

a PPL company

Jeff DeRouen, Executive Director Public Service Commission of Kentucky 211 Sower Boulevard P. O. Box 615 Frankfort, Kentucky 40602

July 25, 2011

# COMMISSION PUBLIC SERVICE

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Louisville Gas and Electric Company State Regulation and Rates 220 West Main Street P.O. Box 32010 Louisville, Kentucky 40232 www.lge-ku.com

Robert M. Conroy Director - Rates T 502-627-3324 F 502-627-3213 robert.conroy@lge-ku.com

# RE: In the Matter of: The Application of Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Approval of Its 2011 Compliance Plan for Recovery by Environmental Surcharge - Case No. 2011-00162

Dear Mr. DeRouen:

Enclosed please find an original and fifteen (15) copies of Louisville Gas and Electric Company's (LG&E) response to the Commission Staff's First Information Request dated July 12, 2011, in the above-referenced matter.

Also enclosed are an original and fifteen (15) copies of a Petition for Confidential Protection regarding certain information contained in response to Question Nos. 9, 22(c), 32(f), 37, 45, and 46(b).

The verification page for Gary H. Revlett is being filed under a separate cover letter.

Should you have any questions regarding the enclosed, please contact me at your convenience.

Sincerely,

Robert M. Conroy

cc: Parties of Record

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# **COMMONWEALTH OF KENTUCKY**

# **BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

THE APPLICATION OF LOUISVILLE GAS AND)ELECTRIC COMPANY FOR CERTIFICATES)OF PUBLIC CONVENIENCE AND NECESSITY)AND APPROVAL OF ITS 2011 COMPLIANCE)PLAN FOR RECOVERY BY ENVIRONMENTAL)SURCHARGE)

# LOUISVILLE GAS AND ELECTRIC COMPANY

RESPONSE TO THE COMMISSION STAFF'S FIRST INFORMATION REQUEST

**DATED JULY 12, 2011** 

FILED: JULY 25, 2011

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

The undersigned, **Daniel K. Arbough**, being duly sworn, deposes and says that he is Treasurer for Louisville Gas and Electric Company and 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.

Daniel K. Arbough

Subscribed and sworn to before me, a Notary Public in and before said County and State, this  $22^{nel}$  day of -2011.

Notary Public J. Ely (SEAL)

November 9, 2014

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

The undersigned, **Lonnie E. Bellar**, being duly sworn, deposes and says that he is Vice President, State Regulation and Rates for Louisville Gas and Electric Company and 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.

P. Roller)

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Subscribed and sworn to before me, a Notary Public in and before said County

and State, this  $2\partial^{nd}$  day of  $-\int_{1}^{1} \int_{1}^{1} day$ \_\_\_\_\_2011.

Notary Public () (SEAL)

November 9, 2014

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

The undersigned, Shannon L. Charnas, being duly sworn, deposes and says that she is Director - Accounting and Regulatory Reporting for LG&E and KU Services Company, and that she has personal knowledge of the matters set forth in the responses for which she is identified as the witness, and the answers contained therein are true and correct to the best of her information, knowledge and belief.

Shannan L. Mauras Shannon L. Charnas

Subscribed and sworn to before me, a Notary Public in and before said County and State, this  $22^{\text{bd}}$  day of 42011.

Janny J. Ely (SEAL) Notary Public ()

November 9, 2014

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

The undersigned, **Robert M. Conroy**, being duly sworn, deposes and says that he is Director - Rates 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.

**Robert M. Conrov** 

Subscribed and sworn to before me, a Notary Public in and before said County and State, this  $22^{\frac{N}{2}}$  day of  $\frac{1}{2011}$ .

Notary Public (SEAL)

Jovember 9, 2014

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

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

Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State, this  $22^{\underline{nd}}$  day of  $\underline{\qquad}$  2011.

Jammy F. Elyn Notary Public ) (SEAL)

November 9, 2014

The undersigned, **John N. Voyles**, **Jr.**, being duly sworn, deposes and says that he is Vice President, Transmission and Generation Services for Louisville Gas and Electric Company and 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.

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Subscribed and sworn to before me, a Notary Public in and before said County and State, this  $22^{\frac{nd}{d}}$  day of  $\frac{1}{2}$  2011.

Notary Public () . Ely (SEAL)

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November 9, 2014

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### **Question No. 1**

### Witness: Robert M. Conroy

- Q-1. Refer to Appendix A of the Application at page 1. The bill impact upon an average residential customer is based on average usage of 1,000 kWh per month.
  - a. Provide the most recent actual average usage for a residential customer and using the actual average usage, provide the monthly increase on both a dollar and a percentage basis in 2012 and 2016.
  - b. Provide the information requested in item 1.a for an electric space-heating customer.
  - c. Provide the information requested in item 1.a for an electric customer served under rate schedule GS.
- A-1. a. The bill impact provided the Application and in testimony was based on a residential customer using 1,000 kWh per month and was not meant to be representative of the actual average residential usage. Actual average usage for residential customers will vary from month to month. Therefore LG&E used 1,000 kWh per month as a general representation to reflect the impact on a residential customer's bill. The actual average usage for a residential customer for the 12-months ending May 31, 2011 is 1,068 kWh. The monthly bill impact on LG&E's average residential customer is as follows:

ſ	2012	2013	2014	2015	2016
ſ	\$2.08	\$5.96	\$9.63	\$15.95	\$17.33

The impact to LG&E customers shown as a percentage is based on the jurisdictional revenue requirement and the forecasted 12-month retail revenues. To calculate the residential customer bill impact, the resulting percentage, or billing factor, is then applied to the total of the basic service charge, energy charge, FAC billings and DSM billings. Therefore, a change in the residential usage assumption will impact the increase in dollars but does not change the billing factor.

b. The requested information is not available. LG&E does not separately track electric space-heating customers.

c. For the 12-months ending May 31, 2011, the actual average usage for a GS customer taking single-phase service is 1,430 kWh and three-phase service is 5,667 kWh. The monthly bill impact is as follows:

	2012	2013	2014	2015	2016
GS Single-Phase	\$3.51	\$10.04	\$16.24	\$26.90	\$29.22
GS Three-Phase	\$11.71	\$33.53	\$54.23	\$89.82	\$97.59

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# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

# Question No. 2

### Witness: Charles R. Schram

- Q-2. Refer to the Direct Testimony of Charles R. Schram ("Schram Testimony") and Exhibit CRS-1. Mr. Schram explains the methodology used to analyze the projects included in LG&E's 2011 Environmental Compliance Plan, presents the evidence of the analysis, and makes the final recommendations related to the most cost effective method of complying with appropriate environmental laws and regulations.
  - a. Was the effect of potential regulations concerning carbon mitigation considered in any of the analysis? Explain.
  - b. If the answer to a. above is no, would the consideration of carbon mitigation change the proposed 2011 Compliance Plan? Explain. Include in the explanation whether additional unit retirements could result.
- A-2. a. Yes, however it is not possible at this time to estimate the scope or costs of potential carbon mitigation regulations and the potential impact on coal and gas fired generating units. There remains considerable uncertainty associated with any future potential carbon mitigation legislation, but the regulations which resulted in the 2011 Compliance Plan are known and imminent. These regulations take effect as early as 2012 and the Company is obligated to comply with the regulations while providing reliable electricity in a least-cost manner.
  - b. While it is possible that consideration of carbon mitigation could change the proposed 2011 Compliance Plan, it is not possible at this time to estimate the scope or costs of potential carbon mitigation regulations and the potential impact on coal and gas fired generating units. Under its "Tailoring Rule", the EPA will regulate CO<sub>2</sub> emissions on a Best Available Control Technology ("BACT") basis, but current BACT solutions for fossil fueled generation, if triggered by permit actions, would not change the 2011 Compliance Plan. Carbon capture and sequestration technologies are not commercially viable on a large scale basis.

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## Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 3

### Witness: John N. Voyles, Jr.

- Q-3. Explain the availability of contractors for the emission control systems for which construction is proposed. Include whether contractors for the work are specifically dedicated to environmental compliance work and if so, whether there is concern as to the availability of the contractors to meet EPA deadlines.
- A-3. At this time, the companies that perform these types of large emission control construction projects are available. We believe our plan positions us well to secure contractors from the engineering, procurement & construction (EPC) market and secure adequate resources to perform the work. However, we believe a significant risk exists regarding the availability of experienced contractors to perform the work for the installation of air quality control systems if we do not proceed with securing the contracts as planned. As other utilities enter the market place and compete for resources, we may experience difficulties hiring the best contractors which may ultimately delay the project, increase the cost, or affect quality and safety of the projects.

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### **Question No. 4**

### Witness: John N. Voyles, Jr.

- Q-4. Provide the age and estimated remaining life of each of LG&E's coal-fired generation units.
- A-4. The current age of each of LG&E's coal-fired units is shown in the table below.

Plant Name	Age (years)
Cane Run 4	49
Cane Run 5	45
Cane Run 6	42
Mill Creek 1	39
Mill Creek 2	37
Mill Creek 3	33
Mill Creek 4	29
Trimble County 1	21
Trimble County 2	0.5

LG&E believes that continuing a prudent level of ongoing maintenance and investment at its remaining generating units will ensure the ongoing reliable operation of the units and minimize the potential for a significant mechanical failure. Consistent with information provided to the Commission in previous IRP and other proceedings, LG&E has informally grouped units into categories for guiding investment decisions that ensure the remaining useful life is maintained. The expected remaining useful life of each coal unit is discussed below.

With respect to the Trimble County 1 and Mill Creek 3-4 Units, LG&E will maintain these units in such a way as to ensure that, year over year, a minimum 30-year remaining useful life is expected. In other words, for each year LG&E operates and maintains these units, LG&E expects to have at least a 30-year remaining useful life commencing in that year. LG&E has made significant investments in environmental controls on these units.

With respect to Trimble County 2, the new unit is expected to have a life expectancy of at least 60 years.

With respect to the Mill Creek 1-2 Units, LG&E will maintain these units in such a way as to ensure that, year over year, a minimum 20-year remaining useful life is expected. In other words, for each year LG&E operates and maintains these units, LG&E expects to have at least a 20-year remaining useful life commencing in that year.

Although Cane Run 4 is now planned to be retired in 2016, LG&E has maintained the unit with the expectation for the unit to have, year over year, a minimum 10-years of remaining useful life. Although Cane Run 5-6 are now planned to be retired in 2016, LG&E has maintained the units with the expectation for the units to have, year over year, a minimum 15-years of remaining useful life.

# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 5

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

- Q-5. Refer to Schram Testimony at page 4. Beginning at line 7, Mr. Schram states, "we assumed that the proposed suite of environmental facilities for each unit was the most cost-effective suite of facilities for the unit; in other words, an analysis of numerous combinations of possible environmental controls for each unit was not necessary." Explain fully the reason(s) for this assumption.
- A-5. The Companies did not base the economic analysis on <u>assumptions</u> for least cost facilities. The Companies clarify that the term "assumed", as used in the Schram testimony on page 4, lines 7-10, refers to the process of using the <u>recommended</u> suite of facilities from the Companies' work with Black and Veatch as inputs to the economic analysis. The Black and Veatch (B&V) study developed the least cost controls to meet emissions limits. The economic analysis then compared building those controls to retiring the unit(s) to determine the least cost compliance plan.

As described more fully in Exhibits JNV-2 and CRS-1, the Companies examined the emissions profile required by the regulations and identified the least-cost technologies to achieve the required emissions reductions. The Companies worked in concert with B&V on assessing potential technologies for each pollutant, the potential layouts of each technology, as well as a review of all B&V submitted draft reports.

Ultimately, the needs analysis identified that reductions in  $SO_2$ , Mercury, Particulate Matter and Sulfuric Acid Mists were required. Proven technology alternatives for reducing these emissions are limited. The least costly controls for meeting emissions limits were provided in the Black and Veatch study and used as inputs to the economic analysis.

# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

# Question No. 6

# Witness: Charles R. Schram

- Q-6. Refer to Exhibit CRS-1 of the Application, at page 4.
  - a. The fourth column in Table 2 is labeled "Difference (A)-(B)". Should the column heading read "Difference (B)-(A)"?
  - b. It is stated that installation of additional environmental controls on the Cane Run units 4-6 is not cost effective and the units will be retired pursuant to the 2011 Compliance Plan.
    - (1) Provide the projected dates by which each unit is to be retired.
    - (2) Provide the generating capacity to be lost upon retirement of the units and the LG&E's plan to replace the power.
- A-6. a. Yes, the heading should read "Difference (B)-(A)" to most accurately describe the arithmetic subtraction calculation to support the convention that a result greater than zero represents lower net present value of revenue requirements for building controls versus unit retirement.
  - b. (1) Cane Run Units 4-6 are assumed to be retired by December 31, 2015.
    - (2) The retirement of the Cane Run Units results in a reduction of 563 MW of net summer capacity. LG&E is currently evaluating options for replacement capacity. This evaluation includes the responses to a Request for Proposal (RFP) for capacity and energy. LG&E anticipates that any necessary regulatory filings will take place in the fall of 2011.

# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

# Question No. 7

# Witness: John N. Voyles, Jr.

- Q-7. Refer to the Direct Testimony of Shannon L. Charnas ("Charnas Testimony") at page 3. LG&E proposes to make modifications to Mill Creek Units 3 and 4 to expand the operating range of the units at which their Selective Catalytic Reduction equipment can function to reduce nitrogen oxide emissions, but it does not propose to recover operation and maintenance ("O&M") expenses associated with these modifications.
  - a. Explain the nature of these modifications and the resultant O&M expenses.
  - b. Will the labor portion of the O&M expenses, if any, be performed by existing LG&E employees? Explain.
  - c. Explain the decision to not request recovery of the O&M expenses associated with these modifications.
- A-7. a. The engineering to determine the specific modifications to the boiler circuit to allow for increased utilization of the SCR has not been finalized, but is scheduled to be completed in early 2012. However, one option being explored and which is reflected in the costs submitted with this ECR filing is to modify the economizers (the last boiler circuit) by changing the surface area which will allow the generating unit to keep the flue gas temperatures higher when operating at lower loads and possibly cooler at higher loads. The higher temperatures at lower loads will allow the SCR to remain in operation at lower loads.
  - b. Operations and Maintenance activities are typically performed by LG&E employees but contracted labor is used to supplement the workforce if necessary.
  - c. As discussed in the testimony of Mr. Voyles, there is no additional O&M cost associated with this project.

Since the capital cost and O&M expense associated with the SCR were included in base rates in conjunction with Plan elimination from the ECR as of the Commission's Order in Case No. 2009-00549, LG&E believes that for simplicity it was not necessary to include the O&M in the ECR for this project.

# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

# Question No. 8

## Witness: Charles R. Schram

- Q-8. Explain whether the 2011 Compliance Plan will result in de-rating any of the affected units. If so, identity the unit, current rating, and projected rating by unit.
- A-8. The tables in the subsections of Section 4.2 of Exhibit CRS-1 identify the unit-specific auxiliary power requirements for the controls contained in the 2011 Compliance Plan. These de-rates were used in the economic analysis.

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### **Question No. 9**

### Witness: Charles R. Schram

- Q-9. Explain whether the 2011 Compliance Plan will result in any of LG&E's units being taken offline? If yes, provide which units will be taken out of service and the specific period of time the units will be out of service.
- A-9. Please see the attached. The timing of the addition of new environmental controls will coincide with the Companies' planned outage schedule that may change from time to time. For most units, the addition of controls extends the planned outage by one to two weeks. The attached summary of the outages that include the addition of environmental controls as well as the number of additional outage weeks, if any, that can be attributed specifically to the environmental controls. Certain redacted information is being filed with the Commission under seal pursuant to a Petition for Confidential Protection.

# **CONFIDENTIAL INFORMATION REDACTED**

Summary of Outages that Include the Addition of Environmental Controls

# Weeks Attributed	to ECR Equipment	0	1	1	Ŧ	0	-	£	0	H	0	ŝ	2	2	0	2	0	0 uwu	0	
	Equipment	<b>Baghouse, SAM Mitigation</b>	Baghouse, SAM Mitigation	Baghouse	Baghouse, SAM Mitigation/SCR Tum-Down	SAM Mitigation	Baghouse <sup>1</sup>	SAM Mitigation/SCR Turn-Down	Baghouse	SAM Mitigation/SCR Turn-Down <sup>2</sup>	Baghouse <sup>2</sup>	FGD, Baghouse, SAM Mitigation	FGD, Baghouse, SAM Mitigation	SAM Mitigation/SCR Turn-Down	FGD	Baghouse	SCR Upgrade	FGD, Baghouse, SAM Mitigation/SCR Turn-Down	Baghouse	
	End Date																			
	Start Date End Date																			
	Unit	Brown 1	Brown 2	Brown 3	Ghent 1	Ghent 2		Ghent 3		Ghent 4		Mill Creek 1	Mill Creek 2	Mill Creek 3			Mill Creek 4		Trimble 1	

<sup>2</sup>Ghent 4 outages for SAM mitigation/SCR tum-down and baghouse have since been combined <sup>1</sup>GH2 outage for baghouse has since been moved to

and moved to

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### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 10

### Witness: John N. Voyles / Robert M. Conroy

Q-10. Refer to Exhibit 1, 2011 Environmental Compliance Plan, page 2 of 2.

- a. For each project listed, provide a breakdown of the estimated operations and maintenance expenses and explain how they were calculated.
- b. Mill Creek Unit 3 O&M expense increased from \$4,857,328 in 2015 to \$13,019,344 in 2016. Fully explain the reasons for an increase of this magnitude.
- c. Mill Creek Unit 4 O&M expense increased from \$3,631,737 in 2014 to \$15,519,305 in 2015. Fully explain the reasons for an increase of this magnitude.
- d. Explain why there are not any O&M expenses indicated for 2012 through 2014 for Project 27 if it is scheduled to be completed in 2012 as indicated on page 1 of 2.
- A-10. a. See attached. The O&M expenses were based on estimates provided in the Black and Veatch studies as contained in Appendices to Exhibit JNV-2.
  - b. The increase in magnitude from one year to the next is based on the in-service month of the facilities being installed. For Mill Creek 3, 2016 represents a full year of O&M expense. Please see the details contained in the attachment to the response for part a.
  - c. The increase in magnitude from one year to the next is based on the in-service month of the facilities being installed. For Mill Creek 4, 2015 represents a full year of O&M expense. Please see the details contained in the attachment to the response for part a.
  - d. Project 27 is scheduled to be completed in 2015. The reference to 2012 is an error.

Incremental O&M Estimates for Projects in the 2011 ECR Plan

# isville Gas and Flectric Company

Louisville Gas and Electric Company		Scheduled					0700	2100	2018	2019	2020
FERC Account	5	In-Service	2012	2013	2014	2015	91.02	1107	0107		
<u>Project 26 - MC Air Compliance - FGDs &amp; Baghouses</u>	<u>:e - FGDs &amp; Baghous</u>		י ھ	\$ 1,693,407	\$ 7,079,485	\$ 31,875,906	\$ 47,403,071	\$ 48,528,230	\$ 49,675,892	\$ 50,846,507	\$ 52,040,535
502006 / 512005 Scrubber Operations & Maintenance Loss: Baseline in Base Rates	itenance es		\$0 \$0	0\$ \$0	\$0 \$0	\$1,067,233 (\$1.321,289)	\$1,632,866 (\$1,981,934)	\$1,665,523 (\$1,981,934) /\$316,411)	\$1,698,834 (\$1,981,934) (\$283,100)	\$1,732,811 (\$1,981,934) (\$249,123)	\$1,767,467 (\$1,981,934) (\$214,467)
Mill Creek 1 - Co	Ibined 1 & 2 FGD	May-15	\$0	\$0	20	(100,462\$)	(404,000)				
156	intenance		\$0 \$0	0\$ \$0	0\$	\$964,148 \$3,375,151	\$1,475,147 \$5,163,981	\$1,504,650 \$5,267,261	\$1,534,743 \$5,372,606	\$1,565,438 \$5,480,058 \$7,046,406	\$1,596,746 \$5,589,659 \$7 186 406
506111 Activated Carbon Mill C	Mill Creek 1 - Baghouse	May-15	\$0	\$0	\$0	\$4,339,300	\$6,639,128	\$6,771,911	\$0,901,349	064,040,14	
506159 / 512152 Sorbent Injection Operations & Maintenance	s & Maintenance		\$0 \$	0\$ \$	0\$ 0\$	\$14,733 \$944.869	\$38,643 \$2,478,257	\$39,416 \$2,527,822	\$40,204 \$2,578,379	\$41,008 \$2,629,946	\$41,828 \$2,682,545
506152 Sorbent Reactant - Reagent Only Mill Creek 1 - S	- Reagent Only Mill Creek 1 - SAM Mitigation	May-15 -	\$0	\$0	\$0	\$959,602	\$2,516,900	\$2,567,238	\$2,618,583	\$2,670,955	\$2,124,314
	Total Mill Creek 1		\$0	\$0	\$0	\$ 5,044,845	\$ 8,806,961	\$ 9,022,738	\$ 9,242,832	\$ 9,467,327	\$ 9,696,312
502056 / 512055 Scrubber Operations & Maintenance less: Baseline in Base Rates Mail Crook 2 - Combined	perations & Maintenance line in Base Rates Aiu Crook 2 - Combined 1& 2 FGD	Apr-15	20 20 20	\$0 \$0 \$0	80 80 80	\$1,200,637 (\$1,183,404) \$17,233	\$1,632,866 (\$1, <u>577,872)</u> \$54,994	\$1,665,523 (\$1,577,872) \$87,651	\$1,698,834 (\$1.577,872) \$120,962	\$1,732,811 (\$1, <u>577,872)</u> \$154,939	\$1,767,467 (\$1,577,872) \$189,595
506156 / 512156 Baghouse Operations & Maintenance 506151 Activated Carbon Mill Creak 2.	k Maintenance	Apr-15	20 20 20	\$0 \$0 \$0	\$0 \$0	\$1,064,150 \$4,070,388 \$5,134,538	\$1,447,245 \$5,535,728 \$6,982,972	\$1,476,189 \$5,646,442 \$7,122,632	\$1,505,713 \$5,759,371 \$7,265,084	\$1,535,828 \$5,874,558 \$7,410,386	\$1,566,544 \$5,992,050 \$7,558,594
506159 / 512152 Sorbent Injection Operations & Maintenance 506152 Sorbent Reactant - Reagent Only Main Creacy 2 - SAM Mithar	min order 2 page 2000 Derations & Maintenance - Reagent Only Mit Crook 2 - SAM Mitination	Apr-15	\$ <del>\$</del> \$	\$0 \$0 \$	0\$ \$0	\$18,943 \$1,283,714 \$1,302,656	\$38,643 \$2,618,776 \$2,657,419	\$39,416 \$2,671,151 \$2,710,567	\$40,204 \$2,724,574 \$2,764,778	\$41,008 \$2,779,066 \$2,820,074	\$41,828 \$2,834,647 \$2,876,475
	Total Mill Creek 2	<u>.</u>	\$0	\$0	\$0	\$ 6,454,427	\$ 9,695,385	\$ 9,920,850	\$ 10,150,825	\$ 10,385,398	\$ 10,624,664

Attachment to Response to KPSC Question No. 10 Page 1 of 2 Conroy

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Incremental O&M Estimates for Projects in the 2011 ECR Plan

# Louisville Gas and Electric Company

Louisville Gas and Electric Company	Cabadulad									
FERC Account	Ju-Service	2012	2013	2014	2015	2016	2017	2018	2019	2020
502056 / 512055 Scrubber Operations & Maintenance less: Baseline in Base Rates Mill Creek 3 - FGD (U4 update and tie in)	Nov-14	\$0 \$0	\$0 \$0 \$0	\$444,961 (\$451,764) (\$6,803)	\$2,922,329 (\$2,710,584) \$211,745	\$2,980,776 (\$2,710,584) \$270,192	\$3,040,392 (\$2,710,584) \$329,808	\$3,101,199 (\$2,710,584) \$390,615	\$3,163,223 (\$2,710,584) \$452,639	\$3,226,488 (\$2,710,584) \$515,904
506156 / 512156 Baghouse Operations & Maintenance 506151 Activated Carbon Mill Creek 3 - Baghouse	Oct-15	\$0 \$0 \$0	808	808	\$161,688 \$960,253 \$1,121,941	\$1,319,377 \$7,835,661 \$9,155,038	\$1,345,764 \$7,992,375 \$9,338,139	\$1,372,679 \$8,152,222 \$9,524,902	\$1,400,133 \$8,315,267 \$9,715,400	\$1,428,136 \$8,481,572 \$9,909,708
506159 / 512152 Sorbent Injection Operations & Maintenance 506152 Sorbent Reactant - Reagent Only Mill Creek 3 - SAM Mitigation	Apr-13 -	\$0 \$0 \$0	\$18,363 \$1,675,044 \$1,693,407	\$37,461 \$3,417,090 \$3,454,550	\$38,210 \$3,485,432 \$3,523,641	\$38,974 \$3,555,140 \$3,594,114	\$39,754 \$3,626,243 \$3,665,997	\$40,549 \$3,698,768 \$3,739,316	\$41,360 \$3,772,743 \$3,814,103	\$42,187 \$3,848,198 \$3,890,385
Mill Creek 3 - SCR Turn-Down	_	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Mill Creek 3	_	\$0	\$ 1,693,407	\$ 3,447,748	\$ 4,857,328	\$ 13,019,344	\$ 13,333,943	\$ 13,654,833	\$ 13,982,142	\$ 14,315,996
502056 / 512055 Scrubber Operations & Maintenance less: Baseline in Base Rates Mill Creek 4 - FGD	- Nov-14	\$0 \$0	80 80 80	\$451,169 (\$430,748) \$20,421	\$2,943,541 (\$2,584,486) \$359,055	\$3,002,412 (\$2,584,486) \$417,926	\$3,062,460 (\$2,584,486) \$477,974	\$3,123,709 (\$2,584,486) \$539,223	\$3,186,184 (\$2,584,486) \$601,697	\$3,249,907 (\$2,584,486) \$665,421
506156 / 512156 Baghouse Operations & Maintenance 506151 Activated Carbon Mill Creek 4 - Baghouse	e May-14	\$0 \$0	\$0 \$0	\$495,584 \$3,057,340 \$3,552,924	\$1,516,487 \$9,355,461 \$10,871,949	\$1,546,817 \$9,542,570 \$11,089,388	\$1,577,754 \$9,733,422 \$11,311,175	\$1,609,309 \$9,928,090 \$11,537,399	\$1,641,495 \$10,126,652 \$11,768,147	\$1,674,325 \$10,329,185 \$12,003,510
506159 / 512152 Sorbent Injection Operations & Maintenance 506152 Sorbent Reactant - Reagent Only Mill Creek 4 - SAM Mitigation	Nov-14	20 20 20	20 20 20	\$516 \$57,876 \$58,392	\$37,885 \$4,250,417 \$4,288,302	\$38,643 \$4,335,425 \$4,374,068	\$39,416 \$4,422,134 \$4,461,549	\$40,204 \$4,510,576 \$4,550,780	\$41,008 \$4,600,788 \$4,641,796	\$41,828 \$4,692,803 \$4,734,632
Mill Creek 4 - SCR Turn-Down	_	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Mill Creek 4		\$0	\$0	\$ 3,631,737	\$ 15,519,305	\$ 15,881,381	\$ 16,250,699	\$ 16,627,402	\$ 17,011,640	\$ 17,403,563
Project 27 - TC1 Air Compliance - Baghouse		20	\$0	0\$	\$3,732,365	\$7,614,024	\$7,766,305	\$7,921,631	\$8,080,064	\$8,241,665
506156 / 512156 Baghouse Operations & Maintenance 506151 Activated Carbon Trimble County 1 - Baghouse	e Nov-15 <sup>-</sup>	80 80 80	80 80	80 80 80	\$493,761 \$3,238,604 \$3,732,365	\$1,007,273 \$6,606,752 \$7,614,024	\$1,027,418 \$6,738,887 \$7,766,305	\$1,047,966 \$6,873,664 \$7,921,631	\$1,068,926 \$7,011,138 \$8,080,064	\$1,090,304 \$7,151,361 \$8,241,665

Attachment to Response to KPSC Question No. 10 Page 2 of 2 Conroy

# **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

# Question No. 11

### Witness: Robert M. Conroy

- Q-11. Refer to Exhibit 3, Tariff. LG&E is proposing text changes in the "Availability of Service" section. Instead of listing the individual rate schedules to which the environmental cost recovery ("ECR") surcharge would apply, the proposed text lists the tariff sections to which ECR surcharge would apply. As a result of this proposed change, would the ECR surcharge apply to Rate Schedule RTP, Real-Time Pricing, when it does not apply to that schedule currently?
- A-11. The objective of the proposed text changes in the "Availability of Service" section is to reduce the opportunity to omit a rate schedule from the tariff that should otherwise be subject to the ECR surcharge. There is no customer impact since no customers have applied for service under RTP.

The Standard Rate Rider RTP, Real-Time Pricing Rider, is offered as an optional three (3) year pilot program and is available as a rider to the Company's P.S.C. Electric No. 6, CTOD, ITOD, or IS rate schedules for customers having received service under those schedules for a minimum of one (1) year as of December 31, 2008. Although RTP is a Rate Rider, the proposed ECR verbiage specifically points to its application to Pilot Programs. This change is supported by the very nature of RTP. The standard rate schedule includes the charge to the customer for a baseline load but the ECR should reflect the customer's efforts to adjust that baseline load by applying it to the RTP charges.

### LOUISVILLE GAS AND ELECTRIC COMPANY

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 12

### Witness: John N. Voyles, Jr.

- Q-12. Refer to Exhibit JNV-2, the Environmental Air Compliance Strategy Summary, at page 7. The last paragraph states that preliminary studies showed that both wet FGDs at Mill Creek 1 and 2 could be modified to meet the expected minimum requirements for SO<sub>2</sub> removal, but that significant outages would be required to make structural upgrades. Provide a detailed cost comparison between modifying the FGDs at Mill Creek 1 and 2 as discussed above and building a new FGD to serve both units as proposed in the 2011 Compliance Plan.
- A-12. Engineering reviews performed subsequent to the preliminary studies identified significant concerns with the Unit 1 and 2 structures that support the FGDs. Please see the details contained in Appendix B of Exhibit JNV-2. In addition to the structural concerns, further assessments of the FGD subsystem components (i.e. conduits, cable trays, piping and mechanical equipment) concluded that the existing FGDs would essentially require a total rebuild after a systematic demolition. In addition to both FGDs requiring a substantial rebuild, ductwork leading to and from the FGDs would require total replacement. A detailed cost estimate was not performed as the scopes of rebuilding the existing FGDs is less than building a new single FGD to service both units. When adding the systematic demolition to salvage reusable structure and components, the overall scope for rebuilding the two existing units exceeded the scope for a single new FGD. In addition to the scope comparison, the rebuild of both existing FGDs would require a significant outage of two years or more on each unit to accomplish in comparison to building a single new FGD that would service both units while the existing FGDs remain in operation. Then, the new single FGD could be tied into the ductwork exiting the boilers within four weeks for each unit.

### LOUISVILLE GAS AND ELECTRIC COMPANY

### **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

### Question No. 13

### Witness: Daniel K. Arbough

- Q-13. There appears to be evidence that credit markets have loosened. Discuss how LG&E will finance the proposed environmental compliance projects and explain whether it has received any indications of potential problems.
- A-13. The credit markets are currently very attractive for solid investment grade utilities, particularly if the security being offered is a first mortgage bond. For example, LG&E was able to raise \$535 million at an average cost of under 4% in November 2010 with maturities of approximately 18 years in a transaction where demand exceeded the supply of bonds. More recently, on July 12, PPL Electric Utilities sold \$250 million of 30 year first mortgage bonds with a coupon of 5.20%, and investor demand for these bonds was very high.

The Company intends to finance the proposed environmental compliance projects with a mix of debt and equity that will allow it to maintain its strong investment grade bond ratings. Specifically, during construction we expect to utilize existing short-term lines of credit and commercial paper until outstanding balances are significant enough to justify issuing a long-term first mortgage bond. The first mortgage bonds will likely have a minimum size of \$250 million to allow the bonds to be "index eligible" making the bonds more marketable and therefore more attractive to investors. However, the Company will monitor the bond markets and will issue somewhat in advance if market conditions are favorable or will wait to issue if market conditions are particularly unattractive.

In addition to first mortgage bonds, when possible and if market conditions are attractive, the Company will utilize tax-exempt bonds. Currently, only costs associated with solid waste assets qualify for tax-exempt issuance which would comprise only a portion of the costs of the proposed facilities. It is important to note that the tax-exempt market has been negatively impacted by the poor financial condition of many municipal and state governments resulting in the taxable market frequently being more attractive for issuers than the tax-exempt market since 2008.

The equity to be utilized in funding the costs of the projects will be from a combination of retaining earnings and equity contributions from LG&E and KU Energy LLC, the Company's immediate parent. The equity contributions are expected to be of a size to allow the Company to maintain a capital structure similar to the existing structure.

The Company has not received any indications of potential problems funding the proposed program utilizing the above structure. This is a very typical financing model for utilities in the U.S. which has proven to be very reliable, even in the difficult times of the recent economic recession.

### LOUISVILLE GAS AND ELECTRIC COMPANY

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 14

### Witness: Daniel K. Arbough

- Q-14. Provide a copy of LG&E's latest reports from its bond rating agencies and any other reports from rating agencies and or banks which discuss any risks facing the company which will affect its ability to borrow the necessary project funds.
- A-14. The most recent bond rating agency reports for the Company are attached. The Company is not aware of reports issued by banks which discuss risks facing the Company in borrowing the necessary funds to construct the proposed projects.

Attachment to KPSC Question No. 14 - Fitch Rating Witness: Arbough

# **FitchRatings**

### CORRECTION - FITCH ASSIGNS EXPECTED RTGS TO KY UTILITIES CO., LOUISVILLE G&E AND LG&E AND KU ENERGY

Fitch Ratings-New York-04 November 2010: (This is a correction for a release issued on Oct. 25, 2010. It amends the expected senior unsecured ratings for both Louisville Gas and Electric Company and Kentucky Utility Company to 'A'.In addition, the Issuer Default Ratings and short-term IDRs for all entities are now final and the Rating Outlooks Stable.)

Fitch Ratings expects to assign the ratings listed below to Kentucky Utilities Company (KU), Louisville Gas and Electric Company (LG&E), and LG&E and KU Energy LLC (currently E. ON U.S) following the close of PPL Corp.'s (Issuer Default Rating [IDR] 'BBB') acquisition of E.ON U.S. The expected ratings are as follows:

LG&E and KU Energy LLC --Issuer Default Rating (IDR) 'BBB+'; --Senior unsecured debt 'BBB+'; --Short-term IDR 'F2'.

Kentucky Utilities Co. --IDR 'A-'; --Secured debt 'A+'; --Senior unsecured debt 'A'; --Short-term IDR 'F2'.

Louisville Gas and Electric Co. --IDR 'A-'; --Secured debt 'A+'; --Senior unsecured debt 'A'; --Short-term IDR 'F2'.

The proposed ratings reflect the currently sound credit quality of the two regulated utilities, PPL's balanced financing plan for completing the acquisition, constructive regulatory policies in Kentucky and the Kentucky Public Service Commission's (PSC) track record for timely rate decisions. Constructive regulatory policies include a monthly fuel adjustment clause and an environmental cost recovery (ECR) mechanism. The ECR mechanism substantially reduces the environmental risks associated with the companies' coal-fired generating portfolios. Regulatory statutes also include the inclusion of construction work in progress (CWIP) in rate base. Consequently, the utilities' investment in Trimble County unit 2 (TC2), a 760 mw coal plant expected to enter commercial operation by year-end, is already reflected in rate base. Moreover, the majority of its non-fuel operating costs were recognized in rates in the July 2010 rate order, which relied on a test year ended Oct. 31, 2009, at which time TC2 was already in testing mode and fully staffed. In July 2010, the two utilities each received constructive rate decisions from the Kentucky PSC that will enhance earnings and eash flow. The rate decisions were issued six months after the companies' filed their rate increase requests following a settlement agreement with intervenors.

The primary credit concerns, other than exposure to changing environmental regulations, is a provision in the change of control settlement that prohibits the companies from seeking a base rate adjustment that would be effective prior to Jan. 1, 2013 (excluding fuel and ECR adjustments), which will require the company to absorb cost increases in the interim, and the delay in commercial operation of TC2. Burner malfunctions and a transformer failure occurred during commissioning and testing activity of TC2 conducted in the second and third quarter of 2010 causing a delay in TC2 commercial operation. The unit is now expected to enter commercial operation by year end. Because TC2 was constructed with a fixed price contract with liquidated damages, the two utilities

are not expected to incur any significant additional capital costs from the start-up delay.

On April 28, 2010, E.ON AG entered into a definitive agreement to sell PPL Corp. (PPL) its equity interests in E.ON U.S. LLC, the parent company of LG&E and KU. The cash purchase price. excluding the assumption of \$925 million of pollution control bonds, is approximately \$6.7 billion In June 2010, PPL issued an aggregate of \$3.6 billion of common equity and hybrid securities to complete the equity and hybrid security portion of the acquisition financing plan, including \$1.15 billion of equity units and \$2.484 billion of common equity (net proceeds of \$1.116 billion and \$2,409 billion, respectively). The remaining cash purchase price of approximately \$3,175 billion will be funded with a draw on PPL's existing credit facility, to be repaid with the proceeds of subsidiary debt to be issued after closing the transaction and eash. Management has indicated it plans to issue approximately \$2.1 billion of first mortgage bonds at the two utilities and to retire a similar amount of existing inter-company borrowings. Consequently, debt levels should not be meaningfully different from the June 30, 2010 levels and going forward leverage and interest coverage measures should benefit from recently implemented rate increases as well as accessing the capital markets during a period of exceptionally low interest rates. Planned debt financing at LG&E and KU Energy LLC of approximately \$800 million is well below the existing parent inter-company borrowings of more than \$2 billion.

PPL expects to close the acquisition in the fourth quarter of 2010. On Sept. 2, 2010, PPL reached a settlement agreement with all intervening parties in its change of control application in Kentucky In the settlement, PPL agreed not to raise base rates before Jan. 1, 2013 (excluding fuel and ECR adjustments). Rate increases that took effect on Aug. 1, 2010 will remain in place. The change of control agreement also provides for 50/50 sharing of any earnings above a 10.75% ROE. On Sept. 30, 2010, the Kentucky PSC approved the proposed acquisition subject to PPL's acceptance of all conditions. State regulators in Tennessee and Virginia have also approved the merger. Other required approvals include the Federal Energy Regulatory Commission (FERC). Pennsylvania Public Utility Commission (PUC) approval is not required.

Contact:

Primary Analyst Robert Hornick Senior Director +1-212-908-0523 Fitch, Inc. One State Street Plaza New York, NY 10004

Secondary Analyst Glen Grabelsky Managing Director +1-212-908-0577

Committee Chairperson Philip Smyth Senior Director +1-212-908-0531

Media Relations: Cindy Stoller, New York, Tel: +1 212 908 0526, Email: cindy.stoller@litchratings.com.

Additional information is available at 'www.fitchratings.com'.

Applicable Criteria and Related Research:

--'Corporate Rating Methodology' (Nov. 24, 2009)

--'Credit Rating Guidelines for Regulated utility Companies' (July 31, 2007)

--'U.S. Power and Gas Comparative Operating Risk (COR) Evaluation and Financial Guidelines'

(Aug. 22, 2007)

Applicable Criteria and Related Research: Corporate Rating Methodology http://www.fitchratings.com/creditdesk/reports/report\_frame.cfm?rpt\_id=546646 Credit Rating Guidelines for Regulated Utility Companies http://www.fitchratings.com/creditdesk/reports/report\_frame.cfm?rpt\_id=334652 U.S. Power and Gas Comparative Operating Risk (COR) Evaluation and Financial Guidelines http://www.fitchratings.com/creditdesk/reports/report\_frame.cfm?rpt\_id=338030

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Witness: Arbough dated March 22, 2011 Attachment to KPSC Question No. 14 – Standard & Poors, Global Credit Portal (LG&E)

## STANDARD &POOR'S

# **Global Credit Portal** RatingsDirect<sup>®</sup>

March 22, 2011

## Louisville Gas & Electric Co.

**Primary Credit Analyst:** 

Gerrit Jepsen, CFA, New York (1) 212-438-2529; gerrit\_jepsen@standardandpoors.com

### Secondary Contact: Barbara A Eiseman, New York (1) 212-438-7666; barbara\_eiseman@standardandpoors.com

### **Table Of Contents**

**Major Rating Factors** 

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# Louisville Gas & Electric Co.

### **Major Rating Factors**

### Strengths:

- Stable and relatively predictable utility operations and associated cash flows;
- Credit-supportive regulatory environment in Kentucky;
- Competitive rates; and
- Efficient operations and high customer satisfaction ratings.

### Weaknesses:

- Little fuel diversity; virtually all plants are coal-fired;
- Exposure to pending environmental standards, especially carbon dioxide; and
- Linked to parent credit quality.

### Rationale

The ratings on vertically-integrated electric utility Louisville Gas & Electric Co. (LG&E) reflect the credit quality of ultimate parent PPL Corp., which, along with its affiliates LG&E, Kentucky Utilities Co. (KU), LG&E and KU Energy LLC (LKE), PPL Electric Utilities Corp. (PPLEU), PPL Energy Supply LLC (PPL Energy), Western Power Distribution (South West) PLC, and Western Power Distribution (South Wales) PLC, are on CreditWatch with negative implications. Affiliate Western Power Distribution Holdings Ltd. is on CreditWatch with developing implications. The CreditWatch listings followed PPL's planned acquisition of E.ON UK's Central Networks West PLC (CNW) and Central Networks East PLC (CNE), two distribution networks in the U.K. The CreditWatch listing directly relates to the execution of the financing plan for the acquisition, which includes a commitment by the company for a substantial issuance of equity. Resolution of the CreditWatch will depend on the company's ability to complete its financing activities consistent with our expectations for the 'BBB' ratings.

Allentown, Pa.-based PPL has about \$13.4 billion of debt, including \$1.63 billion of junior subordinated notes.

