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 AND SMART METERING PILOT PROGRAM	))))	CASE NO. 2007-00117

O R D E R

On March 21, 2007, Louisville Gas and Electric Company ("LG&E") submitted an application requesting the Commission issue an order approving a proposed responsive pricing and smart metering pilot program ("Pilot"). The application was filed pursuant to 807 KAR 5:001, in compliance with the Commission's Order in Administrative Case No. 2006-00045,[1] and in compliance with Section 3.6 of the Partial Settlement, Stipulation, and Agreement ("Settlement Agreement") approved by the Commission in Case No. 2003-00433, LG&E's last base rate proceeding.[2] In support of this application, LG&E submitted testimony and exhibits from Kent W. Blake, Gregory Fergason and Sidney L. "Butch" Cockerill. Illustrative tariff sheets for the Residential Responsive Pricing Service ("RRP") and General Responsive Pricing Service ("GRP") were included in the exhibits submitted by Mr. Blake. The Attorney General of the Commonwealth of Kentucky,

[1] Administrative Case No. 2006-00045, Consideration of the Requirements of the Federal Energy Policy Act of 2005 Regarding Time-Based Metering, Demand Response, and Interconnection Service, Order dated December 21, 2006.

[2] Case No. 2003-00433, An Adjustment of the Gas and Electric Rates, Terms, and Conditions of Louisville Gas and Electric Company, Order dated June 30, 2004.

through his Office of Rate Intervention ("AG"), and Kentucky Industrial Utility Customers, Inc. ("KIUC") have been granted full intervenor status in this proceeding.

BACKGROUND

LG&E and Kentucky Utilities Company ("KU") began researching new technologies that would provide a price signal to the customer to encourage more efficient use of energy and would provide the customer with an incentive to shift usage from high-cost time periods into lower-cost time periods following Commission approval of their joint Demand-Side Management ("DSM") 2000-2007 Program Plan in Case No. 2000-00459.[3] On June 30, 2004, the Commission issued an Order in LG&E's Case No. 2003-00433 approving the Settlement Agreement between LG&E and the intervenors in that case. In Section 3.6 of the Settlement Agreement, LG&E agreed to develop and implement a real-time pricing pilot program. LG&E believes the Pilot, as set out in the proposed RRP and GRP tariff sheets, complies with the Settlement Agreement requirements. The Commission took notice of the Settlement Agreement in Administrative Case No. 2006-00045 and, among other things, required LG&E to "finalize its proposed residential real-time pilot pricing program in accordance with the settlement in Case No. 2003-00433 and submit the plan for Commission consideration within 90 days of the date of this Order."[4]

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[3] Case No. 2000-00459, Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for the Review, Modification, and Continuation of DSM Programs and Cost Recovery Mechanisms, Order dated May 11, 2001.

[4] Administrative Case No. 2006-00045, December 21, 2006 Order at 18.

TECHINAL DESIGN OF THE PILOT

According to LG&E, the proposed Pilot provides a responsive pricing rate structure with time-of-use and real-time, critical peak pricing components. The time-of-use component provides published, known rates during published, known periods that will apply to approximately 99 percent of the hours in a year. Weekday and weekend hours are divided into three time-of-use periods: low-, medium-, and high-cost. The proposed RRP tariff varies from the low-cost rate (P_1) of \$0.0399 per kWh to a critical cost rate (P_4) of \$0.30107 per kWh, while the proposed GRP tariff varies from the low-cost rate (P_1) of \$0.04400 per kWh to a critical cost rate (P_4) of \$0.30107 per kWh. Approximately 87 percent of the hours in a year will be subject to the low- and medium-cost rates for each class and approximately 12 percent of the hours in a year will be subject to the high- cost rates. The low- and medium-cost rates are lower than the current Residential Service ("RS") and General Service ("GS") tariffs while the high- and critical cost rates have rates that are higher than the current RS and GS tariffs.

