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May 31, 2005

**HAND DELIVERY**

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PUBLIC SERVICE  
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Elizabeth O'Donnell  
Executive Director  
Kentucky Public Service Commission  
211 Sower Boulevard  
Frankfort, Kentucky 40601

RE: *The Application of Louisville Gas and Electric Company for Approval of Its 2004 Compliance Plan for Recovery by Environmental Surcharge*  
Case No. 2004-00421

*The Application of Kentucky Utilities Company for a Certificate of Public Convenience and Necessity to Construct Flue Gas Desulfurization Systems and Approval of Its 2004 Compliance Plan for Recovery by Environmental Surcharge*  
Case No. 2004-00426

Dear Ms. O'Donnell:

Enclosed please find and accept for filing two originals and ten copies Louisville Gas and Electric Company's and Kentucky Utilities Company's Joint Post-Hearing Brief in the above-referenced matter. Please confirm your receipt of this filing by placing the stamp of your Office with the date received on the enclosed additional copies and return them to me in the enclosed self-addressed stamped envelope.

Should you have any questions or need any additional information, please contact me at your convenience.

Very truly yours,

Kendrick R. Riggs

KRR/ec  
Enclosures  
cc: Parties of Record

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED

MAY 31 2005

PUBLIC SERVICE  
COMMISSION

In the Matter of:

THE APPLICATION OF LOUISVILLE GAS )  
AND ELECTRIC COMPANY FOR APPROVAL OF ) CASE NO. 2004-00421  
ITS 2004 COMPLIANCE PLAN FOR RECOVERY )  
BY ENVIRONMENTAL SURCHARGE )

In the Matter of:

THE APPLICATION OF KENTUCKY UTILITIES )  
COMPANY FOR A CERTIFICATE OF PUBLIC )  
CONVENIENCE AND NECESSITY TO )  
CONSTRUCT FLUE GAS DESULFURIZATION ) CASE NO. 2004-00426  
SYSTEMS AND APPROVAL OF ITS 2004 )  
COMPLIANCE PLAN FOR RECOVERY BY )  
ENVIRONMENTAL SURCHARGE )

JOINT POST-HEARING BRIEF OF  
LOUISVILLE GAS AND ELECTRIC COMPANY  
AND KENTUCKY UTILITIES COMPANY

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FILED: May 31, 2005

**CERTIFICATE OF SERVICE**

The undersigned hereby certifies that a true and correct copy of the foregoing Joint Post-Hearing Brief was served on the following parties of record this 31st day of May 2005, by mailing a copy thereof, postage prepaid, via U.S. mail to:

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**COMMONWEALTH OF KENTUCKY**  
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COMPLIANCE PLAN FOR RECOVERY BY )  
ENVIRONMENTAL SURCHARGE )**

**JOINT POST-HEARING BRIEF OF  
LOUISVILLE GAS AND ELECTRIC COMPANY  
AND KENTUCKY UTILITIES COMPANY**

Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”), (collectively, the “Companies”), in support of their environmental surcharge applications and for their Joint Post-Hearing Brief, state as follows:

**I. INTRODUCTION**

Environmental compliance is a continuous and ongoing utility activity, requiring investment in new and existing facilities to meet applicable environmental requirements. It is this duty of continuous compliance that requires KU to request a certificate of public convenience and necessity (“CCN”) to build four new flue gas desulfurization facilities at its Ghent and Brown generation stations; the same duty also requires LG&E and KU to build the new and additional pollution control facilities included in their 2004 Environmental Compliance Plans. LG&E’s 2004 Environmental Compliance Plan includes seven projects to serve its Cane Run, Mill Creek and Trimble County

Generating Stations, all of which are necessary for LG&E to continue to control fly and bottom ash and sulfur dioxide (“SO<sub>2</sub>”) emissions. KU’s 2004 Environmental Compliance Plan contains four new additional pollution control facilities at its Ghent and Brown Generating Stations, also designed to control SO<sub>2</sub> and fly and bottom ash. LG&E’s and KU’s proposed surcharges, if approved, will recover the cost of these projects in accordance with KRS 278.183 and the Commission’s previous surcharge orders. The estimated initial impact on a residential customer using 1,000-kilowatt hours per month is expected to be an increase of \$0.14 for LG&E’s customers and \$0.80 for KU’s customers in 2005.<sup>1</sup>

The Office of the Attorney General, Division of Rate Intervention, (“AG”) and the Kentucky Industrial Utility Customers, Inc. (“KIUC”) intervened in both cases. Both intervenors filed testimony in each proceeding. A public hearing was held on April 20, 2005 and an evidentiary hearing was held on May 10, 2005, at which the Transcript of Evidence (“T.E.”) was taken.

## **II. KU SHOULD BE AWARDED A CERTIFICATE OF CONVENIENCE AND NECESSITY TO CONSTRUCT FOUR FLUE GAS DESULFURIZATION FACILITIES**

KU is requesting a certificate of public convenience and necessity for the construction of wet-limestone, forced oxidation flue gas desulfurization (“FGD”) systems on E.W. Brown Units 1, 2 and 3, and Ghent Units 2, 3 and 4. The FGDs are part of KU’s SO<sub>2</sub> compliance plan presented in detail in the *2004 SO<sub>2</sub> Compliance Strategy* attached to Mr. Malloy’s testimony as Exhibit JPM-2. That study identified that E.W. Brown Units 1-3 and Ghent Units 2-4 account for over 55% of the Companies’ future SO<sub>2</sub> emissions and are the most logical and economical choice for installing

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<sup>1</sup> Direct Testimony of Kent W. Blake for LG&E, p 5; Direct Testimony of Kent W. Blake for KU, p. 9; KU Response to PSC Data Request No. 1-3.

control technologies to reduce overall SO<sub>2</sub> emissions.<sup>2</sup> The *2004 SO<sub>2</sub> Compliance Strategy* recommends the construction of the proposed FGD systems and the simultaneous switching of the to-be-scrubbed units to high sulfur coal and the purchasing of allowances on an as-needed basis as the most cost-effective plan for continued environmental compliance.<sup>3</sup> The study also demonstrates that compared to purchasing SO<sub>2</sub> allowances, construction of the wet FGD systems and the simultaneous conversion of the units to high sulfur coal provide the following ratepayer benefits over the analysis period:

1. Decreases the cost of SO<sub>2</sub> compliance (the cost of savings is projected to be more than \$110 million in present value revenue requirements (“PVRP”));
2. Limits significant exposure to the SO<sub>2</sub> allowance market by reducing the Companies’ anticipated shortfall;
3. Increases fuel procurement flexibility;
4. Improves the Companies’ position for meeting SO<sub>2</sub> reduction requirements associated with the Clean Air Interstate Rule (“CAIR”) and future regulations targeting mercury.<sup>4</sup>

The technology for the FGD systems is described in detail in Mr. Malloy’s testimony.<sup>5</sup> KU proposes to use an alliance-type agreement for engineering, procurement and construction of the FGDs for E.W. Brown and Ghent.<sup>6</sup> KU expects to achieve cost savings associated with the alliance agreement through design standardization and resulting savings in purchasing, engineering, spare

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<sup>2</sup> Direct Testimony of John P. Malloy for KU, p. 3. The *2004 SO<sub>2</sub> Compliance Strategy* includes the evaluation of numerous strategies utilizing wet FGD processes, dry FGD processes and fuel switching for the purchasing of allowances to determine the most cost-effective means of mitigating the expected SO<sub>2</sub> allowance shortfall.

<sup>3</sup> Direct Testimony of John P. Malloy for KU, Exhibit JPM-2, *2004 SO<sub>2</sub> Compliance Strategy for Kentucky Utilities Company and Louisville Gas and Electric Company* (November 2004), pp. 22-23.

<sup>4</sup> Direct Testimony of John P. Malloy for KU, p. 5.

<sup>5</sup> Direct Testimony of John P. Malloy for KU, pp. 6-7.

<sup>6</sup> Direct Testimony of John P. Malloy for KU, p. 7.



parts and training associated with the project. The savings have been incorporated into the analysis used to reach the projected cost of the FGDs at E.W. Brown and Ghent.<sup>7</sup> The location, anticipated cost and completion schedule of the FGDs is:

<u>Location</u>	<u>In-Service Date</u>	<u>Total Cost (Million \$)</u>
Brown 1-3 FGD	May 2009	\$234.19
Ghent 2 FGD	May 2008	\$149.57
Ghent 3 FGD	May 2007	\$129.02
Ghent 4 FGD	May 2009	<u>\$146.15</u>
		\$658.93

The AG does not oppose KU's request for a CCN.<sup>8</sup> The evidence in the record demonstrates that the public convenience and necessity requires the construction of the four FGD systems.

### **III. LG&E'S AND KU'S ENVIRONMENTAL COMPLIANCE PLANS SHOULD BE APPROVED**

Under KRS 278.183, upon a Commission determination that their compliance plans are reasonable and cost-effective, LG&E and KU are entitled to the current recovery by an environmental surcharge to customers' bills of their costs of complying with applicable environmental regulations. None of the interveners in this proceeding have opposed any of the projects the Companies have proposed in their compliance plans. This fact alone strongly supports the Companies' belief that their plans are indeed reasonable and cost-effective.

#### **A. Overview**

LG&E's and KU's evidence demonstrates that their 2004 Environmental Surcharge Compliance Plans ("Compliance Plans") are reasonable and cost-effective. The testimony of Sharon L. Dodson, Director of Environmental Affairs, described the environmental regulations applicable to

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<sup>7</sup> Direct Testimony of John P. Malloy for KU, p. 8. The KIUC has not taken an adverse position against KU's request for the CCN and, as discussed in Section III.A. *infra*, does not oppose the four FGDs as a project in KU's 2004 Environmental Surcharge Compliance Plan.

<sup>8</sup> T.E., p. 131.

coal combustion wastes and by-products from LG&E's and KU's facilities used to generate electricity from coal.<sup>9</sup> Her testimony identified the applicable regulations and showed why the projects included in the Compliance Plans are required.<sup>10</sup> Ms. Dodson's testimony also demonstrated how the projects in LG&E's and KU's compliance plans satisfy the applicable environmental regulations.<sup>11</sup> John P. Malloy, Director of Generation Services, also testified in support of LG&E's and KU's applications and their 2004 Compliance Plans. He provided a description of each of the projects and described the planning process used in determining the cost-effective method for meeting the environmental requirements.<sup>12</sup> Mr. Malloy also provided the time frame for construction and the estimated costs of the projects.<sup>13</sup> The total capital cost of the seven projects in LG&E's 2004 Compliance Plan is estimated to be approximately \$40.2 million plus an additional emission allowance purchase cost of approximately \$10.5 million. The seven projects in LG&E's Compliance Plan and the associated air pollutant or waste to be controlled and resulting cost are summarized as follows:<sup>14</sup>

<b>Project</b>	<b>Air Pollutant or Waste/By-Product To Be Controlled</b>	<b>Control Facility</b>	<b>Generating Station</b>	<b>Actual (A) or Estimated (E) Project Cost</b>
11	Fly & Bottom Ash	Landfill	Mill Creek Station	\$12.5 M (E)
12	Fly & Bottom Ash	Landfill	Cane Run Station	\$4.1 M (E)
13	SO <sub>2</sub>	Flue Gas Desulfurization	Trimble Co. Unit 1	\$9.5 M (E)
14	SO <sub>2</sub>	Flue Gas Desulfurization	Cane Run Unit 6	\$5.2 M (E)

<sup>9</sup> Direct Testimony of Sharon L. Dodson for LG&E, pp. 2-14; Direct Testimony of Sharon L. Dodson for KU, pp. 2-13.

<sup>10</sup> Direct Testimony of Sharon L. Dodson for LG&E, pp. 2-14; Direct Testimony of Sharon L. Dodson for KU, pp. 2-13.

<sup>11</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 11; Exhibit JPM-1; Direct Testimony of Sharon L. Dodson for KU, pp. 2-13; Exhibit JPM-1.

<sup>12</sup> Direct Testimony of John P. Malloy for LG&E, pp. 3-15; Direct Testimony of John P. Malloy for KU, pp. 2-14.

<sup>13</sup> Direct Testimony of John P. Malloy for LG&E, Exhibit JPM-1; Direct Testimony of John P. Malloy for KU, Exhibit JPM-1.

<sup>14</sup> Direct Testimony of John P. Malloy for LG&E, Exhibit JPM-1.