PPL's purchase price of the Central Networks utilities includes the assumption of \$800 million of public debt and cash of \$5.6 billion (excluding related transaction expenses and fees) that it will initially fund through a bridge loan and ultimately through a combination of cash, common equity issuance at PPL, unsecured debt at CNW and CNE, and unsecured debt at an intermediate holding company (generically UK Holdings) that will own CNW and CNE. In addition, PPL will issue equity units at PPL Capital Funding, which will likely receive high equity credit under our rating criteria. This acquisition will raise PPL's regulated cash flows to about 75% from the current 60%. Before PPL bought the Kentucky utilities, its regulated cash flows were less than 30%. The ratings change reflects our revisions, in accordance with our criteria, of PPL's business risk profile to excellent from strong (we categorize business risk profiles as excellent to vulnerable) and the company's financial risk profile to aggressive from significant (we rank financial profiles from minimal to highly leveraged).

The excellent business profile reflects the addition of fully regulated distribution utilities that have credit-supportive U.K. regulation and no commodity exposure, since power for retail customers is procured by nonaffiliated retail suppliers. The Central Networks utilities are contiguous to PPL's existing U.K. utilities. After the acquisition of CNE

Corporate Credit Rating

BBB/Watch Neg/A-3

and CNW, we expect U.K. operations to be about 30% of PPL's consolidated cash flow. With this transaction, we are viewing all of PPL's utility assets as part of a consolidated entity, whereas previously we considered only the quality of the utility's dividends to its parent. The stability of CNE and CNW along with existing utility assets in the U.K., Kentucky, and Pennsylvania, which we assess as excellent, will more than offset the satisfactory business risk profile of PPL Energy's merchant generation, resulting in a consolidated business profile of excellent. We expect the merchant generation business to contribute less than 25% of pro forma consolidated cash flows.

LG&E's consolidated business risk profile< which we consider excellent, reflects the strengths of serving electric and natural gas customers in the Louisville area. The utility's strengths include relatively predictable utility operations with steady cash flows, constructive cost recovery, and relatively low rates stemming from low-cost coal-fired generation. Although generation is mostly coal-fired, the plants meet current environmental requirements and have a significant amount of capital spending through 2014 that they should be able to recover through rates.

As LG&E's financial risk profile reflects that of PPL's consolidated profile, we consider it as aggressive. Our revision of the financial risk profile to aggressive reflects in part the company's financial policies toward acquisitions, including funding with aggressive levels of hybrid securities. Furthermore, due to the company's strategy of focusing on fully regulated operations and also expanding its U.K. presence, we are incorporating consolidated financial measures for PPL in our analysis. When reviewing the financial metrics, we are now including all cash flows and debt obligations from the U.K. utilities and PPLEU in PPL's financial measures. We expect consolidated financial measures, including ratios of debt to EBITDA, funds from operations (FFO) to total debt, and debt to capital, to range in the aggressive category of our financial risk profile. Debt to EBITDA should range between 4x and 5x, while we expect the percentage of FFO to debt to be in the mid-teens. These measures will support ratings at the 'BBB' level when the company successfully completes the permanent financing.

### Short-term credit factors

LG&E's short-term rating is A-3. The utility's liquidity position reflects that of PPL. We consider PPL's liquidity strong under Standard & Poor's corporate liquidity methodology, which categorizes liquidity in five standard descriptors. Liquidity supports PPL's 'BBB+' issuer credit rating. Projected sources of liquidity, mainly operating cash flow and available bank lines, exceed projected uses, mainly necessary capital expenditures, debt maturities, and common dividends, by more than 1.5x. Sources over uses would be positive even after a 50% EBITDA decline. Further supporting our description of liquidity as strong is PPL's ability to absorb high-impact, low-probability events with limited need for refinancing, its flexibility to lower capital spending, its sound bank relationships, its solid standing in credit markets, and generally prudent risk management.

### **Recovery analysis**

We assign recovery ratings to First Mortgage Bonds (FMBs) issued by investment-grade U.S. utilities, which can result in issue ratings being notched above a utility's corporate credit rating (CCR) depending on the CCR category and the extent of the collateral coverage. The investmentgrade FMB recovery methodology is based on the ample historical record of nearly 100% recovery for secured bondholders in utility bankruptcies and our view that the factors that supported those recoveries (limited size of the creditor class and the durable value of utility rate-based assets during and after a reorganization given the essential service provided and the high replacement cost) will persist in the future. Under our notching criteria, we consider the limitations of FMB issuance under the utility's indenture relative to the value of the collateral pledged to bondholders, management's stated intentions on future FMB issuance, as well as the regulatory limitations on bond issuance when assigning issue ratings to utility FMBs. FMB ratings can exceed a utility's CCR by up to one notch in the 'A' category, two notches in the 'BBB' category,

and three notches in speculative-grade categories.

LG&E's FMBs benefit from a first-priority lien on substantially all of the utility's real property owned or subsequently acquired. Collateral coverage of about 1.5x supports a recovery rating of 1+ and an issue rating two notches above the CCR.

### CreditWatch

The CreditWatch listing will remain until the company demonstrates progress on the permanent financing plan in line with our expectations. The acquisition requires large permanent financing that has attendant execution risks, and we will monitor PPL's ability to finalize this permanent financing. We could remove the CreditWatch listing and assign a stable outlook if financing is consistent with our expectation. We could lower the ratings if PPL can't fully execute its permanent financing plan in a credit-supportive manner consistent with our expectations for 'BBB' ratings.

### Related Criteria And Research

- 2008 Corporate Criteria: Analytical Methodology
- Criteria Methodology: Business Risk/Financial Risk Matrix Expanded
- 2008 Corporate Criteria: Ratios And Adjustments
- Methodology And Assumptions: Standard & Poor's Standardizes Liquidity Descriptors For Global Corporate
   Issuers

Financial figures are not available because the company's figures are not currently public.

PPL Corp Peer Comparison*		· · · · · · · · · · · · · · · · · · ·					
Industry Sector: Energy							
	PPL Corp.	FirstEnergy Corp.	Public Service Enterprise Group Inc.	Ameren Corp.			
Rating as of March 17, 2011	BBB/Watch Neg/	BBB-/Stable/	BBB/Stable/A-2	BBB-/Stable/A-3			
	Average of past three fiscal years						
(Mil. \$)							
Revenues	5,285.6	13,266.0	11,995.5	7,522.3			
Net income from cont. oper.	483.9	1,044.0	1,466.6	452.0			
Funds from operations (FFO)	1,560.7	2,675.2	2,494.4	1,836.9			
Capital expenditures	1,177.4	2,352.5	1,874.5	1,668.3			
Cash and short-term investments	721.6	812.7	290.2	419.7			
Debt	8,598.5	17,675.4	8,875.7	9,223.1			
Preferred stock	333.3	0.0	53.3	88.7			
Equity	4,776.7	8,451.0	8,533.8	7,619.0			
Debt and equity	13,375.2	26,126.4	17,409.5	16,842.1			
Adjusted ratios			•				
EBIT interest coverage (x)	27	2.4	6.2	3.0			
FFO int. cov. (X)	4.8	3.2	6.0	4.6			
FFO/debt (%)	18.2	15.1	28.1	19.9			

Discretionary cash flow/debt (%)	(1.2)	(2.5)		1.0	(2.8)			
Net cash flow / capex (%)	86.6	85.2		97.1	85.0			
Total debt/debt plus equity (%)	64.3	67.7		51.0	54.8			
Return on common equity (%)	12.7	10.9		17.5	5.6			
Common dividend payout ratio (un-adj.) (%)	111.4	64.2		46.0	95.0			
*Fully adjusted (including postretirement obligations) N N	A Not Meaningful		<u>an an a</u>					
Ratings Detail (As Of March 22, 2011)*								
Louisville Gas & Electric Co.								
Corporate Credit Rating			BBB/Watch Neg/A-3					
Senior Secured (11 Issues)			A-/A-3					
Senior Secured (1 Issue)			A-/NR					
Senior Secured (2 Issues)			A-/Watch Neg					
Corporate Credit Ratings History	an ann an Addit a Channaichteann a' far à bhail is an tann ann ann ann ann ann	na na anna a' an air na hao na a' ann a' an ann a' ann						
21-Mar-2011			BBB/Watch Neg/A-3					
02-Mar-2011			BBB/Watch Neg/NR					
07-Jul-2004			BBB+/Stable/NR					
Business Risk Profile			Excellent					
Financial Risk Profile			Aggressive					
Related Entities	<u>, , , , , , , , , , , , , , , , , , , </u>			**********				
Kentucky Utilities Co.								
Issuer Credit Rating			BBB/Watch Neg/A-3					
Senior Secured (5 Issues)			A-/A-3					
Senior Secured (2 Issues)			A-/NR					
Senior Secured (3 Issues)			A-/Watch Neg					
LG&E and KU Energy LLC								
Issuer Credit Rating			BBB/Watch Neg/					
Senior Unsecured (2 Issues)			BBB-/Watch Neg					
PPL Corp.								
Issuer Credit Rating			BBB/Watch Neg/NR					
Junior Subordinated (2 Issues)			BB+/Watch Neg					
Senior Unsecured (3 Issues)			BBB-/Watch Neg	BBB-/Watch Neg				
PPL Electric Utilities Corp.								
Issuer Credit Rating			BBB/Watch Neg/A-3					
Commercial Paper								
Local Currency			A-3/Watch Neg					
Preference Stock (1 Issue)			BB+/Watch Neg					
Senior Secured (8 Issues)			BBB+/Watch Neg					
PPL Energy Supply LLC								
Issuer Credit Rating			BBB/Watch Neg/NR					
Senior Unsecured (12 Issues)			BBB/Watch Neg					
PPL Montana LLC								
Senior Secured (1 Issue)			<b>BBB-/Positive</b>					

Ratings Detail (As Of March 22, 2011)*(cont.)	
Western Power Distribution Holdings Ltd.	
Issuer Credit Rating	BBB-/Watch Dev/A-3
Senior Unsecured (2 Issues)	BBB-/Watch Neg
Western Power Distribution (South Wales) PLC	
Issuer Credit Rating	BBB/Watch Neg/A-3
Senior Unsecured (3 Issues)	BBB/Watch Neg
Western Power Distribution (South West) PLC	
Issuer Credit Rating	BBB/Watch Neg/A-3
Senior Unsecured (4 Issues)	BBB/Watch Neg
William attended and all estimates to the second are stated and estimate. Chandrad	2. Design and it estimates the slabel and a second second state source countries. Considered

\*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligors or obligations within that specific country.

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Attachment to KPSC Question No. 14 – Standard & Poor's, *Global Credit Portal* (LG&E and KU Energy LLC) dated March 22, 2011 Witness: Arbough

STANDARD &POOR'S

# **Global Credit Portal** RatingsDirect<sup>®</sup>

March 22, 2011

# LG&E and KU Energy LLC

### **Primary Credit Analyst:**

Gerrit Jepsen, CFA, New York (1) 212-438-2529; gerrit\_jepsen@standardandpoors.com

Secondary Contact: Barbara A Eiseman, New York (1) 212-438-7666; barbara\_eiseman@standardandpoors.com

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# LG&E and KU Energy LLC

### **Major Rating Factors**

### Strengths:

- Owns utilities that produce stable and predictable cash flows;
- Utilities have a credit-supportive regulatory environment in Kentucky;
- Utilities have competitive rates; and
- Utilities have efficient operations and high customer satisfaction ratings.

### Weaknesses:

- Utilities have little fuel diversity; virtually all are coal-fired;
- Utilities have exposure to pending environmental standards, especially carbon dioxide; and
- Linked to parent credit quality.

### Rationale

The ratings on intermediate holding company LG&E and KU Energy LLC (LKE) reflect parent PPL Corp.'s consolidated credit profile that, along with its affiliates LKE, Kentucky Utilities Co. (KU), Louisville Gas & Electric Co. (LG&E), PPL Electric Utilities Corp. (PPLEU), PPL Energy Supply LLC (PPL Energy), Western Power Distribution (South West) PLC, and Western Power Distribution (South Wales) PLC, are on CreditWatch with negative implications. Affiliate Western Power Distribution Holdings Ltd. is on CreditWatch with developing implications. The CreditWatch listings followed PPL's planned acquisition of E.ON UK's Central Networks West PLC (CNW) and Central Networks East PLC (CNE), two distribution networks in the U.K. The CreditWatch listing directly relates to the execution of the financing plan for the acquisition, which includes a commitment by the company for a substantial issuance of equity. Resolution of the CreditWatch will depend on the company's ability to complete its financing activities consistent with our expectations for the 'BBB' ratings.

Allentown, Pa.-based PPL has about \$13.4 billion of debt, including \$1.63 billion of junior subordinated notes.

PPL's purchase price of Central Networks utilities includes the assumption of \$800 million of public debt and cash of \$5.6 billion (excluding related transaction expenses and fees) that it will fund initially through a bridge loan and ultimately through a combination of cash, common equity issuance at PPL, unsecured debt at CNW and CNE, and unsecured debt at an intermediate holding company (generically UK Holdings) that will own CNW and CNE. In addition, PPL will issue equity units at PPL Capital Funding, which will likely receive high equity credit under our rating criteria. This acquisition will raise PPL's regulated cash flows to about 75% from the current 60%. Before PPL bought the Kentucky utilities, its regulated cash flows were less than 30%. The ratings change reflects our revisions, in accordance with our criteria, of PPL's business risk profile to excellent from strong (we categorize business risk profiles as excellent to vulnerable) and the company's financial risk profile to aggressive from significant (we rank financial profiles from minimal to highly leveraged).

The excellent business profile reflects the addition of fully regulated distribution utilities that have credit-supportive U.K. regulation and no commodity exposure, since power for retail customers is procured by nonaffiliated retail suppliers. The Central Networks utilities are contiguous to PPL's existing U.K. utilities. After the acquisition of CNE

Corporate Credit Rating

BBB/Watch Neg/--

and CNW, we expect U.K. operations to be about 30% of PPL's consolidated cash flow. With this transaction, we are viewing all of PPL's utility assets as part of a consolidated entity, whereas previously we considered only the quality of the utility's dividends to its parent. The stability of CNE and CNW along with existing utility assets in the U.K., Kentucky, and Pennsylvania, which we assess as excellent, will more than offset the satisfactory business risk profile of PPL Energy's merchant generation, resulting in a consolidated business profile of excellent. We expect the merchant generation business to contribute less than 25% of pro forma consolidated cash flows.

LKE's business risk profile incorporates the strengths of subsidiaries LG&E and KU that serve electric and natural gas customers scattered throughout Kentucky, including Louisville and Lexington. The strengths of these utilities include relatively predictable utility operations with steady cash flows, constructive cost recovery, and relatively low rates derived from low-cost coal-fired generation. Although generation is mostly coal-fired, the plants meet current environmental requirements and have a significant amount of capital spending through 2014 that the company should be able to recover through rates.

As LKE's financial risk profile reflects that of PPL's consolidated profile, we consider it as aggressive. Our revision of the financial risk profile to aggressive reflects in part the company's financial policies toward acquisitions, including funding with aggressive levels of hybrid securities. Furthermore, due to the company's strategy of focusing on fully regulated operations and also expanding its U.K. presence, we are incorporating consolidated financial measures for PPL in our analysis. When reviewing the financial metrics, we are now including all cash flows and debt obligations from the U.K. utilities and PPLEU in PPL's financial measures. We expect consolidated financial measures, including ratios of debt to EBITDA, funds from operations (FFO) to total debt, and debt to capital, to range in the aggressive category of our financial risk profile. Debt to EBITDA should range between 4x and 5x, while we expect the percentage of FFO to debt to be in the mid-teens. These measures will support ratings at the 'BBB' level when the company successfully completes the permanent financing.

### Short-term credit factors

LKE's liquidity position reflects that of PPL. We consider PPL's liquidity strong under Standard & Poor's corporate liquidity methodology, which categorizes liquidity in five standard descriptors. Liquidity supports PPL's 'BBB+' issuer credit rating. Projected sources of liquidity, mainly operating cash flow and available bank lines, exceed projected uses, mainly necessary capital expenditures, debt maturities, and common dividends, by more than 1.5x. Sources over uses would be positive even after a 50% EBITDA decline. Additional factors that support the liquidity are PPL's ability to absorb high-impact, low-probability events with limited need for refinancing, its flexibility to lower capital spending, its sound bank relationships, its solid standing in credit markets, and generally prudent risk management.

### CreditWatch

The CreditWatch listing will remain until the company demonstrates progress on its permanent financing plan in line with our expectations. The acquisition requires large permanent financing that has attendant execution risks, and we will monitor PPL's ability to finalize this permanent financing. We could remove the CreditWatch listing and assign a stable outlook if financing is consistent with our expectation. We could lower the ratings if PPL can't fully execute its permanent financing plan in a credit-supportive manner consistent with our expectations for 'BBB' ratings.

### **Related Criteria And Research**

- 2008 Corporate Criteria: Analytical Methodology
- Criteria Methodology: Business Risk/Financial Risk Matrix Expanded
- 2008 Corporate Criteria: Ratios And Adjustments
- Methodology And Assumptions: Standard & Poor's Standardizes Liquidity Descriptors For Global Corporate Issuers

Financial figures are not available because the company's figures are not currently public.

Ratings Detail (As Of March 22, 2011)*		
LG&E and KU Energy LLC		
Corporate Credit Rating	BBB/Watch Neg/	
Senior Unsecured (2 Issues)	BBB-/Watch Neg	
Corporate Credit Ratings History		
02-Mar-2011	BBB/Watch Neg/	
04-Aug-2003	BBB+/Stable/	
12-Sep-2002	A-/Stable/	
Business Risk Profile	Excellent	
Financial Risk Profile Aggressive		
Related Entities		
Kentucky Utilities Co.		
Issuer Credit Rating	BBB/Watch Neg/A-3	
Senior Secured (5 Issues)	A-/A-3	
Senior Secured (2 Issues)	A-/NR	
Senior Secured (3 Issues)	A-/Watch Neg	
Louisville Gas & Electric Co.		
Issuer Credit Rating	BBB/Watch Neg/A-3	
Senior Secured (11 Issues)	A-/A-3	
Senior Secured (1 Issue)	A-/NR	
Senior Secured (2 Issues)	A-/Watch Neg	
PPL Corp.		
Issuer Credit Rating	BBB/Watch Neg/NR	
Junior Subordinated (2 Issues)	BB+/Watch Neg	
Senior Unsecured (3 Issues)	BBB-/Watch Neg	
PPL Electric Utilities Corp.		
Issuer Credit Rating	BBB/Watch Neg/A-3	
Commercial Paper		
Local Currency	A-3/Watch Neg	
Preference Stock (1 Issue)	BB+/Watch Neg	
Senior Secured (8 Issues)	BBB+/Watch Neg	
PPL Energy Supply LLC		
Issuer Credit Rating	BBB/Watch Neg/NR	
Senior Unsecured (12 Issues)	BBB/Watch Neg	

Ratings Detail (As 0f March 22, 2011)*(cont.)	
PPL Montana LLC	n na hanna an an ann ann ann ann ann ann
Senior Secured (1 Issue)	BBB-/Positive
Western Power Distribution Holdings Ltd.	
Issuer Credit Rating	BBB-/Watch Dev/A-3
Senior Unsecured (2 Issues)	BBB-/Watch Neg
Western Power Distribution (South Wales) PLC	
Issuer Credit Rating	BBB/Watch Neg/A-3
Senior Unsecured (3 Issues)	BBB/Watch Neg
Western Power Distribution (South West) PLC	
Issuer Credit Rating	BBB/Watch Neg/A-3
Senior Unsecured (4 Issues)	BBB/Watch Neg
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The McGraw-Hill Companies

dated January 29, 2010 Attachment to KPSC Question No. 14 - Moody's Investors Services, Credit Option (LG&E) Witness: Arbough



Credit Opinion: Louisville Gas & Electric Company

Louisville Gas & Electric Company

Louisville, Kentucky, United States

#### Ratings

Category Outlook	Moody's Rating Stable
Issuer Rating	A2
Uit Parent: E.ON AG	
Outlook	Stable
Senior Unsecured -Dom Curr	A2
Commercial Paper	P-1
Parent: E. ON U.S. LLC	
Outlook	Stable
Issuer Rating	A3
Contacts	

Analyst	Phone
Scott Solomon/New York	212.553.4358
William L. Hess/New York	212.553.3837

#### Opinion

#### Rating Drivers

E.ON AG ownership strengthens LG&E's financial position

Regulatory compact allows for the timely recovery of costs

Elevated capital expenditure spending program

Ability to manage a successful outcome for a recently filed rate case

#### **Corporate Profile**

Louisville Gas and Electric Company (LG&E) is a regulated public utility engaged in the generation, transmission and distribution of electricity and the storage, distribution and sale of natural gas. It provides electricity to approximately 389,000 customers in Louisville and adjacent areas and natural gas service to approximately 314,000 customers. LG&E's coal-fired electric generating plants produce most of its electricity.

LG&E is a wholly-owned subsidiary of E.ON U.S. LLC (A3 Issuer Rating). E.ON U.S. is an indirect wholly-owned subsidiary of German-based E.ON AG (A2 senior unsecured). LG&E's affiliate Kentucky Utilities (KU: A2 Issuer Rating), is a regulated public utility also operating in Kentucky. Although LG&E and KU are separate legal entities, they are operated as a single, fully integrated system and provide the majority of the consolidated earnings and cash flow of E.ON U.S. LLC.

#### SUMMARY RATING RATIONALE

Moody's evaluates LG&E's consolidated financial performance relative to the Regulated Electric and Gas Utilities rating methodology published in August 2009 and as depicted in the grid below, LG&E's indicated rating under this methodology is A3 compared to its A2 senior unsecured rating.

LG&E receives a one notch rating lift from its ownership by E.ON AG. Specifically, E.ON AG's size, scale and credit profile has historically provided LG&E considerable liquidity and financial flexibility primarily in the form of inter-company funding that in our opinion strengthens LG&E's financial position. Inter-company debt accounted for

approximately 60% of LG&E's approximate \$1.0 billion of debt at September 30, 2009.

The ratings and outlook of LG&E could be affected if E.ON AG's senior unsecured rating were to be downgraded from its current level.

In addition to its ownership by E.ON AG, LG&E's A2 senior unsecured rating reflects its historical financial metrics combined with regulatory supportiveness provided by the Kentucky Public Service Commission (KPSC) and its historical ability to recover costs in a timely manner.

### STRONG FINANCIAL PROFILE

While down slightly from prior levels due to inter-company debt incurred to fund the construction of its new Trimble 2 generating facility, LG&E's key financial metrics remain within a notch of its current rating. Specifically, LG&E's ratio of consolidated cash flow before changes in working capital (CFO pre W/C) to debt and CFO pre-W/C interest coverage for the twelve months ended September 30, 2009 were approximately 27% and 6 times, respectively.

In January 2009, a significant winter ice storm passed through LG&E's service territory causing approximately 205,000 customer outages, followed closely by a severe wind storm in February 2009, causing approximately 37,000 customer outages. LG&E incurred \$44 million of incremental operation and maintenance expenses and \$10 million of capital expenditures related to the restoration following the two storms. LG&E has been allowed by the KPSC to establish a regulatory asset for its 2009 storm costs and has requested recovery of these costs over a five-year period.

#### CONSTRUCTIVE REGULATORY ENVIRONMENT

LG&E has an environmental cost recovery mechanism in its electric rates that allows for the recovery of environmental costs, including a 10.63% return on equity. This is an important factor given that KU and LG&E's combined environmental capital spending has been estimated to be approximately \$700 million in aggregate during the three-year period ending 2011. Proceedings are conducted every two years to evaluate the operation of the environmental cost recovery mechanism. The utilities also benefit from a fuel adjustment clause that eliminates supply cost volatility.

LG&E filed a rate case in January 2010 requesting a \$94.6 million or 12.1% base electric rate increase and a \$22.6 million or 7.7% natural gas base rate increase with a proposed effective date of March 1, 2010. The rate increase is needed to cover increased costs, to provide a return on the company's considerable investment in its infrastructure, primarily Trimble 2, and to recovery costs associated with the storm restorations. The KPSC has the ability to suspend the proposed rate increase for up to 6 months. The current weak statewide economic environment could present a challenge for LG&E in its efforts to manage a successful rate outcome

#### LARGE CAPITAL EXPENDITURE PROGRAM

The company is nearing construction completion of the new 750-megawatt Trimble 2 coal-fired generating station of which LG&E and KU own undivided 14.25% and 60.75% interests, respectively. The remaining 25% interest is owned by regional municipal power entities. The generating station is expected to begin commercial operation during the summer of 2010 at a total cost to KU and LG&E of approximately \$900 million.

LG&E's capital expenditures are still expected to remain significant going forward, estimated at \$690 million for the three year period ending December 31, 2011 compared to approximately \$600 million during the three year period ended December 31, 2008. Incremental Inter-company funding is anticipated in order to finance in part these expenditures.

#### Liquidity

LG&E's external sources for liquidity includes \$125 million of bilateral lines of credit with third party lenders due June 2012 and an inter-company money pool agreement where E.ON U.S. and/or KU make up to \$400 million of funds available to LG&E. LG&E's borrowing under the inter-company money pool at September 30, 2009 was \$149 million. There were no borrowings under the bilateral line of credit, which is used to backstop a similar amount of pollution control revenue bonds that are subject to tender for purchase at the option of the holder.

E.ON U.S. maintains revolving credit facilities totaling \$313 million at September 30, 2009 with affiliated companies to ensure funding availability for the money pool.

#### **Rating Outlook**

The stable rating outlook reflects Moody's expectation that LG&E will continue to show strong fundamentals and that inter-company funding support will continue to be provided by E.ON AG.

#### What Could Change the Rating - Up

In light of LG&E's sizeable expenditure program, limited prospects exist for the rating to be upgraded over the next several years. Longer-term, core financial metrics would need to improve considerably, such as CFO pre W/C to debt greater than 30%, for Moody's to consider an upgrade.

#### What Could Change the Rating - Down

Moody's would consider a rating downgrade if E. ON AG's senior unsecured rating was downgraded from its current A2 level, if inter-company funding support was discontinued or significant changes were made to the environmental cost recovery mechanism or if CFO pre-W/C declined to below 15%.

#### **Rating Factors**

#### Louisville Gas & Electric Company

Regulated Electric and Gas Utilities	Aaa	Aa	A	Baa	Ba	В
Factor 1: Regulatory Framework (25%)				X		
Factor 2: Ability to Recover Costs and Earn Returns (25%)			x			
Factor 3: Diversification (10%)						
a) Market Position (5%)		n 1		x		
b) Generation and Fuel Diversity (5%)					X	
Factor 4: Financial Strength, Llquidity and Key Financial Metrics (40%)						
a) Liquidity (10%)			x			
b) CFO pre-WC + Interest / Ineterest (7.5%) (3yr Avg)			x			
c) CFO pre-WC / Debt (7.5%) (3yr Avg)			x			
d) CFO pre-WC - Dividends / Debt (7.5%) (3yr Avg) e) Debt / Capitalization or Debt / RAV (7.5%) (3yr Avg)			x	×		
Rating:						
a) Methodology Implied Senior Unsecured Rating				A3		
b) Actual Senior Unsecured Rating				A2		

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"by it feas ranging from \$1,500 to approximately \$2,400 000. Moody's Corporation (MCO) and its wholly-owned. "creat rating service subsidiary, Moody's Investors Service (MIS), also maintain policies and ""procedures to address the independence of MIS's ratings and rating processes. Information." regarding "certain affiliations that may exist between directors of MCO and rated entities, and between " entities who hold atings from MIS and have also publicly reported to the SEC an ownership interest " "in MCO of more than 5%, is posted innually on Moody's website at www.moodys.com.under the heading, "Shareholder Relations - Corporate Governance - Director and Shareholder Affiliation Policy

dated November 9, 2010 Witness: Arbough Attachment to KPSC Question No. 14 – Moody's Investors Services, Rating

### MOODY'S INVESTORS SERVICE

Rating Action: The second and second could be a first of the second seco

#### Approximately \$2.9 billion of debt securities affected

New York, November 09, 2010 -- Moody's Investors Service has assigned ratings of A2 to \$1,500 million of first mortgage bonds issued by Kentucky Utilities Company (KU: Baa1 Issuer Rating) and \$535 million of first mortgage bonds issued by Louisvitle Gas and Electric Company (LG&E: Baa1 Issuer Rating). Moody's also assigned a Baa2 rating to \$875 million of senior unsecured notes issued by their intermediate parent holding company. LG&E and KU Energy LLC (LKE: Baa2 Issuer Rating). The rating outlooks for KU, LG&E and LKE are stable.

به رزی میں اور او در در در در در

#### Assignments:

...Issuer: Kentucky Utilities Co.

- ....Senior Secured First Mortgage Bonds, Assigned A2
- ...Issuer: LG&E and KU Energy LLC
- ....Senior Unsecured Regular Bond/Debenture, Assigned Baa2
- ...Issuer: Louisville Gas & Electric Company
- ....Senior Secured First Mortgage Bonds, Assigned A2

#### RATINGS RATIONALE

Proceeds from these offerings will be used to repay intercompany debt arising from PPL Corporation's (PPL: Baa3 senior unsecured) acquisition of LKE and its subsidiaries on November 1, 2010 for approximately \$7,625 billion.

KU and LG&E's issuer Ratings are supported by their sound financial performance and the supportive regulatory environment in which they operate offset in part by a lack of fuel diversity and modestly sized service territories. It is Moody's policy to generally rate first mortgage bonds of investment-grade rated utilities two alpha-numeric ratings higher than its Issuer Rating or service unsecured debt rating. The Baa2 rating assigned to LKE's senior unsecured debt is the same as its issuer Rating and one-notch below KU and LG&E's issuer Ratings due to the structural subordination of its debt to the debt issued at its utility subsidiaries.

Please refer to Moodys.com for additional research relating to KU, LG&E and LKE.

The principal methodology used in this rating was Regulated Electric and Gas Utilities published in August 2009.

PPL is a diversified energy holding company headquartered in Allentown, Pennsylvania.

#### REGULATORY DISCLOSURES

Information sources used to prepare the credit rating are the following: parties involved in the ratings, parties not involved in the ratings, public information, confidential and proprietary Moody's Investors Service information, and confidential and proprietary Moody's Analytics information.

Moody's Investors Service considers the quality of information available on the issuer or obligation satisfactory for the purposes of assigning a credit rating.

Moody's adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources. Moody's considers to be reliable including, when appropriate, independent third-party sources. However, Moody's is not an auditor and cannot in every instance independently verify or validate information received in the rating process.

Please see ratings tab on the issuer/entity page on Moodys.com for the last rating action and the rating history.

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Please see the Credit Policy page on Moodys.com for the methodologies used in determining ratings, further information on the meaning of each rating category and the definition of default and recovery.

New York Scott Solomon Vice President - Senior Analyst Infrastruture Finance Group Moody's Investors Service JOURNALISTS: 212-553-0376 SUBSCR/BERS: 212-553-1653

New York William L. Hess MD - Utilities Infrastructure Financo Group Moody's Investors Service JOURNALISTS: 212-553-0376 SUBSCRIBERS: 212-553-1653

Moody's Investors Service 250 Greenwich Street New York, NY 10007 U.S.A.

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Attachment to KPSC Question No. 14 – Standard & Poors, Global Credit Portal (E.ON U. S. LLC) dated May 6, 2010 Witness: Arbough

# TANDARD &POOR'S

# **Global Credit Portal** RatingsDirect®

May 6, 2010

## E.ON U.S. LLC

Primary Credit Analyst: Barbara A Eiseman, New York (1) 212-438-7666; barbara\_eiseman@standardandpoors.com

Secondary Credit Analyst: Gabe Grosberg, New York (1) 212-438-6043; gabe\_grosberg@standardandpoors.com

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**Major Rating Factors** 

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www.standardandpoors.com/ratingsdirect

# E.ON U.S. LLC

# **Major Rating Factors**

#### Strengths:

- Stable and relatively predictable utility operations and associated cash flows;
- Credit supportive regulatory environment in Kentucky;
- · Competitive rates; and
- · Efficient operations and high customer satisfaction ratings.

#### Weaknesses:

- Little fuel diversity; virtually all coal-fired;
- Heavy construction program;
- Rate relief needs during a time of unusual economic weakness; and
- Somewhat weak consolidated financial metrics.

# Rationale

Our ratings on E.ON U.S. are currently based on the credit profile of its two operating utilities in Kentucky, Louisville Gas & Electric (LG&E) and Kentucky Utilities (KU) and the company's focus on operating the fully integrated utilities. Current ratings are linked to ultimate parent E.ON AG (A/Stable/A-1).

On April 28, 2010, PPL Corp. announced its plan to acquire E.ON U.S. for \$7.625 billion in cash. The transaction includes the assumption of \$574 million of tax-exempt debt at LGE and \$351 million of tax-exempt debt at KU. The acquisition requires approvals by state regulators in Kentucky, Virginia and Tennessee, and by the FERC. The transaction is expected to close by the end of 2010.

The inclusion of LG&E and KU into PPL will rebalance PPL's portfolio toward a greater regulated mix. With regulated operations contributing 60%-65% of the overall cash flow post acquisition compared with about 30% in 2009, the "excellent" business risk profile of the utility businesses will more than offset the "satisfactory" business risk profile of the generation business. This will result in a pro forma "strong" consolidated business risk profile. We expect consolidated debt to EBITDA and total debt to total capital ratios to range in the "significant" financial risk profile category. Projected FFO to total debt of 23.5%-25% will likely support ratings at the higher end of the 'BBB' rating category on successful completion of the acquisition.

The acquisition requires large permanent financing that has attendant execution risks. If the transaction with PPL is not ultimately consummated, we will affirm the 'BBB+' ratings on E.ON U.S., LG&E, and KU.

We view E.ON U.S.'s consolidated business risk profile as 'excellent' (we categorize business risk profiles as 'excellent' to 'vulnerable') and its financial profile as 'aggressive' (financial profiles are ranked from 'minimal' to 'highly leveraged'). The company's business risk profile is supported by relatively low-risk, regulated vertically integrated electric and natural gas distribution operations, a stable and credit supportive regulatory environment in Kentucky, efficient generation facilities that allow for competitive rates, consistently high customer satisfaction rankings, and effective cost containment. The company's electric operations benefit from a fuel and purchased power (energy only) adjustment clause, an environmental cost recovery surcharge, and other timely cost recovery

Standard & Poor's | RatingsDirect on the Global Credit Portal | May 6, 2010

# Corporate Credit Rating

BBB+/Stable/--

2

mechanisms, while its smaller gas operations benefit from a gas supply clause. These strengths are tempered by the lack of fuel diversity (nearly all coal-fired), a relatively heavy construction program, and rate relief needs during a period of unusual economic weakness. Construction outlays focus on the company's 75% ownership share in the 750 MW Trimble County Unit 2 coal-fired facility that's slated for completion later this year, ongoing environmental requirements, and other project betterments.

On July 16, 2009, the power plant lease arrangement between E.ON U.S.'s subsidiary Western Kentucky Energy Corp. and Big Rivers Electric Corp. was terminated. While unwinding of the contract required a large one-time cash payment of \$575 million and other concessions, it significantly reduces E.ON U.S.'s dependence on riskier unregulated activities, and enhances the company's business risk profile within the "excellent" category.

Currently pending before the Kentucky Public Service Commission are rate applications for a \$94.6 million (12.1%) electric rate hike and a \$22.6 million (7.7%) natural gas rate increase for LG&E and a \$135 million (11.5%) electric rate hike for KU. The rate requests are predicated upon an 11.5% return on equity. Commission orders are expected this summer. Higher rates are needed to recover the utilities' investment in Trimble County Unit 2, damage costs related to severe storms, and higher costs. The fact that the state regulators will be reviewing somewhat large rate hike requests in a weakened economy is a credit concern. Therefore, the company's ability to manage regulatory risk will be critical to credit quality.

E.ON U.S.'s consolidated financial metrics have declined somewhat, owing primarily to its heavy construction program. However, with well controlled operating and maintenance expenses, continued efficient operations, responsive regulatory treatment, and credit supportive actions by management, bondholder protection parameters should strengthen to levels more commensurate with the current rating level.

#### Short-term credit factors

Standard & Poor's expects E.ON U.S.'s capital spending to exceed cash flow from operations primarily because of significant environmental expenditures and outlays to complete the Trimble County Unit 2 station. The steady internal cash flow generated by KU's and LG&E's regulated operations will not be enough to meet these obligations, thus creating a reliance on outside capital. Such funding is expected to be concentrated at Germany-based parent E.ON AG, which will also provide support in the case of short-term liquidity needs. (An E.ON AG-related entity provides a credit facility to E.ON U.S. to ensure funding availability for its money pool.

#### Outlook

The stable outlook on E.ON U.S. is based on corporate strategy that maintains a primarily low-risk, utility-based business risk profile. Standard & Poor's could lower the ratings absent future sufficient rate relief, if construction expenditures materially increase resulting in higher-than-expected reliance on debt, and if cash flow metrics erode. In light of a prospectively heavy capital program and subpar financial metrics, higher ratings are not envisioned in the foreseeable future.

# **Related Criteria And Research**

- "2008 Corporate Criteria: Analytical Methodology," April 15, 2008.
- "Criteria Methodology: Business Risk/Financial Risk Matrix Expanded," May 27, 2009.

E.ON U.S. is a private company and does not release financial information publicly.

E.ON U.S. LLC Corporate Credit Rating	BBB+/Stable/
	DDD+/3\dule/~
Corporate Credit Ratings History	
04-Aug-2003	BBB+/Stable/
12-Sep-2002	A-/Stable/
09-Apr-2001	BBB+/Watch Pos/
Business Risk Profile	Excellent
Financial Risk Profile	Aggressive
Related Entities	
Central Networks East PLC	
Issuer Credit Rating	A/Stable/A-1
E.ON AG	
Issuer Credit Rating	A/Stable/A-1
Commercial Paper	A-1
Senior Unsecured (50 Issues)	A
Short-Term Debt (1 Issue)	A-1
E.ON Energy Ltd.	
Issuer Credit Rating	A/Stable/A-1
E.ON International Finance B.V.	
Commercial Paper	
Local Currency	A-1
E.ON U.K. PLC	
Issuer Credit Rating	A/Stable/A-1
Senior Unsecured (1 Issue)	А
Kentucky Utilities Co.	
Issuer Credit Rating	BBB+/Stable/A-2
Senior Unsecured (3 Issues)	BBB+
Senior Unsecured (4 Issues)	BBB+/A-2
Louisville Gas & Electric Co.	
ssuer Credit Rating	BBB+/Stable/NR
Senior Unsecured (8 Issues)	B8B+
Senior Unsecured (4 Issues)	BBB+/A-2
Powergen (East Midlands) Investments	
Issuer Credit Rating	A/Stable/

\*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligations within that specific country.

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Witness: Arbough dated May 6, 2010 Attachment to KPSC Question No. 14 – Standard & Poors, Global Credit Portal (LG&E)

# TANDARD & POOR'S

# **Global Credit Portal** RatingsDirect<sup>®</sup>

May 6, 2010

# Louisville Gas & Electric Co.

Primary Credit Analyst: Barbara A Eiseman, New York (1) 212-438-7666; barbara\_eiseman@standardandpoors.com

Secondary Credit Analyst: Gabe Grosberg, New York (1) 212-438-6043; gabe\_grosberg@standardandpoors.com

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**Major Rating Factors** 

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# Louisville Gas & Electric Co.

# **Major Rating Factors**

#### Strengths:

- Stable and relatively predictable utility operations and associated cash flows;
- Credit supportive regulatory environment in Kentucky;
- Competitive rates; and
- Efficient operations and high customer satisfaction ratings.

#### Weaknesses:

- Little fuel diversity, virtually all coal-fired;
- Heavy construction program;
- · Rate relief needs during a time of unusual economic weakness; and
- Somewhat subpar consolidated financial metrics.

# Rationale

The ratings on Louisville Gas & Electric Co. (LG&E) are based primarily on parent E.ON U.S. LLC's credit profile. The ratings on E.ON U.S. are based primarily on the credit profile of its two operating utilities in Kentucky-LG&E and Kentucky Utilities Co. (BBB+/Stable/A-2) -- and the company's focus on operating the fully integrated utilities. Current ratings are linked to ultimate parent E.ON AG (A/Stable/A-1).

On April 28, 2010, PPL Corp. announced its plan to acquire E.ON U.S. for \$7.625 billion in cash. The transaction includes the assumption of \$574 million of tax-exempt debt at LGE and \$351 million of tax-exempt debt at KU. The acquisition requires approvals by state regulators in Kentucky, Virginia and Tennessee, and by the FERC. The transaction is expected to close by the end of 2010.

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The acquisition requires large permanent financing that has attendant execution risks. If the transaction with PPL is not ultimately consummated, we will affirm the 'BBB+' ratings on E.ON U.S., LG&E, and KU.

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2

Corporate Credit Rating BBB+/Stable/NR

rankings, and effective cost containment. The company's electric operations benefit from a fuel and purchased power (energy only) adjustment clause, an environmental cost recovery surcharge, and other timely cost recovery mechanisms, while its smaller gas operations benefit from a gas supply clause. These strengths are tempered by the lack of fuel diversity (nearly all coal-fired), a relatively heavy construction program, and rate relief needs during a period of unusual economic weakness. Construction outlays focus on the company's 75% ownership share in the 750 MW Trimble County Unit 2 coal-fired facility that's slated for completion later this year, ongoing environmental requirements, and other project betterments.

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#### Short-term credit factors

Standard & Poor's expects E.ON U.S.'s capital spending to exceed cash flow from operations primarily because of significant environmental expenditures and outlays to complete the Trimble County Unit 2 station. The steady internal cash flow generated by KU's and LG&E's regulated operations will not be enough to meet these obligations, thus creating a reliance on outside capital. Such funding is expected to be concentrated at Germany-based parent E.ON AG, which will also provide support in the case of short-term liquidity needs. (An E.ON AG-related entity provides a credit facility to E.ON U.S. to ensure funding availability for its money pool.

#### Outlook

The stable outlook on LG&E mirrors that of parent E.ON U.S. is based on corporate strategy that maintains a primarily low-risk, utility-based business risk profile. Standard & Poor's could lower the ratings absent future sufficient rate relief, if construction expenditures materially increase resulting in higher-than-expected reliance on debt, and if cash flow metrics erode. In light of a prospectively heavy capital program and subpar financial metrics, higher ratings are not envisioned in the foreseeable future.

# Related Criteria And Research

- "2008 Corporate Criteria: Analytical Methodology," April 15, 2008.
- "Criteria Methodology: Business Risk/Financial Risk Matrix Expanded," May 27, 2009.

