

a PPL company

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

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PUBLIC SERVICE
COMMISSION

Kentucky Utilities Company
State Regulation and Rates
220 West Main Street
PO 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

August 5, 2011

RE: *The Application of Kentucky Utilities Company for Certificates of Public Convenience and Necessity and Approval of Its 2011 Compliance Plan for Recovery by Environmental Surcharge*
Case No. 2011-00161

Dear Mr. DeRouen:

Enclosed please find an original and fifteen (15) copies of Kentucky Utilities Company's (KU) response to the First Set of Interrogatories of Rick Clewett, Raymond Berry, Sierra Club, and the Natural Resource Defense Council dated July 12, 2011, in the above-referenced matter.

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

Sincerely,

A handwritten signature in black ink, appearing to read 'R. M. Conroy', written over a horizontal line.

Robert M. Conroy

cc: Parties of Record

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

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

Charles R. Schram
Charles R. Schram

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 4th day of August 2011.

Jammy J. Ely (SEAL)
Notary Public

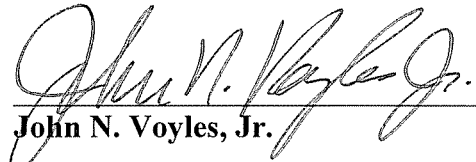
My Commission Expires:

November 9, 2014

VERIFICATION

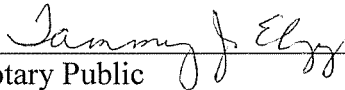
COMMONWEALTH OF KENTUCKY)
) SS:
COUNTY OF JEFFERSON)

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



John N. Voyles, Jr.

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 5th day of August 2011.

 (SEAL)

Notary Public

My Commission Expires:

November 9, 2014

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF KENTUCKY UTILITIES)	
COMPANY FOR CERTIFICATES OF PUBLIC)	
CONVENIENCE AND NECESSITY AND)	CASE NO.
APPROVAL OF ITS 2011 COMPLIANCE PLAN)	2011-00161
FOR RECOVERY BY ENVIRONMENTAL)	
SURCHARGE)	

**RESPONSE OF
KENTUCKY UTILITIES COMPANY
TO THE FIRST SET OF INTERROGATORIES OF
RICK CLEWETT, RAYMOND BERRY, SIERRA CLUB, AND THE
NATURAL RESOURCE DEFENSE COUNCIL
DATED JULY 12, 2011**

FILED: August 5, 2011

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 1

Witness: Charles R. Schram / Gary H. Revlett

- Q-1. Refer to page 9, lines 5-9 of the testimony of Lonnie E. Bellar. Identify “any necessary adjustments to KU’s 2011 Plan that are responsive to CATR,” which was finalized as the Cross-State Air Pollution Rule on July 6, 2011.
- A-1. Please see the response to KPSC-1 Question No. 49.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 2

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

- Q-2. Refer to page 12, lines 14-18 of the testimony of John N. Voyles Jr. Identify which “additional SCR installations” were deferred by KU’s 2011 Plan and for long they will be deferred.
- A-2. Please see the responses to KPSC-1 Question Nos. 57 and 59. The potential additional SCR installations are limited to the Companies’ remaining non-SCR equipped units. The Companies’ projected system NO_x emissions are less than the emission allowances provided in CSAPR. Therefore, the Companies will defer any additional SCR installations until required by future regulations.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 3

Witness: Charles R. Schram

- Q-3. Refer to Table 1 on page 3 of Exhibit CRS-1. Identify in what year the dollar figures identified therein are.
- A-3. The total capital costs in Table 1 represent the sum of the nominal capital costs.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 4

Witness: Charles R. Schram

- Q-4. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, state whether the PVRR of installing controls identified therein includes each of the following category of costs. For each category, if the answer is yes, identify the total PVRR in 2011 dollars that was included for that cost:
- a. Capital projects other than environmental controls
 - b. Fixed operation and maintenance costs
 - c. Variable operation and maintenance costs
 - d. Fuel costs
 - e. Emission allowance costs
- A-4. Please see the attached table for each component of the total PVRR.

