Lignite Vision 21 Program – Phase VI

Generation Technology, Environmental and Transmission Planning Services

July 1, 2010 – June 30, 2012

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ABSTRACT

The Lignite Vision 21Program (LV21P) is the culmination of unprecedented commitment and cooperation among government agencies, elected leadership and the lignite industry. It is a vision of a vibrant economy, fueled by environmentally responsible lignite power generation and transmission and lignite coal-to-liquid fuels or chemicals. The goal of the LV21P is to revitalize growth in the lignite industry to meet the energy demands of the 21st century.

This phase of the LV21P will involve the LV21P Team providing continued technical support to the LV21P participants in their endeavors to build new lignite-fueled electrical generation power plants, coal-to-liquids plants, or other lignite energy conversion facilities that will create jobs and grow the state's lignite economy. The LV21P team's technical support will include providing legal, marketing, generation technology, environmental, and transmission services to the LV21P participants, which will also be directly and indirectly of benefit to the existing lignite operations. The LEC LV21P is seeking $1,312,500 from the North Dakota Industrial Commission (NDIC) over a period of 24-months (July 1, 2010 – June 30, 2012).

PROJECT SUMMARY

The primary objective of the LV21P is to provide technical assistance to construct one or more new lignite-fired power plants, a coal-to-liquids plant, or other lignite-fueled energy conversion facility that will result in the growth of the lignite industry in North Dakota. In order to achieve the LV21P objectives and to coordinate and assist the LV21P participants, it is proposed that the LV21P team, in conjunction with the LV21P participants, continue to develop and implement legal, marketing, generation technology, environmental and transmission strategies. Additionally, the LV21P team would manage the LV21P in order to monitor progress, eliminate any potential duplication among the LV21P participants, and maximize value for the State of North Dakota. Activities and tasks that will be conducted during Phase VI grant include:

- Project Management;
- Legal and Marketing Strategies & Activities;
- Generation Technology Studies and Strategies;
- Environmental Strategies & Activities; and
- Transmission Strategies & Activities.

Development and implementation of Phase VI strategies and activities will take place over 24 months from July 1, 2010 through June 30, 2012. Total funding for this effort is estimated at $1,312,500. Key personnel involved in the management of the Lignite Vision 21 Program are the John Dwyer, LEC president and LV21P policy advisor, Mike Jones, technical representative to the NDIC and project manager and Sandi Tabor, director of the North Dakota Transmission Authority, along with consultants that have legal, marketing, generation, environmental, and transmission technical expertise.

BACKGROUND

A. State Policy

In 1991, the North Dakota Legislative Assembly enacted legislation creating the Lignite Research, Development and Marketing Program and declaring that:

> "...it is an essential governmental function and public purpose to assist with the development and wise use of North Dakota's vast lignite resources by supporting a lignite research, development, and marketing program that promotes economic, efficient, and clean uses of lignite and products derived from lignite in order to maintain and enhance development of North Dakota lignite and its products; preserve and create jobs involved in the production and utilization of North Dakota lignite; ensure economic stability, growth, and opportunity in the lignite industry; and maintain a stable and competitive tax base for our state's lignite industry for the general welfare of North Dakota....." (NDCC § 54-17.05-01)

In further support of the North Dakota Lignite Research, Development and Marketing Program (Program), the North Dakota Legislative Assembly appropriated $1.5 million for the 2009 to 2011 biennium from the Lignite Research Fund for the purpose of contracting for scopes of work that preserve existing jobs and production and also lead to increased development of lignite so that new jobs and economic growth are created. The NDIC, with policy advice and funding recommendations from the Lignite Research Council, administers this program. In providing guidelines for the use of the $1.5 million, the Legislature stated that:

> "...Moneys appropriated pursuant to this section may... be used for the purpose of contracting for nonmatching studies and activities in support of the Lignite Vision 21 Project; for nonmatching externality studies and activities in externality proceedings; or other marketing or environmental activities that assist with marketing of lignite-based electricity and lignite-based byproducts..." (Chapter 42, Section 10, 2009 ND Session Laws)

B. Industry Economic Impact, Challenges, and Opportunities

Over the years lignite producers in North Dakota have maintained a fairly steady annual production level at approximately 30 million tons. North Dakota ranks as one of the top twelve coal producing states in the country. In 2009 the lignite industry employed approximately 4,300 people and created an additional 24,000 indirect jobs. The industry generates over $3 billion in annual business activity, as well as, over $98 million in annual state tax revenues.[1]

The market for electricity produced by North Dakota lignite reached a plateau several years ago. After strong growth in the 70s and early 80s, no new lignite-based generating unit has come on line since 1986. The start-up of the combined heat and power Spiritwood facility near Jamestown in October 2010 will mark the first new lignite-based energy conversion facility in over 20 years. This is a significant milestone in light of the challenges facing the lignite industry. These challenges include competition from other energy sources; environmental challenges from increasingly more stringent regulations;[2] and transmission constraints due to the export constraint on the existing system and the increasing addition of load from wind development in North Dakota.

