

## **FINDING OF NO SIGNIFICANT IMPACT**

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### **GREENIDGE MULTI-POLLUTANT CONTROL PROJECT**

**AGENCY:** U.S. Department of Energy (DOE)

**ACTION:** Finding of No Significant Impact (FONSI)

**SUMMARY:** DOE has prepared an Environmental Assessment (EA), DOE/EA-1493, titled *Greenidge Multi-Pollutant Control Project*, to analyze the potential environmental consequences of providing cost-shared funding support for the design, construction, and demonstration of an integrated multi-pollutant control system at AES's Greenidge Station in Dresden, New York. The system, expected to control emissions of NO<sub>x</sub>, SO<sub>2</sub>, SO<sub>3</sub>, HF, HCl, and Hg, would be installed on the existing, coal-fired, 107-MW Unit 4 at Greenidge. The results of the analyses provided in the EA are summarized in this Finding of No Significant Impact.

The proposed action is for DOE to provide about \$14.5 million for this project, while CONSOL Energy Inc. and its project partners would be responsible for the remaining \$21 million. The proposed project will result in technical, environmental, and financial data from the design, operation and construction of the multi-pollutant control system. This 4.5-year, commercial-scale demonstration project would allow utilities, particularly those with units less than 300-MW in capacity, to make decisions regarding the integrated multi-pollutant control system as a viable commercial option.

Based on the analyses in the EA, DOE has concluded that the Greenidge Multi-Pollutant Control Project would result in minimal and insignificant consequences to the human environment. Thus, DOE considers that the proposed action, providing cost-shared funding for the project, is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969, 42 United States Code 4321, *et seq.* Therefore, in accordance with 10 CFR Part 1021.322, DOE has concluded that preparation of an Environmental Impact Statement is not required, and DOE is issuing this FONSI.

**COPIES OF THE EA ARE AVAILABLE FROM:**

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**BACKGROUND:** This project was proposed by CONSOL and its project partners in response to DOE's solicitation under the Power Plant Improvement Initiative (PPII). Projects selected under the PPII solicitation were required to have the potential for demonstrating substantial improvements in power plant performance, including improvements in efficiency, environmental, and cost-competitiveness.

**PUBLIC PARTICIPATION:** On June 21, 2004, DOE released a draft EA for review and comment. Public notices announcing availability of the draft EA were placed in The Chronicle Express newspaper in Penn Yan, NY and the Finger Lakes Times in Geneva, NY. Hardcopies of the EA were made available in the Penn Yan Library, which is the nearest public building to the site.

Following a 30-day review and comment period, the comments received were incorporated into the body of the EA and copies were attached as Appendix C. The Final EA was completed in August 2004.

**DESCRIPTION OF THE PROPOSED ACTION:** The proposed action is for DOE to provide cost-shared funding to design, construct and demonstrate an integrated multi-pollutant control system on the 107-MW, coal-fired Unit 4 at AES Greenidge Station. This 4.5-year commercial-scale demonstration project would illustrate to the target boiler market the technical, environmental, and financial impacts of such a system.

The proposed technology includes a single-bed, in-duct Selective Catalytic Reduction (SCR) unit for NO<sub>x</sub> control and a Circulating Dry Scrubber (CDS) for SO<sub>2</sub>, mercury, acid gases, and SO<sub>3</sub> control. Additionally, particulate would be controlled by either a baghouse or an Electrostatic Precipitator (ESP). The particulate device would be chosen by the equipment vendor, since the target control specifications are the same in either case.

The project is intended to demonstrate improved cost-competitiveness as well as improved mercury, SO<sub>3</sub>, and fine particulate control in comparison with existing technologies. This system would target reductions of 95% for SO<sub>2</sub>, SO<sub>3</sub>, HCl, and HF emissions; and 60% to 90% for mercury emissions. NO<sub>x</sub> emissions would be reduced to less than 0.122 lb/MMBtu, and particulate emissions would be reduced such that no visible emissions from the stack would result.

