COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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

COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION TO KENTUCKY UTILITIES COMPANY

Kentucky Utilities Company ("KU"), pursuant to 807 KAR 5:001, is to file with the Commission the original and six copies of the following information, with a copy to all parties of record. The information requested herein is due no later than September 1, 2011. Responses to requests for information shall be appropriately bound, tabbed and indexed. Each response shall include the name of the witness responsible for responding to the questions related to the information provided.

Each response shall be answered under oath or, for representatives of a public or private corporation or a partnership or association or a governmental agency, be accompanied by a signed certification of the preparer or person supervising the preparation of the response on behalf of the entity that the response is true and accurate to the best of that person's knowledge, information, and belief formed after a reasonable inquiry.

KU shall make timely amendment to any prior response if it obtains information which indicates that the response was incorrect when made or, though correct when

made, is now incorrect in any material respect. For any request to which KU fails or refuses to furnish all or part of the requested information, KU shall provide a written explanation of the specific grounds for its failure to completely and precisely respond.

Careful attention should be given to copied material to ensure that it is legible. When the requested information has been previously provided in this proceeding in the requested format, reference may be made to the specific location of that information in responding to this request. When applicable, the requested information shall be separately provided for total company operations and jurisdictional operations.

1. Refer to KU's response to Item 20.c. of Commission Staff's First Request for Information ("Staff's First Request") and pages 3 and 4 of the Direct Testimony of Charles R. Schram.

a. The response to Item 20.c. states that the two analyses referred to in the Schram Testimony did not consider power purchases, renewable or otherwise. Pages 3 and 4 of the testimony, starting at line 23 of page 23 and continuing to line 2 of page 24, indicate that the second analysis performed compared whether it would be more cost effective to install the control facilities or to retire the unit and purchase replacement power or generation. Clarify and explain the apparent discrepancy between the testimony and the data response.

b. The response states: "Ultimately, market availability of suitable replacement capacity and energy is determined through the RFP process when replacing generation." Explain why KU believes there will be available capacity and energy through the Request for Proposals ("RFPs") process when other utilities, who

are installing air quality control systems, will be competing for the same available suitable replacement capacity and energy.

2. Refer to KU's response to Item 20.d. of Staff's First Request and the response of KU and Louisville Gas and Electric Company ("LG&E") to Item 6 of Staff's First Request in Case No. 2011-00140.[1] The response to Item 20.d. states that "[t]he RFP for new capacity and energy issued in December 2010 resulted in multiple responses from parties marketing renewable generation resources." The response in Case No. 2011-00140 states that "The Companies completed the RFP analysis in May and anticipate beginning negotiation of an agreement with the selected bidder(s) in June. The Companies expect to file applications for certificates of public convenience and necessity with the Commission later this year."

a. State whether agreements with the selected bidders have been executed by KU and LG&E.

b. State when KU and LG&E plan to file the referenced applications for certificates of public convenience and necessity with the Commission.

c. State whether the RFP process undertaken by KU and LG&E has resulted in the selection of:

(1) Self-build options;

(2) Acquiring existing generation capacity; or

(3) Purchasing power from a third party.

[1] Case No. 2011-00140, The 2011 Joint Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company, filed April 21, 2011.

d. Provide the responses received by KU and LG&E to the RFP issued in December 2010 for new capacity and energy.

3. Refer to KU's response to Item 28.c. of Staff's First Request. The response states that no Black and Veatch expenses have been assigned to Projects 29, 34, and 35. Identify the specific accounts in which the Black and Veatch expenses have been recorded.

4. Refer to KU's response to Item 25 of Staff's First Request. Provide a revenue allocation that KU believes would "balance the interests of all customers" and explain why the allocation would do so.

5. Refer to KU's response to Item 35 of Staff's First Request. The response states "Relying on purchased power as a compliance measure would create market risk that could have a detrimental impact on customers." Once KU is compliant after the installation of the air quality control systems, does KU anticipate having excess generation for off-systems sales to utilities that are not compliant? Explain.

6. Refer to KU's responses to Items 37 and 46 of Staff's First Request. The response to Item 37 states that KU expects that the coal units to be fitted with pollution control equipment will continue to produce power at a lower cost than market power prices. The response also refers to market power prices provided in response to Item 46. For each KU unit to be fitted with pollution control equipment, provide the calculations that compare the cost to produce power with market power prices.