#### Table 1.

Louisville Gas	& Electric Co	- Financial	Summary*		

		Fisc	al year ended D	ec. 31	
	2009	2906	2007	2006	2005
Rating history	BBB+/Stable/	BBB+/Stable/	BBB+/Stable/	BBB+/Stable/	BBB+/Stable/
(Mil. \$)					
Revenues	1,272.0	1,467.0	1,286.0	1,338.0	1,424.3
Net income from continuing operations	95.0	90.0	120.0	117.0	128.9
Funds from operations (FFO)	194.7	191.5	232.9	234.4	271.8
Capital expenditures	186.3	255.2	203.0	146.0	138.9
Cash and short-term investments	5.0	4.0	4.0	7.0	7.1
Debt	1,307.8	1,442.0	1,204.4	1,067.6	1,172.0
Preferred stock	0	0	D	70.0	70.4
Equity	1,253.0	1,234.0	1,161.0	1,164.0	1,043.0
Debt and equity	2,560.8	2,676.0	2,365.4	2,231.6	2,215.0
Adjusted ratios					
EBIT interest coverage (x)	3.8	3.1	4.3	5.0	5.8
FFO int. cov. (x)	4.0	3.7	4.9	5.7	7.3
FFO/debt (%)	14.9	13.3	19.3	22.0	23.2
Discretionary cash flow/debt (%)	3.8	(8.9)	(7.4)	8.5	(2.3)
Net Cash Flow / Capex (%)	61.6	59,4	82.7	92.7	165.5
Debt/debt and equity (%)	51.1	53.9	50.9	47.8	52.9
Return on common equity (%)	7.6	7.5	10.6	10.7	12.7
Common dividend payout ratio (un-adj.) (%)	84.2	44.4	54.2	84.1	31.0

\*Fully adjusted (including postretirement obligations).

#### Table 2.

#### Reconciliation Of Louisville Gas & Electric Co. Reported Amounts With Standard & Poor's Adjusted Amounts (Mil. S)\*

--Fiscal year ended Dec. 31, 2009--

Louisville Gas & El	ectric Co. r	eported amount	3					
	Debt	Operating income (before D&A)	Operating income (before D&A)	Operating income (after D&A)	Interest expense	Cash flow from operations	Cesh flow from operations	Capital expenditures
Reported	1,066.0	303.0	303.0	167.0	44.0	309.0	309.0	186.0
Standard & Poor's a	djustment	5						
Operating leases	19.4	7.0	0.9	0.9	0.9	6.1	6.1	0.3
Postretirement benefit obligations	130.7	28.0	28.0	28.0	8.0	2.0	2.0	

Standard & Poor's | RatingsDirect on the Global Credit Portal | May 6, 2010

4

#### Table 2.

\$)* (cont.)								
Power purchase agreements	71.6	2.9	2.9	2.9	2.9		**	
Asset retirement obligations	20.2	2.0	2.0	2.0	2.0	(1.3)	(1.3)	
Reclassification of nonoperating income (expenses)				19.0			••	•
Reclassification of working-capital cash flow changes	**		**				(121.0)	
Total adjustments	241.8	39.9	33.8	52.8	13.8	6.7	(114.3)	0.3

#### Standard & Poor's adjusted amounts

	Debt	Operating income (before D&A)	EBITDA	EBIT	Interest expense	Cash flow from operations	Funds from operations	Capital expenditures
Adjusted	1,307.8	342.9	336.8	219.8	57.8	315.7	194.7	186.3

\*Louisville Gas & Electric Co. reported amounts shown are taken from the company's financial statements but might include adjustments made by data providers or reclassifications made by Standard & Poor's analysts. Please note that two reported amounts (operating income before D&A and cash flow from operations) are used to derive more than one Standard & Poor's adjusted amount (operating income before D&A and cash flow from operations, respectively). Consequently, the first section in some tables may feature duplicate descriptions and amounts.

Ratings Detail (As Of May 6, 2010)*	
Louisville Gas & Electric Co.	
Corporate Credit Rating	BBB+/Stable/NR
Senior Unsecured (8 Issues)	BBB+
Senior Unsecured (4 Issues)	BBB+/A-2
Corporate Credit Ratings History	
07-Jul-2004	BBB+/Stable/NR
04-Aug-2003	BBB+/Stable/A-2
12-Sep-2002	A-/Stable/A-2
Business Risk Profile	Excellent
Financial Risk Profile	Aggressive
Related Entities	
Central Networks East PLC	
Issuer Credit Rating	A/Stable/A-1
E.ON AG	
Issuer Credit Rating	A/Stable/A-1
Commercial Paper	A-1
Senior Unsecured (50 Issues)	Α
Short-Term Debt (1 Issue)	A-1
E.ON Energy Ltd.	
Issuer Credit Rating	A/Stable/A-1
E.ON International Finance B.V.	
Commercial Paper	
Local Currency	A-1

Louisville Gas & Electric Co.

Ratings Detail (As Of May 6, 2010)*(cont.)	
E.ON U.K. PLC	
Issuer Credit Rating	A/Stable/A-1
Senior Unsecured (1 Issue)	A
E.ON U.S. LLC	
Issuer Credit Rating	BBB+/Stable/
Kentucky Utilities Co.	
Issuer Credit Rating	BBB+/Stable/A-2
Senior Unsecured (3 Issues)	BBB+
Senior Unsecured (4 Issues)	BBB+/A-2
Powergen (East Midlands) Investments	
Issuer Credit Rating	A/Stable/

\*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligations within that specific country.

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The McGraw Hill Companies

www.standardandpoors.com/ratingsdirect

# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 15

#### Witness: Daniel K. Arbough

- Q-15. Provide a copy of any bond rating agency and or bank reports which discuss any issues surrounding obtaining regulatory approval for construction projects based upon EPA rules that have not been finalized.
- A-15. The Company is not aware of any reports that are responsive to this request.

# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

#### Question No. 16

#### Witness: Lonnie E. Bellar

- Q-16. Explain whether LG&E is aware of any other electric generation utility that has filed a CPCN application with its state regulatory agency prior to EPA's new rules being finalized.
- A-16. LG&E is not aware of the position other electric generation utilities have taken with respect to CPCN applications for compliance with the EPA's new rules.

#### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 17

#### Witness: Lonnie E. Bellar

- Q-17. Refer to the Direct Testimony of Lonnie E. Bellar ("Bellar Testimony") at pages 9-10. In the final order in LG&E's most recent base rate case, at pages 28-33, there is discussion of testimony which supported return on equity ("ROE") estimates over a wide range for LG&E. The Commission found that LG&E's "required ROE for both electric and gas operations falls within a range of 9.75 to 10.75 percent with a midpoint of 10.25 percent." Pursuant to KRS 278.183(2)(b), the Commission must establish a reasonable return on capital expenditures for projects included in an environmental compliance plan.
  - a. Notwithstanding that the parties to Case No. 2009-00549, with the exception of the Attorney General, signed a settlement agreeing to an ROE of 10.63 percent, explain why a 10.63 percent ROE is appropriate on a going forward basis.
  - b. Provide all economic analyses performed by or for LG&E that demonstrate a ROE of 10.63 percent is reasonable based on current economic conditions.
  - c. If it is appropriate for the Commission to consider the 10.63 percent ROE established in LG&E's last rate case, and in the absence of any new testimony addressing the derivation of ROE estimates, explain why it would not be appropriate to consider the return on equity testimony also.
  - d. Provide all support for the position that the Commission's decision in LG&E's last rate case to accept a 10.63 percent ROE for environmental cost recovery obligates the Commission to now adopt that same ROE for a new environmental compliance plan absent a showing that a 10.63 percent ROE is now reasonable.
- A-17. a. The 10.63 percent ROE, as agreed to by the eight signatories to the Stipulation in Case No. 2009-00549, is appropriate and reasonable on a going-forward basis. First, the 10.63 percent not only falls within the ROE for electric operations set forth in the Stipulation (10.25% to 10.75%), but likewise falls within the range set forth in the Commission's Order of July 30, 2010 (9.75% to 10.75%). Second, while the Commission issued independent findings that varied from certain terms in the Stipulation, the Commission approved the provisions in the Stipulation containing the 10.63% ROE for ECR purposes "in their entirety." Moreover, KU currently has a pending rate case in Virginia (PUE-2011-00013) in which it has requested a ROE of 11.0 percent, the midpoint of 10.5% and 11.5%. The requested ROE in that

proceeding is reflective of the current economic conditions and provides further evidence that the 10.63 percent ROE remains reasonable.

- b. Please see the attached direct testimony of Mr. William E Avera, dated April 1, 2011, referenced in response to KPSC Question No. 17(a) on CD in the folder titled Question 17b.
- c. The Commission can consider the ROE testimony from the record in Case No. 2009-00549. Please note that the agreed upon 10.63 percent value remains within the range (9.75% to 10.75%) set forth in the Commission's final Order in that proceeding.
- d. The 10.63 percent ROE for environmental cost recovery was first approved by the Commission in its February 5, 2009 Order in Case No. 2008-00252, which was a base rate case. The Commission's Order stated that "[t]ypically, an electric utility with an environmental surcharge approved pursuant to KRS 278.183 uses the ROE from its most recent rate case in the return component of the environmental costs included in its surcharge." The Commission then stated that the 10.63 percent ROE had been agreed to by the parties and approved its use. In LG&E's last base rate case, the signatories to the Stipulation agreed to continue use of the 10.63 percent ROE, despite agreeing upon a separate ROE for electric operations. Similarly, the Commission permitted KU to continue use of the 10.63 ROE for environmental cost recovery, but approved a separate ROE for electric operations. The Stipulation contained the resolution of various other items which at the time represented a balanced resolution of the issues under consideration in that case. In keeping with the Commission's precedent, it is reasonable to allow LG&E to utilize the specific ROE for environmental costs approved in LG&E's last rate case, which is the 10.63 percent requested in this proceeding.

### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 18

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

- Q-18. Refer to Schram Testimony at pages 3-4. The testimony references two related analyses which were performed by LG&E's Project Engineering department, along with Black & Veatch.
  - a. Provide the reports and all supporting workpapers for the suite of environmental compliance facilities for each coal unit in the generation fleet to determine whether all of the proposed facilities would be necessary to meet the applicable environmental regulations.
  - b. Provide the reports and all supporting workpapers for the determination for each generating unit if it would be more cost effective to install the facilities or to retire the unit and buy replacement power or generation.
  - c. If not included in parts a. and b. above, explain how the analyses considered the purchase of power (renewable or otherwise) and provide the workpapers and assumptions for each specific power purchase scenario.
  - d. As the costs of environmental compliance are realized, the relative price of smaller decentralized power generation becomes more attractive. Other utilities and companies in Kentucky are exploring the development of potential sources of generation including landfill methane, bio-digesters, biomass, and small natural gas wellheads. Explain whether the analyses considered the development of these or other potential distributed generation sources and provide the workpapers and assumptions for each scenario.
  - e. As the costs of environmental compliance are realized, the relative price of Demand Side Management and energy efficiency programs becomes more attractive. If not included in parts a. and b. above, explain whether and how the development of new and the expansion of existing programs is considered in the analyses.
- A-18. a. The report and documentation is included in Exhibit JNV-2.
  - b. Exhibit CRS-1 contains the material supporting the determination for building controls or retiring the unit and constructing replacement generation.

- c. The analyses do not consider power purchases, renewable or otherwise. Ultimately, market availability of suitable replacement capacity and energy is determined through the RFP process when replacing generation.
- d. The Companies' 2011 Integrated Resource Plan evaluated multiple technologies, including renewable technologies, in the supply side screening process. The Companies have not seen information which supports the cost-effectiveness of decentralized power generation at the scale required to replace the generation assumed to be retired in the 2011 Compliance filing. Replacement generation for the units recommended for retirement will need to be dispatchable to meet the customers' energy needs and be of sufficient scale to replace the retired units' capacity. The RFP for new capacity and energy issued in December 2010 resulted in multiple responses from parties marketing renewable generation resources. The Companies have, and continue to, explore these options as well.
- e. The analyses include the impact of programs in the 2011 DSM filing, but do not consider further energy efficiency programs. The need for replacement generation due to retirements of units assumed in the 2011 Compliance plan is unlike any plan to use incrementally increasing energy efficiency programs to meet incremental growth in load requirements. The scale of the retirements and their timing, all by the end of 2015, create an immediate need for capacity and energy at that time.

#### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### **Question No. 19**

### Witness: Charles R. Schram

- Q-19. Refer to Schram Testimony, Exhibit CRS-1, Section 6.0, Appendix A Analysis Assumptions, at page 48. Explain the derivation of the Desired Return on Rate Base of 6.71 percent.
- A-19. The Desired Return on Rate Base is the weighted average of the Companies' return on equity and after-tax cost of debt. The attachment to this response shows the derivation. Because the majority of the costs evaluated in the decisions to install controls or retire/replace capacity are non-ECR costs, the Companies utilized a weighted average cost of capital for non-ECR projects in its analysis. A summary of the Companies' weighted average cost of capital for ECR projects is also included.

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# 2010 Year-End, WACC

Non-ECR Projects (10.5% ROE)	LGE	<u>KU</u>	<u>Combined</u> <u>Companies-</u> <u>50/50</u> Weighting	<u>Combined</u> <u>Companies-</u> <u>Wtd Avg</u>
Financing Contribution	45.54%	47.13%	46.52%	46.52%
Common Stock Contribution	54.46%	52.87%	53.48%	53.48%
Permanent Financing Cost of Debt	3.97%	3.76%	3.87%	3.84%
Equity Return	10.50%	10.50%	10.50%	10.50%
Tax Rate	38.9%	38.9%	38.9%	38.9%
WACC	6.82%	6.63%	6.72%	6.71%
ECR Projects (10.63% ROE)				
Financing Contribution	45.54%	47.13%	46.52%	46.52%
Common Stock Contribution	54.46%	52.87%	53.48%	53.48%
Permanent Financing Cost of Debt	3.97%	3.76%	3.87%	3.84%
Equity Return	10.63%	10.63%	10.63%	10.63%
Tax Rate	38.90%	38.90%	38.90%	38.90%
WACC	6.89%	6.70%	6.78%	6.78%

2010

	Unadjusted Capitilization	Weighting	Cost Rate		Gross Up		
<u>ad an in 1997, an </u>		LGE				CER	Input
Short-Term Debt	174,876	7.13%	2.133%	0.15%	0.15%	Debt Rate	Debt %
A/R Securitization	0	0.00%	0.000%	0.00%	0.00%	3.97%	45.54%
Long-Term Debt	942,156	38.41%	4.313%	1.66%	1.66%		
Preferred Stock	0	0.00%	0.000%	0.00%	0.00%		
Common Equity	1,335,909	54.45%	10.500%	5.72%	9.36%		
Totals	2,452,941	99.99%			******		
anna an	2021/00/045-001#7470-0017778-0-0-0-154/0002011#1	KU					lan an t th
Short-Term Debt	10 434	0.27%	0 250%	0.00%	0.000/	CER Debt Rate	Debt %

		KU				CER	nput
Short-Term Debt	10,434	0.27%	0.250%	0.00%	0.00%	Debt Rate	Debt %
A/R Securitization	0	0.00%	0.000%	0.00%	0.00%	3.76%	47.13%
Long-Term Debt	1,839,956	46.87%	3.779%	1.77%	1.77%		
Preferred Stock	0	0.00%	0.000%	0.00%	0.00%		
Common Equity	2,075,467	52.87%	10.500%	5.55%	9.08%		
Totals	3,925,857	100.00%					00000000000000000000000000000000000000

50/50 Combined Company Weighting							Input
Short-Term Debt	92,655	2.91%	1.192%	0.03%	0.03%	Debt Rate	Debt %
A/R Securitization	0	0.00%	0.000%	0.00%	0.00%	3.87%	46.52%
Long-Term Debt	1,391,056	43.61%	4.046%	1.76%	1.76%		
Preferred Stock	0	0.00%	0.000%	0.00%	0.00%		
Common Equity	1,705,688	53.48%	10.500%	5.62%	9.20%		
Totals	3,189,399	100.00%					

Combined Company Weighting					CER Input		
Short-Term Debt	185,310	2.91%	2.027%	0.06%	0.06%	Debt Rate	Debt %
A/R Securitization	0	0.00%	0.000%	0.00%	0.00%	3.84%	46.52%
Long-Term Debt	2,782,112	43.61%	3.960%	1.73%	1.73%		
Preferred Stock	0	0.00%	0.000%	0.00%	0.00%		
Common Equity	3,411,376	53.48%	10.500%	5.62%	9.20%		
Totals	6,378,798	100.00%					

Tax Rate 38.9000%

Other financial notes:

- The property tax rate of 0.15% is based on the rate for manufacturing equipment as shown in KRS 132.020(1).

- The insurance rate of 0.07% is used as an estimate for the composite insurance rate for generation assets as an input to the Strategist CER module.

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#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### **Question No. 20**

#### Witness: Gary H. Revlett

- Q-20. Refer to Bellar Testimony at page 5, lines 16-18. Explain why LG&E has not installed the SAM mitigation systems for Mill Creek Units 3 and 4 that were approved in LG&E's 2006 Plan. When does LG&E expect to install the systems?
- A-20. The referenced SAM mitigation systems in LG&E's 2006 Environmental Compliance Plan were originally planned to mitigate modeled visibility impairment issues for Mill Creek Units 3 and 4 in accordance with the Regional Haze Rule, including requirements to install the Best Available Retrofit Technology (BART). Kentucky submitted a revised State Implementation Plan (SIP) on June 25, 2008 that specified installation of the equipment at Mill Creek (with an additional revision on May 28, 2010 to correct emission limit values); however, EPA has not yet approved the Kentucky SIP. This delay has been due to EPA's previous determination that compliance with CAIR would fulfill BART requirements and uncertainty created by the subsequent remand of CAIR and its replacement by Clean Air Transport Rule (CATR)/Cross State Air Pollution Rule (CSAPR). Implementation of the SAM mitigation systems under the SIP will not be required until after the SIP is approved. Because EPA has replaced CAIR with CSAPR, Kentucky will need to resubmit its State Implementation Plan and again await approval by EPA. However, the Company has applied to the Louisville Metro Air Pollution Control District (LMAPCD) for a construction permit for installation of the required for environmental controls and currently anticipates issuance of a permit in early 2012.

#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 21

#### Witness: John N. Voyles, Jr.

- Q-21. Refer to the Direct Testimony of John N. Voyles ("Voyles Testimony") at page 12, lines 3-10. Fully explain the decision to locate the new FGD for Mill Creek Units 1 and 2 such that it requires demolition of existing warehouses and locker rooms, given that these facilities will be reconstructed in a different location at the site.
- A-21. Several optional layouts of the WFGD for Mill Creek Units 1 and 2 were considered, including refurbishing the existing WFGDs. However, the other potential layouts would require longer unit outages, increased overall costs due to construction in more constrained spaces which would restrict modular construction, present more difficult constructability issues (crane placement, interference with station operations during construction) and safety considerations (see Black and Veatch reports). The current option was adopted as the best overall location to reduce the total cost of the project. The location chosen provides a construction zone away from the operation of the units which will minimize impact to the operating units and result in a lower overall construction cost by decreasing interference from the station operations to the constructor, as well as allow modular construction instead of smaller component erection for constrained construction close to the units.

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# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 22

#### Witness: John N. Voyles, Jr.

- Q-22. Refer to Voyles Testimony at page 5 which states that Black and Veatch was retained in May 2010 to assist the LG&E in developing their Environmental Compliance Plan.
  - a. Was a Request for Proposal ("RFP") issued to obtain these services? If so provide a copy.
  - b. What other companies were considered to perform the services for which Black & Veatch was retained?
  - c. Provide a copy of the contract with Black & Veatch.
  - d. Provide the amount that has been paid to Black & Veatch as of the most recent payment.
  - e. Will the expenditures associated with the Black and Veatch contracts be included in the ECR?
  - f. Have the expenditures that have been incurred to date been assigned to Projects 26 and/or 27?
  - g. If so, provide the amounts currently charged to each of the projects.
- A-22. a. There are a number of engineering service providers that the companies have used previously that are qualified to perform these types of assessments. The first study was requested to support the company's financial planning process. Due to the limited time available, a formal RFP was not issued, however, the Project Engineering management team contacted two of the most experienced, top engineering firms, Black and Veatch and Burns and McDonnell to determine their interest in the project, their availability to execute the project with the best qualified engineers within the proposed timeframe and their expectations of the total cost. Black and Veatch proposed the most viable plan.
  - b. See the response to part a.

- c. Please see the attached contract. Certain redacted information is being filed with the Commission under seal pursuant to a Petition for Confidential Protection.
- d. Black and Veatch have invoiced \$1,396,674.64 (\$579,205.25 LGE/\$817,469.39 KU) to date.
- e. Yes, the expenditures associated with the Black and Veatch work will be included.
- f. No, Black and Veatch expenses have been assigned to Projects 26 and/or 27.
- g. Please see the response to part f.

Air Quality Control Study Witness: Voyles Attachment to KPSC Question No. 22(c) - Contract No. 43658 - Black & Veatch Corporation

#### CONTRACT NO. 43658

#### BLACK & VEATCH CORPORATION AIR QUALITY CONTROL STUDY TABLE OF CONTENTS

Contract 1	
Commercial Schedule A	
Exhibit No. 1: Scope of Work	
Exhibit No. 2: General Services Agreement (Signature Page)	
Exhibit No.2 (i): Contractor / Subcontractor Safefy Policy	
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Exhibit No.2 (iii): Contractor Code of Business Conduct	
Exhibit No. 3: Project Cost / Manpower Summary	
Exhibit No. 5 :Overview of Passport Program	
Exhibit No. 6 :Project Specific Hazard Analysis	
Exhibit No. 7 : Project Specific Hazard Mitigation Plan	

#### SIGNATURES REQUIRED ON THE FOLLOWING PAGES NOTED BELOW:

Contract Signature (Return two originals)5	
Safety Policy Signature (Return one with original signature) 27	ł

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# E.ON U.S. Services Inc. Company C O N T R A C T No. 43658

AIR QUALITY CONTROL STUDY FOR: E.W. BROWN UNITS 1, 2, AND 3 GHENT UNITS 1, 2, 3, AND 4 CANE RUN UNITS 4, 5, AND 6 MILL CREEK UNITS 1, 2, 3, AND 4 TRIMBLE COUNTY UNITS 1 AND 2 GREEN RIVER UNITS 3 AND 4

This Contract is entered into, effective as of April 28, 2010, between E.ON U.S. Services Inc. (hereinafter referred to as "E.ON U.S. or Company"), whose address is 820 Broadway, Louisville, KY 40202, and Black & Veatch Corporation (hereinafter referred to as "Contractor") whose address is 11401 Lamar Avenue, Overland Park, KS 66211. The parties hereto agree as follows:

#### 1.0 GENERAL

Contractor shall perform the following: Air Quality Control Study to include: E.W Brown Units 1, 2, and 3; Ghent Units 1, 2, 3, and 4; Cane Run Units 4, 5, and 6; Mill Creek Units 1, 2, 3, and 4; Trimble County Units 1 and 2: and Green River Units 3 and 4, as more specifically described in Articles 2.0 and 3.0 hereof (hereinafter referred to as the "Work") and E.ON U.S. shall compensate the Contractor on a time and material basis NOT TO EXCEED ONE HUNDRED THIRTY FIVE THOUSAND DOLLARS for the Work, under all the terms and conditions hereof.

#### 2.0 DESCRIPTION OF WORK

- 2.1 Except as otherwise expressly provided herein, Contractor shall supply all labor, supervision, materials, equipment, tools and warehousing, and shall pay all expenses, necessary or appropriate in the performance of the Work.
- 2.2 No materials containing asbestos shall be supplied or used in the performance of Work.
- 2.3 Without limitation, Contractor shall meet all requirements set forth in the Lead Construction Standard 29 CFR 1926.62.
- 2.4 The Work shall include but not be limited to the following:
  - 2.4.1 Air Quality Control Study for E.ON U.S. Fleet (see Exhibit No. 1)

#### 3.0 EXHIBITS AND SCOPE OF WORK

All work shall be performed in strict accordance with the following exhibits and Scope of Work which are incorporated herein by reference.

3.1 EXHIBITS

EXHIBIT NO.	Тпе
Exhibit No. 1	Scope of Work
Exhibit No. 2	General Services Agreement, "The Standard Terms",
	Executed 5 November 2009.

BLACK & VEATCH CORPORATION CONTRACT NO. 43658

EXHIBIT NO.	ΤΠLΕ
Exhibit No. 2 (i)	E.ON U.S. Contractor/Subcontractor Safety Policy (incorporated herein by reference)
Exhibit No. 2(ii)	Drug Testing Requirements (incorporated herein by reference)
Exhibit No. 2(iii)	E.ON U.S. Contractor Code of Conduct (incorporated herein by reference)
Exhibit No. 3	Project Cost / Manpower Summary
Exhibit No. 4	Bidder Comment Log
Exhibit No. 5	Passport Overview (incorporated herein by reference)
Exhibit No. 6	Project Specific Hazard Analysis
Exhibit No. 7	Hazard Mitigation Plan

#### 4.0 **TERM**

This Contract shall become effective <u>upon full execution and</u> continue through <u>completion of Work</u>, subject to the Article titled "Termination at E.ON U.S.'s Option" set forth in the attached Standard Terms. E.ON U.S. makes no promise or guarantee as to the amount of Work to be performed under this Contract.

#### 5.0 **PERFORMANCE SCHEDULE**

5.1 Contractor shall commence performance of the Work on execution of this Contract and shall complete Work not later than the dates listed below.

Kick- Off meeting:	Week of May 3, 2010
Visits to plant sites:	Week of May 24, 2010
First Draft Report due:	June 1, 2010
Comments from E.ON	
Returned to Contractor	June 11 2010
Second Draft Report	June 18, 2010
Final Report due:	July 2, 2010

- 5.2 Contractor shall notify E.ON U.S. of all subcontractors to be utilized in performance of Work at least forty-eight (48) hours prior to start of Work. Subcontractors will be denied access to E.ON U.S. facilities without the required notification. See the Article titled "Subcontracts and Purchase Orders" in the Standard Terms.
- 5.3 Company may terminate this Contract "for cause" should Contractor not maintain the performance schedules set-forth herein, Because time is of the essence, Contractor shall not be given an opportunity to cure its performance.

#### 6.0 STANDARD TERMS AND CONDITIONS

E.ON U.S. Services Inc.'s General Services Agreement (the Standard Terms) executed by your company on November 5, 2009 (Exhibit No. 1) as part of E.ON U.S./E.ON U.S.'s Supplier Certification process, or the most current fully executed General Services Agreement, and the Contractor Code of Business Conduct and Contractor Safety Policies are hereby incorporated by reference herein and are thereby made a part of this Contract.

#### 7.0 CONTRACTOR DRUG AND ALCOHOL TESTING

7.1 Plant Outage, Plant Project, or Major Construction Work: The work under this Contract is considered "Plant Project Work". In accordance with the revised E.ON-US Contractor /

BLACK & VEATCH CORPORATION Contract No. 43658 Subcontractor Safety Policy effective 1-31-08, <u>all</u> contractor employees working on-site shall fully comply with the terms and conditions of the executed General Services Agreement to include compliance with Company's Drug, Alcohol, and Safety Policies. E.ON-US Corporate Health and Safety will be auditing Contractor compliance with these requirements. Any cost associated with compliance shall be the responsibility of the Contractor.

#### 8.0 SPECIFIC REPORTING REQUIREMENTS

Contractor shall promptly submit the schedules and reports set forth below:

- 8.1 Weekly progress Reports and action items list.
- 8.2 First Draft Project Report due June 1, 2010
- 8.3 Second Draft Report due June 18, 2010 assuming EON response to draft issued by June 11, 2010.
- 8.4 Final Report Due July 2, 2010

#### 9.0 COMPENSATION

#### 9.1 Time and Materials Not To Exceed

Full compensation to Contractor for full and complete performance of the Work, compliance with all terms and conditions of this Contract and payment by Contractor of all obligations incurred in, or applicable to, Contractor's performance of the Work (hereinafter referred to as the "Contract Price") shall be in accordance with Schedule A, attached hereto and made a part of this Contract, with a NOT TO EXCEED PRICE OF ONE HUNDRED THIRTY FIVE THOUSAND DOLLARS (\$135,000), inclusive of travel, unless otherwise approved in writing by E.ON U.S.

9.1.1 For accounting purposes only, the time and materials price is broken down as follows:

Task	Coal-Fired Fleet Wide Assessment	Τοται
1	Project Initiation	\$5,360.00
2	Project Kick-off Meeting and Site Visits	\$26,936.00
3	Review and Confirm Air Emission Levels	\$4,572.00
4.1	Project Design Memo	\$7,966.00
4.2	Technology Description & Selection	\$18,632.00
4.3	Cost Estimate (Capital, O&M, Layouts, etc.)	\$47,926.00
5	Report	\$23,608.00
	Man-hours	
	Billing Rate (\$/mh)	
	Labor Subtotal	\$135,000.00
Note:	Travel costs are estimated at \$10,000 for 6 staff for 5	days

#### 9.2 PRICING FOR CHANGES IN SCOPE OF WORK

At E.ON U.S.'s sole option, adjustments to the Contract Price for changes in the scope or description of Work shall be on a lump sum basis, unit price basis, or in accordance with Schedule A attached to and made a part of this Contract

#### 9.3 SPECIAL INVOICING INSTRUCTIONS

- 9.3.1 See the Article titled "Invoices and Effect of Payments" in the Standard Terms.
- 9.3.2 Invoices shall be prepared in one original and one copy distributed as follows:

Original:	E.ON U.S. Services Inc. 820 West Broadway Louisville, KY 40202 Attn: Judy Disney	
Сору:	E.ON U.S. Services Inc. 820 West Broadway Louisville, KY 40202 Attn: Eileen Saunders	
Invoice Information	CPA Number Project # Task # E.ON U.S. Contact Contractor Contact	<b>43658</b> TBA TBA Eileen Saunders Kyle Lucas

#### 10.0 CONTRACTUAL NOTICES

See the Article titled "Notices" in the Standard Terms for provisions governing contractual notices. In addition, a copy of all notices to E.ON U.S. Services Inc. shall be sent to:

 10.1 E.ON U.S.'s address: E.ON U.S. Services Inc. 820 West Broadway Louisville, KY 40202 Attn: Joe Clements (502) 627-2760 Joe.clements@eon-us.com
 10.2 Contractor's Address: MikeKing, P.E.

MikeKing, P.E. Regional General Manager Black & Veatch 3550 Green Court Ann Arbor, MI. 48105 Phone: (734) 622-8516 Fax: (734) 622-8700 e-mail: <u>kingml@by.com</u>

#### 11.0 ENTIRE AGREEMENT

This Contract, including all specifications, exhibits and drawings listed in this Contract and the Standard Terms, constitutes the entire agreement between the parties relating to the Work and

BLACK & VEATCH CORPORATION CONTRACT NO. 43658 supersedes all prior or contemporaneous oral or written agreements, negotiations, understandings and statements pertaining to the Work or this Contract.

The parties hereto have executed this Contract on the dates written below, but it is effective as of the date first written above.

E.ON U.S. Services Inc.	
BY: Joellimento	
NAME(Pont): be CLEMENTS	_
TITLE: Mar. CONTRACTS	
DATE: 5/3/10	
<b>,</b> -	
Black & Veatch Corporation	1
BV: Kent & Polling	< <u>s</u>

BY:	Kent & Polling	Sign Here
NAME (Print):	KENT D. POLLINS	N
TITLE:	In Vice President	
DATE:	30 Apr 10	

-END-

BLACK & VEATCH CORPORATION CONTRACT NO. 43658

## COMMERCIAL SCHEDULE A LABOR HOURLY RATES

THE WORK SHALL BE PERFORMED AND BILLED AT A BLENDED BILL RATE OF

- 1. The above rates may be used for agreed to Change Orders and Standby Time.
- 2. Except as may be expressly provided otherwise elsewhere in this Contract, the rates set forth above are inclusive of all direct wage rates, fringe benefits, labor allowances, payroll taxes, insurance, small tools which cost Contractor less than \$1,500 per tool, temporary construction facilities, consumables, expendables, overhead profit and all other costs and expenses incurred by Contractor in performing the Work and this Contract.
- 3. The rates will only apply to actual hours worked or standby time, as agreed and attested to by an E.ON U.S. Representative.
- 4. Individual travel time to and/or from respective job sites are not billable hours.
- 5. Individual travel, per-diem, and related travel expenses are to be billed at cost.

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#### **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

#### Question No. 23

#### Witness: Shannon L. Charnas

- Q-23. Refer to Charnas Testimony at page 4, lines 11-15 which indicates the accounts that LG&E proposes to use to identify and track O&M costs for the Compliance Plan projects.
  - a. Are other expenses charged to these accounts that are not related to the Compliance Plan projects?
  - b. If so, how will LG&E ensure that only O&M expenses related to the Compliance Plan projects are recovered through the environmental surcharge?
- A-23. a. Yes, there are expenses that are not related to the Compliance Plan projects recorded to accounts 502, Steam Expenses Operation; 506, Miscellaneous Steam Power Expenses; and 512, Maintenance of Boiler Plant.
  - b. The expenses that are related to the Compliance Plan are recorded in subaccounts for ECR related activity and identified by location. These subaccounts contain only ECR related costs. See the testimony of Shannon L. Charnas at page 4, lines 11-15.

## Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 24

### Witness: Robert M. Conroy

Q-24. Refer to the Direct Testimony of Robert M. Conroy ("Conroy Testimony") at page 5, lines 1-21. Provide an analysis of the \$8.85 million of annual O&M expense associated with the FGDs at Mill Creek that is included in base rates.

A-24. Please see the attached.

LG&E and KU Power Generation Mill Creek FGD/SDRS Expenses

12 Months Ended Oct 2009

Account	Exp Type	MC1	MC2	MC3	MC4	Total
502006 - SCRUBBER REACTANT EX	0438 - PM - DIBASIC ACID	0	0	\$430,180		0 \$430,180
502006 - SCRUBBER REACTANT EX	0432 - PM - LIMESTONE	\$ 792,980	\$ 814,067	792,980 \$ 814,067 \$ 1,010,285 \$ 1,307,288 \$ 3,924,620	\$ 1,307,28	8 \$ 3,924,620
Total		\$ 792,980	\$ 814,067	792,980 \$ 814,067 \$ 1,440,466 \$ 1,307,288 \$ 4,354,801	\$ 1,307,28	8 \$ 4,354,801
512005 - MAINTENANCE-SDRS	PLTL: TOTAL LABOR	\$87,891	\$59,495	\$85,670	<b>\$85,619</b>	9 \$318,675
512005 - MAINTENANCE-SDRS	PNTL: TOTAL NON-LABOR	\$1,100,962	\$704,865	\$1,184,452	\$1,191,67	\$1,191,670 \$4,181,949
Total		\$1,188,852	\$764,360	\$1,270,122	\$1,277,28	\$1,277,289 \$4,500,623
Total O&M included in Base Rates		\$1,981,833 \$1,578,427	\$1,578,427	\$2,710,588	\$2,584,57	\$2,584,577 \$8,855,424

Conroy Attachment to PSC Question No. 24 Page 1 of 1

### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

### Question No. 25

#### Witness: Robert M. Conroy

- Q-25. Refer to Conroy Testimony at page 7, lines 3-6. Can LG&E's accounting system allow for the use of additional subaccounts to permit accumulation of SAM sorbent costs by the project for which it is consumed?
- A-25. LG&E's accounting system does allow for the use of additional subaccounts to the SAM sorbent costs by the project for which it is consumed. As stated in testimony, from an operational perspective, it is very difficult to track separately SAM sorbent being used by multiple environmental facilities related to different ECR projects at the same generating unit with any reasonable certainty because multiple environmental facilities related to different ECR projects at the same generating unit with any reasonable certainty because multiple environmental facilities related to different ECR projects at the same generating unit will consume the same sorbent. It is not practical for the plants to maintain and track separate inventories of the same sorbent that has multiple uses.

In the alternative, LG&E would have to use an allocation to assign the sorbent costs to the appropriate approved project.

The purpose of LG&E's proposed method for sorbent cost recovery is for practical necessity and to provide the clearer reporting to the Commission.

## Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 26

### Witness: Lonnie E. Bellar

- Q-26. Refer to Bellar testimony at page 11, lines 4-8. Mr. Bellar implies that an alternative revenue allocation should be considered. Is Mr. Bellar suggesting any alternative for consideration in this proceeding?
- A-26. The Company is not suggesting a specific alternative revenue allocation should be considered in this proceeding. The issue of revenue allocation is not a new topic and has been discussed extensively in previous ECR Plan cases. Given the amount of LG&E's proposed investment in ECR facilities compared to LG&E's current electric rate base, it would be reasonable to consider alternative revenue allocations that balance the interests of all customers.

### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 27

#### Witness: John N. Voyles, Jr.

- Q-27. Refer to Bellar Testimony at page 14, line 2. Mr. Bellar states that "contracting for certain parts of work" has commenced. List any contracts that LG&E has entered related to Projects 26 and 27. Include the date of the contract, a description of the services and/or equipment included and the dollar amount of the contract.
- A-27. No contracts for Projects 26 and 27 have been entered into with regards to detailed engineering, procurement of equipment or materials, or construction. Contracts to date include only preliminary engineering assessments, scope development and specification development.

Contract:	43658
Date:	April 28, 2010
Cost:	Not to Exceed \$135,000

Scope: Black and Veatch contracted to perform Air Quality Control Studies for E.W. Brown, Ghent, Cane Run, Mill Creek, Trimble County and Green River stations. No equipment included in the contract.

Contract:	496789
Date:	August 28, 2010
Cost:	Not to Exceed \$1,593,000

Scope: Black and Veatch contracted to perform facility specific air quality control studies consisting of conceptual design and budgetary cost estimates for E.W. Brown, Ghent and Mill Creek Stations. No equipment purchases were included in the contract.

Contract:	510845
Date:	June 9, 2011
Cost:	Not to Exceed \$374,517

Scope: Black and Veatch contracted to prepare the technical specifications for the WFGDs, Fabric Filters (baghouses) and Fans. Additionally, Black and Veatch will support LGE/KU with the technical review of bids for the aforementioned equipment. No equipment purchases were included in the contract.

Contract:501654Date:December 13, 2010Cost:Not to Exceed \$75,729

Scope: Babcock Power Environmental Inc. was contracted to provide all engineering, insurance, travel, and services to assess the feasibility of upgrading the existing Mill Creek Units 1 and 2 FGDs and upgrading the existing Mill Creek Unit 4 FGD and utilizing it for Mill Creek Unit 3. This report was provided to Black and Veatch and included in their report.

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#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 28

#### Witness: Lonnie E. Bellar / Counsel

- Q-28. Refer to Bellar Testimony at page 14, lines 20–22. Mr. Bellar states, "by filing now, LG&E has ensured that the CATR and HAPs Rule should be final before the Commission must issue its final order in this proceeding." In the event the HAPs rule is not final at the time the final order in this proceeding is due, what is LG&E's proposal to the Commission with regard to the approval of the certificates of convenience and necessity?
- A-28. The CATR rule (renamed by the EPA as the Cross-State Air Pollution Rule "CSAPR") has become final since LG&E filed its application. With regard to the HAPs rule, the EPA is required pursuant to court order to publish the final rule by November 16, 2011. well in advance of the date by which the Commission is required to issue a final order in this proceeding. If, unexpectedly, the rule is not final before the Commission must issue its final order in this proceeding, the Commission can still grant the certificates of convenience and necessity LG&E has requested. The Commission has, in many cases, recognized the importance of expedient action. In so doing, the Commission has successfully discharged its responsibility under KRS Chapter 278 by ruling upon cases before it without waiting on the resolution of all related issues. For example, in Case No. 2000-00112 the Commission granted a certificate of convenience to KU and LG&E for the construction of selective catalytic reduction technologies although the final emissions limit was pending before the U.S. Court of Appeals for the District of Columbia.<sup>1</sup> Because the impending implementation date was not stayed, KU and LG&E filed their application for certificates of convenience and necessity based upon the most stringent emissions limit within the Court's consideration. KU and LG&E explained that they would only construct the number of units necessary to comply with the ultimate This is very analogous to the present situation, as LG&E must seek emissions limit. certificates of convenience and necessity in this proceeding in order to comply with the implementation date although the final rules are not yet issued.

<sup>&</sup>lt;sup>1</sup> In the Matter of: Application of Kentucky Utilities Company and Louisville Gas and Electric Company for a Certificate of Convenience and Necessity to Construct Selective Catalytic Reduction (SCR) NOx Control Technologies, PSC Case No. 2000-00112 (Order dated June 22, 2000).

Further, the Commission has routinely issued final orders conditioned upon the occurrence of future necessary events.<sup>2</sup> Likewise, the Commission has taken into account relevant time frames when they affect the bottom lines of utilities.<sup>3</sup> As explained in LG&E's application, it is prudent to seek Commission approval before the rule becomes final in order to construct the proposed projects at a reasonable cost. Thus, even if the HAPs rule is not final by the date the Commission must issue its final order, the Commission may still grant the certificates of convenience and necessity.

<sup>&</sup>lt;sup>2</sup> See, e.g., Application of Bluegrass Wireless LLC for Issuance of a Certificate of Public Convenience and Necessity to Construct a Cell Site (Woodbine) in Rural Service Area #11 (Whitley) of the Commonwealth of Kentucky, PSC Case No. 2008-00080 (Order dated Sept. 26, 2008) (issuing final order even though the applicant's applications with the Federal Aviation Administration and the Kentucky Airport Zoning Commission remained pending, and instructing the applicant to file copies of the final decisions of the FAA and KAZC within ten days of receiving them); Joint Application of Classic Construction, Inc. and Coolbrook Utilities, LLC for Approval of the Transfer of Wastewater Treatment Plant to Coolbrook Utilities, LLC, PSC Case No. 2008-00257 (Order dated Oct. 21, 2008) (approving the transfer of the utility upon the condition that the buyer obtain an irrevocable letter of credit and line of credit and the necessary permits for the operation of the utility, including a Kentucky Pollutant Discharge Elimination System Permit); Joint Application for Transfer of Louisville Gas and Electric Company and Kentucky Utilities Company in Accordance with E.ON AG's Planned Acquisition of Powergen PLC, PSC Case No. 2001-104 (Order dated Aug. 6, 2001) (approving the transfer upon numerous conditions, including the requirement that the necessary approvals of other federal and state agencies be filed with the Commission within ten days of receipt)

<sup>&</sup>lt;sup>3</sup> See, e.g., Application of the North Hopkins Water District for a Certificate of Public Convenience and Necessity to Construct and Finance an Improvements Project Pursuant to KRS 278.300, PSC Case No. 2001-243 (Order dated Aug. 30, 2001) (granting a deviation from numerous filing requirements of 807 KAR 5:001, to save the utility the time of compiling the financial information because the construction project had been bid and the loss of time would risk loss of favorable bids); Application of Henry County Water District No. 2 to Issue Securities in the approximate Principal Amount of \$2,958,000 for the Purpose of Refunding Certain Outstanding Revenue Bonds of the District Pursuant to the Provisions of KRS 278.300 and 807 KAR 5:001, PSC Case No. 2002-00411 (Order dated Dec. 16, 2002) (granting a deviation from filing requirements of 807 KAR 5:001 because the "volatility of the bond market" made it risky to delay the closing of the loan while the utility expended the time necessary to compile the necessary financial information).