The Pilot's real-time, critical peak pricing component has a published, known rate that is significantly higher (approximately five times higher) than LG&E's current tariff rates. LG&E plans to limit this significantly higher rate to hours of peak generation system demand, approximately 1 percent or 80 hours maximum per year for each class. To enable Pilot participants to shift usage away from critical peak pricing periods or to eliminate such usage altogether, participants will receive notice at least half an hour before a critical peak pricing period begins. Pilot participants will receive the appropriate critical peak pricing information from the equipment they will receive, which is described in more detail later in this Order.

The Pilot combines responsive pricing rates with smart metering technology, appliance control, and energy information displays to display usage and pricing information. The “smart meter” required to implement the Pilot is a typical meter equipped with an electronic card that provides two-way communications (between LG&E and the meter) which enables the meter to record and transmit a customer’s usage during different pricing periods to LG&E. To enable Pilot participants to know the pricing period that is in effect at a given time, LG&E will install energy use display equipment. Under the program, each participant will receive the pricing signal from LG&E indicating which tariff is currently applicable to their use of electricity by way of the proposed energy display unit which will be installed in each participant’s home or facility. The energy use display unit provides a visual signal to indicate the different tariff costs. This visual signal incorporates both a digital numerical readout of the applicable tariff and a variable four color “band” to indicate the applicable tariff. In addition to current pricing period information, it is through these information displays that LG&E will provide Pilot participants at least one half-hour’s advance notice of an upcoming critical peak pricing period. Because an information display receives pricing period information through radio contact with its assigned smart meter, a Pilot participant may place the information display anywhere in the participant's home or business that is most useful and that remains within radio range of the smart meter.

In addition to the smart meter and energy use display discussed above, LG&E will equip Pilot participants with additional DSM technology, specifically programmable thermostats and load control switches, that should enable Pilot participants to maximize their savings through energy usage reduction and time-shifting. Like the information displays, the programmable thermostats will be able to receive pricing period signals from the smart meters and will enable Pilot participants to pre-program different desired temperatures for the different pricing periods. For example, during the summer, a Pilot participant could set a temperature of 70°F during the low-cost period, 72°F during the medium-cost period, 75°F during the high-cost period, and 80°F during critical peak pricing periods.[5] Using load control switches for electric water heaters and other larger loads in conjunction with programmable thermostats will automate the usage of these loads to allow Pilot participants to shift usage without manual intervention on a daily basis. LG&E expects that some Pilot participants will choose to find ways to reduce their overall usage of energy, as well as to shift additional energy uses from peak to off-peak periods.

The program is designed to be cost neutral to a participant and to LG&E if there is no shift in the participant's energy usage or total consumption. Each participant will be assessed the customer-specific costs through an increment to a monthly customer charge. Customer-specific costs have been estimated to be $193.00 per participant, $78 for a smart meter card and $115 for an installed information display ($28,950 total for 150 participants).[6] Based on LG&E's calculations, an increment for the customer-specific costs in the amount of $2.26 will increase the total monthly customer charge to $10.00 for RS customers, $20.00 for single-phase GS customers, and $24.00 for three-phase GS customers. LG&E will recover the customer-specific costs though the participants' customer charges during the first 6 months of the Pilot. After 6 months,

[5] Application at 6, paragraph 12.

[6] Id., Exhibit SLC-1.

LG&E will evaluate the level of participation in the Pilot and consider modifying the treatment of customer-specific charges to encourage Pilot participation.

Non-customer-specific costs and DSM equipment costs, estimated at $1,946,849.00, will be recovered from all Rate RS and Rate GS customers through the DSM Cost Recovery Component of LG&E's DSM Cost Recovery Mechanism. LG&E recognizes that recovering non-customer-specific costs from only Rate RS and Rate GS customers is a departure from the terms of the Settlement Agreement, which provided that LG&E should recover such costs from Rate RS, Rate GS, and Rate LP customers; however, because the Commission has since ordered LG&E to create an RTP pilot for large commercial and industrial customers,[7] LG&E determined that it would not be appropriate to recover Pilot costs from such large commercial and industrial customers.

