

Beneficiated Lignite Market Study

Contractor: Energy & Environmental Research Center

Subcontractor: WorleyParsons

Objective: Analyze the market for beneficiated North Dakota lignite and identify specific potential users for market growth.

Cost: \$150,000 NDIC; \$75,150 EERC-DOE; Total project cost: \$225,150

Duration: August 1, 2009 – April 30, 2010 (9 months)

Scope of Work (Summary):

Task 1 – Industry Overview – Energy Prices and Outlook. The overview of U.S. & Canada provides the overall context to understand where ND lignite fits in the overall coal industry.

Subtask 1.1 – Coal Energy Trends

- Coal supply & demand
- Coal pricing
- Coal projections
- Production Data
- Mines in production
- Cost of producing electricity
- Nonfuel uses of lignite

Subtask 1.2 – Competitive Environment. The competitive position for ND beneficiated lignite as a fuel compared to other substitutable products, including subbituminous coal, natural gas and renewable energy.

Subtask 1.3 – Advances in Coal-Fired Systems and Fuel Developments. Opportunities for lignite will be discussed.

Subtask 1.4 – Infrastructure Development. Discussion of transportation and transmission infrastructure to make beneficiated lignite available and competitive.

Task 2 – Analysis of Environmental Issues, Emission Control, Emerging Regulatory Environment, and Impacts on Lignite-Based Power Generation.

Task 3 – Evaluation of Technology Options and Providers. A review of beneficiated technologies and providers will be provided as well as an evaluation of products potentially derived from lignite.

Task 4 – Market Survey of Potential End Users of Beneficiated North Dakota Lignite. Potential users will be evaluated in concentric circles of 250-, 500- and 1000-mile radius from west-central North Dakota.

Subtask 4.1 – Define the Population. Facilities: existing & new coal fired plants, biofuels facilities, steel, industrial, natural gas, water treatment, other.

Subtask 4.2 – Develop Discussion Guide. Verify existing facilities, unit sizes, boiler type, fuels fired, air pollution control equipment, transportation methods, storage and pricing.

Subtask 4.3 – In-Depth Interviews of Potential Beneficiate Lignite

Task 5 – Transportation Analysis

Subtask 5.1 – Determine Best Mode of Transportation, Truck or Rail

Subtask 5.2 – Cost Estimate of Truck/Rail Transport. Cost ranges on a \$/ton basis for unit train and trucking costs based on shipments in tandem axle trailer and pup units.

Task 6 – Market Analysis

Subtask 6.1 – Market Overview. Overview will be tailored to ND lignite incorporating industry findings collected in research interviews to provide assessment of market potential.

Subtask 6.2 Product Summary. Determination of what specifications beneficiated lignite would have to meet, including moisture, volatile matter, ash content, ash composition, sodium content, sulfur and heating value.

Subtask 6.3 – Competitive Advantages of Beneficiated Lignite

Subtask 6.4 – Refine Market Segments of ND Lignite Based Upon the Market Research

Subtask 6.5 – Requirements for Market Entry. Description of typical modifications that would be required for a plant currently using a different fuel.

Subtask 6.6 – Identification of Market Opportunities. New technologies and new niche markets.

Subtask 6.7 – Identification of Industry Leads. Prospective customers.

Task 7 – Management and Reporting. Quarterly reports, draft final report, final report and presentation detailing the study findings in Bismarck.