7. a. For the Tyrone and Green River units that have been mentioned as potential candidates for retirement, explain whether environmental remediation costs resulting from de-commissioning have been included in any cost/benefit analysis

performed in the formulation of the compliance plan. If the remediation costs are known, or if they can be estimated, provide those costs by unit.

b. If environmental remediation costs for retired units do occur, explain whether KU believes any or all of the costs would be recovered through the environmental surcharge.

8. Describe how possible price volatility of natural gas, due to increased demand for electric generation or from possible increased regulation due to environmental concerns, was considered in modeling for the 2011 Compliance Plan.

9. Refer to KU's response to Item 3 of Staff's First Request. Due to the nation's electric industry's need to meet more stringent environmental standards, the potential exists for a surge in construction of gas-fired generating units or conversion of existing coal-fired generating units.

a. Explain whether the contractors that perform the air quality control system construction described in the response are, for the most part, the same contractors that will be involved in the construction of gas-fired generation units or conversion of coal-fired generation units.

b. Identify those contractors known by KU to be likely bidders, or industry leaders, in the area of engineering and construction of air quality control systems.

c. The response states that KU is concerned about securing the best experienced contractors to install the air quality control systems due to other utilities competing for the same resources. Aside from competing against utilities for the same

resources, what other potential barriers may KU encounter when installing the air quality control systems? Explain.

10. Refer to KU's response Item 64 of Staff's First Request. Explain whether KU has any concern, or is aware of any reporting by other utilities, of excessive corrosion in using lime injection methodologies.

11. Refer to KU's response to Item 17 of Rick Clewitt, Raymond Berry, Sierra Club, and the Natural Resource Defense Council's Request for Production of Documents. The response states that KU's Transmission group examined the impact on the transmission system of potential power plant retirements.

a. Explain whether the examination included the effect of power purchases necessary to replace retired generation upon the transmission system. Include in the explanation whether the effect upon the transmission system is considered significant.

b. Explain whether KU has studied, or is aware of any studies concerning, the possible impacts on the regional electric grid of the retirement of a sizeable portion of the country's coal-fired electric generation. For any material on this subject of which KU is aware, provide copies of articles, studies, or links to subject-matter resources.

c. Describe the possible effect of the redirection of power flows upon the regional power grid if the existing grid was engineered in part to deliver loads from units that are to be retired.

12. Refer to KU's response to Item 21 of Staff's First Request which states, "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. List and describe the non-Environmental Cost Recovery ("ECR") costs that would be incurred related to the installation of controls.

b. List and describe the ECR costs that would be incurred related to the retirement/replacement of capacity.

13. Refer to page 12 of KU's Supplemental Response to Item 39 of Staff's First Request and the Environmental Cost Recovery Surcharge Summary on page 7 of the Direct Testimony of Robert Conroy. Page 12 of the Supplemental Response states: "Those increases do not take into account the costs associated with retiring generating units with a current book value of over $100 million-units the MACT rule will make uneconomical to run beginning in 2016-nor do they account for the additional costs of replacing the retired units."

a. Provide an update to the Environmental Cost Recovery Surcharge Summary by year, through 2020, to include the projected costs associated with the retirement of generating units, the additional costs of replacing the retired units, and any cost savings resulting from the retirement of generating units.

b. Provide the impact the cost in 11.a. above will have on the incremental billing factor and residential customer impact listed in the Summary.

14. For each fossil generation unit in the system:

a. Provide a timeline, out to the year 2020, showing the tonnage amount of emission allowances granted by the U.S. Environmental Protection Agency ("EPA") for the Cross-State Air Pollution Rule ("CSAPR"), the Hazardous Air Pollutants

("HAPs") rule under the Clean Air Act, and the tonnage amount of projected emissions generated by the unit assuming that KU's mitigation strategy is implemented as proposed.

b. To the extent that surplus allowances exist in any given year, describe how these surplus allowances will be utilized and under what conditions.

c. Indicate whether there is currently, or likely to be, a means of sequestering CO_2 should future regulations require reductions. If there is currently, or likely to be, a means of sequestering CO_2, provide any cost estimates that have been performed.

15. Indicate if KU has performed any preliminary research on meeting future CO_2 reduction goals in the proposed cap and trade regulations or other, more restrictive, regulations.

16. a. For each unit in the system for which new technology is being added in the current Compliance Plan, explain whether any analysis has been conducted to determine if there would be stranded costs should the unit be retired prior to its newly projected life.

b. For each unit in the system for which new technology is being added in the current Compliance Plan, indicate what the stranded costs would be if the unit is forced to retire for any reason after ten years.

c. Repeat for 20 years.

d. Provide the length of time the unit would need to operate to achieve a breakeven Net Present Value ("NPV").