OTHER ASPECTS OF THE PILOT DESIGN

All of the Pilot participants will have access to their usage data via the Internet on a dedicated site that LG&E will establish for that purpose. Participation in the Pilot requires a one-year commitment. A participant may withdraw from the program at any time but will be ineligible to participate in the pilot program in the future and will also be responsible for the uncollected customer-specific costs for the remainder of the one-year term.

As per the Settlement Agreement, the Pilot will have an initial term of 3 years but will remain in effect until the Commission modifies or terminates it. Although the Settlement Agreement provides that 50 Rate RS and 50 Rate GS customers should be allowed to participate in the Pilot, up to 100 customers under Rate RS and up to 50

[7] Administrative Case No. 2006-00045, December 21, 2006 Order at 18.

customers under Rate GS may qualify for the program. LG&E states that the level of potential participants was raised because of increased interest in such energy efficiency programs and to obtain a more useful sample from the larger Rate RS customer population.

To carry out the proposed program, LG&E will also expand its Smart Metering-DSM component by equipping four complete metering routes (up to approximately 2,000 customers, including responsive pricing participants) with the same kind of smart meters used for customers participating in the responsive pricing component of the Pilot. LG&E will draw all 150 of the responsive pricing participants from these four metering routes. As noted above, a selected number of customers residing along the four selected metering routes who do not volunteer for the responsive pricing rate structure will nevertheless receive some DSM equipment and/or smart meters as described below. This "control group" will have varying levels of the same equipment installed but will not be subject to the tariffs proposed under the program. None of the control group participants will be on the Rate RRP or GRP tariff. LG&E believes it is necessary to gather information from the control group to assist in the determination of whether providing customers with different blends of information and control devices without a change in tariff energy rates can produce energy and cost-saving behavior comparable to that of responsive pricing participants. The control group will receive the DSM equipment as follows (these figures are approximate): (1) 150 will receive programmable thermostats and information displays; (2) 150 will receive programmable thermostats and load control devices; (3) 100 will receive information displays; and (4) the remaining customers will receive smart meters only.

LG&E has stated that if the Commission approves its application, it will take approximately 6 months to implement the Pilot, including ordering equipment, obtaining responsive pricing volunteers, installing the necessary equipment, and performing other required tasks. Also, if the program is approved, at the end of the 3-year term, LG&E will evaluate the performance of the Pilot. As initially proposed by LG&E, the evaluation will include, but not be limited to: (1) determining the impact of the Pilot on the affected customers; (2) determining the amount of revenue loss from the Pilot, if any; (3) evaluating customer acceptance of the time-of-use and responsive pricing period rate structure; and (4) evaluating the potential for implementing the Pilot as a standard rate schedule. LG&E will file its evaluation report with the Commission within 6 months after the first three years of implementing the Pilot.

DISCUSSION

LG&E's research into other electric utilities' real-time pricing programs and pilots indicates that for LG&E, considering the costs of implementation, weather, and relatively low prices for electricity, a responsive pricing rate structure consisting of time-of-use and real-time, critical peak pricing components in conjunction with a DSM program will likely maximize demand response for residential and commercial customers in a cost-effective manner. According to LG&E, the intent of the Pilot is to provide appropriate time-of-use and critical peak pricing period signals to encourage customers to reduce their overall electric usage and to shift some usage from higher-demand and higher-cost time periods to lower-demand and lower-cost time periods, resulting in cost savings for the customer and LG&E.

As noted previously, LG&E will establish a control group which will participate in an Expanded Smart Metering-DSM component so that LG&E may obtain data about the costs and benefits of different combinations of smart metering, information displays, programmable thermostats, and load control switches from non-pilot participants.

