6.873
119	3000248683001	0	744	MEAN	2.108
120	3000248683001	0	744	STD	1.186
121	3000248741001	0	744	N	744.000
122	3000248741001	0	744	MIN	0.045
123	3000248741001	0	744	MAX	8.971
124	3000248741001	0	744	MEAN	2.296
125	3000248741001	0	744	STD	1.392
126	3000251763002	0	744	N	744.000
127	3000251763002	0	744	MIN	0.000
128	3000251763002	0	744	MAX	12.062
129	3000251763002	0	744	MEAN	2.341
130	3000251763002	0	744	STD	1.965
131	3000367304001	0	744	N	744.000
132	3000367304001	0	744	MIN	0.336
133	3000367304001	0	744	MAX	9.062
134	3000367304001	0	744	MEAN	3.362
135	3000367304001	0	744	STD	1.553
136	3000367366001	0	744	N	744.000
137	3000367366001	0	744	MIN	0.282
138	3000367366001	0	744	MAX	6.256
139	3000367366001	0	744	MEAN	1.963
140	3000367366001	0	744	STD	1.484
141	3000367461001	0	744	N	744.000
142	3000367461001	0	744	MIN	0.156
143	3000367461001	0	744	MAX	8.787
144	3000367461001	0	744	MEAN	2.436

145	3000367461001	0	744	STD	1.226
146	3000704585001	0	744	N	744.000
147	3000704585001	0	744	MIN	0.077
148	3000704585001	0	744	MAX	7.409
149	3000704585001	0	744	MEAN	0.706
150	3000704585001	0	744	STD	1.079
151	3000834558001	0	744	N	744.000
152	3000834558001	0	744	MIN	0.300
153	3000834558001	0	744	MAX	8.963
154	3000834558001	0	744	MEAN	2.267
155	3000834558001	0	744	STD	1.631
156	3000842488001	0	744	N	744.000
157	3000842488001	0	744	MIN	0.000
158	3000842488001	0	744	MAX	4.827
159	3000842488001	0	744	MEAN	0.326
160	3000842488001	0	744	STD	0.841
161	3000946951002	0	744	N	744.000
162	3000946951002	0	744	MIN	0.496
163	3000946951002	0	744	MAX	11.242
164	3000946951002	0	744	MEAN	3.654
165	3000946951002	0	744	STD	2.337
166	3001082851001	0	744	N	744.000
167	3001082851001	0	744	MIN	0.517
168	3001082851001	0	744	MAX	9.741
169	3001082851001	0	744	MEAN	3.512
170	3001082851001	0	744	STD	2.019
171	303609003	0	1	N	0.000
172	303609003	0	1	MIN	.
173	303609003	0	1	MAX	.
174	303609003	0	1	MEAN	.
175	303609003	0	1	STD	.
176	305243003	0	1	N	0.000
177	305243003	0	1	MIN	.
178	305243003	0	1	MAX	.
179	305243003	0	1	MEAN	.
180	305243003	0	1	STD	.
181	336482002	0	1	N	0.000
182	336482002	0	1	MIN	.
183	336482002	0	1	MAX	.
184	336482002	0	1	MEAN	.
185	336482002	0	1	STD	.
186	353412003	0	1	N	0.000
187	353412003	0	1	MIN	.
188	353412003	0	1	MAX	.
189	353412003	0	1	MEAN	.
190	353412003	0	1	STD	.
191	4000143984003	0	140	N	140.000
192	4000143984003	0	140	MIN	0.000
193	4000143984003	0	140	MAX	10.000
194	4000143984003	0	140	MEAN	1.736

195	4000143984003	0	140	STD	2.573
196	4000225023001	0	744	N	744.000
197	4000225023001	0	744	MIN	0.707
198	4000225023001	0	744	MAX	9.108
199	4000225023001	0	744	MEAN	3.055
200	4000225023001	0	744	STD	1.545
201	4000225127001	0	744	N	744.000
202	4000225127001	0	744	MIN	0.013
203	4000225127001	0	744	MAX	12.198
204	4000225127001	0	744	MEAN	1.338
205	4000225127001	0	744	STD	1.718
206	4000226871002	0	744	N	744.000
207	4000226871002	0	744	MIN	0.000
208	4000226871002	0	744	MAX	3.665
209	4000226871002	0	744	MEAN	0.271
210	4000226871002	0	744	STD	0.731
211	4000242796002	0	744	N	744.000
212	4000242796002	0	744	MIN	0.000
213	4000242796002	0	744	MAX	5.237
214	4000242796002	0	744	MEAN	0.517
215	4000242796002	0	744	STD	0.649
216	4000267712002	0	744	N	744.000
217	4000267712002	0	744	MIN	0.042
218	4000267712002	0	744	MAX	10.418
219	4000267712002	0	744	MEAN	2.153
220	4000267712002	0	744	STD	1.475
221	4000327026002	0	744	N	744.000
222	4000327026002	0	744	MIN	0.227
223	4000327026002	0	744	MAX	7.284
224	4000327026002	0	744	MEAN	1.893
225	4000327026002	0	744	STD	1.112
226	4000367246001	0	744	N	744.000
227	4000367246001	0	744	MIN	0.000
228	4000367246001	0	744	MAX	5.092
229	4000367246001	0	744	MEAN	0.422
230	4000367246001	0	744	STD	1.161
231	4000367396001	0	744	N	744.000
232	4000367396001	0	744	MIN	0.242
233	4000367396001	0	744	MAX	8.080
234	4000367396001	0	744	MEAN	2.009
235	4000367396001	0	744	STD	1.941
236	4000445049002	0	744	N	744.000
237	4000445049002	0	744	MIN	0.466
238	4000445049002	0	744	MAX	7.915
239	4000445049002	0	744	MEAN	3.331
240	4000445049002	0	744	STD	1.740
241	4000543264003	0	744	N	744.000
242	4000543264003	0	744	MIN	0.248
243	4000543264003	0	744	MAX	7.027
244	4000543264003	0	744	MEAN	1.429