**ENVIRONMENTAL CONSEQUENCES:** The Environmental Assessment included analyses of the potential impacts of the proposed *Greenidge Multi-Pollutant Control Project* on the following elements of the human and natural environment: land use and aesthetics; atmospheric resources and air quality; surface water resources; geological resources; floodplains and wetlands; ecological resources; waste management; cultural resources; socioeconomic resources;

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environmental justice; transportation and noise; electromagnetic fields; and human health and safety. No substantive adverse impacts were identified from analyzing the effects of the proposed project on the human and natural environment.

#### LAND USE AND AESTHETICS:

No impacts on offsite land use would occur, since the project would be wholly confined to AES property. On the site, 3 acres of previously developed land, currently paved and used for parking, would be used for the new equipment, while an area that was previously cleared but not developed would be used as a new parking lot. Ash disposal would continue in the AES-owned Lockwood Landfill.

#### ATMOSPHERIC RESOURCES AND AIR QUALITY:

With the exception of ammonia emissions, the air emissions at AES Greenidge would decrease or remain constant. The installation of the SCR would result in an increase in air emissions of ammonia from 0 to 280 lbs/year. This ammonia emission would be minimal in comparison with current emissions from fertilizer used in local vineyards. Additionally, the resultant reductions in NO<sub>x</sub>, SO<sub>2</sub>, SO<sub>3</sub>, HCl, HF, and Hg significantly outweigh the increase in ammonia. Particulate matter emissions in the PM-10 and PM-2.5 size ranges would be expected to remain constant. Overall, a slight benefit to air quality would be expected as a result of this project.

During the construction phase of the project, additional vehicle emissions and fugitive dust would temporarily increase. Dust would be controlled by sprinkling water on exposed soil as needed. No anticipated impact from this temporary localized increase in emissions would occur.

#### SURFACE WATER RESOURCES

The proposed project would produce negligible anticipated adverse impacts on water quality and quantity in Seneca Lake. While additional quantities of solid and liquid waste would be generated during construction, the plant would properly dispose of them and utilize existing containment and spill mitigation procedures to prevent contaminants from reaching Seneca Lake. Erosion and runoff would be managed in accordance with regulations and guidance from the New York State Department of Environmental Conservation. During the operation phase, no additional waste water would be produced, but an additional 93 gallons per minute, 0.1% of the plant's total water use, would be consumed. All plant wastewater would continue to be treated in accordance with applicable permits.

#### GEOLOGICAL RESOURCES

The proposed project would not affect the availability or accessibility of rock or mineral resources. No agricultural soils would be removed from potential production. Sand, crushed

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stone, glacial till soil, and limestone used in the construction or operation of the plant are locally available.

The proposed project would not affect any groundwater users or uses, since neither is present in the site vicinity. The project would not use groundwater sources for construction or operation. Waste disposal by the plant would be unlikely to impact groundwater, since the new portion of the Lockwood Landfill is fully lined and monitoring wells would detect any contaminant leaching from the older portion.

#### FLOODPLAINS AND WETLANDS

No adverse impacts on the Keuka Lake Outlet or Seneca Lake floodplains would be anticipated, since the entire project area is outside the 500-year floodplain.

A review of the National Wetlands Inventory maps indicated no wetlands on or adjacent to the project site. No adverse impacts on wetlands would be anticipated.

#### ECOLOGICAL RESOURCES:

Section 7(a)(2) of the Endangered Species Act directs Federal agencies to consult with the Department of the Interior to ensure that any Federal action authorized, funded, or carried out is not likely to jeopardize the continued existence of any endangered or threatened species or to result in the destruction or adverse modification of the habitat of such species. The U.S. Department of the Interior/Fish & Wildlife (F&W) Service was consulted and confirmed that the proposed project would not be likely to result in any adverse effects on endangered, threatened or State-protected animal or plant species under the jurisdiction of the F&W Service. Any impact on biota would likely be slightly beneficial, due to the net reduction of pollutants emitted.