PVRR (\$M)

Unit(s)	Production Costs				Capital		Total
	Fixed O&M	Variable O&M	Fuel Costs	Emission Allowance Costs	Environmental Controls	Other	
Tyrone 3	4,277	2,788	18,765	0.2	3,614	3,709	33,153
Green River 3	4,252	2,760	18,769	0.2	3,568	3,791	33,140
Brown 3	4,138	2,711	18,810	0.2	3,522	3,880	33,060
Cane Run 4	4,138	2,711	18,810	0.2	3,522	3,880	33,060
Cane Run 6	4,001	2,730	19,088	0.2	3,217	3,935	32,972
Brown 1-2	3,901	2,771	19,426	0.2	2,805	4,077	32,980
Cane Run 5	3,901	2,771	19,426	0.2	2,805	4,077	32,980
Ghent 3	3,740	2,794	19,707	0.2	2,484	4,196	32,921
Ghent 1	3,740	2,794	19,707	0.2	2,484	4,196	32,921
Green River 4	3,740	2,794	19,707	0.2	2,484	4,196	32,921
Mill Creek 4	3,601	2,691	19,849	0.2	2,417	4,255	32,811
Trimble County 1	3,601	2,691	19,849	0.2	2,417	4,255	32,811
Ghent 4	3,601	2,691	19,849	0.2	2,417	4,255	32,811
Mill Creek 3	3,601	2,691	19,849	0.2	2,417	4,255	32,811
Ghent 2	3,601	2,691	19,849	0.2	2,417	4,255	32,811
Mill Creek 1-2	3,601	2,691	19,849	0.2	2,417	4,255	32,811

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 5

Witness: Charles R. Schram

- Q-5. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, identify any cost not listed in Interrogatory 4 that is included in the PVRR of installing controls identified in Table 2. For each such cost, identify the total PVRR in 2011 dollars that was included for that cost.
- A-5. Please see the response to Question No. 4 in the column entitled "Capital – Environmental Controls."

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 6

Witness: Charles R. Schram

- Q-6. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, state whether, in determining the PVRR of retiring and replacing capacity indentified in Table 2, each of the following options was included as replacing some or all of the capacity for that unit. For each option that was included, identify the amount of capacity that such option was assumed to replace, and the per unit of energy cost that was assumed for such option.
- a. Energy efficiency
 - b. Demand side management
 - c. Combined heat and power
 - d. Wind turbines
 - e. Solar
 - f. Hydroelectric
 - g. Construction of a new natural gas combined cycle facility
 - h. Purchase of power from an existing natural gas combined cycle facility
 - i. Purchase of an existing natural gas combined cycle facility
 - j. Power purchase agreements
- A-6. Please see the responses to KPSC-1 Question Nos. 20 and 43. While there is no single input that equates to the “per unit of energy cost that was assumed for each option”, the details for demand-side and supply-side technologies are provided in the Companies’ 2011 Integrated Resource Plan (“2011 IRP”) filing.¹ Please refer to Volumes I and III of the 2011 IRP. Also, please see the detail provided in Exhibit CRS-1 Section 4.2 (including associated subsections) and Appendix C.

¹ *In the Matter of: The 2011 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, PSC Case No. 2011-00140.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 7

Witness: Charles R. Schram

- Q-7. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, identify any option not listed in Interrogatory 6 that, in determining the PVRR of retiring and replacing capacity identified in Table 2, was included as replacing some or all of the capacity for that unit. For each such option, identify the amount of capacity that such option was assumed to replace, and the per unit of energy cost that was assumed for such option.
- A-7. All options were addressed in the response to Question No. 6.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 8

Witness: Charles R. Schram

- Q-8. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, state whether the PVRR of retiring and replacing capacity identified therein includes each of the following categories of costs. For each category, if the answer is yes, identify the total PVRR in 2011 dollars that was included for that cost.
- a. Transmission grid upgrades or additions
 - b. Decommissioning costs
 - c. Undepreciated book value
 - d. Replacement capacity
- A-8.
- a. No, transmission grid upgrades or additions are considered when evaluating detailed replacement capacity alternatives, which is beyond the scope of the KU 2011 Plan.
 - b. Decommissioning costs are not included.
 - c. The undepreciated book value does not affect the revenue requirements analysis for retired units, since the revenue requirements include recovery of the undepreciated book value for retired units.
 - d. The table below contains the PVRR associated with the system expansion units for each of the unit retirement cases.