245	4000543264003	0	744	STD	1.339
246	4000684326005	0	744	N	744.000
247	4000684326005	0	744	MIN	0.153
248	4000684326005	0	744	MAX	6.572
249	4000684326005	0	744	MEAN	1.350
250	4000684326005	0	744	STD	1.282
251	4000720485001	0	744	N	744.000
252	4000720485001	0	744	MIN	0.505
253	4000720485001	0	744	MAX	7.109
254	4000720485001	0	744	MEAN	2.348
255	4000720485001	0	744	STD	1.211
256	412739002	0	1	N	0.000
257	412739002	0	1	MIN	.
258	412739002	0	1	MAX	.
259	412739002	0	1	MEAN	.
260	412739002	0	1	STD	.
261	5000021599002	0	744	N	744.000
262	5000021599002	0	744	MIN	0.410
263	5000021599002	0	744	MAX	9.416
264	5000021599002	0	744	MEAN	3.041
265	5000021599002	0	744	STD	1.709
266	5000243239002	0	744	N	744.000
267	5000243239002	0	744	MIN	0.176
268	5000243239002	0	744	MAX	7.257
269	5000243239002	0	744	MEAN	1.294
270	5000243239002	0	744	STD	1.089
271	5000248089004	0	744	N	744.000
272	5000248089004	0	744	MIN	0.000
273	5000248089004	0	744	MAX	4.394
274	5000248089004	0	744	MEAN	1.549
275	5000248089004	0	744	STD	0.779
276	5000287987002	0	744	N	744.000
277	5000287987002	0	744	MIN	0.186
278	5000287987002	0	744	MAX	7.443
279	5000287987002	0	744	MEAN	2.242
280	5000287987002	0	744	STD	1.511
281	5000340052002	0	744	N	744.000
282	5000340052002	0	744	MIN	0.253
283	5000340052002	0	744	MAX	10.354
284	5000340052002	0	744	MEAN	2.629
285	5000340052002	0	744	STD	1.504
286	5000367318001	0	744	N	744.000
287	5000367318001	0	744	MIN	0.219
288	5000367318001	0	744	MAX	8.325
289	5000367318001	0	744	MEAN	2.523
290	5000367318001	0	744	STD	1.651
291	5000456062004	0	140	N	140.000
292	5000456062004	0	140	MIN	0.000
293	5000456062004	0	140	MAX	14.000
294	5000456062004	0	140	MEAN	0.975

295	5000456062004	0	140	STD	1.762
296	5000525460001	0	140	N	140.000
297	5000525460001	0	140	MIN	0.000
298	5000525460001	0	140	MAX	14.000
299	5000525460001	0	140	MEAN	1.754
300	5000525460001	0	140	STD	2.951
301	5000676865002	0	744	N	744.000
302	5000676865002	0	744	MIN	0.086
303	5000676865002	0	744	MAX	9.268
304	5000676865002	0	744	MEAN	1.124
305	5000676865002	0	744	STD	1.308
306	5000845902001	0	744	N	744.000
307	5000845902001	0	744	MIN	0.226
308	5000845902001	0	744	MAX	7.048
309	5000845902001	0	744	MEAN	1.948
310	5000845902001	0	744	STD	1.259
311	511651004	0	1	N	0.000
312	511651004	0	1	MIN	.
313	511651004	0	1	MAX	.
314	511651004	0	1	MEAN	.
315	511651004	0	1	STD	.
316	568033001	0	1	N	0.000
317	568033001	0	1	MIN	.
318	568033001	0	1	MAX	.
319	568033001	0	1	MEAN	.
320	568033001	0	1	STD	.
321	572753001	0	1	N	0.000
322	572753001	0	1	MIN	.
323	572753001	0	1	MAX	.
324	572753001	0	1	MEAN	.
325	572753001	0	1	STD	.
326	6000113752002	0	744	N	744.000
327	6000113752002	0	744	MIN	0.086
328	6000113752002	0	744	MAX	7.128
329	6000113752002	0	744	MEAN	0.805
330	6000113752002	0	744	STD	0.884
331	6000148185005	0	744	N	744.000
332	6000148185005	0	744	MIN	0.228
333	6000148185005	0	744	MAX	7.723
334	6000148185005	0	744	MEAN	1.588
335	6000148185005	0	744	STD	0.769
336	6000206598002	0	744	N	744.000
337	6000206598002	0	744	MIN	0.000
338	6000206598002	0	744	MAX	10.597
339	6000206598002	0	744	MEAN	3.949
340	6000206598002	0	744	STD	2.113
341	6000226772002	0	744	N	744.000
342	6000226772002	0	744	MIN	0.042
343	6000226772002	0	744	MAX	8.384
344	6000226772002	0	744	MEAN	0.765

345	6000226772002	0	744	STD	1.194
346	6000238019003	0	744	N	744.000
347	6000238019003	0	744	MIN	0.337
348	6000238019003	0	744	MAX	9.568
349	6000238019003	0	744	MEAN	2.115
350	6000238019003	0	744	STD	1.036
351	6000367392001	0	744	N	744.000
352	6000367392001	0	744	MIN	0.042
353	6000367392001	0	744	MAX	6.358
354	6000367392001	0	744	MEAN	1.107
355	6000367392001	0	744	STD	0.846
356	6000367404001	0	744	N	744.000
357	6000367404001	0	744	MIN	0.000
358	6000367404001	0	744	MAX	6.937
359	6000367404001	0	744	MEAN	1.258
360	6000367404001	0	744	STD	1.079
361	6000414102003	0	744	N	744.000
362	6000414102003	0	744	MIN	0.173
363	6000414102003	0	744	MAX	9.071
364	6000414102003	0	744	MEAN	2.578
365	6000414102003	0	744	STD	1.881
366	6000417043002	0	744	N	744.000
367	6000417043002	0	744	MIN	0.170
368	6000417043002	0	744	MAX	5.120
369	6000417043002	0	744	MEAN	0.913
370	6000417043002	0	744	STD	0.767
371	6000442333002	0	744	N	744.000
372	6000442333002	0	744	MIN	0.207
373	6000442333002	0	744	MAX	7.853
374	6000442333002	0	744	MEAN	2.437
375	6000442333002	0	744	STD	1.748
376	6000588030003	0	744	N	744.000
377	6000588030003	0	744	MIN	0.078
378	6000588030003	0	744	MAX	5.756
379	6000588030003	0	744	MEAN	1.245
380	6000588030003	0	744	STD	1.073
381	6000778730002	0	744	N	744.000
382	6000778730002	0	744	MIN	0.000
383	6000778730002	0	744	MAX	4.270
384	6000778730002	0	744	MEAN	0.220
385	6000778730002	0	744	STD	0.442
386	6000975304002	0	744	N	744.000
387	6000975304002	0	744	MIN	0.278
388	6000975304002	0	744	MAX	9.253
389	6000975304002	0	744	MEAN	2.446
390	6000975304002	0	744	STD	1.569
391	6001011674001	0	744	N	744.000
392	6001011674001	0	744	MIN	0.232
393	6001011674001	0	744	MAX	8.174
394	6001011674001	0	744	MEAN	1.646

