PPL companies

Mr. Jeff DeRouen
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40601

RECEIVED

JUN 13 2011

PUBLIC SERVICE COMMISSION

LG&E and KU Energy LLC
State Regulation and Rates
220 West Main Street
PO Box 32010
Louisville, Kentucky 40232
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Rick E. Lovekamp
Manager Regulatory Affairs
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June 13, 2011

RE: ***The 2011 Joint Integrated Resouce Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*** **– Case No. 2011-00140**

Dear Mr. DeRouen:

Please find enclosed and accept for filing the original and ten (10) copies of the response of Louisville Gas and Electric Company and Kentucky Utilities Company to the Commision Staff's First Information Request dated May 26, 2011, in the above-referenced matter.

Also enclosed are an original and ten (10) copies of a Petition for Confidential Protection regarding certain information contained in response to Question No. 34.

Should you have any questions regarding 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:

THE 2011 JOINT INTEGRATED RESOURCE PLAN	)	
OF LOUISVILLE GAS AND ELECTRIC COMPANY	)	CASE NO.
AND KENTUCKY UTILITIES COMPANY	)	2011-00140

RESPONSE OF
LOUISVILLE GAS AND ELECTRIC COMPANY
AND
KENTUCKY UTILITIES COMPANY
TO THE COMMISSION STAFF'S FIRST INFORMATION REQUEST
DATED MAY 26, 2011

FILED: June 13, 2011

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

Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 13th day of June 2011.

Victoria B Hayes (SEAL)
Notary Public

My Commission Expires:

Sept 22, 2014

VERIFICATION

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

The undersigned, **Michael E. Hornung**, being duly sworn, deposes and says that he is Manager of Energy Efficiency Planning & Development 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.

Michael E. Hornung

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 10th day of June 2011.

Victoria B. Harper (SEAL)
Notary Public

My Commission Expires:

Sept 22, 2014

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

The undersigned, **Edwin R. Staton**, being duly sworn, deposes and says that he is Director - Transmission 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.

Edwin R. Staton

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 10th day of June 2011.

Notary Public (SEAL)

My Commission Expires:

9-29-2014

JANICE JOHNSON NOTARY PUBLIC STATE AT LARGE, STATE OF KENTUCKY

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 1

Witness: Charles R. Schram

Q-1. Refer to Volume 1, page 5-28, Table 5.(3)-9, of the 2011 Joint Integrated Resource Plan ("IRP") of LG&E/KU.

a. Refer to the column headed "2010" and the row titled "Utility Use." Confirm that 2 Gigawatt-hours is the correct amount of Utility Use. If yes, explain the reduction in utility use compared to the prior years.

b. The amounts in the row titled "Energy Requirements" in all columns appear to be in error. Confirm whether the amounts are correct. If they are incorrect, provide a corrected Table 5.(3)-9. Any changes will also be applicable to Table 7.(2)(b).

A-1.

a. Please see the corrected table on the next page. The value for "Utility Use" was incorrect. Correct values for 2009 and 2010 are now in the table below. The methodology in accounting for Company Use was changed for LG&E in 2009 to be consistent with the methodology used by KU.

Table 5.(3)-9
LG&E Recorded and Weather-Normalized Annual Generation & Energy Sales by Class

	2006	2007	2008	2009	2010
SYSTEM BILLED SALES:					
Recorded	12,010	12,669	12,058	11,333	12,277
Weather Normalized	12,132	12,210	12,121	11,562	11,712
SYSTEM USED SALES:					
Recorded	11,965	12,658	12,083	11,405	12,338
Weather Normalized	12,136	12,268	12,038	11,596	11,772
ENERGY REQUIREMENTS:					
Recorded	12,593	13,296	12,690	11,944	12,892
Weather Normalized	12,764	12,906	12,645	12,135	12,326
SALES BY CLASS:					
TOTAL RESIDENTIAL	4,018	4,486	4,206	4,096	4,592
General Service	1,319	1,428	1,392	1,344	1,461
Large Commercial	2,295	2,409	2,331	2,273	2,332
Large Power	3,068	2,992	2,851	2,412	2,603
Public Authorities	1,205	1,282	1,241	1,221	1,296
Lighting	61	60	62	59	54
TOTAL LG&E SALES	11,965	12,658	12,083	11,405	12,338
SYSTEM LOSSES	605	615	581	524	542
Utility Use	23	24	26	15	12
ENERGY REQUIREMENTS	12,593	13,296	12,690	11,944	12,892

b. A corrected table is shown below. The total row was incorrect due to a spreadsheet formula error. In addition to the changes noted above, the System Losses for 2006 and 2007 have been corrected.

Table 7.(2)(b)
LG&E Recorded and Weather-Normalized Annual Generation & Energy Sales by Class

	2006	2007	2008	2009	2010
SYSTEM BILLED SALES:					
Recorded	12,010	12,669	12,058	11,333	12,277
Weather Normalized	12,132	12,210	12,121	11,562	11,712
SYSTEM USED SALES:					
Recorded	11,965	12,658	12,083	11,405	12,338
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ENERGY REQUIREMENTS:					
Recorded	12,593	13,296	12,690	11,944	12,892
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Large Power	3,068	2,992	2,851	2,412	2,603
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Lighting	61	60	62	59	54
TOTAL LG&E SALES	11,965	12,658	12,083	11,405	12,338
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Utility Use	23	24	26	15	12
ENERGY REQUIREMENTS	12,593	13,296	12,690	11,944	12,892

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 2

Witness: Charles R. Schram

Q-2. Refer to Volume 1, page 5-32, Table 5.(3)-11 I, of the IRP. Explain why the "% Growth in Energy Sales" for 2011 is so much greater than in later years.

A-2. It was anticipated that in 2011 sales were still recovering from the prior recession. After 2011, sales growth is expected to continue at a more modest rate.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 3

Witness: Michael Hornung

Q-3. Refer to Volume 1, page 5-36, Table 5.(4), of the IRP. Explain the first note regarding the one program with annual savings that do not accumulate.

A-3. This note refers to the Smart Energy Profile Program. As customer behavioral programs are relatively new to the utility industry, and long-term savings associated with continued customer conservation upon the end of these programs has yet to be fully understood, the Companies have taken a conservative stance by not accumulating the energy and demand savings year over year.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 4

Witness: Michael Hornung

Q-4. Refer to Volume 1, page 5-37, of the IRP. Provide a comparison of each company's actual energy and peak reductions with the projected energy and peak reductions provided in Case No. 2007-00319[1] since the time of the Commission's approval of LG&E/KU's existing Demand-Side Management ("DSM") programs in that case.

A-4. Projected and actual energy and peak reductions by Company are highlighted below.

LG&E Energy Projection (MWh)	2008	2009	2010
Residential Conservation	604	827	939
Residential Low Income	1,063	1,063	1,063
Residential High Efficiency Lighting	30,302	28,090	26,039
Residential HVAC Diagnostics & Tune Up	143	326	408
Residential New Construction	205	396	796
Residential Load Management	2,401	2,401	2,401
Commercial Conservation	27,494	27,494	27,494
Commercial Diagnostics & Tune Up	264	462	659
Commerical Load Management	107	107	107
Total	62,583	61,166	59,906

LG&E Energy Actual (MWh)	2008	2009	2010
Residential Conservation	550	344	526
Residential Low Income	1,545	1,177	1,333
Residential High Efficiency Lighting	83	34,590	39,930
Residential HVAC Diagnostics & Tune Up	-	292	228
Residential New Construction	-	230	1,653
Residential Load Management	710	1,623	-
Commercial Conservation	1,105	971	30,077
Commercial Diagnostics & Tune Up	-	18	4
Commerical Load Management	2	90	-
Total	3,996	39,335	73,752

LG&E Demand Projection (MW)	2008	2009	2010
Residential Conservation	0	0	0
Residential Low Income	0	0	0
Residential High Efficiency Lighting	2	2	2
Residential HVAC Diagnostics & Tune Up	0	0	0
Residential New Construction	0	0	0
Residential Load Management	10	10	10
Commercial Conservation	10	10	10
Commercial Diagnostics & Tune Up	0	0	0
Commerical Load Management	1	1	1
Total	24	24	24

LG&E Demand Actual (MW)	2008	2009	2010
Residential Conservation	0	0	0
Residential Low Income	0	0	0
Residential High Efficiency Lighting	0	3	3
Residential HVAC Diagnostics & Tune Up	-	0	0
Residential New Construction	-	0	1
Residential Load Management	4	8	10
Commercial Conservation	0	0	11
Commercial Diagnostics & Tune Up	-	0	0
Commerical Load Management	0	0	0
Total	5	12	26

[1] Case No. 2007-00319, Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company Demand-Side Management for the Review, Modification, and Continuation of Energy Efficiency Programs and DSM Cost Recovery mechanisms (Ky. PSC Apr. 17, 2008).

