

**LMFS-07-39**  
**LIGNITE VISION 21 PROGRAM - PHASE V**  
**ENVIRONMENTAL PERMITTING & TRANSMISSION PLAN DEVELOPMENT OF**  
**LIGNITE VISION 21 PROJECTS**

**CONTRACTOR:** Lignite Energy Council

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**CONTRACT AMOUNT:** \$851,000

**Project Schedule – 15 Months**

Contract Date – 06/14/2007  
Start Date – 10/1/2006  
Completion Date – 6/30/2008

**Project Deliverables**

Quarterly Report – 12/31/2006 (√)  
Quarterly Report – 3/31/2007 (√)  
Quarterly Report – 6/30/2007 (√)  
Quarterly Report – 9/30/2007 (√)  
Quarterly Report – 12/31/2007 (√)  
Quarterly Report – 3/31/2008 (√)  
Draft Final Report – 6/30/2008 ( )  
Final Report – 7/31/2008 ( )

**OBJECTIVE / STATEMENT OF WORK**

The primary objective of the Lignite Vision 21 Program (LV21P) is to assist in constructing new lignite-fueled power plants, coal-to-liquids plants, or other lignite energy conversion facilities that will create jobs and grow the state's lignite economy. The objectives of this proposal are to: 1) coordinate and assist the LV21P participants; 2) develop and implement legal, marketing, generation, environmental, and transmission strategies; 3) manage the LV21P projects in order to eliminate any potential duplication; and 4) maximize value for the State of North Dakota.

The strategic vision for the LV21P is economic development through revitalization and growth in the lignite industry. Specific objectives and the vision of the LV21P for the State of North Dakota are to increase jobs, business growth, and tax revenue.

Specific tasks for the LV21P Phase IV program are:

- Project Management
- Legal and Marketing Strategies & Activities
- Advanced Generation Technology Strategies and Activities
- Environmental and Technology Strategies & Activities, and
- Transmission Strategies & Activities

## STATUS

### **October 1 – December 31, 2006**

MDU/W continues to evaluate a site in the Gascoyne vicinity. MDU/W has an air permit-to-construct for a 175 MW power plant from the North Dakota Department of Health (NDDH). The permit is for an air-cooled 175 MW circulating fluid bed (CFB) generation technology. In November, MDU/W requested an extension from the NDDH for the permit-to-construct from December 2006 through August 2007. Additionally, the NDDH is reviewing an application for a 500 MW power plant in the same vicinity for Westmoreland Power. MDU/W has been reimbursed \$1,125,000 by the NDIC and is eligible to receive up to \$1.8 million in Phase I of its project.

GNPD continues to evaluate a site in the South Heart vicinity. The technology that has been selected includes an air-cooled 500 MW CFB power plant. In June of 2006, GNPD completed its application to the NDDH for an air quality permit-to-construct and anticipates the NDDH issuing a draft permit for public comment by the second quarter of 2007. The primary focus of GNPD during this quarter was continuation of the transmission studies that are in progress. GNPD continues to meet with prospective customers regarding its proposed project. GNPD completed Phase III of its contract with the NDIC as of December 31, 2006. Through the first three phases of GNPD's project, the NDIC has committed \$2,671,193. It is anticipated GNPD will apply to the NDIC in the April 2007 grant round for funding for the next phase of its project.

In May of 2006, the NDIC approved investing \$10 million in a Coal-to-Liquids Plant Project in which Great River Energy, The Falkirk Mining Company, Headwaters Energy Services Corp, & The North American Coal Corp. (Partners) are working together toward conducting a \$50 million front-end engineering and design process study. The study would be the first step in plan to construct and operate a coal-to-liquid fuels plant in North Dakota. The NDIC has signed a contract committing \$1.2 million to the project through the Partner's first "go/no go" decision point scheduled for April 2007. Accomplishments to date include: Plant configuration – complete; Liquids and Gas Product Market Study – Phase I complete; Plant & Mine Environmental Fatal Flaw Study – complete; CO2 Sequestration Study – complete; Electric Transmission & Power Market Study – in progress; Land lease Study – in progress; Public Relations, Permitting, Public Support Study – in progress; Coal Cost & Location Due Diligence Study – in progress. The project schedule includes a 3-year FEED Process; a 3-year construction & commissioning period; and start-up in 2012-2013

In September of 2006, the NDIC approved investing \$2 million in the Great River Energy Spiritwood Energy Power Plant Project. The project involves construction of an 80 MW-equivalent power plant to provide steam to the Newman Group's new 100 million gallon per year ethanol plant and to support expansion of Cargill Malt America's malting plant, while providing 35-50 MW of electric power to the grid. The project is located near Spiritwood, ND, with construction scheduled to commence in the summer of 2007 and be in commercial operation in 2010. During the quarter, GRE and the NDIC made progress in contract negotiations.