Subject to certain conditions set forth in his comments, the AG recommends the Commission approve the Pilot. The AG's specific concerns and LG&E's responses follow:

First, the AG's states that his comments should not be construed in any manner as acquiescing to the inclusion of any administrative costs in a future rate case. LG&E perceived this comment as a statement of the AG's intent and determined that it did not require nor would it be appropriate to respond.[8]

The AG urges that the Commission require LG&E ensure that participants in the Pilot are fully advised regarding the proper use and operation of all equipment installed for their use under the program and to educate participants regarding the different tariffs and their impact. The AG also expressed his concern that LG&E fully advise participants when each tariff rate "is expected to be in effect and on the options which a participant can take to reduce their demand when those rates are in effect."[9]

LG&E responds that it is committed to make every reasonable effort to have the participants fully familiar with the equipment and rate structure. LG&E refers to its response to Item No. 13 of the AG's Request for Information, dated March 30, 2007

[8] LG&E's Response to the Comments of the Attorney General, dated June 1, 2007, Footnote No. 2, at 1.

[9] Attorney General's Comments, dated May 24, 2007, at 3.

wherein it cites the means with which it will educate participants. LG&E further states that participants must be fully informed concerning their equipment, rate schedule and energy savings measures. Therefore, it will use all of the means described in that response to fully educate the participants.[10]

The AG states his concern that the number of hours to which a participant may be subject to the critical cost (P_4) rate (the highest rate participants may incur) is not variable "based upon demand during critical events up to a maximum of 1% or 80 hours per year"[11] but represents a fixed quantity of critical cost (P_4) rate hours. This position is based on LG&E's intent to achieve revenue neutrality and the fact that the calculations provided to reflect revenue neutrality use a fixed quantity of critical cost (P_4) hours. The AG notes that this position is further supported by LG&E's response to a data request where it stated that the calculation of revenue neutrality assumed 80 critical cost hours and that in "the event the number of critical cost hours was lower, it would require an upward adjustment to the remaining $P_{1,}$ P_2 or P_3 rates."[12]

In closing on this issue, the AG states that unless LG&E is willing to forgo revenue under the program, the time of critical cost (P_4) hours at 1 percent or 80 hours per year does in fact represent a fixed quantity.

In response, LG&E reiterates its position that 80 critical cost hours represents the maximum number of critical cost hours that could be implemented. This was the

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[10] LG&E's Response to the Comments of the Attorney General, June 1, 2007 at 2.

[11] Attorney General's Comments, May 24, 2007, at 3.

[12] Id. at 3 and 4, and Supplemental Request for Information by the Attorney General, dated April 13, 2007, Item No. 4B.

amount of critical cost hours used in making the revenue neutral calculation but there is no tariff or other requirement that LG&E implement all such hours.

The AG also expressed concern about LG&E's proposal to recover from each participant the cost of the customer-specific equipment over a 6-month period in that such costs, estimated by the AG to be approximately $32.00 per month,[13] may be burdensome to lower income households and, therefore, limit their participation in the program. The AG suggests that LG&E consider subsidizing, for lower income participants, all or part of the customer-specific costs for the duration of the program to ensure that the lower income demographic is adequately and fairly represented.

As an alternative, the AG suggests that, at a minimum, the customer-specific costs for such participants be collected in a lower amount over a longer period of time such as $16.00 over 12 months.[14] This is supported, the AG notes, by the fact that LG&E plans to use a 12-month period to gauge the monetary consequences to the participant for revenue neutrality.

LG&E responds that the AG's position appears to be based on a misunderstanding due to LG&E's restatement in this proceeding of the commitment made in the Settlement Agreement relating to the customer-specific costs. To correct this misunderstanding, LG&E cites its response to Item No. 18 in the AG's March 30, 2007 Request for Information where it noted that the incremental cost of the customer-specific costs included in the facilities charge was $2.26. As a result, LG&E argues that

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[13] Attorney General's Comments, May 24, 2007, at 4.