<b>Project</b>	<b>Air Pollutant or Waste/By-Product To Be Controlled</b>	<b>Control Facility</b>	<b>Generating Station</b>	<b>Actual (A) or Estimated (E) Project Cost</b>
15	SO <sub>2</sub>	Flue Gas Desulfurization	Cane Run Unit 5	\$2.8 M (E)
16	SO <sub>2</sub>	Flue Gas Desulfurization	Trimble Co. Unit 1	\$6.1 M (E)
17	SO <sub>2</sub>	Emission Allowances	All Plants	\$10.5 M (E)

The total capital cost of the four projects in KU's Compliance Plan is estimated to be approximately \$702.5 million plus an additional emission allowance purchase cost of approximately \$58.1 million. The four projects in KU's Compliance Plan and the associated air pollutant or waste to be controlled and resulting cost are summarized as follows:<sup>15</sup>

<b>Project</b>	<b>Air Pollutant or Waste/By-Product To Be Controlled</b>	<b>Control Facility</b>	<b>Generating Station</b>	<b>Actual (A) or Estimated (E) Project Cost</b>
19	Fly & Bottom Ash	Ash Handling Equipment	Ghent Station	\$3.75 M (E)
20	Fly & Bottom Ash	Ash Treatment Basin (Phase I)	E.W. Brown Station	\$39.78 M (E)
21	SO <sub>2</sub>	Flue Gas Desulfurization	Ghent 2 Ghent 3 Ghent 4 E.W. Brown Station	\$149.57 M (E) \$129.02 M (E) \$146.15 M (E) \$234.19 M (E)
22	SO <sub>2</sub>	Emission Allowances	All Plants	\$58.1 M (E)

The AG and KIUC do not oppose any of the projects in either LG&E's or KU's proposed Compliance Plan.<sup>16</sup>

<sup>15</sup> Direct Testimony of John P. Malloy for KU, Exhibit JPM-1.

<sup>16</sup> KIUC Response to Commission Staff First Data Request, Item No. 7(a); T.E., pp. 131, 151.

## **B. LG&E's 2004 Compliance Plan is Reasonable and Cost-Effective**

LG&E's 2004 Environmental Compliance Plan includes seven projects to serve its Cane Run, Mill Creek and Trimble County Generating Stations, all of which are necessary for LG&E to continue to control fly and bottom ash and SO<sub>2</sub> emissions.

### **1. Mill Creek Generating Station Landfill Expansion (Project 11)**

LG&E's expansion of the landfill at the Mill Creek Generating Station is reasonable and the most cost-effective solution for continued management of the fly and bottom ash by-products of the station's electric generation, and is necessary to comply with environmental regulations 401 KAR Chapters 5 and 45, as well as the applicable environmental permits Kentucky Pollutant Discharge Elimination System ("KPDES")-KY0003221 and Kentucky Division of Waste Management ("KYDWM")-056-00029.<sup>17</sup>

Coal combustion by-products consisting of bottom ash, fly ash, gypsum and scrubber sludge, which are not beneficially reused, are categorized as special wastes.<sup>18</sup> These coal combustion by-products are regulated under the Clean Water Act and the Resource Conservation and Recovery Act.<sup>19</sup> Primacy for implementation and enforcement of these federal environmental statutes has been granted to Kentucky.<sup>20</sup> The coal-fired units in Kentucky are under the jurisdiction of the Kentucky Environmental and Public Protection Cabinet ("KEPPC") and must comply with regulations promulgated by the state agency.<sup>21</sup> The Kentucky Division of Water ("KYDOW") and the KYDWM oversee the water and waste management issues for the KEPPC, respectively.<sup>22</sup>

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<sup>17</sup> Direct Testimony of John P. Malloy for LG&E, pp. 4-7; Direct Testimony of John P. Malloy for LG&E, Exhibit JPM-2; Direct Testimony of Sharon L. Dodson for LG&E, pp. 3-4.

<sup>18</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>19</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>20</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>21</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>22</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

At each of its plants except Trimble County, which is a zero-discharge facility, LG&E operates ash treatment basins (“ATBs”).<sup>23</sup> Fly and bottom ash are sluiced with water to the ATBs, wherein the ash settles out and the decanted water is returned back to surface waters as a point source discharge.<sup>24</sup> These point source discharges are permitted by the KYDOW through KPDES regulations 401 KAR 5:005, 5:050, 5:055, 5:060, 5:065 and 5:080.<sup>25</sup> The KYDOW’s program establishes water quality standards (401 KAR 5:031) for the protection of aquatic life, drinking water and primary and secondary contact recreation.<sup>26</sup> The water discharge from each of LG&E’s ATBs must meet effluent limitations (limits on the concentration and mass of pollutants returned to surface waters), compliance with which LG&E must demonstrate through discharge monitoring and reporting.<sup>27</sup>

The KYDWM regulates utility wastes under their special waste management regulatory program (401 KAR Chapter 45).<sup>28</sup> Fly and bottom ash, gypsum, and scrubber sludge, which are disposed of in a surface impoundment permitted under the KYDOW’s KPDES program, are granted a special waste permit-by-rule by the KYDWM.<sup>29</sup> Utility wastes that are disposed of on a dry basis have to obtain a special waste landfill permit from the KYDWM.<sup>30</sup> Since each of LG&E’s ATBs operates as a surface impoundment with a KPDES permit, the KYDWM considers them permit-by-rule facilities under the special waste regulations.<sup>31</sup> The scrubber sludge generated by the limestone-

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<sup>23</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>24</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>25</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>26</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 5.

<sup>27</sup> Direct Testimony of Sharon L. Dodson for LG&E, pp. 5-6.

<sup>28</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 6.

<sup>29</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 6.

<sup>30</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 6.

<sup>31</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 6.

based scrubber process at the Cane Run Generating Station is stabilized with fly ash and disposed of on-site in a special waste landfill.<sup>32</sup>

Mill Creek Generating Station's on-site ash disposal facilities consist of a landfill and an ATB.<sup>33</sup> The landfill is divided into active and inactive areas.<sup>34</sup> Area A, which is approximately 70 acres, is active, while Area B, which is about 50 acres, is completely filled and inactive.<sup>35</sup> To keep the ATB serviceable, LG&E excavates ash from it and deposits the ash in the landfill.<sup>36</sup>

As Mill Creek's capability for storage of coal-combustion by-products neared capacity, LG&E contracted with Fuller Mossbarger Scott & May Engineers, Inc. ("FMSM"), to perform an evaluation that identified potential alternatives for by-product disposal.<sup>37</sup> After considering two alternatives on the Mill Creek property (expanding the landfill and ATB) and seven sites on property owned by Kosmosdale Cement, FMSM's August 2002 study concluded, and LG&E concurred, that the most reasonable and cost-effective alternative would be to expand the existing landfill.<sup>38</sup>

The expansion project, as defined in 2002, included the development of the vertical expansion permit for Sites A and B and the purchase of property parcels adjacent to the existing landfill necessary for the future horizontal expansion of Site A into Site C.<sup>39</sup> In 2003, the acquisition of the two parcels was completed.<sup>40</sup> The application for the vertical expansion of Site A and Site B

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<sup>32</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 6.

<sup>33</sup> Direct Testimony of John P. Malloy for LG&E, p. 4.

<sup>34</sup> Direct Testimony of John P. Malloy for LG&E, p. 4.

<sup>35</sup> Direct Testimony of John P. Malloy for LG&E, p. 4.

<sup>36</sup> Direct Testimony of John P. Malloy for LG&E, p. 4.

<sup>37</sup> Direct Testimony of John P. Malloy for LG&E, p. 5.

<sup>38</sup> Direct Testimony of John P. Malloy for LG&E, p. 5.

<sup>39</sup> Direct Testimony of John P. Malloy for LG&E, pp. 5-6.

<sup>40</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

of the landfill was submitted and approved by the KYDWM on January 14, 2004,<sup>41</sup> after which LG&E began construction on the vertical expansion of Site A.<sup>42</sup>

LG&E continued to work with FMSM in 2004 to complete the permit application for the horizontal expansion of the landfill.<sup>43</sup> The horizontal permit application was submitted to the KYDWM on December 22, 2004.<sup>44</sup> The KYDWM determined the application was administratively complete on February 3, 2005.<sup>45</sup> The application with the Metropolitan Sewer District was submitted on January 20, 2005.<sup>46</sup> Construction of the horizontal landfill expansion will begin upon receipt of KYDWM approval of the application.<sup>47</sup> Thus, the evidence shows that all the necessary regulatory permits for this project can be reasonably expected to be obtained on or before September 2005.<sup>48</sup> The horizontal expansion will provide the facility approximately 20 additional years of storage capacity.<sup>49</sup>

The current plan for the Mill Creek landfill site is to complete the vertical expansion of Site A and then to expand Site A horizontally into Site C.<sup>50</sup> The horizontal expansion of the currently active portion of the landfill (Site A) will provide significant cost savings to mobilizing the landfill operations to Site B after the exhaustion of the Site A vertical expansion.<sup>51</sup>

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<sup>41</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 3.

<sup>42</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

<sup>43</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

<sup>44</sup> Direct Testimony of John P. Malloy for LG&E, p. 6; LG&E Response to PSC Data Request No. 1-5.

<sup>45</sup> LG&E's Response to PSC Data Request No. 1-5; LG&E Response to PSC Data Request No. 2-2.

<sup>46</sup> LG&E Response to PSC Data Request No. 1-4; LG&E Response to PSC Data Request No. 2-3.

<sup>47</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

<sup>48</sup> LG&E's Response to PSC Data Request No. 1-5; LG&E's Response to PSC Data Request No. 2-2; LG&E Response to PSC Data Request No. 1-4; LG&E Response to PSC Data Request No. 2-3.

<sup>49</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

<sup>50</sup> Direct Testimony of John P. Malloy for LG&E, p. 6.

<sup>51</sup> Direct Testimony of John P. Malloy for LG&E, pp. 6-7.

Current projections for the vertical and horizontal expansion project over the course of its life are estimated at approximately \$59.0 million.<sup>52</sup> With this filing, LG&E seeks recovery of capital expenditures through 2008, coinciding with the completion of construction of Site C -- Phase I and its ability to receive material.<sup>53</sup> The annual forecasted capital expenditures are noted in Exhibit JPM-3.<sup>54</sup>

The Commission should allow LG&E to recover its capital expenditures related to the Mill Creek Generating Station landfill expansion project because the project is necessary to comply with environmental regulations 401 KAR Chapters 5 and 45, as well as environmental permits KPDES-KY0003221 and KYDWM-056-00029.<sup>55</sup> They are also reasonable and cost-effective, as the FMSM study shows, because the expansion of the current landfill is the lowest cost per ton means of addressing the problem of disposing of the generating station's coal combustion by-products.<sup>56</sup>

## **2. Cane Run Generating Station Landfill Expansion (Project 12)**

Just as with the Mill Creek Generating Station, Cane Run Generating Station faces a mounting problem of what to do with the coal combustion by-products it creates in the process of generating power. LG&E's proposed solution -- vertical expansion of the existing landfill -- is reasonable and cost-effective because it is the lowest cost alternative available.<sup>57</sup> This project is also necessary to comply with the relevant environmental regulations, 401 KAR Chapters 5 and 45, (discussed in Section III.B.1 herein) as well as permit numbers KYDWM-056-00030 and KPDES-

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<sup>52</sup> Direct Testimony of John P. Malloy for LG&E, p. 7.

<sup>53</sup> Direct Testimony of John P. Malloy for LG&E, p. 7.

<sup>54</sup> Direct Testimony of John P. Malloy for LG&E, p. 7.

<sup>55</sup> Direct Testimony of John P. Malloy for LG&E, p. 7.

<sup>56</sup> Direct Testimony of John P. Malloy for LG&E, pp. 4-7; Direct Testimony of John P. Malloy for LG&E, Exhibit JPM-2.

<sup>57</sup> Direct Testimony of John P. Malloy for LG&E, pp. 8-9.



KY002062.<sup>58</sup> The KYDWM approved the vertical expansion of the Cane Run landfill on June 16, 2003, under application number LS1MOVX1.<sup>59</sup>

Cane Run Generating Station's on-site ash disposal facilities include a landfill and an ATB.<sup>60</sup> The landfill includes three adjacent areas that span approximately 110 acres, all areas of which contain some coal combustion by-products, primarily poz-o-tec.<sup>61</sup>

As the landfill neared capacity, LG&E considered several alternatives for disposing of the approximately 500,000 tons of by-products the Cane Run Generating Station produces every year.<sup>62</sup> Constructing an entirely new landfill or disposing of the by-products in landfills owned by other parties would be cost-prohibitive; doing nothing is not an option because it would require shutting down the generating station.<sup>63</sup> LG&E also has not been successful in locating long-term beneficial reuse opportunities for the by-products, making a vertical expansion of the current landfill the lowest-cost and most reasonable alternative, with a capital expenditure of \$4.14 million.<sup>64</sup> It is possible that inflation and escalation of materials and labor costs may result in higher costs for the project because the construction extends through the year 2015.<sup>65</sup> LG&E is seeking cost recovery only for those expenses associated with the project incurred after September 30, 2003, which are not included in the Company's electric base rates.<sup>66</sup>

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<sup>58</sup> Direct Testimony of John P. Malloy for LG&E, p. 9.

<sup>59</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 4.

<sup>60</sup> Direct Testimony of John P. Malloy for LG&E, p. 9.