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 29

### Witness: John N. Voyles, Jr.

- Q-29. Refer to Voyles Testimony at page 24, lines 15-19. The testimony states that LG&E does not plan to enter into any contracts for equipment or construction until a final order is issued in this proceeding "unless entering into one or more such contracts would be necessary to ensure timely environmental compliance or to avoid significant market price or equipment availability risks".
  - a. Has LG&E enter into any contracts for Projects 26 and/or 27 to date?
  - b. How will LG&E assess the market price or equipment availability risks associated with the related equipment or construction?
- A-29. a. Please see the response to Question No. 27.
  - b. As the Companies have been actively engaged in environmental control equipment and major construction projects during the recent 10 years LG&E and KU maintain good relationships with engineering and construction firms that monitor market impacts to commodities, as well as labor and engineered equipment availability. Along with our own experience, these firms have been willing to discuss their market research with the company in the past which has been invaluable to our engineering, project management and construction efforts. Additionally, LG&E actively participates in industry conferences where market volatility, equipment availability and construction issues are discussed.

## Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

### Question No. 30

#### Witness: John N. Voyles, Jr.

- Q-30. Refer to Voyles Testimony at page 25. Has LG&E issued any Requests for Quotations ("RFQs") for the equipment related to these projects? If so, provide the issue date of the RFQ, the equipment for which quotations are sought, and the due date for responses.
- A-30. No Requests for Quotations for the equipment related to the projects have been issued as of the date of this filing.

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### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 31

### Witness: John N. Voyles, Jr.

- Q-31. Refer to Voyles Testimony at page 6, Exhibit JNV-2, Environmental Air Compliance Strategy Summary. The discussion at the end of Section 3.0 indicates that the plans should not be considered final at this time. What is the expected range of actual expenditures that LG&E may incur for Projects 26 and 27?
- A-31. The discussion at the end of Section 3.0 relates to equipment specifications and design. The estimates contained in the Compliance Plan are reasonable for the purposes of evaluating and selecting technology for the Compliance Plan in this proceeding. Actual expenditures are monitored in the normal course through monthly ECR filings and further reviewed by the Commission in 6-month and 2-year review cases.

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 32

## Witness: John N. Voyles, Jr.

- Q-32. Refer to Voyles Testimony. Provide the following information for each unit proposed for the addition of AQC equipment:
  - a. Year placed in service;
  - b. The number of normal cycles (stops and starts);
  - c. The number of emergency trips and starts;
  - d. Heat rate;
  - e. Capacity factor;
  - f. Provide for the last 10 years of major internal and minor outages including the major projects completed during each outage;
  - g. Provide an outline of the major availability and performance detractors;
  - h. Provide a condition assessment that includes;
    - (1) Condition of turbine.
    - (2) Condition of generator.
    - (3) Condition of boiler.
    - (4) Condition of balance of plant equipment.
  - i. Provide any formal life assessment or extension reports.

A-32. a. The requested information is contained in the table below.

Unit	In-Service <u>Date</u>
Mill Creek 1	08/01/72
Mill Creek 2	07/01/74
Mill Creek 3	08/01/78
Mill Creek 4	09/01/82
Trimble County 1	12/23/90

b. The requested information is contained in the table below.

<u>Actual Unit Starts</u> Unit	2010
Mill Creek 1	22
Mill Creek 2	20
Mill Creek 3	14
Mill Creek 4	22
Trimble County 1	24

Source: Micro GADS NERC data.

c. The requested information is contained in the table below. Please note that emergency starts are not applicable to these coal units.

Actual NERC "U1" (Immediate) Forced Outages			
Unit	<u>2010</u>		
Mill Creek 1	14		
Mill Creek 2	8		
Mill Creek 3	8		
Mill Creek 4	14		
Trimble County 1	19		

Source: Micro GADS NERC data.

d. The requested information is contained in the table below.

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Actual NERC Net Unit	Heat Rate 2010	
Mill Creek 1	10,684	
Mill Creek 2	10,845	
Mill Creek 3	10,738	
Mill Creek 4	10,518	
Trimble County 1	10,695	
Source:	Micro GADS	NERC data and station reports.

e. The requested information is contained in the table below.

Actual NERC Net C Unit	apacity Factor 2010
Mill Creek 1	75.69
Mill Creek 2	79.95
Mill Creek 3	84.45
Mill Creek 4	78.90
Trimble County 1	80.82

Source:	Micro	GADS	NERC data.	
ALC: NO. OF THE OWNER				

- f. In response, please find attached a list of major capital projects performed during an outage in the last ten years. The Company is providing the requested information under a Petition for Confidential Protection being filed with the Commission.
- g. The requested information is contained in the table below.

Response to Question No. 32 Page 4 of 4 Voyles

2010 Events > 20,000 MWh by Unit:						
Unit	Event	Event	Event	Event	MWH	Event
<u>Name</u>	Туре	<u>Start</u>	End	<u>Hours</u>	<u>Lost</u>	Cause
МСЗ	U1	1/17/10 6:46	1/19/10 21:51	63.08	25,044	ECONOMIZER LEAKS
MC3	MO	10/29/10 21:55	11/1/10 2:47	52.87	20,988	WET SCRUBBER/ABSORBER TOWER OR MODULE
MC3	MO	9/3/10 23:58	9/6/10 2:45	50,78	20,161	OTHER INDUCED DRAFT FAN PROBLEMS
MC4	MO	6/29/10 2:05	7/2/10 22:47	92.70	45,608	OTHER EXCITER PROBLEMS
MC4	MO	11/11/10 22:45	11/15/10 9:55	83.17	40,918	AIR HEATER FOULING (REGENERATIVE)
MC4	U1	12/12/10 17:16	12/16/10 4:05	82.82	40,746	FIRST SUPERHEATER LEAKS
MC4	MO	6/4/10 22:56	6/8/10 2:48	75.87	37,326	AIR HEATER (REGENERATIVE)
TC1	U1	1/17/10 11:09	2/3/10 15:32	412.38	212,377	GENERATOR HYDROGEN SEALS
TC1	U2	5/3/10 11:23	5/8/10 7:50	116.45	59,972	FIRST REHEATER LEAKS
TC1	U1	6/18/10 8:51	6/21/10 15:59	79.13	40,754	FIRST REHEATER LEAKS
TC1	MO	10/1/10 23:01	10/4/10 22:00	70.98	36,556	FIRST REHEATER LEAKS
TC1	U1	6/14/10 4:23	6/16/10 7:40	51.28	26,411	FIRST REHEATER LEAKS
TC1	SF	10/4/10 22:00	10/6/10 21:47	47.78	24,608	TURBINE LUBE OIL PUMPS
TC1	U2	2/27/10 18:47	3/1/10 14:15	43.47	22,385	FIRST REHEATER LEAKS
TC1	U3	6/5/10 3:27	6/6/10 20:12	40.75	20,986	SECOND SUPERHEATER LEAKS

h. Please see the attached CD in folder titled Question 32(h).

i. Please see the attached CD in folder titled Question 32(i).

Attachment to Response to LG&E KPSC-1 Question No. 32(f)

## CONFIDENTIAL INFORMATION REDACTED

# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

#### Question No. 33

## Witness: John N. Voyles, Jr.

- Q-33. Refer to Voyles Testimony. Indicate whether any risk assessment was performed to determine probability of units meeting a 30 year projected life extension.
- A-33. Please see response to Question No. 32(h).

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

#### Question No. 34

#### Witness: Charles R. Schram

- Q-34. Refer to Voyles Testimony. Are there any capital costs included in individual unit budgets for replacement of major plant components such as turbine shells, rotors, generator components, steam leads, heaters, or transformers? Have these costs been included in the economic assessment?
- A-34. Yes, capital costs are included in the economic assessment for projects related to the ongoing reliability and integrity of the individual units. Examples of these projects include stator rewinds, air heater basket replacements, and controls upgrades.

### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 35

#### Witness: Charles R. Schram

- Q-35. Refer to Voyles Testimony. Provide any analysis on replacement power costs for the 2015-2017 time period. Include potential long term purchases, bi-lateral contracts or other sources that may be available should there be delays in completing construction. What is the impact on heat rate of the selected option?
- A-35. The 2011 Environmental Compliance Plan was developed based on a construction schedule for facilities necessary to comply with environmental regulations in the time specified by the environmental statutes in the CAAA and the EPA regulations. Relying on purchased power as a compliance measure would create market risk that could have a detrimental impact on customers. As in the past during large construction projects, if delays in construction occur, the Companies have taken various prudent measures to manage the cost impact to customers. Such measures have included the operation of combustion turbines, short-term purchases from the market, consent decrees with regulatory agencies (if permitted) or other changes to operations.

Long term purchases, bi-lateral contracts or other sources as well as delays in completing construction do not have an impact on heat rate.

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# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

# Question No. 36

#### Witness: John N. Voyles, Jr.

Q-36. Refer to Voyles Testimony at page 11, line 17.

- a. Was there any analysis that considered a long term outage to replace the existing FGD in its present location?
- b. What is the incremental cost in performance and ancillary services required for a FGD located further from the unit?
- A-36. a. Yes, LG&E considered a long-term outage to replace the existing FGDs in the present locations. A review of substantially demolishing the existing two WFGDs in place and essentially performing a total rebuild that would require each unit to be off-line for two or more years versus constructing a single WFGD to service both units. Construction of a new, single WFGD allows the units to remain in-service during construction and then a short outage to tie them in to the new combined WFGD during four week outages.
  - b. The location of the new WFGD will require negligible increases in auxiliary power consumption to account for the increased ductwork to account for the distance from the boilers compared to the location of the existing WFGDs.

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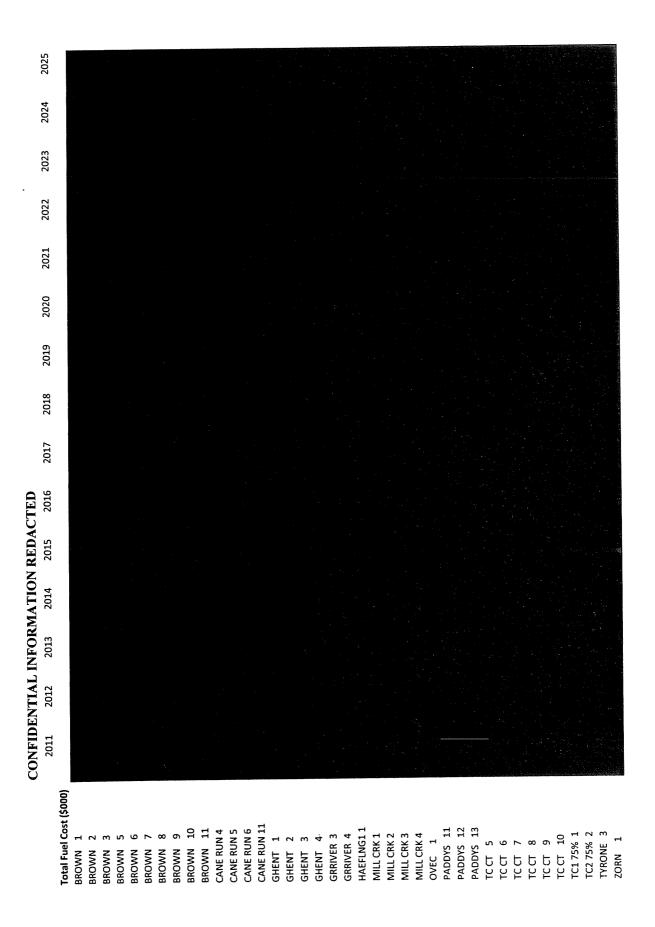
#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

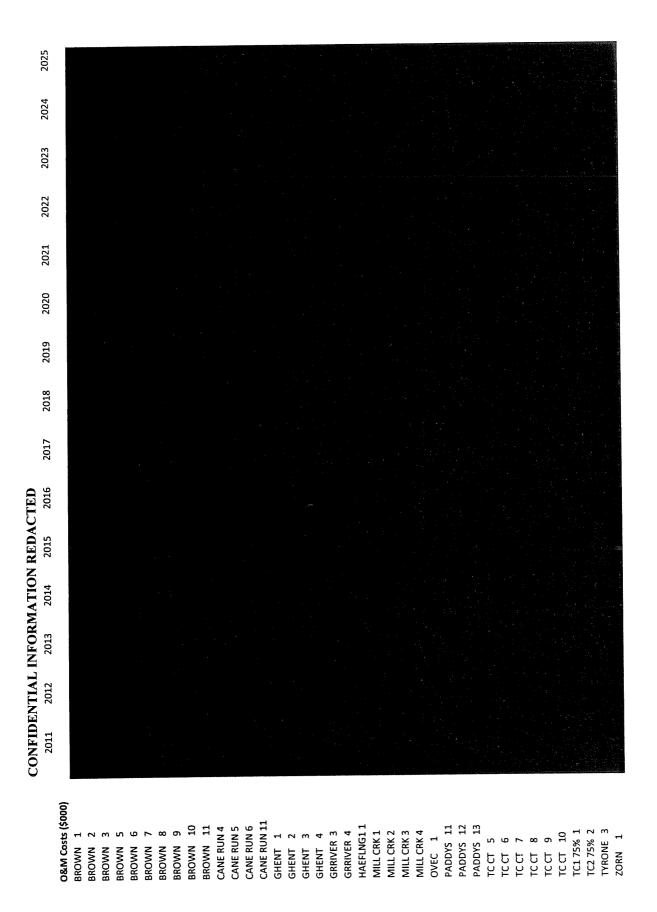
#### Question No. 37

#### Witness: Charles R. Schram

- Q-37. Refer to Voyles Testimony at page 24, line 10. Provide any analysis to support the conclusion that purchased power would be more expensive, given all factors.
- A-37. The Companies believe it is reasonable to expect that the coal units for which controls are proposed will continue to produce power at a lower cost than market power prices, based on current and forward market prices. Please see the average dispatch cost for the coal units for which controls are proposed in the attachment being provided pursuant to a Petition for Confidential Protection. These costs are below the around-the-clock electricity prices contained in the attachment to the response to Question No. 46.

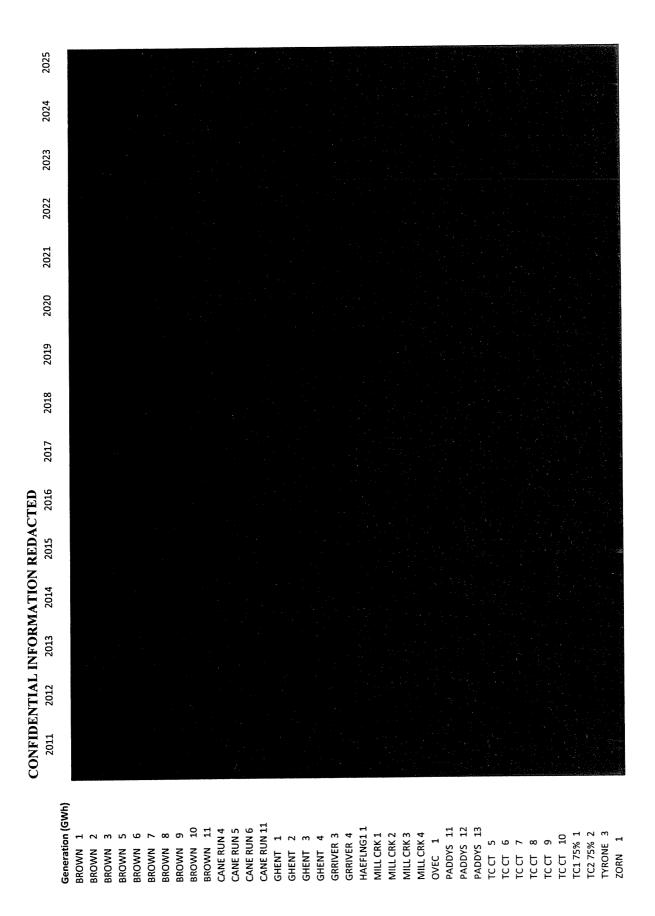


Attachment to Response to LGE KPSC-1 Question No. 37 Page 1 of 8 Schram

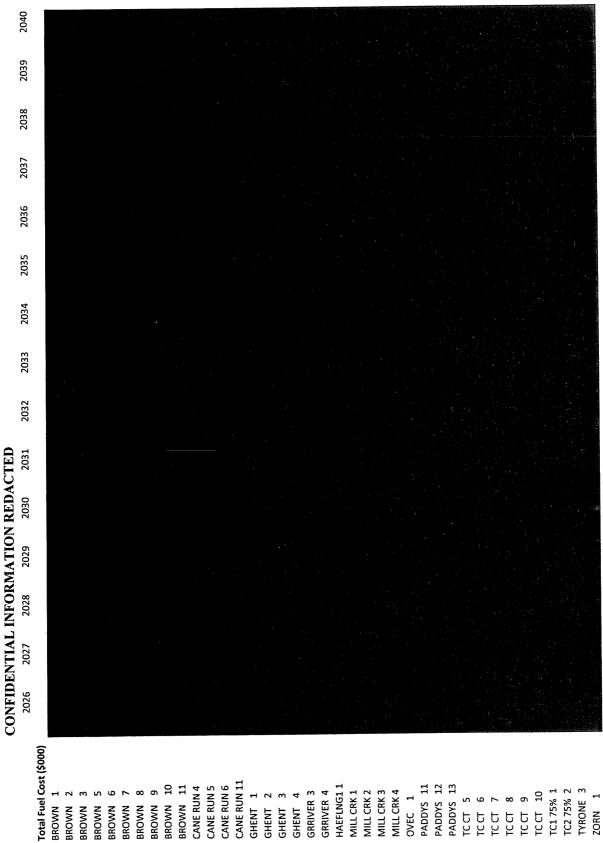


Attachment to Response to LGE KPSC-1 Question No. 37 Page 2 of 8

Schram



Attachment to Response to LGE KPSC-1 Question No. 37 Page 3 of 8 Schram



Page 4 of 8 Attachment to Response to LGE KPSC-1 Question No. 37 Schram

**CANE RUN 11 CANE RUN 5** BROWN 11 CANE RUN 6 **CANE RUN 4** 

TC CT 5

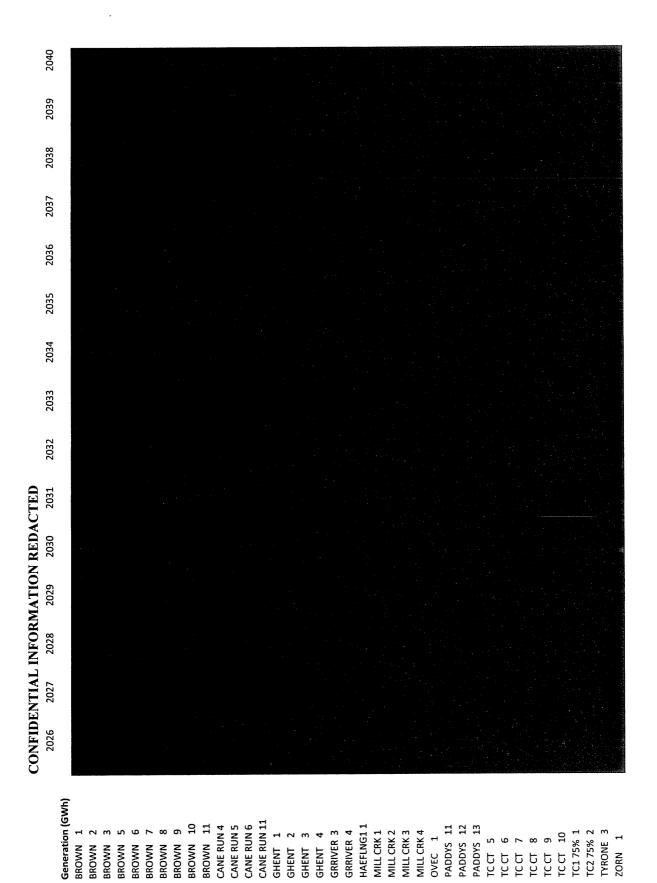
GHENT 1

GHENT 4

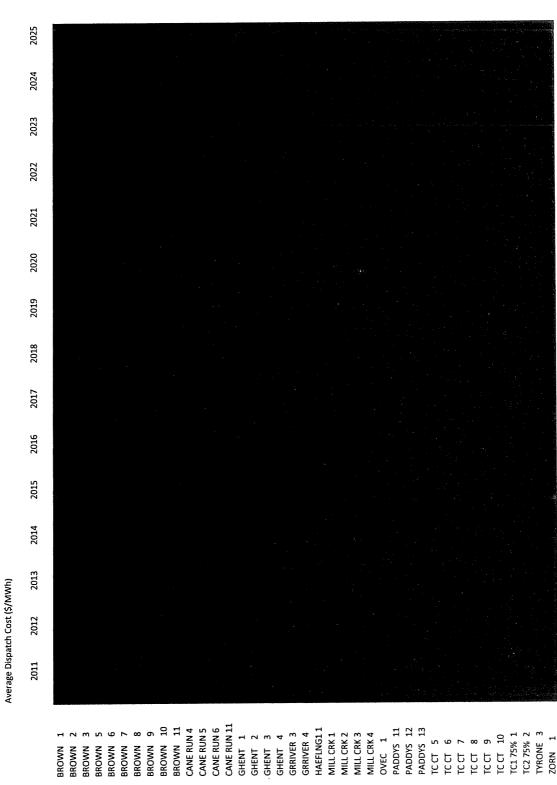
PADDYS 11 PADDYS 12 MILL CRK 4 OVEC 1

2040 2039 2038 2037 2036 2035 2034 2033 2032 2031 **CONFIDENTIAL INFORMATION REDACTED** 2030 2029 2028 2027 2026 O&M Costs (\$000) **CANE RUN 11** BROWN 10 BROWN 11 **CANE RUN 4 CANE RUN 5** CANE RUN 6 HAEFLNG1 1 PADDYS 11 PADDYS 13 PADDYS 12 BROWN 5 BROWN 8 BROWN 9 **GRRIVER 3 GRRIVER 4** MILL CRK 1 MILL CRK 3 MILL CRK 4 BROWN 1 BROWN 2 **BROWN 6** MILL CRK 2 TC2 75% 2 TYRONE 3 BROWN 3 BROWN 7 TC1 75% 1 GHENT 1 GHENT 3 GHENT 4 OVEC 1 TC CT 10 ZORN 1 GHENT 2 TC CT 5 TC CT 6 TC CT 7 TC CT 8 TC CT 9

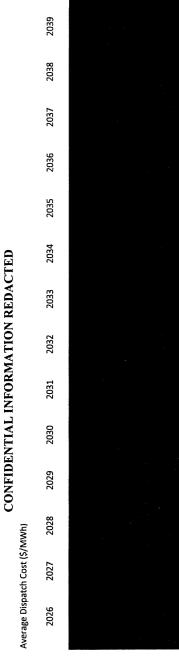
Page 5 of 8 Attachment to Response to LGE KPSC-1 Question No. 37 Schram



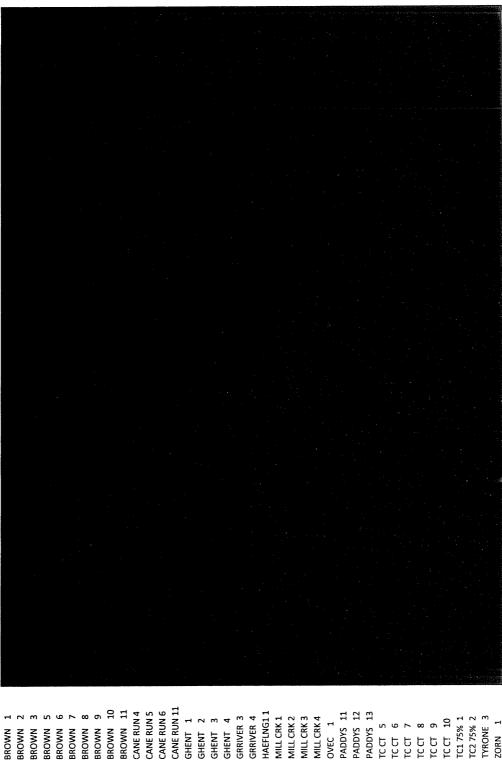
Attachment to Response to LGE KPSC-1 Question No. 37 Page 6 of 8 Schram



**CONFIDENTIAL INFORMATION REDACTED** 



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Page 8 of 8 Schram Attachment to Response to LGE KPSC-1 Question No. 37

#### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 38

#### Witness: John N. Voyles, Jr.

- Q-38. Refer to Voyles Testimony. Provide a color copy of the May 2011 presentation titled "Existing and Preliminary Air Quality Control Process flow Diagrams"
- A-38. A color copy of the May 2011 presentation was included in the Application as Exhibit JNV-3. A color copy is attached to this response.

Witness: Voyles **Process Flow Diagrams** Attachment to KPSC Question No. 38 – Existing & Preliminary Future Air Quality Control

# Existing & Preiminary Future Process Flow Diagrams Air Quality Control

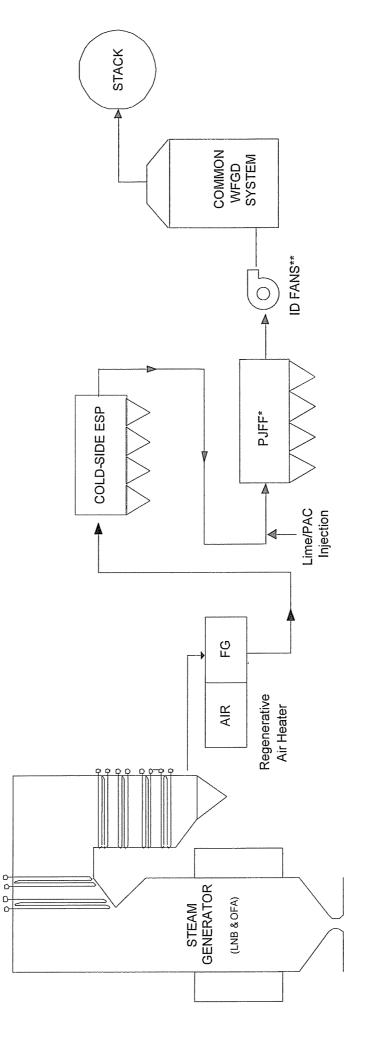
For Mill Creek Generating Station and Trimble County Unit 1



**PPL** companies

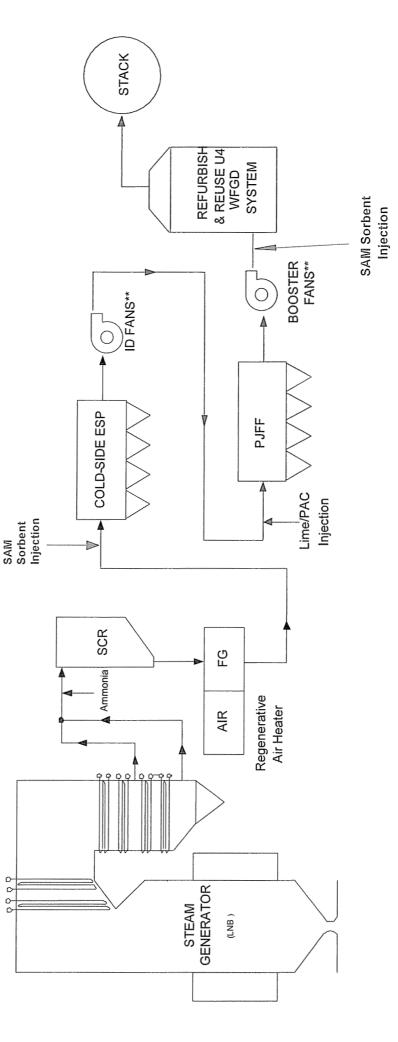
May 2011

AQC Process Flow Diagram Will Creek Unit 1 and 2



\*\*Replacement to new Booster Fans or larger ID Fans is yet to be determined

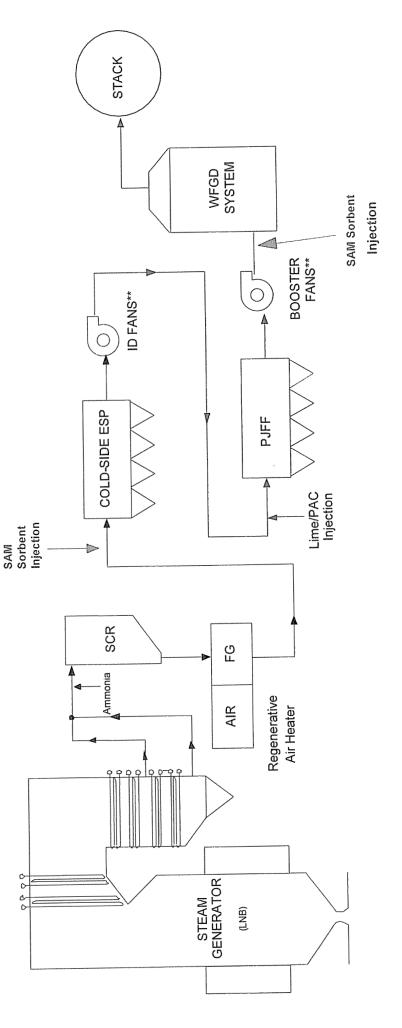
# AQC Process Flow Diagram Will Creek Unit 3



\*\*Replacement to new Booster Fans or larger ID Fans is yet to be determined

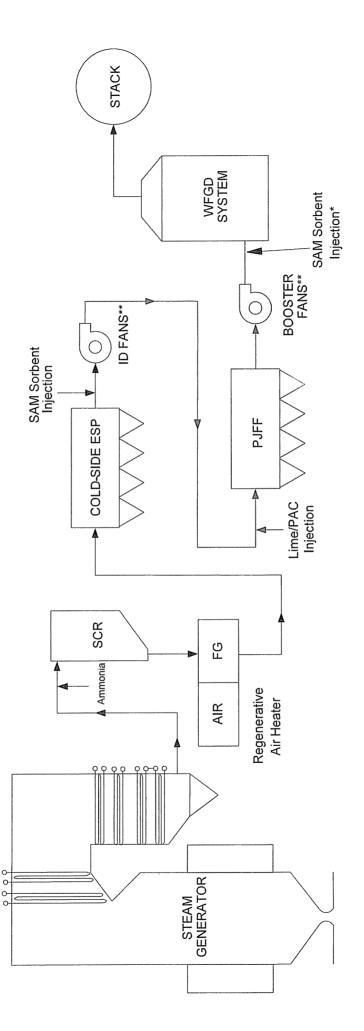
Black = Existing Red = Preliminary Additions Green = Previously approved. Not yet installed.

AQC Process Flow Diagram Will Creek Unit 4



\*\*Replacement to new Booster Fans or larger ID Fans is yet to be determined





\*Relocation of existing Injection Nozzles \*\*Replacement to new Booster Fans or larger ID Fans is yet to be determined

Black = Existing Red = Preliminary Additions •

#### Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

#### Question No. 39

#### Witness: Gary H. Revlett

- Q-39. Refer to the Direct Testimony of Gary H. Revlett ("Revlett Testimony"). Did LG&E or any of the PPL affiliated entities file comments on the May 3, 2011 version of EPA's HAPs proposed rule? If so, provide a copy of the comments.
- A-39. While the due date for the comment period for EPA's proposed HAPs rule was extended to August 4, 2011, the date at which they will issue the final rule remains November 16, 2011. Comments for this rulemaking will be provided under a joint effort among all PPL entities to EPA by the August 4, 2011 due date. Upon completion and submittal, a copy will be provided to the KPSC.

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### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 40

#### Witness: Gary H. Revlett

- Q-40. Refer to Revlett Testimony at page 7, lines 19-20. Mr. Revlett's testimony notes that EPA expects to issue proposed rules for CATR II in the near future. It appears that the proposed regulation will likely result in further nitrogen compound ("NOx") and SO<sub>2</sub> restrictions.
  - a. Although the specifics of CATR II are not known, does LG&E believe that the modifications proposed in this proceeding are likely to meet the more stringent compliance requirements of CATR II?
  - b. Was the impact of carbon regulation considered as part of LG&E's analysis to determine the modifications proposed in this proceeding?
  - c. Was the impact of NAQS revisions considered as part of LG&E's analysis to determine the modifications proposed in this proceeding?
- A-40. a. The initial compliance year under the new Cross-State Air Pollution Rule (CSAPR) is 2012; therefore, it is necessary to continue with the modifications proposed in this proceeding to be in compliance with CSAPR. The effective date and reduction requirements of CATR II remain unknown. However, any additional requirements from CATR II will likely require the installation of additional controls for NO<sub>x</sub> on units that currently do not have SCRs. The addition of SCRs on units that do not currently have SCRs will not have an impact on the projects in this Compliance Plan.
  - b. Yes. Please see the response to Question No. 2.
  - c. Yes, the impact of NAAQS revisions was considered. Computer modeling of the new 1-hour SO<sub>2</sub> NAAQS standard indicated excursions near the Mill Creek and Cane Run facilities and that high efficiency FGD systems would be required to demonstrate compliance with new NAAQS.

# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

# Question No. 41

#### Witness: Charles R. Schram

- Q-41. Refer to Schram Testimony at page 4, lines 7-10. There it states that it was "assumed that the proposed suite of environmental facilities for each unit was the most cost-effective suite of facilities for the unit". However, it appears that with the assistance of Black and Veatch the most compliance-effective suite of facilities was selected. Explain how this assumption translates to most cost-effective suite of facilities.
- A-41. Please see the response to Question No. 5.

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# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

#### Question No. 42

#### Witness: Charles R. Schram

- Q-42. Refer to Schram Testimony at page 5, lines 4-6. Provide any analysis that supports conclusion that gas combined cycle is only the replacement technology.
- A-42. Please see the response to Question No. 44.

# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

#### **Question No. 43**

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#### Witness: Charles R. Schram

- Q-43. Refer to Schram Testimony at page 5, lines 7-13. Why was a thirty year extension used for every unit? Was sensitivity analysis conducted for shorter lives for older units?
- A-43. Please see the response to Question Nos. 4 and 61.

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# Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

#### Question No. 44

#### Witness: Charles R. Schram

- Q-44. Refer to Schram Testimony. For the evaluation of the LG&E air compliance projects, the construction of the environmental controls was compared to the retirement of the generation unit to determine the least cost method of compliance. At page 5, lines 5-6, of Schram Testimony, it states that the replacement generation technology for the purposes of this analysis was a natural gas fired combined cycle combustion turbine.
  - a. Was any consideration given to constructing a coal-fired generating unit?
  - b. Explain why a coal-fired unit was not included in the analysis.
- A-44. Yes, a coal-fired unit was considered as a supply side resource. The Companies' 2011 IRP, which included coal units as a resource choice, indicated that natural gas fired combined cycle combustion turbines are the least cost resource to meet requirements for the intermediate load capacity needed in 2016. As noted in the attached page from the Companies' 2011 IRP, Volume 3, the next three units in the base expansion plan are 3x1 combined cycle combustion turbines (denoted as "3x1C"). The historical capacity factors of the units planned for retirement are well below the baseload levels which would support the selection of a coal unit with high capital costs and lower fuel costs compared to natural gas. Furthermore, based on historical experience, it would not be possible to permit and construct a coal unit by January 1, 2016.

 and installing the necessary emissions controls on existing units to meet the proposed environmental regulations.

For reference, this least cost base plan will be referred to as Plan "A" and it represents the 30year expansion strategy that minimizes the present value of revenue requirements criterion under the base assumptions. As seen in Table 3, optimization results using the base assumptions indicate that the optimal plan is the installation of three 3x1 combined cycle units: one in 2016, one in 2018, and one in 2025.

Plan:	"A"
2011	
2012	
2013	
2014	
2015	
2016	3x1C
2017	
2018	3x1C
2019	
2020	
2021	
2022	
2023	
2024	
2025	3x1C

# Table 3Base Expansion Plan

With this plan, there is a 40 MW reserve margin shortfall in 2015 when the summer reserve margin was allowed to drop to approximately 15.4%, as shown in Table 8.(4)(a)-1 in Section 8 of Volume I. In 2015 and in other years with relatively small reserve margin deficits immediately

## LOUISVILLE GAS AND ELECTRIC COMPANY

# Response to Commission Staff's First Information Request Dated July 12, 2011

## Case No. 2011-00162

#### Question No. 45

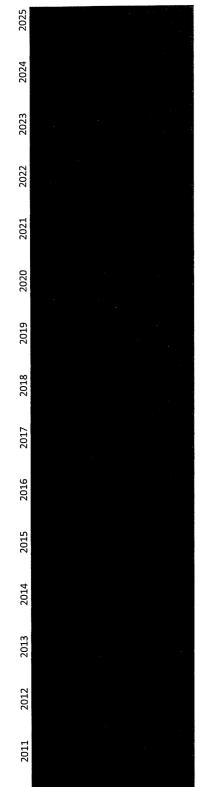
#### Witness: Charles R. Schram

- Q-45. Refer to Schram Testimony. Provide the fuel forecasts for coal by type and natural gas as well as the source of the forecasts that were used to perform the analyses in Exhibit CRS-1, 2011 Air Compliance Plan.
- A-45. Please see the attachment being provided pursuant to a Petition for Confidential Protection.

CONFIDENTIAL INFORMATION REDACTED

Fuel Costs (\$/MBtu)

Brown Coal Cane Run Coal Ghent Coal Green River Coal Mill Creek Coal Trimble County PRB Coal Tyrone Coal VU Gas LGE Gas LGE Gas



\*Beyond 2025, fuel prices were held constant to maintain a consistent relationship between coal and gas prices.

average of the same RFQ prices and prices from a 2010 Wood-MacKenzie forecast (the weighting of RFQ prices to Wood-MacKenzie prices in 2012, 2013, and 2014 is 75/25, 50/50, \*\*The 2011 portion of the coal forecasts is based on responses to the Companies' RFQ for coal in early 2010. The 2012-2014 portion of the coal forecasts is computed as a weighted and 25/75, respectively). Beyond 2014, the coal forecasts are based entirely on the 2010 Wood-MacKenzie forecast.

\*\*\*The 2011-2013 portion of the gas forecasts are based on Henry Hub market forwards as of June 2010. Beyond 2015, the forecast is based on PIRA's Spring 2010 natural gas forecast. The 2014-2015 portion of the forecast is interpolated.

## LOUISVILLE GAS AND ELECTRIC COMPANY

#### Response to Commission Staff's First Information Request Dated July 12, 2011

## Case No. 2011-00162

## Question No. 46

# Witness: Charles R. Schram

- Q-46. Refer to Schram Testimony. Provide details that describe both Strategist and PROSYM, including:
  - a. Details on license, operation and any modifications developed for KU/LG&E;
  - b. Inputs for all KU units, including, size, heat rate, outage projections, O&M costs, and other parameters used in the model;
  - c. Provide all inputs from outside the KU/LGE system that are used in the models; and
  - d. When were model inputs updated? Do they consider projected changes in regional capacity and pricing due to the very AQC changes being proposed by KU/LG&E? Are retirements of units by utilities in other regions included in the models?
- A-46. a. The Companies own software version 4.4.1 of Strategist and version 5.2.21 of PROSYM, both of which are Ventyx products. Generally, the Companies compile information for the cost of generation for each unit, a description of the generation capabilities of each unit, a load forecast, the market price of electricity, and the volumetric ability to access the market to make economical power purchases. All of this information is brought together to model the economic operation of the Companies' generating system. Strategist does not include any modifications developed for the Companies. The attachments to parts (b) and (c) below contain the documentation of the assumptions for the units' capacities, heat rates, maintenance schedules, forced outage rates and variable O&M. PROSYM includes a customized feature that allows the Companies to approximate the results of the Companies' After-the-Fact Billing ("AFB") process. AFB is used to identify and determine the cost of actual intercompany transactions and for assigning actual off-system sales and purchases to the two utilities. PROSYM's AFB feature is a stand-alone process that does not affect PROSYM's normal operation and was not used in the 2011 Compliance Plan.

- b. Please see the attachment being provided pursuant to a Petition for Confidential Protection.
- c. Please see the attachment.
- d. The model inputs are updated annually. The inputs for the 2011 Compliance Plan analysis are consistent with the 2011 IRP filed with the Commission on April 21, 2011. The Companies use the EPIS Aurora model for regional power market modeling. The resulting power prices from this model are inputs into Strategist and PROSYM. The Companies used screening criteria for eastern interconnect generating units to estimate the retirement of 21 GW of coal-fired generation capacity in the eastern interconnect. The modeled prices reflect these estimated retirements.