KU Energy Projection (MWh)	2008	2009	2010
Residential Conservation	890	1,169	1,308
Residential Low Income	1,233	1,233	1,233
Residential High Efficiency Lighting	30,302	28,090	26,039
Residential HVAC Diagnostics & Tune Up	143	326	408
Residential New Construction	205	396	796
Residential Load Management	2,401	2,401	2,401
Commercial Conservation	27,494	27,494	27,494
Commercial Diagnostics & Tune Up	264	462	659
Commerical Load Management	107	107	107
Total	63,038	61,678	60,445

KU Energy Actual (MWh)	2008	2009	2010
Residential Conservation	510	390	626
Residential Low Income	787	1,240	284
Residential High Efficiency Lighting	647	-	38,374
Residential HVAC Diagnostics & Tune Up	-	184	129
Residential New Construction	-	130	2,360
Residential Load Management	593	1,325	-
Commercial Conservation	770	1,183	1,741
Commercial Diagnostics & Tune Up	-	18	-
Commerical Load Management	4	40	-
Total	3,312	4,510	43,306

KU Demand Projection (MW)	2008	2009	2010
Residential Conservation	0	0	0
Residential Low Income	0	0	0
Residential High Efficiency Lighting	2	2	2
Residential HVAC Diagnostics & Tune Up	0	0	0
Residential New Construction	0	0	0
Residential Load Management	10	10	10
Commercial Conservation	10	10	10
Commercial Diagnostics & Tune Up	0	0	0
Commerical Load Management	1	1	1
Total	24	24	24

KU Demand Actual (MW)	2008	2009	2010
Residential Conservation	0	0	0
Residential Low Income	0	0	0
Residential High Efficiency Lighting	0	-	3
Residential HVAC Diagnostics & Tune Up	-	0	0
Residential New Construction	-	0	1
Residential Load Management	4	6	9
Commercial Conservation	0	0	0
Commercial Diagnostics & Tune Up	-	0	-
Commerical Load Management	0	0	0
Total	4	7	14

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 5

Witness: Michael Hornung

Q-5. Refer to Volume 1, page 5-40, of the IRP. Identify and describe the challenges and obstacles encountered in implementing the DSM programs approved in Case No. 2007-00319 and the lessons learned that will be used in implementing programs proposed in Case No. 2011-00134.[2]

A-5. The challenges and obstacles in implementing the DSM programs approved in Case No. 2007-00319 resulted from: (1) budgets and energy/demand targets which assumed full program deployment within the first 12 months of operation; and (2) procurement/contracting and personnel efforts required to fully implement the programs took longer than anticipated. Implementation activities carried through the first quarter of 2009 when all programs became fully operational.

For Case No. 2011-00134, the Companies have addressed these issues by: (1) better scaling both the energy/demand savings and financial budgets to allow the programs to ramp up over the first two years of the programs with the ability to achieve the goals outlined in the 2011 IRP; and (2) submitting Request for Proposals to seek qualified contractors and consultants for the proposed programming while Case No. 2011-00134 is pending with the Commission. The Companies intend to enter into contracts with the successful bidders that are contingent upon Commission approval of the respective programs and corresponding cost recovery. These initiatives are intended to shorten the implementation time to provide these services to the customers.

The DSM Rider Tariff contains an annual Balancing Adjustment that is used to adjust any over/under spend associated with the annually filed budgets. This mechanism ensures that customers are only contributing for actual measures/services implemented.

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[2] Case No. 2011-00134, Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for Review, Modification, and Continuation of Existing, and Addition of New Demand-Side Management and Energy Efficiency Programs, filed April 14, 2011.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 6

Witness: Charles R. Schram

Q-6. Refer to Volume 1, page 5-41, of the IRP. Provide the current status of the Request For Proposal ("RFP") process described therein and the remaining steps, as well as the time frames, involved in determining the least-cost resources proposed to meet LG&E/KU's next generation need.

A-6. A total of 20 bidders ultimately submitted responses to the Companies' RFP. Several of those offers contained multiple options. Each of the discrete options was evaluated and a five bidder short list was developed in March. Meetings were held with each of the short listed bidders the week of March 28, 2011. After each meeting, the bidder was given the opportunity to submit any clarifications to their offer by April 11, 2011. The Companies completed the RFP analysis in May and anticipate beginning negotiation of an agreement with the selected bidder(s) in June. The Companies expect to file applications for certificates of public convenience and necessity with the Commission later this year.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 7

Witness: Michael Hornung

Q-7. Refer to Volume 1, page 5-45, of the IRP. Describe the term "phased approach" and explain how it will be applied in implementing the DSM programs proposed in Case No. 2011-00134.

A-7. As discussed in response to Question No. 5, the term "phased approach" refers to the scaling of energy/demand saving and financial budgets to account for the implementation efforts. The Companies' have scaled or phased the first two years of the new programming to allow for the optimization of program promotion to customers and allow for any program adjustments for successful program operations.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 8

Witness: Charles R. Schram

Q-8. Refer to Volume 1, page 6-21, of the IRP. Describe the general scope of the home appliance saturation surveys of the LG&E/KU customers, how the surveys were conducted (mail, phone, etc.), number of customers surveyed, and the response rates for each company.

A-8. The overall objective of this type of research is to accurately profile the energy usage characteristics of a representative sample of households within the Companies' service territory. Specifically, this research was designed to address the following informational objectives:

- Determine primary heating fuels and equipment given the strong energy demand of residential space heating;
- Uncover usage of air conditioning and penetration of specific types;
- Reveal the types of energy used to heat water in the home;
- Inventory appliances used in the home, including cooking ranges and clothes dryers, as well as others from freezers to computers;
- Profile housing characteristics such as age, type and size of home for usage modeling of HVAC findings;
- Evaluate usage considerations such as thermostat settings and energy saving behaviors; and
- Review key decision-making drivers in the selection of key equipment purchases, including the role and importance of energy efficiency considerations.

A blended methodology was used to survey customers. This utilized both telephone and web-based surveying. Unlike direct mail efforts where there is limited ability to control for quotas, with these approaches a stratified sample could be developed and obtained and the need for balancing the results with weights for less responsive groups would be unnecessary. By stratifying the sample in terms of energy use quintiles, further assurance of representativeness could be achieved. The table below summarizes the response level obtained in this endeavor.

	KU	LG&E	ODP	Total
Phone	*401* *77%*	*363* *70%*	*419* *78%*	*1,183* *75%*
E-mail	*122* *23%*	*152* *30%*	*117* *22%*	*391* *25%*
Total	*523*	*515*	*538*	*1,574*

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 9

Witness: Michael Hornung

Q-9. Refer to Volume 1, page 6-25, of the IRP. Explain whether changes in rates, for whatever reason, affect participation levels in the Green Energy program.

A-9. The Green Energy program is a voluntary program offered by the Companies. If changes in rates occur, there is the possibility that customer participation levels could fluctuate. While the Companies have not seen a drop in participation following recent rate cases, in order to mitigate this risk, the Companies continue to maintain program promotion efforts as outlined within KPSC Case No. 2009-00467.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 10

Witness: Charles R. Schram

Q-10. Refer to Volume 1, page 6-30, of the IRP. Describe the reserve sharing group formed by LG&E/KU along with the Tennessee Valley Authority and East Kentucky Power Cooperative, Inc.