On October 19, Sandi Tabor was named Acting Director of the North Dakota Transmission Authority by the NDIC; her responsibilities include:

- Meeting with wind and lignite interests and the Lignite Vision 21 participants in conjunction with LV21 Transmission Team members to further identify steps that can be taken to advance the reality of increased capacity of existing transmission and/or new transmission from North Dakota to our customers in adjacent states;
- Initiate the regulatory process outlined in the Transmission Authority Act;

- Coordinate and facilitate legislative and regulatory proposals that will assist with the development and implementation of transmission plans needed for delivery of electricity to customers in our market areas; and
- In consultation with the Industrial Commission conduct a search for a permanent Transmission Authority Director.

**January 1 – March 31, 2007**

In November, MDU/W requested an extension from the NDDH for the permit-to-construct from December 2006 through August 2007. In February, the NDDH granted MDU/W an extension through August of 2007 to begin construction. Additionally, the NDDH is reviewing an application for a 500 MW power plant in the same vicinity for Westmoreland Power. Westmoreland anticipates the NDDH issuing a draft permit for public comment in the next quarter of 2007. MDU/W has been reimbursed \$1,125,000 by the NDIC and is eligible to receive up to \$1.8 million in Phase I of its project.

On March 21, GNPD sent a letter to Karlene Fine indicating they would not be in a position to submit a Phase IV application to the LRC on the April 1 deadline for applications. However, GNPD indicated it is proceeding with work on the South Heart Power Project including the gathering of baseline data for their mine permit application, their marketing/business development plans and continuation of MISO/WAPA studies to resolve transmission constraints. GNPD indicated they intend to submit a Phase IV application to the LRC on or before the October 1 LRC grant application deadline. Through the first three phases of GNPD’s project, the NDIC has committed \$2,671,193.

The Coal-to-Liquids Plant Partners have been evaluating three separate locations in Western North Dakota for the project. The project schedule includes a 3-year FEED Process; a 3-year construction & commissioning period; and start-up in 2012-2013

Accomplishments to date on the Great River Energy Spiritwood Energy Power Plant Project include: air permit-to-construct & wastewater permit applications filed; MISO interconnect request filed; initiated detailed engineering design; and developing transmission strategies to deal with MISO and Basin/WAPA system impact studies related to generator interconnect request. Contingent upon receiving the necessary permits, construction is scheduled to begin in the summer of 2007 and be in commercial operation in 2010.

During the quarter, meetings were held with representatives from Basin Electric Power Cooperative, the North Dakota Transmission Authority (TA) and the Bank of North Dakota to discuss the expansion of transmission facilities in the oil and gas fields of western North Dakota and what role the TA could play. The TA was conducted, and the TA facilitated discussions between the Bank of North Dakota and Basin Electric regarding the financing of a project.

**April 1 – June 30, 2007**

In a letter dated April 30, 2007, MDU announced it was withdrawing from the LV21P. MDU indicated it is not able to commit to develop the Gascoyne 175 MW project by any certain date, although they are committed to that location for future development. MDU returned \$562,500 (all of its share of funds received by the NDIC) to the NDIC. Westmoreland Power Inc. (WPI) has begun the process of working with the NDIC to amend the existing LV21P contract FY01-XLI-107 in order for WPI to continue on its own as a participant in the LV21P in its endeavor to develop a 500 MW power plant at Gascoyne. The NDDH issued a draft permit for the WPI 500 MW project and held a public meeting in Scranton on June 21 to discuss the draft permit. The public comment period regarding the draft permit ends on July 14.

There was no substantial progress to report regarding GNPD's project. Through the first three phases of GNPD's project, the NDIC has provided funds totaling \$2,671,193.

