

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF LOUISVILLE GAS)	
AND ELECTRIC COMPANY TO MODIFY)	CASE NO.
ITS CERTIFICATE OF PUBLIC CONVENIENCE)	2012-00469
AND NECESSITY AS TO THE MILL CREEK)	
UNIT 3 FLUE-GAS DESULFURIZATION UNIT)	

ORDER

On October 25, 2012, Louisville Gas and Electric Company (“LG&E”) filed an application to modify the Certificate of Public Convenience and Necessity (“CPCN”) granted by the Commission in Case No. 2011-00162.¹ That CPCN authorized the construction of certain environmental projects that were contained in LG&E’s 2011 Environmental Compliance Plan (“2011 Plan”), including environmental equipment at the Mill Creek Generating Station (“Mill Creek”). LG&E’s 2011 Plan was also approved in Case No. 2011-00162, and the costs of the projects contained therein are eligible for recovery by LG&E under its Environmental Cost Recovery (“ECR”) surcharge.

LG&E’s pending application requests the Commission to modify the CPCN to authorize the construction of a new wet flue-gas desulfurization (“WFGD”) system at Mill Creek Unit 3, as a substitute for the previously authorized portion of Project 26, which was the rehabilitation of the existing WFGD at Unit 4 for use at Unit 3. LG&E initially requested that the Commission issue an Order in this case by January 18, 2013 to allow LG&E time to complete the new WFGD by April 2016, which is the deadline for

¹ Case No. 2011-00162, *Application of Louisville Gas and Electric Company for Certificates of Public Convenience and Necessity and Approval of Its 2011 Compliance Plan for Recovery by Environmental Surcharge*, (Ky. PSC Dec. 15, 2011).

compliance with the Mercury and Air Toxics Standard (“MATS”) Rule, assuming a one-year extension is granted. LG&E subsequently stated that it was able to negotiate with its equipment supplier and construction contractor to extend their firm pricing until late February 2013, so that a decision in this case by February 15, 2013 would allow LG&E to lock in those prices and still complete the new WFGD at Mill Creek Unit 3 by April 2016.² Completion of this new WFGD by April 2016 would, according to LG&E, maximize the benefits to ratepayers. LG&E served a copy of its application on each person who was a party to Case No. 2011-00162, but no request to intervene was filed in this case.

By letter dated November 2, 2012, the Commission requested LG&E to clarify whether it intended to file at some future date an application for a modification of its 2011 Plan to include the construction of a new WFGD at Mill Creek Unit 3 and to delete the rehabilitation of the WFGD at Unit 4 for use on Unit 3 or, alternatively, to not seek ECR surcharge recovery of the costs to construct a new WFGD at Mill Creek Unit 3. In response to the Commission’s letter, LG&E filed on November 9, 2012 an amended application and supporting motion requesting a declaratory Order that no 2011 Plan modification is necessary because Project 26 is described in the 2011 Plan as including a WFGD at Mill Creek Unit 3 without specifying whether the WFGD is to be new or refurbished. In the alternative, LG&E’s amended application requested the Commission to modify Project 26 in LG&E’s 2011 Plan to allow for the costs of a new WFGD to serve Mill Creek Unit 3 to be recovered by ECR surcharge.

On November 9, 2012, the Commission issued an Order establishing a procedural schedule for the processing of this case. The procedural schedule provided for two

² LG&E’s Updated Response to Hearing Information Request filed January 18, 2013, Item No. 3.

rounds of discovery on LG&E and the opportunity for intervenors to file comments or testimony. The Commission subsequently scheduled a public hearing which was held on January 4, 2013 at the Commission's offices in Frankfort, Kentucky.