Summer Maximum Capacity (MW)

4 2025																																									
2023 2024																																									
2022 203																																									
2021 2																																									
2020	105	164	401	122	146	146	121	121	121	121	153	166	237	14	487	481	448	481	66	92	36	300	297	385	467	152	12	23	158	160	160	160	160	160	160	379	549	69	14	64	30
2019	105	164	401	122	146	146	121	121	121	121	153	166	237	14	487	481	448	481	66	92	36	300	297	385	467	152	12	23	158	160	160	160	160	160	160	379	549	69	14	64	30
2018	105	164	401	122	146	146	121	121	121	121	153	166	237	14	487	481	448	481	99	92	36	300	297	385	467	152	12	23	158	160	160	160	160	160	160	379	549	69	14	64	30
2017	105	164	401	122	146	146	121	121	121	121	153	166	237	14	487	481	448	481	99	92	36	300	297	385	467	152	12	23	158	160	160	160	160	160	160	379	549	69	14	64	30
																																160									
																																160									
																																160									
2013				122			121	121		121																						160									30
2012	106	166	406	122	146	146	121	121	121	121			240	14	-	490		487	68	95	36	303	301		477			3 23	-	160	160	160	160	160	0 160	383	9 549	l 71	1 14		5 28
2011	106	166	411	122	146	146	121	121	121	121	155	168	240	14	493	490	454	487	68	95	36	303	301	391	477	156	11	23	158	160	160	160	160	160	160	) 383	) 549	71	14	52	2(
	Brown 1	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trímble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trimble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Tyrone 3	Zorn 1	Ohio Falls 1-8	Dix Dam 1-3

Attachment to Response to LGE KPSC-1 Question No. 46(b) Page 1 of 10 Schram

Summer Maximum Capacity (MW)

2026 105 164	2027 2028 2029 105 105 105 164 164 164	2030 105 164	2031 105 164	2032 105	2033 105	2034 105	2035 105	2036 105	2037 105	2038 105	2039 105	2040 105
104 401	401 401	401 401	104 401	164 401								
122 122	52	122	122	122	122	122	122	122	122	122	122	122
146 146 146 146 146 146 146 146 146	<u> </u>	146 146	146 146	146 146	146 146	146 146	146 146	146 146	146 146	146 146	146 146	146 146
		121	121	121	121	121	121	121	121	121	121	121
121 121		121	121	121	121	121	121	121	121	121	121	121
121 121		121	121	121	121	121	121	121	121	121	121	121
121 121		121	121	121	121	121	121	121	121	121	121	121
153 153	m	153	153	153	153	153	153	153	153	153	153	153
166 166	10	166	166	166	166	166	166	166	166	166	166	166
237 237	~	237	237	237	237	237	237	237	237	237	237	237
14 14		14	14	14	14	14	14	14	14	14	14	14
487 487		487	487	487	487	487	487	487	487	487	487	487
481 481		481	481	481	481	481	481	481	481	481	481	481
448 448	~	448	448	448	448	448	448	448	448	448	448	448
481 481		481	481	481	481	481	481	481	481	481	481	481
66 66		66	66	66	66	99	99	99	66	66	99	99
92 92		92	92	92	92	92	92	92	92	92	92	92
36 36	.0	36	36	36	36	36	36	36	36	36	36	36
300 300	_	300	300	300	300	300	300	300	300	300	300	300
297 297		297	297	297	297	297	297	297	297	297	297	297
385 385		385	385	385	385	385	385	385	385	385	385	385
467 467		467	467	467	467	467	467	467	467	467	467	467
152 152		152	152	152	152	152	152	152	152	152	152	152
12 12	~1	12	12	12	12	12	12	12	12	12	12	12
23 23	~	23	23	23	23	23	23	23	23	23	23	23
158 158	8	158	158	158	158	158	158	158	158	158	158	158
160 160	0	160	160	160	160	160	160	160	160	160	160	160
160 160	<u>o</u>	160	160	160	160	160	160	160	160	160	160	160
160 160	0	160	160	160	160	160	160	160	160	160	160	160
160 160	~	160	160	160	160	160	160	160	160	160	160	160
		160	160	160	160	160	160	160	160	160	160	160
		160	160	160	160	160	160	160	160	160	160	160
		379	379	379	379	379	379	379	379	379	379	379
	_	549	549	549	549	549	549	549	549	549	549	549
	6	69	69	69	69	69	69	69	69	69	69	69
	14	14	14	14	14	14	14	14	14	14	14	14
64	64	64	64	64	64	64	64	64	64	64	64	64
	0	30	30	30	30	30	30	30	30	30	30	30

Attachment to Response to LGE KPSC-1 Question No. 46(b) Page 2 of 10 Schram

Average Heat Rate at Maximum (MBtu/MWh)

2023 2024 2025	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12
1 2022																																					
2020 2021				•••	•••	• •	•••		•••	•••		.,																									
2019 20																																				8.87 8	
2018	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12
2017			• •		.,		• •	• •		• •	•••	•••						•••				.,	• •													8.87	-
5 2016 7 11 17																																					-
2014 2015				*-1				• •						•••	•••	• •	•••	•••	•••		•••	•••			•••		• •				•••			• •			
	10.24 10	·	12.59 12	13.43 13	13.43 13	13.26 13	13.26 15	13.26 13	13.26 13	10.89 10	10.67 10	10.28 10	16.12 16	10.72 10	10.01 10	11.09 11	10.67 1(	• •	11.52 1:		10.58 1(	10.90 10	• •	10.82 10			17.01 1.	10.31 10	10.67 1(	10.67 10						8.87	13.12 1
2012	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	, 10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12
2011	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12
-	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trimble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trímble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Tyrone 3

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Average Heat Rate at Maximum (MBtu/MWh)

	10.45				•••	• •	.,	• •				• •		•••				• •								• •												
2039 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.48	10.60	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2038 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.48	10.60	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2037 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2036 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2035 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2034 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2033 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2032 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2031 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2030 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2029 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2028 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2027 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
2026 11.17	10.24	10.38	12.59	13.43	13.43	13.26	13.26	13.26	13.26	10.89	10.67	10.28	16.12	10.72	10.01	11.09	10.67	13.36	11.52	18.00	10.58	10.90	10.64	10.82	10.00	15.48	17.01	10.31	10.67	10.67	10.67	10.67	10.67	10.67	10.27	8.87	13.12	18.68
Brown 1	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trimble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trimble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Tyrone 3	Zorn 1

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Planned Maintenance (Weeks/Year)

2025 1	I m	<del>، م</del> ا	0	0	0	0	0	0	0	0	0	0		m	m	80	H	0	0		4		4	1				0	0	0	0	0	0	0	œ	0	
2024 3	. 4	£	0	0	0	0	0	0	0	0	0	0		Ч	Ч	Ч	m	0	0			4		4				0	0	0	0	0	0	0	0	4	
2023 1	00	-4	0	0	0	0	0	0	0	0	0	0		m	m	m	H	0	0		4	7	4	-1				0	0	0	0	0	0	0	4	0	
2022 3														-	-	Ч	8	0	0		Ч	4	1	8				0	0	0	0	0	0	0	0	4	
2021 8		1	0	Ō	0	0	0	0	0	0	0	0		80	m	m		0	0		80		4	r-1				1	0	0	0	0	0	0	4	0	
2020 3	. m	'n	8	2		0	0	0	0	0	0	0		ŝ	<del>-1</del>	1	m	0	0		ч,	80	۴I	4				<del>1</del> -1	0	0	0	0	0	0	0	4	
2019 1		80	0	н	7	2	2	2	0	0	0	0		Ч	6	4	1	0	0		4	7	∞	۳				7	0	0	0	0	0	80	4	0	
2018 3	i m	'n	0	1	80	0	0	0	0	0	0	0		4		∞	4	0	0			4	e-1	4				16	0	0	80	0	∞	0	0	80	
2017 1	-	1	0	8	4	0	0	0	0	0	0	0		1	2	m	1	0	0		4	H	4	H				7	80	0	0	80	0	0	80	0	
2016 3	~~~~	m	0	÷,	2	0	0	2	∞	0	0	0		4	4	r-1	m	0	0			4	teri	4				-	0	80	0	0	0	0	0	4	
2015 1		4	0	Ч		2	2	0	0	0	0	0		H	2	5	∞	1	m		9	9	9	ы				-1	0	0	0	0	0	0	4	0	
2014 8	4	'n	2	2	2	0	0	8	0	m	0	m		6	4	t-1	9	m	1			4	ы	80					0	0	0	0	0	0	0	4	
2013 1	l m	1	0	Ч	-1	2	80	0	0	0	£	0		<del>1</del> 74	ч	9	ч	÷	m		80		9	2				1	0	0	0	0	0	8	4	0	
2012 3	1	œ	2	1	1	1	<b>€</b> ~1	2	2	∞	0	m		m	6	m	m	m	1		2	8	2	4				⊷	0	0	80	0	80	0	0	4	
2011 2	ц ц	m	0	1	2	0	2	0	0	1	m	0		2	2	6	1	7	4		2		14	2				15	6	0	0	80	0	0	9	4	
Brown 1	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trimble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trimble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Tyrone 3 Zorn 1

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Planned Maintenance (Weeks/Year)

39 2040															۰. ۱							4	. 1		. r							0						
2038	m		n n	0	0	0	0	0		• C	0	0		)	4m		( <del></del>	1 11		C	,	4	14	. –	1 00	)			0	0	0	0	0	0	0	0	4	
2037	۲J	8		0	0	0	0	0	C	0	0	0	0	•	ŝ		m		0	0	•	80	• •	। ব	• •	ı			0	0	0	0	0	0	0	4	0	
2036	m	£	ſ	0	0	0	0	0	0	0	0	0	0	i.		1		×	0	0		1	~~~~	• •	4				0	0	0	0	0	0	0	0	4	
2035	∞	-1	Ч	0	0	0	0	0	0	0	0	0	0		ø	m	m	£	0	0	I	4	•1	00		ŀ			0	0	0	0	0	0	0	4	0	
2034	m	m	m	0	0	0	0	0	0	0	0	0	0		m	1			0	0		Ч	4		4				0	0	0	0	0	0	0	0	80	
2033	ч	щ	∞	0	0	0	0	0	0	0	0	0	0		⊷	80	m	m	0	0		4	H	4	1				0	0	0	0	0	0	0	80	0	
2032	m	£	m	0	0	0	0	0	0	0	0	0	0		m	æ	∞		0	0		Ч	4	<del>, ~ i</del>	4				o	0	0	0	0	0	0	0	4	
2031	<del>1</del> -1		Ħ	0	0	0	0	0	0	0	0	0	0		1	1	-	m	0	0		4	1	4	Ч				0	0	0	0	0	0	0	4	0	
2030	m	œ	m	0	0	0	0	0	0	0	0	0	0		m	m	m	Н	0	0		7	4	۳	80				0	0	0	0	0	0	0	0	4	
2029	ч	m	-1	0	0	0	0	0	0	0	0	0	0		Ч	-1	H	80	0	0		œ	-1	4	ч				0	0	0	0	0	0	0	4	0	
2028	8	Ч	m	0	0	0	0	0	0	0	0	0	0		80	£	'n	m	0	0		н	8	*-1	4				0	0	0	0	0	0	0	0	4	
2027	1	ŝ		0	0	0	0	0	0	0	0	0	0		m	7		<del>,1</del>	0	0		4	H	80	1				0	0	0	0	0	0	0	4	0	
2026	m	۳	8	0	0	0	0	0	0	0	0	0	0		۴H	œ	m	m	0	0		1	4	ч	4				0	0	0	0	0	0	0	0	80	
	Brown 1	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trimble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trimble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Tyrone 3 Zorn 1

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Forced Outage Rate (%)

	TTN7	7107	5113	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4
	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Cane Run 4	8.2	8.5	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Cane Run 5	8.2	8.5	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Cane Run 6	7.3	7.6	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9
Cane Run 11	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Green River 3	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
Green River 4	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
Haefling 1-3	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Mill Creek 1	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Mill Creek 2	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Mill Creek 3	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Mill Creek 4	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Paddy's Run 11	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Paddy's Run 12	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Paddy's Run 13	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
<b>Frimble County 5</b>	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Trimble County 6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
<b>Frimble County 7</b>	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
rimble County 8	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Frimble County 9	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
rimble County 10	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
Trimble County 1 (75%)	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
[rimble County 2 (75%)	9.0	7.5	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0

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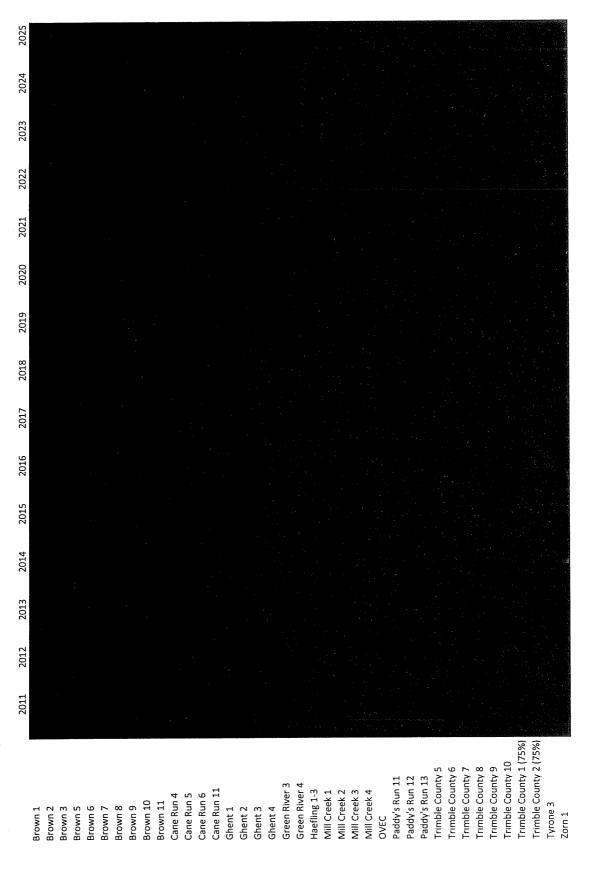
Forced Outage Rate (%)

																											50.0 50.0											
2038	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	r
2037	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	1
2036	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	5
2035	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	6
2034	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	7
2033	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	5
2032	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	Ċ
2031	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	1
2030	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	г с
2029	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	0
2028	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	5
2027	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	C 0
2026	8.2	8.2	7.3	12.4	6.8	6.8	7.8	7.8	7.8	7.8	8.8	8.8	7.9	50.0	6.7	6.7	6.7	6.7	9.6	9.6	50.0	6.7	6.7	6.7	6.7	0.0	50.0	50.0	8.7	4.6	4.6	4.6	4.6	4.6	4.6	4.9	6.7	6 0
	Brown 1	Brown 2	Brown 3	Brown 5	Brown 6	Brown 7	Brown 8	Brown 9	Brown 10	Brown 11	Cane Run 4	Cane Run 5	Cane Run 6	Cane Run 11	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Green River 3	Green River 4	Haefling 1-3	Mill Creek 1	Mill Creek 2	Mill Creek 3	Mill Creek 4	OVEC	Paddy's Run 11	Paddy's Run 12	Paddy's Run 13	Trimble County 5	Trimble County 6	Trimble County 7	Trimble County 8	Trimble County 9	Trimble County 10	Trimble County 1 (75%)	Trimble County 2 (75%)	Turono 2

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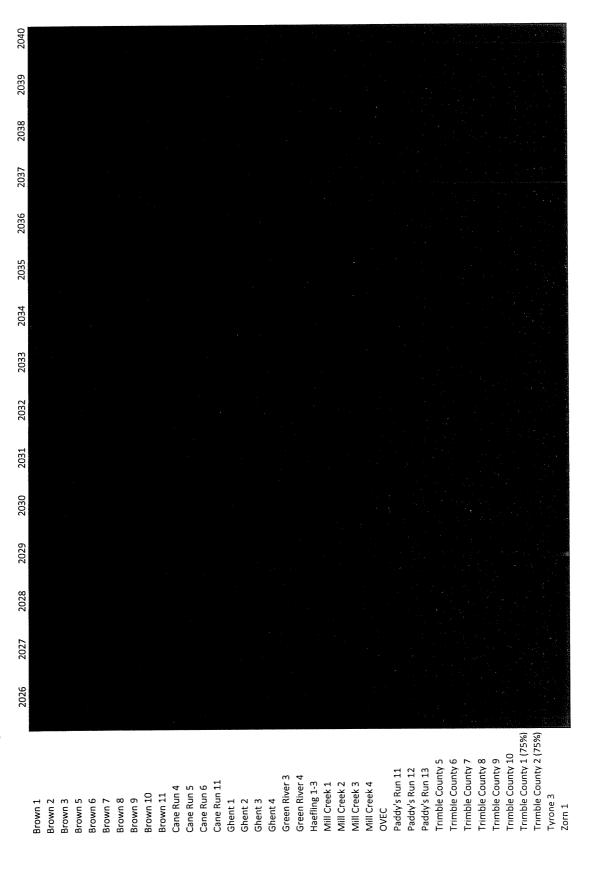


Consumable Variable O&M for Existing and Potential Controls (\$/MWh)





Consumable Variable O&M for Existing and Potential Controls (\$/MWh)



Attachment to Response to LGE KPSC-1 Question No. 46(b) Page 10 of 10 Schram

Emissions Allowances (\$/ton emitted)

2025	0	0	0	
2024	0	0	0	
2023	0	0	0	
2022	0	0	0	
2021	0	0	0	
2020	0	0	0	
2019	0	0	0	
2018	0	0	D	
2017	0	0	0	
2016	0	0	0	
2015	0	0	0	
2014	0	0	0	
2013	50	0	10	
2012	100	0	10	
2011	340	30	30	
	NOX, Annual	NOx, Seasonal	S02	
•				

Attachment to Response to LGE KPSC-1 Question No. 46(c) Page 1 of 4 Schram

Emissions Allowances (\$/ton emitted)

2040	0	0	<b>O</b>	
2039	0	0	0	
2038	0	0	0	
2037	0	0	0	
2036	0	0	0	
2035	0	0	0	
2034	0	0	0	
2033	0	0	0	
2032	0	0	0	
2031	0	0	0	
2030	0	0	0	
2029	0	0	0	
2028	0	0	0	
2027	0	0	0	
2026	0	0	o	
	NOx, Annual	NOx, Seasonal	502	

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Electricity Prices (\$/MWh)

2025	87.65	56.71	70.21	74.02
2024	84.59	55.49	67.50	71.66
2023	81.85	52.61	65.31	68.93
2022	81.37	50.40	62.87	67.50
2021	81.89	50.99	63.73	68.14
2020	82.17	50.22	63.68	68.02
2019	80.62	48.87	62.37	66.57
2018	75.69	49.04	60.66	63.95
2017	69.70	47.97	57.47	60.11
2016	58.04	31.08	38.40	45.30
2015	54.14	30.45	39.57	43.48
2014	50.34	29.82	40.94	41.71
2013	47.09	30.94	43.22	40.97
2012	45.20	29.19	40.08	38.89
2011	43.88	28.25	38.58	37.65
	Peak (5x16)	Off-Peak (7x8)	Weekend (2x16)	Around the Clock

1.74% Annual escalation rate beyond 2035

Electricity Prices (\$/MWh)

2040	103.54	73.48	116.04	95.89
2039	101.77	72.22	114.06	94.25
2038	100.03	70.99	112.11	92.64
2037	98.32	69.77	110.19	91.06
2036	96.63	68.58	108.31	89.50
2035	94.98	67.41	106.45	87.97
2034	96.60	66.26	96.50	86.47
2033	98.23	65.12	86.71	84.99
2032	98.84	64.03	79.20	83.51
2031	93.83	62.90	86.35	82.10
2030	86.50	61.83	99.24	80.70
2029	84.60	60.77	98.60	79.32
2028	84.22	59.81	94.01	77.97
2027	85.59	58.70	85.58	76.62
2026	87.00	57.70	76.89	75.31
	Peak (5x16)	Off-Peak (7x8)	Weekend (2x16)	Around the Clock

1.74% Annual escalation r

# LOUISVILLE GAS AND ELECTRIC COMPANY

# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

## Question No. 47

## Witness: Charles R. Schram

- Q-47. Refer to Schram Testimony, Exhibit CRS-1, Appendix 6.1. The Exhibit provides the analysis assumptions. For each of the Financial Assumptions provide all documentation and calculations relied on to support those assumptions.
- A-47. Please see the response to Question No. 21.

## LOUISVILLE GAS AND ELECTRIC COMPANY

## Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

## Question No. 48

#### Witness: Robert M. Conroy / Shannon L. Charnas

- Q-48. Refer to Charnas Testimony. At this time, have any costs been incurred for Projects 26 and/or 27? If so, what are those amounts by project and have any of those expenditures been previously recovered through base rates?
- A-48. As of June 30, 2011, total capital expenditures incurred for the proposed Project 26 are \$88,296. The capital expenditures related to the proposed Project 26 have not previously been recovered in base rates.

There have been no costs incurred at this time related to the proposed Project 27.

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# LOUISVILLE GAS AND ELECTRIC COMPANY

## Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 49

### Witness: Robert M. Conroy

- Q-49. Refer to Conroy Testimony at page 8. Mr. Conroy provides a table titled Environmental Cost Recovery Surcharge Summary. Provide copies of all documents and data inputs used to make the computations included in this table. Also provide these computations in an electronic spreadsheet with formulas included.
- A-49. The table contained on page 8 of Conroy Testimony is a summary of the information contained in Exhibit RMC-5. Please see the attached. An electronic version of the computations for the requested table and Exhibit RMC-5 is being provided on the attached CD in folder titled Question 49.

# Louisville Gas and Electric Company Environmental Cost Recovery Surcharge Summary

	2012	2013	2014	2015	2016
Total E(m) - (\$000)	\$25,243	\$76,600	\$127,031	\$218,209	\$248,966
12 Month Average Jurisdictional Ratio	87.20%	87.20%	87.20%	87.20%	87.20%
Jurisdictional E(m) - (\$000)	\$22,012	\$66,797	\$110,774	\$190,284	\$217,105
Forecasted Jurisdictional R(m) - (million)	\$956	\$1,013	\$1,038	\$1,077	\$1,131
Incremental Billing Factor	2.30%	6.60%	10.67%	17.67%	19.20%
Residential Customer Impact Monthly bill (1,000 kWh per month)	\$1.96	\$5.61	\$9.08	\$15.03	\$16.33

# Kentucky Utilities Company Environmental Cost Recovery Surcharge Summary

	2012	2013	2014	2015	2016
Total E(m) - (\$000)	\$22,998	\$69,805	\$143,788	\$199,867	\$232,668
12 Month Average Jurisdictional Ratio	86.99%	86.99%	86.99%	86.99%	86.99%
Jurisdictional E(m) - (\$000)	\$20,005	\$60,722	\$125,079	\$173,861	\$202,394
Forecasted Jurisdictional R(m) - (million)	\$1,365	\$1,442	\$1,505	\$1,560	\$1,655
Incremental Billing Factor	1.47%	4.21%	8.31%	11.15%	12.23%
Residential Customer Impact Monthly bill (1,000 kWh per month)	\$1.13	\$3.26	\$6.43	\$8.63	\$9.46

State	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020								
Tax Rate	¥17.35	35.71%	35.71%	35.71%	35.71%	35.71%	\$12'56	35.71%	35.71%	35.71%								
	LORE	ĸu																
Tax Rate-Relifements	35,7100%	35.7100%																
Property Tex Rele	0.15%	0.15%																
	LG8	LG&E Rate of Return Calculation	atum Calcul	ation														
		August 31, 2010	31, 2010					(Sou	rce: capital structu	(Source: capital structure used in most recent ECR review case 2010-00475)	ant ECR review c	zze 2010-00475)						
	Total Company - Elec Rate Base % Electric Capitaliza Post 1995 Plan / Adjusted Electric Capitalization	ioc Rate Base % Eie	ktric Capitaliza Por	ti 1995 Plan (Adju	tled Electric Capit		2011 Weighted Annual Cost Rate Cost of Capital		2012 Weighted 2013 Weighted Cost of Capital Cost of Capital	2013 Weighted 2014 V Cost of Capital Cost of	2014 Weighted 2015 Cost of Capital Cost	2015 Weighted 20161 Cost of Capital Cost o	Weighted 2017 /	2015 Weighted 2016 Weighted 2017 Weighted 2016 Weighted Cost of Capital Cost of Capital Cost of Capital Cost of Capital	Veightad 2019 M Capital Cott of	2019 Weighted 2020 Weighted Cost of Capital Cost of Capital	sighted Sapital	
Long-Term Debi				2	723.812 130	36,65%	6113	2,00%	2.00%	2,00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	
Short-Term Debi					0F2 625 62	5.10%	a: D	0.01	0.01%	0.01%	0.01 %	0.01%	0.01%	0.01%	0.01%	0.01%	. 0.01%	
Preferred Stock					e	0,00%	7400 D	0,00%	1,00.0	0.00%	<b>%00</b> ,0	1,00.0	\$,00%	0.00%	N00'0	N-00-0	0.00%	
Common Equity				2	1-055-422-249	56.25%	10 61-0	5,98%	5.96%	5.98%	S.58%	5.98%	5.98%	5.98%	5.98%	5.96.4	5.98%	
Total				1.8	1,872,809,491			7.99%	1.66.1	7.66.7	X 66°.1	1,99.4	7,56,7	7.99%	7.66.7	7,99%	7.66.7	
Composite Debt Rate								2.01%	2.01%	2.01%	2.01%	2.01%	2.01%	2.01%	2.01%	2.01%	2,01%	
Composite Tax Rate								35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	
Overal Rate of Return Grossed Up								*10.11	\$15.11	*15.11	*10.11	*16.11	*15.11	11.31%	*15.11	212.11	¥16,11	
	ž	KU Rate of Return Calculation August 31, 2010	te of Return Calculat August 31, 2010	tion				(Sou	ice: capital struct	(Source: capital structure used in most recent ECR review case 2010-00-74)	ant ECR review o	2010-00474)						
	Total Company E	Tolal Commany Elec Rate Base % Electric Capitaliza 1994 ECR Rolf. Port 1994 Plan i Adjusted Electric Capitaliza	schic Capitaliza 19	34 ECR Rollf Par	1994 Plan (Adju	tied Electric Capital		2011 Weighted Annual Cost Rate Cost of Capital	l Weighted 2012 Lof Capital Cost	2011 Weighted 2012 Weighted 2013 Weighted Cost of Capital Cost of Capital Cost of Capital		2014 Weighted 2015 Cost of Capital Cost o	Weighted 2015	2014 Weighted 2015 Weighted 2015 Weighted 2017 Weighted Cost of Capital Cost of Capital Cost of Capital	Veighted 2018 V I Capital Cost of	Veighted 2019 V Ceptal Cost of	2018 Weighted 2019 Weighted 2020 Weighted Cast of Capital Cost of Capital	eighted Capital
Long-Term Dabt						11.742.025.31B	44,25%	1.001	2.06%	2,08%	2.06%	2.08%	2,06%	2,00%	2.06%	2,05%	2.08%	2.08%
Short-Term Dett						202 330 47	1,59%	0.244	0.00%	0.00%	0.00%	\$00.0	0.00%	0.00%	N00.0	0.00%	0.00%	N00.0
Preferred Stack						t.	0.00%	4,00%	9,00,0	0.00%	0.00%	0,00%	0.00%	0.00%	0,00%	0,00%	0.00%	\$,00.0
Cemmon Equity						204 192 Sta	54,17%	1496.	5.76%	5.76%	5.76%	5.76%	5.76%	5.76%	5,76%	5,76%	5.76%	S.76%
Total					'n	3,146,123,044			7.84%	7.84%	7.84%	7.84%	7,84%	7.84%	7.84%	7.84%	7.84%	7.54%
Composite Debi Rate									2.05%	2.08%	2.06.%	2.00%	2.08%	2.08%	2.08%	2.08%	2.08%	2.08%
Composite Tax Rate									35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Overall Rate of Return Grossed Up									11.04%	11.04%	11.04%	11,04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%

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Jurisdictional Ratios from ECR Filings	s from EC	R Filings					Billing 12/1/201	Billing Factors as of 12/1/2010 Expense Month	of Ionth		porti	portional Share TC Facilities Ash Pond & Lar	ties Ash Po	nd & Lar
BHI	Billing Month	LOKE	ş					LOLE	Š					
	Mar-10	86,20%	84,36%			อื	Customer Charge	8.SD	8.50			Utlany	75%	
	Apr-10	80.32%	81.71%			ង	Energy	0.07068	0.06805			IG&E	¥ 25	39.000.60
	01-VeM	\$06'99	69,26%			FA	FAC	0.00241	(0:00160)			ки	48%	36.000%
	01-nuL	84.15%	87.37%			ä	DSM	0,00350	0.00243					
	Jul-10	85.36%	86.65 %			2 E	ECR Factor	0.01290	0.02550					
	Aug-10	%E5'E8	86.14%											
	Sep-10	<b>32.29%</b>	\$65.05%					40513.00						
	Oct-10	93.56 <b>%</b>	¥69'19											
	Nov-10	30,68%	88.85%											
	Dec-10	85,51%	80,72%											
	Jan-11	\$1.29.02	88.01%											
	Feb-11	\$3.46%	86.39 K											
Average		87.20%	¥55'99											
12/1/2010 Expanse Month Avg Mith Juris Rev		658,529,356	1,251,944,184											
		ц.	Revenue Calculations Percentage Change	alculation	s Percent	tage Chan	ge							
LORE		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
Non-Fuel Base Revenues		612,299,201	616,463,124	661,886,884	674,166,088	706.062,084	731,555,030	793,375,938	810,638,275	848,006,746	871,350,286			
Base Fuel Revenues		252,871,140	254,605,555	256,654,116	258,061,715	260,515,941	263,215,132	265,505,098	266,936,102	273,316,507	277,998,218			
FAC Revenues		6,569,367	52,094,215	65,106,450	12,573,861	76,932,645	99,476,590	101,719,476	195,181,911	136,745,475	144,911,542			
Environmental Cost Recovery		8,489,276	24,911,926	67,205,086	152,459,410	273,508,372	314,131,056	319,850,631	314,016,635	200,101,005	290.548,494			
Energy Efficient Operations Cost Recovery		25,020,225	32,753,925	29 101 464	930,689,559	33,435,195	36,698,749	34,810,785	37,017,622	34,610,250	36,819,727			
Total (less ECR)		536,759,953	955,916,819	1.012,748,964	1,036,491,023	1,076,945,865	1.130,945,501	1,195,411,298	1,235,773,390	1,292,678,978	£77,870,1EE,1			
X Change			0.05597	0,05945	0.02542	0.03703	0.05014	0.057.00	0.03376	0.04505	1,1620.0			
				0.1293	0.1580	0.2009	0.2611	0.3330	0,3780	0.4415	0.4843			
Ŗ		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020			
Non-Fuel Base Revenues		066,702,277	783,997,444	847,674,177	864,767,856	904,788,293	031,637,550	986,720,335	1,024,534,600	1,117,637,185	1,144,830,904			
Base Fuel Revenues		508,150,329	517,236,870	526,269,091	532,138,408	541,521,192	549.025,330	555,266,141	563,396,145	573,613,293	583,751,081			
FAC Revenues		16,174,164	32,016,696	38,186,813	73,393,620	78,267,633	135,900,479	142,622.427	184,547,422	236,117,566	261,130,956			
Environmental Cost Recovery		64,844,127	85,800,705	117,000,021	177,716,989	228,127,822	292,469,292	297,641,363	286,104,421	279,719,572	257,929,664			
Energy Efficient Operations Cost Recovery		23,709,208	31,433,679	30,165,987	34,916,610	35,013,260	38,155,163	36,392,806	38,652,987	36,197,617	38,503,851			
Total (Mass ECR)		1,320,241,691	1,364,734,689	1,442,296,068	1,505,216,494	1,559,590,578	1,654,716,522	1,721,201.709	1,611,131,354	1,963,765,781	2,026.216,792			
% Change			0.03370	0.05683	236140,0	0.03612	0.06100	0.04018	0.05225	0.05428	0.03262			
				0.0924	0.1401	0.1513	0,2533	1000.0	0176.0	0.4874	0,5362			

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LG&E										
Proised 25	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MC Air Complance (FGDuBaghoutes) - Al Units	•	0	1,693,407	7,079,485	31,875,726	47,403,071	48,528,230	49,675,892	50.846.507	52,040,535
Project 21		c	c		336 662 6		305 975 T	100 PC		
I CI As Companies (Bagnouse) Totald GF		5	A PPA 1	7 079 485		55.017.005	255 744 575	120/175/	58 076 571	602,182,0
KU										
Proisci 23-Amended	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
BR Lendia (Phase I)	٥	•	o	2,613,772	2,898,185	2,965,131	3,074,685	3,166,925	3,261,933	3,359,791
Project 34										
BR Ak Compliance (Baghouses) - Al Unks	0	•	0	7,536,179	16,358,110	19,085,903	19,467,621	19,856,973	20,254,113	20,659,195
Project 35										
GH Air Compliance (Baghouses) - Al Units	0	5,692	8,229,481	25,061,610	41,503,865	64,806,127	66,102,250	67,424,295	68,772,761	70,148,237
Total-KU	0	5,692	8,229,481	35,411,561	60,770,160	86,877,161	88,644,555	90,448,193	92,288,626	94,167,222

Incremental O&M

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Area below used as inputs into Project tabs

## Beneficial Reuse		2011	2012	2011 2012 2013 2013 2014 201	2014	2015 2015	2016	2017	2018	2019	2020
Louisville Gas and Electric Company Proposed Project 26 MC Air Compliance - FGDs & Baghouses	w	<i>и</i> э 1	ۍ ۲	1,693,407 \$	7,079,485 \$	\$ 31,875,726 \$	31,875,726 \$ 47,403,071 \$		48,528.230 \$ 49.675,892 <b>\$</b>	\$ 50,846,507 <b>\$</b>	52,040,535
Mill Creek 1 - Combined 1 & 2 FGD Mill Creek 1 - Baghouse Total Mill Creek 1	4 1		05 05	\$0 \$0	8 8 8 8	(\$254,057) \$5,298,902 5,044,845 \$	(\$349,068) \$9,156,028 \$ 8,806,961	(\$316,411) \$9,339,149 \$9,022,738	(\$283,100) \$9,525,932 \$9,242,832	(\$249,123) \$9,716,451 \$9,467,327 \$	(\$214,467) \$9,910,780 9,696,312
Mill Creek 2 - Combined 1& 2 FGD Mill Creek 2 - Baghouse Total Mill Creek 2	× 2		\$0 \$0	\$0 \$0	20 20 20	\$17,233 \$6,437,015 6,454,247	\$54,994 \$9,640,391 \$9,695,385	\$87,651 \$9,833,199 \$9,920,850	\$120,962 \$10,029,863 \$10,150,825	\$154,939 \$10,230,460 \$ 10,385,398 \$	\$189,595 \$10,435,069 10,624,664
Mill Creek 3 - FGD (U4 update and tie in) Mill Creek 3 - Baghouse Mill Creek 3 - SCR Turn-Down Mill Creek 3 - SCR Turn-Down Total Mill Creek 3	en v		\$ \$0 \$ \$	\$0 \$0 \$1,693,407 \$0 1,693,407 \$	(\$6,803) \$0 \$3,454,550 \$3,447,748 \$	\$211,745 \$1,121,941 \$3,523,641 \$3,523,641 \$0 4,857,328 \$	\$270,192 \$9,155,038 \$3,594,114 \$3,594,114 \$0 \$13,019,344 \$	\$329,808 \$9,338,139 \$3,665,997 \$3,665,997 \$0 \$13,333,943	\$390,615 \$9,524,902 \$3,739,316 \$3,739,316 \$0 \$13,654,833	\$452,639 \$9,715,400 \$3,814,103 \$3,814,103 \$13,982,142 \$	\$515,904 \$9,909,708 \$3,890,385 \$0 14,315,996
Mill Creek 4 - FGD Mill Creek 4 - Baghouse Mill Creek 4 - SCR Turn-Down Mill Creek 4 - SCR Turn-Down Total Mill Creek 4	× 4		\$0 \$0 \$0	8 8 8 8 8 8	\$20,421 \$3,552,924 \$58,392 \$681,737 \$0 3,631,737 \$	\$359,055         \$417,926           \$10,871,949         \$11,089,388           \$4,288,302         \$4,374,068           \$4,288,302         \$4,374,068           \$10,519,305         \$15,681,381           \$15,519,305         \$15,881,381		\$477,974 \$11,311,175 \$4,461,549 \$4,461,549 \$0 \$16,250,699	\$539,223 \$11,537,399 \$4,550,780 \$0 \$0 \$16,627,402	\$601,697 \$11,768,147 \$4,641,796 \$4,641,796 \$17,011,640 \$	\$665,421 \$12,003,510 \$4,734,632 \$4,734,632 \$17,403,563
Proposed Project 27 TC1 Air Compliance - Baghouse		\$0	\$0	\$0	\$0	\$3,732,365	\$7,614,024	\$7,766,305	\$7,921,631	\$8,080,064	\$8,241,665

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Incremental O&M

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 2019 66,102,250 \$ 67,424,295 \$ 68,772,781 ŝ \$11,672,657 \$0 \$13,059,901 \$13,397,339 \$12,652,164 \$7,314,718 \$7,461,012 7,314,718 \$ 7,461,012 \$ 19,467,621 \$ 19,856,973 \$ \$12,404,082 \$0 \$5,690,037 \$0 \$5,427,269 2018 \$3,166,925 \$2,532,094 \$2,571,398 \$11,443,781 \$0 \$12,803,825 \$13,134,646 \$2,571,398 \$4,721,071 \$0 \$5,578,468 \$3,074,685 \$2,482,445 \$2,520,979 \$4,628,501 \$2,520,979 \$0 \$5,320,852 \$11,219,393 \$12,160,865 2017 2 \$12,552,769 \$12,877,104 6,363,418 \$ 17,537,222 \$ 2,483,343 \$ 4,809,135 \$ 4,905,317 \$ 5,052,836 \$ 6,871,856 \$ 7,009,293 \$ \$4,687,119 \$7,171,292 \$ 4,687,119 \$ 7,171,292 \$ ŝ 47 \$2,433,769 \$2,471,548 \$4,537,746 \$2,471,548 2016 \$2,985,131 19,085,903 \$ 64.806,127 \$10,999,405 \$0 \$12,624,612 \$0 \$11,922,417 \$ \$12,306,637 \$4,912,610 7,536,179 \$ 16,368,110 \$ 2015 \$2,386,049 \$2,423,086 \$487,027 \$0 \$2,898,185 25,061,610 \$ 41,503,865 \$0 \$0 \$4,448,770 \$12,065,330 \$10,783,730 \$1,547,134 \$2,423,086 \$4,816,284 Area below used as inputs into Project tabs 2011 2012 2013 2014 2014 4,721,847 \$ \$881,024 \$1,302,230 \$0 \$0 \$4,721,847 \$0 \$0 \$5,256,715 \$1,559,509 \$923,835 \$3,271,155 \$1,781,681 \$0 \$5,013,957 \$7,885,837 \$2,813,772 \$0 ŝ • ŝ 8,229,481 \$ 2,730,914 \$ 1,276,696 \$ 642,953 \$ \$0 \$0 \$2,730,914 \$0 \$0 \$3,578,918 \$0 \$1,276,696 \$0 \$0 \$642,953 20 SO \$ 0\$ 3 • 8,692 \$ s 8,692 \$ 64 ŝ \$0 \$8,692 \$0 \$0 \$0 \$0 20 20 \$0 3 \$0 \$0 \$ 47 ŝ . ŝ \$ 49 Total Brown 1 Total Brown 3 Total Ghent 1 Total Brown 2 Total Ghent 2 Total Ghent 3 BR Air Compliance - Baghouses **GH Air Compliance - Baghouses** Ghent 1 - Baghouse Ghent 1 - SCR Tum-Down Ghent 1 - SAM Mittigation Ghent 4 - Baghouse Ghent 4 - SCR Tum-Down Ghent 4 - SAM Mitigation Ghent 3 - Baghouse Ghent 3 - SCR Tum-Down Ghent 3 - SAM Mitigation Brown 2 - Baghouse Brown 2 - SAM Mitigation Brown 1 - Baghouse Brown 1 - SAM Mitigation Ghent 2 - Baghouse Ghent 2 - SAM Mitigation Brown 3 - Baghouse Amended Project 29 BR Landfill (Phase I Kentucky Utilities Company Proposed Project 34 Proposed Project 35 ## Beneficial Reuse

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\$5,919,915

3,578,918 \$ 5,256,715 \$ 5,848,876 \$ 17,391,503 \$ 17,739,333 \$ 18,094,120 \$ 18,456,002 \$ 18,825,122

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Incremental O&M

Revenue Requirements Summar 2011 Amended Plan - LG&E	mary									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
MC Air Compliance • All Units - FGDs & PM Control Systems	rol Systems									
Revenue Requirement										
Eligible Plant	9,618,429	223,007,642	635,707,764	1,006,220,362	1,260,668,843	1,268,214,657	1,268,214,657	1,268,214,657	1,268,214,657	1,268,214,657
Less: Retired Plant	•	ł	٠	(66,093,145)	(171,243,250)	(171,243,250)	(171,243,250)	(171,243,250)	(171,243,250)	(171,243,250)
Less: Accumulated Depreciation	,	•	•	(2,051,239)	(40,402,159)	(92,361.100)	(144,320,041)	(196,278,982)	(248,237,922)	(300,196,863)
Plus: Accumulated Depreciation on retired plant	ı	,	ı	33,754,526	107,305,608	107,305,608	107,305,608	107,305,608	107,305,608	107,305,608
Less: Deferred Tax Balance	•	•	•	(5,075,817)	(13,943,352)	(27,194,621)	(38,060,062)	(46,720,057)	(53,337,644)	(58,067,671)
Plus: Deferred Tax Balance on retired plant	•	•		3,536,499	5,341,429	5,341,429	5,341,429	5,341,429	5,341,429	5,341,429
Environmental Compliance Rate Base	9,618,429	223,007,642	635,707,764	970,291,187	1,147,727,118	1,090,062,723	1,027,238,342	966,619,405	908,042,877	851,353,909
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
	\$ 1,088,109	\$ 25,228,303	\$ 71,916,049	\$ 109,766,644	\$ 129,839,533	\$ 123,316,102	\$ 116,208,935	\$ 109,351,265	\$ 102,724,647	\$ 96,311,564
Operating expenses	ł		1,693,407	7,079,485	31,875,726	47,403,071	48,528,230	49,675,892	50,846,507	52,040,535
Annual Depreciation expense	·	,	,	2,051,239	38,350,920	51,958,941	51,958,941	51,958,941	51,958,941	51,958,941
Less depreciation on retired plant	,	ł	•	206,498	(907,630)	(907,630)	(907,630)	(907,630)	(907,630)	(001,630)
Annual Property Tax expense		14,428	334,511	953,562	1,506,254	1,830,400	1,763,780	1,685,842	1,607,904	1,529,965
Total OE	' S	\$ 14,428	\$ 2,027,919	\$ 10,290,783	\$ 70,825,269	\$ 100,284,782	\$ 101,343,321	\$ 102,413,045	\$ 103,505,721	\$ 104,621,811
Total E(m)	1,088,109	25,242,731	73,943,967	120,057,427	200,664,802	223,600,884	217,552,256	211,764,309	206,230,368	200,933,375

