FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED ADVANCED HYBRID PARTICULATE COLLECTOR 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-1418, to analyze the potential environmental consequences of participating in a project to demonstrate Advanced Hybrid Particulate Collector (AHPC) technology potentially capable of achieving greater than 99.99% removal of particulate matter from flue gas, regardless of particle size. This advanced particulate collector technology combines and integrates features of electrostatic precipitators and fabric filters in a manner that achieves synergistic performance improvements for particle collection. The AHPC system would be retrofit into the housing of the existing electrostatic precipitator at Otter Tail Power Company's 450-megawatt, coal-fired, Big Stone Power Plant in Grant County, SD.

If approved, DOE would provide approximately 49% of the estimated $13.4 million cost of the 3-year project. Following completion of the technology demonstration under the cooperative agreement with DOE, Otter Tail Power Company would be expected to continue operation of the AHPC system for controlling fine particulate emissions from the Big Stone Power Plant.

Based on the analysis in the EA, DOE has determined that the proposed action 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, 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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FINDING OF NO SIGNIFICANT IMPACT
FOR THE PROPOSED
ADVANCED HYBRID PARTICULATE COLLECTOR PROJECT

BACKGROUND: As part of its mission, DOE's National Energy Technology Laboratory (NETL) provides science, technology, and policy options to resolve environmental, supply, and reliability issues associated with the use of fossil energy. Consistent with this mission and in partnership with stakeholders, NETL supports efforts by industry to increase energy efficiency, minimize waste, reduce environmental impacts, and increase the availability of domestic energy supplies through productivity and operational enhancements.

To facilitate commercial demonstration of technologies capable of maintaining the viability of coal as a stable domestic resource for electric power generation, DOE/NETL issued solicitation DE-PS26-01NT41101, "Power Plant Improvement Initiative," under which Otter Tail Power Company responded with a proposal for "Demonstration of a Full-Scale Retrofit of the Advanced Hybrid Particulate Collector." The Otter Tail proposal offered a new approach to particulate collection that combined the best features of electrostatic precipitators and fabric filters in a novel manner. Tests of a pilot-scale AHPC system confirmed the potential to achieve ultra-high particle collection efficiency, overcome problems of excessive fine particle emissions that exist with conventional electrostatic precipitators, and solve problems of re-entrainment and re-collection of dust, which occur in conventional fabric filter systems. Otter Tail proposed to retrofit this technology into the housing of an existing electrostatic precipitator, which is the current technology used for controlling particulate emissions at the Big Stone Power Plant. DOE selected the Otter Tail proposal for support.

DESCRIPTION OF THE PROPOSED ACTION: The proposed action is for DOE to provide, through a 3-year cooperative agreement resulting from Otter Tail Power Company's proposal under the cited DOE/NETL solicitation, cost-shared financial support for design, construction, and operation of an integrated particulate collection technology. The proposed system would replace the existing electrostatic precipitator at the 450-megawatt, coal-fired, Big Stone Power Plant in Grant County, SD. Under the proposed action, DOE would provide about $6.5 million (approximately 49% of the total project cost) for the technology demonstration.

ENVIRONMENTAL CONSEQUENCES: The Environmental Assessment included consideration of potential effects on the following environmental resources: air quality, water quality, solid and hazardous waste, socioeconomics, safety and health, floodplains and wetlands, flora and fauna, cultural and historic resources, land use, soils and geology, noise, environmental justice, and aesthetics. The environmental analysis identified that the most notable changes from the proposed action would occur in the areas of air emissions, construction (safety and health) impacts, and solid waste disposal. No substantive adverse impacts or environmental concerns were identified from analyzing the effects of these changes.

Air Quality: The proposed project would result in installation of an improved particulate control technology capable of reducing particulate emissions, primarily emissions of fine particulate, from a current level of 278 tons per year to a level of 6 tons per year.

Water Quality: Water requirements at the power plant would be reduced by 10 gallons per minute due to elimination of the need for humidification of the flue gas to improve performance in the existing electrostatic precipitator, which would be replaced by the AHPC system.