Construction and operation of the proposed project would not adversely affect terrestrial ecological resources. The proposed project location is highly disturbed and completely industrialized, supporting few, if any, native plant or animal communities. Ammonia emissions would increase slightly, due to the use of an SCR for NO<sub>x</sub> removal. Any resulting addition of ammonia to aquatic and terrestrial habitats would be miniscule compared to the emissions from nitrogen-based fertilizer in the wineries and other agricultural uses in the immediate area.

#### WASTE MANAGEMENT:

Non-hazardous solid waste generated during the demolition and construction processes would be reused as fill, sold as scrap, or transported to the municipal landfill. The municipal landfill has sufficient capacity to accept these wastes without any detrimental effects on its useful life.

A slight increase in the amount of hazardous waste, such as paint or solvent, would be generated during construction. These wastes would be handled in accordance with existing waste handling procedures at the plant. No additional hazardous wastes would be generated during operation,

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with the exception of the SCR catalyst bed. Because the catalyst loses its reactivity over time, the commonly accepted commercial practice is to replace the bed after 3 years; however, this would not be necessary during the 12-month demonstration period.

The quantity of bottom ash generated would not change, while the quantity of fly ash would increase by 50%. The increase in fly ash would result from capturing lime used in the CDS and from enhanced capture of very fine particulate, since the CDS agglomerates fine particles into larger particles that can be captured in a baghouse or ESP. Fly ash would be landfilled in the Lockwood Landfill, owned by AES. The increase in landfilled material would reduce the useful life of the landfill. The capacity of the landfill would be reached around 2040, rather than 2057 as previously calculated. Leachate would continue to be monitored and treated, if necessary, to meet permit requirements for discharge into Keuka Lake Outlet. The increase in capture of mercury from plant emissions would result in increased mercury levels in the fly ash. Research on leaching of mercury from fly ash indicates that there would be negligible effects on Hg levels in Lockwood Landfill leachate. The proposed project would not change the requirements or process for closure and post-closure monitoring of the landfill.

#### CULTURAL RESOURCES:

DOE requested a consultation with New York State's Historic Preservation Officer with no response. Impacts from construction and operation of the proposed project would not be likely, because the project site has been disturbed since the 1950's, no cultural resources have been found on or near the project site, and the two National Register properties closest to the site are approximately 0.5 miles to the northwest.

#### SOCIOECONOMIC RESOURCES:

Minimal socioeconomic impacts would result from the proposed project. The impacts of the construction workforce on local population, employment, housing, taxes, and sanitation would be minimal and temporary, since no additional permanent personnel would be needed following the 12-month construction period.

#### ENVIRONMENTAL JUSTICE:

The proposed project would not result in disproportionately high impacts on minority or low income populations.

#### TRANSPORTATION AND NOISE

The proposed project would produce minimal impacts on road transportation in the vicinity of the site during the 12-month construction period. These impacts, resulting from the temporary increase in workers and construction supplies, would be managed by scheduling arrivals in 15-minute intervals, if necessary. During the project demonstration, the number of trucks per day

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would remain constant, while a slight increase in the number of coal trains per year (from 1 per year to 2 per year) would result.

Elevated noise levels would be localized and temporary during the construction phase. These noise levels would be mitigated to the extent possible using exhaust mufflers and engine enclosures on construction equipment. Inside the plant, long-term increases in noise level due to the additional equipment installed would be mitigated by enclosing and acoustically insulating the equipment. Additionally, sound-attenuating enclosures or other noise dampening measures would be used as needed so that the noise level would be less than 85 dB(A) at 3 feet from the base of the equipment.

#### ELECTROMAGNETIC FIELDS

No additional sources of electromagnetic radiation would be created by this proposed project.

#### HUMAN HEALTH AND SAFETY

Potential health and safety hazards for the construction workers would be consistent with the hazards at any construction site. No unusually hazardous situations would be anticipated. Health and safety risks would be mitigated by complying with the Occupational Health and Safety Administration (OSHA) General Industry and Construction Industry standards. Similarly, the plant's Occupational Safety and Health Program would be revised to include the new equipment. Provisions would also be added to contingency plans for incorporating requirements of OSHA and the U. S. Environmental Protection Agency (USEPA).

