COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE 2014 JOINT INTEGRATED RESOURCE PLAN OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY	**)** **)** **)** **)** **)**	**CASE NO. 2014-00131**

RESPONSE OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY TO THE COMMISSION STAFF'S SECOND REQUESTS FOR INFORMATION DATED DECEMBER 8, 2014

FILED: DECEMBER 22, 2014

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **John N. Voyles, Jr.**, being duly sworn, deposes and says that he is the Vice President, Transmission and Generation Services for Louisville Gas and Electric Company and Kentucky Utilities Company and an employee of LG&E and KU Services Company, that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

John N. Voyles, Jr.

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 19th day of September 2014.

Notary Public (SEAL)

My Commission Expires:

JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
Notary ID # 512743

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **SS:**
COUNTY OF JEFFERSON)

The undersigned, **Charles R. Schram**, being duly sworn, deposes and says that he is Director – Energy Planning, Analysis and Forecasting for LG&E and KU Services Company, and that he has personal knowledge of the matters set forth in the responses for which he is identified as the witness, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 29th day of December 2014.

Notary Public (SEAL)

My Commission Expires:

JUDY SCHOOLER
Notary Public, State at Large, KY
My commission expires July 11, 2018
Notary ID # 512743

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's Second Requests for Information
Dated December 8, 2014

Case No. 2014-00131

Question No. 1

Witnesses: John N. Voyles, Jr./Charles R. Schram

Q-1. Refer to the 2014 Resource Assessment Addendum, page 4, where the request for a four-year capacity purchase and tolling agreement with Bluegrass Generation is discussed. Also refer to the Companies' application in Case No. 2014-00002,[1] page 23 of Exhibit DSS-1 to the Direct Testimony of David S. Sinclair. The paragraph immediately after Table 16 includes a confidential discussion about the cost of a transmission project associated with certain purchased power agreements. Refer also to the hearing in that case at 11:02:50-11:06:34 in the confidential video transcript in which the change in the cost of the transmission project was discussed by Mr. Sinclair. Explain in greater detail what caused the cost of the transmission project to change.

A-1. Case No. 2014-00002, in Exhibit DSS-1 at page 23, states that a $35 million transmission project, which was initially based on the Companies preliminary internal transmission assessments, must be completed to ensure that power from the LS Power Assets can flow to the Companies' native load during (all) peak operating periods. Since the time of that statement, an ITO System Impact Study (SIS), as required by the LG&E/KU Open Access Transmission Tariff, was completed on November 19, 2014. This recent ITO study indicates that the only limitation that would require the $35 million project for resolving the overload condition in this portion of the transmission network, which currently exists, is transmission capacity availability for the month of August 2015. While a lower cost project was identified in the study that would resolve the overload condition during most periods, the $35 million project would resolve the single month issue, but it is not possible to complete this project by August 2015. The Companies will complete the lower cost project resolving most periods and currently plan to purchase firm transmission, if available, on a short term basis for August 2015.

[1] Case No. 2014-00002, Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Certificates of Public Convenience and Necessity for the Construction of a Combined Cycle Combustion Turbine at the Green River Generating Station and a Solar Photovoltaic Facility at the E.W. Brown Generating Station (filed Jan. 17, 2014).

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Question No. 2

Witness: John N. Voyles, Jr.

Q-2. Refer to the response to Item 1 of Commission Staff's First Request for Information ("Staff's First Request") where it states, "However, since the filing of the IRP, recent events on LG&E and KU's transmission network and the interconnected utilities have raised concerns over reliability impacts created by the planned retirement of these units and triggered the need for additional study. These recent events include uncertain operations of the expanded Midcontinent Independent System Operator ("MISO"), recently announced news from Big Rivers Electric Corporation that all three generating units at its Coleman station could be offline for several years, and a real-time electric grid reliability operating condition that occurred in June 2014."

a. Identify and explain the Companies' concerns regarding uncertain operations of the expanded MISO.

b. Explain whether the Companies believe a Certificate of Public Convenience and Necessity will be required for the construction of the transmission reliability solutions.