In May of 2006, the NDIC approved investing \$10 million in a Coal-to-Liquids Plant Project in which Great River Energy, The Falkirk Mining Company, Headwaters Energy Services Corp, & The North American Coal Corp. are working together in a new company known as American Lignite Energy to conduct a \$50 million front-end engineering and design process study. The study would be the first step in plan to construct and operate a coal-to-liquid fuels plant in North Dakota. The NDIC has signed a contract committing \$1.2 million to the project through the Partner's first "go/no go" decision point scheduled for April 2008. Preliminary studies completed include: Plant configuration study including conceptual engineering and cost estimating; Coal analysis, reserve estimate and mining cost estimate fro three ND sites; Site fatal flaw analysis, including preliminary air emissions modeling for one site; Water supply assessment; Carbon management plan for carbon dioxide enhanced oil recovery utilization and sequestration; Liquid fuel market study and customer survey; Power market and transmission study; and Project financial analysis and sensitivities modeling.

There was no substantial progress to report on the Great River Energy Spiritwood Energy Power Plant Project located near Spiritwood, ND.

In April, a project involving the expansion of transmission facilities in the oil and gas fields of western North Dakota was announced. The project includes a 67-mile, 230 kV line from Belfield to Rhame that would be constructed by Basin Electric Power Cooperative (BEPC). The \$33 million project is scheduled to begin construction in 2009, with studies beginning in the summer of 2007. The North Dakota Transmission Authority helped finance a feasibility study and facilitated discussions between the Bank of North Dakota and BEPC.

#### **July 1 – September 30, 2007**

WPI has begun the process of working with the NDIC to amend the existing LV21P contract FY01-XLI-107 in order for WPI to continue on as a participant in the LV21P in its endeavor to develop a 500 MW power plant at Gascoyne. (Its partner, MDU, withdrew from the contract in April of this year.) WPI is reviewing a draft amendment to the NDIC contract. The public comment period regarding the draft North Dakota Department of Health (NDDH) permit-to-construct for WPI's power plant project ended July 14. WPI and the NDDH are in the process of responding to comments received during the public comment period.

GNPD continues to evaluate a site in the South Heart vicinity. The technology that has been selected for the project includes an air-cooled 500 MW CFB power plant. GNPD has completed the first three phases of its project and contracts with the NDIC. GNPD expects to submit a Phase IV application to the LRC on October 1. GNPD is proceeding with work on the South Heart Power Project including the gathering of baseline data for its mine permit application, their marketing/business development plans and continuation of MISO/WAPA studies to resolve transmission constraints. Through the first three phases of GNPD's project, the NDIC has provided funds totaling \$2,671,193.

ALE continued working on pre- front-end engineering and design (FEED) and optimization studies. These preliminary studies lead up to a decision to conduct a \$50 million FEED process study. The study would be the first step in plan to construct and operate a coal-to-liquid fuels plant in North Dakota. The project would involve producing 30,000 bpd of gasoline and generating 200 MW of

electricity. The CTL facility would use about 10 million tons per year of lignite. The NDIC has signed a contract committing \$1.7 million to the project through the Partner's first "go/no go" decision point scheduled for April 2008.

In September of 2006, the NDIC approved investing \$2 million in the Great River Energy Spiritwood Energy Power Plant Project located near Spiritwood, ND. The project involves construction of a 99 MW-equivalent power plant to provide steam to the Newman Group's new 100 million gallon per year ethanol plant and to support expansion of Cargill Malt America's malting plant, while providing electric power to the grid. The NDDH issued a draft permit for public comment in August. On August 16, the LV21P provided testimony in support of the project at a NDDH public meeting. The final permit was issued by the NDDH on September 10. Construction is scheduled to begin in October 2007, with commercial operation to begin in 2010.

### **October 1 – December 31, 2007**

WPI has been working with the North Dakota Department of Health (NDDH) and meeting with the National Park Service to respond to comments received regarding the NDDH draft permit-to-construct for the proposed Gascoyne 500 MW electrical generating station. Also, Westmoreland has been reviewing the draft addendum (issued by the NDIC) to the existing LV21P contract FY01-XLI-107, which would accommodate WPI's continued involvement as a participant in the LV21P. (Its partner, MDU, withdrew from the contract in April of this year.)

On November 20, the NDIC approved committing \$7,328,807 towards Phase IV of GNPD's project which has changed from developing an electrical generating station to a coal-to-synthetic natural gas plant. The plant is estimated to cost \$1.4 billion with plant construction to begin in the 2009/2010 timeframe. GNPD is proceeding with work on the South Heart Power Project including the gathering of baseline data for its mine permit application and its marketing/business development plans. GNPD has completed the first three phases of its project and contracts with the NDIC. Through the first three phases of GNPD's project, the NDIC has provided funds totaling \$2,671,193.

