FINDING OF NO SIGNIFICANT IMPACT
COMMERCIAL DEMONSRATION OF THE LOW NOx BURNER/SEPARATED OVER-FIRE AIR (LNB/SOFA)
INTEGRATON SYSTEM EMISSION REDUCTION TECHNOLOGY

HOLCOMB STATION
SUNFLOWER ELECTRIC POWER CORPORATION
FINNEY COUNTY, KANSAS

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

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The DOE has prepared an Environmental Assessment (EA), to analyze the potential impacts of the commercial application of the Low-NO_X Burner/Separated Over-Fire Air (LNB/SOFA) integration system to achieve nitrogen oxide (NO_X) emissions reduction at Sunflower's Holcomb Unit No. 1 (Holcomb Station), located near Garden City, in Finney County, Kansas. The Holcomb Station would be modified in three distinct phases to demonstrate the synergistic effect of layering NO_x control technologies.

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 U.S.C. 4321 *et seq.* Therefore, the preparation of an Environmental Impact Statement (EIS) is not required and DOE is issuing this FONSI.

COPIES OF THE EA ARE AVAILABLE FROM:

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FOR FURTHER INFORMATION ON THE DOE NEPA PROCESS, CONTACT:

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BACKGROUND: The U.S. Department of Energy (DOE) implemented the Power Plant Improvement Initiative (PPII) to provide industry with an opportunity to demonstrate new

technologies for improving operations of the nation's 450 existing coal-fired power plants. The PPII encouraged proposals to develop technologies that could either increase the amount of power currently being generated or that could help plants to avoid premature shutdowns by installing more effective or lower-cost pollution control technologies.

The latter approach (installing more effective or lower cost pollution controls) is of interest to power generators due to the potential for avoiding the high cost and lengthy time periods of unit outage required for installing alternative technologies such as Selective Catalytic Reduction (SCR). The project would demonstrate that a unit equipped with an existing low-NO_x burner system could be retrofitted with a new separated over-fire air (SOFA) system, coal flow measurement and control, and enhanced combustion monitoring to achieve about 45 percent reduction in NO_x emissions.

The DOE and Sunflower Electric Power Corporation have signed an agreement to use the utility's Holcomb Station power plant in Finney County, Kansas, to field-test this "Integrated Combustion Optimization System." The pollution reducing potential of the integrated system is expected to rival other devices now being installed on other coal-burning power plants, but overall costs are likely to be only half as much, a significant benefit for ratepayers.

DESCRIPTION OF THE PROPOSED ACTION: The Proposed Action includes several specific technology components to be added to the Holcomb Station. These include a SOFA system, furnace sensors, coal flow measuring and control devices, and neural network controls. If successful, the Integrated Combustion Optimization System would reduce emissions to 0.15 to 0.22 pounds of NO_x per million Btus and simultaneously increase power output by seven megawatts – all at less than half the cost of state-of-the-art NO_x control technology.

The components of the LNB/SOFA integrated system would be installed in three distinct phases to demonstrate the synergistic effect of layering NO_x control technologies. The three phases are:

Phase I	Advanced Monitoring/Coal Flow Measurement
Phase II	Low-NO_x Burner Modifications/Coal Flow Control
Phase III	Advanced Over-fire Air/DCS Integration

Phase I - Advanced Monitoring would demonstrate the effectiveness of control upgrades with respect to NO_x control and thermal efficiency, with minimal impact from physical modification of the boiler. During this phase, instruments capable of measuring coal flow within individual coal conduits would be installed. Limited changes would be made to the plant's computing and control systems.

Phase II – Low-NO_x Burner Modifications would demonstrate the effectiveness of low-cost modifications to the existing, first generation low-NO_x burners for the reduction of NO_x emissions. The modifications would also include modifications to the existing pulverizer classifiers to permit automated fuel balancing among all burners and would include the installation of new burner tips and a better means of controlling air flow on individual burners.

Phase III - Advanced Over-Fire Air would demonstrate deeper NO_x control competitive to SCR installation with the addition of an over-fire air system that would be coupled with the existing Phase I and II modifications to optimize system performance. Final combustion control integration with a new combustion control system (a contemporaneous improvement not included as a part of this project) would maximize potential NO_x reductions.

The materials used for the project would include both sheet and prefabricated steel products and thermal insulation systems for the principal modifications to the boiler and electrical and electronic subcomponents for the control systems. Once installed, small additional amounts of coal fuel, air, and water would be consumed in the production of electricity. This project would not require any new waste treatment, disposal, or recycling facilities. Small additional quantities of flyash would be disposed in the on-site industrial landfills.

ENVIROMENTAL CONSEQUENCES: Environmental consequences associated with both installation and operations of the Proposed Action were considered in the EA. The main issue of concern examined in the EA was related to air quality as a result of changes in emissions.

Air quality from the project would have both positive and negative impacts. NO_x emissions would be significantly improved with an anticipated 45 percent reduction. However, SO_x and CO emissions would increase. EPA has generally accepted increases in CO emission levels when they occur as a result of substantial decreases in NO_X emissions. Because the Holcomb 1 unit has a well-functioning installed SO_x scrubber and uses low-sulfur coal, about 80 percent removal of SO_x can be achieved by the existing control equipment. The project would not affect the air quality attainment status of the area.

