

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

**In the Matter of:**

<b>ELECTRONIC JOINT APPLICATION OF</b>	)	
<b>LOUISVILLE GAS AND ELECTRIC</b>	)	
<b>COMPANY AND KENTUCKY UTILITIES</b>	)	
<b>COMPANY FOR REVIEW, MODIFICATION,</b>	)	
<b>AND CONTINUATION OF CERTAIN</b>	)	<b>CASE NO. 2017-00441</b>
<b>EXISTING DEMAND-SIDE MANAGEMENT</b>	)	
<b>AND ENERGY EFFICIENCY PROGRAMS</b>	)	

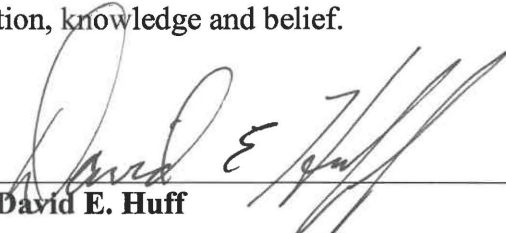
**RESPONSE OF**  
**LOUISVILLE GAS AND ELECTRIC COMPANY**  
**TO METROPOLITAN HOUSING COALITION FIRST SET OF DATA**  
**REQUESTS**  
**DATED JANUARY 24, 2018**

**FILED: FEBRUARY 7, 2018**


**VERIFICATION**

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

The undersigned, **David E. Huff**, being duly sworn, deposes and says that he is Director of Customer Energy Efficiency & Emerging Technologies 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 that the answers contained therein are true and correct to the best of his information, knowledge and belief.

  
\_\_\_\_\_  
**David E. Huff**

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 5<sup>th</sup> day of February 2018.

  
\_\_\_\_\_  
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, **Gregory S. Lawson**, being duly sworn, deposes and says that he is Manager Energy Efficiency Planning and Development for Louisville Gas and Electric Company and Kentucky Utilities Company, an employee of 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 that the answers contained therein are true and correct to the best of his information, knowledge and belief.

  
\_\_\_\_\_  
**Gregory S. Lawson**

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 10th day of February 2018.


  
\_\_\_\_\_  
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, **Rick E. Lovekamp**, being duly sworn, deposes and says that he is Manager – Regulatory Strategy/Policy for Louisville Gas and Electric Company and Kentucky Utilities Company, an employee of 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.

  
Rick E. Lovekamp

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 6<sup>th</sup> day of February 2018.

  
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**

**Response to Metropolitan Housing Coalition First Set of Data Requests**  
**Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 1**

**Witness: David E. Huff / Gregory S. Lawson**

- Q-1. With respect to LG&E's assessment of the cost and benefit of the current DSM programs, and the decision to curtail, continue, or eliminate individual DSM programs for residential customers,
- a. What is LG&E's definition of "cost-effective"?
  - b. Which model or models were used by LG&E to assess the cost effectiveness of its DSM programs, and why was that model or models chosen?
  - c. Did LG&E use the Societal Cost Test?
  - d. Has LG&E reviewed the recommendations within the report, "Energy Efficiency Cost-Effectiveness Screening," published by the Regulatory Assistance Program in November 2012? If so, has LG&E followed its recommendations?
  - e. Has LG&E reviewed the recommendations within the report, "National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources," published by the National Efficiency Screening Project in May, 2017? If so, has LG&E responded to those recommendations in conducting its cost-effectiveness assessments for this filing?
  - f. Please identify any other models that were used by LG&E in computing cost effectiveness of DSM programs, and compare the results of the computations under those models to the results presented in the filing.
  - g. Was the model used to determine cost-benefit for various DSM measures the California Standard Practice Model?
  - h. Was this the California Standard Practice Model referred to in the 1997 Public Service Commission case, 1997-00083?
  - i. What version of the California Standard Practice Model was utilized, and when was the model last updated?

- j. Please explain the basis for choosing to use the California Standard Practice Model in assessing costs and benefits of various DSM measures.
  - k. Please identify any other models that have been used by LG&E in the past, or in preparation of this filing, to assess the costs and benefits of various DSM measures, and identify any such models and the results of those assessments.
  - l. Did LG&E use the Avoided Cost Model of 2017 used by the California Public Utilities Commission?
  - m. Did LG&E use the Demand Response currently in use in California, which includes “avoiding the consumption of fossil fuels which can damage the environment”?
  - n. Did LG&E use all the expanded externalities of the 2001 update of the California Standard Practice Model in the area of Total Resource Cost Test?
  - o. Did LG&E use a “Societal Test as described in the updated California Standard Practice Manual. If not, explain why not.
  - p. If so, what is the difference from the Total Resource Cost Test
  - q. Did LG&E include a definition of self-generation as a type of “demand-side activity” as stated in the 2001 California Standard Practice Model. If so, what is the definition.
  - r. Please explain the factors that have caused LG&E to recommend changes in the current DSM programs from those approved in the last DSM filing.
- A-1.
- a. “Cost-effective” means the value of a program’s rate or service benefits exceeds the net present value of its costs. The value obtained need not be a financial value or return, but it should relate to utility rates or service. For example, for a pilot program or offering such as the AMS Customer Service Offering, where the primary value sought is information and experience regarding possible service-related offerings or deployments, a cost-effective program is one reasonably calculated to provide the information or experience sought at the lowest reasonable cost.
  - b. As stated on page 20 of Exhibit GSL-1 to the Testimony of Gregory S. Lawson, the Companies used PortfolioPro, a PC-based software package developed by Cadmus. Portfolio Pro offers greater flexibility than DSMore (used in previous DSM/EE program filings), allowing users to integrate individual measures into programs and combine programs into portfolios to calculate cost effectiveness.
  - c. No.