Unit(s)	Replacement Capacity PVRR (\$M)
Tyrone 3	1,898
Green River 3	2,002
Brown 3	2,103
Cane Run 4	2,103
Cane Run 6	2,205
Brown 1-2	2,433
Cane Run 5	2,433
Ghent 3	2,604
Ghent 1	2,604
Green River 4	2,604
Mill Creek 4	2,680
Trimble County 1	2,680
Ghent 4	2,680
Mill Creek 3	2,680
Ghent 2	2,680
Mill Creek 1-2	2,680

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 9

Witness: Charles R. Schram

- Q-9. Refer to Table 2 on page 4 of Exhibit CRS-1. For each unit listed in Table 2, identify any cost not listed in Interrogatory 8 that was included in determining the PVRR of retiring and replacing capacity identified therein. For each cost, identify the total PVRR in 2011 dollars that was included for that cost.
- A-9. All costs have been discussed in response to Question Nos. 4 and 8.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 10

Witness: John N. Voyles, Jr.

- Q-10. Refer to page 1 of Exhibit JNV-1. For each of the electric generating units at KU's Brown and Ghent generating stations, identify the following emissions rates and amounts from such unit after the environmental controls that are proposed as part of Project 34 and 35 are completed.
- a. SO₂ lbs/mmBtu
 - b. SO₂ tpy
 - c. NO_x lbs/mmBtu
 - d. NO_x tpy
 - e. PM lbs/mmBtu
 - f. PM tpy
 - g. Mercury lbs/TBtu
 - h. Mercury pounds per year
 - i. HCl - lbs/mmBtu
 - j. HCl - tpy
 - k. CO₂ - tpy
 - l. SAM - lbs/mmBtu
 - m. SAM - tpy
- A-10. Emission rates for each pollutant vary with specific averaging periods. Please refer to Exhibit JNV-2, Appendix A for the targeted emissions limits used when considering control technology for each unit. The Companies intend to comply with the final EPA regulations that govern the emissions listed for the aforementioned pollutants. No environmental controls are proposed for CO₂ in Projects 34 and 35. See the responses to Question Nos. 12 and 23.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 11

Witness: John N. Voyles, Jr.

Q-11. Identify any planned, anticipated, or assumed retirement dates for each of KU's electric generating units.

A-11. Please see the response to KPSC-1 Question No. 4.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 12

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

- Q-12. Identify any actions that the KU 2011 Plan assumes KU will need to take to comply with any existing, pending, or anticipated regulation of CO2 emissions from KU's electric generating units.
- A-12. The regulations requiring the installation of the environmental controls contained in the KU 2011 Plan are shown on Application Exhibit 1 and Exhibit JNV-1. The regulations are discussed on page 2 of the testimony of Mr. Voyles, and on pages 2, 4 and 5 of the testimony of Mr. Revlett. Also, please see the response to KPSC-1 Question No. 2.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 13

Witness: John N. Voyles, Jr. / Gary H. Revlett

Q-13. Identify any actions that the KU 2011 Plan assumes KU will need to take as a result of the 1 -hour SO₂ NAAQS.

A-13. The regulations requiring the installation of the environmental controls contained in the KU 2011 Plan are shown on Application Exhibit 1 and Exhibit JNV-1. The regulations are discussed on page 2 of the testimony of Mr. Voyles, and on pages 2, 4 and 5 of the testimony of Mr. Revlett. Also, please see the response to KPSC-1 Question No. 40.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 14

Witness: John N. Voyles, Jr. / Gary H. Revlett

- Q-14. Identify any actions that the KU 2011 Plan assumes KU will need to take as a result of US EPA's reconsideration of the 2008 ozone NAAQS.
- A-14. The regulations requiring the installation of the environmental controls contained in the KU 2011 Plan are shown on Application Exhibit 1 and Exhibit JNV-1. The regulations are discussed on page 2 of the testimony of Mr. Voyles, and on pages 2, 4 and 5 of the testimony of Mr. Revlett. Also, please see the response to KPSC-1 Question No. 40.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 15