Project 26

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	Revenue Requirements Summary 2011 Amended Plan - LG&E	nary									
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Project 27	TC1 Air Compliance - PM Control Systems										
	Revenue Requirement										
	Eligible Plant		,	23,479,869	61,329,417	118,470,025	123,752,357	123,752,357	123,752,357	123,752,357	123,752,357
	Less: Retired Plant	ŀ	,	·	ł	,	,		,		ı
	Less: Accumulated Depreciation	·	,	ł	,	(536,077)	(5,015,912)	(9,495,748)	(13,975,583)	(18,455,418)	(22,935,254)
	Plus: Accumulated Depreciation on retired plant	,		r		•	•	3	ł	ł	,
	Less: Deferred Tax Balance	•	•		•	(1,395,029)	(2,985,498)	(4,336,446)	(5,466,435)	(6,391,372)	(7,127,169)
	Plus: Deferred Tax Balance on retired plant	ł	•	,			•	·	,		ı
	Environmental Compliance Rate Base		•	23,479,869	61,329,417	116,538,920	115,750,947	109,920,164	104,310,340	98,905,567	93,689,935
	Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
		s - s	-	\$ 2,656,220 \$	6,938,045	\$ 13,183,760 \$	13,094,619	\$ 12,434,997	\$ 11,800,371 \$	\$ 11,188,942 \$	10,598,911
	Operating expenses	ŧ		•		3,732,365	7,614,024	7,766,305	7,921,631	8,080,064	8,241,665
	Annual Depreciation expense	ı	,	,	,	536,077	4,479,835	4,479,835	4,479,835	4,479,835	4,479,835
	Less depreciation on retired plant		ı	,	ı	ı	1	1	,	•	ì
	Annual Property Tax expense				35,220	91,994	176,901	178,105	171,385	164,665	157,945
	Total OE	\$ ' \$	T	\$ ' \$	35,220	\$ 4,360,436 \$	\$ 12,270,761	\$ 12,424,245	\$ 12,572,851 \$	\$ 12,724,564 3	\$ 12,879,446
	Total E(m)	,	,	2,656,220	6,973,265	17,544,196	25,365,379	24,859,241	24,373,222	23,913,506	23,478,356
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LGE-Summary

2011 Amended Plan - LG&E										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total E(m) - All LG&E Projects	1,088,109	25,242,731	76,600,187	127,030,692	218,208,998	248,966,263	242,411,497	236,137,532	230,143,875	224,411,731
	1,088,109	25,242,731	76,600,187	127,030,692	218,208,998	248,966,263	242,411,497	236,137,532	230, 143, 875	224,411,731
Total Revenue Requirements										
Project 26	1,088,109	25,242,731	73,943,967	120,057,427	200,664,802	223,600,884	217,552,256	211,764,309	206,230,368	200,933,375
Project 27	٠	۲	2,656,220	6,973,265	17,544,196	25,365,379	24,859,241	24,373,222	23,913,506	23,478,356
Total	1,088,109	25,242,731	76,600,187	127,030,692	218,208,998	248,966,263	242,411,497	236,137,532	230,143,875	224,411,731
	•	•	•	,	ı	ł	•	•	•	,
12 Month Average Jurisdictional Ratio	87.20%	87.20%	87.20%	87.20%	87.20%	87.20%	87.20%	87.20%	87.20%	87.20%
Jurisdictional Allocation	948,858	22,012,293	66,797,278	110,773,939	190,283,702	217,104,806	211,388,886	205,917,831	200,691,212	195,692,640
Forecasted 12-Month Retail Revenue	896,759,953	955,916,819 1,012,748,964		1,038,491,023	1,076,945,865	1,130,945,501	1,195,411,298	1,235,773,390	1,292,678,978	1,331,079,773
Billing Factor	0.11%	2.30%	6.60%	10.67%	17.67%	19.20%	17,68%	16,66%	15.53%	14.70%
LGE Residential Bill Impact										
Customer Charge	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50
Energy - 1,000 Kwh @ \$0.07068	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68	\$70.68
FAC billings (Dec 10 factor - \$0.00241/kWh)	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41	\$2.41
DSM billings (Dec 10 factor - \$0.0035/kWh)	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50
ECR billings (Dec 10 factor: 1.29%)	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10	\$1.10
Additional ECR factor	\$0.09	\$1.96	\$5.61	\$9.08	\$15.03	\$16.33	\$15.05	\$14.18	\$13.21	\$12.51

Revenue Requirements Summary 2011 Amended Plan - LG&E Attachment to Response to KPSC Question No. 49 Conroy Page 10 of 36

LGE-Summary

Summary Cash Flow	Cash Flow for 2011 thru 2020	2011 LG&E Amended ECR Plan
Sumr	Cash	2011

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	MC1 & MC2	MC FGDs	- MC3	MC1 & MC2 MC FGDs - MC3 MC FGDs - MC4		Compliance -	Compliance - MC2 Compliance - MC3 Compliance - MC4 TC Air Compliance -	Compliance - MC	3 Complianc	:e - MC4	TC Air Compliar	- e-		
Date	(Project 26)	(Project 26)	t 26)	(Project 26)	MC1	MC1 (Project 26)	(Project 26)	(Project 26)	(Project 26)	t 26)	TC1 (Project 27)	(2:		Total
2009	s.	s		· S	ы м			s S	s		64		s	•
2010	' 19	ŧ	,	, , ,	ю	ı	د	, S	s	•	8		v	•
	s s	ŝ		\$ 4,049,212	2 \$	,	ۍ ۲	<b>\$</b> 192,372	s	5,376,845	в		ŝ	9,618,429
2012	\$ 50,384,502	\$	6,892,461	\$ 70,537,279	s S	13,571,615	\$ 12,967,870	\$ 4,615,765	s	54,419,721	s		ŝ	213,389,212
2013	\$ 104,799,763	s	32,256,716 \$	\$ 87,592,561	s t	42,786,743	\$ 41,386,870	\$ 45,032,370	s	58,845,099	\$ 23,479,869	,869	s	436,179,991
2014	\$ 108,991,754	\$	29,819,542 \$	\$ 44,293,005	ŝ	49,569,616	\$ 49,120,072	\$ 49,061,558	¢9	39,657,052	\$ 37,849,548	,548	\$	408,362,146
2015	\$ 89,616,306	ŝ	3,876,540 \$	\$ 11,842,514	4 \$	48,617,414	\$ 47,612,217	\$ 43,768,430	Ś	9,115,060	\$ 57,140,608	1,608	ŝ	311,589,089
2016	م	s	1	s	s	•	۰ ه	S 7,545,814	4 \$		\$ 5,282,332	,332	69	12,828,146
2017	, 63	s	,	s	ю	,	, ,	, s	S		s		ŝ	•
2018	, N	s	1	۰ د	Ś		، ج	, s	ŝ		S		s	ı
2019	۰ ه	s	,	۰ ۲	s	•	' S	' S	s		s	,	ŝ	,
2020	, 9	64	,	۰ ډ	s	,	, ,	' \$	ы	•	ŝ		S	•
	\$ 353 792 325	s	72 845 258 - 5	<u>s 218.314.57</u>	571 S	154,545,388	s 151.087.029 S	s 150.216.309 S		167,413,776	\$ 123.752.357	.357 \$	· ·	\$ 1,391,967,014

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		Revel	Revenue Requirements Project 26 - LG&E	irements LG&E						
					April					
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
in-Service					-	2	n	4	5	9
Mill Creek 2PC										
CapEx - Mill Creek FGDs - Combined MC1-MC2 new FGD	5	\$ 50,384,502 \$	\$ 104,799,763 \$	\$ 108,991,754 \$	89,616,306	י י ג	•	s 1 2	•	•
Accumulated Expenditures	, v	\$ 50,384,502 \$	155,184,265	\$ 264,176.019 \$	353,792,325	\$ 353,792,325 \$ 353,792,325 \$ 353,792,325 \$ 353,792,325 \$ 353,792,325	353,792,325	353,792,325 \$	353,792,325	353,792,325
Book Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	4.280%	4,280%	4.280%	4.280%	4.280%	4.280%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35,71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance		,	•	·	907,537	4,620,647	7,648,999	10,045,654	11,856,095	13,125,805
Book Accumulated Depreciation Batance		,			10,725,804	25,868,115	41,010,427	56,152,739	71,295,050	86,437,362
Unrecovered investment Book	•	50,384,502	155,184,265	264,176,019	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325
Book Depreciation	•	,	,	•	10,725,804	15,142,312	15,142,312	15,142,312	15,142,312	15,142,312
Unrecovered investment – Tax total	•	50,384,502	155, 184, 265	264,176,019	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325
Tax Depreciation		,	•	•	13,267,212	25,540,268	23,622,714	21,853,752	20,212,156	18,697,924
Allowed Rate of Return	11.31%	11.31%	11.31%	11.31%	11.31%	11,31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total	•	,	ı		10,725,804	15,142,312	15,142,312	15,142,312	15,142,312	15,142,312
Tax Depreciation expense total	,	•	•	•	13,267,212	25,540,268	23,622,714	21,853,752	20,212,156	18,697,924
Annual Property Tax Rate	0.1500%	0,1500%	0,1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	F	•	,	•	907,537	3,713,110	3.028,352	2,396,655	1,810,441	1,269,709
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures		50,384,502	155, 184, 265	264,176,019	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325	353,792,325
Loop Repressive Man	•		,	ı	(91,533,054)	(91,533,054)	(91,533,054)	(91,533,054)	(91,533,054)	(91,533,054)
Less: Accumulated Depreciation	•		·		(10,725,804)	(25,868,115)	(41,010,427)	(56,152,739)	(71,295,050)	(86,437,362)
Phas Accumulated Degrecation on Relition Phan				ı	67,043,393	67,043,393	67,043,393	67,043,393	67,043,393	67,043,393
Less: Deferred Tax Balance			•	,	(307,537)	(4,620,647)	(7,648,999)	(10,045,654)	(11,856,095)	(13,125,805)
Plus, Deferred Tay Belance on Rerigial Plant					1,722,429	1,722,429	1,722,429	1,722,429	1,722,429	1.722,429
Environmental Compliance Rate Base	,	50,384,502	155,184,265	264, 176,019	319,391,751	300,536,329	282,365,666	264,826,699	247,873,946	231,461,925
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	<b>\$</b>	\$ 5.699,874 \$	17,555,612 \$	5 29,885,580 <b>5</b>		36,132,000 \$ 33,998,932 \$	\$ 31,943,330 \$		29,959,190 \$ 28,041,367 \$	\$ 26,184,716
Oresoline Evennese					(DCB 3FC)	1294 074)	(228,759)	(162 138)	(94 185)	(24.872)
Annual Depreciation expense	•	,	•		10,725,804	15,142,312	15,142,312	15,142,312	15,142,312	15,142,312
Less depreciation on rosted plant	•	,	,	,	1202/2021	1210 622	1.05 022)	1308,022)	1308,0221	(306 903)
Annual Property Tax expense	•	*	75,577	232.776	396,264	514,600	491,886	469,173	446,459	423,746
Total OE	5	s - S	75,577	\$ 232,776 \$	10,579,222	<b>\$</b> 15,056,815	\$ 15,099,416	\$ 15,143,324	\$ 15,188,564	<b>\$ 15,235,163</b>
Total E(m) - Project	•	5,699,874	17,631,189	30,118,357	46,711,221	49,055,747	47,042,746	45,102,514	43,229,931	41,419,878

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Mill Creek 3PC										
CapEx - Mill Creek FGDs - MC3 FGD (Old MC4 FGD tied-In)	, ,	\$ 6,892,461	\$ 32,256,716 <b>\$</b>	29,819,542 \$	3,876,540 \$	, ,	, s	<b>.</b>		
Accumulated Expenditures	, s	\$ 6,892,461	\$ 39,149,176 \$	68,968,718 \$	72,845,258 \$	72,845,258	\$ 72,845,258 \$	72,845,258 \$	72,845,258 \$	72,845,258
Book Depreciation rate, per year	0.000%	0.000%	%000%	3.850%	3,850%	3.850%	3.850%	3.850%	3.850%	3.850%
Tax Depreciation rate, per year	%000"0	%000%	0,000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4.888%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	ŀ	,	•	805,052	1,681,431	2,416,820	3,022,143	3,506,766	3,880,053	4,150,069
Book Accumulated Depreciation Balance	,	1		331,912	3,136,454	5,940,997	8,745,539	11,550,082	14,354,624	17,159,167
Unrecovered Investment — Book	,	6,892,461	39,149,176	68,968,718	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258
Book Depreciation			ı	331,912	2,804,542	2,804,542	2,804,542	2,804,542	2,804,542	2,804,542
Unrecovered Investment — Tax total	,	6,892,461	39,149,176	68,968,718	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258
Tax Deprectation	•	٠	,	2,586,327	5.258,699	4,863,878	4,499,652	4,161,650	3,849,872	3,560,676
Allowed Rate of Return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total	•	1	٢	331,912	2,804,542	2,804,542	2,804,542	2,804,542	2,804,542	2,604,542
Tax Depreciation expense total	,	•	,	2,586,327	5,258,699	4,863,878	4,499,652	4,161,650	3,849,872	3,560,676
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0,1500%	0.1500%	0.1500%
Deferred Tax Balance	,	•	,	805,052	876.379	735,389	605,323	484,623	373,287	270,015
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	•	6,892,461	39,149,176	68,968,718	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258	72,845,258
Less Related Plan		•	,	(66,093,145)	(66,093,145)	(66,093,145)	(66,093,145)	(66,093,145)	(66,093,145)	(66,093,145)
Less: Accumulated Depreciation		•	ŀ	(331,912)	(3,136,454)	(5,940,997)	(8,745,539)	(11,550,082)	(14,354,624)	(17,159,167)
Plus Acommulated Deprecution on Retried Plant	•	•	·	33,754,526	33,754,526	33,754.526	33,754,526	33,754,526	33,754,526	33,754,526
Less: Deferred Tax Balance	,	•	ı	(805,052)	(1,681,431)	(2,416,820)	(3,022,143)	(3,506,766)	(3,880,053)	(4,150,069)
Plus Deterred Tuy Balance on Retred Plant	1	•	ł	3,536,499	3,536,499	3,536,499	3,536,499	3,536,499	3,536,499	3,536,499
Environmental Compliance Rate Base	•	6,892,461	39,149,176	39,029,635	39,225,254	35,685,322	32,275,457	28,986,291	25,808,462	22,733,904
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	•	\$ 779.727	\$ 4,428,850 \$	4,415,326 \$	4,437,456 \$	4,036,992 \$	3,651,243 \$	3,279,147 \$	2,919,647 \$	2,571,830
Operating Expenses		,	ł	(6,803)	211,745	270, 192	329,808	390.615	452,639	515,904
Annual Depreciation expense	,		,	331,912	2,804,542	2,804,542	2,804,542	2,804,542	2,804,542	2,804,542
Less depreciation on reited plant				201-1113	108,495	206.496	205,495	205,495	208,488	206,496
Annual Property Tax expense		-	10,339	58,724	102,955	104,563	100,356	96,150	91,943	87,736
Total OE		, S	\$ 10,339 \$	590,331 \$	3,325,741 \$	3,385,795 \$	3,441,204 \$	3,497,805 \$	3,555,622 \$	3,614,680
Total E(m) - Project	•	727,977	4,439,188	5,005,657	7,763,197	7,422.788	7,092,447	6,776,953	6,475,270	6,186,510

## Revenue Requirements Project 26 - LG&E

2020

2019 6

2018 5

2017

2016 3

2015 2

2013

2012

2011

Mill Creek 3PC In-Service

November 2014 -

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	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
th-Service				۲	2	£	4	S	9	7
Mill Creek 4PC										
CanEx - Mill Creek FGDs - MC4 New FGD	5 4 0 40 212	• 70 537 379	87 407 561	• 44 203 005 •	11 847 544	•	•	•	-	
Assessment of the second framework of the second										
	4'N49'Z1Z	< 184,080,491 C	701,811,201		\$ 218,314,515, \$	218,314,511 \$ 218,314,514 \$ 218,314,51		\$ 218,314,5/1 \$ 218,314,5/1	5 218,314,571	5 218,314,571
Book Depreciation rate, per year	0,000%	0.000%	0.000%	3.710%	3.710%	3.710%	3,710%	3.710%	3.710%	3.710%
Tax Depreciation rate, per year	0.000%	0,000%	%000%	3.750%	7.219%	6.677%	6.177%	5.713%	5,285%	4.888%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance		,		2,422,991	5,158,612	7,471,689	9,394,965	10,956,507	12,184,379	13,102,749
Book Accumulated Depreciation Balance	•	•	•	957,514	9,056,985	17,156,455	25,255,926	33,355,397	41,454,867	49,554,338
Unrecovered Investment – Book	4,049,212	74,586,491	162,179,052	206,472,057	218,314,571	218,314,571	218,314,571	218,314,571	218,314,571	218,314,571
Book Depreciation		,	•	957,514	8,099,471	8,099,471	8,099,471	8,099,471	8,099,471	8,099,471
Unrecovered investment – Tax total	4,049,212	74,586,491	162,179,052	206,472,057	218,314,571	218,314,571	218,314,571	218,314,571	218,314,571	218,314,571
Tax Depreciation	•	,		7,742,702	15,760,129	14,576,864	13,485,291	12,472,311	11,537,925	10,671,216
Allowed Rate of Return	11.31%	11.31%	11.31%	11.31%	11.31%	11,31%	11.31%	11.31%	11,31%	11.31%
Book Depreciation expense total		,		957,514	8,099,471	8,099,471	8,099,471	8,099,471	8,099,471	8,099,471
Tax Depreciation expense total	,	1	,	7,742,702	15,760,129	14,576,864	13,485,291	12,472,311	11,537,925	10,671,216
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	,		•	2,422,991	2,735,621	2,313,077	1,923,276	1,561,541	1,227,872	918,370
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	4,049,212	74,586,491	162,179,052	206,472,057	218.314,571	218,314,571	218,314,571	218,314,571	218,314,571	218,314,571
Less Rotres Pland	•	•		•		•	•	•		١
Less: Accumulated Depreciation	,	1		(957.514)	(9,056,985)	(17, 156, 455)	(25,255,926)	(33,355,397)	(41,454,867)	(49,554,338)
Plus Accumulated Deprecuation on Retruct Plant		1			,		•	•		ı
Less: Deferred Tax Balance	,	·		(2,422,991)	(5,158,612)	(7,471,689)	(9,394,965)	(10,956,507)	(12,184,379)	(13,102,749)
Plus: Deterred Tax Belance on Retred Plant	•	•	•	•	•	•	•	•	٠	,
Environmental Compliance Rate Base	4,049,212	74,586,491	162,179,052	203,091,552	204,098,975	193,686,427	183,663,680	174,002.668	164,675,325	155,657,484
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	\$ 458,077	\$ 8,437,785 <b>\$</b>	18,346,915	\$ 22,975,245 \$		23,089,213 \$ 21,911,267	\$ 20,777,418	\$ 19,684,492	\$ 18,629,313	\$ 17,609,147
Onerstine Evenese			,	+CF UC	340 044	417 076	670 778	FCC 8F7	601 697	665 471
Annual Damartin and an				067 644	9 000 474	6 000 471	141 000 8	8 000 471	8 000 A74	8 000 474
		•	•	+1 c' / cs	1 / 1 (650 0	0,4,800,0	14'200'0	- 14'220'0	t then's	1 14 660.0
Less depreciation on terted plant	•		•			,	•	•	•	•
Annuai Property Tax expense		6,074	111,880	243,269	308,272	313,886	301,737	289,588	277,439	265,290
Total OE	5	\$ 6.074 \$	111,880	\$ 1,221,204	\$ 8,766,797	\$ 8,831,283	<b>5</b> 8,879,182	5 8,928,282	\$ 8,978,607	\$ 9,030,181
Total E(m) - Project	458,077	8,443,859	18,458,795	24,196,449	31,856,010	30,742,550	29,656,600	28,612,774	27,607,919	26,639,328

Revenue Requirements Project 26 - LG&E

November

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					:					
	2011	2012	2013	2014	May 2015	2016	2017	2018	2019	2020
In-Service					٣	5	e	ч	ŝ	9
Mill Creek 1NPC										
CapEx - MC1 PM Control System - SAM Mitigation	, S	\$ 13,571,615 \$	42,786,743 \$	49,569,616 \$	48,617,414 \$		• •			
Accumulated Expenditures	, ,	\$ 13,571,615 \$	56,358,358 \$	105,927,974 \$	154,545,388 \$	154,545,388 <b>\$</b> 154,545,388 <b>\$</b> 154,545,388	154,545,388 \$	\$ 154,545,388 \$	\$ 154,545,388 \$	\$ 154,545,388
Book Depreciation rate, per year	0000%	%000%	0.000%	0.000%	4.240%	4.240%	4.240%	4.240%	4.240%	4.240%
Tax Depreciation rate, per year	0.000%	0.000%	0,000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance				,	607,070	2,251,125	3,596,060	4,665,055	5,477,977	6,054,693
Book Accumulated Depreciation Balance	•	,			4,095,453	10,648,177	17,200,902	23,753,626	30,306,351	36,859,075
Unrecovered Investment – Book	•	13,571,615	56,358,358	105,927,974	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388
Book Depreciation	ŀ	ı			4,095,453	6,552,724	6,552,724	6,552,724	6,552,724	6,552,724
Unrecovered Investment – Tax total	'	13,571,615	56,358,358	105,927,974	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388
Tax Depreciation	•		•	1	5,795,452	11,156,632	10,318,996	9,546,269	8,829,178	8,167,724
Allowed Rate of Return	11.31%	11,31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total		ı	ı	ı	4,095,453	6,552,724	6.552,724	6,552,724	6,552,724	6,552,724
Tax Depreciation expense total	•		,	ı	5,795,452	11, 156,632	10,318,996	9,546,269	8,829,178	8,167,724
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0,1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	•		•		607,070	1,644,055	1,344,935	1,068,995	812,922	576,716
Kevenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	٠	13,571,615	56,358,358	105,927,974	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388	154,545,388
Leen Runed Plan		•	ı	,	(2,532,868)	(2,532,868)	(2,532,868)	(2,532,868)	(2,532,868)	(2,532,868)
Less: Accumulated Depreciation	ŀ	·			(4,095,453)	(10,648,177)	(17,200,902)	(23,753,626)	(30,306,351)	(36,859,075)
Plus Aconnulated Depreciation on Reflect Plant	,	ŀ	,	ı	2,410,292	2,410,292	2,410,292	2,410,292	2,410,292	2,410,292
Less: Deferred Tax Balance		,	ı	,	(607,070)	(2,251,125)	(3,596,060)	(4,665,055)	(5,477,977)	(6,054,693)
Plus Ceterrea Tay Balance on Retred Plant		,	,	ı	19,604	19,604	19,604	19,604	19,604	19,604
Environmental Compliance Rate Base	•	13,571,615	56,358,358	105,927,974	149,739,893	141,543,114	133,645,454	126,023,735	118,658,089	111,528,648
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	5	\$ 1,535,323 <b>\$</b>	6,375,682 \$	11,983.370 \$	16,939,704 \$	5 16,012,423 S	15,118,980 S	14.256.754 S	13,423,496	\$ 12,616,960
Operating Expenses	,				5,298,902	9,156,028	9,339,149	9,525,932	9,716,451	9,910,780
Annual Depreciation expense			ı		4,095,453	6,552,724	6,552,724	6,552,724	6,552,724	6,552,724
Less depreciation on reixed plant				٠	istei Si	1944 B.	16.9-191	(5,643)	157°0 81	(5 ** 8)
Annual Property Tax expense	•	•	20,357	84,538	158.892	225,675	215,846	206,017	196,188	186,359
Total OE	5	s - 5	20,357 \$	84,538 \$	9,544,297	\$ 15,925,478 \$	16,098,770	\$ 16,275,724 \$	16,456,413	<b>\$</b> 16,640,913
Total E(m) - Project	,	1,535,323	6,396,039	12,067,907	26,484,001	31,937,901	31,217,750	30,532,477	29,879,910	29,257,873

Revenue Requirements Project 26 - LG&E

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	2011	2012	2013	2014	April 2015	2016	2017	2018	2019	2020
In-Service					-	2	m	4	ŝ	9
Mill Creek 2NPC										,
CapEx - MC2 PM Control System - SAM Mitigation	, ,	\$ 12,967,870 \$	41,386,870 \$	49,120,072 \$	47,612,217	, , ,	, , S	د ۲	, , S	, ,
Accumulated Expenditures	, ,	\$ 12,967,870 \$	54,354,740 \$	103,474,812 \$	151,087,029	\$ 151,087,029 \$ 151,087,029		\$ 151,087,029 \$	\$ 151,087,029	\$ 151,087,029
Book Deprectation rate, per year	0.000%	%000 <sup>0</sup> %	0.000%	0.000%	4.700%	4.700%	4.700%	4.700%	4,700%	4.700%
Tax Depreciation rate, per year	0.000%	%000%	0.000%	0,000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
income tax rate	35.71%	% 35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Defetred Tax Balance	•	،	•	,	227.053	1,586,134	2,652,788	3,449,676	3,996,222	4,311,848
Book Accumulated Depreciation Batance	•	•	•	,	5,029,939	12,131,029	19,232,120	26,333,210	33,434,301	40,535,391
Unrecovered Investment – Book	•	12,967,870	54,354,740	103,474,812	151,087,029	151,087,029	151,087,029	151,087,029	151,087,029	151,087,029
Book Depreciation	'		•	,	5.029,939	7,101,090	7,101,090	7,101,090	7,101,090	7,101,090
Unrecovered Investment Tax total	·	12,967,870	54,354,740	103,474,812	151,087,029	151,087,029	151,087,029	151,087,029	151,087,029	151,087,029
Tax Depreciation	,	·			5,665,764	10,906,973	10,088,081	9,332,646	8,631,602	7,984,949
Allowed Rate of Return	11.31%	% 11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total	•		,		5,029,939	7,101,090	7,101,090	7,101,090	7,101,090	7,101,090
Tax Depreciation expense total	•	·			5,665,764	10,906,973	10,088,081	9,332,646	8,631,602	7,984,949
Annual Property Tax Rate	0.1500%	% 0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	•	r		,	227,053	1,359,081	1,066,654	796,888	546,546	315,626
Revenue Recovery on Canital Excenditure to date										
		13 967 870	04 354 740	C18 A7A 505	151 097 070	161 007 000	000 200 234	000 200 131	000 200 131	000 100 101
i post Ruthers Blanc					1770' Jon's Of				620' 100'I CI	
		•	•	•	111 / (670)	(1117:270)	(111, 620)	(11) / (670)	(111/279)	(111/679)
Less: Accumulated Depreciation	1	·	•		(5,029,939)	(12,131,029)	(19,232,120)	(26.333.210)	(33,434,301)	(40,535,391)
Plus. Accumulated Depreciation on Retried Plant	1		ı	,	550,727	550,727	550,727	550,727	550,727	550,727
Less: Deferred Tax Balance	,	•	,		(227,053)	(1,586,134)	(2,652,788)	(3,449,676)	(3,996,222)	(4,311,848)
Plus Deterroi Tay Belarce on Reared Plant	•	•	ŗ	١	29,169	29,169	29,169	29,169	29,169	29,169
Environmental Compliance Rate Base	1	12,967,870	54,354,740	103,474,812	145,784,222	137,324,051	129,156,306	121,258,327	113,610,691	106,193,975
Rate of return	11,31%	% 11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	, S	\$ 1,467,023 \$	<b>S</b> 6,149,017 <b>S</b>	11,705,850 \$	16,492,209	<b>5</b> 15,535,131	\$ 14,611,134	\$ 13,717,655 \$	\$ 12,852,497	<b>5</b> 12,013,462
Operating Expenses	,	•	ı		6,437,015	9,640,391	9,833,199	10,029,863	10,230,460	10,435,069
Annual Depreciation expense	,			,	5,029,939	7,101,090	7,101,090	7,101,090	7,101,090	7,101,090
ि तडेड वह्यत्रान्भ्य का रण्डात्वी प्रोताः	·		·		12.451)	12.45.0	(2,45 ()	(2.451)	1.451	(1920)
Annual Property Tax expense			19,452	81,532	155,212	219,086	208,434	197.782	187,131	176,479
Total OE	5	\$ - 2	19,452 \$	81,532 \$	11,619,715	\$ 16,958,116	\$ 17,140,272 \$	\$ 17,326,285 \$	\$ 17,516,230	\$ 17,710,188
Total E(m) - Project	•	1.467.023	6.168.469	11.787.382	28.111.924	32,493,247	31,751,406	31,043,940	30 368.727	29.723.650
•		-								

Revenue Requirements Project 26 - LG&E

### Attachment to Response to KPSC Question No. 49 Conroy Page 17 of 36

<ul> <li>98, 302,065</li> <li>0,000%</li> <li>0,000%</li> <li>35,71%</li> <li>35,71%</li> <li>98, 902,065</li> <li>98, 902,065</li> <li>11,31%</li> <li>11,31%</li> <li>0,1500%</li> </ul>	142,670,485 3870% 35,750% 35,71% 1,489,771 1,150,281 1,150,281 1,150,285 5,350,144 11,31% 1,150,281 1,150,281 1,150,281 0,1500% 1,489,771		\$ 150,216,309 \$ 3,870% 6,577% 6,577% 6,577% 7,801,988 1,2,777,023 150,216,309 5,813,371 11,31% 5,813,371 11,31% 5,813,371 10,029,943 0,1500%	5         150.216,309         5         150.216,309         5         150.216,309         5         150.216,309         5         150.216,309         5         150.216,309         3         150.216,309         3         150.216,309         3         150.216,309         3         150.216,309         3         150.216,309         3         150.216,309         3         150.216,309         3         150.217,37         3         35.71%         3         35.71%         3         35.71%         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         7         3         3         3         3         3         3         3         3         3         3         3         3         3         3	150,216,309 <b>5</b> 3.870% 5.713% 5.713% 35.71% 7.028,141 24,403.766 24,403.766	150,216,309 3.870% 5.285% 35.71% 7.787,178
0.000% 0.000% 35.71%  98.902.065  11.31%  0.1500%	3.870% 3.5750% 3.571% 1.499.771 1.150.281 1.150.281 1.150.281 1.2570.495 5,350,144 1.150.281 5,350,144 0.1500% 1.1500% 1.499.771	3.870% 3.870% 35.71% 3.296.250 6.963.652 150.216.309 5.813.377 11.31% 5.813.377 5.813.377 0.1500% 1.796.479	3.870% 6.577% 6.577% 3.571% 4.801.988 1.2777,023 150.216,309 5.813.377 11.31% 5.813.377 10.029.943 0.1500% 1.505,738	3.870% 5.177% 5.177% 5.77% 5.239514 15.50239 15.290 5.813.377 15.276.309 5.813.377 11.31% 5.813.377 11.31% 5.813.371 9.278.861 0.7500%	3.870% 5.713% 35.71% 7.028,141 24,403,765	3.870% 5.285% 35.71% 7,787,178
0.000% 35.71% 98.902.065 - 11.31% 0.15.00%	3.750% 35.71% 1.499.77 1.150.281 1.150.281 1.150.281 1.2570.495 5.350,144 1.150.281 5.350,144 0.1500% 1.499.771	7.216% 35.71% 3.296.250 6.963.652 150.216.309 5.813.371 11.31% 5.813.371 10.844.115 0.1500% 1.796.479	6.577% 35.71% 4.801.988 1.2.777,023 150.216,309 5.813,377 11.31% 5.813,377 10,022,943 0,1501% 10,022,943 0,1502,348	6.177% 5.71% 5.239.514 6.039.514 15.290.394 15.0216.309 5.813.377 11.31% 5.813.377 11.31% 5.813.371 9.278.861 0.1500%	5.713% 35.71% 7.028,141 24,403.766	5.285% 35.71% 7.787,178
35.71%  98,902,065 0.1500%	35.71% 1,499.771 1,150.281 1,150.281 1,150.281 1,150.245 5,350,144 1,150.281 5,350,144 0.1500% 1,499.771	35.71% 3.296.250 6.96.3652 150.216.309 5.813.371 11.31% 5.813.371 10.844.115 0.1500% 1,796.479	35.71% 4.801.988 4.801.988 7.77,22 15.0.20 5.813.37 110.029.943 0.15.01 10.029.943 0.1502.943 0.1502.943	35,71% 5,039,514 16,599,394 150,216,309 5,813,377 150,216,309 9,278,661 11,31% 5,813,371 9,278,861 0,1500%	35.71% 7,028,141 24,403,766	35.71% 7.787,178
98,902,065 98,902,065 11,31% 0.1500%	1,499,771 1,150,281 1,150,2495 1,150,2495 5,350,144 1,150,281 1,150,281 5,350,144 0,1500% 1,499,771	3,296,250 6,963,652 150,216,309 5,813,371 11,31% 5,813,371 11,31% 5,813,371 10,844,115 0,1500% 1,796,479	4,801,968 12,777,023 150,216,309 5,813,377 150,216,309 10,029,943 11,31% 5,813,377 10,029,943 0,1500% 1,505,738	6,039,514 15,590,394 150,216,309 5,813,377 150,216,309 9,278,661 11,31% 5,813,377 9,278,861 0,3507 0,3507	7,028,141 24,403,766	7,787,178
98,902,065 98,902,065 11,31% - 0,1500%	1,150,281 1,150,495 1,150,2495 5,350,144 1,150,281 1,150,281 1,150,281 5,350,144 0,1500% 1,499,771	6,963,652 150,216,309 5,813,371 11,31% 5,813,371 10,844,115 0,1500% 1,796,479	12,777,023 150,216,309 5,813,377 150,216,309 10,029,943 11,3176 5,813,377 10,029,943 0,1500% 1,505,738	18.590.394 150.216.309 5.813.371 150.216.309 9.278.861 11.31% 5.813.371 9.278.861 0.1500%	24,403,766	
98,902,065 98,902,065  0,1500%	142.670,495 1.150.281 1.42.670,495 5,350,144 1.130,281 1.150,281 5,350,144 0.1500% 1.499.771	150,216,309 5,813,377 150,216,309 10,844,115 11,31% 5,813,371 10,844,115 0,1500% 1,796,479	150,216,309 5,813,377 150,216,309 10,029,943 11,31% 5,813,37 10,029,943 0,1500% 1,505,738	150,216,309 5,813,371 150,216,309 9,278,861 11,31% 5,813,371 9,278,861 0,1500%	ans 315 na+	30,217,137
98,902,065   0.1500%	1,150,281 142,670,495 5,350,144 11,31% 1,150,281 5,350,144 0,1500% 1,499,771	5,813,377 150,216,309 10,844,115 11,31% 5,813,371 10,844,115 0,1500% 1,796,479	5,813,371 150,216,309 10,029,943 11,31% 5,813,371 10,029,943 0,1500% 1,505,738	5,813,371 150,216,309 9,278,861 11,31% 5,813,371 9,278,861 0,1500%	בחכיםו ליחכו	150,216,309
98,902,065 - 11.,31%  0.,1500%	142,670,495 5,350,144 11,31% 1,150,281 5,350,144 0,1500% 1,499,771	150,216,309 10,844,115 11,31% 5,813,371 10,844,115 0,1500% 1,795,479	150,216,309 10,029,943 11,31% 5,813,371 10,029,943 0,1500% 1,505,738	150,216,309 9.278,861 11.31% 5,813,371 9,278,861 0,1500%	5,813,371	5,813,371
- - - 0.1500% - -	5,350,144 11.31% 1,150,281 5,350,144 0,1500% 1,499,771	10,844,115 11.31% 5,813,371 10,844,115 0,1500% 1,796,479	10,029,943 11,31% 5,813,371 10,029,943 0.1500% 1,505,738	9,278,861 11.31% 5,813,371 9,278,861 0,1500%	150,216,309	150,216,309
11.31% - - 0.1500% -	11.31% 1.150,281 5,350,144 0.1500% 1,499,771	11.31% 5.813.371 10.844.115 0.1500% 1.796.479	11.31% 5.813.371 10,029.943 0.1500% 1,505,738	11.31% 5.813.371 9.278,861 0.1500%	8,581,858	7,938,932
0.1500%	1,150,281 5,350,144 0.1500% 1,499,771	5,813,371 10,844,115 0,1500% 1,796,479	5.813,371 10,029,943 0.1500% 1,505,738	5,813,371 9,278,861 0,1500%	11.31%	11.31%
0.1500% 	5,350,144 0.1500% 1,499,771	10,844,115 0.1500% 1,796,479	10,029,943 0.1500% 1,505,738	9,278,861 0,1500%	5,813,371	5,813,371
0.1500%	0.1500% 1,499,771	0.1500% 1,796.479	0.1500% 1,505,738	0.1500%	8,581,858	7,938,932
	1,499,771	1,796,479	1,505,738		0.1500%	0.1500%
350 CVB 80				1,237,527	988,627	759,038
320 000 80						
000°700'00	142,670,495	150,216,309	150,216,309	150,216,309	150,216,309	150,216,309
•	(10,458,472)	(10,458,472)	(10,458,472)	(10,458,472)	(10,458,472)	(10,458,472)
,	(1,150,281)	(6,963,652)	(12,777,023)	(18,590,394)	(24,403,766)	(30,217,137)
	3,546,670	3,546,670	3,546,670	3,546,670	3,546,670	3,546,670
,	(1,499,771)	(3,296,250)	(4,801,988)	(6,039,514)	(7,028,141)	(7,787,178)
	33,729	33,729	33,729	33,729	33,729	33,729
98,902,065	133,142,370	133,078,334	125,759,225	118,708.327	111,906,330	105,333,921
11,31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
\$ 11,188.546 <b>\$</b>	15,062,067	<b>5</b> 15,054,823	\$ 14,226,830 \$	\$ 13,429,180 \$	12,659,687 \$	11,916,166
3,454,550	4,645,582	12,749,152	13,004,135	13,264,218	13,529,502	13,800,092
ı	1,150,281	5,813,371	5,813,371	5,813,371	5,813,371	5,813,371
	1796,7061	1402, 261	136,708	1907,3971	(198,706)	1397,79851
74,761	148,353	212,280	214,879	206,159	197,439	188,719
\$ 3,529,311 \$	5,147,511	17,978,098	\$ 18,235,680	18,487,043	18,743,607 \$	19,005,477
14,717,857	20,209,578	33,032,921	32,462,510	31,916,222	31,403,293	30,921,643
	3.454.550 - - 3.529.311 14.717,857	3,454,550 4,645,582 - 1,150,281 - 1,150,281 - 74,761 148,353 3,529,311 <b>\$</b> 5,147,511 14,717,857 20,209,578	3,454,550 4,645,562 12,748,152 - 1,150,281 5,613,371 - 1,150,281 5,613,371 - 1,785,169 148,353 2,12,280 3,529,311 5 5,147,511 5 17,978,098 14,717,857 20,209,578 33,032,921	3,454,550 4,645,582 12,749,152 13,004,135 - 1,150,281 5,813,371 5,813,371 - 7,785,705 - 3,812,371 5,813,371 - 7,785,705 - 312,280 2,14,879 3,523,311 5 5,147,511 5 17,978,098 5 18,235,680 14,717,857 20,209,578 33,032,921 32,462,510	3,454,550         4,645,562         12,749,152         13,064,135         13,264,219           -         1,150,281         5,813,371         5,813,581         2,914,879         205,169         2,94,879,643         3,913,520         3,1316,222         14,477,857         20,209,578         33,032,921         31,316,222         14,717,857         31,316,222         14,717,857         31,316,222         13,316,222         31,316,222         31,316,222         31,316,222         31,316,222         31,316,222         31,316,222         31,316,222         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         31,316,322         3	3,454,550         4,645,562         12,743,152         13,004,135         13,264,216         13,523,502           -         1,150,281         5,813,371         5,913,371         5,913,371         5,913,371         5,913,371         5,913,371         5,913,371         5,914,511         5,147,511         5,147,512         2,15,769         5,14,743,607         7,913,430           3,523,311         5,5,147,511         5,147,511         5,147,513         5,147,513         5,147,513         7,143,233         14,743,607           3,747,632         3,502,921         32,662,510         3,154,522         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233         3,1403,233<

Revenue Requirements Project 26 - LG&E October 

In-Service Mill Creek 3NPC

### Attachment to Response to KPSC Question No. 49 Conroy Page 18 of 36

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service				-	2	e	4	S	9	7
Mill Creek 4NPC										
CapEx - MC4 PM Control System - SAM Mitigation - SCR Turn-down	\$ 5,376,845	\$ 54,419,721 \$	58,845,099 \$	39,657,052 \$	9,115.060 \$	·	• <b>^</b>	1	,	,
Accumulated Expenditures	\$ 5,376,845	\$ 29,796,566 \$	118,641,665 \$	158,298,717 \$		167,413,776 \$ 167,413,776 \$	\$ 167,413,776 \$	\$ 167,413,776 \$	\$ 167,413,776	\$ 167,413,776
Book Deprectation rate, per year	0.000%	0.000%	0.000%	3.850%	3.850%	3.850%	3.850%	3.850%	3.850%	3.850%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4.888%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	,	•		1,847,774	3,851,879	5,551,958	6,943,119	8,056,885	8,914,777	9,535,329
Book Accumulated Depreciation Balance	·	•		761,813	7,207,243	13,652,673	20,098,104	26,543,534	32,988,964	39,434,395
Unrecovered investment – Baak	5,376,845	59,796,566	118,641,665	158,298,717	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776
Book Deprectation	•	•	•	761,813	6,445,430	6,445,430	6,445,430	6,445,430	6,445,430	6,445,430
Unrecovered Investment Tax total	5,376,845	59,796,566	118,641,665	158,298,717	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776
Tax Depreciation	,			5,936,202	12,085,601	11,178,218	10,341,149	9,564,349	8,847,818	8,183,185
Allowed Rate of Return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total	·	•		761,813	6,445,430	6,445,430	6,445,430	6,445,430	6,445,430	6,445,430
Tax Depreciation expense total	,		•	5,936,202	12,085,601	11,178,218	10,341,149	9,564,349	8,847,818	8,183,185
Annual Property Tax Rate	0.1500%	0,1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	,	•		1,847,774	2,014,105	1,690.078	1,391,161	1,113,766	857,893	620,552
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	5,376,845	59,796,566	118,641,665	158,298,717	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776	167,413,776
Loss Found Plant		,		,			•	•	•	ı
Less: Accumulated Depreciation	1	ľ		(761,813)	(7,207,243)	(13,652,673)	(20,098,104)	(26,543,534)	(32,988,964)	(39,434,395)
Plus i Accumulated Depreciation on Retried Plant	,	•	•	ı	•	,	•		,	ı
Less: Deferred Tax Balance	•	,	,	(1,847,774)	(3,861,879)	(5,551,958)	(6,943,119)	(8,056,885)	(8,914,777)	(9,535,329)
Fills Divierred Tax Balance on Pietrick Plant	,	Ņ	1	,	•		•	•	,	•
Environmental Compliance Rate Base	5,376,845	59,796,566	118,641,665	155,689,130	156,344,654	148,209,145	140,372,554	132,813,358	125,510,035	118,444,052
Rate of return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Return on Environmental Compliance Rate Base	\$ 608,269	\$ 6.764,638 \$	13,421,638	\$ 17,612,727 \$	17,686,884	\$ 16,766,534	\$ 15,880,000	\$ 15.024,847	<b>5</b> 14, 198, 640	<b>5</b> 13,399,283
Operating Expenses		,		3,611,316	15,160,250	15,463,455	15,772,725	16,088,179	16,409,943	16,738,141
Annual Depreciation expense	ı	,	ı	761,813	6,445,430	6,445,430	6,445,430	6,445,430	6,445,430	6.445,430
៤៩៩៩ កំពុទ្ធខេត្តលៅជោ ជាអ្នកទំព័ន្ធភ្លាស់ ស្នាវិជាស័										
Annual Property Tax expense		8,065	89,695	177,962	236,305	240.310	230,642	220,974	211,305	201,637
Total OE	,	s 8,065 \$	89,695	\$ 4,551,091 \$	21,841,986	\$ 22,149,196	\$ 22,448,797	<b>\$</b> 22,754,583	\$ 23,066,678	s 23,385,209
						000 210 00	707 8CC 8C	0EV 022 26	37 365 318	767 AG7
Total E{m} - Project	608,269	p'//7/03	000,110,01	919 <sup>°</sup> F91	1 10 070 60	חר ו'רו ב'פר	101'070'00			