A-10. The TVA, EKPC and LG&E/KU Contingency Reserve Sharing Group ("CRSG") went into effect on January 1, 2010. The three parties carry generation reserves to meet the sudden loss of generation or a supply source of the group. By NERC definition, the amount of contingency reserves required to be carried at all times by the CRSG is equal to the most severe single contingency ("MSSC") of the group. The MSSC of the group is generation owned by TVA that equals 1,347 MW. The 1,347 MW of contingency reserves is shared by the three parties based on the load ratio share of each party's prior year peak demand. Currently LG&E/KU is carrying 240 MW of the 1,347 MW of contingency reserve obligations of the group. The CRSG arrangement allowed by NERC is beneficial to each party since each party is allowed to carry an amount of contingency reserves that is less than the amount of contingency reserves it would be required to carry if it was not in the CRSG.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 11

Witness: Charles R. Schram

Q-11. Refer to Volume 1, page 6-31, of the IRP. Describe the current status of Dix Dam and identify any inspections or evaluations of the dam that have occurred since the issuance of the ARCADIS report in the fall of 2009.

A-11. The engineering analyses regarding Dix Dam continue to conclude that the dam is safe. Current work is based on the economic value and is not a dam safety issue. Since the issuance of the report by Arcadis in the fall of 2009, the following has taken place with regards to Dix Dam.

A draft Planning Report was developed in 2010 to address the following recommendations listed in the 2009 Potential Failure Mode Analysis Report.

- Control leakage through the face slab and foundation.
- Assess and stabilize potentially unstable rock on the east abutment.

After the plan was developed, the following projects were developed.

- Face Slab Repair: June 2011 with expected completion Dec 2011 (Contract Awarded).
- Foundation Exploratory Drilling: Summer 2010 (Completed) with draft report titled "Left Abutment Foundation Investigation".
- Rock Stabilization-Upstream: Winter 2010 (Completed).
- Rock Stabilization-Downstream: June 2011 with expected completion Sep 2011 (Contract Awarded)
- Update Current Seismic Analysis: June 2011 with expected completion Aug 2011

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 12

Witness: Ed Staton

Q-12. Refer to Volume 1, page 6-32, of the IRP. Provide the current status of the RFP process described therein and the remaining steps, as well as the time frames, involved in obtaining a new Independent Transmission Operator.

A-12. On March 21, 2011, an RFP was sent out to 10 potential providers with responses due back no later than April 24, 2011. During the response period, a scoping call with potential providers was held and evaluation criteria that were previously presented to the stakeholders was reviewed and weighted internally. On April 23, 2011, an RFP extension until May 2, 2011 was granted to the potential providers to accommodate their requests for more response time.

On May 2, 2011, 4 responses were received and are now under review. After receiving the bids, the Companies again solicited feedback, suggestions, and comments from stakeholders during a progress report presentation that was made on May 17, 2011. The Companies plan to provide to the stakeholders an additional progress report and comment period in June and July 2011. The Companies plan to make a final decision and all necessary filings later this summer.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 13

Witness: Charles R. Schram

Q-13. Refer to Volume 1, page 6-33, of the IRP. LG&E/KU's expected monetary contribution to the FutureGen Industrial Alliance has been reduced to approximately 10 percent of the formerly anticipated level of contributions. Explain whether expected contributions of the other members of the consortium have been similarly reduced.

A-13. The expected monetary contribution by all members of the FutureGen Industrial Alliance has been reduced to approximately 10 percent of the formerly anticipated level.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 14

Witness: Charles R. Schram

Q-14. Refer to Volume 1, pages 7-5, 7-6 and 7-29, of the IRP.

a. Provide a copy of the end-use survey questions administered to customers.

b. Provide a further explanation of the Energy Forecaster's Group which is managed by Itron. Specifically, discuss the development of regional end-use saturation and efficiency data, what data is developed, and how LG&E/KU use that data.

A-14.

a. Please see attached survey questionnaire.

b. The Energy Information Administration develops projections of the regional end-use saturation and efficiency data that are inputs into in the LG&E/KU SAE models used for forecasting sales to customers on residential and general service tariff rates. These are driven by assumptions about available technology and costs, energy prices, and economic conditions.

Referring to the documents contained in Volume II or the IRP, the saturation and efficiency projections are direct inputs in the "Index" variables (i.e., Heat Index, Cool Index, and Other Index). Each of these is then multiplied by the appropriate "Use" variable (again Heat Use, Cool Use, and Other Use) to obtain the regressors in the model (XHeat, XCool, and XOther).

Using heating as an example, we can compute:

$$HeatIndex_y = HeatSales_{04} \times \frac{\left(HeatShare_y / Eff_y \right)}{\left(HeatShare_{04} / Eff_{04} \right)}$$

(Note: Share is the same as saturation).

2010 Residential Appliance Survey

Q1. First, how is your home primarily heated?
- o Natural gas furnace
- o Heat pump (electric) with gas furnace backup
- o Heat pump (electric)
- o Heat pump (geothermal)
- o Electric furnace only
- o Baseboard
- o LP/Bottled Gas/Propane
- o Other _____

Q2. Approximately how old is your primary heating system?
- o Less than 3 years old.....
- o 3 to 5 years old
- o 6 to 10 years old
- o 11 to 15 years old
- o Over 15 years old
- o Don't know

Q3. Do you have other heating equipment that is used on a ***regular*** basis?
(Check all that apply)
- ☐ Natural gas furnace
- ☐ Heat pump (electric) with gas furnace backup
- ☐ Heat pump (electric)
- ☐ Heat pump (geothermal)
- ☐ Electric furnace only
- ☐ Baseboard
- ☐ LP/Bottled Gas/Propane
- ☐ Wood stove
- ☒ Electric space heaters
- ☐ Other _____
- ☒ No other heating equipment

Q4. Do you have an air conditioner in your home?
- ☒ Yes
- ☐ No →**SKIP TO Q8**

Q5. What type of air conditioner do you have? **(Check all that apply)**
- ☐ Central air
- ☐ Heat pump
- ☒ Window or wall mounted air conditioner

IF Q5 = Central air
Q6a. How many central air conditioners do you have in your home? _____

IF Q5 = Heat pump
Q6b. How many heat pumps do you have in your home? _____

IF Q5 = Window or wall mounted air conditioner
Q6c. How many window or wall mounted air conditioner units do you have in your home? _____

Q7. Approximately how old is your air conditioner? If you have multiple units, what is the age of the oldest unit?
- o Less than 3 years old
- o 3 to 5 years old
- o 6 to 10 years old
- o 11 to 15 years old
- o Over 15 years old
- o Don't know

Q8. How is water heated in your home?
- o Natural Gas
- o Electricity
- o Solar
- o LP/Bottled Gas/Propane
- o Other _____

Q9. What is the approximate size of your water heater?
- o Less than 30 gallons
- o 30 – 39 gallons
- o 40 – 49 gallons
- o 50 – 59 gallons
- o 60 or more
- o Don't know

Q10. Approximately how old is your water heater?
- o Less than 3 years old
- o 3 to 5 years old
- o 6 to 10 years old
- o 11 to 15 years old
- o Over 15 years old
- o Don't know

Q11. Please indicate how many of the following items you have in your home.

Ceiling fans	___	Pool pumps (summer use)	___
Televisions (tube)	___	Hot tubs	___
Televisions (flat screen)	___	Refrigerators	___
Outdoor lighting, like porch and decorative non-solar yard lights	___	Freezers (separate unit)	___
Space heaters (winter use)	___	Microwaves	___
Dehumidifiers (summer use)	___	Dishwashers	___
Personal computers	___	Clothes washers	___

Q12. [If more than one refrigerator ask: Approximately how old is your 1st refrigerator, 2nd , 3rd, etc. – if only one leave out #] Approximately how old is your refrigerator?