<sup>61</sup> Direct Testimony of John P. Malloy for LG&E, p. 9.

<sup>62</sup> Direct Testimony of John P. Malloy for LG&E, p. 9.

<sup>63</sup> Direct Testimony of John P. Malloy for LG&E, pp. 8-9.

<sup>64</sup> Direct Testimony of John P. Malloy for LG&E, pp. 8-9; LG&E Response to PSC Data Request No. 1-7(a).

<sup>65</sup> Direct Testimony of John P. Malloy for LG&E, p. 9; LG&E Response to PSC Data Request No. 1-7(b) ("Mr. Malloy's testimony . . . makes a reference to additional costs; the reference is not related to an expansion in project scope. Rather, the Company is stating that, over time, the final costs of this project may change due to inflation and cost escalations.").

<sup>66</sup> LG&E Response to PSC Data Request No. 1-7(c).

### 3. Trimble County Unit 1 Flue Gas Desulfurization (Project 13)

Project 13 consists of component replacement to maintain the structural integrity and operational performance of the flue gas desulfurization (“FGD”) equipment at Trimble County Unit 1, and is a cost-effective and reasonable means of complying with the acid deposition control requirements under Title IV of the Clean Air Act Amendments of 1990 (“CAAA”) and Trimble County’s Title V Operating Permit V-02-043, issued by the Kentucky Division for Air Quality (“KYDAQ”).<sup>67</sup> The station’s Title V operating permit requires that the air pollution control equipment be “operated as necessary to maintain compliance with permitted emission limitations, in accordance with manufacturer’s specifications and/or standard operating practices.”<sup>68</sup> LG&E must also continue to meet SO<sub>2</sub> emission reduction obligations of Title IV of the CAAA.<sup>69</sup> Under Title IV, LG&E was not granted sufficient allowances to operate without efficient SO<sub>2</sub> reductions from the FGD equipment.<sup>70</sup> Thus, LG&E periodically makes major investments in the FGDs on its coal-fired units in order to ensure compliance with the KYDAQ’s SO<sub>2</sub> limitations (as specified in 401 KAR 59:015) and SO<sub>2</sub> emission reduction obligations of the CAAA.<sup>71</sup>

Project 13 is a multi-year plan (2007-2009) to maintain the structural integrity of the existing FGD module walls, linings, and structural members, all of which are necessary to comply with the environmental regulations set out above.<sup>72</sup> Normal operation of the FGD unit subjects the interior components to thinning by corrosion and erosion.<sup>73</sup> LG&E will replace special alloy material to ensure the reliable continuation of FGD equipment operation.<sup>74</sup>

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<sup>67</sup> Direct Testimony of John P. Malloy for LG&E, pp. 9-10; Direct Testimony of Sharon L. Dodson for LG&E, pp. 6-7.

<sup>68</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>69</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>70</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>71</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>72</sup> Direct Testimony of John P. Malloy for LG&E, p. 9.

<sup>73</sup> Direct Testimony of John P. Malloy for LG&E, p. 9-10.

<sup>74</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

LG&E will also replace recycle pump piping to ensure the liquid to gas ratio is maintained for effective flue gas scrubbing.<sup>75</sup> These pipes must be replaced because the recycle pumps spray an abrasive limestone slurry through the pipes and into the flue gas stream.<sup>76</sup> This process leads to external pipe corrosion through contact with flue gas, as well as internal pipe erosion due to the abrasion of the limestone slurry.<sup>77</sup>

The process of component replacement constitutes the lowest-cost method of keeping the FGD equipment functioning properly, which is necessary in order to comply with CAAA regulations and Trimble County's Title V permit.<sup>78</sup>

#### **4. Cane Run Unit 6 Flue Gas Desulfurization (Project 14)**

As with Trimble County Unit 1, refurbishing Cane Run Unit 6's FGD equipment is the least-cost and most reasonable means of complying with the acid deposition control requirements of the CAAA and Cane Run's Title V Operating Permit 175-00-TV (R1), which was issued by the Louisville Metro Air Pollution Control District ("LMAPCD").<sup>79</sup> The station's Title V permit refers to LMAPCD Regulation 1.05, which requires LG&E, "to the extent practicable, [to] maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions."<sup>80</sup> LG&E must also

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<sup>75</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>76</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>77</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>78</sup> Direct Testimony of John P. Malloy for LG&E, p. 10; LG&E Response to PSC Data Request No. 1-9.

<sup>79</sup> Direct Testimony of John P. Malloy for LG&E, pp. 10-11; Direct Testimony of Sharon L. Dodson for LG&E, p. 7. Under the CAAA, LG&E is regulated by federal, state and local agencies. The United States Environmental Protection Agency ("EPA") has granted Kentucky primacy for implementing the provisions of the CAAA through the State Implementation Plan ("SIP") process. In Chapter 77 of the KRS, the Commonwealth has granted the LMAPCD primacy for implementing the Jefferson County portion of the SIP. Direct Testimony of Sharon L. Dodson for LG&E, p. 8.

LG&E has seven coal-fired units located in Jefferson County, Kentucky, and one in Trimble County, Kentucky. The Jefferson County units fall under the LMAPCD's jurisdiction and must comply with its air emission regulations. The Trimble County unit is under the jurisdiction of the KYDAQ and must comply with that agency's air emission regulations. *Id.*

<sup>80</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

continue to meet SO<sub>2</sub> emission reduction obligations imposed by Title IV of the CAAA.<sup>81</sup> Under Title IV, LG&E was not granted sufficient allowances to operate without efficient SO<sub>2</sub> emission reductions from Cane Run Units 5 and 6's FGDs (Cane Run Unit 5's FGD refurbishment is Project 15, below).<sup>82</sup> Thus, LG&E periodically makes major investments in the FGDs on its coal-fired units to ensure compliance with the LMPACD's SO<sub>2</sub> emission limitations (as specified in LMAPCD Regulation 6.07) and SO<sub>2</sub> emission reduction obligations of the CAAA.<sup>83</sup>

Project 14 consists of a multi-year plan (2005-2009) to ensure the continued operation of Cane Run Unit 6 FGD and associated equipment.<sup>84</sup> The self-supporting FGD inlet and outlet ducts have experienced significant thinning due to corrosion and erosion through normal operation of the unit.<sup>85</sup> These ducts route coal combustion flue gas into and out of the FGD module.<sup>86</sup> The ducts will be relined with high nickel alloy material as per the FGD equipment's original design.<sup>87</sup>

FGD module relining, mist elevator chevrons, and recycle pump suction and discharge lines require replacement due to erosion and corrosion through normal operation of the unit.<sup>88</sup> This continues to be an in-kind replacement strategy to ensure continued operation and to prevent catastrophic failure resulting in loss of FGD operation and subsequent violation of environmental regulations and associated permits.<sup>89</sup> The balance of the work consists of replacement of by-product management components that have exhausted their useful lives (e.g., Sludge Processing Plant filter

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<sup>81</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>82</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 7.

<sup>83</sup> Direct Testimony of Sharon L. Dodson for LG&E, pp. 7-8.

<sup>84</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>85</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>86</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>87</sup> Direct Testimony of John P. Malloy for LG&E, p. 10.

<sup>88</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

<sup>89</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

belts and thickener rakes).<sup>90</sup> The process of component replacement constitutes the lowest-cost method of keeping the FGD equipment functioning properly.<sup>91</sup>

### **5. Cane Run Unit 5 Flue Gas Desulfurization (Project 15)**

Cane Run Unit 5's FGD equipment also requires refurbishment to keep the unit compliant with CAAA regulations and Title V Operating Permit 175-00-TV (R1) in the least-cost and most reasonable manner.<sup>92</sup> Project 15 consists of a multi-year plan (2005-2008) to ensure continued operation of the FGD equipment by replacing pump liners and suction and discharge piping that normal operation of the unit has eroded and corroded.<sup>93</sup> The FGD module and flue gas duct will be relined with high-nickel alloy material to ensure the continued structural integrity of the FGD.<sup>94</sup> Finally, mist eliminator wash system and slurry spray headers have deteriorated through normal operation and must be replaced to ensure the continued operation of the FGD.<sup>95</sup> Only through these refurbishments can LG&E do what is necessary to comply with CAAA regulations and Cane Run's Title V Operating Permit in the most cost-effective and reasonable way.<sup>96</sup>

### **6. Trimble County Unit 1 Flue Gas Desulfurization Equipment Performance Improvement (Project 16)**

Improving the FGD equipment at Trimble County Unit 1 ("TC1") is the most reasonable and cost-effective way to maintain the Trimble County plant's compliance with Kentucky Division of Air Quality regulations, particularly in anticipation of the projected SO<sub>2</sub> emissions from Trimble County Unit 2 ("TC2").<sup>97</sup> The Prevention of Significant Deterioration ("PSD") provisions of the CAAA

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<sup>90</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

<sup>91</sup> LG&E Response to PSC Data Request No. 1-9.

<sup>92</sup> Direct Testimony of John P. Malloy for LG&E, pp. 11-12. These regulations and their requirements are discussed in Section III.B.4. *infra*.

<sup>93</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

<sup>94</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

<sup>95</sup> Direct Testimony of John P. Malloy for LG&E, p. 11.

<sup>96</sup> LG&E Response to PSC Data Request No. 1-9.

<sup>97</sup> Direct Testimony of John P. Malloy for LG&E, pp. 12-14.

require that new emissions sources undergo rigorous review when there will be a net emission increase greater than specified thresholds and is classified as a “major” modification.<sup>98</sup> This review requires a determination of Best Available Control Technology (“BACT”), in addition to assessment of air quality impacts.<sup>99</sup> Determination of what constitutes BACT has become a major hurdle in obtaining an air permit as many regulatory agencies and non-governmental organizations are entitled to comment on the BACT determination.<sup>100</sup> Because of subjective and historic interpretation, there are ongoing debates and lawsuits regarding the combustion technologies and fuels that must be considered for each new project.<sup>101</sup> Expansion of an existing facility is subject to this review if there will be a significant net increase in emissions on a pollutant-by-pollutant basis.<sup>102</sup> Emission decreases at the facility are creditable in offsetting increased emissions from the new sources of emissions.<sup>103</sup> In addition to this considerable economic value, which alone would justify this project, the FGD performance enhancement at TC1 will result in a creditable decrease in SO<sub>2</sub> emissions such that TC2 can be added with no significant increase in emissions.<sup>104</sup>

LG&E’s discussions with the Kentucky Division for Air Quality led to LG&E’s decision to offset the projected SO<sub>2</sub> emissions from the new TC2 unit with reductions from TC1 to ensure the project minimizes impact on ambient air quality and is not considered a major modification for SO<sub>2</sub> air permitting purposes.<sup>105</sup> LG&E reviewed the necessary TC1 FGD upgrades with Alstom (the original equipment manufacturer for TC1’s FGD), resulting in Alstom recommending options to achieve approximately 98% SO<sub>2</sub> removal from TC1.<sup>106</sup>

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<sup>98</sup> Direct Testimony of Sharon L. Dodson for LG&E, pp. 8-9.

<sup>99</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>100</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>101</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>102</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>103</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>104</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.

<sup>105</sup> Direct Testimony of John P. Malloy for LG&E, p. 12.

<sup>106</sup> Direct Testimony of John P. Malloy for LG&E, p. 12.

LG&E internally reviewed Trimble County plant SO<sub>2</sub> reduction options with regard to life-cycle cost, long-term versus short-term benefits, capital cost, operations and maintenance cost, and ability to complete each option within the required timeframe to meet the federal Environmental Protection Agency (“EPA”) limit that LG&E and KU chose for the PSD netting offset in the air permitting process for TC2.<sup>107</sup>

The scope chosen for upgrading TC1 involves the addition of a dibasic acid (“DBA”) injection system to increase the FGD’s removal rate during times when certain FGD components, such as a lower level spray header are not in-service.<sup>108</sup> The scope also includes the addition of module wall Performance Enhancing Plates mounted around the perimeter of the module internals to direct the flue gas flow toward the module centers to reduce “wall slippage” of the flue gas around the slurry spray.<sup>109</sup> The existing module slurry spray headers will also be modified by increasing the number of slurry spray nozzles in each module as recommended by Alstom.<sup>110</sup> The additional nozzles focus the slurry spray toward the outer perimeter areas near the module walls, again to reduce “wall slippage.”<sup>111</sup> The removal rates required also will require the FGD to utilize all five existing spray elevations, thus eliminating any spare levels of spray.<sup>112</sup> Given the high availability of the slurry pumps, the decision was made not to install a spare header.<sup>113</sup> Instead, the project will include the purchase of two spare slurry recycle pumps, reducers and motors, and will inventory them as spares in the event the existing equipment fails.<sup>114</sup> This will allow the station to replace the

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<sup>107</sup> Direct Testimony of John P. Malloy for LG&E, pp. 12-13.