LGE-Project 26

### Revenue Requirements Project 26 - LG&E

November

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Operating Expenses		,	,	1	•	3,732,365	7,614,024	7,766,305	7,921,631	8,080,064	8,241,665
Annual Depreciation expense		,	•	٠	•	536,077	4,479,835	4,479,835	4,479,835	4,479,835	4,479,835
Less depreciation on retired plant			,	,	•	•			,		,
Annual Property Tax expense			,	'	35.220	91,994	176,901	178,105	171,385	164,665	157,945
Total OE	s	, v		-		\$ 4,360,436	\$ 12.270.761	35,220 \$ 4,360,436 \$ 12,270,761 \$ 12,424,245 \$ 12,572,851 \$ 12,724,564 \$ 12,879,446	s 12.572.851	\$ 12.724.564	\$ 12,879,446
Total E(m) - Project			ı	2,656,220	6,973,265	17,544,196	25,365,379	24,859,241	24,373,222	23,913,506	23,478,356
							Attac	hment to	Respons	e to KPS(	Attachment to Response to KPSC Question
Project 27											Page 1

10,598,911	11,188,942 \$	\$ 11,800,371 \$	\$ 12,434,997	13,094,619	- \$ 2,656,220 \$ 6,938,045 \$ 13,183,760 \$ 13,094,619 \$ 12,434,997 \$ 11,800,371 \$ 11,188,942 \$ 10,598,911	6,938,045	2,656,220	·	\$ 1
11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
93,689,935	98,905,567	104,310,340	109,920,164	115,750,947	116,538,920	61.329,417	23,479,869	,	•
•			•	,	•	•	•	,	
(7,127,169)	(6,391,372)	(5,466,435)	(4.336,446)	(2,985,498)	(1,395,029)	•	•	,	•
•		•	•	•	•	•	•		,
(22,935,254)	(18,455,418)	(9.495.748) (13,975,583)	(9,495.748)	(5,015,912)	(536,077)	•	•	,	
ł	ı		ı	•	,	ł	·		•
123,/52,357	123,752,357	123,752,357	123,752,357	123,752,357 123,752,357	61,329,417 118,470,025	61,329,417	23,479,869	,	•

Environmental Compliance Rate Base

Rate of return

TrimblePC Capital Expenditures - Project 27 - TC1 Baghouse	ı	, v	\$ 23,479,869	\$ 37,849,548 \$ 57,140,608	\$ 57,140,608	\$ 5,282,332	۰ ۱	••		
Accumulated Expenditures		, ,	\$ 23,479,869	\$ 61,329,417	61,329,417 \$ 118,470,025	\$ 123,752,357 \$ 123,752,357 \$ 123,752,357	\$ 123,752,357	\$ 123,752,357	\$ 123,752,357	\$ 123,752,357
Book Depreciation rale, per year	0.000%	0.000%	0.000%	0.000%	3.620%	3.620%	3.620%	3.620%	3.620%	3.620%
Tax Depreciation rate, per year	%000'0	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	•	•	•		1,395,029	2,985,498	4,336,446	5,466,435	6,391,372	7,127,169
Book Accumutated Depreciation Batance	•	•	•	•	536,077	5,015,912	9,495,748	13,975,583	18,455,418	22,935,254
Unrecovered Investment – Book	•	•	23,479,869	61,329,417	118,470,025	123,752,357	123,752,357	123,752,357	123,752,357	123,752,357
Book Depreciation		•	•	•	536,077	4,479,835	4,479,835	4,479,835	4,479,835	4,479,835
Unrecovered Investment - Tax total	•	•	23,479,869	61,329,417	118,470,025	123,752,357	123,752,357	123,752,357	123.752,357	123,752,357
Tax Depreciation	,	•			4,442,626	8,933,683	8,262,945	7,644,183	7,069,972	6,540,312
Allowed Rale of Return	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%	11.31%
Book Depreciation expense total	,		•		536,077	4,479,835	4,479,835	4,479,835	4,479,835	4,479,835
Tax Depreciation expense total		•	•		4,442,626	8,933,683	8,262,945	7,644,183	7,069,972	6,540,312
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	1	•		•	1,395,029	1,590,469	1,350,948	1,129,989	924,938	735,796
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumutative capital expenditures	•	•	23,479,869	61,329,417	118,470,025	123,752,357	123,752,357	123,752,357	123,752,357	123,752,357
Less: Retired Plant	•	•	•	r	,	•	•	•	,	ı
Less: Accumulated Depreciation	•	•	•	•	(536,077)	(5,015,912)	(9,495,748)	(13,975,583)	(18,455,418)	(22,935,254)
Plus: Accumulated Depreciation on Retired Plant	,	,	•		•		•	•	•	•
Less: Deferred Tax Balance	•	,	,	•	(1,395,029)	(2,985,498)	(4,336,446)	(5,466,435)	(6,391,372)	(7,127,169)
Plus: Deferred Tax Balance on Retired Plant	•		٠	,	•	,	•	•	•	•

# Revenue Requirements Project 27 - LG&E

2020 6

2019 5

2018 4

2017 3

2016 2

2015 November

2014

2013

2012

2011

In-Service

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### LGE-Pro

		2011	<del></del>	2012	2013	2014	2015	2016	2017	2018	2019	2020
Project 29	Brown Landfill (Phase I)											
	Revenue Requirement											
	Eligible Plant	7,8	7,887,735	34,610,113	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420
	Less: Retired Plant					ł	·		ł			
	Less: Accumulated Depreciation		•			(1,574,430)	(3,217,314)	(4,860,198)	(6,503,082)	(8,145,965)	(9,788,849)	(11,431,733)
	Plus: Accumulated Depreciation on retired plant			·	•	,	ı	•		•		
	Less: Deferred Tax Balance		•	•	•	(223,495)	(1,149,392)	(1,961,725)	(2,669,296)	(3,279,646)	(3,800,319)	(4,237,810)
	Plus: Deferred Tax Balance on retired plant		ŀ	•	•		,		,		•	
	Environmental Compliance Rate Base	7,8	7,887,735	34,610,113	58,674,420	56,876,495	54,307,714	51,852,497	49,502,043	47,248,809	45,085,252	43,004,877
	Rate of return		11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
		s	870,487 <b>\$</b>	3,819,556 \$	6,475,281 \$	6,276,863 \$	5,993,373 \$	5,722,417 \$	5,463,022 \$	5,214,356 \$	4.975,587 \$	4,745,998
	Oneration expenses				,	2 813 772	2 898 185	2 985 131	3 074 685	3 166 925	3 261 933	3 359 791
	Annual Deprectation expense		•	,	ł	1,574,430	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884
	Less depreciation on retired plant		¢	,	ı	ı	ł	ł	i	ı	ı	ı
	Annual Property Tax expense	1		11,832	51,915	88,012	85,650	83, 186	80,721	78,257	75,793	73.328
	Total OE	\$	- S	11,832 \$	51,915 \$	4,476,214 \$	4.626,719 \$	4,711,200 \$	4.798,290 \$	4,888,066 \$	4,980,609 \$	5,076,003
	Total E(m)	ŭ	870,487	3,831,387	6,527,196	10,753,077	10,620,092	10,433,617	10,261,312	10,102,422	9,956,196	9,822,001

Revenue Requirements Summary 2011 Amended Plan - KU

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		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Project 34	BR Air Compliance - All Units - PM Control Systems										
	Revenue Requirement										
	Eligible Plant	5,224,347	71,624,419	196,530,009	307,550,104	343,785,964	343,785,964	343,785,964	343,785,964	343,785,964	343,785,964
	Less: Retired Plant	,			ı	•	,	,	•	ł	•
	Less: Accumulated Depreciation		,		(4,247,407)	(13,089,386)	(23, 159, 043)	(33,228,699)	(43,298,356)	(53,368,012)	(63,437,668)
	Plus: Accumulated Depreciation on retired plant	•	ı	•	•	ı		ŗ	•		,
	Less: Deferred Tax Balance	ł		ł	(1.521,248)	(5,777,851)	(10,605,360)	(14,801,503)	(18,412,981)	(21,483,990)	(24,054,674)
	Plus: Deferred Tax Balance on retired plant	•	•	·	•		•	•	ł		١
	Environmental Compliance Rate Base	5,224,347	71,624,419	196,530,009	301,781,449	324,918,727	310,021,561	295,755,762	282,074,628	268,933,962	256,293,622
	Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
	1	576,556	\$ 7,904,437	\$ 21.688,958 \$	33,304,457 \$	35,857,876 \$	34,213,832 \$	32,639,465 \$	31,129,621 \$	29,679,424 \$	28,284,442
	Operating expenses	•			7,536,179	16,368,110	19,085,903	19,467,621	19,856,973	20,254,113	20,659,195
	Annual Depreciation expense	•			4,247,407	8,841,979	10,069,656	10,069,656	10,069,656	10,069,656	10,069,656
	Less depreciation on retired plant	ł	•		·	•		•	ı		I
	Annual Property Tax expense	**	7,837	107,437	294,795	454,954	496,045	480,940	465,836	450,731	435,627
	Total OE	,	s 7.837	s 107.437 S	12 078 381 \$	25 665 043 \$	29 651 604 \$	30.018.217 \$	30 397 465 \$	30 774 500 \$	31 164 478

Revenue Requirements Summary 2011 Amended Plan - KU 59,448,920

60,453,924

61,522,087

62,657,682

63,865,435

61,522,919

45,382,838

21,796,395

7,912,273

576,556

Total E(m)

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		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Project 35	GH Air Compliance - All Units - PM Control Systems										**
	Revenue Requirement										
	Eligible Plant	5,094,166	101,828,630	299,923,984	530,338,048	698,652,348	711,534,820	711,534,820	711,534,820	711,534,820	711,534,820
	Less: Retired Plant	•		ı	•	,	,			•	,
	Less: Accumulated Depreciation		ł	ı	(4,400,802)	(15,808,453)	(36,310,719)	(56,812,985)	(77,315,251)	(97,817,517)	(118,319,783)
	Plus: Accumulated Depreciation on retired plant	ı	,	٠	•	,	,				ı
	Less: Deferred Tax Balance	•	,		(2,741,380)	(12,096,178)	(22,481,196)	(31,538,360)	(39,367,343)	(46,059,617)	(51,700,784)
	Plus: Deferred Tax Balance on retired plant	•	,	ı	,	•	·	,	ı		,
	Environmental Compliance Rate Base	5,094,166	101,828,630	299,923,984	523,195,866	670,747,717	652,742,905	623,183,475	594,852,226	567,657,686	541,514,253
	Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
	\$	562,190	\$ 11.237.759 \$	33,099,468 <b>\$</b>	57,739,646 S	74,023,398 \$	72,036,395 \$	68,774,231 \$	65,647,608 \$	62,646,431 \$	59,761,255
	Operating expenses	,	8.692	8.229.481	25.061.610	41 503 865	64 806 127	66 102 250	67 424 295	68 773 781	7D 148 237
	Annual Depreciation expense	·	•	<b>,</b>	4,400,802	11,407,651	20,502,266	20,502,266	20,502,266	20,502,266	20,502,266
	Less deprectation on retired plant		ı	ı	,			•	,		ı
	Annual Property Tax expense		7,641	152,743	449,886	788,906	1,024,266	1,012,836	982,083	951,329	920,576
	Total OE	-	\$ 16,333 \$	8,382,224 \$	29,912,298 \$	53,700,423 \$	86,332,659 \$	87,617,352 \$	88,908,644 \$	90,226,376 \$	91,571,078
	Total E(m)	562,190	11,254,092	41,481,691	87,651,944	127,723,820	158,369,055	156,391,583	154,556,251	152,872,807	151,332,333

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equireme ded Plan	nts Summary	- KU
/en 1 ⊿	Revenue Requireme	Amended

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total E(m) - Ali KU Projects	2,009,233	22,997,753	69,805,282	143,787,858	199,866,832	232,668,107	229,310,577	226,180,760	223,282,928	220,603,254
	1,712,578	19,012,967	60,245,001	123,740,224	177,214,254	210,444,215	207,489,439	204,738,062	202,195,965	199,850,703
Total Revenue Requirements										
Project 29	870,487	3,831,387	6,527,196	10,753,077	10,620,092	10,433,617	10,261,312	10,102,422	9,956,196	9,822,001
Project 34	576,556	7,912,273	21,796,395	45,382,838	61,522,919	63,865,435	62,657,682	61,522,087	60,453,924	59,448,920
Project 35	562, 190	11,254,092	41,481,691	87,651,944	127,723,820	158,369,055	156,391,583	154,556,251	152,872,807	151,332,333
Total	2,009,233	22,997,753	69,805,282	143,787,858	199,866,832	232,668,107	229,310,577	226,180,760	223,282,928	220,603,254
	•	ı	ı	•	•	,	·	•	ı	
12 Month Average Jurisdictional Ratio	86.99%	86.99%	86.99%	86.99%	86.99%	86.99%	86.99%	86.99%	86.99%	86.99%
Jurisdictional Allocation	1,747,798	20,005,362	60,722,452	125,078,661	173,860,826	202,394,108	199,473,449	196,750,873	194,230,098	191,899,094
Forecasted 12-Month Retail Revenue	1,251,944,184	1,364,734,889	1,442,296,068	1,505,216,494	1,559,590,578	1,654,718,522	1,721,201,709	1,811,131,354	1,963,765,781	2,028,216,792
Billing Factor	0.14%	1.47%	4.21%	8.31%	11.15%	12.23%	11.59%	10.86%	9,89%	9.46%
KU Residential Bill Impact										
Customer Charge	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50	\$8.50
Energy - 1,000 Kwh @ \$0.06805	\$68.05	\$68.05	\$68.05	\$68.05	\$68.05	\$68.05	\$68,05	\$68.05	\$68.05	\$68.05
FAC billings (12/1/201 factor - \$-0.0016/kWh)	-\$1,60	-\$1.60	-\$1.60	-\$1.60	-\$1,60	-\$1.60	-\$1.60	-\$1.60	-\$1.60	\$1.60
DSM billings (12/1/201 factor - \$0.00243/kWh)	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43	\$2.43
ECR billings (12/1/201 factor: 2.55%)	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97	\$1.97
Additional ECR factor	\$0.11	\$1.13	\$3.26	\$6.43	\$8,63	\$9.46	\$8.97	\$8.41	\$7.65	\$7.32

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Summary Cash Flow	Cash Flow for 2011 thru 2020	2011 KU Amended ECR Plan
Sumn	Cash	2011

			Total		18,206,248	189,856,914	347,065,251	341,434,159	204,550,160	12,882,472	•	•	,	
				s	ŝ	ю	\$	ŝ	\$	69	ф	÷	÷	
10				•		,	•	•	÷	,	•	,		
			•											
				<del>63</del>	€9	69	ŝ	₩	ŝ	69	¢ <del>7</del>	ŝ		
6	mpliance -	4 (Project	35)	1	1,458,737	4,321,807	35,116,729	57,307,535	77,571,909	8,984,440		·		
	ပိ	Б		643	÷	÷	\$	ŝ	69	₩		\$		
8	Compliance - Compliance -	3 (Project	35)	1	1,307,716	4,809,001	47,890,171	56,057,325	84,049,087	3,898,032	,	•		
	ပိ	Ŗ		w	ы	ŝ	ø	69	69	ф	64	69		
7	GH Air	npliance - GH2	(Project 35)	,	148,784	37,354,857	48,163,861	72,191,638	6,693,304	•	٠	•		•
		Cor		÷	69	ф	ю	ŝ	\$	69	ф	ы		
9	GH Air	BR2 Compliance - BR3 Compliance - GH1 Compliance - GH2 GH3 (Project GH4 (Project	(Project 35)		2,178,929	50,248,800	66,924,592	44,857,567				٠		
сı		й м		¢	69	4	0 \$	4	\$ 0	\$	69	÷		
	BR Air	Compliance - BR	(Project 34)	•	۰ ب	\$ 2,176,274	\$ 28,291,560	\$ 50,217,924	\$ 36,235,860	•	۰ ج			
4		3R2			073	82,705	464	07,055						
	BR Air	BR Landfill Compliance - Compliance - F	(Project 29) BR1 (Project 34) (Project 34)		\$ 2,688,073	\$ 33,382,	\$ 50,067,464	\$ 31,507,	69	69	\$	€9		
ы			34)		,274	,093	,567	.115	,	,	,			
	BR Air	Compliance	R1 (Project		2,536,274	30,841,093	46,546,567	29,295,115						
7		II	9 B	63	35 \$	78 \$	07 \$	€9	v	69	69	\$		
F		BR Landf	(Project 2	•	\$ 7,887,735	\$ 26,722,378	\$ 24,064,307	۰ «	۰ دع	۰ م	۰ 67	، د/>		
			Date	2010	2011	2012	2013	2014	2015	2016	2017	2018		

	\$ 1,113,995,204
	184,761,157 \$
	31 \$
	198,011,331 \$
	44 85
•	164,552,444 \$
	164,209,888 \$
	116,921,618 \$
	69
	7,64
	109,219,049 \$ 117,645,
an man an an a share and a	\$ 58,674,420 \$

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		ī	Project 23 - NU	2						
	2011	2012	2013	January 2014	2015	2016	2017	2018	2019	2020
In-Service				٣	2	e	4	ŝ	g	7
Brown 3										
Capital Expenditures - Project 29 - Brown Landfill - Phase II	\$ 7,687,735	\$ 26,722,378 \$	24,064,307 \$	ŝ	<b>v</b> > ,	, ,	s I	• <b>&gt;</b>	<b>.</b>	ı
Accumulated Expenditures	\$ 7,887,735	\$ 34,610,113 \$	58,674,420 \$	58,674,420 \$	58,674,420	\$ 58,674,420 \$	\$ 58,674,420 \$ 58,674,420	58,674,420 \$	\$ 58,674,420 \$	\$ 58,674,420
Boak Depreciation rate, per year	0.000%	0.000%	0.000%	2.800%	2.800%	2.800%	2.800%	2.800%	2.800%	2.800%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	. 6.177%	5.713%	5.285%	4.888%
Income tax rate	35.71%	35,71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	•	•	•	223,495	1,149,392	1,961,725	2,669,296	3,279,646	3,800,319	4,237,810
Book Accumulated Depreciation Bajance		,	•	1,574,430	3,217,314	4,860,198	6,503,082	8,145,965	9,788,849	11,431,733
Unrecovered investment – Baok	7,887,735	34,610,113	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420
Book Depreciation	1	•	•	1,574,430	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884
Unrecovered Investment - Tax total	7,887,735	34,610,113	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420
Tax Depreciation	1		,	2,200,291	4,235,706	3,917,691	3,624,319	3,352,070	3,100,943	2,868,006
Allowed Rate of Return	11.04%	11.04%	11,04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Deprectation expense total	,	•	1	1,574,430	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884
Tax Depreciation expense total	٠	,	•	2,200,291	4,235,706	3,917,691	3,624,319	3,352,070	3,100,943	2,868,006
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance			1	223,495	925,897	812,334	707,570	610,350	520,673	437,491
Revenue Recovery on Capital Excenditure to date										
Eligible Plant, cumulative capital expenditures	1,887,735	34,610,113	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420	58,674,420
		•		•		•	ł			ı
Less: Accumulated Deprectation	•	·		(1,574,430)	(3,217,314)	(4.860,198)	(6,503,082)	(8,145,965)	(9,788,849)	(11,431,733)
Plus: Accumulated Depreciation on Retired Plant	,	,	•	ł	•	,	,	•	,	ı
Less: Deferred Tax Balance		,	•	(223,495)	(1.149,392)	(1,961,725)	(2,669,296)	(3,279,646)	(3,800,319)	(4,237,810)
Plus: Deferred.Tax Balance on Retired Plant	•	·	ł	,	F	ı	•	,	•	,
Environmental Compliance Rate Base	7,887,735	34,610,113	58,674,420	56,876,495	54,307,714	51,852,497	49,502,043	47,248,809	45,085,252	43,004,877
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	\$ 870,487	\$ 3,819,556 \$	6,475,281 \$	6,276,863 \$	5,993,373	5,722,417	\$ 5,463,022 <b>\$</b>	5,214,356 \$	4,975,587	4,745,998
Operating Expenses	•	,	,	2,813,772	2,898,185	2,985,131	3,074,685	3,166,925	3,261,933	3,359,791
Annual Depreciation expense	,	,	۲	1,574,430	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884	1,642,884
Lass depreciation on relined plant				•	·		·	ı		
Annual Property Tax expense		11,832	51,915	88,012	85,650	83,186	80,721	78,257	75,793	73,328
Total OE	5	\$ 11,832 \$	51,915 \$	4,476,214 \$	4,626,719	\$ 4,711,200	\$ 4,798,290 \$	4,888,066 \$	4,980,609 \$	5,076,003
	F01 0F0			FE0 535 04		710 CC1 C1	C10 190 01		906 900	100 008 0
lotal E(m) - Project	0/0,40/	100,100,0	961'/7C'9	110,561,01	10,520,032	10,433,017	715,102,01	10,102,422	021'005'5	100'770'8

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			•	Mav						
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service				-	7	ň	4	ŝ	9	7
Brown 1										
CapEx - BR1 PM Control System - SAM Mitigation	\$ 2,536,274	\$ 30,841,093 \$	46,546,567	\$ 29,295,115 \$	•	, ,	•	, ,	د • د	,
Accumulated Expenditures	\$ 2,536,274	\$ 33,377,367 \$	79,923,934	\$ 109,219,049 \$	109,219,049	\$ 109,219,049	\$ 109,219,049	\$ 109,219,049	\$ 109,219,049 \$	<b>\$</b> 109,219,049
Book Depreciation rate, per year	0.000%	0.000%	0.000%	2.980%	2.980%	2.980%	2.980%	2.980%	2.980%	2.980%
Tax Depreciation rate, per year	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4.888%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance		•		736,165	2,389,465	3,831,373	5,078,271	6,144,199	7,043,198	7,787,359
Book Accumulated Depreciation Balance		,	٠	2,034,205	5,288,932	8,543,660	11.798,388	15,053,115	18,307,843	21,562,571
Unrecovered investment – Book	2,536,274	33,377,367	79,923,934	109,219,049	109,219,049	109,219,049	109,219,049	109,219,049	109.219,049	109,219,049
Book Depreciation		•	•	2,034,205	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728
Unrecovered Investment - Tax total	2,536,274	33,377,367	79,923,934	109,219,049	109,219,049	109,219,049	109,219,049	109,219,049	109,219,049	109,219,049
Tax Depreciation	,	•	•	4.095,714	7,884,523	7,292,556	6,746,461	6,239,684	5,772,227	5,338,627
Allowed Rate of Return	11.04%	11.04%	11.04%	11.04%	11,04%	11,04%	11.04%	11.04%	11,04%	11.04%
Book Depreciation expense totat		,	,	2,034,205	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728
Tax Deprectation expense total	I	,	,	4,095,714	7,884,523	7,292,556	6,746,461	6,239,684	5,772,227	5,338,627
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance		•	•	736,165	1,653,300	1,441,908	1,246,898	1,065,928	838,999	744,160
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumutative capital expenditures	2.536,274	33,377,367	79,923,934	109,219,049	109,219,049	109.219.049	109.219.049	109.219.049	109.219.049	109.219.049
Less Retred Fight	•	•	٠			•	1	,	ı	
Less: Accumulated Depreciation	•	•	,	(2,034,205)	(5,288,932)	(8,543,660)	(11,798,386)	(15,053,115)	(18,307,843)	(21,562,571)
Plus Accumulated Depreciation on Relified Plant	•	٠				·	•	•	•	•
Less: Deferted Tax Balance		•	•	(736,165)	(2,389,465)	(3,831,373)	(5,078,271)	(6,144,199)	(7,043,198)	(7,787,359)
Plus Deferred Tax Balance on Relired Plant	•		,	•		,	•	•	•	٠
Environmental Compliance Rate Base	2,536,274	33,377,367	79,923,934	106,448,679	101,540,651	96,844,015	92,342,390	88,021,734	83,868,007	79,869,119
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	\$ 279.902	\$ 3,683,510 \$	8,820,367	\$ 11,747,625 \$	11,205,978	\$ 10,687,659	\$ 10.190,862	\$ 9.714.037	\$ 9.255,633 \$	8,814,318
Operating Expenses	,		,	2,483,343	4,809,135	4,905,317	5,003,424	5,103,492	5,205,562	5,309,673
Annual Depreciation expense		ŧ	,	2,034,205	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728	3,254,728
Lass depreciation on retired plant		,							·	
Annual Property Tax expense	3	3,804	50,066	119.886	160,777	155,895	151,013	146,131	141,249	136,367
Total OE	5	\$ 3,804 \$	50.066	s 4,637,434 s	8.224,640	s 8,315,940	8,409,164	\$ 8,504,351	s 8,601,538 s	8,700,768
Total E(m) - Broteet	778 BUC	1 687 316	CCK 070 0	16 306 060	212 027 01	10 003 600	10 600 076	Cac a+c a+	CE + 430 C +	47 646 086
		202		n	100010	660'000'EI	070'000'01	100'01 7'01	211 200 11	000'010'11

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				April						
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service				•	2	m	4	ŝ	g	7
Brown 2										
CapEx - BR2 PM Control System - SAM Mitigation	\$ 2.688,073	\$ 33,382,705 \$	50,067,464	\$ 31,507,055 \$	,	, ,	, ,	,	•	,
Accumulated Expenditures	\$ 2,688,073	\$ 36,070,778 \$	86,138,242	\$ 117,645,297 \$	\$ 117,645,297	\$ 117,645,297 \$	\$ 117,645,297 \$	\$ 117,645,297 \$	\$ 117,645,297	\$ 117,645,297
Book Depreciation rate, per year	0.000%	0.000%	0.000%	3.010%	3.010%	3.010%	3.010%	3.010%	3.010%	3.010%
auax Deprectation rate, per year	0.000%	%000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4.888%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance		•		785,083	2,553,332	4,093,880	5,424,373	6,559,934	7,515,687	8,304,656
Book Accumulated Depreciation Balance	•			2,213,202	5,754,326	9,295,449	12,836,573	16,377,696	19,918,819	23,459,943
Unrecovered investment – Book	2,688,073	36,070,778	86,138,242	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297
Book Depreciation		ŀ		2.213,202	3,541,123	3.541,123	3,541,123	3,541,123	3,541,123	3,541,123
Unrecovered investment – Tax total	2,688,073	36,070,778	86,138,242	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297	117,645,297
Tax Depreciation			•	4,411,699	8,492,814	7,855,177	7,266,950	6,721,076	6,217,554	5,750,502
Allowed Rate of Return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Depreciation expense total	•	•	•	2,213,202	3,541,123	3,541,123	3,541,123	3,541,123	3,541,123	3,541,123
Tax Depreciation expense total	,	•		4,411,699	8,492,814	7.855,177	7,266,950	6,721,076	6,217,554	5,750,502
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance		•		785,083	1,768,249	1,540,548	1,330,493	1,135,561	955,753	788,969
versine verovert on capital cypenature to date										
Eligible Plant, cumulative capital expenditures	2,688,073	36,070,778	86,138,242	117.645,297	117,645,297	117,645.297	117,645,297	117,645,297	117,645,297	117,645,297
Less Retrad Plant	,	r		·	•	•	•	•	•	,
Less: Accumulated Depreciation	ı		,	(2,213,202)	(5,754,326)	(9,295,449)	(12,836,573)	(16,377,696)	(19,918,819)	(23,459,943)
Plus, Austrinulated Depreciation on Retred Plant	•		ı		•	ı	ı	•	•	ı
Less: Deferred Tax Balance		•		(785,083)	(2,553,332)	(4,093,880)	(5,424,373)	(6.559,934)	(7,515,687)	(8,304,656)
Plus Deterred Tak Balance on Reteed Plant	,	,	,	,		•	,	,	•	,
Environmental Compliance Rate Base	2,688,073	36,070,778	86, 138, 242	114,647,012	109,337,640	104,255,968	99,384,352	94,707,668	90,210,791	85,880,698
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	\$ 296,654 \$	\$ 3,980,754 \$	9,506,175	\$ 12,652,390 \$	12,066,450	\$ 11,505,639 \$	\$ 10.968,010 \$	\$ 10,451,893 \$	9.955,620	<b>5</b> 9.477,753
Operating Expenses		٠	,	5,052,836	6,871,856	7,009,293	7,149,479	7,292,469	7,438,318	7,587,085
Annual Deprectation expense	•	•	,	2,213,202	3,541,123	3,541,123	3,541,123	3,541,123	3.541,123	3,541,123
Less dapreoration on relited plant							1			
Annual Property Tax expense	-	4.032	54,106	129,207	173,148	167,836	162,525	157,213	151,901	146,590
Total OE	S -	\$ 4,032 \$	54,106	\$ 7,395,245 \$	10,586,128	\$ 10,718,253 \$	\$ 10,853,128 \$	10,990,805	\$ 11,131.343	<b>\$</b> 11,274,798
Total E(m) - Project	296,654	3,984,786	9.560.281	20,047,635	22,652,578	22,223,892	21,821,137	21,442,698	21,086,963	20,752,551

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					May					
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service					۳	2	9	4	S	Ğ
Brown 3										
CapEx - BR3 PM Control Systems	, S	\$ 2,176,274 \$	28,291,560 \$	50,217,924 \$	36,235,860	, , ,	•	•		•
Accumulated Expenditures	•	\$ 2,176,274 \$	30,467,834 \$	80,685,758	\$ 116,921,618	\$ 116,921,618 \$ 116,921,618 \$ 116,921,618 \$ 116,921,618 \$ 116,921,618	116,921,618	116,921,618 \$	116,921,618	116,921,618
Book Deprectation rate, per year	%000%	0.000%	0.000%	0.000%	2.800%	2.800%	2.800%	2.800%	2.800%	2.800%
Tax Depreciation rate, per vear	0.000%	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	•			•	835,054	2,680,106	4,298,859	5,708,848	6,925,104	7,962,659
Book Accumulated Depreciation Balance	,				2,046,128	5,319,934	8,593,739	11,867,544	15,141,350	18,415,155
Unrecovered investment – Book		2,176,274	30,467,834	80,685,758	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618
Book Deprectation	•	ſ			2,046,128	3,273,805	3,273,805	3,273,805	3,273,805	3,273,805
Unrecovered Investment – Tax total	•	2,176,274	30,457,834	80,685,758	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618
Tax Depreciation	,	•	•	•	4,384,561	8,440,572	7,806,856	7,222,248	6,679,732	6,179,308
Allowed Rate of Return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Depreciation expense total	ı			•	2,046,128	3,273,805	3,273,805	3,273,805	3,273,805	3,273,805
Tax Depreciation expense total		,	•	,	4,384,561	8,440,572	7,806,856	7,222,248	6,679,732	6,179,308
Annual Property Tax Rate	0.1500%	0.1500%	0,1500%	0,1500%	0,1500%	0.1500%	0.1500%	0,1500%	0,1500%	0.1500%
Deferred Tax Balance	,			•	835,054	1,845,052	1,618,753	1,409,989	1,216,256	1,037,555
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures		2,176,274	30,467,834	80,685,758	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618	116,921,618
Lass Forsed Plant	•	•	•	,	·	,	•	ı	•	•
Less: Accumulated Depreciation			•	•	(2,046,128)	(5,319,934)	(8,593,739)	(11,867,544)	(15,141,350)	(18,415,155)
Plus Accumulated Depreciation on Reared Plant		i	,	•	•	ı	•	•	•	ł
Less: Deferred Tax Bajance		•			(835,054)	(2,680,106)	(4,298,859)	(5,708,848)	(6.925.104)	(7,962,659)
Phis Deferred Tax Balance on Featred Plant	ı	,			•	,	•	3	•	ı
Environmental Compliance Rate Base		2,176,274	30,467,834	80,685,758	114,040,436	108,921,578	104,029,020	99,345,226	94.855.164	90,543,804
Rate of return	11.04%	11.04%	11,04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base		\$ 240,173 \$	3,362,416 \$	8,904.442 \$	12,585,448	\$ 12.020,533 \$	\$ 11,480,593	\$ 10,963,692 \$	10.468,171	\$ 9,992,371
Operating Expenses		,	,	٠	4,687,119	7,171,292	7,314,718	7,461,012	7,610,232	7,762,437
Annial Danzeristion evnence		,			2 045 128	3 273 BUE	3 773 RUS	3 273 BUS	3 273 805	3 773 BUS
i ante attractation attractation attractation										
			<u>n</u> .	-			•			
Annuał Property Tax expense	-	-	3.264	45,702	121,029	172,313	167,403	162,492	157,581	152.670
Total OE	S -	s - s	3,264 \$	45,702 \$	6.854.276	\$ 10,617,410	\$ 10,755,926	\$ 10,897,309 \$	\$ 11.041,619	5 11,188,913
Total E(m) - Project	ı	240,173	3,365,680	8,950,144	19,439,724	22,637,944	22,236,519	21,861,001	21,509,789	21,181,284

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tures s revear per year ber year trectation Balance ti - Book ti - Tax total			•				•			
51 51 51		\$ 52,421,128 \$	\$ 119,352,320 \$	164.209,888 \$	\$ 164,209,888	\$ 164,209,888	\$ 164,209,888	\$ 164,209,888	\$ 164,209,888	\$ 164,209,888
ance 2.1	0.000%	0.000%	0.000%	3.840%	3.840%	3.840%	3.840%	3.840%	3.840%	3.840%
ance 2,1	0.000%	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4,888%
arce	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
ance	,		,	791,631	2.773,055	4.436,653	5,807,055	6,905,370	7,752,709	8.367,249
	,		•	3,941,037	10,246,697	16,552,357	22,858,016	29,163,676	35,469,336	41,774,995
		52,427,728	119,352,320	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888
	,	,	,	3,941,037	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660
Tax Depreciation		52,427,728	119,352,320	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888
	,	1	•	6,157,871	11,854,312	10,964,294	10,143,245	9,381,311	8,678,493	8,026,579
Allowed Rate of Return 11.0	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Deprectation expense total	ı	,	,	3,941,037	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660
Tax Depreciation expense total	ı	•		6,157,871	11,854,312	10,964,294	10,143,245	9,381,311	8,678,493	8,026,579
Annual Property Tax Rate 0.150	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	1	r	ł	791,631	1,981,424	1,663,598	1,370,402	1,098,315	847,339	614,540
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures 2,178,929		52,427,728	119,352,320	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888	164,209,888
Less: Retired Plant	4			,	,	,	•	,	,	•
Less: Accumulated Depreciation		•	•	(3,941,037)	(10,246,697)	(16,552,357)	(22,858,016)	(29,163,676)	(35,469,336)	(41,774,995)
Plus: Accumulated Depreciation on Rethred Plant	•		•	•	•	•	•	,	,	
Less: Deferred Tax Balance		,	,	(791,631)	(2,773,055)	(4,436,653)	(5,807,055)	(6,905,370)	(7,752,709)	(8,367,249)
Plus: Deferred Tax Balance on Petited Plant				,	,	,		•	•	,
Environmental Compliance Rate Base 2,178,929		52,427,728	119,352,320	159,477,219	151,190,136	143,220,878	135,544,816	128,140,842	120,987,843	114,067,643
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	240,466 \$ 5	5,785,899 \$	13,171,665 \$	17,599,830 \$	16,685,271	\$ 15,805,788	\$ 14,958,661	\$ 14,141,562	\$ 13,352,161	\$ 12,588,451
Operating Expenses	,	ı	2,730,914	12,899,794	17,179,567	17,523,158	17,873,621	18,231,093	18,595,715	18,967,630
Annual Depreciation expense	,	ı	,	3,941,037	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660	6,305,660
Less depreciation on retired plant	,		,			,			ı	ı
Annual Property Tax expense		3,268	78,642	179,028	240,403	230,945	221,486	212,028	202,569	193,111
Total OE	- 2	3,268 \$	2,809,555 \$	17,019,860 \$	\$ 23,725,630	\$ 24,059,762	\$ 24,400,767	\$ 24,748,781	\$ 25,103,944	\$ 25,466,400
Total E(m) – Project 240.	240,466 5	5,789,167	15,981,220	34,619,690	40,410,901	39,865,550	39,359,428	38,890,343	38,456,105	38,054,851

May 

In-Service

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In-Service										
In-vervice			1		C 107	2027				
				-	7	٣	4	ß	9	7
Ghent 2										
CapEx - GH2 PM Control Systems & SAM Mitigation	\$ 148,784	4 \$ 37,354,857 <b>\$</b>	48,163,861 \$	72,191,638 \$	6,693,304	· ·	•	•	•	•
Accumulated Expenditures	\$ 148,784	\$ 37,503,641 <b>\$</b>	85,667,502 \$	157,859,140 \$	164,552,444	\$ 164,552,444	\$ 164,552,444	\$ 164,552,444 \$ 164,552,444 \$ 164,552,444 \$ 164,552,444	\$ 164,552,444	\$ 164,552,444
Book Depreciation rate, per year	0.000%	%0000%	0.000%	2.330%	2.330%	2.330%	2.330%	2.330%	2.330%	2.330%
Tax Depreciation rate, per year	0.000%	% 0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%	4,888%
Income tax rate	35.71%	% 35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	•	,	,	1,949,749	4,822,608	7,376,978	9,637,540	11,625,447	13,361,855	14,864,978
Book Accumulated Deprectation Balance	ı	•	ł	459,765	4,293,837	8,127,909	11,961,981	15,796,053	19,630,124	23,464,196
Unrecovered Investment – Book	148,784	4 37,503,641	85,667,502	157,859,140	164,552,444	164,552,444	164,552,444	164,552,444	164,552,444	164,552,444
Book Deprectation		ť	·	459,765	3,834,072	3,834,072	3,834,072	3,834,072	3,834,072	3,834,072
Unrecovered Investment → Tax total	148,784	4 37,503,641	85,667,502	157,859,140	164,552,444	164,552,444	164,552,444	164,552,444	164,552,444	164,552,444
Tax Depreciation		ı	,	5,919,718	11,879,041	10,987,167	10,164,404	9,400,881	8,696,597	8,043,323
Allowed Rate of Return	11.04%	% 11.04%	11.04%	11.04%	11.04%	11,04%	11.04%	11.04%	11.04%	11.04%
Book Deprectation expense total		•		459,765	3.834,072	3,834,072	3,834,072	3,834,072	3,834,072	3,834,072
Tax Depreciation expense total	•		•	5,919,718	11,879,041	10,987,167	10,164,404	9,400,881	8,696,597	8,043,323
Annual Property Tax Rate	0.1500%	% 0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0,1500%	0.1500%	0.1500%
Deferred Tax Balance	ı		ı	1,949,749	2,872,858	2,554,370	2,260,562	1,987,908	1,736,408	1,503,124
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	148,784	4 37,503,641	85,667,502	157,859,140	164,552,444	164,552,444	164.552,444	164,552,444	164,552,444	164,552,444
Less: Rebied Plant	•	•	•	•	,	•		·		,
Less: Accumulated Deprectation	,	ı	•	(459,765)	(4,293,837)	(8,127,909)	(11,961,981)	(15,796,053)	(19,630,124)	(23,464,196)
Plus: Accumulated Depreciation on Relived Plant		,	ı	ı	•	•		•	,	ł
Less: Deferred Tax Balance	'	ı	•	(1,949,749)	(4,822,608)	(7,376,978)	(9,637,540)	(11,625,447)	(13,361,855)	(14,864,978)
Plus: Deferred Tax Balance on Retired Plant	•	·	,	,		ı	ı	I	•	•
Environmental Compliance Rate Base	148,784	4 37,503,641	85,667,502	155,449,626	155,436,000	149,047,558	142,952,924	137,130,944	131,560,465	126,223,269
Rate of return	11.04%	% 11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	<b>\$</b> 16,420	0 \$ 4,138,884 \$	9,454,225 S	17,155,347 \$	17,153,843	\$ 16.448,817	\$ 15.776.216	\$ 15,133,706	\$ 14,518,950	\$ 13,929,940
Operating Expenses	1	8,692	1,276,696	2,183,254	12,112,005	12,354,245	12,601,330	12,853,356	13,110,424	13,372,632
Annuał Depreciation expense	,	ı		459,765	3,834,072	3,834,072	3,834,072	3,834,072	3,834,072	3,834,072
Less depreziation on retired plant	£			·				ł		I
Annual Property Tax expense	1	223	56,255	128,501	236,099	240,388	234,637	228,886	223,135	217,383
Total OE	s.	\$ 8.915 \$	5 1,332,951 S	2,771,520 \$	16,182,176	\$ 16,428,705	\$ 16,670,039	S 16,916,314	s 17,167,630	\$ 17,424,087
							22 110 26			
			26 10 00			THE FEED AND A	147. 400 7.5			