ALE has selected contractors to provide a preliminary process design package for the acid gas removal and sulfur recovery portion of the pre-FEED study and the air separation unit. Preliminary process design packages have been received for the dryer, gasification island, methanol synthesis, methanol-to-gasoline units and gas turbines. A lignite sample has been sent to a test facility. An update of the methanol-to gasoline market and water supply assessments are underway.

The Spiritwood Energy Power Plant Project air permit-to-construct was issued by the NDDH in September. A groundbreaking ceremony was held for the Spiritwood Station on November 6, 2008. Earthwork was 80% complete at the end of the 2007 construction season. Spiritwood Station is expected to be operational the first quarter of 2010 and will generate 62 megawatts of baseload electricity and 37 megawatts of peaking electricity to be exported to the regional transmission grid. During the highly efficient process, approximately 550,000 pounds of steam per hour will be captured and used to operate Cargill Malt and a proposed ethanol plant. The plant would be the first combined heat and power plant in North Dakota. The plant will use approximately 610,000 tons of beneficiated coal from the Falkirk Mine.

On October 22, the Upper Great Plains Transmission Coalition met to discuss a variety of issues, mainly focusing on policy changes being pursued by MISO. Agenda items discussed included updates on: 1) the coordinating agreement negotiations between MISO and WAPA; 2) discussions regarding the MISO queue logjam and ways to improve the study process; 3) the MISO transmission planning process for 2008; 4) implementation of Regional Expansion Criteria & Benefits I and II

tariff structures; and 5) DOE's National Interest Electric Transmission Corridor designation process. In December, a job announcement for a North Dakota Transmission Authority Executive Director was prepared and posted. The application deadline is February 1, 2008.

### **January 1 – March 31, 2008**

As an outcome of the North Dakota Department of Health (NDDH) public comment period (January 14 – February 29, 2008) regarding WPI's draft permit-to-construct, WPI has been working with the NDDH to respond to comments received by the NDDH. In its comments, the National Park Service indicated the project could cause an adverse impact on visibility in the Theodore Roosevelt National Park. In its analysis prior to issuing the draft permit, the NDDH did not conclude the same. The next step is for the NDDH to either issue or deny the final permit. Also, Westmoreland has been reviewing the draft addendum (issued by the NDIC) to the existing LV21P contract FY01-XLI-107, which would accommodate WPI's continued involvement as a participant in the LV21P. (Its partner, MDU, withdrew from the contract in April of 2007.)

On November 20, the NDIC approved committing \$7,328,807 towards Phase IV of GNPD's project, which is a coal-to-synthetic natural gas plant project. GNPD is reviewing a draft NDIC Phase IV contract. GNPD has held town meetings in South Heart and Dickinson in January and February. WorleyParsons has completed a conceptual design optimization study. GNPD and its consultants have been involved in the inventory and data acquisition of water supply wells and springs in the vicinity of the project. On April 1, GNPD received approval from the Stark County Commission for a zoning change. GNPD intends to submit its mine permit application to the Public Service Commission (PSC) in April. The pre-Front End Engineering and Design (pre-FEED) studies are anticipated to be completed in the second quarter of this year and the 12-month FEED study is anticipated to begin in the third quarter of 2008. Scheduled for the fourth quarter of this year is submittal of the air permit-to-construct application to the NDDH and submittal of the siting certificate application to the PSC. Construction for the \$1.4 billion plant is planned for early 2010 and commercial operation is planned for early 2013. GNPD has completed the first three phases of its project and contracts with the NDIC. To date, the NDIC has provided funds totaling \$2,671,193.

ALE is in the process of conducting the necessary pre-FEED process study. In the pre-FEED studies, ALE has completed: coal testing, water supply assessment, coal mine plan, preliminary process design packages, preliminary air modeling, market studies and a FEED execution plan. After reviewing several potential locations, ALE has selected the McLean County Falkirk Mine vicinity. The NDIC signed a contract committing \$1.7 million to the project through ALE's first "go" or "no-go" decision point scheduled for April 1, 2008. On March 26, ALE requested the April 1 decision date be deferred until December 31, 2008. The NDIC will evaluate the request on April 22. The ALE decision involves whether ALE will proceed with a FEED study. It would be the next step in the plan to construct and operate a coal-to-liquid fuels plant in North Dakota. The FEED study would take about 1-year and cost over \$50 million. When in commercial operation, the plant would use 11.5 million tons of lignite per year to produce 30,000 barrels of gasoline per day and 100 MW of electricity for export.

The Spiritwood Energy Power Plant Project is under construction and on schedule to commence commercial operation in April 2010.