Solid and Hazardous Waste: Removal of internal and operational components associated with the existing electrostatic precipitator wold result in up to 500 tons of scrap steel. Small quantities of asbestos waste may also be generated. Asbestos wastes would be segregated and packaged for disposal using standard practices for asbestos abatement activities. Up to an additional 300 tons per year of flyash, an increase of less than 1%, would be recovered for disposal in an existing, on-site landfill.

Socioeconomic Resources: The proposed project would not require a permanent on-site workforce, and a maximum of 150 workers would be required during the 5-6 week construction stage of the project. The proposed project would not increase school-aged population or have any adverse impacts to local educational or recreational resources or local infrastructure.

Safety and Health: No new occupational hazards would be created by the proposed project. Demolition and construction activities at the proposed site would be covered by Occupational Safety and Health Administration (OSHA) regulations at Title 29, Code of Federal Regulations (CFR), Part 1926, "Safety and Health Regulations for Construction." Conformance to applicable OSHA standards would provide adequate protection to workers during the construction phase of the project. Hazards during operation of the AHPC system would be similar to existing hazards, which would be handled using existing work procedures.

Floodplains and Wetlands: No floodplains or wetlands are located near the project site.

Flora and Fauna: The proposed project would be located within existing structures at the Power Plant, which would eliminate hazards to fish, plant, or wildlife species. No Federally listed threatened or endangered (T&E) species are known to occur in the area. Consultation with the U.S. Fish and Wildlife Service confirmed that the project area does not support any T&E species or critical habitat.

Cultural and Historic Resources: The proposed project would be conducted in an area that does not contain historic or cultural properties. As part of the scoping process and to comply with Section 106 of the National Historic Preservation Act, DOE notified the State Historic Preservation Office. No records of historic or cultural properties that could potentially be affected by the proposed project were identified.

Land Use, Soils, and Geology: The increased efficiency of particulate collection would result in up to 300 tons per year of additional flyash requiring landfill disposal. Records indicate that the maximum annual ash addition to the landfill was 169,000 tons in recent years. Since the landfill is permitted to accept up to 250,000 tons per year of ash waste, no adverse effects would be anticipated from the additional disposal requirement.

Noise: Construction noise would be generated during the 5-6 week construction period. Intermittent and short-duration noise would also be produced during bag cleaning.

Environmental Justice: The population potentially affected by the proposed project would not be classified as an environmental justice community. In addition, the proposed Federal action would not be expected to result in either an adverse impact on the environment or a disparate application of environmental laws or policies. No disproportionate adverse impacts to low-income or minority populations would be expected.

Aesthetics: Ductwork at the power plant would be increased in elevation by 20 feet from the existing 75-foot height of the electrostatic precipitator, which is well below the 295-foot height of the adjacent boiler building. No adverse impacts to visual aesthetics would be expected.

ALTERNATIVES CONSIDERED: In addition to the proposed action, DOE considered the No Action Alternative, whereby DOE would not provide cost-shared funding to the project. Without DOE participation, Otter Tail Power Company would not proceed with installation of the AHPC system, and the existing electrostatic precipitator would continue to be used for controlling particulate emissions from the Big Stone Power Plant.

PUBLIC AVAILABILITY: A Draft EA was distributed to Federal and state agencies and to the public for review and comment. The Draft EA was also posted on the NETL website. Copies were made available for review at the Ortonville City Public Library in Ortonville, MN, and at the Grant County Library in Milbank, SD. A Public Notice announcing availability of the Draft EA was published in the Grant County Review. The only response to the Draft EA was provided by the Minnesota Pollution Control Agency, which supported installation of the advanced particulate collector, suggested that opportunities for future improvements in NO_x and SO_2 removal be pursued, and suggested that future monitoring plans include provisions for analysis of gaseous mercury and SO_2 capture efficiency. No adverse comments regarding the proposed action or the environmental analysis were received.

DETERMINATION: Based on the information and analyses in the EA, DOE has determined that the proposed Federal action, to provide cost-shared financial support for the design, construction, and initial operation of an AHPC system at the Big Stone Power Plant, 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 11 day of June, 2002.

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