395	6001011674001	0	744	STD	1.228
396	660962003	0	1	N	0.000
397	660962003	0	1	MIN	.
398	660962003	0	1	MAX	.
399	660962003	0	1	MEAN	.
400	660962003	0	1	STD	.
401	7000168618002	0	744	N	744.000
402	7000168618002	0	744	MIN	0.098
403	7000168618002	0	744	MAX	7.266
404	7000168618002	0	744	MEAN	2.173
405	7000168618002	0	744	STD	1.668
406	7000225026001	0	744	N	744.000
407	7000225026001	0	744	MIN	0.283
408	7000225026001	0	744	MAX	7.905
409	7000225026001	0	744	MEAN	1.936
410	7000225026001	0	744	STD	1.228
411	7000248735001	0	744	N	744.000
412	7000248735001	0	744	MIN	0.148
413	7000248735001	0	744	MAX	8.204
414	7000248735001	0	744	MEAN	1.916
415	7000248735001	0	744	STD	1.289
416	7000367168001	0	744	N	744.000
417	7000367168001	0	744	MIN	0.000
418	7000367168001	0	744	MAX	6.851
419	7000367168001	0	744	MEAN	1.862
420	7000367168001	0	744	STD	1.614
421	7000367295001	0	744	N	744.000
422	7000367295001	0	744	MIN	0.176
423	7000367295001	0	744	MAX	5.453
424	7000367295001	0	744	MEAN	1.231
425	7000367295001	0	744	STD	0.993
426	7000533356005	0	744	N	744.000
427	7000533356005	0	744	MIN	0.062
428	7000533356005	0	744	MAX	7.501
429	7000533356005	0	744	MEAN	1.808
430	7000533356005	0	744	STD	1.177
431	7000807834002	0	744	N	744.000
432	7000807834002	0	744	MIN	0.000
433	7000807834002	0	744	MAX	5.980
434	7000807834002	0	744	MEAN	1.909
435	7000807834002	0	744	STD	1.115
436	7000949856001	0	744	N	744.000
437	7000949856001	0	744	MIN	0.234
438	7000949856001	0	744	MAX	5.822
439	7000949856001	0	744	MEAN	2.444
440	7000949856001	0	744	STD	1.693
441	7001080871001	0	744	N	744.000
442	7001080871001	0	744	MIN	0.525
443	7001080871001	0	744	MAX	9.587
444	7001080871001	0	744	MEAN	3.612

445	7001080871001	0	744	STD	1.417
446	741653004	0	1	N	0.000
447	741653004	0	1	MIN	.
448	741653004	0	1	MAX	.
449	741653004	0	1	MEAN	.
450	741653004	0	1	STD	.
451	8000027240002	0	744	N	744.000
452	8000027240002	0	744	MIN	0.446
453	8000027240002	0	744	MAX	16.927
454	8000027240002	0	744	MEAN	2.980
455	8000027240002	0	744	STD	1.844
456	8000367261001	0	744	N	744.000
457	8000367261001	0	744	MIN	0.337
458	8000367261001	0	744	MAX	11.110
459	8000367261001	0	744	MEAN	4.090
460	8000367261001	0	744	STD	2.505
461	8000584441001	0	744	N	744.000
462	8000584441001	0	744	MIN	0.000
463	8000584441001	0	744	MAX	9.722
464	8000584441001	0	744	MEAN	2.626
465	8000584441001	0	744	STD	1.467
466	8000968154002	0	744	N	744.000
467	8000968154002	0	744	MIN	0.280
468	8000968154002	0	744	MAX	13.130
469	8000968154002	0	744	MEAN	4.082
470	8000968154002	0	744	STD	2.367
471	8001107844002	0	744	N	744.000
472	8001107844002	0	744	MIN	0.166
473	8001107844002	0	744	MAX	6.755
474	8001107844002	0	744	MEAN	1.151
475	8001107844002	0	744	STD	0.978
476	9000224917002	0	744	N	744.000
477	9000224917002	0	744	MIN	0.000
478	9000224917002	0	744	MAX	8.735
479	9000224917002	0	744	MEAN	1.272
480	9000224917002	0	744	STD	1.580
481	9000224931001	0	744	N	744.000
482	9000224931001	0	744	MIN	0.118
483	9000224931001	0	744	MAX	9.719
484	9000224931001	0	744	MEAN	2.999
485	9000224931001	0	744	STD	2.005
486	9000281782002	0	744	N	744.000
487	9000281782002	0	744	MIN	0.323
488	9000281782002	0	744	MAX	6.181
489	9000281782002	0	744	MEAN	2.657
490	9000281782002	0	744	STD	1.348
491	9000367490001	0	744	N	744.000
492	9000367490001	0	744	MIN	0.225
493	9000367490001	0	744	MAX	6.652
494	9000367490001	0	744	MEAN	0.715

495	9000367490001	0	744	STD	1.074
496	9000367534001	0	744	N	744.000
497	9000367534001	0	744	MIN	0.268
498	9000367534001	0	744	MAX	7.307
499	9000367534001	0	744	MEAN	3.100
500	9000367534001	0	744	STD	1.326
501	9000384221002	0	744	N	744.000
502	9000384221002	0	744	MIN	0.648
503	9000384221002	0	744	MAX	10.861
504	9000384221002	0	744	MEAN	3.300
505	9000384221002	0	744	STD	1.736
506	9000441773003	0	744	N	744.000
507	9000441773003	0	744	MIN	0.089
508	9000441773003	0	744	MAX	6.256
509	9000441773003	0	744	MEAN	1.132
510	9000441773003	0	744	STD	1.106
511	9000468008002	0	744	N	744.000
512	9000468008002	0	744	MIN	0.470
513	9000468008002	0	744	MAX	6.438
514	9000468008002	0	744	MEAN	3.682
515	9000468008002	0	744	STD	1.311
516	9000833673002	0	744	N	744.000
517	9000833673002	0	744	MIN	0.230
518	9000833673002	0	744	MAX	8.173
519	9000833673002	0	744	MEAN	1.295
520	9000833673002	0	744	STD	1.332
521	9000858699004	0	744	N	744.000
522	9000858699004	0	744	MIN	0.187
523	9000858699004	0	744	MAX	10.187
524	9000858699004	0	744	MEAN	2.095
525	9000858699004	0	744	STD	1.830
526	9000987060003	0	744	N	744.000
527	9000987060003	0	744	MIN	0.008
528	9000987060003	0	744	MAX	5.347
529	9000987060003	0	744	MEAN	0.389
530	9000987060003	0	744	STD	0.854

Residential Customers – July Output

Obs	accountnumber1	_TYPE_	_FREQ_	_STAT_	premload1
1	0000000111030	0	744	N	744.000
2	0000000111030	0	744	MIN	0.154
3	0000000111030	0	744	MAX	7.007
4	0000000111030	0	744	MEAN	2.069
5	0000000111030	0	744	STD	1.732
6	0000014768005	0	744	N	744.000
7	0000014768005	0	744	MIN	0.131
8	0000014768005	0	744	MAX	5.289
9	0000014768005	0	744	MEAN	1.020
10	0000014768005	0	744	STD	0.792
11	0000014768058	0	744	N	744.000
12	0000014768058	0	744	MIN	0.113
13	0000014768058	0	744	MAX	8.510
14	0000014768058	0	744	MEAN	1.632
15	0000014768058	0	744	STD	1.406
16	0000014768095	0	744	N	744.000
17	0000014768095	0	744	MIN	0.176
18	0000014768095	0	744	MAX	7.549
19	0000014768095	0	744	MEAN	2.069
20	0000014768095	0	744	STD	1.582
21	0000014768142	0	744	N	744.000
22	0000014768142	0	744	MIN	0.234
23	0000014768142	0	744	MAX	9.217
24	0000014768142	0	744	MEAN	3.591
25	0000014768142	0	744	STD	2.137
26	0000025590001	0	744	N	744.000
27	0000025590001	0	744	MIN	0.000
28	0000025590001	0	744	MAX	9.048
29	0000025590001	0	744	MEAN	2.001
30	0000025590001	0	744	STD	1.953
31	0000025895001	0	744	N	744.000
32	0000025895001	0	744	MIN	0.409
33	0000025895001	0	744	MAX	10.289
34	0000025895001	0	744	MEAN	2.637
35	0000025895001	0	744	STD	1.898
36	0000025895007	0	744	N	744.000
37	0000025895007	0	744	MIN	0.226
38	0000025895007	0	744	MAX	7.461
39	0000025895007	0	744	MEAN	1.722
40	0000025895007	0	744	STD	1.468
41	0000053777003	0	744	N	744.000
42	0000053777003	0	744	MIN	0.000
43	0000053777003	0	744	MAX	6.863
44	0000053777003	0	744	MEAN	0.669
45	0000053777003	0	744	STD	1.299