LG&E'S POSITION

The basis for LG&E's request for a modification of the CPCN to build a new WFGD at Mill Creek Unit 3 is the result of a comprehensive inspection of the physical condition of the existing WFGD at Unit 4, as well as a detailed revision to its cost estimates to refurbish versus build new. LG&E has determined that the total current estimated costs associated with rehabilitating the existing WFGD at Mill Creek Unit 4 for an additional 20-plus-year³ life in order to serve Mill Creek Unit 3 is considerably higher than originally anticipated. The original capital cost estimate to rehabilitate the existing WFGD at Mill Creek Unit 4 was \$74 million. Since the issuance of the Commission's Order in Case No. 2011-00162, LG&E has obtained further detailed engineering studies and cost estimates and has determined that the capital cost to upgrade the existing Mill Creek Unit 4 WFGD is now estimated to be \$161 million. LG&E has also now determined that the capital cost to construct a new WFGD for Mill Creek Unit 3 would be \$132 million.

LG&E states that, in addition to greater deterioration of the Unit 4 WFGD than anticipated, more detailed engineering analysis has now identified significant other modifications to structures and equipment that would be required to complete the refurbishment. Based on these revised cost estimates, LG&E has performed studies that calculate the net present value revenue requirements ("NPVRR") for refurbishing the WFGD at Mill Creek Unit 4 and for constructing a new WFGD for Mill Creek Unit 3.

³ Direct Testimony of John N. Voyles, Jr., ("Voyles Testimony") p. 7.

Those studies show that over a 30-year period, there is a lower NPVRR associated with the construction of a new WFGD for Mill Creek Unit 3 than with the previously approved proposal to remove the existing WFGD at Unit 3 and refurbish the existing WFGD at Unit 4 for use at Unit 3.

ENVIRONMENTAL COMPLIANCE REQUIREMENTS

As discussed in the Commission's December 15, 2011 Order in Case No. 2011-00162, LG&E will need to reduce the level of SO₂ emissions from all Mill Creek Units by 2017 to be in compliance with the new one-hour SO₂ National Ambient Air Quality Standard ("NAAQS"). This reduction in SO₂ emissions is required as a part of the Commonwealth of Kentucky State Implementation Plan ("SIP") applicable to Jefferson County, Kentucky, which is expected to be declared a nonattainment area. The SIP requirement in Kentucky is unique to LG&E and its location in a non-attainment area.⁴

In addition to the NAAQS requirements, the Mill Creek Units must be in compliance with MATS, which establishes a surrogate acid gas emission limit. To comply with MATS, LG&E will have to install upgraded WFGDs at the Mill Creek Units by April 2015, but it is expected to be able to take advantage of a provision for a broadly available one-year extension through April 2016.⁵ LG&E's request for this first year extension must be submitted to the Kentucky Division of Air Quality no later than December 2014, and the extension request will need to be supported by specific contract and engineering documentation.⁶ LG&E is aware of no reason why the one-

⁴ Voyles Testimony p. 3-6.

⁵ LG&E's Response to Commission Staff's First Request for Information, Item Nos. 1 and 7.

⁶ LG&E's Response to Commission Staff's Second Request for Information, Item No. 1.

year extension would not be granted.⁷

LG&E's MATS compliance plan was developed based on its entire generating fleet's meeting the MATS compliance requirements. The construction schedule for the fleet to meet the MATS compliance requirements was established to allow reasonable equipment manufacturing lead times while optimizing construction processes. In addition, the schedule was developed to maximize the availability of all generating units to meet customer loads without purchasing power. If the WFGD construction cannot be completed in time to permit Mill Creek 3 to operate in compliance with the MATS requirements by April 2016, either a second year extension would be necessary or replacement power would need to be purchased from the market after April 2016.⁸

A request for a second one-year extension for MATS compliance would have to be based on a specific and documented reliability concern. LG&E's ability to receive a second one-year extension of MATS is uncertain at this time, and its current plans do not include a second one-year extension. If a new or refurbished WFGD is not installed at Mill Creek Unit 3 by April 2016, the unit will not be available to meet LG&E's load during the 2016 summer peak season, and LG&E would be required to make arrangements to purchase power to meet its customers' load. LG&E has estimated the cost of purchased power in the summer of 2016 to be \$19 million.⁹ LG&E's obligations to comply with the emission limits under MATS, as well as those under NAAQS, are not dependent upon, or impacted by, the August 21, 2012 decision of the United States

⁷ *Id.*, Item No. 1.a.