**ALTERNATIVES CONSIDERED:** DOE's role in the project would be limited to deciding whether or not to co-fund the project; thus, the alternative actions considered were also limited. The alternatives considered in the Final Environmental Assessment consisted of (1) a No-Action Alternative, under which DOE would not provide cost-shared funding for the project, and Greenidge Station would cease operations; (2) AES installing commercially-available pollution controls to comply with emissions standards; (3) AES switching the fuel from coal to natural gas; and (4) AES purchasing emissions credits and continuing to operate at current emissions levels.

The No-Action Alternative would eliminate emissions and consumption of natural resources locally, but increase emissions from another power plant making extra power to cover the loss of Greenidge. Additionally, there would be socioeconomic impacts resulting from the losses of construction revenue and permanent jobs.

The installation of commercially-available pollution controls would reduce emissions, but would not meet the goals of the PPII program for demonstration of new technologies for coal-fired power plants. Additionally, the cost of an SCR is prohibitive for smaller units.

Switching the fuel at the host site to natural gas would lower emissions, but it would be cost-

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prohibitive and would not further the goals of the PPII program for improvements to coal-fired power plants.

Continued operation at current emissions levels coupled with the purchase of additional emissions credits would not reduce environmental impacts. Purchasing credits would not further the goals of the PPII program, nor would it result in a socioeconomic benefit of construction jobs.

The preferred alternative is to provide cost-shared funding for the proposed project to integrate emissions control technologies in a novel way, at an economically-competitive price.

#### PROJECT PLAN ADJUSTMENTS:

Some adjustments have been made to the project plan since the EA was written and published for public comment. Initially, the plan called for a single-bed, in-duct SCR. The SCR as originally proposed would reduce NO<sub>x</sub> emissions to 0.122 lb/MMBtu. In order to meet future lower New York State NO<sub>x</sub> requirements, AES proposed the injection of urea above the combustion zone in the boiler to use Selective Non-Catalytic Reduction (SNCR) to reduce NO<sub>x</sub> levels. The ammonia slip from the SNCR process would be used to drive the reaction in the in-duct, single-bed SCR system, which would further reduce NO<sub>x</sub> to 0.10 lb/MMBTU. The addition of the SNCR upstream of the SCR would not adversely impact the outcome of the EA, since the initial plan accounted for ammonia emissions from the SCR. Additionally, the initial plan provided for the transportation, storage, and use of anhydrous ammonia, which is classified as a hazardous material and has a much higher associated risk than the non-hazardous urea. With respect to the change to urea, therefore, the potential for environmental impact would be lessened.

In the EA, the particulate control technology is not specified, since either a baghouse or an ESP could be used to achieve required particulate control. The particulate emissions reduction specifications would be the same in the case of either technology (Section 2.1.3). AES approved selection of a baghouse for particulate control, which would not adversely affect the impact data provided in the EA.

Based on this information, the impacts identified in the EA are accurate and applicable as written.

**FINDING:** Based on the information and data contained in the Final EA, which analyzes the relevant environmental issues and concerns of stakeholders, DOE finds that no significant impact would result from implementing the proposed Federal action, to provide cost-shared funding for the design, construction, and operation of an integrated multi-pollutant control system at AES Greenidge Station.

This Finding of No Significant Impact is made pursuant to the National Environmental Policy

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Act (NEPA) of 1969 [42 U.S. Code 4321 *et seq.*]; the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of NEPA, Title 40 CFR, Part 1500-1508; and the DOE's NEPA Implementing Procedures, Title 10 CFR, Part 1021. The Proposed action does not constitute a major Federal action that would significantly affect the quality of the human environment within the meaning of the National Environmental Policy Act. Therefore, an Environmental Impact Statement is not required and DOE is issuing this FONSI.

ISSUED IN PITTSBURGH, PA, this 3<sup>RD</sup> day of ~~December~~ 2004.



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Director

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