[14] Id.

it will not recover the full cost of the $193.00 customer-specific costs during the 6-month period.

LG&E proposes to collect data from participants in the program and the control group for a period of 3 years and then to issue a report evaluating whether the objectives of the program were met within 6 months of the program end. However, the AG believes that LG&E should submit interim reports in order for the Commission to adequately monitor the program. The AG recommends that the following information be collected and provided along with any analysis on a yearly basis:

> 1) the current number of program participants,
> 2) the number of participants who have withdrawn from the program along with any reasons for such withdrawal,
> 3) the average, minimum and maximum monthly electrical usage and cost for program participants during each 12 month reporting period,
> 4) the average, minimum and maximum monthly electrical usage and costs for program participants for the 12 month period immediately preceding enrollment into the program,
> 5) the requirement that the Petitioner solicit and report any comments or suggestions of program participants,
> 6) the requirement that the Petitioner submit whether, in its' [sic] opinion, the program is achieving its stated objectives and Petitioner's evaluation of the comments and suggestions of the program participants,
> 7) the program costs to the date of the report along with the details of any deviations from the program budget submitted along with the application.[15]

The Attorney General suggests that such interim reports be made a part of the record and distributed to all parties in the matter.

LG&E accepted the AG's recommendation stating that it would provide the requested information on an annual basis in reports that will be entered into the record of this proceeding. LG&E also stated that it would ensure that such data is included in the full Pilot reporting and evaluation to be made at the end of the 3-year Pilot term.

[15] Id. at 5.

Finally, the AG suggests that as both LG&E and the ratepayers share in the benefits of the program, it should also bear some of the costs by sharing equally in the cost of the pilot program. In other words, only 50 percent of the program costs would be eligible for recovery through the DSM Cost Recovery Mechanism.

LG&E asserts that it will receive no financial benefit from the Pilot and all of the savings will benefit LG&E's customers, Pilot participants and otherwise. Therefore, LG&E disagrees with the AG and renews its request for full DSM cost recovery of Pilot costs.

The Commission believes that LG&E has satisfactorily addressed the AG's concerns and comments. We agree that the first comment is a statement of the AG's intent and will be addressed if and when such a request is made by LG&E. The Commission believes that LG&E's answer to the AG's concern regarding educating participants regarding the use of equipment and rate structure which states that "LG&E will use all of the means . . . to ensure Pilot participants are fully informed,"[16] reflects LG&E's understanding of the importance of fully educating participants.

The AG maintains his position that the 80 critical cost hours represent a fixed quantity while LG&E's describes the 80 critical cost hours as a maximum and states that there is no requirement that it has to implement all such hours. In his testimony, Mr. Blake stated that the critical cost hours included in the tariff are those critical peak pricing periods that "LG&E will implement only during times of very high demand for

[16] LG&E's Response to the Comments of the Attorney General, June 1, 2007, at 2.

electricity."[17] In response to questions by the AG regarding the "times of very high demand for electricity," LG&E identified projected summer and winter load peaking times, explained that from a capacity shortage perspective anytime demand approaches capacity can constitute a "time of very high demand for electricity," and provided a chart illustrating those hours over the past 4 years.[18] However, upon further questioning by the AG, LG&E explained that those hours identified in that response represented the hours during which load controls for its DSM program were activated in the summer months and that it had no record of "critical peak hours" since there was no separate tariff for those hours.[19] LG&E also stated that a critical peak can occur anytime the company has capacity shortages. LG&E further explained that the critical peak (P_4) rate reflected the real-time cost to produce electricity during critical cost hours. According to LG&E, the P_4 rate was based on the installed and running costs of a natural gas-fired combustion turbine reflecting its utilization of 200 operating hours per year. Finally, LG&E stated that 80 hours represents 1 percent of the hours in a year and is consistent with similar programs designed to elicit a meaningful demand response from residential customers.[20]

The Commission has some concerns regarding the amount of critical cost hours because the proposed tariffs state that the "hours of the responsive pricing periods for

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[17] Testimony of Kent W. Blake, at 4.