46	0000112288003	0	744	N	744.000
47	0000112288003	0	744	MIN	1.108
48	0000112288003	0	744	MAX	12.384
49	0000112288003	0	744	MEAN	6.318
50	0000112288003	0	744	STD	3.032
51	0000123497007	0	744	N	744.000
52	0000123497007	0	744	MIN	0.088
53	0000123497007	0	744	MAX	4.546
54	0000123497007	0	744	MEAN	0.405
55	0000123497007	0	744	STD	0.571
56	0000175531001	0	744	N	744.000
57	0000175531001	0	744	MIN	0.613
58	0000175531001	0	744	MAX	6.576
59	0000175531001	0	744	MEAN	2.706
60	0000175531001	0	744	STD	1.458
61	0000175612001	0	744	N	744.000
62	0000175612001	0	744	MIN	0.000
63	0000175612001	0	744	MAX	4.636
64	0000175612001	0	744	MEAN	0.572
65	0000175612001	0	744	STD	0.713
66	0000191144002	0	744	N	744.000
67	0000191144002	0	744	MIN	0.290
68	0000191144002	0	744	MAX	8.888
69	0000191144002	0	744	MEAN	3.156
70	0000191144002	0	744	STD	1.799
71	0000196050002	0	744	N	744.000
72	0000196050002	0	744	MIN	0.262
73	0000196050002	0	744	MAX	7.079
74	0000196050002	0	744	MEAN	2.012
75	0000196050002	0	744	STD	1.101
76	0000198745005	0	744	N	744.000
77	0000198745005	0	744	MIN	0.337
78	0000198745005	0	744	MAX	8.670
79	0000198745005	0	744	MEAN	2.792
80	0000198745005	0	744	STD	2.205
81	0000204450004	0	744	N	744.000
82	0000204450004	0	744	MIN	0.307
83	0000204450004	0	744	MAX	9.862
84	0000204450004	0	744	MEAN	3.145
85	0000204450004	0	744	STD	2.146
86	0000218838002	0	744	N	744.000
87	0000218838002	0	744	MIN	0.142
88	0000218838002	0	744	MAX	8.532
89	0000218838002	0	744	MEAN	1.684
90	0000218838002	0	744	STD	1.269
91	0000218940002	0	744	N	744.000
92	0000218940002	0	744	MIN	0.185
93	0000218940002	0	744	MAX	7.561
94	0000218940002	0	744	MEAN	1.381
95	0000218940002	0	744	STD	1.041

96	0000221005004	0	744	N	744.000
97	0000221005004	0	744	MIN	0.269
98	0000221005004	0	744	MAX	9.430
99	0000221005004	0	744	MEAN	2.947
100	0000221005004	0	744	STD	1.849
101	0000221474002	0	744	N	744.000
102	0000221474002	0	744	MIN	0.101
103	0000221474002	0	744	MAX	4.594
104	0000221474002	0	744	MEAN	0.980
105	0000221474002	0	744	STD	0.890
106	0000222691003	0	744	N	744.000
107	0000222691003	0	744	MIN	0.163
108	0000222691003	0	744	MAX	9.905
109	0000222691003	0	744	MEAN	2.358
110	0000222691003	0	744	STD	1.491
111	0000223249004	0	744	N	744.000
112	0000223249004	0	744	MIN	0.167
113	0000223249004	0	744	MAX	8.747
114	0000223249004	0	744	MEAN	2.038
115	0000223249004	0	744	STD	1.728
116	0000223249005	0	744	N	744.000
117	0000223249005	0	744	MIN	0.269
118	0000223249005	0	744	MAX	12.557
119	0000223249005	0	744	MEAN	3.296
120	0000223249005	0	744	STD	2.028
121	0000224889001	0	744	N	744.000
122	0000224889001	0	744	MIN	1.509
123	0000224889001	0	744	MAX	10.922
124	0000224889001	0	744	MEAN	3.767
125	0000224889001	0	744	STD	2.041
126	0000224889002	0	744	N	744.000
127	0000224889002	0	744	MIN	0.348
128	0000224889002	0	744	MAX	12.557
129	0000224889002	0	744	MEAN	3.105
130	0000224889002	0	744	STD	2.344
131	0000224908001	0	744	N	744.000
132	0000224908001	0	744	MIN	0.140
133	0000224908001	0	744	MAX	7.660
134	0000224908001	0	744	MEAN	1.126
135	0000224908001	0	744	STD	1.572
136	0000224954001	0	744	N	744.000
137	0000224954001	0	744	MIN	0.188
138	0000224954001	0	744	MAX	8.770
139	0000224954001	0	744	MEAN	1.356
140	0000224954001	0	744	STD	1.457
141	0000224961001	0	744	N	744.000
142	0000224961001	0	744	MIN	0.022
143	0000224961001	0	744	MAX	3.390
144	0000224961001	0	744	MEAN	0.539
145	0000224961001	0	744	STD	0.821

146	0000224977001	0	744	N	744.000
147	0000224977001	0	744	MIN	0.000
148	0000224977001	0	744	MAX	7.570
149	0000224977001	0	744	MEAN	0.638
150	0000224977001	0	744	STD	1.003
151	0000224984002	0	744	N	744.000
152	0000224984002	0	744	MIN	0.000
153	0000224984002	0	744	MAX	9.481
154	0000224984002	0	744	MEAN	0.889
155	0000224984002	0	744	STD	1.592
156	0000225006001	0	744	N	744.000
157	0000225006001	0	744	MIN	0.115
158	0000225006001	0	744	MAX	8.885
159	0000225006001	0	744	MEAN	2.107
160	0000225006001	0	744	STD	1.555
161	0000225082002	0	744	N	744.000
162	0000225082002	0	744	MIN	0.292
163	0000225082002	0	744	MAX	8.369
164	0000225082002	0	744	MEAN	2.197
165	0000225082002	0	744	STD	1.624
166	0000225126001	0	744	N	744.000
167	0000225126001	0	744	MIN	0.016
168	0000225126001	0	744	MAX	7.202
169	0000225126001	0	744	MEAN	0.993
170	0000225126001	0	744	STD	1.670
171	0000225149002	0	744	N	744.000
172	0000225149002	0	744	MIN	0.216
173	0000225149002	0	744	MAX	14.043
174	0000225149002	0	744	MEAN	2.606
175	0000225149002	0	744	STD	3.268
176	0000225156001	0	744	N	744.000
177	0000225156001	0	744	MIN	0.000
178	0000225156001	0	744	MAX	7.155
179	0000225156001	0	744	MEAN	1.843
180	0000225156001	0	744	STD	1.327
181	0000225188005	0	744	N	744.000
182	0000225188005	0	744	MIN	0.337
183	0000225188005	0	744	MAX	8.609
184	0000225188005	0	744	MEAN	2.541
185	0000225188005	0	744	STD	1.309
186	0000225438002	0	744	N	744.000
187	0000225438002	0	744	MIN	0.581
188	0000225438002	0	744	MAX	9.423
189	0000225438002	0	744	MEAN	3.176
190	0000225438002	0	744	STD	1.786
191	0000225813002	0	744	N	744.000
192	0000225813002	0	744	MIN	0.000
193	0000225813002	0	744	MAX	9.172
194	0000225813002	0	744	MEAN	0.952
195	0000225813002	0	744	STD	1.517