Witness: John N. Voyles, Jr. / Gary H. Revlett

- Q-15. Identify any actions that the KU 2011 Plan assumes KU will need to take as a result of US EPA's reconsideration of the 2006 PM_{2.5} NAAQS.
- A-15. The regulations requiring the installation of the environmental controls contained in the KU 2011 Plan are shown on Application Exhibit 1 and Exhibit JNV-1. The regulations are discussed on page 2 of the testimony of Mr. Voyles, and on pages 2, 4 and 5 of the testimony of Mr. Revlett. KU did not include in their 2011 Plan any actions pursuant to the possible EPA reconsideration of the 2006 PM_{2.5} NAAQS. At this time EPA has not proposed a new PM_{2.5} standard and they have clearly delayed their previous target date of January 2011 for this action. Also, please see the response to KPSC-1 Question No. 40.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 16

Witness: John N. Voyles, Jr.

- Q-16. Identify any actions that the KU 2011 Plan assumes KU will need to take as a result of existing, proposed, or anticipated Clean Water Act regulations
- A-16. The KU 2011 Plan does not address actions necessary for compliance with existing, proposed, or anticipated Clean Water Act regulations.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 17

Witness: John N. Voyles, Jr.

- Q-17. State whether any of the flue gas desulfurization systems at any of the electric generating units at KU's Brown or Ghent generating stations were constructed using duplex stainless steel alloy 2205 or other duplex stainless steels.
- A-17. The flue gas desulfurization systems at KU's Brown and Ghent generating stations were not constructed using duplex stainless steel alloy 2205 or other duplex stainless steels.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 18

Witness: John N. Voyles, Jr.

Q-18. State whether any of the flue gas desulfurization systems at any of the electric generating units at KU's Brown or Ghent generating stations have experienced problems with corrosion.

A-18. The flue gas desulfurization systems at Brown and Ghent have not experienced any significant corrosion issues.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 19

Witness: Charles R. Schram

Q-19. Identify the energy generated (in kWh or MWh) at each of KU's electric generating units in each calendar year during the period 2000-2010.

A-19. Please see the attachment.

Annual Electric Energy by Unit (2000-2010, Net MWh)