- d. Yes, the Companies reviewed the report and the recommendations. The Companies did not follow recommendations that were inconsistent with prior KPSC guidance on cost-effectiveness testing.
- e. See response to part (d.) above.
- f. No other models were used.
- g. PortfolioPro was the model used, which computes cost-effectiveness scores in accordance with the California Standard Practice Manual.
- h. Yes.
- i. The California Standard Practice Manual dated October 2001 was used to evaluate cost-effectiveness of the DSM-EE programs as described in the Testimony of Gregory S. Lawson, page 15, line 1 through page 17.
- j. The Commission requires the use of the Ratepayer Impact Measurement (“RIM”), Total Resource Cost (“TRC”), Participant, and Utility Cost Tests prescribed in the California Standard Practice Manual: “Any new DSM program or change to an existing DSM program shall be supported by ... [t]he results of the four traditional DSM cost/benefit tests.”<sup>1</sup> The California Standard Practice Manual is the most widely recognized and utilized guidance on cost effectiveness testing across the industry.
- k. DSManager and DSMore were used in previous DSM-EE filings, both of which are based on the California Standard Practice Manual.
- l. No.
- m. See response to part i.
- n. No externalities were included in the cost / benefit analysis.
- o. No. Please see the response to j. above. In addition, the Societal Cost Test includes externalities as benefits. These “non-energy” benefits do not affect utility rates or service, and the Commission has previously declined to take such benefits into account.<sup>2</sup> The Companies have previously stated they do not believe that current law

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<sup>1</sup> *In the Matter of the Joint Application of the Members of the Louisville Gas and Electric Company Demand-Side Management Collaborative for the Review, Modification, and Continuation of the Collaborative, DSM Programs, and Cost Recovery Mechanism*, Case No. 1997-00083, Order at 20 (April 27, 1998).

<sup>2</sup> *In the Matter of: Joint Application of Louisville Gas and Electric Company for Review, Modification, and Continuation of Existing, and Addition of New, Demand-Side Management and Energy-Efficiency Programs*, Case No. 2014-00003, Order at 26 (Nov. 14, 2014) (“The Commission disagrees with including the cost of non-energy factors and benefits, since these are not yet fully known.”).

permits the Commission to account for such externalities when evaluating DSM-EE programs.<sup>3</sup>

- p. Not applicable.
- q. No.
- r. Please see the Testimony of Gregory S. Lawson (including all exhibits) and the Testimony of David E. Huff at pages 6-24.

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<sup>3</sup> See Case No. 2014-00003, Rebuttal Testimony of Robert M. Conroy at 2-3 (June 16, 2014) (“By definition, non-energy benefits do not affect utility rates or service; if they did, they would be energy-related benefits, and the Companies would have accounted for them. But because they do not affect the Companies’ rates or service, the Commission may not account for them or require the Companies to do so. ... Whether to include externalities in the cost benefit analysis is a question for the Kentucky General Assembly.”).



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 2**

**Witness: Gregory S. Lawson**

- Q-2. In the Mr. Lawson testimony, it is stated that the Residential Refrigerator Removal Program is no longer cost-effective because of the declining age of the refrigerators.
- a. For the years 2014, 2015, 2016, and 2017, please identify the number of refrigerators using Freon, that were collected each year.
  - b. If known, please identify the volume of Freon that was drained and disposed of for each year.
  - c. If known, please describe the disposition of the collected Freon.
  - d. Please describe the consideration, if any, to the societal benefit of collecting and disposing, rather than venting to the atmosphere, that Freon.
  - e. Did LG&E receive payment for the Freon recovered from the old refrigerators, and for the scrap value of the refrigerators? If so, how much?

A-2.

a. and b. See below:

Question	Per EPA RAD Submitted Reporting File	Calendar Year			
		2014	2015	2016	2017
Q 1-2 part a	Number of Refrigerators / Freezers Recycled	10,557	10,355	12,500	11,367
Q 1-2 part b	Volume of Refrigerant Destroyed / Reclaimed (lb)	1,954.8	1,834.5	2,211.9	1,992.8

- c. The Companies' vendor for this program, ARCA, collects and then destroys or reclaims the refrigerants from the refrigerators and freezers it recycles.
- d. Please see the responses to Question Nos. 1-1(n) and (o).
- e. No.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 3**

**Witness: Gregory S. Lawson / Rick E. Lovekamp**

- Q-3. With respect to the Customer Education and Public Information Program, the Lawson testimony was that the program will cease as a DSM measure but will be supported by LG&E. Will the costs associated with the program be recovered by ratepayers in a future rate case, or will shareholders assume responsibility for the costs?
- A-3. See response to PSC Question No. 1-3.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 4**

**Witness: Gregory S. Lawson**

- Q-4. In determining the cost effectiveness of energy efficiency measures, did LG&E consider the The National Standard Practice Manual for Assessing Cost Effectiveness of Energy Efficient Resources, published by the National Efficiency Screening Project? If not, why not.
- A-4. As stated in the response to Question No. 1-1(e), the Companies were aware of the National Standard Practice Manual.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 5**

**Witness: Gregory S. Lawson**

- Q-5. The cost of retail power in Kentucky has grown approximately 6% annually for the last several years. Did LG&E incorporate those cost increases and trend in its assessment of DSM programs?
- A-5. No. The Companies used annual escalation rates of 3.0% for labor costs and 2.0% for non-labor costs in conducting its DSM-EE cost-benefit analyses.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 6**

**Witness: Gregory S. Lawson**

- Q-6. In determining the costs and benefits of DSM and of energy-efficiency measures, did LG&E consider the benefit that such measures have in reducing greenhouse gas emissions? If not, why not, and if so, what value was assigned to the avoidance of emissions of greenhouse gases?
- A-6. The Companies exclude GHG emission costs as a benefit in the cost-effectiveness testing because there are presently no such costs to avoid, as there is no legally binding value or price currently assigned to carbon emissions in Kentucky, and the Companies do not anticipate there will be one through 2025.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 7**

**Witness: Gregory S. Lawson**

- Q-7. In determining the costs and benefits of DSM and of energy-efficiency measures, did LG&E consider the benefit that such measures have in reducing morbidity and mortality associated with public exposure to particulate emissions? If not, why not, and if so, what value was assigned to the avoidance of emissions and to resulting reductions in pulmonary and respiratory morbidity and mortality?
- A-7. No. Please see responses to Question Nos. 1-1(n) and (o).

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 8**

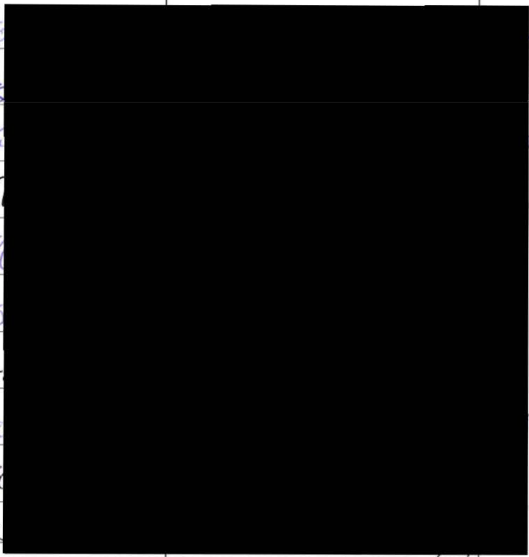
**Witness: David E. Huff**

- Q-8. Please provide all documents, including cost-benefit studies, provided to the members of the LG&E DSM Advisory Group since the last DSM filing by LG&E.
- A-8. All documents provided to the DSM Advisory Group in 2016 and 2017 are included in Exhibit GSL-1, Appendix A, GSL-2, and GSL-3. There were three DSM Advisory meetings held in 2015 on February 11, May 22, and September 29. The documents provided to the DSM Advisory Group for each of these meetings is attached. In addition, LG&E and KU discussed the 2016 Industrial Potential Study with the DSM Advisory Group and that study was filed with the Commission in Case No. 2014-00003 on May 26, 2016. To facilitate communications, the DSM Advisory Group minutes, presentations, and handouts beginning with documents from the June 23, 2016 meeting are publicly available on [www.lge-ku.com/dsm](http://www.lge-ku.com/dsm).