⁸ *Id.*, Item No. 1.c.

⁹ Exhibit JNV-3, p. 4-5.

Court of Appeals for the District of Columbia Circuit to vacate the Cross State Air Pollution Rule ("CSAPR").¹⁰

COMMISSION FINDINGS

Based on a review of the record and being otherwise sufficiently advised, the Commission finds that LG&E's 2011 Plan, as filed in Case No. 2011-00162, estimated a cost of \$74 million to refurbish the existing WFGD at Mill Creek Unit 4 for use at Unit 3. The basis for this estimate was an April 2011 study by Black and Veatch.¹¹ The \$74 million estimate was considered a Pre-Level 1 or conceptual engineering estimate. The level of accuracy of an estimate at this screening phase was less than the more detailed estimates developed later in the process.¹²

Since the issuance of the Commission's Order in Case No. 2011-00162, LG&E has conducted further equipment inspections, engineering studies, and more detailed cost estimates, and has determined that the capital cost to upgrade the existing WFGD at Mill Creek Unit 4 is likely to be \$161 million. This total cost consists of \$70 million as estimated by Babcock Power Environmental, Inc. ("Babcock"), for the direct cost of engineering, procuring and installing the engineered equipment; \$33 million as estimated by LG&E's engineering contractor, Zachry, for Balance of Plant scope, WFGD foundations, instrument and electrical work, ductwork improvements, balance of plant structural steel replacements and HVAC; and an additional \$58 million estimated by Zachry for stack impacts, spare parts, balance of plant engineering, overheads,

¹⁰ Voyles Testimony, p. 6.

¹¹ LG&E's Response to Commission Staff's First Request for Information, Item No. 2.

¹² *Id.*, Item No. 5.

labor, escalation and administrative and general expenses.¹³ As discussed in Babcock's December 2011 Mill Creek Unit 4 Upgrade Study, a more complete analysis of the existing WFGD at Unit 4 was conducted during a unit outage and it revealed that the overall condition of the WFGD absorber and support equipment was significantly worse than had been anticipated in a preliminary engineering study prepared in February 2011.¹⁴

In September 2012, LG&E received a study from Zachry that estimated the cost to install a new WFGD at Mill Creek Unit 3 to be \$113.5 million.¹⁵ In addition to this cost, LG&E estimates that if a new WFGD is constructed at Mill Creek Unit 3, another \$18 million will be required for auxiliary power impacts, distributed control systems, chimney impacts, balance of plant, overheads, escalation, spare parts and administrative and general expenses.¹⁶ The total estimated cost for the new WFGD is \$132 million.

The revised capital costs of \$161 million to refurbish the WFGD at Mill Creek Unit 4 and \$132 million to install a new WFGD at Unit 3 are both greater than the original estimated cost of \$74 million to refurbish the WFGD at Unit 4. However, the updated cost projections also include a reduction of the fixed and variable operation and maintenance costs for the baghouse operations required to capture particulate matter. The variable material consumption costs estimates have been reduced by approximately 47 percent and the fixed operational costs by approximately 50 percent.¹⁷

¹³ *Id.*, Item No. 8.

¹⁴ Volyes Testimony, p. 7-8 and Exhibit JNV-1.

¹⁵ Exhibit JNV-2.

¹⁶ LG&E's Response to Commission Staff's First Request for Information, Item No. 3.

¹⁷ *Id.*, Item No. 10.