- o Less than 3 years old
- o 3 to 5 years old
- o 6 to 10 years old
- o 11 to 15 years old
- o Over 15 years old
- o Don't know

Q13. What type of range do you cook with?

- o Electric
- o Natural gas
- o LP/Bottled Gas/Propane
- o No Range
- o Other _____

Q14. What type of clothes dryer do you use in your home?

- o Electric
- o Natural gas
- o LP/Bottled Gas/Propane
- o No Dryer
- o Other _____

Q15. Which of the following best describes your home?

- o Single family home.....
- o Apartment/townhouse
- o Condominium
- o Duplex
- o Mobile home

Q16. Approximately how old is your home? _____ years

Q17. What is your estimate of the total living space in your home? (do not force to answer)

- o Under 800 square feet

- o 800 to 1500 square feet
- o 1501 to 2500 square feet.....
- o 2501 to 3500 square feet
- o Over 3500 square feet

Q18. During the past year how many people, including yourself, regularly lived in your home? _____

Q19. Please indicate which of the following you've done in the past to increase energy efficiency. **(Check all that apply)**

- ☐ Adjust thermostat (lower in winter/higher in summer)
- ☐ Install programmable thermostat
- ☐ Install compact fluorescent bulbs How many_____
- ☐ Replace an appliance for the specific purpose of increasing efficiency
- ☐ Turn off computer/lights/TV's when not being utilized
- ☐ Purchase space heaters
- ☐ Add insulation
- ☐ Have a home energy audit
- ☐ Purchased a maintenance or service plan for your heating and cooling system

Q19a. Please indicate which of the following you plan to do in the **next 12 months** to increase energy efficiency. **(Check all that apply)**

- ☐ Adjust thermostat (lower in winter/higher in summer)
- ☐ Install programmable thermostat
- ☐ Install compact fluorescent bulbs How many_____
- ☐ Replace an appliance for the specific purpose of increasing efficiency
- ☐ Turn off computer/lights/TV's when not being utilized
- ☐ Purchase space heaters
- ☐ Add insulation
- ☐ Have a home energy audit
- ☐ Purchased a maintenance or service plan for your heating and cooling system

Q20. When you are home what temperature do you keep your home in the winter? ____degrees

Q21. When you are home what temperature do you keep your home in the summer? ____degrees

Q22.When people purchase major equipment/appliances for their home, certain elements are more important to some people.

For each of the following items, please rate the importance of Energy Efficiency, Price, Appearance and Brand Name on 3-point scale where a 1 means it is very important in your decision making process, 2 means it is somewhat important and 3 means it is unimportant.

When purchasing:	Energy efficiency of item			Price of item			Appearance of item			Brand name of item		
	Very	SW	Not	Very	SW	Not	Very	SW	Not	Very	SW	Not
Heating & cooling equipment	1	2	3	1	2	3	1	2	3	1	2	3
Kitchen appliances (refrigerator and dishwasher)	1	2	3	1	2	3	1	2	3	1	2	3
Laundry appliances (washer and dryer)	1	2	3	1	2	3	1	2	3	1	2	3
Home entertainment equipment (TV, stereo, computer)	1	2	3	1	2	3	1	2	3	1	2	3

How interested would you be in energy efficiency programs for you home if they were offered by your utility? Would you say…

☐ Very Interested
☐ Somewhat Interested
☐ or not interested at all?

Q24. The next time you were in the market to purchase a vehicle, if cars which were all-electric or plug-in hybrid were available, how like would you be to consider one? Would you say…

☐ Very Likely
☐ Somewhat Likely
☐ or not likely at all?

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

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Case No. 2011-00140

Question No. 15

Witness: Charles R. Schram

Q-15. Refer to Volume 1, pages 7-10 and 7-39, of the IRP, which, respectively, are Section 7(4)(d) for KU and LG&E.

a. Explain why the referenced energy sales forecasts do not include the impacts of existing DSM programs as called for in 807 KAR 5:058, Section 7(3).

b. Refer to the last sentence of the Section on page 7-39. Verify that the referenced statement and numbers are correct.

A-15.

a. DSM is considered as a supply side resource in the IRP. However, energy sales forecasts can also be provided on a post-DSM basis.

b. They are correct. Please ignore the reviewing statement that was inadvertently included as part of the final document.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

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Case No. 2011-00140

Question No. 16

Witness: Charles R. Schram

Q-16. Refer to Volume 1, page 7-16, of the IRP. Explain the methodology used to convert energy forecasts from a billed basis to a calendar basis.

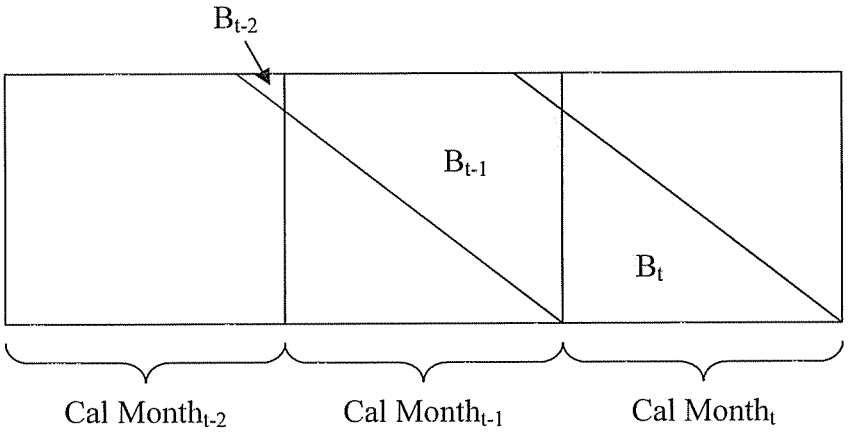
A-16. Billed-to-Calendar Conversion

The billed volumes for most forecast classes do not coincide directly with the boundaries of calendar months. For this reason, most class forecast volumes must be converted from a billed to calendar basis to meet the needs of the Financial Planning department. The forecasts for the following classes do not have to be converted from a billed to calendar basis: LG&E LP-TOD/Special Contract, KU LITOD, Retail Transmission Service, and KU municipals. The customers in these forecast classes are billed on a calendar-month basis.

The shaded area in the figure below represents a typical billing month (B). Area B_t represents the volumes in the billing month that were consumed in the current calendar month (time = t). Area B_{t-1} represents the volumes in the billing month that were consumed in the previous calendar month (time = t-1). Area B_{t-2} represent the volumes in the billing month that were consumed in the calendar month two months prior to the current month (time = t-2)[3]. In this process, ratios of historical monthly calendar sales by revenue class to annual monthly calendar sales by revenue class are developed to allocate forecasted billed sales to calendar sales.

[3] Not all billing months include volumes that were consumed in the calendar month two months prior to the current month.

Billed and Calendar Energy



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Question No. 17

Witness: Charles R. Schram

Q-17. Refer to Volume 1, page 7-18, of the IRP, which indicates that Volunteer Fire Departments ("VFD") are included along with residential service customers in the residential forecast. Explain whether the meters placed at VFD premises are the same as the meters placed at residential premises.

A-17. Yes, the meters installed are generally the same as residential meters; however, some hardware differences could occur due to electric service configuration. The basic service charge and the energy rate are the same as the residential rate.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Question No. 18

Witness: Charles R. Schram

Q-18. Refer to Volume 1, page 7-19, of the IRP. Provide further explanation of how the Time-of-Day-Secondary forecast was derived from the PS-Secondary forecast.

A-18. Based on history, electricity sales on the Time-of-Day Secondary rate were about 7% of the Large Power – Secondary forecast class at the time that the 2011 MTP was produced. As such, the Large Power – Secondary forecast was divided into Power Service – Secondary (93%) and Time-of-Day Secondary based (7%).

LOUISVILLE GAS AND ELECTRIC COMPANY
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Question No. 19

Witness: Charles R. Schram

Q-19. Refer to Volume 1, page 7-20, of the IRP. KU states that, "KU AES sales were modeled as a function of the number of KY residential customers and weather in all months except for May, June, July, August, October and November." Since AES customer usage is not zero in these months, explain how these months are treated in the forecast.