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
Brown 1	615,006	591,387	577,925	599,106	568,432	563,532	480,534	493,483	513,921	217,008	411,311
Brown 2	943,403	791,198	906,575	972,668	971,532	1,075,007	956,008	1,013,933	1,074,881	547,458	763,280
Brown 3	2,793,427	2,375,053	2,278,584	2,525,740	2,246,620	1,584,997	2,031,288	2,396,909	2,534,659	1,740,829	1,828,361
Brown 5	0	59,564	54,241	475	-1,161	122,928	30,777	19,823	2,340	2,380	8,061
Brown 6	20,557	3,351	102,829	15,696	10,767	172,114	97,500	88,563	21,817	36,780	48,131
Brown 7	24,229	48,009	84,941	14,034	20,684	156,711	99,276	51,599	33,143	26,632	46,851
Brown 8	44,764	38,203	34,815	4,782	-758	2,954	46,642	19,870	6,622	7,658	7,864
Brown 9	33,403	21,753	25,687	2,902	-14	1,636	27,105	11,236	3,411	1,509	5,196
Brown 10	25,401	13,605	18,418	3,579	772	1,683	20,966	5,334	1,722	2,370	4,365
Brown 11	16,340	8,079	10,471	406	636	1,854	13,070	4,458	677	4,551	8,529
Cane Run 4	923,971	882,739	966,836	971,150	813,652	1,052,063	961,053	1,105,274	1,044,031	950,924	927,129
Cane Run 5	940,250	1,008,640	1,078,881	1,038,855	897,296	1,091,048	1,087,296	1,043,893	886,232	956,126	1,110,383
Cane Run 6	1,350,265	1,408,314	1,022,287	1,544,055	1,514,046	1,542,731	1,530,907	1,395,319	1,482,371	1,340,828	1,222,086
Cane Run 11	373	339	122	38	33	143	1,179	312	4	210	228
Dix Dam	23,958	26,644	63,944	71,014	94,610	36,590	47,026	35,068	50,505	68,871	35,921
Ghent 1	3,153,430	3,661,109	3,223,170	3,448,042	3,304,417	3,488,619	3,374,404	2,915,043	3,598,899	2,867,588	3,295,876
Ghent 2	2,838,645	3,032,774	3,071,447	2,981,199	2,843,658	2,762,178	3,013,392	3,454,216	2,804,097	2,413,738	3,201,480
Ghent 3	3,210,133	2,918,140	3,093,384	2,265,509	2,829,972	3,086,506	2,967,905	2,358,308	3,262,152	3,182,388	3,431,840
Ghent 4	3,234,493	3,060,192	2,145,650	2,758,455	3,088,747	3,249,370	2,852,022	3,232,661	2,840,532	2,881,867	2,667,176
Green River 1	66,301	43,719	35,155	20,566	-885	0	0	0	0	0	0
Green River 2	57,626	34,917	29,574	18,825	-844	0	0	0	0	0	0
Green River 3	380,547	353,858	212,011	277,711	335,347	336,573	206,046	420,678	379,545	216,614	345,262
Green River 4	539,025	491,937	442,670	351,583	465,396	338,730	433,665	576,042	582,590	408,847	544,049
Haefling 1	358	-50	-136	-158	-144	-117	-130	-118	-115	-143	175
Haefling 2	234	-102	-124	-158	-146	-125	108	0	-123	-147	193
Haefling 3	205	-58	-130	-156	-149	-196	-101	-104	-129	-159	275
Lock 7	2	-13	-24	-13	-21	0	0	0	0	0	0
Mill Creek 1	1,769,257	1,822,807	1,785,523	1,970,334	1,847,144	2,223,638	1,975,638	2,163,431	1,994,139	2,121,020	2,009,037
Mill Creek 2	1,861,504	1,778,112	1,933,487	1,725,186	2,019,094	1,828,966	2,032,265	1,944,646	2,083,269	1,860,292	2,101,040
Mill Creek 3	2,506,522	2,722,661	2,386,458	2,706,297	2,297,199	2,969,840	2,842,591	2,805,103	3,002,860	2,805,833	2,914,876
Mill Creek 4	2,896,419	2,517,369	2,970,156	2,947,137	3,423,665	3,092,783	2,954,368	3,584,949	3,335,864	3,587,250	3,348,610
Ohio Falls	331,653	278,935	216,127	175,608	214,785	194,203	239,852	140,996	161,996	229,643	236,520
Paddy's Run 11	781	197	48	56	0	728	901	172	0	20	244
Paddy's Run 12	1,341	354	155	0	0	521	407	8	27	0	-107
Paddy's Run 13	0	48,923	108,288	30,235	31,448	134,487	89,512	66,288	6,552	1,262	14,729
Pineville	117,668	98,246	0	0	0	0	0	0	0	0	0
Trimble County 1	2,586,805	2,519,945	2,863,345	2,771,658	3,114,522	2,886,772	3,160,653	2,708,402	3,058,244	2,346,678	2,672,799
Trimble County 5	0	0	103,154	36,252	20,896	8,925	11,776	92,508	73,993	43,447	129,014
Trimble County 6	0	0	98,777	29,154	22,887	22,459	23,796	83,953	69,784	28,245	100,290
Trimble County 7	0	0	0	0	30,982	44,210	50,944	112,701	59,477	39,370	125,685
Trimble County 8	0	0	0	0	21,578	77,153	76,814	149,775	63,039	33,229	98,268
Trimble County 9	0	0	0	0	25,172	46,514	59,506	148,371	58,192	29,733	125,067
Trimble County 10	0	0	0	0	13,204	90,645	71,377	130,929	51,431	21,367	103,884
Tyrone 1	-1,536	-1,312	-1,507	-1,503	-1,423	-1,404	-1,203	-192	0	0	0
Tyrone 2	-1,539	-1,600	-1,519	-1,513	-1,428	-1,408	-1,208	-193	0	0	0
Tyrone 3	297,630	266,999	254,389	264,143	238,273	355,762	253,848	390,188	355,632	23,524	137,167
Waterside	1,165	130	43	0	0	0	0	0	0	0	0
Zorn	777	237	53	43	0	0	403	263	0	231	93

Note: Figures are net of auxiliary load. Negative figures indicate auxiliary load in excess of gross generation.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 20

Witness: Charles R. Schram

Q-20. Identify the amount of energy (in kWh or MWh) that KU sold in off-system sales in each calendar year during the period 2000 - 2010.