197	0000226223002	0	744	MIN	0.407
198	0000226223002	0	744	MAX	14.139
199	0000226223002	0	744	MEAN	3.795
200	0000226223002	0	744	STD	2.619
201	0000233461002	0	744	N	744.000
202	0000233461002	0	744	MIN	0.457
203	0000233461002	0	744	MAX	18.554
204	0000233461002	0	744	MEAN	10.433
205	0000233461002	0	744	STD	6.067
206	0000242805002	0	744	N	744.000
207	0000242805002	0	744	MIN	0.577
208	0000242805002	0	744	MAX	10.871
209	0000242805002	0	744	MEAN	4.278
210	0000242805002	0	744	STD	2.782
211	0000248634001	0	744	N	744.000
212	0000248634001	0	744	MIN	0.055
213	0000248634001	0	744	MAX	3.677
214	0000248634001	0	744	MEAN	0.624
215	0000248634001	0	744	STD	0.515
216	0000248641001	0	744	N	744.000
217	0000248641001	0	744	MIN	0.080
218	0000248641001	0	744	MAX	8.186
219	0000248641001	0	744	MEAN	0.872
220	0000248641001	0	744	STD	1.050
221	0000248659005	0	744	N	744.000
222	0000248659005	0	744	MIN	0.000
223	0000248659005	0	744	MAX	9.695
224	0000248659005	0	744	MEAN	2.629
225	0000248659005	0	744	STD	2.155
226	0000248696001	0	744	N	744.000
227	0000248696001	0	744	MIN	0.236
228	0000248696001	0	744	MAX	11.188
229	0000248696001	0	744	MEAN	2.554
230	0000248696001	0	744	STD	2.194
231	0000248708001	0	744	N	744.000
232	0000248708001	0	744	MIN	0.092
233	0000248708001	0	744	MAX	5.969
234	0000248708001	0	744	MEAN	1.690
235	0000248708001	0	744	STD	1.191
236	0000248715001	0	744	N	744.000
237	0000248715001	0	744	MIN	0.064
238	0000248715001	0	744	MAX	7.163
239	0000248715001	0	744	MEAN	2.085
240	0000248715001	0	744	STD	1.419
241	0000248747001	0	744	N	744.000
242	0000248747001	0	744	MIN	0.112
243	0000248747001	0	744	MAX	4.522
244	0000248747001	0	744	MEAN	1.025
245	0000248747001	0	744	STD	1.000
246	0000249525002	0	744	N	744.000

247	0000249525002	0	744	MIN	0.332
248	0000249525002	0	744	MAX	7.977
249	0000249525002	0	744	MEAN	1.944
250	0000249525002	0	744	STD	1.191
251	0000252586003	0	744	N	744.000
252	0000252586003	0	744	MIN	0.304
253	0000252586003	0	744	MAX	6.308
254	0000252586003	0	744	MEAN	1.609
255	0000252586003	0	744	STD	0.766
256	0000256206004	0	744	N	744.000
257	0000256206004	0	744	MIN	0.112
258	0000256206004	0	744	MAX	9.016
259	0000256206004	0	744	MEAN	1.735
260	0000256206004	0	744	STD	1.662
261	0000276243002	0	744	N	744.000
262	0000276243002	0	744	MIN	0.182
263	0000276243002	0	744	MAX	7.414
264	0000276243002	0	744	MEAN	1.693
265	0000276243002	0	744	STD	1.498
266	0000283386002	0	744	N	744.000
267	0000283386002	0	744	MIN	0.228
268	0000283386002	0	744	MAX	9.568
269	0000283386002	0	744	MEAN	2.431
270	0000283386002	0	744	STD	2.165
271	0000283978002	0	744	N	744.000
272	0000283978002	0	744	MIN	0.048
273	0000283978002	0	744	MAX	8.386
274	0000283978002	0	744	MEAN	1.767
275	0000283978002	0	744	STD	1.314
276	0000299087002	0	744	N	744.000
277	0000299087002	0	744	MIN	0.377
278	0000299087002	0	744	MAX	7.781
279	0000299087002	0	744	MEAN	3.822
280	0000299087002	0	744	STD	1.282
281	0000305793002	0	744	N	744.000
282	0000305793002	0	744	MIN	0.184
283	0000305793002	0	744	MAX	8.217
284	0000305793002	0	744	MEAN	1.401
285	0000305793002	0	744	STD	1.228
286	0000327129002	0	744	N	744.000
287	0000327129002	0	744	MIN	0.168
288	0000327129002	0	744	MAX	9.750
289	0000327129002	0	744	MEAN	1.835
290	0000327129002	0	744	STD	2.027
291	0000367148001	0	744	N	744.000
292	0000367148001	0	744	MIN	0.022
293	0000367148001	0	744	MAX	5.110
294	0000367148001	0	744	MEAN	1.061
295	0000367148001	0	744	STD	0.807
296	0000367155001	0	744	N	744.000