17. Since the development of KU's 2011 Compliance Plan, indicate whether the EPA or other federal agencies have indicated a willingness to relax implementation schedules for the new regulations.

18. Refer to the Black & Veatch Due Diligence Report provided in KU's response to Staff's First Request, Item 32.h.

a. For each unit, provide, yearly, the following historical performance data for 2008 through 2010:

(1) Net generation;

(2) Net heat rate;

(3) Capacity factor;

(4) Equivalent Availability Factor; and

(5) Equivalent Forced Outage Rate.

b. Refer to page 2-64 of the Black & Veatch Due Diligence Report. Provide a summary of operational and maintenance issues associated with switching to Illinois Basin coal. Include, in the response, discussion of the impact on the Ghent Units 1–4 boilers, economizers, reheaters, superheaters, and outlet headers.

c. Refer to page 2-87 of the Black & Veatch Due Diligence Report. Based on Black & Veatch's analysis of the Brown Unit 1 turbine LP rotor, it was recommended that the rotor be replaced during the next scheduled turbine overhaul. Provide the current status of the Brown Unit 1 turbine LP rotor.

19. Refer to KU's 2011 Air Compliance Plan, Table 1, "Capital Costs for Environmental Controls," and the Black & Veatch Capital Cost Estimates included in

JNV-2, Appendix B, which details the summarized direct, indirect, and overall capital costs for each unit.

a. Provide an explanation of how the Black & Veatch Capital Costs roll up to the capital costs in the Compliance Plan.

b. Include a cost breakdown for each of the units in the Air Compliance Table.

20. Refer to the attached Appendix which consists of Vantage Energy Consultant's ("Vantage") preliminary analysis of the KU/LG&E cost estimates versus an industry benchmark. Explain why the estimated costs of the Fabric Filters appear to consistently exceed the industry benchmark.

21. Provide insight on any other differences in the Vantage analysis and KU/LG&E values.

22. Refer to KU's Existing and Preliminary Future Air Quality Control Process Flow Diagrams.

a. Will the existing electrostatic precipitators ("ESPs") continue to be utilized?

b. If so, what modifications are planned?

c. Provide the associated ESP modification cost estimates.

23. The Attachment to the response to Item 44 of Staff's First Request, at page 1 of 1, the footnote labeled "*" states that beyond 2025, fuel prices are held constant to maintain a consistent relationship between coal and gas prices. With industry and model projections of nationwide retirements of coal fired plants and an

increase in gas fired plants, what analysis or studies concluded that these costs should be held in a constant price relationship?

24. Indicate if any analysis has been conducted on the impact of market prices for fuels based on the recent announcements of plant retirements, new gas based generation, and reduction in overall capacity of major utilities within Kentucky or that border Kentucky and impact regional market prices.

25. Explain whether the PJM Interconnection western hub energy price futures provide a reasonable projection of market prices in the KU/LG&E region. What adjustments need to be made to these prices to make them useful, or more useful?

26. Refer to KU's response to Staff's First Request, Item 31.

a. Have any of the cost estimates for Projects 29, 34, or 35 been updated since the original filing? If so, provide all of the updated cost estimates.

b. If it cannot provide a probable range of cost estimates at this time, at what stage of the construction process will KU be able to provide a more definitive range of cost estimates?

27. Refer to KU's response to Staff's First Request, Item 39. Provide the comments filed by the PPL entities on EPA's HAPs proposed rulemaking.

28. Project 29 in the KU 2011 Environmental Compliance Plan is estimated to have a capital cost of $59 million. From this total, provide the dollar estimate and the percent of total needed to comply with:

a. The recently finalized CSAPR;

b. The proposed HAPs rule; and

c. The proposed coal combustion residuals rules under the Resource Conservation and Recovery Act.

29. Project 34 in the KU 2011 Environmental Compliance Plan is estimated to have a capital cost of $344 million. From this total, provide the dollar estimate and the percent of total needed to comply with:

a. The recently finalized CSAPR; and

b. The proposed HAPs rules.

30. Project 35 in the KU 2011 Environmental Compliance Plan is estimated to have a capital cost of $712 million. From this total, provide the dollar estimate and the percent of total needed to comply with:

a. The recently finalized CSAPR;

b. The proposed HAPs rules; and

c. Allowances for contingency environmental compliance.