A-19. The only regressor in May, June, July, August, October and November was the number of KY residential customers. KU AES sales were modeled as a function of KY residential customers and weather in all months. In addition a monthly binary variable was included to distinguish between months.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Question No. 20

Witness: Charles R. Schram

Q-20. Refer to Volume 1, page 7-32, Table 7.(2)(f), of the IRP. Explain the reduction in the percent of annual energy loss from 2006 through 2010.

A-20. Losses are using an average over 12 months. Please see the corrected Table 7.(2)(f) below. Please note that these values are based on a formula calculation and not a line loss study. The loss calculation estimates unbilled volumes for calendar months and inadvertent energy flows. As noted in response to Question No. 1, the Annual Energy Loss figures for 2006 and 2007 have been corrected and show a consistent trend over the period of 2006 through 2010.

Table 7.(2)(f)
LG&E Annual Energy Losses (GWh)

	2006	2007	2008	2009	2010
Annual Energy Loss	605	615	581	524	542
Loss Percent of Energy Requirements	4.8%	4.6%	4.6%	4.4%	4.2%

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

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Question No. 21

Witness: Charles R. Schram

Q-21. Refer to Volume, page 7-33, Table 7.(2)(h)-1 of the IRP. Explain the increase in the average annual "Utility Use and Other" class in 2010.

A-21. There was a change in the methodology in how Lighting customers were counted. Please see LG&E Table 7.(2)(a) for details on the change in lighting customers. Usage remained at consistent levels, but the customer count methodology change affects use per customer. The new billing system assigns street lighting in a more effective way to the correct revenue classes.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Question No. 22

Witness: Charles R. Schram

Q-22. Refer to Volume 1, page 8-4 of the IRP, specifically, the discussion of maintenance outages.

a. Explain whether the three-to-four week biennial boiler outages, the one week outages in off-setting years, and the major maintenance outages performed on seven-to-eight year cycles constitute all of the planned maintenance outages for LG&E/KU's base load generating units.

b. Describe, generally, the type of work that is typically performed only during a seven-to-eight year maintenance outage.

A-22.

a. While the outages mentioned constitute all of the regularly planned outages, other outages will be planned as needed to address unit-specific issues such as the expected installation of environmental controls.

b. Generally, the type of work which is typically performed only during a seven-to-eight year maintenance outage is work which either requires an extended period to complete (generally greater than three to four weeks) or work which is only required or recommended at extended intervals. Examples would include major turbine inspection and/or overhaul, intermediate to major boiler inspections and repairs, critical rotating equipment overhauls, complete gas path inspections, comprehensive ancillary system repairs or modifications, and major construction project related items. Some of these items, such as the turbine inspections, are recommend based on hours of operation, operating conditions, age, or other factors which favor an extended outage interval. Other items, such as the major boiler inspections and major construction, are time intensive and as such are coordinated during these extended outage periods and intervals.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Case No. 2011-00140

Question No. 23

Witness: Michael Hornung

Q-23. Refer to Volume 1, page 8-76, Table 8.(3)(e)-4, of the IRP.

a. Provide, by program, for the period 2011-2017, a breakdown of the $9.5 million in development and administrative costs.

b. Provide, by program, for the period 2011-2017, a breakdown of the $17.3 million in residential incentive costs.

c. Provide for LG&E and KU separately, the percentage of planned annual DSM expenditures relative to projected annual electric sales revenue for each of the years 2011-2017.

d. Provide for LG&E and KU separately, the percentage of projected annual energy-efficiency savings relative to projected annual electric sales for each of the years 2011 through 2017.

A-23.

a. The following table outlines the seven year budget associated with the Administrative and Development costs associated with the Companies' DSM programming. The Administration line item represents the labor for 6 full-time employees responsible for the evaluation, measurement, and valuation; procurement; marketing; and program development efforts. The Miscellaneous line item is associated with market research, training, software licenses, and consulting needed to support all of the DSM Programs.

Program Expenses ($M)	2011	2012	2013	2014	2015	2016	2017	Total
Administration	$0.78	$0.94	$0.97	$1.00	$1.04	$1.08	$1.13	$6.94
Implementation	$0.01	$0.02	$0.02	$0.02	$0.02	$0.02	$0.02	$0.13
Incentives	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Miscellaneous	$0.29	$0.34	$0.35	$0.35	$0.36	$0.37	$0.38	$2.43
Total Program Expenses	$1.08	$1.30	$1.34	$1.37	$1.42	$1.47	$1.52	$9.50

b. The following Table outlines the seven year budget associated with the Residential Incentives Program. The Administration expense represents the labor costs of 0.75 full-time equivalent Program Manager and .75 full-time equivalent Customer Service Associate to manage this program. The Incentives expense represents the funds to be paid out to the program participants, with the Miscellaneous expense to be used towards program specific evaluations.

Program Expenses ($M)	2011	2012	2013	2014	2015	2016	2017	Total
Administration	$0.46	$0.51	$0.63	$0.64	$0.64	$0.65	$0.66	$4.19
Implementation	$0.13	$0.15	$0.21	$0.21	$0.21	$0.21	$0.21	$1.32
Incentives	$1.02	$1.24	$1.80	$1.81	$1.81	$1.81	$1.82	$11.31
Miscellaneous	$0.09	$0.05	$0.05	$0.08	$0.05	$0.06	$0.09	$0.48
Total Program Expenses	$1.69	$1.95	$2.69	$2.74	$2.72	$2.73	$2.77	$17.30

c. The table below represents by company, the percentage of planned annual DSM expenditures for each of the years 2011-2017 relative to the 2010 actual annual electric sales revenue.

	2011	2012	2013	2014	2015	2016	2017
LG&E	1.9%	2.1%	2.2%	2.4%	2.0%	2.1%	2.1%
KU	1.3%	1.4%	1.5%	1.6%	1.4%	1.4%	1.5%
Combined Company	1.5%	1.7%	1.8%	2.0%	1.6%	1.7%	1.7%

Source: IRP Table 8.(3)(e)-4 and LG&E / KU Monthly Financial Statements

d. The table below represents by company, the percentage of projected annual energy-efficiency savings relative to projected annual electric sales for each of the years 2011 through 2017.

	2011	2012	2013	2014	2015	2016	2017
LG&E	1.6%	2.2%	2.8%	3.5%	3.8%	4.1%	4.4%
KU	0.9%	1.3%	1.6%	2.0%	2.2%	2.3%	2.5%
Combined Company	1.1%	1.6%	2.0%	2.5%	2.8%	3.0%	3.2%

Source: IRP Tables 5.(3)-11, 5.(3)-6, and 8.(3)(e)(3)

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Case No. 2011-00140

Question No. 24

Witness: Michael Hornung

Q-24. Refer to Volume 1, page 8-76, Section 8.(3)(e)(5), of the IRP. Provide, along with a narrative description, the calculation of the net present-value savings of $864 million expected to be achieved over the lives of the existing/unchanged and enhanced, new, DSM programs.

A-24. The net present value savings were calculated using incremental annual program energy and demand savings, annual average market power prices, LG&E and KU's avoided capacity cost, and program costs. An escalation rate of 2% was applied in some instances and escalated values are indicated via italics. A 7.77% discount rate was applied for net present value calculations and represents a combined Company pre-tax rate.

All information utilized in the calculation is included in the chart below.
"Energy Savings $M" has the following equation: (g) = [(b) x 1,000 x (c)] / 1,000,000.
"Demand Savings $M" has the following equation: (h) = [(d) x 1,000 x (e)] / 1,000,000.
"Net Savings $M" has the following equation: (i) = (g) + (h) – (f).
The 30-year net present value savings is $864 million.