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[1] Coon, Randal C., and F. Larry Leistritz, "North Dakota Lignite Energy Industry's Contribution to the State Economy for 2008 and Projected for 2009," AAE 06002. Dept. of Agribusiness and Applied Economics, North Dakota State University, Fargo. April, 2009.

[2] RDI, Consulting, "Environmental Enhancements from the Increased Use of North Dakota Lignite", June 30, 2000.

While there are many challenges, opportunities to market additional lignite generated electricity have also developed. In October 2009 the Minnesota Office of Energy Security released a report focusing on future energy generation needs for the state of Minnesota.[3] Modeling done for the report indicated that Minnesota will need an additional 4,139 MW of power by 2025. In addition the results from several planning studies conducted by CapX 2020, a consortium of eleven transmission owning utilities, indicate that customer demand for electricity will increased 4,000 to 6,000 MW by 2020. The geographical area represented by this forecasted load growth includes eastern North Dakota, eastern South Dakota, Minnesota, northern Iowa, and western Wisconsin.

In order to take advantage of these energy demand opportunities, the NDIC and the lignite industry developed the LV21P, a state/industry partnership, designed to meet the generation, marketing, environmental, transmission, and economic challenges facing the industry and to position the state and industry for growth in the future. By developing low cost, clean energy for our region's consumers, increased jobs, business growth and tax revenue, the state of North Dakota will benefit.

C. Lignite Vision 21 Program Progress to Date

In its effort to carry out the legislative public policy of growing the lignite economy for the benefit of North Dakota, in 1999 the NDIC approved initial overview studies to encourage LV21P project(s). These Phase I studies involved a review of extraction technologies, generation technologies, environmental issues, transmission issues, and initial marketing strategies. The study results were favorable and the NDIC approved funding for development and marketing strategies involving the identification of potential wholesale customers and equity owners; engineering and technical support for the marketing activities; and development of marketing incentives to encourage investment by potential LV21P project applicants.

As part of the Phase III grant effort the LV21P worked with early program participants[4] on individual and joint feasibility studies involving: business development, marketing, generation technologies, environmental impacts (screening level), transmission, coal quality, water quality and availability, and socioeconomic impacts.

On January 13, 2004 funding for the LV21P Phase IV application was recommended by the Lignite Research Council Executive Committee and approved by the NDIC. Phase IV was completed on September 30, 2006. On September 22, 2006, funding for LV21P Phase V was approved by the Lignite Research Council Executive Committee and approved by the NDIC. Activity under Phase V will be completed during the second quarter of 2010. While Great River Energy and MDU/Westmoreland determined that their early projects would not go forward, the Great Northern Power Development program continues to move forward. In addition the LV21P team worked with industry partners to create new projects which are now in various stages of development. These include the American Lignite Energy project and the Spiritwood Power Station project. The latter is set to begin power production during the third quarter of 2010.

During the next grant cycle the LV21P team will focus on addressing issues associated with carbon management. Recent studies conducted under the Phase V grant will provide valuable information regarding advance generation technologies for new lignite-based plants. The team will also continue to explore new venues for beneficiated coal. Finally, with these studies in

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[3] MN Dept. of Commerce, Office of Energy Security, "Minnesota Resource Assessment Study," http://www.state.mn.us/mn/externalDocs/Commerce/Minnesota_Resource_Assessment_102109022827_MN_Resource_Assessment.pdf

[4] Early program participants included Great River Energy; MDU/Westmoreland and Great Northern Power Development.

hand, the team will work with our industry members to implement through demonstration and deployment of carbon capture and sequestration technologies that will enhance the industry's ability to succeed in a carbon constrained world.

PROJECT DESCRIPTION

A. Overall Objectives

The primary objective of the LV21P is to work with the private sector to construct one or more new lignite-fired power plants or coal-to-liquids plants in North Dakota. In order to achieve the LV21P objective and to coordinate and assist the LV21P participants, it is proposed that the Lignite Energy Council (LEC), in conjunction with the LV21P participants, continue to develop and implement legal, marketing, generation, environmental, and transmission strategies and manage the LV21P in order to monitor progress, eliminate any potential duplication, and maximize value for the State of ND. Activities and tasks that will be required in Phase VI are as follows:

- Project Management;
- Legal and Marketing Strategies & Activities;
- Generation Technology Studies and Strategies;
- Environmental Strategies & Activities; and
- Transmission Strategies & Activities.

Key personnel involved in the management of the Lignite Vision 21 Program are LEC President John Dwyer, who will serve as a policy advisor to the LV21P, Technical Representative to the Industrial Commission and Project Manager Michael Jones, and ND Transmission Authority Director Sandi Tabor, along with consultants that have legal, marketing, generation, environmental, and transmission technical expertise. A detailed description of the management organization and qualifications of key personnel are outlined on pages 12 and 13. Also see organizational chart in Appendix 1.