<sup>108</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>109</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>110</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>111</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>112</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>113</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>114</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

failed equipment over a short equipment outage and utilize DBA if needed for increased SO<sub>2</sub> reduction during maintenance.<sup>115</sup>

Although all of the components that comprise this project are required as one part of the air emission permitting project for TC2, they are also the lowest-cost and most reasonable means of complying with the applicable environmental regulations for Trimble County, regardless of whether or when TC2 is built.<sup>116</sup> The reductions in SO<sub>2</sub> emissions this project will create will also be used as a component of the reductions LG&E forecasts will be necessary to comply with SO<sub>2</sub> allowances under other CAAA programs.<sup>117</sup> Moreover, this project also provides SO<sub>2</sub> emission reductions at an annualized, approximate cost of \$260 per ton, which is significantly less than the current SO<sub>2</sub> allowance cost.<sup>118</sup>

LG&E and KU will utilize the anticipated emission reductions of approximately 3,000 tons per year to reduce the projected necessary allowance purchases from the market.<sup>119</sup>

## **7. SO<sub>2</sub> Emission Allowance Purchases (Project 17)**

Purchasing additional SO<sub>2</sub> emission allowances is the least-cost viable approach to LG&E's continued compliance with existing CAAA regulations and LG&E's Title V Operating Permits.<sup>120</sup> LG&E's current allowance allotment was established under federal regulation 40 CFR Part 73 when KYDAQ and LMAPCD issued Phase II Acid Rain Permits that are incorporated in the LG&E Title V Operating Permits.<sup>121</sup> Even with LG&E's FGD/scrubber technology, LG&E will experience an SO<sub>2</sub> emission allowance shortfall beginning in 2009, in accordance with LG&E and KU's combined

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<sup>115</sup> Direct Testimony of John P. Malloy for LG&E, p. 13.

<sup>116</sup> Direct Testimony of John P. Malloy for LG&E, p. 13; LG&E Response to PSC Data Request No. 2-6.

<sup>117</sup> Direct Testimony of John P. Malloy for LG&E, pp. 13-14.

<sup>118</sup> Direct Testimony of John P. Malloy for LG&E, p. 14. As discussed in Section III.C.4, *infra*, SO<sub>2</sub> allowance market prices have continued to increase to much higher levels.

<sup>119</sup> Direct Testimony of John P. Malloy for LG&E, p. 14.

<sup>120</sup> Direct Testimony of John P. Malloy for LG&E, p. 15.

<sup>121</sup> Direct Testimony of Sharon L. Dodson for LG&E, p. 9.



emission allowance management program.<sup>122</sup> The table contained in Exhibit JPM-7 to LG&E witness John P. Malloy's testimony summarizes the required allowances for LG&E that may be purchased from the market and/or transferred from KU at market price to maintain a minimum allowance bank equal to one year of operation, inclusive of the EPA allowance allocation.<sup>123</sup> The following table shows that transferring the allowances between companies, as needed, priced at market, results in the lowest net present value to all customers.<sup>124</sup>

## Net Present Value Allowance Expense

Present Value Rate= 7.14%

### **Projections for Kentucky Utilities Company**

	<u>Transfer @ Market</u>		<u>Transfer @ Cost</u>	
	<u>Emissions</u>	<u>ECR Credit</u>	<u>Emissions</u>	<u>ECR Credit</u>
2004	\$5,107,773	\$0	\$5,107,773	\$0
2005	\$10,743,610	\$0	\$2,475,982	\$0
2006	\$22,111,052	\$0	\$6,120,542	\$0
2007	\$19,329,790	\$0	\$12,084,626	\$0
2008	\$9,294,418	\$0	\$5,637,444	\$0
2009	\$688,252	\$16,931	\$475,386	\$291
2010	\$163,430	\$8,314,807	\$112,884	\$41,633
<b>Present Value=</b>	<b>\$57,763,956</b>	<b>\$5,509,203</b>	<b>\$27,266,452</b>	<b>\$27,731</b>
<b>Net Present Value=</b>	<b>\$52,254,753</b>		<b>\$27,238,721</b>	

### **Projections for Louisville Gas and Electric Company**

	<u>Transfer @ Market</u>		<u>Transfer @ Cost</u>	
	<u>Emissions</u>	<u>ECR Credit</u>	<u>Emissions</u>	<u>ECR Credit</u>
2004	\$12,936	\$0	\$12,936	\$0
2005	\$7,174	\$11,739,602	\$7,174	\$3,877
2006	\$3,041	\$18,971,855	\$3,041	\$2,587
2007	\$309	\$2,841,358	\$309	\$38
2008	\$31	\$1,908,168	\$31	\$3
2009	\$12,264	\$0	\$215	\$0
2010	\$7,522,921	\$0	\$1,584,102	\$0
<b>Present Value=</b>	<b>\$5,004,908</b>	<b>\$31,243,181</b>	<b>\$1,070,012</b>	<b>\$5,905</b>
<b>Net Present Value=</b>	<b>(\$26,238,273)</b>		<b>\$1,064,107</b>	

### **Projections for KU + LGE**

KU+LGE NPV with Allowances Transferred @ Cost =	\$28,302,828
KU+LGE NPV with Allowances Transferred @ Market =	<u>\$26,016,480</u>
<b>Savings with SO<sub>2</sub> Allowances Being Priced at Market =</b>	<b>\$2,286,348</b>

Transferring the allowances at cost, however, would cost LG&E customers approximately \$27 million (net present value) over the study period, with approximately \$25 million of this net present

<sup>122</sup> Direct Testimony of John P. Malloy for LG&E, p. 14.

<sup>123</sup> Direct Testimony of John P. Malloy for LG&E, p. 14.

<sup>124</sup> LG&E Response to PSC 1-11(b); LG&E Response to PSC Data Request No. 2-7(b) Attachment page 1 of 1.

value representing the amount by which LG&E's customers would be subsidizing KU's customers.<sup>125</sup> Transferring the allowances from LG&E to KU at market prices over the seven year study period is projected to reduce LG&E's environmental surcharge by \$26,238,273 compared to a cost of \$1,064,107 if the allowances are transferred at cost.<sup>126</sup>

Since LG&E's customers have been paying for the pollution control equipment that has allowed LG&E to accumulate its allowance inventory, it is only fair that they be provided full value for these allowances. KU's customers, however, are not unfairly disadvantaged by transferring allowances at market as they would be paying the current cost of meeting environmental compliance obligations whether they acquire those allowances from the market or from LG&E.

### **C. KU's 2004 Compliance Plan is Reasonable and Cost-Effective**

KU's 2004 Environmental Compliance Plan contains four new additional pollution control facilities at its Ghent and Brown Generating Stations, also designed to control SO<sub>2</sub> and fly and bottom ash.

#### **1. Ghent Ash Handling Equipment (Project 19)**

Upgrading and/or replacing the ash conveyance system at the Ghent Generating Station is necessary to comply with 401 KAR Chapter 5 and environmental permit KPDES-KY0002038 in the least-cost and most reasonable way.<sup>127</sup> No new permits are presently required to proceed with this project.<sup>128</sup> Coal-fired units such as those in existence at the Ghent Generating Station produce both bottom ash and fly ash from the coal combustion process.<sup>129</sup> This material must be disposed of on-

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<sup>125</sup> LG&E Response to PSC Data Request No. 2-7(b) Attachment page 1 of 1 (Subtracting the net present value of emission allowances at market prices from the net present value of emission allowances at cost).

<sup>126</sup> LG&E Response to PSC Data Request No. 2-7(b) Attachment page 1 of 1.

<sup>127</sup> Direct Testimony of John P. Malloy for KU, pp. 10-11; Direct Testimony of Sharon L. Dodson for KU, p. 19.

<sup>128</sup> Direct Testimony of Sharon L. Dodson for KU, p. 4; KU Response to PSC Data Request No. 1-7

<sup>129</sup> Direct Testimony of John P. Malloy for KU, p. 10.

site or hauled away to off-site storage facilities.<sup>130</sup> The amount of fly ash and bottom ash produced in the generation of electricity will depend upon, among other things, the amount of electricity produced and the composition of ash in the coal that is being burned.<sup>131</sup> Currently, the Ghent Generating Station produces approximately 600,000 tons of ash by-product per year.<sup>132</sup>

The ash conveyance system currently utilized at the Ghent Generating Station needs to be upgraded and/or replaced.<sup>133</sup> Ash is conveyed via an ash water pump through long pipe runs to an ash booster pump for final deposit into a permitted ATB.<sup>134</sup> The Ghent Unit 1 ash pipeline, which is approximately 3,600 feet long, needs to be replaced due to erosion from abrasive bottom ash.<sup>135</sup> The replacement will be in-kind, basalt-lined pipe.<sup>136</sup> A new ash booster pump will also be installed along with the expansion of the pump house.<sup>137</sup> This ensures the increased head pressure associated with the gradual elevation of the pool level will not cause operational problems.<sup>138</sup>

These refurbishments/replacements are the least-cost and most reasonable means to address the problem of managing coal combustion by-products from the station to the on-site ATB.<sup>139</sup>

## **2. E.W. Brown Ash Treatment Basin Expansion, Phase I (Project 20)**

Because of the E.W. Brown Generating Station's location, which is distant from a navigable waterway and not located within economically feasible trucking distance of industrial facilities that could use the station's coal combustion by-products, the least-cost and most reasonable approach to managing the station's coal combustion by-products is KU's planned expansion of the existing on-

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<sup>130</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>131</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>132</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>133</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>134</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>135</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>136</sup> Direct Testimony of John P. Malloy for KU, p. 10.

<sup>137</sup> Direct Testimony of John P. Malloy for KU, pp. 10-11.

<sup>138</sup> Direct Testimony of John P. Malloy for KU, p. 11.

<sup>139</sup> Direct Testimony of John P. Malloy for KU, p. 11; KU Response to PSC Data Request No. 12(a).

site ATB.<sup>140</sup> This project is also necessary for KU to comply with 401 KAR Chapter 5 and environmental permit KPDES-KY0002020.<sup>141</sup>

The E.W. Brown Generating Station currently produces two primary coal combustion by-products: fly and bottom ash.<sup>142</sup> Both ash by-products are placed in a basin adjacent to the plant.<sup>143</sup> An FMSM study (included in John P. Malloy's testimony as Exhibit JPM-3) estimates that at current by-product production rates (i.e. in absence of any FGDs) the ATB will reach its design capacity in 2010.<sup>144</sup> That same study also indicates that KU must begin the ATB expansion construction process this calendar year in order to have the ATB ready to accept the by-product output from the new E.W. Brown FGD, which FGD output alone will exceed, and be added to, the current by-product output.<sup>145</sup> Indeed, because KU will use some of the output from the new E.W. Brown FGD to increase the height of the berms around the ATB (as further described below), KU must begin other phases of expansion construction this calendar year so that the construction will be at the proper phase of completion when the new FGD begins producing its by-product output.<sup>146</sup> It is therefore appropriate for this project's costs to be included in KU's environmental cost recovery at this time.

FMSM also conducted a study to select the best site within three miles of the plant for by-product disposal/storage or as a source of fill material.<sup>147</sup> Analysis of adjacent topography, hydrogeology, transportation networks, land use and storage validate the decision to expand the ATB vertically on the present site.<sup>148</sup>

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<sup>140</sup> Direct Testimony of John P. Malloy for KU, pp. 11-12.

<sup>141</sup> Direct Testimony of John P. Malloy for KU, p. 12.

<sup>142</sup> Direct Testimony of John P. Malloy for KU, p. 11.

<sup>143</sup> Direct Testimony of John P. Malloy for KU, p. 11.

<sup>144</sup> Direct Testimony of John P. Malloy for KU, p. 11.

<sup>145</sup> Direct Testimony of John P. Malloy for KU, Exh. 3 at 1, 15.

<sup>146</sup> Direct Testimony of John P. Malloy for KU, p. 12; *Id.* Exh. 3 at 1, 15

<sup>147</sup> Direct Testimony of John P. Malloy for KU, p. 11.

<sup>148</sup> Direct Testimony of John P. Malloy for KU, p. 11.

Project 20 provides the lowest-cost viable approach for the management of coal combustion by-products at the E.W. Brown Generating Station.<sup>149</sup> The E.W. Brown Generating Station is not located on a major navigable waterway that would allow barge shipment of large quantities of coal combustion by-products to users.<sup>150</sup> The Station also is not located within economically feasible trucking distance of industrial facilities that would use these coal combustion by-products when compared to other coal-fired generating stations in the Commonwealth.<sup>151</sup> Given E.W. Brown's location within the Commonwealth, the two most economical alternatives are to place the by-products in the ATB or dispose of them off-site.<sup>152</sup> The plan to reuse a large portion of the gypsum from the FGD at E.W. Brown to extend the life of the existing ATB avoids the large expense of hauling the by-product off-site and the cost associated with obtaining the land to receive the by-product.<sup>153</sup> The plan to reuse this gypsum for constructing the ATB extension is also shown to be less expensive than not installing the FGD and having to secure and haul fill from off-site.<sup>154</sup> In short, the use of gypsum from the new E.W. Brown FGD will save the customers money over the alternatives of not constructing the FGD and having to construct the ATB extension exclusively from off-site fill, as well as the alternative of hauling the coal combustion by-product off-site to a landfill.<sup>155</sup> To be ready to avail its customers of this cost-saving approach, KU must begin construction for the ATB expansion now so that construction will be at the proper phase when the FGD begins producing gypsum.