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Energy GWh	Market Price	Demand MW	Capacity Cost $/kW	Program Cost $M	Energy Savings $M	Demand Savings $M	Net Savings $M
2011	182	$38	38	$103.98	$33	$7	$4	($22)
2012	350	$39	91	*$106*	$37	$14	$10	($14)
2013	498	$41	139	*$108*	$39	$20	$15	($3)
2014	694	$42	196	*$110*	$43	$29	$22	$8
2015	787	$43	237	*$113*	$36	$34	$27	$25
2016	880	*$44*	277	*$115*	$37	$39	$32	$34
2017	973	*$45*	318	*$117*	$38	$44	$37	$44
2018	1,071	*$46*	356	*$119*	*$38*	$49	$43	$54
2019	1,167	*$47*	394	*$122*	*$39*	$55	$48	$64
2020	1,263	*$48*	431	*$124*	*$40*	$61	$54	$74
2021	1,359	*$49*	469	*$127*	*$41*	$67	$59	$85
2022	1,455	*$50*	507	*$129*	*$41*	$73	$66	$97
2023	1,551	*$51*	544	*$132*	*$42*	$79	$72	$109
2024	1,647	*$52*	582	*$135*	*$43*	$86	$78	$121
2025	1,743	*$53*	620	*$137*	*$44*	$92	$85	$133
2026	1,839	*$54*	657	*$140*	*$45*	$99	$92	$147
2027	1,839	*$55*	657	*$143*	*$46*	$101	$94	$149
2028	1,839	*$56*	657	*$146*	*$47*	$103	$96	$152
2029	1,839	*$57*	657	*$149*	*$48*	$105	$98	$155
2030	1,839	*$59*	657	*$151*	*$49*	$108	$100	$159
2031	1,839	*$60*	657	*$155*	*$50*	$110	$102	$162
2032	1,839	*$61*	657	*$158*	*$50*	$112	$104	$165
2033	1,839	*$62*	657	*$161*	*$52*	$114	$106	$168
2034	1,839	*$63*	657	*$164*	*$53*	$116	$108	$172
2035	1,839	*$65*	657	*$167*	*$54*	$119	$110	$175
2036	1,839	*$66*	657	*$171*	*$55*	$121	$112	$179
2037	1,839	*$67*	657	*$174*	*$56*	$124	$114	$182
2038	1,839	*$69*	657	*$177*	*$57*	$126	$117	$186
2039	1,839	*$70*	657	*$181*	*$58*	$129	$119	$190
2040	1,839	*$71*	657	*$185*	*$59*	$131	$121	$193
NPV					$514	$731	$647	$864

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

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Case No. 2011-00140

Question No. 25

Witness: Michael Hornung

Q-25. Refer to Volume 1, page 8-87, of the IRP.

a. Describe in detail the nature of the "[a]dditional quantitative screening of the initial 80 DSM/EE programs that were assessed for inclusion in the 2008 IRP."

b. Explain whether any analysis was performed for enhancing demand response opportunities.

A-25.

a. There were a total of 80 DSM/EE programs that were assessed for inclusion into the 2008 IRP. Since the 2008 IRP, the utility industry's focus on DSM initiatives has increased. The Companies began the process of evaluation by researching what other utilities were implementing across the country and in the surrounding service territories. This research accompanying the previous work outlined within the 2008 IRP set as a backdrop for this evaluation. A qualitative analysis was performed taking both the Companies' energy/demand saving objectives and customer base demographics were used to create a short list of opportunities for deeper evaluation. This smaller list then underwent additional research that included vendor based research to better understand the financial and operational feasibility within the Companies' service territory. All of these efforts were cultivated into a final 17 opportunities which were presented to the Companies' DSM Advisory Group. Through feedback from this group and internal quantitative analysis, the programs represented in KPSC Case No. 2011-00134 were chosen.

b. The Companies continue to analyze opportunities to enhance demand response. Demand response programs continue to expand across the utility industry along with smart meter and smart grid. As such, the Companies continue to research demand response holistically with smart grid efforts to monitor emerging and complementary technologies and to minimize stranded costs associated with these efforts.

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Question No. 26

Witness: Michael Hornung

Q-26. Refer to Volume 1, page 8-88, of the IRP.

a. Describe the manner in which ICF International ("ICF") was chosen to review LG&E/KU's proposed portfolio of DSM programs.

b. Provide any written analysis provided to LG&E/KU by ICF concerning the proposed programs and program enhancements.

A-26.

a. ICF was chosen to review the LG&E/KU proposed portfolio of DSM Programs for: (1) an independent third-party perspective that is separate from Navigant Consulting that performs our individual program evaluations; and (2) their prior experience working with LG&E/KU in which they demonstrated their abilities as they were utilized in LG&E/KU's 2007 DSM filing (Case No. 2007-00319). This would allow for comparability for participants within Case No. 2011-00134.

b. The ICF report can be located in KPSC Case No. 2011-00134, Volume I, Exhibit MEH-1.

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Question No. 27

Witness: Charles R. Schram

Q-27. Refer to Volume 1, page 8-98, of the IRP. Provide the 2007 report titled E.ON US Generation Technology Options.

A-27. An electronic version of this report is provided on the enclosed CD in the folder titled Question No. 27.

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Question No. 28

Witness: Charles R. Schram

Q-28. Refer to Volume 1, page 8-107, Table 8.(5)(b)-2, of the IRP. Of the generating units listed, explain whether any are currently out of service pending a decision on the future of the unit. If yes, identify the unit(s) and when a decision on its future is expected.

A-28. Tyrone 3 is currently on the "inactive reserve" with a 7-10 day restart notice needed. The IRP also identifies the unit as on which may be retired as of January 1, 2016.

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Question No. 29

Witness: Michael Hornung

Q-29. Refer to Volume 1, page 8-108, of the IRP.

a. LG&E/KU state that DSMore replaced DSManager to perform benefit/cost calculations for the DSM programs.

(1) Describe the decision process that led to the replacement of DSManager with DSMore and explain whether DSMore is a refinement of DSManager and whether both are products of Integral Analytics.

(2) Explain whether calculations were performed for any of the programs using both DSManager and DSMore. If yes, provide the results of both calculations. Include all workpapers.

b. Explain how environmental costs were factored into the four benefit/cost tests used in assessing the initial and enhanced DSM programs.

A-29.

a.

(1) DSMore provides greater support with an open platform for varying conditions and analysis associated with energy efficiency programming opportunities. The transition to DSMore, an Integral Analytics product, allows for more robust analytics surrounding weather and market conditions and a more transparent platform to understand the underlying calculations associated with the benefit/cost tests. DSManager was developed by Electric Power Software under contract with Electric Power Research Institute ("EPRI").

(2) No, both models were not used to perform calculations for the programs.

b. Environmental costs related to sulfur dioxide and nitrous oxide were reflected in the avoided electricity market cost curves input into DSMore.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Question No. 30

Witness: Charles R. Schram

Q-30. Refer to Volume II, Residential Use-Per-Customer Forecast, pages 3 to 5. Explain how the exponents in the HeatUse variable, CoolUse variable, and the OtherUse variable were obtained.

A-30. Itron provides this data as an input to the residential SAE model. However, we also review studies on Price Elasticity and may adjust the value accordingly.

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Question No. 31

Witness: Charles R. Schram

Q-31. Refer to Volume II, Commercial Use-Per-Customer Forecast, pages 16, 18, and 19. Explain how the exponents in the HeatUse variable, CoolUse variable, and the OtherUse variable were obtained.

A-31. Itron provides this data as input to the commercial SAE model. However, we do review studies on Price Elasticity and may adjust the value accordingly.

LOUISVILLE GAS AND ELECTRIC COMPANY
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Response to the Commission Staff's First Information Request
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Case No. 2011-00140

Question No. 32

Witness: Charles R. Schram

Q-32. According to recent published reports, the Toyota plant KU serves in Scott County has cut back its workforce and production and two industrial customers served by LG&E in Louisville have been affected by explosions at their operating facilities.

a. Describe the impact of these events on LG&E/KU's demand.

b. Explain when each of these three industrial loads is expected to return to its pre-event levels.

A-32.

a. Toyota of Georgetown implemented non-production days in both April and May 2011. As a result, April sales to Toyota were over 6,000 MWh less than expected.