A-20. Please see the attachment.

Kentucky Utilities - Off-System Sales Energy (MWh)

	<u>Sold to Third-Parties</u>	<u>Sold to LG&E</u>	<u>Total</u>
2000	4,047,389	1,683,070	5,730,459
2001	3,651,994	2,218,456	5,870,450
2002	1,708,969	2,145,417	3,854,386
2003	852,717	2,835,801	3,688,518
2004	782,727	2,964,533	3,747,260
2005	641,886	3,125,135	3,767,021
2006	170,213	2,303,138	2,473,351
2007	109,945	1,471,558	1,581,503
2008	314,538	2,579,175	2,893,713
2009	19,001	641,123	660,124
2010	4,515	439,210	443,725

Figures are per FERC Form 1 (pp. 310-311) and may contain small adjustments from prior years.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
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Case No. 2011-00161

Question No. 21

Witness: Charles R. Schram

- Q-21. Identify any KU's electric generating units that have been designated as a must-run unit by MISO, PJM, or any other Regional Transmission Organization. For each such unit, identify when it was designated a must-run unit and the period of time for which the unit was designated as must-run.
- A-21. The Companies are not members of a Regional Transmission Organization. Therefore, none of the Companies' electric generating units have been designated as a must-run unit by MISO, PJM, or any other Regional Transmission Organization.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 22

Witness: Charles R. Schram

Q-22. Identify KU's actual electric energy sales in MWh and actual peak loads in MW for each of the years 2000 through 2010.

A-22. The table below contains the KU native load energy sales and actual peak demands.

Year	Sales (MWh)	Peak (MW)
2000	18,816,462	3,775
2001	18,478,744	3,748
2002	19,537,259	3,899
2003	19,482,919	3,944
2004	20,171,639	3,944
2005	20,990,505	4,079
2006	20,674,704	4,207
2007	21,643,361	4,344
2008	21,189,953	4,476
2009	20,260,147	4,640
2010	21,938,193	4,517

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
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Case No. 2011-00161

Question No. 23

Witness: Charles R. Schram

- Q-23. Identify any CO₂ prices assumed in KU's 2011 Plan for each year of 2011 through 2040, and explain how any such CO₂ prices were factored into the KU 2011 Plan analysis.
- A-23. No CO₂ prices were used in the preparation of the KU 2011 Plan. The Companies have not prepared or caused to be prepared a forecast or projection of possible future CO₂ costs, taxes, or emission allowance prices. The Companies have not done so because there is no reasonable basis on which to forecast such possible costs, all such costs being purely speculative at this time. Please see the response to KPSC-1 Question No. 2.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
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Natural Resource Defense Council**

Case No. 2011-00161

Question No. 24

Witness: Charles R. Schram

Q-24. Identify the price of SO₂ and NO_x allowances that you assumed in KU's 2011 Plan for each year of 2011 through 2040.

A-24. Please see the response to KPSC-1 Question No. 46(c).

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 25

Witness: Charles R. Schram

- Q-25. Identify all of the supply-side and the demand-side resources that you considered as part of the KU 2011 Plan process.
- A-25. The results of the 2011 Integrated Resource Plan were the basis for the evaluation in the KU 2011 Plan filing. Please see the responses to KPSC-1 Question Nos. 20 and 43.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 26

Witness: Charles R. Schram

Q-26. Identify the annual natural gas prices that you assumed as part of the KU 2011 Plan process for each year of 2011 through 2040.

A-26. The natural gas prices used in the preparation of the KU 2011 Plan were provided in response to KPSC-1 Question No. 44 pursuant to a Petition for Confidential Protection.

The Companies will disclose the redacted confidential information to any intervenor with a legitimate interest in such information and as required by the Commission, but only after such an intervenor has entered into a mutually satisfactory confidentiality agreement with the Companies.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 27

Witness: Charles R. Schram

Q-27. Identify the annual coal prices that you assumed as part of the KU 2011 Plan process for each year of 2011 through 2040.