297	0000367155001	0	744	MIN	0.012
298	0000367155001	0	744	MAX	5.977
299	0000367155001	0	744	MEAN	1.035
300	0000367155001	0	744	STD	0.941
301	0000367194001	0	34	N	34.000
302	0000367194001	0	34	MIN	0.000
303	0000367194001	0	34	MAX	4.040
304	0000367194001	0	34	MEAN	1.683
305	0000367194001	0	34	STD	1.256
306	0000367275001	0	744	N	744.000
307	0000367275001	0	744	MIN	0.289
308	0000367275001	0	744	MAX	8.864
309	0000367275001	0	744	MEAN	2.388
310	0000367275001	0	744	STD	1.649
311	0000367282001	0	744	N	744.000
312	0000367282001	0	744	MIN	0.118
313	0000367282001	0	744	MAX	6.347
314	0000367282001	0	744	MEAN	1.955
315	0000367282001	0	744	STD	1.458
316	0000367298001	0	744	N	744.000
317	0000367298001	0	744	MIN	0.365
318	0000367298001	0	744	MAX	8.627
319	0000367298001	0	744	MEAN	2.299
320	0000367298001	0	744	STD	1.376
321	0000367301001	0	744	N	744.000
322	0000367301001	0	744	MIN	0.043
323	0000367301001	0	744	MAX	3.744
324	0000367301001	0	744	MEAN	1.510
325	0000367301001	0	744	STD	0.701
326	0000367349003	0	744	N	744.000
327	0000367349003	0	744	MIN	0.176
328	0000367349003	0	744	MAX	5.093
329	0000367349003	0	744	MEAN	1.201
330	0000367349003	0	744	STD	0.877
331	0000367370001	0	744	N	744.000
332	0000367370001	0	744	MIN	0.188
333	0000367370001	0	744	MAX	6.128
334	0000367370001	0	744	MEAN	1.905
335	0000367370001	0	744	STD	0.869
336	0000367386001	0	744	N	744.000
337	0000367386001	0	744	MIN	0.070
338	0000367386001	0	744	MAX	5.139
339	0000367386001	0	744	MEAN	1.016
340	0000367386001	0	744	STD	0.762
341	0000367393001	0	744	N	744.000
342	0000367393001	0	744	MIN	0.000
343	0000367393001	0	744	MAX	0.000
344	0000367393001	0	744	MEAN	0.000
345	0000367393001	0	744	STD	0.000
346	0000367437001	0	744	N	744.000

347	0000367437001	0	744	MIN	0.299
348	0000367437001	0	744	MAX	11.191
349	0000367437001	0	744	MEAN	2.895
350	0000367437001	0	744	STD	2.056
351	0000367518001	0	744	N	744.000
352	0000367518001	0	744	MIN	0.180
353	0000367518001	0	744	MAX	5.758
354	0000367518001	0	744	MEAN	1.011
355	0000367518001	0	744	STD	0.814
356	0000367525001	0	744	N	744.000
357	0000367525001	0	744	MIN	0.077
358	0000367525001	0	744	MAX	6.460
359	0000367525001	0	744	MEAN	1.834
360	0000367525001	0	744	STD	1.416
361	0000411943097	0	744	N	744.000
362	0000411943097	0	744	MIN	0.290
363	0000411943097	0	744	MAX	8.597
364	0000411943097	0	744	MEAN	1.858
365	0000411943097	0	744	STD	1.402
366	0000411943108	0	744	N	744.000
367	0000411943108	0	744	MIN	0.071
368	0000411943108	0	744	MAX	7.942
369	0000411943108	0	744	MEAN	1.620
370	0000411943108	0	744	STD	1.655
371	0000414172002	0	744	N	744.000
372	0000414172002	0	744	MIN	0.541
373	0000414172002	0	744	MAX	11.375
374	0000414172002	0	744	MEAN	3.936
375	0000414172002	0	744	STD	2.306
376	0000421942002	0	744	N	744.000
377	0000421942002	0	744	MIN	0.014
378	0000421942002	0	744	MAX	8.489
379	0000421942002	0	744	MEAN	2.708
380	0000421942002	0	744	STD	1.554
381	0000441020002	0	744	N	744.000
382	0000441020002	0	744	MIN	0.167
383	0000441020002	0	744	MAX	5.350
384	0000441020002	0	744	MEAN	1.585
385	0000441020002	0	744	STD	0.761
386	0000449336002	0	744	N	744.000
387	0000449336002	0	744	MIN	0.241
388	0000449336002	0	744	MAX	9.729
389	0000449336002	0	744	MEAN	2.387
390	0000449336002	0	744	STD	1.882
391	0000502575001	0	744	N	744.000
392	0000502575001	0	744	MIN	0.000
393	0000502575001	0	744	MAX	5.155
394	0000502575001	0	744	MEAN	1.140
395	0000502575001	0	744	STD	1.779
396	0000522111001	0	744	N	744.000

397	0000522111001	0	744	MIN	0.236
398	0000522111001	0	744	MAX	6.301
399	0000522111001	0	744	MEAN	1.807
400	0000522111001	0	744	STD	1.225
401	0000523640001	0	744	N	744.000
402	0000523640001	0	744	MIN	0.000
403	0000523640001	0	744	MAX	4.829
404	0000523640001	0	744	MEAN	0.903
405	0000523640001	0	744	STD	0.771
406	0000523640003	0	744	N	744.000
407	0000523640003	0	744	MIN	0.000
408	0000523640003	0	744	MAX	7.624
409	0000523640003	0	744	MEAN	0.229
410	0000523640003	0	744	STD	0.731
411	0000546704008	0	744	N	744.000
412	0000546704008	0	744	MIN	0.387
413	0000546704008	0	744	MAX	10.496
414	0000546704008	0	744	MEAN	3.148
415	0000546704008	0	744	STD	1.817
416	0000561151003	0	744	N	744.000
417	0000561151003	0	744	MIN	0.000
418	0000561151003	0	744	MAX	6.034
419	0000561151003	0	744	MEAN	1.126
420	0000561151003	0	744	STD	1.063
421	0000569668002	0	744	N	744.000
422	0000569668002	0	744	MIN	0.077
423	0000569668002	0	744	MAX	7.389
424	0000569668002	0	744	MEAN	1.143
425	0000569668002	0	744	STD	1.235
426	0000571201002	0	744	N	744.000
427	0000571201002	0	744	MIN	0.000
428	0000571201002	0	744	MAX	5.779
429	0000571201002	0	744	MEAN	1.107
430	0000571201002	0	744	STD	1.291
431	0000586480002	0	744	N	744.000
432	0000586480002	0	744	MIN	0.092
433	0000586480002	0	744	MAX	9.442
434	0000586480002	0	744	MEAN	2.055
435	0000586480002	0	744	STD	1.545
436	0000587038001	0	744	N	744.000
437	0000587038001	0	744	MIN	0.300
438	0000587038001	0	744	MAX	5.371
439	0000587038001	0	744	MEAN	1.634
440	0000587038001	0	744	STD	0.971
441	0000592321004	0	744	N	744.000
442	0000592321004	0	744	MIN	0.443
443	0000592321004	0	744	MAX	11.073
444	0000592321004	0	744	MEAN	3.676
445	0000592321004	0	744	STD	2.594
446	0000595974002	0	744	N	744.000