**Energy Efficiency Advisory Group Meeting**  
**Wednesday, February 11<sup>th</sup>, 2015**  
**Fairfield Inn - 1220 Kentucky Mills Drive Louisville, KY 40299**  
**2:30 pm – 4:00pm**

Name	Organization	Phone	E-Mail
Tim Melton	LGE-KU	502	
Larry Cook	OAG	502	
Nat Adams	NAS / KIUUC	502	
Kurt Boehm	KIUC	502	
Lora Knight	HBAK	800	
LISA KEELS	LGE KU	502	
Gabe Guess	KY DEDI	502	
Cathy Hinkle	MHC	502	
Bill Lunsford	KY DEDI	502	
Lisa Cullen	DEDI	502	
Lisa Kilkelly	Legal Aid	502	
Karen Peager	KY NEED	800	
Mike Mulheim	JEPS	502	
Emily Chandler	Louisville Sustainability Council	502	
Brent Fryrear	Partnership for a Green City	502	
Pamela Drumm	Jefferson Community & Technical College	502	
Talina Mathews	KY DEDI	502	



502

502

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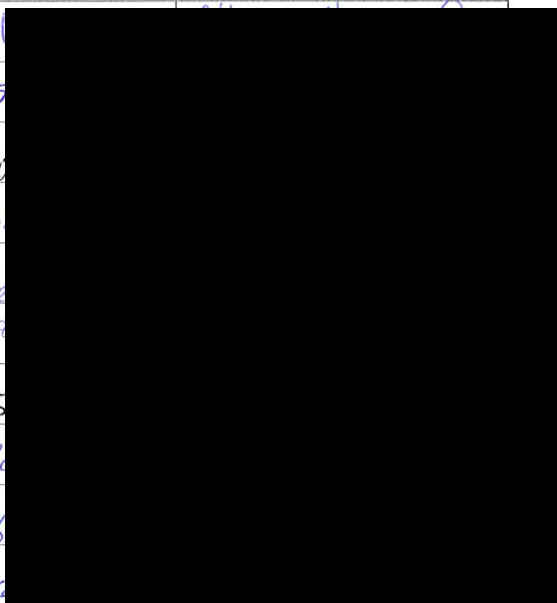
502





**Energy Efficiency Advisory Group Meeting**  
**Wednesday, February 11<sup>th</sup>, 2015**  
**Fairfield Inn - 1220 Kentucky Mills Drive Louisville, KY 40299**  
**2:30 pm – 4:00pm**

Name	Organization	Phone	E-Mail
Allyson Sturgeon	LGE/KU		
Duncan Crosby	SKO for LGE-KU		
Kevin Craft	LGE/KU		
Cheryl Bruner	LGE/KU		
Beck Lovekamp	LGE/KU		
Meg Phillips	CAC for Lex-Fayette		
Michelle King	APCS		
Allan Dittmer	UofL		
Alex Petre	LGE/KU		
Michael Hornung	LGE/KU		



LGE  
 KU



PPL companies

# DSM Advisory Group Industrial Market Potential

February 11, 2015



# Agenda

- KPSC Order to perform Industrial Market Potential Study
- LG&E and KU Joint Application
- Study Scope of Work / Customer Involvement

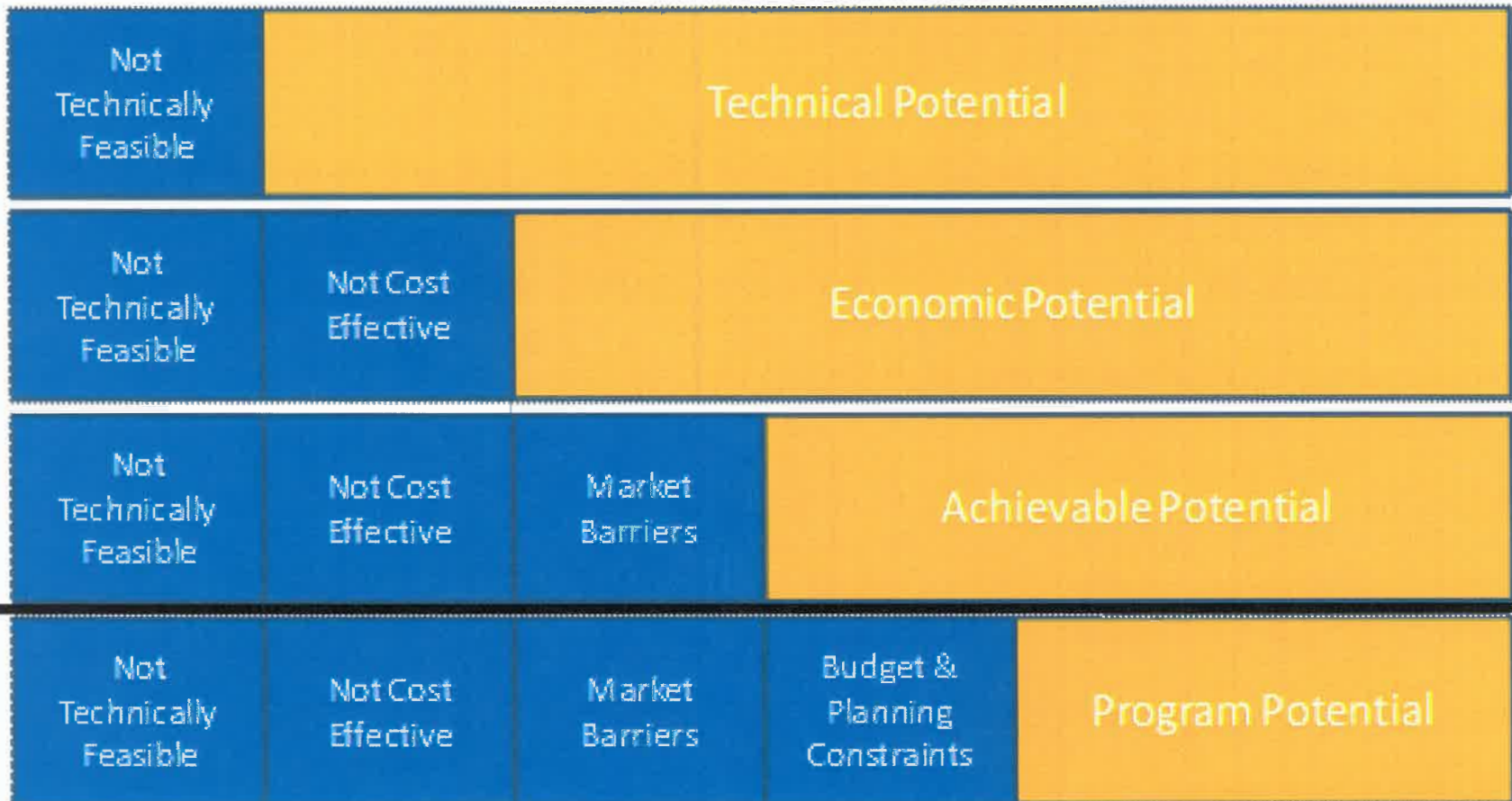
## Kentucky KRS 278.285 (3)

