

# PROJECT facts

U.S. DEPARTMENT OF ENERGY  
OFFICE OF FOSSIL ENERGY  
NATIONAL ENERGY TECHNOLOGY LABORATORY



## CONTACT

### Brad Tomer

Director  
Office of Major Demonstrations  
National Energy Technology  
Laboratory  
3610 Collins Ferry Road  
P.O. Box 880  
Morgantown, WV 26507-0880  
304-285-4692  
brad.tomer@netl.doe.gov

## PARTICIPANT

LG&E Energy Corporation  
Louisville, KY



## Clean Coal Power Initiative (CCPI)

10/2008

## COMMERCIAL DEMONSTRATION OF THE AIRBORNE PROCESS (WITHDRAWN PRIOR TO AWARD)

### Project Description

This project is a full-scale demonstration of advanced emission control technologies integrated with existing emissions control equipment. The demonstration team led by LG&E Energy Corporation includes Airborne Pollution Control, developer and supplier of the fertilizer production system, The Babcock & Wilcox Company, dry sorbent injection and sodium based scrubbing system provider, and USFilter's HPD Systems, regeneration system provider. LG&E Energy Corporation will host this project and serve as the prime contractor with the U.S. Department of Energy. The Babcock and Wilcox Company will support LG&E Energy Corporation by participating in the test program and providing program management support. The Babcock & Wilcox Company, USFilter's HPD Systems, and Airborne Pollution Control will manage and provide the design, installation, start-up, and testing for the four-year project.

The host site will be the 524 MWe Unit 2 at the Ghent Generating Station, owned by LG&E Energy Corporation's Kentucky Utilities Company located near Carrollton, Kentucky. The project concept is depicted in the figure on the following page.

### Benefits

A primary benefit of this project is the demonstration of a potential cost-effective process that can be widely applied in the near term to meet required emissions reductions both for retrofits to existing unscrubbed plants and for new coal-based installations. The Ghent Generating Station Unit 2 could burn in excess of 6,000 tons per day of eastern bituminous coal containing up to 3.5 percent sulfur. The Airborne Process integrates wet sodium scrubbing and dry sorbent injection of sodium bicarbonate to achieve estimated emission reductions of 99.5 percent of SO<sub>2</sub>, 90 percent of SO<sub>3</sub>, 90 percent of NO<sub>x</sub>, and 90 percent of mercury, while turning the by-products into a high-quality, salable, granular fertilizer. Novel technology to regenerate the sodium bicarbonate sorbent, allowing it to be reused, eliminates high costs for sodium-based scrubbing. Fertilizer production will substantially reduce solid waste disposal and will result in a useful by-product. If successful, this demonstration will result in the conversion of a 1977 vintage plant into one of the cleanest coal-fired power plants in the Nation while producing competitively priced electricity.

## ADDITIONAL TEAM MEMBERS

McDermott Technology, Inc.  
Alliance, OH

Babcock & Wilcox Company  
Barberton, OH

USFilter  
Plainfield, IL

Airborne Pollution Control  
Calgary, AB Canada

## LOCATION

Ghent Generating Station  
Carrollton, Carroll County, KY

## COST

**Total Project Value**  
\$120,126,600

**DOE/Non-DOE Share**  
\$31,122,300 / \$89,004,300

## ADDRESS

### National Energy Technology Laboratory

1450 Queen Avenue SW  
Albany, OR 97321-2198  
541-967-5892

2175 University Avenue South  
Suite 201  
Fairbanks, AK 99709  
907-452-2559

3610 Collins Ferry Road  
P.O. Box 880  
Morgantown, WV 26507-0880  
304-285-4764

626 Cochran's Mill Road  
P.O. Box 10940  
Pittsburgh, PA 15236-0940  
412-386-4687

One West Third Street,  
Suite 1400  
Tulsa, OK 74103-3519  
918-699-2000

## CUSTOMER SERVICE

1-800-553-7681

## WEBSITE

[www.netl.doe.gov](http://www.netl.doe.gov)

The high levels of pollutant removal achieved by LG&E Energy Corporation's Ghent Unit 2 will meet with the Administration's proposed Clear Skies Initiative (CSI). CSI calls for emission reductions of 73 percent for SO<sub>2</sub>, 67 percent for NO<sub>x</sub>, and 69 percent for mercury (beyond current reduction requirements) by the time full implementation is achieved in 2018. Completion of this demonstration is planned for 2007 and, thus, will occur during the first phase of CSI reductions scheduled for 2010.

Since the Airborne Process expects high levels of sulfur and oxidized mercury removal, the primary application for this technology will be on power plants firing high-sulfur Eastern bituminous coal. While the Airborne Process can be applied to any such plant, the most attractive situation will occur for existing coal-fired power plants located in the Midwestern and Southeastern states that have access to large agricultural markets for the fertilizer. When demonstrated, this project will provide a cost-effective option for un-scrubbed units in the existing fleet as well as new coal-based generation for meeting domestic energy and environmental objectives.

## Project Status

This project was withdrawn from the Clean Coal Power Initiative Program by mutual consent of LG&E and DOE