Although the current estimated capital costs have changed significantly from the original estimate, LG&E believes these revised capital cost estimates are consistent and comparable to the recent contracts it has awarded for the purchase and installation of WFGD technology at its other units.¹⁸ LG&E's lower cost estimates to operate the baghouse facilities are based on the experience gained from the operation of similar units at LG&E's Trimble County Unit 2.¹⁹

LG&E's pending application is supported by a NPVRR analysis which it used to determine the least-cost alternative for Mill Creek Unit 3 over a 30-year period for a range of given alternatives. A similar NPVRR analysis was filed in Case No. 2011-00162 to support LG&E's 2011 Plan. The alternatives studied included retiring Mill Creek Unit 3, operating it as of April 2016 with a refurbished WFGD from Unit 4, operating it as of April 2016 with a new WFGD, and operating it as of October 2016 with a new WFGD. This last scenario, with a new WFGD delayed until October 2016, would require LG&E to purchase power to replace Mill Creek Unit 3 between April and October 2016, because LG&E could not operate in compliance with MATS.

LG&E's NPVRR analysis included estimates for all relevant capital and operating costs, such as: capital costs for identified equipment; balance of plant expenditures that may be required; and fixed and variable operating costs for all new or proposed equipment. As discussed above, the original capital cost estimates for refurbishing the WFGD at Mill Creek Unit 4 were well below the current estimates, which are based on more recent engineering analysis and inspections. Further, the fixed and variable operating and maintenance costs for the new baghouses used in the original analysis

¹⁸ *Id.*, Item No. 4.

¹⁹ Voyles Testimony, p. 9.

were significantly higher than the revised estimates used in the updated evaluation. Consequently, LG&E's NPVRR analysis as filed in Case No. 2011-00162 concluded that the renovation of the WFGD at Mill Creek Unit 4 for use at Unit 3 was more economical than either the construction of a new WFGD at Unit 3 or the retirement of Unit 3. The updated NPVRR analysis in this case shows that the construction of a new WFGD at Mill Creek Unit 3 is more economical than either the refurbishment of the existing WFGD at Unit 4 for use at Unit 3 or the retirement of Unit 3.

The summary results of LG&E's original NPVRR analysis from Case No. 2011-00162, as well as the updated analysis, are set forth below in Table 1: NPVRR Savings of WFGD Options for Mill Creek Unit 3. The original analysis estimated a \$756 million lifetime savings from operating Mill Creek Unit 3 with a refurbished WFGD from Unit 4 versus retiring Unit 3. The \$756 million of estimated savings is based on the original capital cost for refurbishing the existing WFGD at Unit 4 and the original operating cost estimates of the baghouse. The next three results in the table use revised amounts for the fixed and variable operating and maintenance costs associated with the baghouse and revised capital cost estimates to rehabilitate the WFGD at Unit 4, revised capital costs to construct a new WFGD at Unit 3, and finally, the impact of a six-month delay in installation of a new WFGD at Unit 3. The key to accepting these revised estimates is that the new numbers are based on Level 1 Engineering estimates, while the previous estimates were based on a conceptual estimate that has a much greater degree of error.

Table 1: NPVRR Savings of WFGD Options for Mill Creek Unit 3²⁰

	2011 ECR Plan	Updated Rehab	New FGD	New FGD With Delay
<i>Retrofit Savings (NPVRR, 2011 \$M)</i>	756	794	820	782

One of the major issues reviewed in Case No. 2011-00162 was LG&E's future price projections for natural gas. Projected prices for natural gas are very important because as future gas prices decrease, the projected cost savings from continuing to operate Mill Creek Unit 3 on coal will decrease. The record in Case No. 2011-00162 included fuel estimates developed by Cambridge Energy Research Associates ("CERA"), and those estimates had somewhat lower gas prices than those used by LG&E in its analysis in that case. To further support its application in this case to construct a new WFGD at Mill Creek Unit 3, LG&E performed the NPVRR analysis for all of the above-noted options and with the CERA gas costs, as well. This analysis, as summarized in Table 2, below, shows that a new WFGD at Mill Creek Unit 3 still provides the greatest level of savings, compared with the alternative options.