- "The commission shall assign the cost of demand-side management programs only to the class or classes of customers which benefit from the programs.
- The commission shall allow individual industrial customers with energy intensive processes to implement cost-effective energy efficiency measures in lieu of measures approved as part of the utility's demand-side management programs if the alternative measures by these customer are not subsidized by other customer classes.
- Such individual industrial customers shall not be assigned the cost of demand-side management programs."

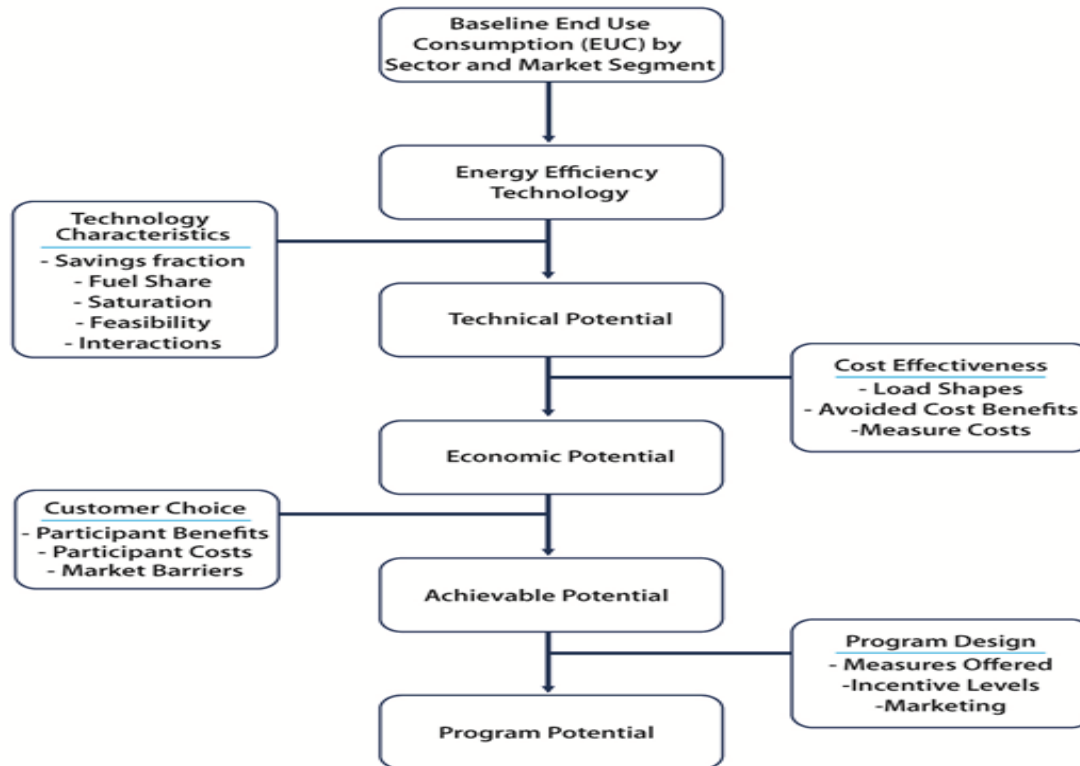
Page 3



# Potential Study – Scope/Methodology



# Methodology for Estimating Potential



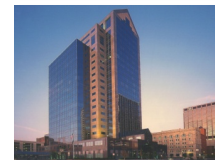
# Customer Involvement

- Industrial Customer Survey
  - 120 phone surveys
  - Stratified sample by utility and customer size (in usage) to limit result bias towards small customers
- Industrial Customer Focus Groups
  - Consultant moderated in-person or online focus groups with facility managers from up to 10 largest industrial customers
  - Recognized short-coming of survey work, this will allow for deeper understanding of customer investment in energy efficiency and decisions surrounding opt in/out associated with potential utility based programs



PPL companies

Thank you.

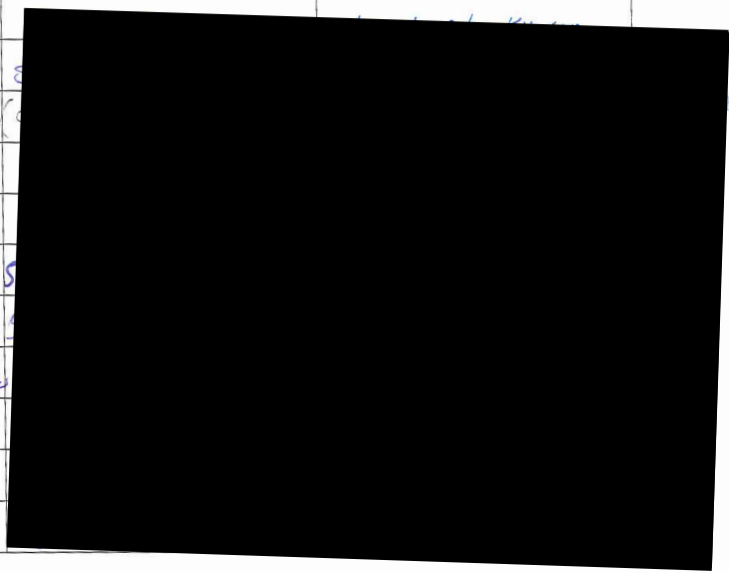






**Energy Efficiency DSM Advisory Group Meeting – Sign in Sheet**  
 Friday, May 22, 2015  
 Kentucky Utilities Shelbyville Office  
 10:00am – 11:30am