447	0000595974002	0	744	MIN	0.220
448	0000595974002	0	744	MAX	10.343
449	0000595974002	0	744	MEAN	1.907
450	0000595974002	0	744	STD	1.875
451	0000602510003	0	744	N	744.000
452	0000602510003	0	744	MIN	0.316
453	0000602510003	0	744	MAX	6.344
454	0000602510003	0	744	MEAN	1.333
455	0000602510003	0	744	STD	0.923
456	0000631551002	0	744	N	744.000
457	0000631551002	0	744	MIN	0.000
458	0000631551002	0	744	MAX	6.903
459	0000631551002	0	744	MEAN	0.668
460	0000631551002	0	744	STD	1.203
461	0000667499001	0	744	N	744.000
462	0000667499001	0	744	MIN	0.000
463	0000667499001	0	744	MAX	8.954
464	0000667499001	0	744	MEAN	1.058
465	0000667499001	0	744	STD	1.783
466	0000673946002	0	744	N	744.000
467	0000673946002	0	744	MIN	0.191
468	0000673946002	0	744	MAX	3.434
469	0000673946002	0	744	MEAN	1.142
470	0000673946002	0	744	STD	0.584
471	0000679801004	0	744	N	744.000
472	0000679801004	0	744	MIN	0.331
473	0000679801004	0	744	MAX	9.430
474	0000679801004	0	744	MEAN	1.365
475	0000679801004	0	744	STD	1.634
476	0000691212001	0	744	N	744.000
477	0000691212001	0	744	MIN	0.000
478	0000691212001	0	744	MAX	3.529
479	0000691212001	0	744	MEAN	0.353
480	0000691212001	0	744	STD	0.727
481	0000719297001	0	744	N	744.000
482	0000719297001	0	744	MIN	0.312
483	0000719297001	0	744	MAX	30.299
484	0000719297001	0	744	MEAN	4.372
485	0000719297001	0	744	STD	6.640
486	0000724492002	0	744	N	744.000
487	0000724492002	0	744	MIN	0.453
488	0000724492002	0	744	MAX	7.658
489	0000724492002	0	744	MEAN	2.020
490	0000724492002	0	744	STD	1.521
491	0000732464003	0	744	N	744.000
492	0000732464003	0	744	MIN	0.018
493	0000732464003	0	744	MAX	9.498
494	0000732464003	0	744	MEAN	1.565
495	0000732464003	0	744	STD	1.432
496	0000743465001	0	744	N	744.000

497	0000743465001	0	744	MIN	0.379
498	0000743465001	0	744	MAX	6.130
499	0000743465001	0	744	MEAN	2.027
500	0000743465001	0	744	STD	1.486
501	0000756999001	0	744	N	744.000
502	0000756999001	0	744	MIN	0.335
503	0000756999001	0	744	MAX	9.835

Appendix C

Assessment of LG&E Smart Rate Program
for
E.ON U.S.

Schmidt Consulting Services, Inc.
Pittsburgh, Pennsylvania

November 2008

Assessment of LG&E Smart Rate Program

Introduction

In the Louisville Gas & Electric (LG&E) Smart Meter pilot program, residential customers receive an enhanced meter that allows collection and review of electricity usage by time of day. As part of this pilot, a small subset of customers is participating in a Smart Rate Program where they are charged based on time of electricity use, with higher prices associated with critical peak periods. These customers have been given load control switches; programmable thermostats; and energy monitors to help them keep track of pricing periods, real time costs, and critical peak pricing events. These tools allow actively involved customers to reduce their energy costs by selecting lower-cost time periods for their energy use.

In the fall of 2008, E.ON U.S. commissioned an assessment of its energy efficiency and green energy programs, including the LG&E Smart Rate Program. The assessment was conducted by Schmidt Consulting Services, an independent marketing research firm, via a telephone survey of utility customers. This report presents the results from the portion of the research covering the Smart Rate Program.

The primary objective of this research was to assess participants' satisfaction with the Smart Rate Program. Additional objectives were to determine reasons for enrolling in the program, to assess the enrollment and start-up process, and to explore any gaps between expectations and experience with the program.

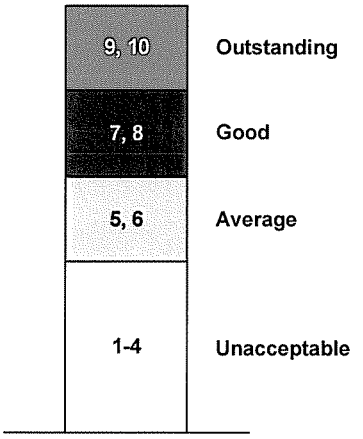
Research Design

The Smart Rate research was one of five modules in the E.ON customer program assessment, which was conducted by means of a telephone interview.

Respondents were asked twelve closed-ended questions regarding the Smart Rate Program. Specific responses to five of the questions triggered open-ended probes to obtain additional information on situations where expectations were either not met or were exceeded.

The primary measure of satisfaction with the program used a scale from 1 to 10, where 1 is "unacceptable," 5 is "average," and 10 is "outstanding." Interpretation of the non-labeled points on the scale was based on a comparison of questions in the full survey using this scale with questions as to whether expectations were met. Figure 1 shows the characterization of responses using this scale.

Figure 1: Characterization of Points on 10-Point Scale



Reported results only include valid responses (i.e., responses of "don't know" or "refused" are excluded).

Sampling Design

LG&E provide a list of 75 participants in the Smart Rate Program as of July 23, 2008, whose contact information could be verified.

Respondents were qualified to participate in the customer programs assessment survey if they confirmed that they made or participated in household decisions about energy or their electric utility. Respondents were asked the questions about the Smart Rate program if they were listed as participants by LG&E and also confirmed their participation program.

A quota of twenty-five interviews was established for program participants. Call disposition is shown in Table 1.

Since almost all program participants were contacted to complete an interview, this survey is considered a census rather than a sample of the eligible population.

Table 1: Call Disposition

Records Provided by LG&E		75
Not Callable		11
Invalid Phone Numbers	2	
Fax/Modem Line	1	
Cell Phone	1	
Not in Service	7	
Callable Numbers		64
Completed Interviews		25
Refusals		4
Could Not Confirm Participation		0
Could Not Contact		32
No Answer/Answering Machine	25	
Respondent Absent	5	
Call Back Later	2	
Not Called		3

Data Collection

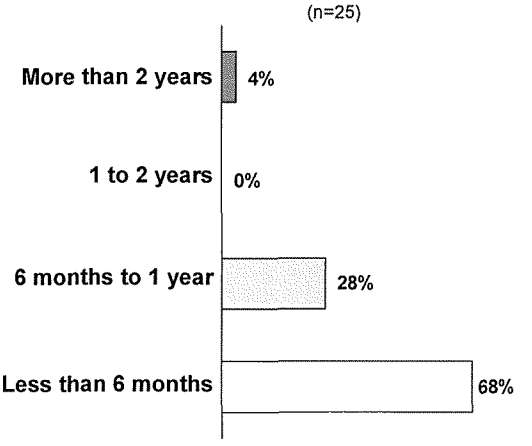
This research was conducted by means of a fully scripted, computer-assisted telephone interview. LG&E was identified as the sponsor of the survey. Respondents were anonymous.

Interviews were conducted between August 25 and September 27, 2008. Due to a severe wind storm on September 14 that left many customers without power, interviewing was suspended from September 14 through September 22.

Results

68% of the respondents have been in the Smart Rate program for less than six months (Figure 2). Two of the twenty-five respondents report being in the program for more than two years, which is longer than the program has been in existence.