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<sup>149</sup> Direct Testimony of John P. Malloy for KU, p. 12; KU Response to PSC Data Request No. 16(a).

<sup>150</sup> Direct Testimony of John P. Malloy for KU, p. 12.

<sup>151</sup> Direct Testimony of John P. Malloy for KU, p. 12.

<sup>152</sup> Direct Testimony of John P. Malloy for KU, p. 12.

<sup>153</sup> Direct Testimony of John P. Malloy for KU, p. 12.

<sup>154</sup> Direct Testimony of John P. Malloy for KU, p. 12; KU Response to PSC Data Request No. 16(a).

<sup>155</sup> Direct Testimony of John P. Malloy for KU, pp. 12-13.

### 3. Four FGD Facilities (Project 21)

Project 21 consists of three wet-limestone, forced oxidization FGDs constructed for Ghent Units 2, 3, and 4, and a single wet-limestone, forced oxidization FGD constructed for E.W. Brown Units 1, 2, and 3, all as identified in the *2004 SO<sub>2</sub> Compliance Strategy* document discussed in, and attached to, John P. Malloy's testimony as Exhibit JPM-2.<sup>156</sup> KU is also requesting a CCN for the construction of these units, which construction should take 18-24 months per FGD, with some portions of the engineering and design being undertaken simultaneously.<sup>157</sup> These FGDs are the most economical and reasonable means of complying with the CAAA and the CAIR, along with the conditions of each facility's air permit to operate (Ghent V-97-025, E.W. Brown O-86-068), and should provide the ratepayers a benefit of over \$110 million over the study period as compared to simply purchasing all the SO<sub>2</sub> allowances that would otherwise be required.<sup>158</sup> The evidence shows that KU's requests to modify the operating permits (Ghent V-97-025, E.W. Brown O-86-068) for purposes of constructing and operating the proposed FGDs have been granted by the environmental authorities.<sup>159</sup>

The *2004 SO<sub>2</sub> Compliance Strategy* study recommends the construction of wet FGD systems on Ghent Units 2, 3 and 4, and E.W. Brown Units 1, 2 and 3, and the simultaneous switching of the units to high sulfur coal and the purchasing of allowances on an as-needed basis as the most cost-effective plan for continued environmental compliance.<sup>160</sup> As identified in LG&E and KU's *2002 SO<sub>2</sub> Environmental Compliance Analysis* contained in LG&E and KU's 2002 Integrated Resource Plan, LG&E and KU have a rapidly depleting bank of SO<sub>2</sub> allowances that will soon require the

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<sup>156</sup> Direct Testimony of John P. Malloy for KU, pp. 2, 13.

<sup>157</sup> Direct Testimony of John P. Malloy for KU, pp. 2, 8.

<sup>158</sup> Direct Testimony of John P. Malloy for KU, pp. 2, 5. See KU March 22, 2005 Supplemental Response to PSC Data Request No. 6 ("The U.S.E.P.A. issued its final CAIR rule on Thursday, March 10, 2005.")

<sup>159</sup> KU February 9, 2005 Response to PSC Data Request Nos. 1-4 and 1-7; KU March 9, 2005 Supplemental Response to PSC Data Request No. 1-4; KU March 22 Supplemental Response to PSC No. 1-7 and KU May 5, 2005 Supplemental Response to PSC Data Request No. 1-4.

<sup>160</sup> Direct Testimony of John P. Malloy for KU, p. 4.

addition of new control technologies or the purchase of SO<sub>2</sub> allowances.<sup>161</sup> LG&E and KU expect that the Companies' entire combined bank of SO<sub>2</sub> allowances will be depleted by the end of 2007, a shortfall that will be exacerbated by the implementation of the CAIR in 2010.<sup>162</sup> Unless the Companies achieve significant SO<sub>2</sub> emission reductions soon, they will be forced to acquire allowances from the allowance market, where prices have skyrocketed from about \$175/ton in July 2003 to nearly \$700/ton on November 2004.<sup>163</sup>

The Companies' *2004 SO<sub>2</sub> Compliance Strategy* study identified Ghent Units 2-4 and E.W. Brown Units 1-3 as being responsible for generating over 55% of the Companies' future SO<sub>2</sub> emissions, and were therefore the most logical and economic choices for units on which to install SO<sub>2</sub> emission control technologies.<sup>164</sup> Using sophisticated computer modeling, the study analyzed several different possible strategies for addressing the looming SO<sub>2</sub> allowance shortfall, including the use of wet and dry FGD processes, switching to low-sulfur coal, and simply purchasing more allowances.<sup>165</sup> As noted above, the *2004 SO<sub>2</sub> Compliance Strategy* study recommends the construction of wet FGD systems on Ghent Units 2, 3 and 4, and E.W. Brown Units 1, 2 and 3, and the simultaneous switching of the units to high sulfur coal and the purchasing of allowances on an as-needed basis as the most effective plan for continued environmental compliance.<sup>166</sup> Once all the FGDs are installed, the projected fuel cost reductions for Brown and Ghent during the 20 year study period shows a typical KU residential customer is estimated to receive approximately \$2.00 per month in fuel clause savings.<sup>167</sup> Although the addition of FGD systems on these units does not eliminate the need to purchase additional SO<sub>2</sub> allowances, it will significantly reduce the Companies'

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<sup>161</sup> Direct Testimony of John P. Malloy for KU, p. 2.

<sup>162</sup> Direct Testimony of John P. Malloy for KU, p. 3; KU Response to PSC Data Request No.13

<sup>163</sup> Direct Testimony of John P. Malloy for KU, p. 3.

<sup>164</sup> Direct Testimony of John P. Malloy for KU, p. 3.

<sup>165</sup> Direct Testimony of John P. Malloy for KU, p. 3.

<sup>166</sup> Direct Testimony of John P. Malloy for KU, p. 4.

<sup>167</sup> KU Response to PSC Data Request No. 17(b) and (c).

exposure to the SO<sub>2</sub> allowance market and assures continued economical compliance with the CAAA's environmental requirements.<sup>168</sup> KU estimates that in 2010 (the first full year after all the scrubbers are in-service) SO<sub>2</sub> emissions on the Companies generating units will decrease by 111,000 tons annually.<sup>169</sup> Over the analysis period, the construction of wet FGD systems and the simultaneous conversion of the units to high-sulfur coal will (1) decrease the cost of SO<sub>2</sub> compliance by more than \$110 million (PVRR), (2) limit the Companies' exposure to the SO<sub>2</sub> allowance market, (3) increase fuel procurement flexibility, and (4) improve the Companies' position for meeting the SO<sub>2</sub> reduction requirements associated with CAIR and future regulations targeting mercury.<sup>170</sup>

Of the four major benefits set out above that the wet FGD systems will provide, perhaps the greatest practical benefit is the increased fuel procurement flexibility that the FGD systems will provide. The cost of low-sulfur coals has increased dramatically in recent years as demand has increased, reserves have been depleted, production efficiency has declined, and producers of low-sulfur coal have exercised increasing supply discipline to maintain high prices.<sup>171</sup> These factors, combined with the increasing difficulty of mining such coal (because the large and easy-to-reach reserves are largely exhausted), which increases barriers to entry and reduces the number of suppliers, dictate that the most prudent strategy for KU going forward is to install these wet FGD systems to allow for more flexible fuel procurement while remaining compliant with all applicable environmental regulations.<sup>172</sup> This increased flexibility will ensure lower fuel costs for KU's customers.

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<sup>168</sup> Direct Testimony of John P. Malloy for KU, pp. 4-5.

<sup>169</sup> KU Response to PSC Data Request No. 2-2. Without the FGDs, the Companies' SO<sub>2</sub> allowance shortfall is projected to exceed 130,00 tons

<sup>170</sup> Direct Testimony of John P. Malloy for KU, p. 5; Direct Testimony of Caryl M. Pfeiffer (adopted by Delbert Billiter at the evidentiary hearing), pp. 2-10.

<sup>171</sup> Direct Testimony of Caryl M. Pfeiffer, pp. 2-3.

<sup>172</sup> Direct Testimony of Caryl M. Pfeiffer, pp. 3-4.



KU has maximized the savings this project will provide through the use of an Alliance contract.<sup>173</sup> Savings from an Alliance contract for a retrofit project on existing, operating units are realized through the purchasing leverage of multiple units, incorporating “lessons learned” from the design and construction of one unit to the subsequent units, and by avoiding paying “risk monies” incorporated into lump sum contracts unless events occur that justify payment of the monies.<sup>174</sup> Contractors will cover unknown risk in their lump sum bids on large scale retrofit projects due to potential changes in scope due to unknown existing conditions at the units during the bidding stage of the project, as well as other changes during the project such as changes in unit outage schedules to allow KU to serve native load when other units have unplanned outages.<sup>175</sup> The Alliance contract format does not include these “risk monies” initially and reimburses the contractors only when events occur that justify the payment of the monies.<sup>176</sup>

Use of the Alliance contract format also allows for standardization of FGD design because only one vendor will be used, thus resulting in purchasing, engineering, spare parts and training savings to the project.<sup>177</sup> The savings associated with a single Alliance contract similar to that used on the Selective Catalytic Reduction program is anticipated to reduce the total cost anywhere from 10-15 percent.<sup>178</sup> These savings have been incorporated into the estimating logic used to reach the projected cost for the FGDs at Ghent and E.W. Brown.<sup>179</sup>

#### **4. Emission Allowance Purchases (Project 22)**

In order for KU to continue complying with existing CAAA regulations and its Title V Operating permits in the lowest-cost and most reasonable manner, it will be necessary for KU to

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<sup>173</sup> Direct Testimony of John P. Malloy for KU, p. 7.

<sup>174</sup> Direct Testimony of John P. Malloy for KU, p. 7.

<sup>175</sup> Direct Testimony of John P. Malloy for KU, pp. 7-8.

<sup>176</sup> Direct Testimony of John P. Malloy for KU, p. 8.

<sup>177</sup> Direct Testimony of John P. Malloy for KU, p. 8.

<sup>178</sup> Direct Testimony of John P. Malloy for KU, p. 8.

<sup>179</sup> Direct Testimony of John P. Malloy for KU, p. 8.

purchase additional SO<sub>2</sub> emission allowances.<sup>180</sup> In accordance with KU and LG&E's combined emission allowance management program, KU is projected to experience an SO<sub>2</sub> emission allowance shortfall beginning this year.<sup>181</sup> The table contained in Exhibit JPM-4 to John P. Malloy's testimony summarizes the allowances KU will require, which may be purchased from the market and/or transferred from LG&E at market price, in order to maintain a minimum allowance bank equal to one year of operation inclusive of the EPA allowance allocation.<sup>182</sup> After the completion of the construction of the Ghent 2, 3, and 4, and E.W. Brown FGDs, the minimum SO<sub>2</sub> allowance bank is lowered to reflect the reduced shortfall between projected SO<sub>2</sub> emissions and EPA allowances.<sup>183</sup>

Insulating the Company and its ratepayers from the fluctuations in the SO<sub>2</sub> allowance market is a considerable benefit of constructing wet FGD systems for these units; upward movements in SO<sub>2</sub> allowance market prices positively correlate with the value this project provides the ratepayers.<sup>184</sup> As discussed in the *2004 SO<sub>2</sub> Compliance Strategy*, a 10% increase in the SO<sub>2</sub> price forecast increases the value of the project by more than \$54 million (from \$110 million in savings for the Company's ratepayers to more than \$164 million).<sup>185</sup> As recently as November 15, 2004, SO<sub>2</sub> allowances were priced at \$697/ton, or almost 78% above the forecasted 2005 price of \$392/ton used in this analysis.<sup>186</sup> SO<sub>2</sub> allowance prices have continued to climb since then, and as of May 27, 2005 were trading at \$765/ton.<sup>187</sup> Therefore, the economics supporting the decision to construct wet FGD systems at Ghent and E.W. Brown is actually better than the Companies' study indicates.<sup>188</sup> And, as

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<sup>180</sup> Direct Testimony of John P. Malloy for KU, p. 13.

<sup>181</sup> Direct Testimony of John P. Malloy for KU, p. 13.

<sup>182</sup> Direct Testimony of John P. Malloy for KU, pp. 13-14.

<sup>183</sup> Direct Testimony of John P. Malloy for KU, p. 14.

<sup>184</sup> Direct Testimony of John P. Malloy for KU, p. 5.