Name	Organization	Phone	E-Mail
Alex Petre	LGE/KU		
Cheryl Bruner	LGE/KU		
Bill Lunsford	KY DEDI		
GREG GROSS	" "		
Lee Altun	" "		
Mike Kurtz	KIUC		
Kurt Behm	KIUC		
NAT ADAMS	North American Stainless		
Mark Rucker	Toyota		
David Huff	LGE/KU		
ALAN MCGINNIS	LGE/KU		





Energy Efficiency DSM Advisory Group Meeting – Sign in Sheet  
Friday, May 22, 2015  
Kentucky Utilities Shelbyville Office  
10:00am – 11:30am

Name	Organization	Phone	E-Mail
John Hayden	LGE/KU		
Allyson Sturgeon	"		
Travis Walker	Cadmus		
flossiein Haari	"		
Mike Hornung	LGE/KU		



PPL companies

# DSM Industrial Advisory Group Industrial Market Potential

May 22, 2015



# Kentucky PSC Orders

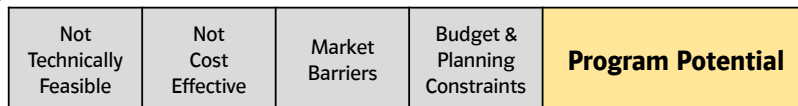
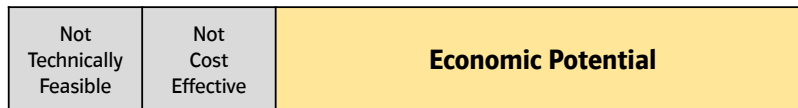
- **DSM Case 2014-00003:**

- *Within three months of the issuance of this Order, the Companies shall commission an industrial potential or market-characterization study.*
- *The Companies shall file with the Commission the industrial potential or market-characterization study within 30 days of the date it is completed and finalized.*

- **Rate Case Settlement Agreement 2014-00371:**

- Commence work on the study immediately.
- *The study will be completed by May 1, 2016 with results filed with the Commission within 30 days of this date.*

# Types of EE Potential



Is NPV of holistic benefit/savings (energy, capacity, secondary fuel) greater than full life-cycle costs?

Which market barriers can be overcome by incentives and effective marketing, while remaining cost-effective?

Study will not address Program Potential



## Need for Primary Research

- The industrial potential studies typically utilize national data sources:
  - *Industrial Assessment Center database*
  - *US Energy Information Agency's Manufacturing Energy Consumption Survey.*
- Primary research used for:
  - *Industrial Standard Practices: Focus group and survey efforts to identify which energy efficiency measures are standard practice and discussions of barriers for adoption of remaining.*
  - *Energy efficiency measures, cost, and applicability: As these estimates vary from one industry to another, customer feedback will better align study to the unique environment within Kentucky.*

# Customer Involvement

- **Industrial Customer Survey**
  - 120 phone surveys
  - Stratified sample by utility and customer size (in usage) to limit result bias towards small customers
- **Industrial Customer Focus Groups**
  - Consultant moderated in-person or online focus groups with facility managers from up to 40 largest industrial customers
  - Recognized short-coming of survey work, this will allow for deeper understanding of customer investment in energy efficiency and decisions surrounding opt in/out associated with potential utility-based programs

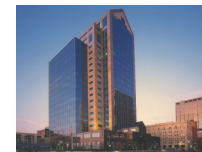
## Next Steps

- Complete Industrial Potential Study
- Understand where/how much potential exists
- Further engagement of Advisory Group
  - *Discuss identified barriers Utility based programs*
  - *Discuss KRS industrial opt-out*
    - Future process and methodology
  - *Discuss potential programmatic opportunities*





**Thank you.**





**Energy Efficiency DSM Advisory Group Meeting – Sign in Sheet**  
**Tuesday, September 29, 2015**  
**Fairfield Inn & Suites**  
**2:00p – 4:00p**

Name	Organization	Phone	E-Mail
Allan Dittmer	UofT / Green City Partnership	[REDACTED]	
Michelle King	APCD		
Pamela Drumm	Jefferson Community & Tech College / PGC Partnership for a Green City		
Brent Myrear	Legal Aid Society		
Lisa Kil Kelly	LGE		
LISA KEES	KY DEDI		
JOHN DAVIES	4		
Bill Lunsford	LGE/KU		
Sam Veeman	LGE / KU		
Tim Melton	JCS		
MIKE MULHEARN			



**Energy Efficiency DSM Advisory Group Meeting – Sign in Sheet**  
**Tuesday, September 29, 2015**  
**Fairfield Inn & Suites**  
**2:00p – 4:00p**

Name	Organization	Phone	E-Mail
MICHAEL HORNUNG	LGE and KU		
Jonathan Whitehouse	LGE and KU		
Jeff Myers	LGE & KU		
RON WILHITE	KSBA		
Allan McMillan	Sierra Club		
Nicholas Johnson	Sierra Club & Ky SES		
Cheryl Bruner	LGE and KU		
Jon Nipple	KSBA		
Allison Sturgeon	LGE and KU		
Kurt Boehm	KIUC		
Gregory Dutton	OAG		



Energy Efficiency DSM Advisory Group Meeting – Sign in Sheet  
Tuesday, September 29, 2015  
Fairfield Inn & Suites  
2:00p – 4:00p

Name	Organization	Phone	E-Mail
Rick Lovkamp	LGE and KU	[REDACTED]	[REDACTED]
David Huff	LGE and KU	[REDACTED]	[REDACTED]
Alex Petre	LGE & KU	[REDACTED]	[REDACTED]

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 9**

**Witness: David E. Huff**

- Q-9. Were the requested changes in the DSM and EE programs in this filing vetted by the DSM Advisory Group, and were the changes supported by the individual members of the group, and by the group as a whole?
- A-9. The Companies presented to, and discussed with, the DSM-EE Advisory Group the changes the Companies have proposed in this proceeding; see the response to Question No. 8. The Companies inferred from the group's discussions that there was not unanimous support for all of the Companies' proposals. Please see also the Companies' response to the Attorney General's Initial Data Request No. 6(d).