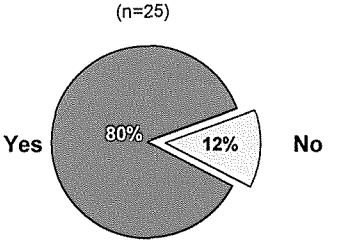
Figure 2: Length of Participation in Smart Rate Program



Twenty-four of the twenty-five respondents reported that they still use the programmable thermostat they were given when they joined the program.

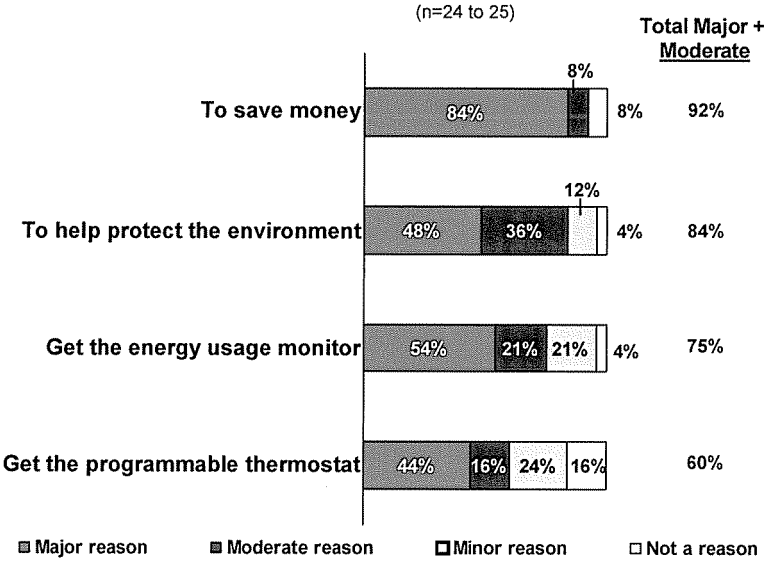
A strong majority of respondents (80%) felt they were contacted in a timely manner to schedule installation (Figure 3). The 3 respondents that were not contacted in a timely fashion reported that it took between 1 month and 1 year to be contacted. These participants expected that they would be contacted in one month or less. All respondents said that the date they were given for installation was within a reasonable length of time.

Figure 3: Contacted in Timely Manner to Schedule Installation



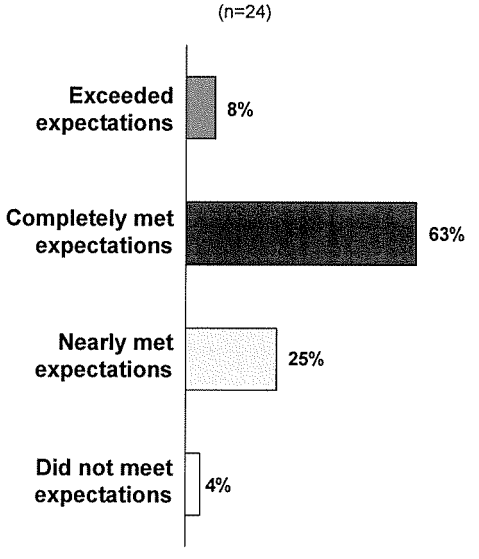
Saving money was the strongest reason for joining the program (Figure 4). More than half of the participants also cited protecting the environment, obtaining the energy usage monitor, and obtaining the programmable thermostat as major or moderate reasons for joining.

Figure 4: Reasons for Joining the Smart Rate Program



The Smart Rate Program has completely met or exceeded expectations among 71% of respondents (Figure 5). Only one of the respondents reported that the program did not meet expectations.

Figure 5: Smart Rate Program Met Expectations



Reasons why two respondents' expectations were exceeded included the energy saving and the detailed information that could be obtained (Table 2).

Table 2: How Expectations Were Exceeded

(n=2)

"The ability to track the meter and probably the energy saving."
"Wasn't expecting the information to be as detailed in the smart meter as was provided."

Among the seven respondents who reported that their expectations were nearly met or not met, three cited difficulty in adjusting the thermostat and two mentioned billing issues (Table 3).

Table 3: How Expectations Were Not Met

(n=7)

"Because they put me on the program and didn't start billing me properly for two months, and I have two bills now instead of one. It's not as useful as I thought it would be."
"Our thermostat was installed in May, but the coordination at the office took three months before we got a bill reflecting the new program."
"The programmable thermostat that I have, I would like an easier way to turn it up or down."
"Very hard to operate."
"Well, sometimes it's been getting pretty cool."
"We were not given full disclosure on the monthly meter charge increase."
"I was hoping to save more money."

Overall, 90% of the respondents rated the Smart Rate Program as "outstanding" (45%) or "good" (45%). An "average" rating was given by 9% (i.e., two of the twenty-two respondents who answered this question) (Figure 6).

Almost half (48%) of respondents have recommended this program to someone else (Figure 7).

Figure 6: Overall Rating of Smart Rate Program

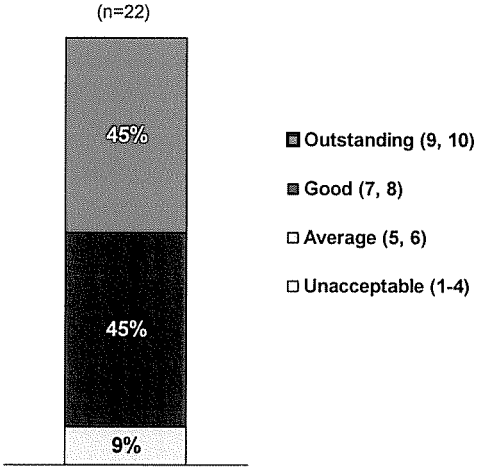
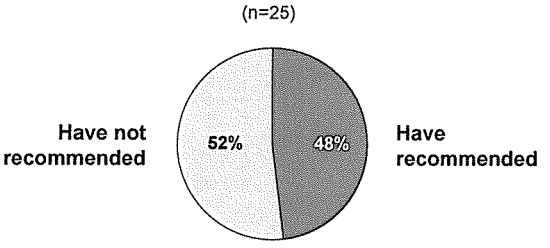


Figure 7: Have Recommended the Smart Rate Program to Anyone



Conclusions

There was a very high level of overall satisfaction among participants in the Smart Rate Program. Close to half of respondents rated the program as "outstanding," and close to half recommended the program to someone else. Only one of the respondents said that the program did not meet expectations.

Customers choose to participate in this program for a variety of reasons, the strongest of which is to save money. Protecting the environment is a secondary motivation. The equipment supplied with the program – the programmable thermostat and the energy monitor – are also seen as attractive benefits.

Program start-up was generally adequate, with no problems reported by more than three participants. Three people felt they should have been contacted sooner to schedule installation, and two people reported billing inconsistencies at the start of the program. Three people also noted that the thermostat was somewhat difficult to operate. While this is a low incidence of problems, it is recommended that these issues be monitored.

Limitations of the Study

Since this study included one-third of program participants, the results of the study are considered representative of participants' initial experience with the pilot program, However, since two-thirds of survey respondents had participated in the program for less than six months and the total number of program participants is currently small, the results of this study are not necessarily indicative of longer-term participants or future participants who are not "early adopters."