PUBLIC ABSTRACT

Applicant (primary) name: AmerenUE

Applicant=s address: 1901 Chouteau Avenue, St. Louis, MO 63103
Street City State Zipcode

Team Members (if any): Powerspan, New Durham, NH 03855
(listing represents only participants at time of application, not necessarily final team membership)
Name City State Zipcode

Sargent & Lundy, Chicago, IL 60603
Name City State Zipcode

The Andersons, Maumee, OH 43537
Name City State Zipcode

(Use continuation sheet if needed.)

Proposal Title: Demonstration of the Electro-Catalytic Oxidation (ECO) Emissions Control Technology on a 510 MWg Power Plant Firing Powder River Basin Fuels

Commercial Application: **9** New Facilities XX Existing Facilities

9 Other, Specify: _____

Technology Type: Air Emissions Reduction

Estimated total cost of project:
(May not represent final negotiated costs.)

Total Estimated Cost: $ 146,060,000

Estimated DOE Share: $ 73,030,000

Estimated Private Share: $ 73,030,000

PUBLIC ABSTRACT (cont=d)

Anticipated Project Site(s): West Alton, St. Charles County, MO 63386
Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Type of coal to be used: Powder River Basin (Primary) Illinois bituminous (Alternate (if any))

Size or scale of project: _____
Tons of coal/day input
And/or
510 MW gross (Megawatts, Barrels per day, etc.)
Other (if necessary)

Duration of proposed project: 53
(From date of award) (Months)

PRIMARY CONTACT:

For additional information, interested parties should contact: Name: Susan L. Gallagher

Position: General Manager – Corporate Communications

Telephone Number: (314) 554-2175

Company: Ameren

e-mail address: SGallagher@amren.com

Address: P.O. Box 66149, Mail Code 100

City State Zipcode: St. Louis, MO 63166-6149

PUBLIC ABSTRACT (cont=d)

Brief description of project:

Demonstration of the Electro-Catalytic Oxidation (ECO) Emissions Control Technology on a 510 MWg Power Plant Firing Powder River Basin (PRB) Fuels

Abstract

AmerenUE (St. Louis, MO) and Powerspan Corp. (New Durham, NH) will demonstrate--at full commercial scale--Powerspan's advanced proprietary multi-pollutant control technology – Electro-Catalytic Oxidation (ECOTM). The demonstration will be conducted on a coal-fired power plant burning primarily Powder River Basin (PRB) coal. In a single system, ECO technology removes greater than 98% of sulfur dioxide (SO2), 90% of nitrogen oxides (NOx), 80 to 90% of mercury, and over 95% of fine particulate matter (PM2.5) and air toxics from a coal-fired flue gas stream. The ECO system produces a commercially salable, ammonium sulfate nitrate fertilizer byproduct, reducing operating costs and avoiding landfill disposal of waste. ECO is more effective, more economical, and more environmentally attractive than the best available emission control technologies currently in use. Capital costs of commercial ECO systems are estimated to be approximately 40% lower than the cost of alternative solutions required to obtain comparable performance.

AmerenUE will install an ECO system on Unit-2 of Sioux Plant, a 510-MW unit in St. Charles County, Missouri, near St. Louis. The ECO system will treat all of the flue gas from Unit-2 and will include all supporting systems to produce, handle, and transport salable fertilizer. The fertilizer will be sold into the marketplace. An existing large, diversified agribusiness and retailing company will participate in design and operation of the fertilizer processing system to ensure the product meets market requirements. This project will demonstrate the technical performance of the ECO process on low-sulfur, sub-bituminous (PRB) coal and will demonstrate the overall economics of the system. This will be the first ECO unit installed to treat an entire flue gas stream, and the first unit to treat flue gas from predominantly PRB coal. It will be designed to the same standards for reliability, controllability, flexibility, and serviceability that would be used for any other permanently installed utility pollution control system. It will be exposed to plant startups and shutdowns, load variation, fuel variation, and boiler upsets. Consequently, the operating experience will be a direct measure of the technical and commercial readiness of ECO and will provide the operating experience needed to support accelerated and widespread commercial adoption of this technology.

In the first phase of this project, a 1.5 MW slipstream pilot will be installed and operated for approximately six months on Sioux Unit-2. This slipstream unit will contain all of the same processing units and in the same configuration as will be used in the full-scale unit. Successful operation of this pilot will be the basis for proceeding with the full-scale unit.

Powerspan’s ECO technology is a three-stage process consisting of a dielectric barrier discharge reactor; an ammonia scrubber/absorber column; and a conventional, vertically oriented wet electrostatic precipitator. The dielectric barrier discharge reactor oxidizes the pollutants. The scrubber removes the SO2 and the oxidized NOx. The wet electrostatic precipitator (WESP) removes any aerosols created from the reactor and from the scrubbing process. Additionally, the WESP removes fine particles and oxidized particulates, such as mercuric

oxide. The mercury removed from the flue gas will be isolated for disposal to avoid any impact on the usability of the byproducts. The ammonium sulfate and nitrate collected in the scrubber are crystallized to form ammonium sulfate nitrate fertilizer. The fertilizer product is in the same physical form and of the same chemical make-up as is currently used for fertilizer and will have a ready market both domestically and overseas. Since the ECO unit is installed after the existing dry electrostatic precipitator, the process has no effect on the existing re-use options for the plant's ash. Powerspan has demonstrated the pollutant removal capability of the ECO system in a 1-MW pilot, operating continuously on a slipstream from First Energy Corp's R.E. Burger Plant in Ohio. A 50-MW unit, also on a slipstream from the R.E. Burger Plant, is expected to be operational in early summer 2003. The Burger Plant burns primarily bituminous coal.

Expected Project Key events:
(1) January 2003 – Project award
(2) June 2003 – ECO Pilot installed on Sioux Unit 2
(3) September 2003 – Pilot data evaluated
(4) October 2003 – Detailed design of full-scale unit begins
(5) March 2006 – Startup of full-scale unit
(6) May 2006 – Full-scale unit put in full time service; 12 month long term performance testing period begins
(7) May 2007 – Project complete
The total duration of this project is four and one half years and the estimated cost is $146MM