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 10**

**Witness: Gregory S. Lawson**

Q-10. Regarding the LG&E conclusion that its customers had adopted energy efficient measures sufficiently so as to render most of its DSM programs unnecessary, please provide all available data quantifying the percentage of LG&E residential and commercial customers have utilized:

- a. Energy Star-rated CFL or LED light bulbs
- b. Energy Star-rated refrigerators
- c. Energy Star-rated dishwashers
- d. Energy Star-rated washing machines
- e. Energy Star-rated clothes dryers
- f. Energy Star-rated furnaces
- g. Energy Star-rated air conditioners
- h. Energy Star-rated water heaters
- i. Power strips for entertainment and other “instant on” electronics?
- j. Attic insulation
- k. Rim-joist insulation
- l. Wall insulation

A-10.

a. The following table shows the saturation of CFL and LED bulbs from the Companies’ Appliance Saturation Survey:

In past 12 months...	2007	2010	2013	2014	2016	2017
Install CFL?	34%	72%	60%	56%	40%	34%
Average # installed	7	11	9	9	8	8
Install LED?	n/a	n/a	35%	37%	51%	61%
Average # installed			7	7	9	10

See the table below showing data for the number of rebates in the Residential Incentives Program and installations through the Home Energy Analysis Program (incentive portion only).

Question #10 Items - LGE	2012	2013	2014	2015	2016	2017	Total	Source
b. Energy Star-rated refrigerators	2,761	7,876	7,554	5,085	5,679	4,996	33,951	Residential Incentives Program (Rebates)
c. Energy Star-rated dishwashers	1,579	4,764	5,082	4,395	5,122	4,867	25,809	Residential Incentives Program (Rebates)
d. Energy Star-rated washing machines	1,944	6,018	5,964	4,547	4,782	3,925	27,180	Residential Incentives Program (Rebates)
e. Energy Star-rated clothes dryers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
f. Energy Star-rated furnaces	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
g. Energy Star-rated air conditioners	305	535	614	598	971	1,032	4,055	Residential Incentives Program (Rebates)
h. Energy Star-rated water heaters	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
i. Power strips	171	716	867	1,067	1,283	1,599	5,703	Home Energy Analysis Program (Customers)
j. Attic insulation	-	-	-	129	248	327	704	Home Energy Analysis Program (Customers)
k. Rim-joint insulation	-	-	-	50	232	182	464	Home Energy Analysis Program (Customers)
l. Wall insulation	1	14	12	25	41	76	169	Home Energy Analysis Program (Customers)
<b>Total</b>	<b>6,761</b>	<b>19,923</b>	<b>20,093</b>	<b>15,896</b>	<b>18,358</b>	<b>17,004</b>	<b>98,035</b>	

Question #10 Items - KU	2012	2013	2014	2015	2016	2017	Total	Source
b. Energy Star-rated refrigerators	1,826	5,903	5,870	4,166	4,891	4,189	26,845	Residential Incentives Program (Rebates)
c. Energy Star-rated dishwashers	1,051	3,646	3,708	3,495	4,251	3,552	19,703	Residential Incentives Program (Rebates)
d. Energy Star-rated washing machines	1,517	4,378	4,465	3,223	3,558	2,831	19,972	Residential Incentives Program (Rebates)
e. Energy Star-rated clothes dryers	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
f. Energy Star-rated furnaces	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
g. Energy Star-rated air conditioners	157	277	249	370	541	602	2,196	Residential Incentives Program (Rebates)
h. Energy Star-rated water heaters	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
i. Power strips	152	539	570	740	1,041	1,315	4,357	Home Energy Analysis Program (Customers)
j. Attic insulation	-	-	-	78	249	312	639	Home Energy Analysis Program (Customers)
k. Rim-joint insulation	-	-	-	23	50	43	116	Home Energy Analysis Program (Customers)
l. Wall insulation	-	3	5	11	24	53	96	Home Energy Analysis Program (Customers)
<b>Total</b>	<b>4,703</b>	<b>14,746</b>	<b>14,867</b>	<b>12,106</b>	<b>14,605</b>	<b>12,897</b>	<b>73,924</b>	

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 11**

**Witness: Gregory S. Lawson**

Q-11. To the extent that such data is available, please provide the breakdown of the data referenced in Q13 between owner-occupied residential ratepayers and renters?

A-11. The Companies do not track customer data on the basis of ownership type.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 12**

**Witness: Gregory S. Lawson**

Q-12. In determining the cost and benefit of the individual DSM and EE measures, did LG&E evaluate the degree to which the measures would be of value to those renting rather than owning their residences?

A-12. Various savings estimates were applied to measures based on their applicability in different housing types (single family, multi-family, etc.), but were not applied based on ownership type, as the Companies do not track this in their Customer Care System. The Companies incorporated master-metered commercial properties in the WeCare program after discussions with members of the DSM Advisory Group. These master-metered accounts are rental properties and classified as commercial and were therefore not previously eligible to participate in the WeCare program.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 13**

**Witness: Gregory S. Lawson**

- Q-13. What proportionality of power and gas use does LG&E assume the typical residential customer uses for plugged in versus space conditioning?
- A-13. Assuming central HVAC versus some other source of heating and cooling, the following is a breakdown from the Companies' Appliance Saturation Survey.

<b>% of Customers</b>	<b>Companies</b>	<b>KU</b>	<b>LG&amp;E</b>
<b>Natural Gas Heating</b>	51%	36%	73%
<b>Other Heating</b>	49%	64%	27%
<b>Central Air Conditioning</b>	77%	69%	89%
<b>Other Cooling</b>	23%	31%	11%

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 14**

**Witness: Gregory S. Lawson**

Q-14. What percentage of demand reduction did the average participant in the Residential Incentives Program achieve?

A-14. Based on a weighted average of the demand reduction realized per participant in 2017, the average LG&E participant achieved 0.55% demand reduction and the average KU participant achieved 0.64% demand reduction.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 15**

**Witness: Gregory S. Lawson**

Q-15. Were the savings achieved via the Residential Incentives Program greater by plugged in savings or building envelope savings, and what were the relative savings achieved?

