

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF EAST KENTUCKY)	
POWER COOPERATIVE, INC. FOR)	
A CERTIFICATE OF PUBLIC)	
CONVENIENCE AND NECESSITY)	CASE NO.
FOR THE CONSTRUCTION OF A)	2007-00375
FLUE GAS DESULFURIZATION SYSTEM)	
ON SPURLOCK POWER STATION UNIT 2)	

O R D E R

On August 1, 2007, East Kentucky Power Cooperative, Inc. ("EKPC") filed an application, pursuant to KRS 278.020(1), requesting the amendment of the Certificate of Public Convenience and Necessity ("CPCN") issued in Case No. 2005-00417¹ for the construction of a Flue Gas Desulfurization control facility ("FGD" or "scrubber") at Unit 2 of its Spurlock Generating Plant ("Spurlock 2") in Mason County, Kentucky.

EKPC was notified that its filing was deficient and required certain information to be filed in order that the application could be deemed administratively complete. On September 10, 2007, EKPC corrected these deficiencies and the Commission accepted its filing.

BACKGROUND

In its application in Case No. 2005-00417, EKPC stated that it needed this facility

¹ Case No. 2005-00417, The Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity for the Construction of a Flue Gas Desulfurization System on Spurlock Power Station Unit 2 (Ky. PSC Apr. 18, 2006).

to be operational by 2010 in order to comply with the requirements of the Clean Air Act Amendments of 1990 (“CAA”)² and the Clean Air Interstate Rule (“CAIR”), even if low-sulfur compliance coal were to be burned at Spurlock 2. Installing the scrubber allows Spurlock 2 to switch fuel from low-sulfur compliance coal to Northern Appalachian and Illinois Basin high-sulfur coal. EKPC proposed to install the scrubber by 2008 to achieve an economic advantage at Spurlock 2 by fuel-switching from the higher priced, low-sulfur coal currently being burned at Spurlock 2 to lower priced, high-sulfur coal. The total estimated cost of the proposed scrubber was \$159 million. The EKPC net present value analysis showed that installing the scrubber by 2008 and burning high-sulfur coal will result in a total cost savings of approximately \$338 million over the 29-year study period, as opposed to continuing to burn low-sulfur compliance coal.

Since the original CPCN was granted in Case No. 2005-00417, EKPC has entered into a Consent Decree with the Environmental Protection Administration (“EPA”). That decree commits EKPC to have the Spurlock 2 scrubber operational not later than October 2008.

The scrubber system approved for construction at Spurlock 2 involves the use of a wet flue-gas desulfurization system and a wet electrostatic precipitator. This system allows a greater range of coal to be burned at Spurlock 2, while reducing emissions of sulfur dioxide (“SO₂”), sulfur trioxide, mercury, and total particulate. In 1982 EKPC installed a scrubber on Spurlock 2 in order to burn high-sulfur coal. After operating for approximately 9,000 hours, that scrubber was shut down and deactivated because the price differential between low-sulfur coal and high-sulfur coal was not great enough to

² As amended, 42 U.S.C.A. § 7401, *et seq.*

offset the cost of operating the scrubber. Consequently, the burning of low-sulfur coal resumed. Since the original scrubber was shut down, the cost of low-sulfur coal has increased. In recent years EKPC determined that a scrubber system was now more economical, and it investigated a new wet FGD system. EKPC's economic justification analysis covered the years 2008—2036, and reflected not only estimates of future coal prices, but other major factors such as capital costs, operating and maintenance expenses, reagent costs, projected costs for SO₂ allowances, and landfill costs.

As the new wet FGD system design progressed, it was assumed that the Spurlock 2 chimney was suitable based on the fact that the chimney had an acid brick liner and had previously operated acceptably with the 1982 scrubber system. As the new Spurlock 2 FGD system design was nearing completion, EKPC stated that they began to investigate adding a scrubber system to Unit 1 at Spurlock Station. The investigation of Spurlock 1 involved a more detailed analysis of that unit's chimney since it had never operated with any scrubber system equipment. During this detailed design investigation, it was determined that the existing Unit 1 chimney would not be acceptable as a component in a wet FGD system because of excessive moist gas velocities, acidic droplet carryover, and condensation re-entrainment. After this determination of the deficiency of the Unit 1 chimney, retrospective additional study was given to the suitability of the existing Spurlock 2 chimney.

The original 1982 scrubber installed on Unit 2 had a bypass feature that increased the gas temperature to above the dew point. As a result, the chimney functioned under dry stack conditions. The new wet FGD system is designed to scrub all of the gas; moreover, EKPC's consultants report that the gas temperature will be

lower, and the moisture content will be greater, resulting in a considerable amount of condensation on the acid brick chimney liner. With the wet flue gas velocity well above the suitable operational limit of the current lining, any condensate forming on the liner walls will be re-entrained and discharged into the atmosphere as an acid plume rather than collected and properly processed.

DISCUSSION

EKPC has indicated that its consultants conducted the studies necessary to conclude that the existing Spurlock 2 chimney would not be compatible with the wet FGD system operating conditions now under construction pursuant to the CPCN granted by the Commission on April 18, 2006 in Case No. 2005-00417. They have stated that all possible alternatives have been explored and have shown that the construction of a new chimney is the best and most economical option. This new chimney stack will consist of a 650 foot tall concrete shell having a 27 1/2 foot diameter carbon steel liner protected by borosilicate block.

The scrubber project cost will increase by an estimated \$19 million required for the construction of the new chimney. In addition, several other project-related costs have increased and added another \$29.4 million to the project cost. Therefore, the original \$159 million project is now estimated to cost \$207.4 million. EKPC states that the addition of the chimney and increased costs will have no significant change in its justification or adverse effect on the operational schedule of the system. EKPC further states that it has completed a revised net present value ("NPV") analysis of all the project cost components using the most current capital costs. This NPV analysis indicates that the new scrubber system will result in a total cost savings of

approximately \$311 million over the 29-year study period, if the system is installed by 2008, and high-sulfur coal is burned rather than continuing to burn low-sulfur compliance coal. EKPC declares that this course of action continues to be the least-cost compliance option available. The financial arrangements for the project likewise have not been altered. It is EKPC's intention to finance the Spurlock 2 scrubber system, including the new chimney, through the Rural Utilities Service by a long-term guaranteed loan from the Federal Financing Bank.

IT IS THEREFORE ORDERED that EKPC is granted an amendment to the CPCN to construct a limestone scrubber and associated equipment at Spurlock 2.

Done at Frankfort, Kentucky, this 8th day of October, 2007.

By the Commission

ATTEST:


Executive Director