[18] LG&E's Response to the Attorney General's Request for Information, dated March 30, 2007, Item No. 17.

[19] LG&E's Response to the Attorney General's Supplemental Request for Information, April 30, 2007, Item No. 4.

[20] Id., Item No. 5.

price level P_4 shall be determined at the discretion of the Company."[21] However, given the fact that the Pilot is voluntary, revenue neutral and that 80 critical cost hours represent the maximum that may be implemented as stated in LG&E's tariff, we do not believe that 80 critical cost hours is unreasonable for purposes of the 3-year term of the Pilot based on the record. In fact, the tariffs for the real-time pricing programs of Gulf Power Company and Tampa Electric Company both state that the period for critical peak pricing shall be determined at their discretion but do not include a limitation to any hours, annually or otherwise. We do believe that LG&E should consider the development of a definition of critical cost hours for inclusion in the tariff as part of its evaluation at the end of the 3-year Pilot term.

The Commission finds that LG&E has satisfactorily clarified the AG's misunderstanding regarding recovery of the customer-specific costs. Instead of the $32.00 the AG states that LG&E will collect over a 6-month period, LG&E has shown that the total monthly customer charge will only include an increment of $2.26 for customer-specific costs as part of the monthly customer charge. Over the 36 months of the 3-year term of the Pilot, LG&E will collect only $81.36 of the $193.00 total customer-specific costs from each customer. LG&E agreed to submit annual reports including the information requested by the AG.

Finally, the Commission accepts LG&E's request to recover the non-specific customer costs of the program through the DSM cost recovery mechanism from its RRP, GRP, RS and GS ratepayers even though the AG argued that LG&E should share in these costs. Although the Commission is not convinced that LG&E will not receive

[21] Application, Exhibit KWB-1 and Exhibit KWB-2.

benefit from the program, the Commission notes that the original Settlement to which the AG agreed and the Commission approved called for recovery in this manner. The Commission notes that a typical residential customer will only pay a total $4.30[22] over the 3-year period of the pilot and a typical general service customer will only pay $9.63[23] over the same period.

Based on the application and being otherwise sufficiently advised, the Commission finds that:

1. LG&E should be authorized to establish the proposed responsive pricing and smart metering pilot program as set forth in its March 21, 2007 application.

2. LG&E should be authorized to recover the non-specific customer cost of the Pilot program from its RRP, GRP, RS and GS ratepayers through its DSM cost recovery mechanism.

3. LG&E should file, in the record in this proceeding, reports including the information requested by the AG and the Commission no later than April 1, 2009, April 1, 2010, and April 1, 2011.

4. LG&E should file an evaluation of the Pilot program in accordance with paragraph 19 of its application, including the information requested by the AG, and as revised herein, no later than July 1, 2011.

IT IS THEREFORE ORDERED that:

1. The responsive pricing and smart metering pilot program as proposed in LG&E's March 21, 2007 application is approved.

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[22] Calculated from the Testimony of Greg Fergason at 9.

[23] Id.

2. The request to recover the non-specific customer cost of the Pilot program from LG&E's RRP, GRP, RS and GS ratepayers through its DSM cost recovery mechanism is approved.

3. LG&E shall file, in the record in this proceeding, reports including the information requested by the AG and the Commission no later than April 1, 2009, April 1, 2010, and April 1, 2011.

4. LG&E shall file an evaluation of the Pilot program in accordance with paragraph 19 of its application, including the information requested by the AG, and as revised herein, no later than July 1, 2011.

5. LG&E shall file, within 20 days of the date of this Order, its revised tariff sheets setting out the charges approved herein showing their date of issue and that they were issued by authority of this Order.

Done at Frankfort, Kentucky, this 12th day of July, 2007.

By the Commission

ATTEST:

Executive Director