A-2.

a. In December 2013, MISO expanded its operation as a single Balancing Authority (BA) to include certain transmission assets in the southern U.S., including Entergy. This expansion of MISO operations raised reliability concerns among various entities as the magnitude of power flows between the pre-expansion MISO and Entergy would frequently be greater than their existing electrical connection capacity. Additionally, a majority of these power transfers flow over other utilities' systems, including the Companies. When combined with the supply side retirements and periodic peak load conditions, the MISO power flow changes were studied to evaluate reliability concerns that would need to be addressed. The solutions recommended for these contingencies require a one-year extension of the Green River 3 and 4 units.

b. The recommended projects from the study to be performed by the Companies referenced in the question above will not trigger the requirements for a CPCN under KRS 278.020.

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Question No. 3

Witness: Charles R. Schram

Q-3. Refer to the response to Item 2 of Staff's First Request. Provide the actual summer 2014 peak demands for each of the Companies, the date and time of those peaks, and the actual summer 2014 combined peak demand for LG&E and KU, and its date and time.

A-3.

2014 Summer Peak Demands

	Peak Demand (MW)	Date/Time (EDT)	High/Low Temp (°F)
LG&E	2,481	6/19/14 Hour Beginning 16:00	94/77
KU	3,870	7/22/14 Hour Beginning 16:00	91/68
Combined Company	6,313	7/22/14 Hour Beginning 16:00	91/68

While the high temperature on July 22, 2014 was consistent with a moderate summer high temperature, the peak demand is affected by a number of other factors including temperature patterns in the prior days. The week preceding the KU and Combined Company peak averaged 71°F in Lexington, 6°F lower than the 20-year average for those dates. LG&E's summer peak demand of 2,481 occurred on June 19, 2014 (the LG&E peak demand on July 22, 2014 was 2,446 MW), which is not a typical time for a summer peak and further highlights the absence of consistently warm weather during the subsequent months of July and August. Prior to the mild summer, the Companies did set a new all-time winter peak in 2014. On January 6, the Combined Company peak demand was 7,114 MW, exceeding the previous winter peak of 6,555 MW set in January 2009.

Setting a new annual peak demand typically requires a number of conditions to occur during the middle of certain weeks in July and August: (i) much higher than normal maximum and minimum temperatures for a number of consecutive days over the entire service area; (ii) high humidity; and (iii) no afternoon thunderstorms. If these weather conditions occur over the weekend, during the holiday week of July 4, only for a short period of time, etc., then a record peak load is not likely to occur. Obviously, these conditions do not occur every year.

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Question No. 4

Witness: Charles R. Schram

Q-4. Refer to the response to Item 9.a. of Staff's First Request. Describe what consideration, if any, the Companies have given to using a period other than 20 years to represent average/normal weather patterns.

A-4. The Companies have consistently used a 20-year average since KU and LG&E merged in 1998. Although the Companies have not undertaken a formal evaluation of alternate historical periods, the tables below indicate that the 20-year and 30-year periods have minimal differences in average temperature, heating degree days (HDD), and cooling degree days (CDD). Furthermore, while either a 20-year or 30-year period is sufficiently long to capture a range of weather patterns in the winter and summer periods, the potential effects of developing or accelerating climatic conditions would actually be better captured using the shorter 20-year period.

	20 Year Avg (°F)	30 Year Avg (°F)	Difference (°F)	Percent Difference
Lexington	55.8	55.8	0.0	0.05%
Louisville	57.6	57.3	0.3	0.44%

Lexington

	Avg HDD	Std. Dev HDD	Avg CDD	Std. Dev CDD
20 year	4,572	326	1,214	218
30 year	4,579	328	1,211	207

Louisville

	Avg HDD	Std. Dev HDD	Avg CDD	Std. Dev CDD
20 year	4,194	370	1,486	251
30 year	4,243	373	1,446	246

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Question No. 5

Witness: Charles R. Schram

Q-5. Refer to the response to Item 14 of Staff's First Request. Based on the response describing KU's higher losses percentage as consistent with its more expansive system, compared to LG&E's losses percentage and system, explain what caused the losses percentages for the Companies to diverge from the norm in 2011.