Table 2: NPVRR Savings of WFGD Options for Mill Creek Unit 3²¹

	2011 ECR Plan	Updated Rehab	New FGD	New FGD With Delay
<i>Retrofit Savings (NPVRR, 2011 \$M) With CERA Gas Prices</i>	338	376	402	370

In addition to the cost savings from that will result from constructing a new WFGD at Mill Creek Unit 3, there are also enhanced environmental benefits. A new WFGD is expected to provide up to an additional 2 percent removal of SO₂, up to a 99 percent level, versus the expected removal level of 97 percent for a refurbished WFGD. This

²⁰ Voyles Testimony, p. 10.

²¹ Voyles Testimony, p. 12.

additional removal of SO₂ is equivalent to approximately 74 tons per year.²² The improved performance level achievable from a new WFGD is also expected to provide additional reductions in inhalable particulates, fine particulates, and sulfuric acid mist.²³

Having found that the construction of a new WFGD at Mill Creek Unit 3 is more cost-effective and will provide additional environmental benefits over the refurbishing of the existing WFGD at Unit 4 for use at Unit 3, the Commission will modify the CPCN issued on December 15, 2011 in Case No. 2011-00162 to authorize a new WFGD at Mill Creek Unit 3. In addition, the Commission finds good cause to grant LG&E's motion to amend its application to include a request to modify Project 26 in its 2011 Plan to include a new WFGD at Mill Creek Unit 3 and allow for its cost recovery by ECR surcharge. Based on the NPVRR analyses filed by LG&E, the Commission finds LG&E's 2011 Plan and rate surcharge as modified in this case to be reasonable and cost-effective for compliance with applicable environmental requirements.

Further, the Commission declines LG&E's request to issue a declaratory order authorizing LG&E cost recovery under its ECR for a new WFGD at Mill Creek Unit 3 without having to amend its 2011 Plan. The Commission's December 15, 2011 Order in Case No. 2011-00162, approved LG&E's 2011 Plan which was described in that Order as including a proposal "to tie Mill Creek Unit 3 into the existing (but upgraded) Mill Creek Unit 4 FGD"²⁴ That is no longer LG&E proposed plan for environmental compliance at Mill Creek Unit 3, and absent Commission approval of an amendment to

²² LG&E's Response to Commission Staff's First Request for Information, Item No. 16.

²³ *Id.*

²⁴ Case No. 2011-00162, Order dated December 15, 2011, p. 6.

that plan, the construction of a new WFGD at Mill Creek Unit 3 is not eligible for cost recovery by ECR surcharge under KRS 278.183.

IT IS THEREFORE ORDERED that:

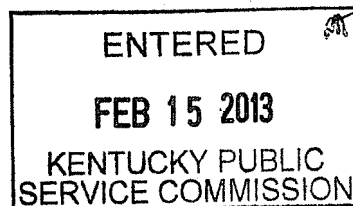
1. The CPCN granted to LG&E by the Commission's December 15, 2011 Order is amended to include the construction of a new WFGD at Mill Creek Unit 3 in place of upgrading the existing WFGD at Unit 4 for use at Unit 3.

2. LG&E's motion to amend its application in this case to include a modification to Project 26 in its 2011 Plan to include the construction of a new WFGD at Mill Creek Unit 3 is granted.

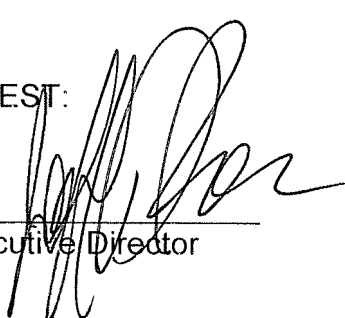
3. LG&E's 2011 Environmental Compliance Plan as amended to include a new WFGD at Mill Creek Unit 3 is approved.

4. LG&E's request for a declaratory order is denied.

By the Commission



ATTEST:



Executive Director

Case No. 2012-00469

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