Carbide Industries had an explosion on March 21, 2011. Since the explosion in their furnace, their daily demand has decreased from a 36+ MW load to about a 3 MW load. As a result of this event, Carbide went from being about 2.9% to less than 0.2% of LG&E/KU monthly industrial sales, which translates to lost monthly sales in the range of 18,000 – 22,000 MWh.

Eckert Aluminum had an explosion on May 10, 2011. The Eckert Aluminum load has decreased approximately 500 kW as a result of the explosion damage.

b. Toyota of Georgetown is expected to return to pre-event levels in June 2011.

Carbide Industries is still in the process of evaluating their options to rebuild. LG&E/KU is currently assuming a 50% probability of Carbide rebuilding the furnace. If the decision is made to rebuild, 2nd quarter of 2012 is the expected timeframe for operations to return to pre-event levels.

The incident at Eckert Aluminum is still under investigation and there is no estimated date for return to pre-event levels.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 33

Witness: Charles R. Schram

Q-33. Refer to Volume III of the IRP, the Supply-Side Analysis, pages 28 to 31 and Exhibit 6.

a. Explain how LG&E/KU determined that the technologies to be given further consideration should be only the first, second, and third lowest-cost technologies.

b. Exhibit 6 reflects a number of combined cycle, pulverized coal, and fluidized bed technologies that are not the first, second, or third lowest-cost technology but which have minimal "$/kW-yr" differences at various capacity factors compared to the three lowest-cost technologies at those capacity factors. Explain why it would not enhance the results of the analysis to give further consideration to such fourth, fifth, and sixth lowest-cost technologies.

A-33.

a. The goal of the Supply-Side Analysis is to develop a thorough yet workable list of technology options that have the potential to be chosen as part of a least-cost expansion plan by screening out technologies that would not be economical relative to the other alternatives. The analysis centers on determining the least-cost technology options across a range of capacity factors and under various assumptions for costs and operating characteristics. The Companies choose the three lowest-cost technologies to eliminate options from further consideration that are not reasonably expected to be a least-cost resource at any capacity factor. Although the chosen number of low-cost technologies is subjective, it has been the Companies' longstanding practice to limit the number chosen to three to allow for reasonable data processing turnaround times.

b. While the inclusion of the fourth, fifth, and sixth lowest-cost technologies would create a longer list of options, it is not likely that these higher-cost options would be included in the least-cost expansion plan. The least-cost expansion plan identified the need for assets operating at approximately 20% average capacity factors in the base load scenario. At this capacity factor, the three least-cost technologies from the supply side screening analysis are the 3x1, 2x1, and 1x1 combined cycle combustion turbine units. The third lowest-cost technology (1x1 combined cycle) was not chosen

for any of the load scenarios evaluated. Based on this result, considering the fourth, fifth, and sixth lowest-cost technologies would not enhance the results of the analysis.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 34

Witness: Charles R. Schram

Q-34. Refer to Volume III of the IRP at Exhibit 6 to the Supply-Side Analysis. Provide the coal and gas base fuel costs in dollars per ton and per Mcf, respectively.

A-34. The coal and gas base fuel costs are shown in the format requested in the table below.

	Coal Price ($/ton)	Gas Price ($/MCF)
2010	[redacted]	
2011		
2012		
2013		
2014		
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2016		
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LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 35

Witness: Charles R. Schram

Q-35. Refer to Volume III of the IRP, specifically, the 2011 Reserve Margin Study ("Study"). LG&E/KU have included reserve margin studies prepared in-house in previous IRPs. Explain why the 2011 Study was prepared by an outside firm rather than in-house by the Generation Planning group as was done in prior IRPs.

A-35. Astrape Consulting ("Astrape") developed the Companies' 2011 Reserve Margin Study ("reserve margin study") using Astrape's Strategic Energy and Risk Valuation Model ("SERVM"). Compared to the tools used to develop the Companies' 2008 reserve margin target, SERVM provides the ability to more robustly model the uncertainty in load, unit availability, and import capability from interconnected regions when calculating distributions of reliability energy costs. As a result, SERVM enhances the Companies' ability to evaluate the impact of carrying additional reserve margin capacity on reliability energy costs. The decision to utilize an outside firm for the 2011 reserve margin study was based on Astrape's ability to improve the quality of the study to ensure continued reliability of the system. The Companies worked closely with Astrape in developing this analysis and utilized the Companies' experience from previous reserve margin analyses as a basis for this study.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 36

Witness: Charles R. Schram

Q-36. Refer to Volume III, page 2, of the 2011 Study and Volume I, page 8-118, of the IRP. Footnote 1 on page 2 of the Study indicates that Astrape ("Astrape") Consulting's Strategic Energy and Risk Valuation Model has been used extensively by "[l]arge utilities in the south-eastern U.S." Page 8-118 indicates that Astrape "[h]as conducted similar studies for other utilities in the southeastern United States."

a. Explain how LG&E/KU chose Astrape to conduct the 2011 Study.

b. Provide a list of southeastern U.S. utilities for which Astrape has performed reserve margins studies.

c. Of the utilities for which Astrape has performed reserve margins studies, identify those for which hurricanes are a potential reliability issue.

A-36.

a. The Companies are continually evaluating new tools and methodologies in an effort to improve the quality of its decisions. As part of this process, the Companies evaluated Astrape's SERVM model in 2010. SERVM models the uncertainty in load, unit availability, and import capability from interconnected regions (among other things). In evaluating the tool, each of these models was thoroughly vetted to ensure the modeled distributions were reasonable and consistent with historical results. Once this was established, the methodology underwent thorough internal review before it was ultimately approved for use in the 2011 IRP.

b. Astrape has also performed reserve margin studies for Southern Company and Tennessee Valley Authority.

c. Hurricanes are a reliability concern for some of the territories served by the companies for which Astrape has performed reserve margin studies. However, the risk of hurricanes and other natural disasters has not been considered in Astrape's reserve margin studies.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 37

Witness: Charles R. Schram

Q-37. Refer to Volume III, page 5, of the 2011 Study and Volume I, page 5-35 of the IRP.

a. Page 5-35 of Volume 1 reflects that a target reserve margin of 16 percent was used by LG&E/KU in developing the optimal expansion plan. Page 5 of the Study indicates that total reliability costs are minimized at a 15.5 percent reserve margin. Explain LG&E/KU's use of a 16 percent target reserve margin and describe the significance of the difference between the two percentages on the amount of total reliability costs.

b. In recent IRPs, LG&E/KU used a 14 percent target reserve margin. In the 1999 IRP, LG&E/KU used a 12 percent target reserve margin. Describe, generally, the factors that are primarily responsible for the larger target reserve margin indicated in the 2011 Study.

A-37.

a. In the 2011 Reserve Margin Study, the optimal reserve margin is the reserve margin that minimizes the sum of reliability energy costs and the cost of carrying reserve margin capacity. Since capacity costs are fixed and the distribution of reliability energy costs is volatile, the distribution of reliability energy costs must be converted to a single value to compute this sum. According to Astrape, the fixed value that would enable the Companies to viably accept the risk associated with the potentially volatile reliability energy costs (and, therefore, the value to which the distribution of costs should be converted) ranges between the 85^{th} and 90^{th} percentile on the distribution of reliability energy costs. Figure ES3 in the reserve margin study summarizes total reliability costs assuming reliability energy costs are converted to a fixed value using the 85^{th} percentile of the distribution. The 85^{th} percentile (and the associated 15.5% optimal reserve margin) was chosen for illustrative purposes only. When the distribution of reliability energy costs is converted to a fixed value using the 90^{th} percentile of the distribution, the optimal reserve margin is 17.25% (see Figure ES4 on page 7 of the reserve margin study). Ultimately, after considering the results of various sensitivities, Astrape recommends that the Companies set a long-term target reserve margin between 15% and 17%. Accordingly, the Companies used

the midpoint of this range (16%) in the evaluation and development of the Integrated Resource Plan.