<sup>185</sup> Direct Testimony of John P. Malloy for KU, p. 5.

<sup>186</sup> Direct Testimony of John P. Malloy for KU, p. 5.

<sup>187</sup> Available at <http://www.evomarkets.com>; <http://www.emissionstrading.com>. Current spot market prices for emission allowances continue to show volatility.

<sup>188</sup> Direct Testimony of John P. Malloy for KU, p. 5.

demonstrated by the table in Section III.B.7, *infra*, transferring the allowances between companies, as needed, priced at market, results in the lowest net present value to all customers.<sup>189</sup>

Again, the transfer of allowances from LG&E to KU at market prices is the most equitable way to treat the customers of both companies. Since LG&E's customers have been paying for the pollution control equipment that has allowed LG&E to accumulate its allowance inventory, it is only fair that they be provided full value for these allowances. KU's customers, however, are not unfairly disadvantaged by transferring allowances at market as they would be paying the current cost of meeting environmental compliance obligations whether they acquire those allowances from the market or from LG&E.

#### **IV. LG&E'S AND KU'S AMENDED ENVIRONMENTAL SURCHARGE TARIFFS ARE REASONABLE**

LG&E's and KU's proposed environmental surcharges were presented in the testimony of Robert M. Conroy, Manager of Rates. Mr. Conroy's testimony reviewed how LG&E's and KU's environmental surcharges will be calculated to recover the costs associated with their Compliance Plans.<sup>190</sup> Mr. Conroy's testimony also presented modifications to the environmental surcharge monthly forms and revisions to the environmental surcharge tariffs.<sup>191</sup> Mr. Conroy showed that the calculation of the environmental surcharges will be in accordance with the Commission's approved methodologies.<sup>192</sup>

Utilities like LG&E and KU that produce electricity from the combustion of coal are entitled, pursuant to KRS 278.183, to the current recovery of their costs of complying with environmental

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<sup>189</sup> LG&E Response to PSC 1-11(b); LG&E Response to PSC Data Request No. 2-7(b) Attachment page 1 of 1.

<sup>190</sup> Direct Testimony of Robert M. Conroy for LG&E, pp. 2-6; Direct Testimony of Robert M. Conroy for KU, pp. 2-7.

<sup>191</sup> Direct Testimony of Robert M. Conroy for LG&E, pp. 2-6; Direct Testimony of Robert M. Conroy for KU, pp. 2-7.

<sup>192</sup> Direct Testimony of Robert M. Conroy for LG&E, pp. 2-6; Direct Testimony of Robert M. Conroy for KU, pp. 2-7.

regulations that apply to coal combustion wastes. The costs recoverable through the environmental surcharge are prescribed by statute to include:

a reasonable return on construction and other capital expenditures and reasonable operating expenses for any plant, equipment, property, facility, or other action to be used to comply with applicable environmental requirements set forth in this section.

KRS 278.183(1). LG&E and KU have proposed amendments to their environmental surcharge tariffs to recover a reasonable return on their capital expenditures for their new pollution control facilities required to comply with environmental regulations and the operating expenses associated with these pollution control facilities.

**A. LG&E's and KU's Proposed Rate of Return is Reasonable**

LG&E and KU are requesting an overall return on capital, including an 11.0 percent return on common equity ("ROE"), as the reasonable return on their new compliance related capital expenditures.

**1. The Companies Are Authorized to Use 11% ROE in Their Environmental Surcharge Filings**

In Case Nos. 2003-00433 and 2003-00434, the Commission approved a unanimous provision of the Partial Settlement and Stipulation that called for an 11% return on common equity to be used as part of the cost recovery for environmental projects pursuant to KRS 278.183, until directed by order of the Commission that a different rate of return shall be utilized. Accordingly, in their filings in the instant proceedings, LG&E and KU employed an 11% ROE component. Below, the Companies demonstrate that: (1) the requested 11% return on common equity is within the range of reasonableness determined by the Commission in its 2004 order in the base rate case; (2) cost of equity analyses made by the AG's return on equity witness, Dr. Carl G.K. Weaver, and the KIUC witness, Richard A. Baudino, show little or no movement in the cost of equity since the 2004 base

rate proceeding; and (3) LG&E and KU rebuttal witness, Robert G. Rosenberg, presented analyses that indicated that an 11% ROE is still reasonable for the Companies.

The 11% ROE for environmental cost recovery purposes approved by the Commission in its 2004 base rate case orders. This 11% ROE is within the 10.0-11.0% cost of equity range found reasonable by the Commission in that order. Nothing in this record warrants a change from that 11.0% value.

Dr. Weaver's own comparative analyses indicated that his cost of equity recommendation declined only 25 basis points since the base rate case proceedings.<sup>193</sup> However, the Companies' rebuttal witness showed that Dr. Weaver's analyses in this proceeding had very substantial elements of understatement; thus a supposed "decline" in the cost of equity (even of only 25 basis points) cannot be accepted at face value.<sup>194</sup> Mr. Baudino's opinion that the cost of equity has declined since the base rate case proceedings is belied by his own analyses—he recommended an ROE of 8.7% in the base rate proceedings and recommends an 8.7% ROE in this proceeding.<sup>195</sup> The record also shows that interest rates are projected to increase about 150 basis points in the near-term future.<sup>196</sup> Furthermore, Mr. Rosenberg's rebuttal testimony offers strong support for the continued use for an 11% ROE for environmental cost recovery purposes. All of these facts, taken together, and the specifics in the discussion of cost of equity methods presented below, provide ample justification for the Companies' requested 11.0% ROE in these proceedings.

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<sup>193</sup> Exhibit of Carl G.K. Weaver for AG (LG&E), Sch. 1; Exhibit of Carl G.K. Weaver for AG (KU), Sch. 1.

<sup>194</sup> T.E., pp. 95-97.

<sup>195</sup> T.E., pp. 170, 192. Although Mr. Baudino's testimony was withdrawn from the record in the base rate case proceedings in connection with the submission of the Settlement Agreement, the fact that he recommended an ROE of 8.7% in the base rate case proceedings was introduced in these proceedings for the purpose of impeaching his testimony at the hearing that the "cost of equity has gone down" since the June 30, 2004 base rate case orders were issued. T.E., p. 184.

<sup>196</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 2-4.

## 2. Dr. Weaver's Analysis, as Adjusted by Mr. Rosenberg, Supports an 11% ROE

Dr. Weaver determined a cost of equity range of 9.75-10.25% and recommends that the ROE for environmental cost recovery be set between 9.75-10.00%.<sup>197</sup> Dr. Weaver employed a group of eight proxy companies that he found to have about the same risk as LG&E and KU.<sup>198</sup> Dr. Weaver employed four equity costing methods: (1) a constant-growth DCF analysis; (2) a multi-stage DCF analysis; (3) a CAPM analysis; and (4) a risk premium analysis. Dr. Weaver made two adjustments to his raw cost of equity figures—a 100 basis point economic adjustment to the DCF results to account for the prospective increase in the cost of capital and a 25 basis point upward adjustment to reflect the elimination of the earnings sharing mechanism (“ESM”).<sup>199</sup> Mr. Rosenberg's modifications to Dr. Weaver's analyses resulted in a modified cost of equity range of 10.5-11.5%.<sup>200</sup> The midpoint of that range - 11.0% - corresponds with the Companies' requested ROE in this proceeding.

Dr. Weaver's 9.75-10.0% recommendation is well below the general level of allowed returns for U.S. utilities and even further below the 11.2% average allowed return for companies in Dr. Weaver's proxy group.<sup>201</sup> These comparisons provide strong support for Mr. Rosenberg's revisions to Dr. Weaver's analysis, discussed below, which result in a modified 11.0% return on equity for LG&E and KU.

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<sup>197</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 42; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 42.

<sup>198</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 26; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 26. Although Dr. Weaver also employed a group of nine companies that he used in the base rate case proceeding, he did not base his recommendation on that group and only showed that analysis for comparative purposes.

<sup>199</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 41; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 41.

<sup>200</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 21.

<sup>201</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 6-7.

Mr. Rosenberg made three revisions to Dr. Weaver's constant-growth DCF approach that raised Dr. Weaver's 9.75% figure up to a range of 10.25-10.75%.<sup>202</sup> Mr. Rosenberg's first modification dealt with Dr. Weaver's error in adding a substantially understated interest rate adjustment to his DCF results. Whereas Dr. Weaver only added a 50 basis point interest difference adjustment to the DCF approach, by his own rationale, **he should have added 100 basis points.**<sup>203</sup> Dr. Weaver explicitly indicates that his DCF results should be adjusted and be 100 basis points higher—to reflect the prospective increase in interest rates over the next two years.<sup>204</sup> In fact, in the base rate case proceeding, Case Nos. 2003-00433 and 2003-00434, Dr. Weaver showed, on page 75 of his testimony, that when he adjusted his DCF results for the prospective increase in interest rates, he added the **full** 95 basis point interest rate adjustment to the unadjusted DCF result in order to get the adjusted figure. He should have done the same type of calculation here, but did not. Just this one correction made by Mr. Rosenberg brought Dr. Weaver's constant-growth DCF result to the level of 10.29%—above the entire 9.75-10.25% range determined by Dr. Weaver in his testimony.<sup>205</sup>

Mr. Rosenberg's second modification to Dr. Weaver's constant-growth DCF analysis involved a correction for inconsistent data that produced revised constant-growth DCF results of 10.34-10.55%.<sup>206</sup>

Mr. Rosenberg's third modification was to add an alternate growth rate, using projected sustainable growth. This modification produced a 10.82% cost of equity estimate.<sup>207</sup> In summary,

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<sup>202</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 8-12.

<sup>203</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 41; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 41; Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 8-10; T.E., pp. 95-97.

<sup>204</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), pp. 40-41; Direct Testimony of Carl G.K. Weaver for AG (KU), pp. 40-41.

<sup>205</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 10.

<sup>206</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 10-12.

<sup>207</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 11-12.

Mr. Rosenberg's three modifications to Dr. Weaver's constant-growth DCF approach resulted in a range of 10.25-10.75%, which is well above Dr. Weaver's 9.75% estimate using this approach.<sup>208</sup> T

The other three analyses Dr. Weaver performed delivered even higher return on equity results.

Dr. Weaver's multi-stage DCF analysis also had numerous errors and understatements. Although Dr. Weaver opined that using a multi-month time period for the DCF price serves to avoid anomalies or spot situations,<sup>209</sup> his use of a spot price causes the DCF result to be lower than had he used an average price.<sup>210</sup> Additionally, Dr. Weaver's near-term growth rate was below the projected growth made by analysts.<sup>211</sup> Mr. Rosenberg presented two alternative growth rates that produce cost of equity estimates in the range of 10.75-11.65%.<sup>212</sup>

Mr. Rosenberg took issue with two aspects of Dr. Weaver's CAPM calculation—the use of 10-year Treasury yields as the risk-free rate and Dr. Weaver's two expected market risk premium calculations. Since common stock is a long-term investment, the risk-free rate should match that long-term perspective, too. Mr. Rosenberg even noted the Commission's own questioning of the use of a 10-year Treasury security in the CAPM analysis.<sup>213</sup> Mr. Rosenberg, therefore, used 20-year Treasury bond yields in his revision of Dr. Weaver's CAPM analysis.

Mr. Rosenberg also revised both of Dr. Weaver's market risk premium calculations. He updated Dr. Weaver's use of an S&P 500-based market risk premium and found that the CAPM cost of equity using these updates was 11.5%.<sup>214</sup> He also took issue with Dr. Weaver's use of a Value

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<sup>208</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 12.

<sup>209</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 35; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 35; Weaver Response to Staff Information Request No. 2.

<sup>210</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 12-13.

<sup>211</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 13-14.

<sup>212</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 14-15.

<sup>213</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 15.

<sup>214</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 16.



Line price appreciation measure. Here Dr. Weaver used a spot estimate of 40% price appreciation, while the figure, on average, over Dr. Weaver's DCF pricing period was 43%. Additionally, Dr. Weaver used a four-year period to calculate price appreciation whereas Mr. Rosenberg showed that Value Line considers the projection to be for three and one-half years.<sup>215</sup> This correction produced a revised CAPM cost of equity estimate of 10.6%.

Furthermore, in cross-examination, it was established that Value Line now projects 55% price appreciation which, when annualized to an 11.6% rate and added to the dividend yield of 1.7%, would produce an expected market return of 13.3%.<sup>216</sup> Subtracting the 5.7% yield on 20-year Treasury securities from the 13.3% expected market return, produces an estimate of the expected market risk premium of 7.6% ( $13.3 - 5.7 = 7.6$ ). Employing Dr. Weaver's average beta of 0.73, a risk-free rate of 5.7% based on the average yield on 20-year Treasury bonds and an expected market risk premium of 7.6%, the CAPM cost of equity estimate is 11.2% ( $5.7 + 0.73(7.6) = 11.2$ ).