The proposed project would be constructed on a previously disturbed site within the Holcomb Station and no impacts to geology, soils or cultural resources would occur. No impacts would be expected to ecological resources, water resources, or floodplains. Construction and operation of the proposed project would not be expected to impact any Federal- or state-listed threatened or endangered species. No changes in noise levels or land use would be expected as a result of the proposed project. Minor economic benefits would be derived indirectly during construction of the project and from decreased electric utility costs in the long-term.

ALTERNATIVES CONSIDERED:

Proposed Action

DOE proposes to provide partial funding to Sunflower Electric Power Corporation to demonstrate the LNB/SOFA integration system to achieve pollution reduction in units equipped with an existing low-NO_x burner system. The Proposed Action includes several specific technology components to be added to the Holcomb Station. These include a SOFA system, furnace sensors, coal flow measuring and control devices, and neural network controls.

No Action

Under the "No Action" alternative, DOE would not provide partial funding for the demonstration of the LNB/SOFA integration emission reduction technology. Under the No Action alternative, utilities would not have access to a demonstrated alternative to installing SCR technology on existing units. Since installing SCR technology does not provide the collateral opportunity to increase electric generation output, the opportunity to generate additional energy on existing units would not be realized.

PUBLIC AVAILABILITY: Information describing the Proposed Action and opportunities to comment was provided to the public by placing a public notice requesting comments on the draft EA in the *Garden City Telegram*, the *Hays Daily News*, and the *Hutchinson News*. In addition, copies of the Draft EA were placed in the Finney County Public Library (Garden City), Sunflower Electric Power Corporation's Holcomb Station (Holcomb), and in Sunflower Electric Power Corporation's offices (Garden City and Hays). Agency comment letters were received during this review period and are summarized below.

On February 12, 2003, the United States Fish and Wildlife Service (USFWS) commented that the draft EA contained incomplete information regarding the presence of federally-listed threatened and endangered species. In addition to the Arkansas River shiner discussed in the draft EA, other listed species occurring in Finney county include the bald eagle (*Haliaeetus leucocephalus*), piping plover (*Charadrius melodus*), least tern (*Sterna antillarum*), and whooping crane (*Grus Americana*). In addition, two species which are currently candidates for federal listing occur in the county. These include lesser prairie-chicken (*Tympanuchus pallidicinctus*) and black-tailed prairie dog (*Cynomys ludovicianus*). However, because the proposed facilities would be located within an existing, previously-disturbed site at the Holcomb Station, USFWS concurred with the determination that no adverse effect on federally-listed or proposed threatened or endangered species would be anticipated.

On February 18, 2003, the Kansas Department of Wildlife and Parks communicated concurrence with findings in the draft EA that implementation of the project would not be expected to affect any listed threatened and endangered species. In addition, the Department of Wildlife and Parks recommended incorporating native plant species into landscaping to enhance wildlife habitat values. However, because no additional land disturbance would occur, the recommendation is beyond the scope of the proposed action.

On February 21, 2003, the Kansas State Historical Society (SHPO) commented that the project as proposed should have no effect on properties listed on the National Register of Historic Places or otherwise identified in their files. The SHPO expressed no objection to implementation of the project.

On February, 21, 2003, the Kansas City District, U.S. Army Corps of Engineers commented that, because no discharges of dredged or fill material would be placed in waters of the United States, including wetlands, no authorization is required under Section 404 of the Clean Water Act (33 USC 1344).

On February 21, 2003, the Kansas Department of Agriculture commented that no authorization would be needed from the Chief of the Division of Water Resources under either the Kansas Water Appropriation Act, K.S.A, 82a-701 *et seq.*, or the Obstruction in Streams Act, K.S.A. 82a-301 to 305a.

On February 26, 2003, the Kansas Department of Health and Environment (Department) transmitted collective comments from various bureaus on the proposed project. The Department's agencies did not identify any issues of concern; including, air emissions, landfill impacts, or stormwater runoff concerns. In addition, the Department provided assessment reports for leakages of underground storage tanks at the Sunflower facility. Both reported leakages have been satisfactorily remediated. In conclusion, the Department recommended clearance of the proposed project.

The FONSI, and the EA on which it is based, will be distributed to all persons and agencies known to be interested in, or potentially affected by, the Proposed Action. Additional copies of the FONSI and the EA can be obtained from the National Energy Technology Laboratory at the address previously identified.

DETERMINATION:

Based upon the information and analysis provided in the EA, DOE has determined that the proposed federal action, to provide partial funding to the Sunflower Electric Power Corporation for demonstrating the commercial application of a LNB/SOFA integration system to achieve NO_X emissions reduction at Holcomb Station, in Finney County, Kansas, does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of NEPA. Therefore, an Environmental Impact Statement is not required and DOE is issuing this FONSI.

ISSUED IN MORGANTOWN, WV, THIS 11th DAY OF MARCH, 2003

Rita A. Bajura
Director
National Energy Technology Laboratory