As the reserve margin increases from 15.5% to 16.0%, the cost of carrying reserves increases by $3.2 million. When the distribution of reliability energy costs is converted to a fixed value using the 85th percentile of the distribution, increasing the reserve margin from 15.5% to 16.0% has the effect of decreasing reliability energy costs by $3.1 million. For these reserve margin levels, the difference in total reliability costs at the 85th percent confidence level is small ($0.1 million). When the distribution of reliability energy costs is converted to a fixed value using the 90th percentile of the distribution, the same increase in reserve margin has the effect of decreasing reliability energy costs by $5.8 million. In this case, total reliability costs decrease by $2.7 million as the reserve margin increases by 15.5% to 16.0%.

b. Several factors are responsible for the larger target reserve margin. First, contingency reserve requirements have increased from 91 MW prior to 2007 to 212 MW in 2010 and to 240 MW in 2011. Second, compared to past studies, generation will be concentrated in fewer and larger units. As a result, the significance of a forced outage event on reliability is greater. Finally, the Companies have faced recent operational challenges with a 15% reserve margin (see pages 8-99 to 8-101 of Volume 1). Based on these factors, a higher reserve margin target is reasonable.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 38

Witness: Charles R. Schram

Q-38. Refer to Volume III of the IRP, at pages 9 to 13, of the 2011 Optimal Expansion Plan Analysis.

a. Describe the emission control equipment assumed in the analysis which would be required for the Cane Run, Green River, and Tyrone coal units under the scenario in which they are not retired.

(1) Identify all sources relied upon, and explain how the estimates were determined, to develop the capital costs of the above-described emission control equipment.

(2) Identify all sources relied upon, and explain how the estimates were determined, to develop the operating costs of the above-described emission control equipment.

b. Explain why no sensitivity analysis was performed on the capital and operating costs for the emission control equipment required for the Cane Run, Green River, and Tyrone coal units in the scenario in which they are not retired.

A-38.

a. To comply with the Environmental Protection Agency's National Ambient Air Quality Standard, new NO_x emission controls must be installed at the Cane Run station by 2016, and new SO_2 emission controls must be installed at the Cane Run, Green River, and Tyrone stations by 2017. In addition, to comply with the Environmental Protection Agency's proposed rule for reducing hazardous air pollutants (such as mercury, other metals, acid gases, and organic air toxics, including dioxins) from new and existing coal- and oil-fired electric utility steam generating units ("HAPs Rule"), fabric filter baghouses must be installed on all Cane Run, Green River, and Tyrone coal units. These controls are summarized in greater in Case Nos. 2011-00161 and 2011-00162 in the Direct Testimony of John N. Voyles, Jr. (Copies of testimony provided on CD in the folder titled Question No. 38).

1) The Companies (in conjunction with Black & Veatch, a reputable engineering consulting firm) developed capital and operating cost estimates for the least-cost option for installing emission controls at each unit to comply with EPA regulations. A complete summary of this process is contained in Case Nos. 2011-00161 and 2011-00162 in the Direct Testimony of John N. Voyles, Jr.
2) See Companies' response to 38.a.(1) above.

b. An analysis of the need for emission controls at the Cane Run, Green River, and Tyrone stations is included in Case Nos. 2011-00161 and 2011-00162 in the Direct Testimony of Charles R. Schram (Copies of the testimony provided on the CD in the folder titled Question No. 38). Development of the 2011 ECR filing continued after key assumptions for the 2011 IRP were finalized. The IRP assumed that more exhaustive sensitivity analyses would be conducted as part of the ECR evaluation.

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 39

Witness: Charles R. Schram

Q-39. Refer to Volume III of the IRP, at pages 13 to 16, of the 2011 Optimal Expansion Plan Analysis. Provide a table showing, in comparative form, the Present Value Revenue Requirements of the four expansion plans evaluated.

A-39. The present value revenue requirements for the four expansion plans evaluated are shown in the table below.

2010 PVRR ($ billions)		**Load Sensitivities**		**Environmental Regulations Sensitivity**
	Base **"A"**	Low **"B"**	High **"C"**	No Unit Retirements **"D"**
30 Yr PVRR	23.1	21.5	24.9	20.5

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE 2011 JOINT INTEGRATED RESOURCE PLAN OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY	))))	**CASE NO. 2011-00140**

PETITION FOR CONFIDENTIAL PROTECTION

Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively "Companies") hereby petition the Kentucky Public Service Commission ("Commission") pursuant to 807 KAR 5:001, Section 7, and KRS 61.878(1)(c) to grant confidential protection for the items described herein, which the Companies seek to provide in response to the First Information Request of Commission Staff to No. 34. In support of this Petition, the Companies state as follows:

1. Under the Kentucky Open Records Act, the Commission is entitled to withhold from public disclosure commercially sensitive to the extent that open disclosure would permit an unfair commercial advantage to competitors of the entity disclosing the information to the Commission. See KRS 61.878(1)(c). Public disclosure of the information identified herein would, in fact, prompt such a result for the reasons set forth below.

2. The confidential information contained in the cited response includes the Companies' coal and gas base fuel costs. If the Commission grants public access to this information, LG&E and KU could be disadvantaged in negotiating fuel contracts in the future, and could also be disadvantaged in the wholesale energy market because fuel costs are important components of energy pricing. All such commercial harms would ultimately harm LG&E's and

KU's customers, who would have to pay higher rates if the disclosed information resulted in higher fuel prices or adversely impacted the Companies' off-system energy sales.

3. The information for which the Companies are seeking confidential treatment is not known outside of LG&E and KU, and is not disseminated within LG&E and KU except to those employees with a legitimate business need to know and act upon the information, and is generally recognized as confidential and proprietary information in the energy industry.

4. The Companies do not object to limited disclosure of the confidential information described herein, pursuant to an acceptable protective agreement, to intervenors with legitimate interests in reviewing the same for the purpose of participating in this case.

5. The Commission has given confidential treatment to projected fuel cost information in previous IRP cases. For example, see the Commission's letter to the Companies dated May 1, 2008, concerning the Companies' 2008 IRP case (Case No. 2008-00148); the Commission's letter to the Companies dated April 28, 2005, concerning the Companies' 2005 IRP case (Case No. 2005-00162); the Commission's letter to the Companies dated October 24, 2002, concerning the Companies' 2002 IRP case (Case No. 2002-00367); and the Commission's letter to the Companies dated March 6, 2000, concerning the Companies' 1999 IRP case (Case No. 99-430).

6. If the Commission disagrees with this request for confidential protection, it must hold an evidentiary hearing (a) to protect the Companies' due process rights and (b) to supply the Commission with a complete record to enable it to reach a decision with regard to this matter. Utility Regulatory Commission v. Kentucky Water Service Company, Inc., Ky. App., 642 S.W.2d 591, 592-94 (1982).

7. In accordance with the provisions of 807 KAR 5:001, Section 7, LG&E and KU are filing with the Commission one copy of the Confidential Information highlighted and ten (10) copies without the Confidential Information.

WHEREFORE, Louisville Gas and Electric Company and Kentucky Utilities Company respectfully requests that the Commission grant confidential protection to the information designated as confidential.

Dated: June 13, 2011

Respectfully submitted,

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Counsel for Louisville Gas and Electric Company and Kentucky Utilities Company

CERTIFICATE OF SERVICE

I hereby certify that a true copy of the foregoing Petition for Confidential Protection was served via U.S. mail, first-class, postage prepaid, this 13th day of June 2011, upon the following persons:

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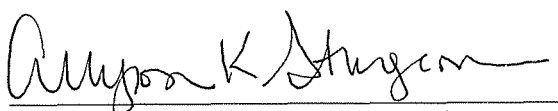

Counsel for Louisville Gas and Electric Company and Kentucky Utilities Company

LOUISVILLE GAS AND ELECTRIC COMPANY
KENTUCKY UTILITIES COMPANY

Response to the Commission Staff's First Information Request
Dated May 26, 2011

Case No. 2011-00140

Question No. 34

Witness: Charles R. Schram

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