Revenue Requirements Project 35 - KU

## Attachment to Response to KPSC Question No. 49 Conroy Page 31 of 36

					October					
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service					•	7	n	¥	S	ę
Ghent 3										
CapEx - GH3 PM Control Systems-SAM Mitigation-SCR Turn-down	\$ 1,307,716 \$	4,809,001 \$	47,890,171 \$	56,057,325 \$	84,049,087	\$ 3,898,032 <b>\$</b>	'	, ,	، ج	, s
Accumulated Expenditures	\$ 1,307,716 \$	6,116,717 \$	54,006,888 \$	110,064,213 \$	194,113,300	\$ 198,011,331	\$ 198,011,331	\$ 198,011,331	\$ 198,011,331	\$ 198,011,331
Book Depreciation rate, per year	0,000%	0.000%	0.000%	0.000%	2.630%	2.630%	2.630%	2.630%	2.630%	2.630%
Tax Depreciation rate, per year	0.000%	%000'0	0.000%	0.000%	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%
Deferred Tax Balance	•	•	•	•	2,219,616	5,464,490	8,326,118	10,834,196	13,014,181	14,891,527
Book Accumulated Depreciation Balance			•	,	1,063,579	6.271.277	11.478,975	16,686,673	21,894,371	27,102,069
Unrecovered investment – Book	1,307,716	6,116,717	54,006,888	110,064,213	194,113,300	198,011,331	198,011,331	198,011,331	198,011,331	198,011,331
Boak Deprectation				•	1,063,579	5,207,698	5,207,698	5,207,698	5,207,698	5,207,698
Unrecovered Investment – Tax total	1,307,716	6,116,717	54,006,888	110,064,213	194,113,300	198,011,331	198,011,331	198,011,331	198,011,331	198,011,331
Tax Depreciation	,	,	ŀ		7,279,249	14,294,438	13,221,217	12,231,160	11,312,387	10,464,899
Allowed Rate of Return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Deprecration expense total	،	•	•	,	1,063,579	5,207,698	5,207,698	5,207,698	5,207,698	5,207,698
Tax Depreciation expense total		,		t	7,279,249	14,294,438	13,221,217	12,231,160	11,312,387	10,464,899
Annuai Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance		•	•	1	2,219,616	3,244,875	2,861,627	2,508,078	2,179,985	1,877,346
revenue recovery ou capital capital contraction of and	1 207 716	E 116 717	SA MAG BBB	110 DEA 213	111 113	198 011 111	198 011 331	198 011 331	198 011 331	198 011 331
cugrole riant, cumulauve capital experiolities	of 1' / nc' 1		000,000,40	C17'top'ot	000-01-0-00					
Less: Retired Plant	•	ı	•	•	ı	•	•	,		,
Less: Accumulated Depreciation	ſ	•	٠	•	(1,063,579)	(6,271,277)	(11,478,975)	(16,686,673)	(21,894,371)	(27,102,069)
Plus: Accumulated Deprectation on Relited Plant	ı		,	1	·	•	•	•	,	
Less: Deferred Tax Batance	,		,	ı	(2,219,616)	(5,464,490)	(8,326,118)	(10,834,196)	(13,014,181)	(14,891,527)
Plus: Deferred Tax Balance on Retred Plant	•		•	ı	,	•	•	•	•	,
Environmental Compliance Rate Base	1,307,716	6,116,717	54,006.888	110,064,213	190,830,105	186,275,564	178,206,238	170,490,462	163,102,779	156,017,735
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	\$ 144,319 \$	675,038 \$	5,960,174	\$ 12,146,634 \$	21,059,919	\$ 20,557,282	\$ 19,666,755	\$ 18,815,246	\$ 17,999,945	\$ 17,218,043
Operating Expenses	·	•	642,953	4,721,847	6,363,418	17,537,222	17,887,966	18,245,725	18,610,640	18,982,853
Annual Depreciation expense		,	ı	ı	1,063,579	5,207,698	5,207,698	5,207,698	5,207,698	5,207,698
Less depreciation on retred julant			ı		÷					
Annual Property Tax expense	-	1,962	9,175	81,010	165,096	289,575	287,610	279,799	271,987	264,175
Total OE	s - S	1,962 \$	652,128	\$ 4,802,857 \$	7,592,093	\$ 23,034,494	\$ 23,383,274	\$ 23,733,222	\$ 24,090,325	\$ 24,454,726
Total E(m) - Pronect	144,319	677,000	6,612,303	16,949,491	28,652,013	43,591,777	43,050,030	42,548,468	42,090,270	41,672,769

KU - Project 35

### Revenue Requirements Project 35 - KU

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					naralinai					
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
In-Service					-	7	3	4	5	Q
Ghent 4										
CapEx - GH4 PM Control Systems-SAM Mitigation-SCR Turn-down	\$ 1,458,737 \$	\$ 4,321,807 \$	35,116,729 \$	57,307,535	\$ 77,571,909 \$	8,984,440 \$	ı	, , 0	•	' S
Accumutated Expenditures	\$ 1,458,737 \$	5,780,544 \$	40,897,273 \$	98,204,808	\$ 175,776,717	\$ 184,761,157 \$	\$ 184,761,157	\$ 184,761,157	\$ 184,761,157	\$ 184,761,157
Book Depreciation rate, per year	0.000%	0,000%	0.000%	0.000%	2.790%	2.790%	2.790%	2.790%	2.790%	2.790%
Tax Deprectation rate, per year	%000%	0.000%	0.000%	%000.0	3.750%	7.219%	6.677%	6.177%	5.713%	5.285%
Income tax rate	35.71%	35.71%	35.71%	35.71%	35.71%	35.71%	35,71%	35.71%	35.71%	35.71%
Deferred Tax Baiance	•			•	2,280,900	5,203,075	7,767,648	10,002,330	11,930,873	13,577,029
Book Accumulated Depreciation Balance	•	•			204,340	5,359,177	10,514,013	15,668,849	20,823,686	25,978,522
Unrecovered investment Book	1,458,737	5,780,544	40,897,273	98,204,808	175,776,717	184,761,157	184,761,157	184,761,157	184,761,157	184,761,157
Book Depreciation	•	•	•		204,340	5,154,836	5,154,836	5,154,836	5,154,836	5,154,836
Unrecovered investment Tax total	1,458,737	5,780,544	40,897,273	98,204,808	175,776,717	184,761,157	184,761,157	184,761,157	184,761,157	184,761,157
Tax Depreciation	ł	,	•	•	6,591,627	13,337,908	12,336,502	11,412,697	10,555,405	9,764,627
Allowed Rate of Return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Book Deprecration expense total	ł	,		•	204,340	5,154,836	5,154,836	5,154,836	5,154,836	5,154,836
Tax Depreciation expense total		•		•	6,591,627	13,337,908	12,336,502	11,412,697	10,555,405	9,764,627
Annual Property Tax Rate	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%	0.1500%
Deferred Tax Balance	'	,		۲	2,280,900	2,922,175	2,564,573	2,234,682	1,928,543	1,646,156
Revenue Recovery on Capital Expenditure to date										
Eligible Plant, cumulative capital expenditures	1,458,737	5,780,544	40,897,273	98,204,808	175,776,717	184,761,157	184,761,157	184,761,157	184,761,157	184,761,157
Less: Retred Plant	,		۲	•	،	,	•	•		ı
Less: Accumulated Depreciation	,	ı	•	•	(204,340)	(5,359,177)	(10,514,013)	(15,668,849)	(20,823,686)	(25,978,522)
Plus: Accumulated Depreciation on Relited Plant		·		•	•		•		•	ı
Less: Deferred Tax Balance		ı		•	(2,280,900)	(5,203,075)	(7.767,648)	(10,002,330)	(11,930,873)	(13,577,029)
Plus: Deferred Tax Balance on Retired Plan	•		•		•	•	•	•	•	ı
Environmental Compliance Rate Base	1,458,737	5,780,544	40,897,273	98,204,808	173,291,476	174,198,905	166,479,496	159,089,978	152,006,599	145,205,606
Rate of return	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%	11.04%
Return on Environmental Compliance Rate Base	\$ 160,985	\$ 637,938 \$	4,513,404	\$ 10,837,836	\$ 19,124,365	\$ 19,224,508	\$ 18,372,598	\$ 17,557,094	\$ 16,775,376	\$ 16,024,821
Anardian Evances		•	3.578.918	5.256.715	5.848.876	17.391.503	17.739.333	18,094,120	18,456,002	18,825,122
Annual Deprectation expense	•	•	,	•	204,340	5,154,836	5,154,836	5,154,836	954,836	959,961,6
Less depreciation on retired plant			,					·	,	·
Annual Property Tax expense		2,188	8,671	61,346	147.307	263,359	269,103		253,638	245,906
Total OE		\$ 2,188 \$	3,587,589	\$ 5,318,061	\$ 6,200,524	\$ 22,809,698	\$ 23,163,272	\$ 23,510,327	\$ 23,864,477	\$ 24,225,865
Total Class Basicad	160 086	640 126	8 100 443	16 155 897	25 324 888	42 034 206	41.535.870	41.067.421	40,639,852	40,250,686
I OLAI E(M) - Project	000,001	071 000	111111	· · · · · · · · · · · · · · · · · · ·	0001-2010-2					

KU - Project 35

### Revenue Requirements Project 35 - KU

December

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	Тах			
Year in	Dep	reciation, 20		Book
Service	yr H	L.		Depreciation
	1	3.75%	Ghent 1PC	3.87%
	2	7.22%	Ghent 1	3.84%
	3	6.68%	Ghent 2	2.33%
	4 5	6.18% 5.71%	Ghent 3 Ghent 4	2.63% 2.79%
	6	5.29%	Brown 1	2.98%
	7	4.89%	Brown 2	3.01%
	8	4.52%	Brown 3	2.80%
	9	4.46%	Ghent 1,3,&4	3.09%
	10	4 46%	Mill Creek 1PC	4.50%
	11	4.46%	Mill Creek 1NPC	4.24%
	12	4.46%	Mill Creek 2PC	4 28%
	13	4.46%	Mill Creek 2NPC	4.70%
	14	4 46%	Mill Creek 3PC	3.85%
	15	4.46%	Mill Creek 3NPC	3.87%
	16	4.46%	Mill Creek 4NPC	3.85%
	17	4.46%	Mill Creek 4PC	3.71%
	18	4.46%	TrimblePC	3.62%
	19	4.46%	TrimbleNPC	3.62%
	20 21	4.46% 2.23%	All Plants-LGE All Plants-KU	4.59% 3.07%
	22	0.00%	All Flams-NU	5.0770
	22	0.00%		
	24	0.00%		
	25	0.00%		
	26	0.00%	Cane Run 4	5 88%
	27	0.00%	Cane Run 5	6.11%
	28	0.00%	Cane Run 6	4.46%
	29	0.00%	Green River 3	3.08%
	30	0.00%	Green River 4	4.20%
	31	0.00%		
	32	0.00%		
	33	0.00%		
	34	0.00%		
	35	0.00%		
	36 37	0.00% 0.00%		
	38	0.00%		
	39	0.00%		
	40	0.00%		
	41	0.00%		
	42	0.00%		
	43	0.00%		
	44	0.00%		
	45	0.00%		
	46	0.00%		
	47	0.00%		
	48	0.00%		
	49 50	0.00%		
	50 51	0.00% 0.00%		
	51	0.00%		
	52 53	0.00%		
	53 54	0.00%		
	55	0.00%		
	56	0.00%		
	57	0.00%		

Assumes all investments to plant account 312 Updated using Depreciation Rates in effect as of 2/6/09 Source: KU and LG&E ECR Databases

PC = Scrubber/FGD NPC = All other Pollution Control

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	12/31/1995	1/1/2005	2/6/2009
Unit	Rate	Rate	2/0/2000
BR1N.1311	2.90%	2.90%	0.60%
BR1N.1312	2.88%	2.88%	2.98%
BR1N.1314	2.88%	2.88%	1.12%
BR1N.1315	2.88%	2.88%	2.10%
BR1N.1316	2.88%	2.88%	2.26%
BR2N.1311	2.88%	2.88%	0.08%
BR2N.1312	2.88%	2.88%	3.01%
BR2N.1314	2.88%	2.88%	2.91%
BR2N.1315	2.88%	2.88%	0.48%
BR2N.1316	2.88%	2.88%	0.71%
BR3N.1311	3.91%	3.91%	0.54%
BR3N.1312	3.91%	3.91%	2.80%
BR3N.1314	3.91%	3.91%	3.17%
BR3N.1315	3.91%	3.91%	0.54%
BR3N.1316	3.91%	3.91%	2.33%
BR3S.1311	3.91%	3.91%	2.65%
BR3S.1312	3.91%	3.91%	3.87%
BR3S.1314	3.91%	3.91%	0.00%
BR3S.1315	3.91%	3.91%	2.70%
GH1N.1311	3.12%	3.12%	0.39%
GH1N.1312	3.12%	3.12%	3.84%
GH1N.1314	3.12%	3.12%	2.23%
GH1N.1315	3.12%	3.12%	0.55%
GH1N.1316	3.12%	3.12%	1.38%
GH1S.1311	3.12%	3.12%	2.65%
GH1S.1312	3.12%	3.12%	3.87%
GH1S.1314	3.12%	3.12%	0.00%
GH1S.1315	3.12%	3.12%	2.70%
GH1S.1316	3.12%	3.12%	2.87%
GH2N.1311	1.84%	1.84%	0.50%
GH2N.1312	1.84%	1.84%	2.33%
GH2N.1314	1.84%	1.84%	2.08%
GH2N.1315	1.84%	1.84%	0.60%
GH2N.1316	1.84%	1.84%	1.07%
GH2S.1311	1.84%	1.84%	2.65%
GH2S.1312	1.84%	1.84%	3.87%
GH2S.1314	1.84%	1.84%	0.00%
GH2S.1315	1.84%	1.84%	2.70%
GH2S.1316	1.84%	1.84%	2.87%
GH3N.1311	2.22%	2.22%	1.19%
GH3N.1312	2.22%	2.22%	2.63%
GH3N.1314	2.22%	2.22%	2.03%
GH3N.1315	2.22%	2.22%	1.03%
GH3N.1316	2.22%	2.22%	1.40%
GH3N.1392	2.22%	2.22%	0.00%
GH3S.1311	5.67%	5.67%	2.65%
GH3S.1312	5.67%	5.67%	3.87%
GH3S.1314	5.67%	5.67%	0.00%
GH3S.1315	5.67%	5.67%	2.70%
GH3S.1316	5.67%	5.67%	0.00%
GH4N.1311	2.16%	2.16%	1.41%
GH4N.1312	2.16% 2.16%	2.16% 2.16%	2.79%
GH4N.1314	2.16%	2.16%	2.20% 1.22%
GH4N.1315 GH4N.1316	2.16%	2.16%	2.03%
GH4N.1316 GH4S.1311	2.16%	2.16%	2.03%
0140.1011	2.10%	5.07 %	2.0070

### **KU Depreciation Rate**

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GH4S.1312	2.16%	5.67%	3.87%
GH4S.1314	2.16%	5.67%	0.00%
GH4S.1315	2.16%	5.67%	2.70%
GH4S.1316	2.16%	5.67%	0.00%
GR2N.1311	0.00%	1.94%	0.00%
GR2N.1312	0.00%	1.94%	2.18%
GR2N.1314	0.00%	1.94%	0.00%
GR2N.1315	0.00%	1.94%	0.00%
GR2N.1316	0.00%	1.94%	0.00%
GR3N.1311	0.00%	1.94%	0.00%
GR3N.1312	0.00%	1.94%	3.08%
GR3N.1314	0.00%	1.94%	2.90%
GR3N.1315	0.00%	1.94%	0.00%
GR3N.1316	0.00%	1.94%	3.97%
GR4N.1311	3.10%	3.10%	0.00%
GR4N.1312	3.10%	3.10%	4.20%
GR4N.1314	3.10%	3.10%	3.79%
GR4N.1315	3.10%	3.10%	1.46%
GR4N.1316	3.10%	3.10%	2.71%
KUTR.1392	2.22%	5.67%	20.00%
SW00.1391	20%	20%	10.14%
TY3N.1311	2.13%	2.13%	0.00%
TY3N.1312	2.13%	2.13%	3.99%
TY3N.1314	2.13%	2.13%	3.44%
TY3N.1315	2.13%	2.13%	0.00%
TY3N.1316	2.13%	2.13%	3.12%

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	12/31/1995	1/1/2005	2/6/2009
Unit	Rate	Rate	
CR4N.131100	2.94%	2.94%	1.14%
CR4N.131200	2.94%	2.94%	5.88%
CR4N 131500	2.94%	2.94%	3.18%
CR4S.131100	3.47%	3.47%	0.95%
CR4S.131200	3.47%	3.47%	4.93%
CR4S.131500	3.47%	3.47%	0.82%
CR5N.131100	2.87%	2.87%	1.92%
CR5N.131200	2.87%	2.87%	6.11%
CR5N.131500	2.87%	2.87%	2.97%
CR5S.131100	3.47%	3.47%	1.56%
CR5S.131200	3.47%	3.47%	4.07%
CR5S.131500	3.47%	3.47%	1.49%
CR6N.131100	3.06%	3.06%	2.13% 5.19%
CR6N.131200	3.06% 3.06%	3.06% 3.06%	5.19% 2.80%
CR6N.131500	2.18%	2.18%	2.00%
CR6S.131100 CR6S.131200	2.18%	2.18%	2.04% 4.46%
CR6S.131200	2.18%	2.18%	1.44%
CRUS.131500	2.82%	2.82%	2.13%
MC1N.131100	2.39%	2.39%	1.64%
MC1N.131200	2.39%	2.39%	4.24%
MC1N.131200	2.39%	2.39%	2.75%
MC1S.131100	3,90%	3,90%	1.65%
MC1S.131200	3.90%	3,90%	4.50%
MC1S.131500	3.90%	3,90%	1.67%
MC2N.131100	2.29%	2,29%	1.42%
MC2N.131200	2.29%	2.29%	4.70%
MC2N.131500	2.29%	2.29%	2.03%
MC2S.131100	3.99%	3.99%	1.81%
MC2S.131200	3.99%	3.99%	4.28%
MC2S.131500	3.99%	3.99%	1.69%
MC3N.131100	3.03%	3.03%	1.51%
MC3N.131200	3.03%	3.03%	3.87%
MC3N.131500	2.29%	2.29%	1.58%
MC3S.131100	4.54%	4.54%	1.47%
MC3S.131200	4.54%	4.54%	3.85%
MC3S.131500	3.99%	3.99%	1.56%
MC4N.131020	2.82%	2.82%	0.00%
MC4N.131100	2.82%	2.82%	1.85%
MC4N.131200	2.82%	2.82%	3.85%
MC4N.131500	2.29%	2.29%	1.75%
MC4S.131100	5.38%	5.38%	1.76%
MC4S.131200	5.38%	5.38%	3.71%
MC4S.131500	3.99%	3.99%	1.71%
MSUB.135310	2.10%	2.10% 20.00%	1.32% 21.96%
SW00.339130 TC1N.131100	20.00% 2.41%	20.00%	2.08%
TC1N.131100	2.41%	2.41%	3.62%
TC1N.131200	2.41%	2.41%	2.13%
TC1S.131100	3,47%	3.47%	2.28%
TC1S.131200	3.47%	3.47%	3.62%
TC1S.131500	3.47%	3.47%	2.12%
TC2N.131100	2.41%	2.41%	2.10%
TC2N.131200	2.41%	2.41%	4.28%
TC2N.131500	2.41%	2.41%	2.49%
TC2S.131100	3.47%	3.47%	2.10%
TC2S.131200	3.47%	3.47%	4.28%
TC2S.131500	3.47%	3.47%	2.49%

### LOUISVILLE GAS AND ELECTRIC COMPANY

### **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

### **Question No. 50**

### Witness: Charles R. Schram / Gary H. Revlett

- Q-50. How do the changes between the proposed rule and the final Cross-State Air Pollution rule impact the assumptions and results in your modeling and thus your recommendations in this case?
- A-50. In finalizing CATR, now called the Cross-State Air Pollution Rule ("CSAPR"), the EPA modified  $SO_2$  and  $NO_x$  allowance allocations. The allowance allocation update, which primarily impacts the timing of allowances in the 2012-2014 period, does not affect the Companies' recommendations in the 2011 Compliance Plan filing.

The Companies jointly dispatch their generating fleets and optimize dispatch to meet emissions regulations in a least cost manner. The Companies have reviewed CSAPR and concluded that all of the projects in the 2011 Compliance plan are still required. The modifications to various systems at the Ghent and Mill Creek stations to expand the operating range at which the SCRs can function to reduce  $NO_x$  are still needed. These proposed modifications will provide additional margin against the  $NO_x$  tonnage caps. The FGD project at Mill Creek is required to meet NAAQS regulations and also supports compliance with CSAPR.

The table below compares allowance allocation assumed in the filing with the final rule.

Allowance Allocations Unde	r the Proposed and Fi	inal CATR/CSA	PR Rule
	Proposed Rule	Final Rule	Change
Louisville Gas and Electric	Company		
SO2 2012-2013	35,277	37,306	6%
SO2 2014+	21,999	17,170	-22%
Annual NOx 2012-2013	13,540	13,871	2%
Annual NOx 2014+	13,540	12,620	-7%
Kentucky Utilities Company	7		
SO2 2012-2013	32,632	41,847	28%
SO2 2014+	22,449	19,887	-11%
Annual NOx 2012-2013	10,673	15,555	46%
Annual NOx 2014+	10,673	14,247	33%
Combined LG&E/KU System	m		
SO2 2012-2013	67,909	79,153	17%
SO2 2014+	44,448	37,057	-17%
Annual NOx 2012-2013	24,213	29,426	22%
Annual NOx 2014+	24,213	26,867	11%

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### LOUISVILLE GAS AND ELECTRIC COMPANY

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### Question No. 51

### Witness: Charles R. Schram

- Q-51. Do you anticipate that the cap and trade provision will provide any lower cost alternatives to either LG&E? Will it provide any economic opportunities to allow LG&E to create any new revenue streams?
- A-51. No. LG&E assumes the question refers to the cap and trade provisions under CATR (the EPA now calls the rule Cross-State Air Pollution Rule, or CSAPR). The cap and trade provisions under CSAPR depend on intra-state allowance trading rather than the unrestricted inter-state allowance trading characteristic of the acid rain program. CSAPR appears to discourage trading as a method of compliance. It is unlikely that these limited trade provisions will result in a robust allowance market or provide any lower cost alternatives to LG&E.

### LOUISVILLE GAS AND ELECTRIC COMPANY

### Response to Commission Staff's First Information Request Dated July 12, 2011

### Case No. 2011-00162

### **Question No. 52**

### Witness: John N. Voyles, Jr.

- Q-52. Refer to LG&E Application at page 5. LG&E proposes to build a Particulate Matter Control System for each of the four Generating units at Mill Creek and for TC1. Each Particulate Matter Control System comprises a pulse-jet fabric filter ("baghouse") to capture particulate matter, a Powdered Activated Carbon ("PAC") injection system to capture mercury, and a lime injection system to protect the baghouse from the corrosive effects of sulfuric acid mist ("SAM"). These Particulate Matter Control Systems will be similar to the baghouse (including the SAM mitigation and PAC injection systems) installed at Trimble County Unit 2 ("TC2") as part of its overall air quality control system (which the Commission approved as part of LG&E's 2006 Plan).
  - a. Explain the make and model and the technology of all pulse-jet fabric filter ("baghouses") to capture particulate matter.
  - b. Explain the make and model and the technology of all Powdered Activated Carbon ("PAC") injection system to capture mercury.
  - c. Is the technology of the Selective Catalytic Reduction ("SCR") proposed to be installed in Mill Creek and TC1 units the most cost effective and the most efficient available in power generation industry? If there are other technologies available in the market, explain why they were not selected.
  - d. Explain if the above Particulate Matter Control Systems technologies are flexible, so it can provide reduction of inhalable particulate required by future regulations.
- A-52. a. LG&E has not yet conducted a bid process to choose the final technology vendor for pulse-jet fabric filters for any of the units in our fleet. The selection of the specific vendor does not impact the compliance plan.
  - b. LG&E has not yet conducted a bid process to choose the final technology vendor for PSC injection systems for any of the units in our fleet. The selection of the specific vendor does not impact the compliance plan.
  - c. LG&E is not requesting approval to install new SCR's in this plan. The projects proposed in this compliance plan include modifications to the boiler circuits that will

enhance the operation of those same SCR installations to improve their operating ranges.

d. There is no information provided by the EPA on the future standards for inhalable particulate matter. It is not possible to assess the future performance of the proposed equipment based on unknown standards.

### LOUISVILLE GAS AND ELECTRIC COMPANY

### **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

### Question No. 53

### Witness: John N. Voyles, Jr.

- Q-53. Refer to LG&E Application, paragraph 13. A statement is made that "Building these Particulate Matter Control Systems is the most cost-effective means of complying with the HAPs Rule." Is this an industry-wide position or specific to the LG&E fleet?
  - a. If this is an industry position, provide the study/work papers which support this statement.
  - b. If LG&E specific, provide a summary of the support for this position.
- A-53. The Companies' position is both an LG&E/KU position and an industry position. As discussed in Exhibit JNV-2, Pulse Jet Fabric Filters (PJFF) in combination with Powdered Activated Carbon (PAC) Injection systems are an effective way to meet particulate control regulations but also allows for compliance with the pending HAPs rule based on the coal specifications that the LG&E boilers are designed to utilize. To determine how cost-effective a particular compliance strategy will be first requires determining the appropriate technologies and then to assessing the constructability issues along with any balance-of-plant impacts associated with implementing those technologies. As Black and Veatch have engineering expertise in the suite of available technologies would comply with EPA regulations and would be most cost effective based on their industry experiences as well as the results of their assessment of our fleet. Please reference the Black and Veatch reports for additional information.

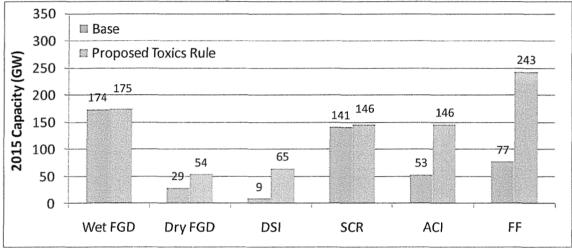
The EPA's analyses on the Utility MACT regulation's impact on coal-fired generation states an expected 166 GW of coal fired units throughout the U.S. will be retrofitted with fabric filter technology. Please see the attached excerpt from the EPA's report titled "Regulatory Impact Analysis of the Proposed Toxics Rule" dated March 2011 that includes projection materials regarding the installation of PJFF technology throughout the industry. The full report is included on the CD in the folder titled Question 53.

	Dry					Waste	
	FGD +				FGD	Coal	
	FF	DSI	FF	ACI	Upgrade	FGD	Total
Capital	1,421	428	1,092	1,498	669	94	5,201
FOM	252	71	41	48	0	20	431
VOM	377	1,241	105	627	0	66	2,416
2015 Annual							
Capital+FOM+VOM	2,050	1,740	1,238	2,173	669	179	8,048

### Table 8-6. Capital, FOM, and VOM Costs by Control Technology for the Proposed Toxics Rule (millions of 2007\$)

Source: Integrated Planning Model run by EPA, 2011.

Figure 8-6. Retrofit Pollution Control Installations on Coal-fired Capacity (by Technology) with the Base Case and with the Proposed Toxics Rule, 2015 (GW)



Note: The difference between controlled capacity in the base case and under the proposed Toxics Rule may not necessarily equal new retrofit construction, since controlled capacity above reflects incremental operation of dispatchable controls in 2015. For this reason, and due to rounding, numbers in the text above may not reflect the increments displayed in this figure. See IPM Documentation for more information on dispatchable controls.

Source: Integrated Planning Model run by EPA, 2011.

### 8.5 Projected Generation Mix

Table 8-7 and Figure 8-7 show the generation mix in the base case and in the proposed Toxics Rule policy case. In 2015, coal-fired generation is projected to decline slightly and natural-gas-fired generation is projected to increase slightly relative to the base case. Coal-fired generation is projected to increase above 2009 actual levels. The vast majority (over 95%) of base case coal capacity is projected to remain in service under the proposed Toxics Rule. In

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# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

### Question No. 54

- Q-54. Refer to LG&E Application, paragraph 21. Project 19, approved by the commission, approved Sulfuric acid mist ("SAM") mitigation systems for Mill Creek 3 and 4 which have not been built. This application asks for Particulate Matter Control Systems ("PMCS") to serve all the generating units at Mill Creek and Trimble County Generating Station Unit 1 ("TC1").
  - a. Has SAM technology changed from the Project 19 approval to the currently proposed Project 26? Explain in detail.
  - b. Is a SAM mitigation system a component of a PMCS?
- A-54. a. No. SAM mitigation equipment originally planned to comply with BART for Mill Creek units 3 and 4 is still in LG&E's compliance plans to be installed. However, due to the delay in BART regulations, the installation of this technology has been deferred.
  - b. The SAM mitigation equipment as part of Project 19 is separate from the SAM mitigation in the PMCS equipment as part of Project 26. The PMSC included in LG&E's plan to comply with the Utility MACT regulation also has SAM reduction benefits; however, the lime injection prior to the fabric filter is primarily to protect the fabric filter internals from sulfuric acid corrosion. Both SAM mitigation equipment and PMSC technology will be installed on Mill Creek units 3 and 4.

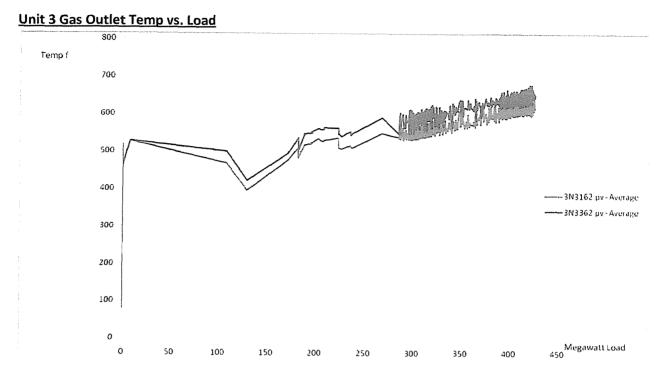
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#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

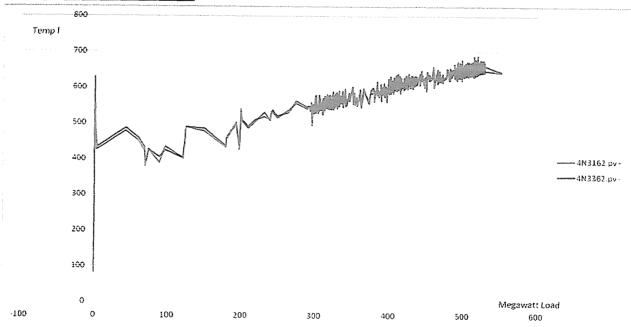
#### Question No. 55

- Q-55. Refer to Voyles Testimony at page 7. The testimony supports modifications to various systems at Mill Creek Units 3 and 4 to expand the operating range of the units at which their existing SCR equipment can function to reduce NOx emissions. Currently, the SCRs can operate only when the Mill Creek units are operating at relatively high generating load levels due to the SCR requiring flue gas temperatures above approximately 630 degrees Fahrenheit. Provide the engineering support for temperature/load versus performance of the catalytic function.
  - a. Explain the relationship between the proximity to the burners and the effectiveness of the SCR?
  - b. In combining flues for operation, does this affect the performance of the SCRs? Explain in summary fashion.
  - c. Provide any available efficiency curves.
- A-55. a. The proximity of the burners to the SCR is not a primary factor in operating temperatures. Every boiler system has different exit temperatures over its load range due to variables such as fuel selection, effectiveness of fuel grind, burner technology, boiler design, economizer design and air heater design. Given the temperature profile versus generating load of each unit differs, some units have higher temperatures at low loads than others. Most SCRs installed in coal-fired applications have catalyst with required minimum operating temperatures approximately of 630 640 degrees Fahrenheit or more. Catalyst vendor and SCR technology provider information can be supplied to support the minimum operating temperature requirement if desired.
  - b. Mill Creek 3 and 4 do not have combined flue streams.
  - c. The attachment contains the Mill Creek Units 3 and 4 gas outlet temperature versus load curves.



# Mill Creek Load vs. Temperature Curve

#### Unit 4 Gas Outlet Temp vs Load



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# **Response to Commission Staff's First Information Request Dated July 12, 2011**

# Case No. 2011-00162

# Question No. 56

- Q-56. Refer to Voyles Testimony at page 13. The testimony indicates that the addition of a higher efficiency FGD in combination with the installation of Particulate Matter Control Systems will require the installation of larger induced draft fans and/or the installation of booster fans to account for the increased pressure drop through the flue gas train. These larger or additional fans will likely require auxiliary power upgrades.
  - a. Are those likely costs included in the Black & Veatch financial estimates?
  - b. Do these fans affect the thermal properties of the flue gas?
  - c. Will they affect the power output of the generators?
- A-56. a. Black and Veatch identified auxiliary power impacts and included costs in their estimates for the auxiliary power system upgrades. These estimates are based on conceptual engineering and are considered estimates. Final design of duct runs and the selection of the fabric filter and FGD vendors will enable final calculations of increased auxiliary power requirements.
  - b. There will be insignificant impacts to the temperature of the flue gas associated with selection of replacement fans and new ductwork configurations.
  - c. The increased horsepower for the new fans will add to the parasitic load required by the plant, thus reducing the net power generated from the units. This loss is normal for any retrofit of technology of this scale and is not expected to be significant. This auxiliary load has been accounted for in the economic analysis of the projects under consideration in the proposed Compliance Plan.

#### **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 57

#### Witness: Robert M. Conroy

- Q-57. Refer to Voyles Testimony at page 8. Mr. Voyles discusses LG&E's preference for recovering costs associated with particulate sorbents. With respect to sorbent cost recovery, is there any difference in the recovery of costs, or any factors related thereto, for the proposed project 26, 27 and the previously approve project 19?
- A-57. There is no difference in the amount of costs recovered related to sorbent for the proposed Project 26, 27 and the previously approved Project 19. As stated in testimony, from an operational perspective, it is very difficult to track separately SAM sorbent being used by multiple environmental facilities related to different ECR projects at the same generating unit with any reasonable certainty. Also, LG&E records all of a unit's SAM sorbent costs in the same subaccount, regardless of which system on the unit consumes the sorbent. It is important to note that multiple environmental facilities related to different ECR projects at the same generating unit will consume the same sorbent. It is not practical for the plants to maintain separate inventories of the same sorbent that has multiple uses.

In the alternative, LG&E would have to use an allocation to assign the sorbent costs to the appropriate approved project.

The purpose of LG&E's proposed method for sorbent cost recovery is for practical necessity and to provide the clearer reporting to the Commission.

#### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### **Question No. 58**

- Q-58. Refer to Voyles Testimony. Provide a brief discussion of the maturity and upgrade potential of:
  - a. Baghouse technology;
  - b. Powder Activated Carbon Injection;
  - c. Lime injection for SAM Systems;
  - d. FGDs (dry and wet); and
  - e. SCRs.
- A-58. Please see Exhibit JNV-2 Appendix A. A brief discussion is below.
  - a. Baghouse technology has been in operation around the world for decades and thus is considered mature technology. However, most high sulfur coal units have utilized dry electrostatic precipitators throughout the world. The utilization of baghouses on coal fired units burning regional high sulfur coal is relatively new to the U.S. Regarding potential for upgrades, baghouse performance upgrades may be possible in the future as improved capabilities to model the flue gas flow through the baghouses evolves. It is also possible that improvements will be realized in the materials of construction of the bags and cages.
  - b. PAC injection for the utility application is a relatively new application; however, the technology is rather simple in that PAC is injected in the flue gas prior to the baghouse. Upgrades in the future will likely include improvements in injection lances and material handling components.
  - c. Lime injection is not a mature technology for coal fired utilities. Both the physical systems to transport the lime to the ductwork and the injection methodologies are new to the industry over the last 3-5 years. In addition to the physical components, the modeling of injection locations and specific methods is considered to be a new technology, especially when considering the industry's inexperience in understanding

the exact impacts on sulfur trioxide formation and reduction variables in the flue gas as it exits the boiler and progresses through the flue gas path to the stack.

- d. Both wet and dry FGD technologies is considered a mature technology. As with baghouses, upgrade potentials are likely in the future in specific components such as reactant nozzle design, pump component design, mist eliminator design and materials of construction.
- e. SCRs are considered mature technology with improvements in the primarily expected to be in catalyst formulation improvements.

### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 59

#### Witness: Shannon L. Charnas

- Q-59. Refer to Charnas Testimony at page 7. The testimony states that in LG&E's 2006 Plan Case No. 2006-00208, the Commission approved separate SAM mitigation systems for Mill Creek Units 3 and 4 as part of Project 19; however, as Mr. Voyles explains in his testimony, LG&E has not yet built those systems, and there is no O&M associated with those systems in base rates or being recovered through the environmental surcharge mechanism.
  - a. Is the same true for Capital Costs?
  - b. Are any SAM mitigation system costs associated with Units 3 and 4 which are being recovered currently?
- A-59. a. Yes, the same is true for capital costs. LG&E has not yet built the SAM mitigation systems for Mill Creek; therefore, no capital costs are included in base rates or being recovered through the environmental surcharge mechanism.
  - b. No, there are no SAM mitigation costs associated with Units 3 and 4 currently being recovered.

### Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 60

- Q-60. Refer to Schram Testimony at page 4. In performing the analysis for the 2011 Environmental plan, Mr. Schram states that the analyses performed by the Companies' Project Engineering department and Black and Veatch produced the most cost-effective suite of environmental controls to meet the applicable environmental requirements.
  - a. Are the initial air quality attainment equipment assumptions, e.g. the equipment used to meet the current air quality limits, thoroughly vetted and explored prior to model runs? Explain the decision making process.
  - b. What element did LG&E contribute versus Black and Veatch?
  - c. Does Black and Veatch represent other electric generation utilities in environmental issues?
  - d. If so, do they come to similar recommendations for air quality attainment?
- A-60. a. LG&E is in compliance with current air quality limits and for the purposes of this plan, each option has been thoroughly vetted. Please see Exhibit JNV-2.
  - b. LG&E contributed the initial data on the existing air pollution control equipment and station's age, conditions, performance, design criteria, etc.. In addition, LG&E worked in concert with B&V on assessing potential technologies for each pollutant, the potential layouts of each technology, as well as a review of all B&V submitted draft reports. Various meetings were held at each station between B&V, Project Engineering, Environmental Affairs and the respective station management/engineering team to review balance-of-plant system capabilities, constructability issues such as safety and interference with station operations, delivery and lay down issues for construction, etc. LG&E and KU have completed construction projects for 6 SCRs, 6 WFGDs and a new 809 MW gross coal-fired unit within the last decade at various generating stations. We believe our knowledge of available technologies, constructability issues with the technologies, existing equipment at our stations, and market influences provided key input and support for B&V developing their final recommendations and estimates.

- c. Black and Veatch is a very large engineering and construction management firm that services a diverse group of clients in various industries throughout the U.S. We do not know how they interact with their other clients in relation to environmental issues.
- d. The Companies are not aware of technology recommendations Black and Veatch has made to their other clients, if any.

# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

## Question No. 61

#### Witness: Charles R. Schram

- Q-61. Refer to Schram Testimony at page 5. Mr. Schram supports the position that the recommended projects result in the lowest Present Value Revenue Requirements ("PVRR") over 30 years, including the impacts from capital investment and Operations and Maintenance (O&M) costs.
  - a. Is 30 years a realistic time frame in the pollution control environment?
  - b. Did you look at different time frames?
  - c. If so, provide those calculations.
- A-61. a. The use of a 30-year period for performing production cost analysis when determining PVRR is consistent with over 20 years of different studies performed by the Companies and is consist with the industry. Analysis in the pollution control environment should not be treated any differently than other PVRR analysis. Pollution control is an integral part of analysis and operation of the entire system. Please see the response to Question No. 4.
  - b. No for the reasons noted in the response to part a
  - c. Not applicable.

# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 62

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

- Q-62. Refer to Schram Testimony. For each project to be constructed, provide the PV for every alternative that was considered and the reasons they were eliminated. Provide all supporting calculations.
- A-62. Please see Exhibits JNV-2 and CRS-1 for a complete description of the process of developing alternatives and the subsequent economic analysis. The NPVRR for each project to be constructed is included in Exhibit CRS-1. The economic analysis compares the cost of each environmental control project to the cost of retiring the unit.

# Response to Commission Staff's First Information Request Dated July 12, 2011

#### Case No. 2011-00162

#### Question No. 63

- Q-63. Refer to Schram Testimony. How was the estimated cost for each proposed project derived?
- A-63. The estimated cost for each project was taken from the Companies' work with Black and Veatch which resulted in recommended projects to meet the emissions limits. Please see the details and discussions contained in Exhibit JNV-2 and the reports (inclusive of the cost estimates) from Black and Veatch contained in Appendices A H of Exhibit JNV-2.

# **Response to Commission Staff's First Information Request Dated July 12, 2011**

### Case No. 2011-00162

### **Question No. 64**

### Witness: John N. Voyles, Jr.

Q-64. Refer to Schram Testimony. Did you send an RFP to construct the proposed facilities?

- a. If no, explain why it is not necessary.
- b. If yes, provide a list to whom it was sent and the responses. Also explain how the successful bidder was chosen.
- A-64. a. No, a RFP to construct the proposed facilities has not been issued. Engineering and technology specification development was not mature enough to support issuing a RFP. LG&E is currently developing specifications to utilize in a RFP for the purchase of equipment and installation of environmental controls. The estimates contained in the Compliance Plan are reasonable for the purposes of evaluating and selecting technology for the Compliance Plan in this proceeding.
  - b. Not applicable.

# **Response to Commission Staff's First Information Request Dated July 12, 2011**

#### Case No. 2011-00162

#### Question No. 65

#### Witness: Shannon L. Charnas

- Q-65. What is the impact of the planned retirements on LG&E's depreciation?
- A-65. Consistent with past practices, ECR monthly filings will reflect the retirement of assets already included in base rates. LG&E's depreciation will decrease by the amount of expense applicable to the retired assets immediately upon their retirement. The next depreciation study completed and approved by the Commission will address any future impacts on the depreciation rates resulting from any remaining accumulative reserve amounts related to these retirements.

# Response to Commission Staff's First Information Request Dated July 12, 2011

# Case No. 2011-00162

# Question No. 66

# Witness: Robert. M. Conroy

- Q-66. Are any costs associated with any retirements proposed to be recovered in this proceeding?
- A-66. No, there are no costs associated with any retirements proposed to be recovered in this proceeding.