

---

---

## SUMMARY

This Environmental Impact Statement (EIS) has been prepared by the U.S. Department of Energy (DOE), in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 USC 4321 *et seq.*), to assess the potential environmental effects associated with constructing a coal-fired Low Emission Boiler System (LEBS) to demonstrate improved technologies for electric power generation at the proof-of-concept scale. DOE is the lead agency for the LEBS project. The U.S. Department of Agriculture, Rural Utilities Service, is a cooperating agency in preparing this EIS for the LEBS project. The EIS will be used in making a decision on whether or not to provide cost-shared funding to design, construct, and demonstrate integrated, low-emission power system technologies proposed by a team led by Babcock Borsig Power\*, a prime contractor in the LEBS project. The goal of the LEBS project is to provide reliable, economic, highly efficient, and environmentally preferred technologies for pulverized coal-fired power generation.

### Description of Proposed Project

The proposed power plant would demonstrate the technologies in a new 91 MW coal-fired power plant to be built adjacent to an existing underground coal mine, which is owned and operated by Turriss Coal Company, a member of the project team and supplier of Illinois bituminous coal with 3% sulfur content from the adjacent mine to the power plant. The proposed site is situated in central Illinois, about 2 miles southeast of the village of Elkhart and about 17 miles northeast of Springfield. The power plant would be owned by Corn Belt Energy Corporation (CBEC) and would incorporate the following technologies: (1) a slagging combustor, which is U-shaped to increase the combustion reaction time; (2) low nitrogen oxides (low-NO<sub>x</sub>) burners, staged combustion, and coal reburning (using about 10-15% of the coal) for NO<sub>x</sub> control during combustion, in combination with a selective catalytic reduction (SCR) post-combustion NO<sub>x</sub> control system; (3) a wet limestone scrubbing system for sulfur dioxide (SO<sub>2</sub>) capture; and (4) an electrostatic precipitator for particulate removal from the flue gas. The technologies would be expected to capture at least 96% of SO<sub>2</sub> emissions, decrease NO<sub>x</sub> emissions by 85%, and remove 99.8% of particulate matter. The technologies proposed for use would achieve SO<sub>2</sub>, NO<sub>x</sub>, and particulate matter emission levels below 0.15 lb/MM Btu, 0.12 lb/MM Btu, and 0.02 lb/MM Btu, respectively, which are equivalent to or lower than emission control performance objectives specified in the Notice of Intent (61 *FR* 67003) to prepare an EIS for the project.

Based on current plans, construction of the proposed plant would require for about 24 months. Demonstration of technology performance would require a 6-month test period. If the technology demonstration is successful, full-time commercial operation of the power plant would immediately follow. The plant would be designed for a lifetime of 35 years, would burn coal from the adjacent mine, and would provide electricity to the local power grid. Bottom ash from coal combustion would be marketed for commercial applications, such as a road base or construction material. Bottom ash that could not be sold and gypsum produced from the flue gas desulfurization (FGD) scrubber would be transported for disposal at a permitted site either on Turriss Coal Company property or at a CBEC disposal site.

---

\*Note: The North American assets of Babcock Borsig Power have been acquired by Babcock Power, Inc. Readers should note that Babcock Power, Inc., would be the industrial participant for this proposed project. All references in this EIS to Babcock Borsig Power, the Babcock Borsig team, and BBP should be interpreted as referring to Babcock Power, Inc.

SUMMARY

---

**Proposed Action and Alternatives**

A proposed action by DOE to provide cost-shared funding of approximately \$33.5 million (about 23.5% of the total estimated cost of \$142.5 million) for design, construction, and operational demonstration of a pulverized coal-fired electric generating facility to demonstrate the integrated operation of low emissions boiler technologies would constitute a major Federal action that could significantly affect the quality of the human environment. Therefore, DOE has prepared this EIS to assess potential impacts of the proposed action and reasonable alternatives on the human and natural environment. The EIS evaluates the proposed action (funding the technology demonstration) and the no-action alternative (not funding the technology demonstration). The only scenario reasonably expected to result as a consequence of the no-action alternative is that the proposed plant would not be built. Other alternatives to the proposed action, such as use of alternative sites or technologies, were considered and found not to be reasonable alternatives requiring detailed analysis under NEPA. The proposed action is DOE's preferred alternative.

**Environmental Issues**

The principal environmental issues, including impacts on air quality and groundwater, that could result from construction and operation of the proposed power plant have been analyzed in the EIS. The analysis finds that emissions from the proposed plant would not exceed National Ambient Air Quality Standards (NAAQS) or Prevention of Significant Deterioration (PSD) increments. For the latter set of standards, the emissions would always be less than 30% of the allowable degradation. The contributions of emissions from the proposed plant to acidic deposition and to greenhouse gas emissions would be 0.1% and 0.003%, respectively. Air pollutant emissions would not adversely affect workers, members of the public, or ecological resources.

The proposed power plant would obtain water from a 22-acre retention pond that would collect and store field drainage runoff and from up to six new groundwater wells, one of which would be located near the village of Elkhart municipal well. The Farnsworth Group, an engineering, architect, surveyor, and scientist firm from Bloomington, Illinois, was contracted through a cost-shared grant with the Illinois Department of Commerce and Community Affairs to perform a groundwater survey for the power plant. The Pearl/Kansan outwash aquifer at the proposed site would be capable of supporting requirements for groundwater during plant operation. Corn Belt Energy would contract with a qualified firm to monitor both drawdown from pumping the new wells and the water quality of the aquifer. The monitoring data would be used to resolve current uncertainties associated with the potential effects of the new wells on Elkhart's municipal well during periods of extended drought and to provide lead-time for implementing corrective actions if data indicate that adverse effects could result from groundwater withdrawal.

If a permitted new combustion waste disposal area is constructed at the adjacent mine, sufficient disposal capacity would be available to accommodate all solid wastes generated by the proposed power plant during the anticipated 35 year operating lifetime, even if bottom ash could not be sold or used. If the proposed waste disposal area is not constructed, the wastes would undergo disposal at existing facilities on Turriss Coal Company's property or would be transported to a permitted disposal site owned by Corn Belt Energy.

Impacts to other resource areas would be minor. Water would be recycled for use. Wastewater from the power plant would discharge to the Turriss Mine freshwater pond for use in mine operations. This water would consist primarily of all cooling tower blowdown and would be suitable quality for mine use. All sanitary water from the power plant would be treated in the Turriss Mine sewage treatment plant. Discharges to surface waters not located on mine property would occur only during infrequent occasions when appreciable rainfall events exceed existing pumping capacities designed to retain all water on the property. Because off-site surface waters would not be used to meet water

supply needs, no effects from surface water withdrawal would result. Flooding at the site would not be anticipated, and floodplain encroachment would not occur. No wetland resources would be impacted. No adverse impacts on terrestrial or aquatic ecosystems would be expected. No historic or archaeological resources are known to exist on the project site. Construction and operation of the power plant would result in minor benefits on socioeconomic factors in the surrounding area, and no disproportionate adverse impacts to minority or low-income populations would be expected. With respect to aesthetic resources, construction of the proposed plant would produce minor short-term visual impacts, but visual characteristics would not differ over the long term from those currently existing at the site. No adverse impacts would be expected with regard to noise, traffic, land use, and human health, including worker safety.

Under the no-action alternative, no construction activities or changes in mine operations would occur. No change in current environmental conditions at the site would result, and impacts for the foreseeable future would remain unchanged from baseline (existing) conditions.