A-5. During the period 2010-2011, the Companies undertook a comprehensive evaluation of the determination of actual line losses. As a result of that evaluation, the Companies revised their allocation of unscheduled deliveries and receipts, as well as their determination of the LG&E and KU individual contributions to total unscheduled energy deliveries and receipts. The modified methodology was implemented in the fourth quarter 2011. Additionally, the Companies have realized that the line loss percentage calculation used in this and previous IRPs inadvertently omitted off-system sales and intercompany sales. If off-system sales, intercompany sales, and the revised determination of unscheduled energy deliveries and receipts were applied to the line loss calculations and percentages, the 2011 results would be consistent with other years.

See the tables below for the revised losses for 2011, reflecting a full year of the revised determination of unscheduled energy deliveries and receipts, and revised determination of loss percentages including off-system sales and intercompany sales in the calculations:

Recalculation of Loss Percentage

KU

	2009	2010	2011	2012	2013
Losses, GWh	1,191	1,507	1,032	1,201	1,311
Total Sales and Uses, GWh	20,899	22,435	23,351	22,027	22,511
Total Sources, GWh	22,090	23,942	24,383	23,227	23,822
Losses-Percent of Sales	5.70%	6.72%	4.42%	5.45%	5.82%
Losses-Percent of Sources	5.39%	6.29%	4.23%	5.17%	5.50%

LG&E

	2009	2010	2011	2012	2013
Losses, GWh	524	542	671	499	525
Total Sales and Uses, GWh	18,089	18,530	17,928	16,650	15,637
Total Sources, GWh	18,612	19,072	18,599	17,149	16,162
Losses-Percent of Sales	2.90%	2.92%	3.74%	3.00%	3.36%
Losses-Percent of Sources	2.82%	2.84%	3.61%	2.91%	3.25%

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Question No. 6

Witness: Charles R. Schram

Q-6. Refer to the response to Item 26 of Staff's First Request.

a. Confirm that the same price elasticity of demand inputs are used in both the LG&E and KU sales forecasts.

b. One perspective on the price elasticity of electricity, particularly for residential customers, is that response to increases in price in the short term is difficult, but that greater response is possible in the long term as decisions are made to upgrade or replace appliances and equipment. Explain why the Companies' model does not distinguish between short-term and long-term price elasticities of demand.

A-6.

a. The same price elasticity of demand inputs are used in both the LG&E and KU sales forecasts.

b. The elasticity input to the residential and small commercial end use models is intended to capture only short-term price effects. The long-term price impacts are captured through the regional EIA end use efficiencies, since higher electric prices encourage the purchase of more efficient appliances and equipment. Refer to the 2014 IRP, Volume II Technical Appendix, pages 24-39, for a detailed description of the SAE model.

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Question No. 7

Witness: Charles R. Schram/John N. Voyles, Jr.

Q-7. Refer to the Companies' *Attachment to Response to Sierra Club Question No. 1.27(d),* the March 2013 Brown 1-2 Baghouse Retrofit Analysis, specifically, the references on pages 4, 5, and 9 of 13, to testing chemical additives to remove mercury from the Brown 1-2 emissions. Provide the status of this testing and the Companies' decision regarding continued operation of the units beyond April 16, 2015, or retirement of the units due to their non-compliance with the Mercury and Air Toxic Standards.

A-7. The purpose of chemical additive testing conducted at E.W. Brown Station was to identify alternatives available for the E.W. Brown Units 1 and 2 to comply with mercury emissions standards and any operational limitations required to maintain compliance.

The completed test results from E.W. Brown Station indicate the ability to attain mercury compliance across a rolling 30 day average on E.W. Brown Units 1 and 2 with some operational limitations during peak summer conditions. The Companies do not plan to retire the units as a result of the Mercury and Air Toxic Standards.