Mr. Rosenberg showed that Dr. Weaver's risk premium analysis employed a non-intuitive averaging approach unlikely to be employed by investors. That approach gave more weight to earlier years' data than recent years.<sup>217</sup> Mr. Rosenberg presented two more rational alternatives to Dr. Weaver's averaging technique which produced a risk premium cost of equity range of 10.6-12.3%.<sup>218</sup>

Mr. Rosenberg's modifications to Dr. Weaver's analyses resulted in a modified cost of equity range of 10.5-11.5%.<sup>219</sup> The midpoint of that range—11.0%—corresponds with the Companies' requested ROE in this proceeding.

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<sup>215</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 17; Exhibit RGR-2, p. 43.

<sup>216</sup> T.E., pp. 141-143.

<sup>217</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 17-19.

<sup>218</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 19-20.

<sup>219</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 21.

### 3. KIUC's 8.70% ROE Recommendation is Grossly Unreasonable

The KIUC's witness, Richard A. Baudino, recommends an ROE for the Companies of 8.70%.<sup>220</sup> At the outset, it must be noted that Mr. Baudino's 8.70% recommendation is about 200 basis points below that for utilities in general and for companies in his proxy group in specific.<sup>221</sup> Mr. Baudino's gross understatement of the required return on equity for the Companies is due to several factors. First, Mr. Baudino's proxy group is suspect—he included two companies that barely have more than 50% of their revenues accounted for by electric operations.<sup>222</sup> Second, Mr. Baudino used only one method—the constant-growth DCF approach—to reach his recommendation.<sup>223</sup> This is in sharp contrast to Dr. Weaver who employed four methods to reach his recommendation. Many of Mr. Baudino's individual-company DCF cost of equity estimates are below, or only close to, the recent cost of debt.<sup>224</sup> Third, Mr. Baudino did employ a CAPM approach where he reached a cost of equity estimate in the range of 8.84% to 11.82%.<sup>225</sup> These CAPM results are significantly above Mr. Baudino's 8.7% recommendation in this proceeding. Yet, Mr. Baudino chose not to rely at all on his CAPM results in spite of the fact that the CAPM: (1) is often considered in rate proceedings; (2) is used by many investors; (3) has been around for about 40 years; and (4) is taught in most colleges.<sup>226</sup> Irrespective of Mr. Baudino's reasoning, Mr. Rosenberg showed that the CAPM analysis that Mr. Baudino did present was problematic and substantially understated.<sup>227</sup>

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<sup>220</sup> Direct Testimony of Richard A. Baudino for KIUC, p. 33.

<sup>221</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 22-23.

<sup>222</sup> T.E., p. 167.

<sup>223</sup> Direct Testimony of Richard A. Baudino for KIUC, p. 33.

<sup>224</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 24-25; Exhibit RGR-1, Sch. 3.

<sup>225</sup> Direct Testimony of Richard A. Baudino for KIUC, p. 33.

<sup>226</sup> T.E., pp. 171-175. Mr. Baudino's thinking regarding the CAPM is, frankly, baffling: if the CAPM is unreliable, why include a CAPM calculation in his testimony? Since Mr. Baudino did indeed perform a CAPM calculation, why did he fail to reflect it in his recommendation? Did he not like the results?

<sup>227</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 25-28.

Contrary to Mr. Baudino's claim that the change in tax policy regarding taxation of dividends and capital gains should lower the cost of equity, Mr. Rosenberg showed that any such effect, if it exists, was already incorporated in the cost of equity analyses presented in this proceeding. Furthermore, Mr. Rosenberg discussed several factors that would render the effect of the dividend tax law change on the required return of electric utilities to be either unclear or *de minimis*.<sup>228</sup>

**B. The Commission Should Reject the AG's and KIUC's Punitive Recommendation to Use a Reduced Rate of Return**

Both the AG's and KIUC's return on equity witnesses testify that the Commission should grant the Companies lower returns than it might otherwise in this case because, at bottom, the Companies' environmental cost recovery is less risky than other aspects of the Companies' regulated operations.<sup>229</sup> The AG's witness, Dr. Weaver, argues that the lower end of the ROE range is appropriate for the Companies in this case for three reasons: (1) environmental compliance is a "self-contained operation" within each of LG&E and KU; (2) there is little risk associated with environmental compliance revenues and expenses; and (3) lower-risk securities have a lower required rate of return.<sup>230</sup> The KIUC's Mr. Baudino states in a similar vein that the Companies' environmental cost recovery return on equity should be lower because the Companies are assured of recovering its environmental costs plus a guaranteed rate of return in real-time, regardless of the adequacy of the Companies' overall rates of return.<sup>231</sup> All of these arguments are flawed.

Clearly, environmental compliance is **not** a self-contained operation within the Companies. The generating plants would not be allowed to operate without the environmental compliance

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<sup>228</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 28-30.

<sup>229</sup> Direct Testimony of Richard A. Baudino for KIUC, p. 36; Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 42; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 42.

<sup>230</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 42; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 42.

<sup>231</sup> Direct Testimony of Richard A. Baudino for KIUC, p. 36.

investment and, conversely, the environmental compliance investment would have no reason to exist without the generating plants.<sup>232</sup>

Contrary to the assertions of Dr. Weaver and Mr. Baudino, the environmental compliance operations cannot be considered to be lower risk than the company as a whole. In fact, the environmental compliance operations face significant risk because of: (1) repeated reviews and possible retrospective disallowances; (2) the extensive, ever-changing and -increasing requirements of environmental regulations; (3) the significant amount of investment required to satisfy environmental regulations; and (4) the fact that investments in pollution control facilities only allows continued operation of existing generation facilities—they produce no additional power for sale and only raise the cost of power sold.<sup>233</sup> In fact, Standard & Poor's, in its May 4, 2005 write-up concerning KU, noted that one of the weaknesses of the Company was its environmental compliance obligations.<sup>234</sup> S&P specifically indicated that “coal-fired generation facilities that require large environmental expenditures detract from LG&E's business profile.” As Mr. Blake noted, environmental surcharge regulation merely offsets some of this risk that would otherwise call for a higher return on equity if this type of investment could only be recovered through a base rate proceeding.<sup>235</sup>

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<sup>232</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 2.

<sup>233</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, pp. 3-4.

<sup>234</sup> KU Hearing Exhibit No. 3.

<sup>235</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 4.

The Commission has a long and well-established policy of allowing utilities to earn a reasonable rate of return on their environmental surcharge compliance plans.<sup>236</sup> Indeed, the May 4, 2005 Standard & Poor's Report identified the "supportive regulatory environment" as a "strength" in evaluating KU's credit rating, citing specifically the environmental surcharge mechanism as reducing the company's exposure to the risk of environmental legislation.<sup>237</sup> A decision to award a reasonable return then reduce that return to a low rate of return would be contrary to the Commission's prior orders. Nothing in this record adequately supports this punitive recommendation. Such a decision would also undermine the quality of regulation that has allowed the Companies to achieve financial strength and maintain solid investment grade credit ratings.

Finally, if the recommendation to allow a lower return for environmental compliance operations is adopted, the Commission will necessarily need to grant a higher return on the equity supporting base electric operations. If the Commission were to use a lower-end return for purposes

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<sup>236</sup> *In the Matter of: The Application of Kentucky Utilities Company for Approval of an Amended Compliance Plan for Purposes of Recovering the Cost of New and Additional Pollution Control Facilities and to Amend Its Environmental Surcharge Tariff*, Case No. 2000-00439, Order, pp. 19-25 (April 18, 2001); *In the Matter of: The Application of Kentucky Utilities Company for Approval of Its 2002 Compliance Plan for Recovery By Environmental Surcharge*, Case No. 2002-00146, Order, p. 10 (February 11, 2003); *In the Matter of: The Application of Louisville Gas and Electric Company for Approval of an Amended Compliance Plan for Purposes of Recovering the Cost of New and Additional Pollution Control Facilities and to Amend Its Environmental Surcharge Tariff*, Case No. 2000-00386, Order, pp. 20-27 (April 18, 2001); *In the Matter of: The Application of Louisville Gas and Electric Company for Approval of Its 2002 Compliance Plan for Recovery By Environmental Surcharge*, Case No. 2002-00147, Order, p. 19 (February 11, 2003); *In the Matter of: An Examination by the Public Service Commission of the Environmental Surcharge Mechanism of Kentucky Power Company d/b/a American Electric Power for the Six Month Billing Periods Ending June 30, 2000, December 31, 2000, December 31, 2001, and June 30, 2002, and for the Two-Year Billing Period Ending June 30, 2001*, Case No. 2002-00393, Order, pp. 5-7 (June 20, 2003); *In the Matter of: The Application of Kentucky Power Company d/b/a American Electric Power for Approval of an Amended Compliance Plan for Purposes of Recovering the Costs of New and Additional Pollution Control Facilities and to Amend Its Environmental Cost Recovery Surcharge Tariff*, Case No. 2002-00169, Order, pp. 23-33 (March 31, 2003); *In the Matter of: Application of Kentucky Power Company d/b/a American Electric Power to Assess A Surcharge Under KRS 278.183 to Recover Costs of Compliance with the Clean Air Act and Those Environmental Requirements Which Apply to Coal Combustion Waste and By-Products*, Case No. 96-489, Order on Rehearing, pp. 11-12 (July 8, 1997); and *In the Matter of: Application of Kentucky Power Company d/b/a American Electric Power to Assess A Surcharge Under KRS 278.183 to Recover Costs of Compliance with the Clean Air Act and Those Environmental Requirements Which Apply to Coal Combustion Waste and By-Products*, Case No. 96-489, Order, pp. 32-35 (May 27, 1997).

<sup>237</sup> KU Hearing Exhibit No. 3.

of calculating the environmental surcharge, then by necessity a high-end return would have to be used to determine revenue requirements for the Companies' base rates. To do otherwise would constitute asymmetrical and legally impermissible ratemaking.<sup>238</sup>

### **C. The Companies' Capital Structures and Cost Rates are Reasonable**

All parties recommend the Commission use the December 31, 2004 capital structure for LG&E.<sup>239</sup> All parties recommend the use of the December 31, 2004 capital structure for KU, except KIUC which, as discussed in Section III.C.2, *infra*, takes exception with the amount of KU's equity. Rebuttal Exhibit KWB-1 provides the adjusted capital structure for LG&E and KU as of December 31, 2004 adjusted for the ratemaking adjustments approved by the Commission in its June 30, 2004 Orders in Case Nos. 2004-00433 and 2004-00434. In discovery, the AG agreed that the Commission could adjust the Companies' capital structures for ratemaking purposes if it was appropriate to do so.<sup>240</sup> The ratemaking adjustments to the Companies' capital structures approved by the Commission in the recent rate cases should be used for purposes of calculating the environmental surcharges in these cases.

#### **1. The AG's Recommendation to Limit the Debt Return Component of the Return on Capital to the Pollution Control Bond Rate is Confiscatory**

The AG's witness claimed that the cost of pollution control bonds should be used as the cost of long-term debt for environmental compliance assets, asserting that use of the overall cost of debt would "result in a surcharge being higher than the actual capital costs that are required on

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<sup>238</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, pp. 3-4. Public Service Commission of Kentucky v. Dewitt Water District, Ky., 720 S.W.2d 725 (1986) ("It is the responsibility of the reviewing court to protect the parties subject to the regulatory authority of the Commission from arbitrary and capricious action."); Kentucky Power Company v. Energy Regulatory Commission of Kentucky, Ky., 623 S.W.2d 904 (1981).

<sup>239</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 47; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 47; Rebuttal Testimony of Kent W. Blake for LG&E and KU, pp. 4-5; Direct Testimony of Lane Kollen for KIUC, pp. 18-19.

<sup>240</sup> Response of AG to PSC Data Request No. 7 (LG&E); Response of AG to PSC Data Request No. 7 (KU).

environmental assets.”<sup>241</sup> The AG subsequently asserted in discovery that environmental surcharge recovery should be limited to the cost of only the assets that qualify for pollution control financing.<sup>242</sup> The AG’s claim is nothing less than confiscatory under the United States and Kentucky Constitutions because it would deny the Companies service on their long- and short-term debt.

In Bluefield Waterworks & Imp. Co. v. Public Service Commission of W. Va., 262 U.S. 679 at 692-93, 43 S.Ct. 675 at 679, 68 L.Ed. 1176 (1923), the United States Supreme Court recognized the constitutional rights of a public utility as:

A public utility is entitled to such rates as will permit it to earn a return on the value of property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding, risks and uncertainties [...]

In addition, that decision expressed the constitutional requirements of a reasonable return as:

The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

In the seminal case, Federal Power Commission et al. v. Hope Natural Gas Co., 320 U.S. 591 at 603, 64 S.Ct. 281 at 288, 88 L.Ed. 333 (1944), the Supreme Court again recognized the constitutional right to a reasonable return and the requirements of such a return:

From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock.... That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

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<sup>241</sup> Direct Testimony of Carl G.K. Weaver for AG (LG&E), pp. 47-49; Direct Testimony of Carl G.K. Weaver for AG (KU), pp. 47-49.