A-27. The coal prices used in the preparation of the KU 2011 Plan were provided in response to KPSC-1 Question No. 44 pursuant to a Petition for Confidential Protection.

The Companies will disclose the redacted confidential information to any intervenor with a legitimate interest in such information and as required by the Commission, but only after such an intervenor has entered into a mutually satisfactory confidentiality agreement with the Companies.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 28

Witness: Charles R. Schram

- Q-28. Identify the assumptions you used in each base case and sensitivity scenario that you modeled in the KU 2011 Plan process.
- A-28. The assumptions for the base case are contained in Exhibits CRS-1 and CRS-2. Also see the response to Initial Request for Production of Documents of Rick Clewett, et al., Question Nos. 3 and 26.

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 29

Witness: Charles R. Schram

- Q-29. For each of the three generating units at KU's Brown plant and the four generating units at KU's Ghent plant, identify the anticipated annual capital, maintenance, operating, and fuel costs KU expects to incur for each year of 2011 through 2040.
- A-29. Please see the attached information which is contained in the production cost models used in development of the KU 2011 Plan.

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	Capital							O&M							Fuel						
	Brown 1	Brown 2	Brown 3	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Brown 1	Brown 2	Brown 3	Ghent 1	Ghent 2	Ghent 3	Ghent 4	Brown 1	Brown 2	Brown 3	Ghent 1	Ghent 2	Ghent 3	Ghent 4
2011	2,783	1,436	3,041	9,460	21,781	9,518	9,506	4,307	7,152	17,803	22,236	14,277	22,706	18,150	4,665	9,167	57,047	68,079	85,287	46,062	75,625
2012	15,418	4,559	3,102	9,107	85,610	10,390	10,009	5,315	7,100	26,078	24,261	21,886	17,412	20,338	6,433	13,922	46,606	75,890	74,581	60,278	84,460
2013	19,395	15,707	5,294	10,844	117,077	31,708	21,738	4,381	7,385	20,611	25,079	17,471	19,545	21,803	7,114	13,499	52,377	80,911	91,242	60,700	91,519
2014	11,196	15,968	30,289	68,908	126,669	68,062	63,773	7,294	10,782	28,574	25,619	24,084	21,123	23,989	5,932	17,162	53,857	79,232	89,953	75,841	87,394
2015	799	16,153	43,708	88,944	82,204	93,258	83,522	8,188	13,299	26,160	27,732	24,730	28,818	31,527	5,672	15,822	56,702	100,853	93,988	70,651	83,980
2016	815	2,684	16,650	33,059	29,440	15,115	13,727	8,797	16,220	37,803	38,744	36,779	36,892	43,446	12,757	21,107	65,675	86,604	96,714	73,858	91,294
2017	831	1,375	3,425	6,136	6,252	6,200	6,187	9,098	16,747	37,544	43,918	39,908	36,788	46,926	14,164	23,415	70,833	94,161	100,183	65,196	95,362
2018	848	1,402	3,493	6,258	6,377	6,324	6,311	9,348	17,232	38,382	44,507	40,961	39,287	47,356	15,012	25,538	72,152	94,141	106,409	82,936	94,118
2019	865	1,430	3,563	6,384	6,505	6,451	6,437	9,700	17,819	43,462	46,398	40,748	39,991	49,282	17,618	29,415	69,431	105,614	93,406	84,483	105,270
2020	882	1,459	3,634	6,511	6,635	6,580	6,566	9,874	18,214	45,278	47,217	42,879	41,333	50,103	16,727	29,148	78,046	105,330	113,392	90,148	105,118
2021	900	1,488	3,707	6,642	6,767	6,711	6,697	9,980	18,704	46,837	46,678	43,416	42,093	51,622	15,544	32,222	86,341	94,877	111,658	91,951	112,522
2022	918	1,518	3,781	6,774	6,903	6,846	6,831	10,396	19,237	47,765	49,850	44,590	43,299	50,882	19,921	36,190	88,760	119,520	121,141	99,369	101,811