31. Refer to KU's response to Staff's First Request, Item 57. Provide a detailed description of the KU and LG&E needs analysis that demonstrated that the construction of additional Selective Catalytic Reduction devices was not required to meet NOx emissions limits or allowance allocations.

32. Refer to KU's response to Staff's First Request, Item 44. The footnotes to the table refer to the 2010 Wood-MacKenzie forecast for coal and PIRA's Spring 2010 natural gas forecast.

a. Provide the 2010 Wood-MacKenzie price forecast.

b. Provide an update to the table using the most recent Wood-MacKenzie forecasts. Also, provide the range of the price forecasts (e.g., high-low).

c. Provide the PIRA Spring 2010 natural gas forecast.

d. Provide an update to the table using the most recent PIRA forecasts. Also, provide the range of the price forecasts (e.g., high-low).

e. Provide any additional studies, other than the Wood-Mackenzie 2010 price forecast and the PIRA Spring 2010 natural gas forecast, used to develop natural gas and coal prices for modeling purposes.

f. Provide the description, and results, of any methodology used to adjust the forecasts for coal or natural gas modeling prices to be Kentucky-specific. If such adjustments were made, provide the underlying data.

33. Refer to pages 9 and 10 of the Direct Testimony of John N. Voyles, Jr. Explain, based on now having more specific information on the sources and cost of the power that will substitute for the generation of the units planned for retirement, whether KU and LG&E have updated their NPV analysis of the "add controls" and "retire" alternatives. If an updated NPV analysis has been performed, provide the results therefrom. If such an analysis has not yet been performed, explain when it will be performed.

Stephanie Bell for Jeff Derouen

Jeff Derouen
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Public Service Commission
P.O. Box 615
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DATED AUG 18 2011

cc: Parties of Record

APPENDIX

APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE COMMISSION IN CASE NO. 2011-00161 DATED AUG 18 2011

Trimble County Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)		
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Trimble County 1 547 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference
Wet Scrubber	$538	$485	$622	$580	$850	$762	$512	n/a	n/a
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$460	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$183	n/a	n/a
Fabric Filter (see note 5)	$170	$78	$187	$78	$230	$78	$154	$227	$73
Dry Sorbent Injection	$43	n/a	$61	n/a	$134	n/a	$43	n/a	n/a
Powdered Activated Carbon	$8	$6	$12	$6	$30	$6	$7	n/a	n/a
	Industry Benchmark in 2010 $/kw (see note 3)								
Low Nox Burners	$48						$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a
SNCR	$36						$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a
Trona Injection	$90						$90	n/a	n/a
CO2 Capture/Sequestration	$1,300						$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) The KU/LG&E cost estimate for the fabric filter is 32% above the industry benchmark.

Tyrone Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)		
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Tyrone 3 75 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see Note 4)	Difference
Wet Scrubber	$538	$485	$622	$580	$850	$762	$806	n/a	n/a
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$727	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$247	n/a	n/a
Fabric Filter (see note 5)	$170	$78	$187	$78	$230	$78	$154	$600	$446
Dry Sorbent Injection	$43	n/a	$61	n/a	$134	n/a	$134	n/a	n/a
Powdered Activated Carbon	$8	$6	$12	$6	$30	$6	$18	n/a	n/a
	Industry Benchmark in 2010 $/kw (see note 3)								
Low Nox Burners	$48						$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a
SNCR	$36						$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a
Trona Injection	$90						$90	n/a	n/a
CO2 Capture/Sequestration	$1,300						$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) The KU/LG&E cost estimate for the fabric filter is 75% above the industry benchmark.

