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PUBLIC SERVICE  
COMMISSION

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April 27, 2009

RE: CONSIDERATION OF THE NEW FEDERAL STANDARDS OF  
THE ENERGY INDEPENDENCE AND SECURITY ACT OF 2007  
Adm Case 2008-00408

Dear Mr. DeRouen:

Enclosed please find an original and ten (10) copies of Kentucky Utilities Company ("KU") and Louisville Gas and Electric Company ("LG&E") Response to the Second Data Request of Commission Staff dated April 13, 2009, in the above-referenced docket.

Should you have any questions concerning the enclosed, please do not hesitate to contact me.

Sincerely,

Rick E. Lovekamp

cc: Parties of Record

**COMMONWEALTH OF KENTUCKY**  
**BEFORE THE PUBLIC SERVICE COMMISSION**

**In the Matter of:**

**CONSIDERATION OF THE NEW )**  
**FEDERAL STANDARDS OF THE )**  
**ENERGY INDEPENDENCE AND ) CASE NO. 2008-00408**  
**SECURITY ACT OF 2007 )**

**RESPONSE TO SECOND DATA REQUEST**  
**OF COMMISSION STAFF**  
**DATED APRIL 13, 2009**

**FILED: April 27, 2009**







**KENTUCKY UTILITIES COMPANY  
LOUISVILLE GAS AND ELECTRIC COMPANY**

**ADMINISTRATIVE CASE NO. 2008-00408**

**Response to Second Data Request  
Dated April 13, 2009**

**Question No. 33**

**Responding Witness: John P. Malloy**

Q-33. KU and LG&E's response to Staff's Initial Data Request, Item 87, refers to "meter technology currently in place." Identify each of the metering technologies currently in place, which class a particular type of meter would typically be used for, and the information retrieved from each type.

A-33. Currently, KU and LG&E (collectively, "the Companies") use single-phase electro-mechanical meters for nearly all residential and small non-residential customers. For residential customers, these meters record only consumption information; for non-residential customers, such meters also record peak demand.

For larger commercial and industrial customers, the Companies use solid state three-phase meters. These meters can record the same type of consumption information as single-phase meters, but can also record demand every fifteen minutes, provide power factor information, and do load profiles.

Recently, both utilities made a strategic decision to adopt a Smart Metering Platform by switching from electro-mechanical meters to solid state meters. These "Smart Meters" offer the newest technology in meter design and serve as the cornerstone to enabling Automated Metering Infrastructure ("AMI") by allowing two-way communications from the utility to the customer. The implementation of "Smart Meters" will allow both utilities the ability to establish various energy rate offerings, such as time of use rates.

Currently both utilities are conducting pilots aimed at obtaining information on customer's acceptance of alternative rate programs and provide a mechanism to evaluate the "Smart Technology" being utilized. LG&E is conducting a three-year pilot program for approximately 2,000 residential and small commercial customers that utilize smart metering. The Responsive Pricing and Smart Metering Pilot Program ("Pilot"), approved under KPSC order 2007-00117, is operating from 2008 through 2010 and is aimed at evaluating the impact of various drivers on electric consumption / consumer behavior. These drivers include pricing (via time-of-use rates with critical peak pricing component),

automation (via smart thermostats), and information (via in-home energy usage displays).

In addition to the Pilot, both utilities are offering their large industrial and commercial customers the opportunity to participate in a three-year Real Time Pricing program, reference KPSC order 2006-00045. Under this program, customers energy pricing are based upon an hourly rate structure where the hourly rates are provided to the customers on the prior day. This advanced notice is provided to allow customers time to adjust their energy consumption.





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**Question No. 34**

**Responding Witness: Lonnie E. Bellar**

Q-34. Refer to the response to Staff's Initial Data Request, Item 91, regarding rate designs that promote energy efficiency. LG&E and KU have not proposed the measures described in the response in the DSM filings they have made under KRS 278.285. Explain whether LG&E and KU believe the Commission has the authority to approve such measures under the current statute.

A-34. In Administrative Case No. 2007-00477, the Companies stated the Commission has the authority to approve new and innovative DSM and energy efficiency programs, as well as the cost recovery, lost sales recovery, and financial incentives needed to implement cost-effective DSM and energy efficiency programs, as described in response to Question No. 91.

Kentucky's demand-side management ("DSM") program statute, KRS 278.285, already provides the Commission the authority needed to address the only significant impediment to utilities' consideration and implementation of "cost-effective demand-management strategies for addressing future demand": economics. KRS 278.285 gives the Commission the authority it needs to overcome this obstacle; namely, the power to approve the recovery of lost revenues and financial incentives for implementing cost-effective DSM and energy efficiency programs.