<sup>242</sup> Response of AG to PSC Data Request No. 8 (LG&E); Response of AG to PSC Data Request No. 8 (KU).

The United States Supreme Court affirmed the validity of the Hope doctrine in Duquesne Light Co. v. Barasch, 488 U.S. 299, 109 S.Ct. 609, 102 L.Ed.2d 646, 98 P.U.R.4th 253 (1989). Kentucky courts have also consistently recognized and applied the Hope doctrine. See e.g., National-Southwire Aluminum Co. v. Big Rivers Electric Corp., Ky. App., 785 S.W.2d 503 (1990).

The rebuttal testimony of Mr. Blake in these proceedings demonstrates that the AG's claim has no basis in reality, and is based upon the unsupported assumptions that: (i) all environmental costs can be project financed with tax-exempt debt; and (ii) the Companies can secure from the Kentucky Private Activity Bond Allocation Committee enough volume cap to finance environmental facilities that are qualified under federal law for financing.<sup>243</sup> Because only a portion of the new pollution control facilities qualify for tax-exempt financing, the funding of these new pollution control facilities will be treated the same as LG&E's and KU's other capital expenditures. Indeed, as pointed out in Mr. Blake's rebuttal testimony: (1) the Companies do not assign specific portions of capitalization to specific assets; (2) the Commission has repeatedly recognized that investment in utility plant cannot be traced to specific capital sources; (3) the Companies will not be able to obtain enough tax-exempt debt to cover the entire debt component of its capital expenditures over the next several years.<sup>244</sup> As explained by Mr. Blake, pollution control bonds are tax-exempt bonds that finance "qualifying costs" of the scrubbers under the federal tax rules. These bonds are secured by all assets of the Companies and in no way represent "project financing." Financing of the pollution control bonds is possible only because the entire collateral under the first mortgage indenture of each Company is used to secure the loan.<sup>245</sup>

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<sup>243</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 5.

<sup>244</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, pp. 5-8

<sup>245</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, pp. 5-6.



To retain their investment grade bond rating, the Companies must maintain a balanced capital structure. The Companies do not assign specific portions of capitalization to specific assets.<sup>246</sup> All capitalization (pollution control debt, long- or short-term debt, preferred stock or equity) supports the entire asset base of LG&E and KU.<sup>247</sup> Dr. Weaver, at the hearing, admitted that all capital expenditures by LG&E and KU are funded by equity, long- and short-term debt, preferred stock and pollution control debt.<sup>248</sup>

The Commission previously considered and rejected similar claims. In Case Nos. 2000-00386 and 2000-00439, KIUC claimed that the environmental surcharge rate of return should be effectively limited to the costs of various types of short-term debt.<sup>249</sup> In rejecting this argument, the Commission stated:

The Commission is not persuaded by KIUC's argument. Pursuant to KRS 278.183(1), among the costs recoverable through the surcharge is a reasonable return on construction and other capital expenditures. KRS 278.183(2)(b) requires that the Commission establish a reasonable return on the compliance-related capital expenditures. Given this requirement, the Commission believes that a reasonable return on the capital expenditures included in the surcharge constitutes a part of the total actual cost incurred by the utility. Concerning the financing of utility plant, it has long been recognized in the utility industry that capital expenditures are financed by numerous sources of capital, and that it is generally not possible to match a capital expenditure with a specific source of capital. KIUC has acknowledged that neither it nor KU stated that the 2001 Plan to capital expenditures will be financed exclusively with short-term debt. Absence such evidence, the Commission cannot find it reasonable or appropriate to set the rate of return on the 2001 Plan rate base at the cost of KU's short-term debt, either during the CWIP phase or after the facilities are in service.<sup>250</sup>

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<sup>246</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 6.

<sup>247</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 6.

<sup>248</sup> T.E., p. 144.

<sup>249</sup> Direct Testimony of Lane Kollen for KIUC, pp. 10-13.

<sup>250</sup> PSC Order 2000-00386, pp. 23-24; PSC Order 2000-00439, pp. 22-23.

The record of these proceedings before the Commission is no different. The rebuttal testimony of Mr. Blake demonstrates that the 2004 Plans for LG&E and KU cannot be financed exclusively with pollution control debt. At the hearing, the AG's witness acknowledged that the Companies' capital investments are financed by short-term debt, pollution control debt, preferred stock and equity.<sup>251</sup> The Commission should reject the AG's claim.

All of LG&E's and KU's capital requirements are funded with a mix of short-, medium- and long-term debt, preferred stock and common equity. Because only a portion of the new pollution control facilities qualify for tax exempt financing, the funding of these pollution control facilities will be treated the same as LG&E's and KU's other capital expenditures. LG&E and KU presently expect to fund their construction expenditures, including pollution control projects, from all available sources of capital.<sup>252</sup>

Indeed, although (incorrectly) allocating tax-exempt debt as the sole cost rate for debt for ECR purposes would artificially lower ECR rates, if such a decision were legally permissible and somehow reasonable, the Commission would be required also to **raise** base rates since much or all of the tax-exempt debt would have been allocated to ECR operations. The AG's claim should be rejected.

## **2. The Commission Should Use KU's Actual Capital Structure and Reject KIUC's Claim**

Both KU and the AG, through Dr. Weaver, recommend use of the KU capital structure as of December 31, 2004, which includes a 55.09% common equity ratio.<sup>253</sup> In contrast, KIUC witness

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<sup>251</sup> T.E., p. 144.

<sup>252</sup> Direct Testimony of Kent W. Blake for KU, p. 5; LG&E Response to AG Data Request Nos. 1-7 through 1-10.

<sup>253</sup> Rebuttal Testimony of Kent W. Blake for LG&E and KU, p. 5; Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 31-37; Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 47; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 47.

Mr. Kollen recommends that the common equity ratio be capped at the level set in KU's last base rate case (i.e., 51.58%).<sup>254</sup> Mr. Kollen based his recommendation on three arguments: (1) KU has a higher common equity ratio than certain other companies he examined; (2) KU's capital structure is at the strong end of the S&P target criterion for capital structure; and (3) KU has an equity ratio substantially in excess of that of LG&E. All three arguments do not stand up to scrutiny, as shown below.

Unlike Mr. Kollen, who looked only at the 2003 and 2004 equity ratios of Mr. Baudino's proxy group, Mr. Rosenberg examined a much broader array of equity ratios. Mr. Rosenberg's analysis incorporated equity ratios for both Mr. Baudino's and Dr. Weaver's proxy groups and both recent actual equity ratio levels along with projected equity ratio levels.<sup>255</sup> This more extensive analysis showed that KU's common equity ratio, while still somewhat above average, is much closer to average than Mr. Kollen's limited comparison would suggest. KU's common equity ratio is generally within the range of common equity ratios analyzed by Mr. Rosenberg.<sup>256</sup> Furthermore, in spite of KU's somewhat higher equity ratio, both Dr. Weaver and Mr. Baudino find that their proxy groups are risk-comparable to KU.<sup>257</sup> Although the KIUC suggested during cross-examination that KU's equity ratio was above that allowed in recent rate cases, Mr. Rosenberg correctly pointed out that such equity ratios are not analytically comparable to that of KU due to two factors: (1) those equity ratios reflect numerous ratemaking adjustments and are not on a "financial analysis" basis;

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<sup>254</sup> Direct Testimony of Lane Kollen for KIUC, pp. 5, 17.

<sup>255</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 32-34; Exhibit RGR-1, Sch. 4-7.

<sup>256</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, Exhibit RGR-1, Sch. 5-7.

<sup>257</sup> Direct Testimony of Richard A. Baudino for KIUC, pp. 19-21; Direct Testimony of Carl G.K. Weaver for AG (LG&E), p. 26; Direct Testimony of Carl G.K. Weaver for AG (KU), p. 26.

and (2) those ratios do not reflect imputed debt related to purchased power, an important consideration for KU.<sup>258</sup>

Mr. Rosenberg demonstrated that KU's adjusted total debt/total capital ratio of 46.5% was very close to the midpoint of S&P's 42-50% target range for a company of KU's risk and bond rating.<sup>259</sup> This is the benchmark process that KU has repeatedly referenced over the years as its targeted capital structure.<sup>260</sup> S&P adjusts the per books debt ratio to add an imputed amount of debt reflecting KU's significant purchased power commitments. This recognition of the effect of purchased power causes KU's per books common equity ratio of 55.09% to decline to the level of 51.43% in the eyes of that rating agency.<sup>261</sup> As Mr. Rosenberg noted, the regulatory commission in Colorado recently allowed a company to increase its common equity ratio up to 60% of capital to reflect the economic cost incurred by its existing purchased power contracts.<sup>262</sup>

Mr. Kollen's claim that KU's common equity ratio is substantially in excess of that of LG&E is simply incorrect. As Mr. Kollen himself acknowledged, when imputed debt related to purchased

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<sup>258</sup> T.E., pp. 107-116. And an important and long-standing consideration of this Commission. KPSC *Administrative Case No. 350*, Order, pp. 7-9 (October 25, 1993).

<sup>259</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 34. This target debt ratio can be found in the S&P report shown on page 5 of Exhibit LK-4. Note that this report displays both ratio medians and ratio target guidelines. S&P clearly states that the ratio medians are merely descriptive and do not assume a role in the bond rating process; instead, the ratio target guidelines—e.g., the 42-50% debt ratio range referenced above—are what S&P examines in rating a company.

<sup>260</sup> *In the Matter of: An Adjustment of the Electric Rates, Terms and Conditions of Kentucky Utilities Company*, Case No. 2003-434, Direct Testimony of S. Bradford Rives for KU, p. 17 ln. 2-4 (December 29, 2003) (“The Company has a target capital structure of the midpoint of the range for ‘A’ rated utilities published by Standard and Poor’s.”); *In the Matter of: An Adjustment of the Electric Rates, Terms and Conditions of Louisville Gas and Electric Company*, Case No. 2003-433, Direct Testimony of S. Bradford Rives for LG&E, p. 20 ln. 13-15 (December 29, 2003) (“The Company has a target capital structure of the midpoint of the range for ‘A’ rated utilities published by Standard and Poor’s.”); *In the Matter of: The Application of Louisville Gas and Electric Company for Approval of An Amended Compliance Plan for Purposes of Recovering the Costs of New and Additional Pollution Control Facilities and To Amend Its Environmental Cost Recovery Surcharge Tariff*, Case No. 2000-386, and *In the Matter of: The Application of Kentucky Utilities Company for Approval of An Amended Compliance Plan for Purposes of Recovering the Costs of New and Additional Pollution Control Facilities and To Amend Its Environmental Surcharge Tariff*, Case No. 2000-439, Joint Post Hearing Brief of LG&E and KU, pp. 21-23 (March 30, 2001).

<sup>261</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, pp. 34-35.

<sup>262</sup> Rebuttal Testimony of Robert G. Rosenberg for LG&E and KU, p. 35.

## **VI. CONCLUSION**

For the foregoing reasons stated in this brief and in their testimony, Louisville Gas and Electric Company and Kentucky Utilities Company request the Public Service Commission to enter an order which grants the Companies the following relief:<sup>291</sup>

1. Granting KU a Certificate of Public Convenience and Necessity to construct three wet-limestone, forced oxidization FGDs for Ghent Units 2, 3, and 4, at the Ghent Generating Station and one wet-limestone forced oxidization FGD for E.W. Brown Units 1, 2, and 3 at the Brown Generating Station;
2. Approving LG&E's 2004 Environmental Surcharge Compliance Plan (consisting of seven additional projects) and KU's 2004 Environmental Surcharge Compliance Plan (consisting of four additional projects) to meet federal, state and local environmental regulations, including LG&E Project No. 17 and KU Project No. 22 to allow the transfer of emission allowances between LG&E and KU at fair market prices;
3. Approving LG&E's and KU's proposed Environmental Surcharge Tariffs for service rendered on and after July 1, 2005;
4. Authorizing LG&E and KU to use an 11.0 percent return on equity in the calculation of the overall rate of return on their 2004 Environmental Surcharge Compliance Plans;

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<sup>291</sup> Kentucky Utilities Company further requests the Commission enter an order on or before June 20, 2005 granting its application in Case No. 2005-00183, *In the Matter of: Application of Kentucky Utilities Company For Order Authorizing The Issuance Of Securities And The Assumption Of Obligations*. At the evidentiary hearing, the AG and KIUC stated they had no objection to KU's procedural request for the issuance of an order in Case No. 2005-00183 by June 20, 2005. T.E., pp. 14-16.

5. Authorizing LG&E and KU to continue to calculate the rate of return for their environmental surcharges consistent with the manner established in the Commission's previous orders; and
6. Approving the reporting formats proposed by LG&E and KU for use in the monthly surcharge filings.

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Respectfully submitted,



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