Brown Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)								
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Brown 1 110 mw			Brown 2 110 mw			Brown 3 457 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference
Wet Scrubber	$538	$485	$622	$580	$850	$762	$601	n/a	n/a	$601	n/a	n/a	$512	n/a	n/a
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$532	n/a	n/a	$532	n/a	n/a	$460	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$201	n/a	n/a	$201	n/a	n/a	$183	n/a	n/a
Fabric Filter (see note 5)	$170	$78	$187	$78	$230	$78	$133	$1,000	$867	$133	$1,000	$867	$124	$258	$134
Dry Sorbent Injection (see note 6)	$43	n/a	$61	n/a	$134	n/a	$61	$33	$28	$61	$33	$28	$43	n/a	n/a
Powdered Activated Carbon (see note 7)	$8	$6	$12	$6	$30	$6	$9	$8	$1	$9	$8	$1	$7	n/a	n/a
	Industry Benchmark in 2010 $/kw (see note 3)														
Low Nox Burners	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
SNCR	$36						$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a
Improvements	$24						$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a
Rehabilitation	$73						$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a
Trona Injection	$90						$90	TBD	TBD	$90	TBD	TBD	$90	TBD	TBD
CO2 Capture/ Sequestration	$1,300						$1,300	n/a	n/a	$1,300	n/a	n/a	$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.
2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.
3) Data taken from various industry sources.
4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.
5) The KU/LG&E cost estimates for the fabric filter are 52% to 87% above the industry benchmark.
6) The KU/LG&E cost estimates for the dry sorbent injection systems are 45% below the industry benchmark.
7) The KU/LG&E cost estimates for the powered activated carbon systems are 11% below the industry benchmark.

Cane Run Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)								
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Cane Run 4 168 mw			Cane Run 5 181 mw			Cane Run 6 261 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference
Wet Scrubber (see note 5)	$538	$485	$622	$580	$850	$762	$601	$1,077	$476	$601	$1,050	$449	$601	$927	$326
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$532	n/a	n/a	$532	n/a	n/a	$532	n/a	n/a
SCR (see note 6)	$201	$165	$217	$184	$268	$225	$201	$423	$222	$201	$414	$213	$201	$372	$171
Fabric Filter (see note 7)	$170	$78	$187	$78	$230	$78	$133	$238	$105	$133	$232	$99	$133	$211	$78
Dry Sorbent Injection (see note 8)	$43	n/a	$61	n/a	$134	n/a	$61	$18	$43	$61	$17	$44	$61	$15	$46
Powdered Activated Carbon	$8	$6	$12	$6	$30	$6	$9	n/a	n/a	$9	n/a	n/a	$9	n/a	n/a
	Industry Benchmark in 2010 $/kw (see note 3)														
Low Nox Burners	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
SNCR	$36						$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a
Trona Injection	$90						$90	n/a	n/a	$90	n/a	n/a	$90	n/a	n/a
CO2 Capture/ Sequestration	$1,300						$1,300			$1,300	n/a	n/a	$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) The KU/LG&E cost estimates for the wet scrubbers are 35% to 44% above the industry benchmark.

6) The KU/LG&E cost estimates for the SCR are 44% above the industry benchmark.

7) The KU/LG&E cost estimates for the fabric filter are 37% to 44% above the industry benchmark.

8) The KU/LG&E cost estimates for the dry sorbent injection systems are 18% below the industry benchmark.

Ghent Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)											
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Ghent 1 541 mw			Ghent 2 517 mw			Ghent 3 523 mw			Ghent 4 526 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (note 4)	Difference
Wet Scrubber	$538	$485	$622	$580	$850	$762	$512	n/a	n/a	$512	n/a	n/a	$512	n/a	n/a	$512	n/a	n/a
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$460	n/a	n/a	$460	n/a	n/a	$460	n/a	n/a	$460	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$183	n/a	n/a	$183	n/a	n/a	$183	n/a	n/a	$183	n/a	n/a
Fabric Filter (see note 5)	$170	$78	$187	$78	$230	$78	$124	$273	$149	$124	$303	$179	$124	$348	$224	$124	$321	$197
Dry Sorbent Injection (see note 6)	$43	n/a	$61	n/a	$134	n/a	$43	$8	$35	$43	$8	$35	$43	$8	$35	$43	$8	$35
Powdered Activated Carbon	$8	$6	$12	$6	$30	$6	$7	$7	$0	$7	$7	$0	$7	$7	$0	$7	$7	$0
	Industry Benchmark in 2010 $/kw (see note 3)																	
Low Nox Burners	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
SNCR	$36						$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a
Trona Injection	$90						$90	TBD	TBD	$90	TBD	TBD	$90	TBD	TBD	$90	TBD	TBD
CO2 Capture/ Sequestration	$1,300						$1,300	n/a	n/a	$1,300	n/a	n/a	$1,300	n/a	n/a	$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) The KU/LG&E cost estimates for the fabric filter are 55% to 65% above the industry benchmark.

6) The KU/LG&E cost estimates for the dry sorbent injection system are 80% below the industry benchmark.