A-15. For the Residential Incentives Program for the twelve months ending on December 31, 2017, the plugged in savings were greater than the building envelope savings. The relative savings for the items are below:

**Based on 2017 historical data for Residential Incentives Program**

<u>"Plugged In" / Appliance Savings (MWh)</u>	<u>Savings</u>
Heat Pump Water Heater	218
Clothes Washer	1,768
Refrigerator	535
Freezer	22
Dishwasher	251
Central Air Conditioner	319
Central Heat Pump	813
<u>Total</u>	<u>3,927</u>

<u>Building Envelope Savings (MWh)</u>	<u>Savings</u>
<u>Window Film</u>	<u>508</u>
<u>Total</u>	<u>508</u>

<u>Grand Total 2017 Savings (MWh)</u>	<u>4,435</u>
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**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 16**

**Witness: Gregory S. Lawson**

- Q-16. Please explain the cost and benefits of providing Smart Energy Profiles on customers' bills, and the basis for the assumptions?
- A-16. The delivery methods for the Smart Energy Profiles reports were reviewed as part of the prior Request for Proposals ("RFPs") for this program that were done in 2011 and 2014. As part of the RFP evaluation process, bidders provided their recommendations for the most cost-effective optimal delivery methods. The responding vendors, as well as the vendor ultimately selected, preferred a separate mailing so that the messaging would be more likely to be seen by customers and lead to higher savings. Note, this is the approach used by most, if not all, of the similar programs across the country.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 17**

**Witness: David E. Huff**

- Q-17. Please explain why did LG&E cease printing the greenhouse-gas emissions of customers' power use on monthly bills?
- A-17. LG&E ceased printing the greenhouse-gas emissions of customers' power use on the monthly bill when the monthly usage graphic and data were added to the bill. To continue to print this information would have required adding a third page to the bill, resulting in higher costs and paper usage. The Companies decided that removing the information was better than expanding the bill to a third page.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 18**

**Witness: David E. Huff**

Q-18. What consideration has LG&E given to restoring those greenhouse-gas emissions to monthly bills in lieu of Smart Energy Profiles, since it's a simple mathematical calculation (2 x kWh)?

A-18. See response to Question No. 17.

**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 19**

**Witness: Gregory S. Lawson**

- Q-19. Regarding the bases on which LG&E concluded its customers had adopted enough energy efficient measures, did LG&E consider plugged in purchases, such as appliances, building-envelope improvements, such as weatherization and insulation or both? How does LG&E weigh the relative effectiveness of plugged in purchases versus building-envelope improvements?
- A-19. As part of the design and planning for this DSM Portfolio, LG&E considered all types of energy efficient measures that included not only “plugged in” purchases and building envelope improvements, but also behavioral measures. All types of measures are weighed equally utilizing the methodology as described in the Potential Study. Please see the section on “Plan Development” on page 15 of 182 in Exhibit GSL-1 as well as Exhibit GSL-3, which is the Residential and Commercial Potential Study.



**LOUISVILLE GAS AND ELECTRIC COMPANY**

**Response to Metropolitan Housing Coalition First Set of Data Requests  
Dated January 24, 2018**

**Case No. 2017-00441**

**Question No. 20**

**Witness: Gregory S. Lawson**

- Q-20. What percentage of the residential class have participated in LG&E's audit programs? Please provide the percentage by census block or zip code, and if know, by age of building and whether the building is owned-occupied or a rental unit.
- A-20. See attached containing the percentage of residential customers by zip code who participated in the Home Energy Analysis or WeCare audit programs as of January 8, 2018. The Companies do not track this data by census block, nor do we collect and track age of building and ownership type.

	KU	KU			LG&E	LG&E
Zip Code	Percent Participating	Percent Not Participating		Zip Code	Percent Participating	Percent Not Participating
40003	6%	95%		40004	2%	98%
40004	4%	96%		40006	1%	99%
40006	6%	94%		40010	8%	92%
40007	5%	95%		40011	3%	97%
40008	3%	97%		40013	0%	100%
40009	2%	98%		40014	7%	93%
40011	9%	91%		40018	0%	100%
40012	1%	99%		40019	1%	99%
40013	11%	89%		40022	0%	100%
40014	4%	96%		40023	6%	94%
40019	5%	95%		40025	8%	92%
40020	6%	94%		40026	7%	93%
40022	4%	96%		40027	0%	100%
40023	3%	97%		40031	5%	95%
40031	3%	97%		40033	0%	100%
40033	6%	94%		40037	1%	99%
40036	5%	95%		40041	0%	100%
40037	3%	97%		40047	2%	98%
40040	1%	99%		40048	0%	100%
40045	4%	96%		40050	1%	99%
40046	4%	96%		40055	3%	97%
40050	4%	96%		40056	9%	91%
40051	5%	95%		40057	1%	99%
40052	6%	94%		40059	8%	92%
40055	0%	100%		40065	0%	100%
40057	3%	97%		40067	2%	98%
40058	0%	100%		40068	2%	98%
40061	0%	100%		40069	0%	100%
40062	0%	100%		40071	2%	98%
40063	0%	100%		40077	4%	96%
40065	5%	95%		40108	4%	96%
40067	3%	97%		40109	1%	99%
40068	4%	96%		40118	7%	93%
40069	3%	97%		40150	1%	99%
40070	8%	92%		40155	5%	95%
40071	5%	95%		40160	1%	99%
40075	6%	94%		40162	3%	97%

	KU	KU			LG&E	LG&E
Zip Code	Percent Participating	Percent Not Participating		Zip Code	Percent Participating	Percent Not Participating
40076	4%	96%		40165	3%	97%
40107	6%	94%		40175	1%	99%
40150	4%	96%		40177	6%	94%
40160	5%	95%		40202	2%	98%
40162	5%	95%		40203	6%	94%
40175	3%	97%		40204	6%	94%
40310	2%	98%		40205	9%	91%
40311	7%	93%		40206	5%	95%
40313	4%	96%		40207	7%	93%
40319	5%	95%		40208	4%	96%
40324	5%	95%		40209	10%	90%
40330	5%	95%		40210	14%	86%
40336	4%	96%		40211	12%	88%
40337	2%	98%		40212	11%	89%
40342	5%	95%		40213	5%	95%
40347	5%	95%		40214	5%	95%
40348	17%	83%		40215	9%	91%
40350	0%	100%		40216	7%	93%
40351	4%	96%		40217	6%	94%
40353	3%	97%		40218	5%	95%
40355	2%	98%		40219	5%	95%
40356	5%	95%		40220	6%	94%
40357	4%	96%		40222	6%	94%
40359	5%	95%		40223	7%	93%
40360	3%	97%		40228	6%	94%
40361	5%	95%		40229	6%	94%
40363	6%	94%		40241	7%	93%
40370	3%	97%		40242	8%	92%
40371	3%	97%		40243	7%	93%
40372	7%	93%		40245	7%	93%
40374	3%	97%		40258	6%	94%
40379	5%	95%		40272	7%	93%
40383	6%	94%		40291	5%	95%
40385	3%	97%		40299	6%	94%
40390	3%	97%		42141	0%	100%
40391	5%	95%		42154	0%	100%
40403	6%	94%		42214	0%	100%
40409	4%	96%		42701	2%	98%