B. Statement of Work

The LV21P team provides overall program management responsibility for the LV21P. Key personnel identified above will be responsible for completing Phase VI Tasks and achieving program objectives. The Phase VI timeframe is estimated at 24 months (July 1, 2010 to June 30, 2012). Costs for completing Phase VI are estimated at $1,312,500. Tasks and timeframes for the initial Phase VI activities are summarized in this section.

QUALIFICATIONS

A. Capabilities and Experience

The Lignite Energy Council is a trade organization comprised of 300+ members including major lignite producers who produce a total of 30 million tons annually, the nation's largest commercial gasification project, and investor-owned utilities and rural electric cooperatives from a multi-state area that generate electricity from lignite serving two million people in the Upper Midwest. For over 16 years, the Lignite Energy Council has maintained a formal partnership with the NDIC to assist with administration of the Lignite Research, Development and Marketing Program and provide technical assistance to the NDIC.

Besides partnering with the NDIC on the development and implementation of the state's R&D program, the Lignite Energy Council manages a regional marketing program for lignite-based electricity and an education program that trains teachers from across the region about the lignite industry. Because of the important impact that governmental policies have on the competitive position of lignite and the ability to develop new lignite projects, the Lignite Energy Council is also involved in various governmental relations activities such as legislative, Congressional, and public official forums and briefings.

The Lignite Energy Council has effectively managed LV21P contracts with the NDIC through the first five phases of the project dating back to May 1999. Based on this experience and the above-described capabilities, the Lignite Energy Council is capable of administering Phase VI of the Lignite Vision 21 Program.

B. Key Personnel

LV21P Policy Advisor

John Dwyer has over 25 years experience in the energy industry having served in various federal and state capacities. He has served as President of the Lignite Energy Council since 1981. Mr. Dwyer also serves as an advisor for coal-related activities at the federal and state levels. At the federal level, Mr. Dwyer is a member of the National Coal Council, which serves as an advisor to the United States Secretary of Energy on coal-related matters. At the state level, he serves as Chairman of the North Dakota Lignite Research Council, which serves as the advisory council for the Lignite Research, Development and Marketing Program.

Expertise of the Technical Representative and Project Manager

Michael Jones Ph.D. has over 30 years of experience with the development of technologies leading to the clean and efficient use of North Dakota lignite. Prior to coming to the Lignite Energy Council, Mr. Jones served in a number of management positions with the Energy and Environmental Research Center at the University of North Dakota. In November 2009 he was hired to serve as the Director of Research and Development for the Lignite Energy Counsel and as the director of the LV21P. In addition the NDIC appointed Mr. Jones to serve as the Technical Advisor to the NDIC for the North Dakota Lignite Research, Development and Marketing Program. Mr. Jones received PhD M.S. and B.S. degrees in Physics.

Expertise of the ND Director of the Transmission Authority

Sandi Tabor has served as the Director of the North Dakota Transmission Authority for over three years. An attorney by training, Ms. Tabor currently serves as Governor Hoeven's representative on several regional and national transmission planning initiatives. Ms. Tabor has served in management positions throughout her career including service as the Chief Deputy Attorney General prior to her work with the NDTA.

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Resumes of LV21P Consultants are available upon request.

VALUE TO NORTH DAKOTA

The primary objective of the LV21P is to provide technical assistance to construct one or more new lignite-fired power plants, a coal-to-liquids plant, or other lignite-fueled energy conversion facility that will result in growth of the lignite industry in North Dakota. Construction of a new 500 MW lignite-fired power plant would mean approximately 3 million more tons of lignite mined each year; 1,300 more direct and indirect jobs; $140 million more in business volume; and $6 million more in state tax revenue each year. A coal-to-liquids plant would mean 3 million to 15 million more tons of lignite mined each year and between 350 and 1,000 jobs direct jobs and 6,000 indirect jobs. The LV21P projects being proposed would provide a significant favorable economic impact to the rural areas which would host the projects.

MANAGEMENT

See description of project management under "Project Description, C. Phase VI Task Summaries." Also see Organizational Chart in Appendix 1 on page 17.

TIMETABLE

Phase VI of the LV21P will begin on July 1, 2010 and end on June 30, 2012. Quarterly project reports will be submitted to the NDIC as mentioned in the "Project Description" section.

MATCHING FUNDS

The LV21P Phase VI project will use nonmatching funds from the lignite research fund consistent with the intent of the North Dakota Lignite Research, Development and Marketing Program as described in the "Background, A. State Policy" section. The previous five phases of the LV21P were approved to use nonmatching funds from the lignite research fund. The total nonmatching funds requested are $1,312,500.

TAX LIABILITY

I, John W. Dwyer, certify that the Lignite Energy Council is not delinquent on any tax liability owed to the State of North Dakota.

STANDARDS OF SUCCESS

The project proposal has included work task objectives (see above). The LV21P team will be submitting periodic progress reports, as it has in previous phases of the LV21P, addressing progress under each of the tasks. Documented accomplishments and progress in each of the task areas will provide a standard of success.

John W. Dwyer, President
Lignite Energy Council