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**Question No. 40**

**Responding Witness: John P. Malloy**

- Q-40. Refer to the response of Duke Kentucky to Staff's Initial Data Request, Item 36, Attachment (a), pages 17-18. Describe the extent to which your plans for smart grid reflect the addition of infrastructure and new technology that will enhance the integration of demand response and energy efficiency into your system.
- A-40. Currently we are evaluating options for Smart Grid deployment. The plan will include the infrastructure and technology that is scalable and provides "plug-in" capability with foreseeable applications (such as robust home-area-network and distribution-automation) that enable the enhancement of demand response and energy efficiency. At the meter, this means accommodating time of use rates as well as a wide range of communications protocols for demand-response and energy-management devices, while also allowing for updating or changing these protocols without a meter change or removal. From the meter to the utility offices, our dual focus is upon data security/integrity and scalability of bandwidth to accommodate increasing volumes of data, particularly from the use of distribution monitoring and automation.



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**Question No. 41**

**Responding Witness: John P. Malloy**

Q-41. Refer to the response of Duke Kentucky to Staff's Initial Data Request, Item 36, Attachment (c), pages 49-50. Describe the extent to which your plans for smart grid incorporate the addition of communication infrastructure that will enhance the use of distributed resources on your system.

A-41. The communication infrastructure is a critical component of any Smart Grid deployment. Due to the large amount of data that will be required and the speed at which the data will need to be transmitted and received, the communication infrastructure is one of the most critical components of any Smart Grid deployment. A Smart Grid would allow two-way communication between the electric system and a much larger number of devices located outside the control of the utility. To successfully manage the volume and speed of this data, many utilities are upgrading their systems to use Internet-based protocols and technologies. However, utilizing Internet-based protocols may mean an indirect Internet vulnerability to sensitive control systems. Recognizing this concern, one component of The Energy Independence and Security Act of 2007 (EISA) required the Federal Energy Regulatory Commission ("FERC") to adopt standards and protocols necessary to ensure smart grid functionality and interoperability. On March 19, 2009, FERC issued a Proposed Policy Statement and Action Plan seeking comments on the cyber security issue and other key smart grid elements. Though there are current standards and protocols for protecting Critical Infrastructure Protection Standards ("CIPs"), it is likely these will change as a result of the current efforts of FERC. Because of these issues, we are evaluating several design possibilities (i.e., combinations of getting data to collectors, and to "backbone" fiber network, and/or directly to our offices). Our emphasis is currently on identifying and quantifying the costs and benefits of these options as well as monitoring the pending security and data-integrity issues.



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**ADMINISTRATIVE CASE NO. 2008-00408**

**Response to Second Data Request  
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**Question No. 42**

**Responding Witness: John P. Malloy**

- Q-42. It does not appear from the testimony and data responses that any of the electric utilities are considering networking options for smart grid, such as partnering with broadband and mobile wireless providers to provide network connections, as opposed to investing in the construction of their own networks. Explain whether such partnering is being explored on either a utility-specific or industry-wide level.
- A-42. We are calculating costs and benefits with both public and private solutions for wide-area-network ("WAN") communications as part of our Smart Grid analysis. The need to provide a secure communication infrastructure is a major factor in this decision process.





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**Question No. 43**

**Responding Witness: John P. Malloy**

Q-43. It does not appear from the testimony and data responses that any of the electric utilities have indicated to what extent they have prioritized the smart grid elements they plan to pursue. Provide a list showing how you have prioritized the items in your smart grid plan along with an explanation thereof.

A-43. The Companies are in the process of determining which smart grid technologies and field components to pursue and implement for the long-term. When that process is complete, the Companies will move to an implementation plan that will lay out priorities across the three functional areas:

1. Customer load and use management (which will include installing smart meters, “behind the meter” technology such as smart thermostats, and technology to maximize the benefit of distributed generation and plug-in-hybrid electric vehicles (“PHEV”))
2. Distribution monitoring and control (e.g., SCADA [Supervisory Control And Data Acquisition], automation of the distribution network, and system hardening)
3. Transmission monitoring and control (e.g., SCADA, automation of the transmission network, and system hardening)

Because the safe, reliable, and efficient operation of a “smart” transmission and distribution system requires the high-speed collection and transmission of large amounts of data, the Companies will deploy a redundant fiber-optic network and associated information technology simultaneously with the roll-out of “smart” field hardware across all three of the functional areas discussed above.