2023	936	1,548	3,857	6,910	7,041	6,983	6,968	10,688	19,512	49,226	50,065	45,170	43,811	53,713	21,265	33,985	93,057	111,949	115,838	95,550	116,814
2024	955	1,579	3,934	7,048	7,182	7,122	7,107	10,895	20,050	49,999	52,078	46,413	44,587	54,484	20,382	35,309	87,685	115,455	115,449	90,269	109,145
2025	974	1,611	4,012	7,189	7,325	7,265	7,250	11,225	20,604	51,652	52,627	46,995	46,658	56,167	22,552	38,458	94,877	113,745	113,019	102,599	116,210
2026	994	1,643	4,093	7,333	7,472	7,410	7,395	11,433	21,149	51,242	54,357	47,110	47,544	56,813	22,309	40,689	82,171	119,414	101,492	102,147	112,521
2027	1,014	1,676	4,175	7,479	7,621	7,558	7,542	11,751	21,488	54,189	54,934	49,231	48,952	58,589	23,716	39,316	98,667	115,260	117,630	106,005	117,411
2028	1,034	1,709	4,258	7,629	7,774	7,709	7,693	11,821	22,101	55,154	54,818	49,896	50,052	59,340	21,153	42,265	97,572	105,540	113,345	107,027	114,251
2029	1,054	1,744	4,343	7,782	7,929	7,864	7,847	12,278	22,441	56,332	58,104	51,219	51,511	58,855	24,513	40,668	98,169	122,631	117,630	110,703	101,987
2030	1,076	1,778	4,430	7,937	8,088	8,021	8,004	12,568	22,636	57,942	58,469	51,887	51,906	62,281	25,200	36,733	102,126	116,556	113,019	105,649	118,198
2031	1,097	1,814	4,519	8,096	8,249	8,181	8,164	12,826	23,496	58,948	60,514	53,289	51,953	62,945	25,302	42,916	100,820	123,118	117,630	97,889	114,083
2032	1,119	1,850	4,609	8,258	8,414	8,345	8,327	13,132	23,863	60,524	61,100	54,009	54,862	64,938	25,998	41,383	103,953	118,550	113,345	112,160	119,170
2033	1,141	1,887	4,701	8,423	8,583	8,512	8,494	13,425	24,540	60,343	63,274	54,115	55,977	65,600	26,435	44,310	93,179	125,403	101,492	112,258	114,882
2034	1,164	1,925	4,795	8,592	8,754	8,682	8,664	13,712	24,869	63,177	63,649	56,550	57,355	67,577	26,686	41,984	105,470	119,104	117,630	114,171	119,291
2035	1,188	1,964	4,891	8,763	8,929	8,856	8,837	13,801	25,586	64,417	63,416	57,287	58,498	68,329	24,166	45,074	105,180	108,600	113,019	114,114	115,418
2036	1,211	2,003	4,989	8,939	9,108	9,033	9,014	14,318	25,966	65,674	67,373	58,863	60,407	67,887	27,379	43,267	104,960	126,916	117,956	119,354	103,829
2037	1,235	2,043	5,089	9,117	9,290	9,213	9,194	14,683	26,144	67,560	67,878	59,601	60,689	71,846	28,395	38,652	109,007	121,309	113,019	112,997	120,184
2038	1,260	2,084	5,191	9,300	9,476	9,398	9,378	14,921	27,147	68,428	70,084	61,212	60,382	72,529	27,691	45,011	105,641	126,873	117,630	102,670	115,546
2039	1,285	2,125	5,294	9,486	9,665	9,586	9,566	15,306	27,563	70,429	70,707	62,009	64,076	74,768	28,790	43,381	109,932	121,872	113,019	119,121	120,298
2040	1,311	2,168	5,400	9,675	9,859	9,777	9,757	15,533	28,196	69,723	73,091	62,191	65,083	75,549	29,270	45,631	101,788	127,144	101,906	117,125	116,673

KENTUCKY UTILITIES COMPANY

**Response to the First Set of Interrogatories of
Rick Clewett, Raymond Berry, Sierra Club and the
Natural Resource Defense Council**

Case No. 2011-00161

Question No. 30

Witness: John N. Voyles, Jr.

- Q-30. Identify any transmission grid upgrades or additions KU anticipates needing to make in order to avoid transmission grid reliability, stability, or voltage support problems as the result of the retirement of any of KU's existing electric generating units.
- A-30. Please see the response to Initial Request for Production of Documents of Rick Clewett, et al., Question No. 17.