Green River Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)					
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Green River 3 71 mw			Green River 4 109 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference
Wet Scrubber	$538	$485	$622	$580	$850	$762	$806	n/a	n/a	$601	n/a	n/a
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$727	n/a	n/a	$532	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$247	n/a	n/a	$201	n/a	n/a
Fabric Filter (see note 5)	$170	$78	$187	$78	$230	$78	$154	$634	$480	$133	$605	$472
Dry Sorbent Injection	$43	n/a	$61	n/a	$134	n/a	$134	n/a	n/a	$61	n/a	n/a
Powdered Activated Carbon	$8	$6	$12	$6	$30	$6	$18	n/a	n/a	$9	n/a	n/a
	Industry Benchmark in 2010 $/kw (see note 3)											
Low Nox Burners	$48						$48	n/a	n/a	$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a	$48	n/a	n/a
SNCR	$36						$36	n/a	n/a	$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a	$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a	$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a	$61	n/a	n/a
Trona Injection	$90						$90	n/a	n/a	$90	n/a	n/a
CO2 Capture/ Sequestration	$1,300						$1,300	n/a	n/a	$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) The KU/LG&E cost estimates for the fabric filter are 75% above the industry benchmark.

Mill Creek Air Quality Control System Cost Profile ($/kw)

Air Quality Control System	Industry Benchmark in 2010 $/kw (see note 1)						Specific Unit / Costs in $/kw (see note 2)											
	301 - 1500 mw		101 - 300 mw		1 - 100 mw		Mill Creek 1 330 mw			Mill Creek 2 330 mw			Mill Creek 3 425 mw			Mill Creek 4 525 mw		
	EPA	EIA	EPA	EIA	EPA	EIA	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference	Industry Average Benchmark	KU/LG&E Estimate (see note 4)	Difference
Wet Scrubber (see note 7)	$538	$485	$622	$580	$850	$762	$512	$544	$32	$512	$544	$32	$512	(See note 5)		$512	$415	$97
Spray Dryer Absorber	$460	n/a	$532	n/a	$727	n/a	$460	n/a	n/a	$460	n/a	n/a	$460	n/a	n/a	$460	n/a	n/a
SCR	$201	$165	$217	$184	$268	$225	$183	n/a	n/a	$183	n/a	n/a	$183	n/a	n/a	$183	(See note 6)	
Fabric Filter (see note 8)	$170	$78	$187	$78	$230	$78	$124	$465	$341	$124	$465	$341	$124	$329	$205	$124	$289	$165
Dry Sorbent Injection (see note 9)	$43	n/a	$61	n/a	$134	n/a	$43	n/a	n/a	$43	n/a	n/a	$43	$6	$37	$43	$5	$38
Powdered Activated Carbon (see note 10)	$8	$6	$12	$6	$30	$6	$7	n/a	n/a	$7	n/a	n/a	$7	$6	$1	$7	$5	$2
	Industry Benchmark in 2010 $/kw (see note 3)																	
Low Nox Burners	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
Low Nox Burners with Overfired Air	$48						$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a	$48	n/a	n/a
SNCR	$36						$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a	$36	n/a	n/a
ESP Improvements	$24						$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a	$24	n/a	n/a
ESP Rehabilitation	$73						$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a	$73	n/a	n/a
ESP Expansion	$61						$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a	$61	n/a	n/a
Trona Injection	$90						$90	TBD	TBD	$90	TBD	TBD	$90	TBD	TBD	$90	TBD	TBD
CO2 Capture/ Sequestration	$1,300						$1,300	n/a	n/a	$1,300	n/a	n/a	$1,300	n/a	n/a	$1,300	n/a	n/a

Notes:

1) Data taken from recent EPA and EIA reports.

2) For each specific unit utilized the average of the EPA and EIA costs for the specific unit's industry benchmark.

3) Data taken from various industry sources.

4) Estimate based on the KU/LG&E 2011 Air Compliance Plan, dated May 2011.

5) Mill Creek 4 scrubber to be upgraded and reused as the Unit 3 scrubber at a cost of $74M ($174/kw).

6) Mill Creek 4 to be upgraded at a cost of $6M ($11/kw).

7) The KU/LG&E cost estimates for the unit 1&2 wet scrubber is 5% below industry benchmarks, while the cost estimate for the Unit 4 wet scrubber is 19% below the industry benchmark.

8) The KU/LG&E cost estimates for the fabric filter are 57% to 73% above the industry benchmark.

9) The KU/LG&E cost estimates for the dry sorbent injection systems are 88% below the industry benchmark.

10) The KU/LG&E cost estimates for the powdered activated carbon systems are 29% below the industry benchmark.

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