	KU	KU			LG&E	LG&E
Zip Code	Percent Participating	Percent Not Participating		Zip Code	Percent Participating	Percent Not Participating
40410	0%	100%		42716	2%	98%
40419	3%	97%		42722	0%	100%
40422	5%	95%		42746	0%	100%
40437	3%	97%		42748	1%	99%
40440	5%	95%		42749	0%	100%
40442	5%	95%		42757	1%	99%
40444	4%	96%		42764	0%	100%
40445	2%	98%				
40448	4%	96%				
40456	3%	97%				
40461	6%	94%				
40464	4%	96%				
40468	4%	96%				
40472	3%	97%				
40475	4%	96%				
40484	3%	97%				
40489	4%	96%				
40502	5%	95%				
40503	5%	95%				
40504	4%	96%				
40505	6%	94%				
40507	2%	98%				
40508	5%	95%				
40509	5%	95%				
40510	9%	91%				
40511	6%	94%				
40513	6%	94%				
40514	6%	94%				
40515	5%	95%				
40516	5%	95%				
40517	4%	96%				
40601	6%	94%				
40701	3%	97%				
40729	5%	95%				
40734	4%	96%				
40737	0%	100%				
40740	3%	97%				
40741	3%	97%				

	KU	KU				
Zip Code	Percent Participating	Percent Not Participating				
40744	4%	96%				
40755	0%	100%				
40769	3%	97%				
40771	4%	96%				
40801	3%	97%				
40806	4%	96%				
40810	0%	100%				
40813	7%	93%				
40815	6%	94%				
40818	3%	97%				
40819	3%	97%				
40820	7%	93%				
40822	0%	100%				
40823	3%	97%				
40824	3%	97%				
40827	100%	0%				
40828	6%	94%				
40829	2%	98%				
40830	3%	97%				
40831	5%	95%				
40843	6%	94%				
40845	7%	93%				
40847	5%	95%				
40849	2%	98%				
40854	5%	95%				
40855	3%	97%				
40856	3%	97%				
40863	3%	97%				
40870	5%	95%				
40873	4%	96%				
40902	10%	90%				
40906	4%	96%				
40913	9%	91%				
40915	0%	100%				
40927	4%	96%				
40930	0%	100%				
40935	2%	98%				
40939	2%	98%				

	KU	KU				
Zip Code	Percent Participating	Percent Not Participating				
40940	0%	100%				
40955	0%	100%				
40958	7%	93%				
40962	3%	97%				
40964	3%	97%				
40965	4%	96%				
40977	5%	95%				
40988	13%	87%				
40997	1%	99%				
41002	3%	97%				
41003	5%	95%				
41004	3%	97%				
41006	2%	98%				
41007	4%	96%				
41008	3%	97%				
41010	3%	97%				
41031	6%	94%				
41034	3%	97%				
41035	33%	67%				
41037	0%	100%				
41039	6%	94%				
41040	0%	100%				
41041	4%	96%				
41043	3%	97%				
41044	3%	97%				
41045	3%	97%				
41046	1%	99%				
41052	1%	99%				
41055	4%	96%				
41056	2%	98%				
41061	0%	100%				
41062	0%	100%				
41064	2%	98%				
41083	3%	98%				
41086	2%	98%				
41095	6%	94%				
41098	4%	96%				
41311	3%	97%				

	KU	KU				
Zip Code	Percent Participating	Percent Not Participating				
42001	0%	100%				
42022	2%	98%				
42023	0%	100%				
42024	3%	97%				
42031	1%	99%				
42032	6%	94%				
42033	5%	95%				
42037	0%	100%				
42038	3%	97%				
42041	3%	97%				
42053	2%	98%				
42055	2%	98%				
42056	3%	97%				
42064	3%	97%				
42078	2%	98%				
42081	0%	100%				
42086	3%	97%				
42087	3%	97%				
42127	2%	98%				
42141	0%	100%				
42152	5%	95%				
42217	3%	97%				
42259	0%	100%				
42303	0%	100%				
42320	4%	96%				
42321	3%	97%				
42323	2%	98%				
42324	5%	95%				
42325	6%	94%				
42326	4%	96%				
42327	2%	98%				
42328	3%	97%				
42330	4%	96%				
42332	7%	93%				
42337	6%	94%				
42344	4%	96%				
42345	3%	97%				
42347	4%	96%				

	KU	KU				
Zip Code	Percent Participating	Percent Not Participating				
42350	5%	95%				
42352	3%	97%				
42354	2%	98%				
42367	3%	97%				
42369	2%	98%				
42371	1%	99%				
42372	3%	97%				
42374	2%	98%				
42404	2%	98%				
42406	3%	97%				
42408	4%	96%				
42409	2%	98%				
42410	2%	98%				
42411	3%	97%				
42413	1%	99%				
42420	4%	96%				
42431	4%	96%				
42436	0%	100%				
42437	5%	95%				
42440	3%	97%				
42441	5%	95%				
42442	4%	96%				
42444	2%	98%				
42445	2%	98%				
42450	3%	97%				
42452	3%	97%				
42453	3%	97%				
42455	2%	98%				
42456	2%	98%				
42457	5%	95%				
42459	4%	96%				
42460	0%	100%				
42461	3%	97%				
42462	3%	97%				
42463	1%	99%				
42464	5%	95%				
42501	4%	96%				
42503	4%	96%				



	KU	KU				
Zip Code	Percent Participating	Percent Not Participating				
42519	3%	97%				
42533	3%	97%				
42539	3%	97%				
42541	2%	98%				
42553	5%	95%				
42558	0%	100%				
42566	4%	96%				
42567	6%	94%				
42629	2%	98%				
42631	0%	100%				
42635	2%	98%				
42638	0%	100%				
42642	2%	98%				
42647	1%	99%				
42649	33%	67%				
42653	1%	99%				
42701	4%	96%				
42712	2%	98%				
42713	2%	98%				
42716	4%	96%				
42718	3%	97%				
42721	3%	97%				
42722	2%	98%				
42724	4%	96%				
42726	1%	99%				
42728	5%	95%				
42732	1%	99%				
42740	4%	96%				
42743	3%	97%				
42746	4%	96%				
42748	4%	96%				
42749	5%	95%				
42754	3%	97%				
42757	4%	96%				
42762	3%	97%				
42765	4%	96%				
42776	4%	96%				
42784	4%	96%				

	<b>KU</b>	<b>KU</b>				
<b>Zip Code</b>	<b>Percent Participating</b>	<b>Percent Not Participating</b>				
42788	0%	100%				