

September 29, 2006

Ms. Karlene Fine
Executive Director
North Dakota Industrial Commission
State Capitol – Fourteenth Floor
600 East Boulevard Avenue
Bismarck, ND 58505

Dear Ms. Fine:

Subject: EERC Proposal No. 2007-0046 Entitled “Review of North Dakota Regulations, Standards, and Practices Related to the Use of Coal Combustion Products”

Enclosed please find an original and six copies of the subject proposal. The Energy & Environmental Research Center (EERC) is pleased to submit this proposal for consideration for funding through the North Dakota Industrial Commission. Also enclosed is the \$100 application fee.

If you have any questions, please contact me by telephone at (701) 777-5296 or by e-mail at tbuckley@undeerc.org.

Sincerely,

Tera D. Buckley
Marketing Research Specialist

TDB/kal

Enclosures

c/enc: Jeff Burgess, NDIC

REVIEW OF NORTH DAKOTA REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS

EERC Proposal No. 2007-0046

Submitted to:

Ms. Karlene Fine

North Dakota Industrial Commission
State Capitol – Fourteenth Floor
600 East Boulevard Avenue
Bismarck, ND 58505

Amount Requested: \$12,000

Submitted by:

Tera D. Buckley

Energy & Environmental Research Center
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Tera D. Buckley, Project Manager

Dr. Barry I. Milavetz, Associate VP for Research
Research Development and Compliance

September 29, 2006

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REVIEW OF NORTH DAKOTA REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS

ABSTRACT

The primary objective of this effort is to assess activities in North Dakota that have resulted in encouraging or prohibiting the use of coal combustion products (CCPs) in an environmentally appropriate manner. The objective will be accomplished by working with industry, state agencies, and other key stakeholders to perform a review of CCP laws, regulations, policies, guidelines, and use practices in North Dakota. A final report will be prepared that highlights what the state is doing right, what could be done to improve CCP utilization, what barriers exist that hinder CCP use, and what potential threats could impact future CCP use.

The period of performance for the proposed effort is January 1 – December 31, 2007.

The total project cost is estimated to be \$36,000. The project costs will be provided from multiple sources. Industrial cash contributions in the amount of \$3,000 each will be provided by Basic Electric Power Cooperative, Great River Energy, and Minnkota Power Cooperative, Inc. An additional \$3,000 contribution is being solicited from Montana–Dakota Utilities Company. The EERC will request \$12,000 from the EERC’s U.S. Department of Energy Jointly Sponsored Research Program (JSRP) with the Coal Ash Resources Research Consortium[®] (CARRC[®]). The EERC requests \$12,000 from the North Dakota Industrial Commission.

REVIEW OF NORTH DAKOTA REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS

PROJECT SUMMARY

Many of the technical issues associated with coal combustion product (CCP) utilization have been solved, yet utilization rates have not reached optimal levels (North Dakota's CCP utilization rate is slightly under the national rate). The Energy & Environmental Research Center (EERC) proposes to work with industry, state agencies, and other key stakeholders to perform a review of CCP laws, regulations, policies, guidelines, and use practices in North Dakota. A final report will be prepared that highlights what the state is doing right, what could be done to improve CCP utilization, what barriers exist that hinder CCP use, and what potential threats could impact future CCP use.

PROJECT DESCRIPTION

Introduction

About 49 million tons, or 40%, of CCPs are beneficially used in the United States each year, but over 73 million tons, or 60%, are still being disposed (American Coal Ash Association [ACAA], 2005). The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) set goals to increase CCP utilization to 50% by 2010. Many of the technical barriers associated with CCP utilization have been solved, but social and knowledge barriers still exist. One of the key nontechnical barriers is the broad range of state laws, regulations, policies, and guidelines regarding the use of CCPs (ACAA, 1998; Pflughoeft-Hassett et al., 1999; Dockter and Jagiella, 2005). Some states have worked to develop progressive and effective guidance for CCP utilization, while other states still lack the resources and information to feel comfortable

with a more progressive approach, particularly with applications they consider to be nontraditional, such as geotechnical, agriculture, and other nonconfined applications (Pflughoeft-Hassett et al., 1999).

North Dakota's coal-fired power plants produce over 2 million tons of CCPs per year, including fly ash, bottom ash, wet flue gas desulfurization (FGD) material (also referred to as scrubber sludge), fluidized-bed combustion (FBC) ash, and spray dryer absorber (SDA)-FGD material. It is estimated that about 25%–35% of CCPs produced in North Dakota is beneficially used. This utilization rate can be partly attributed to one utility selling the majority of fly ash it produces to the concrete market. Some bottom ash is used for ice control, in on-site construction projects, to construct mine haul roads, and in government road construction projects. Boiler slag is often sold to a local abrasives manufacturer.

The proposed effort supports the priorities of the Coal Combustion Products Partnership (C²P²) Program, which was established to promote the beneficial use of CCPs and the associated environmental benefits. Through the C²P² Program, EPA and its cosponsors work with all levels of government, as well as industry organizations, to reduce or eliminate legal, institutional, economic, market, informational, and other barriers to the beneficial use of CCPs. The CCP state review activity is one of the barrier-breaking activities C²P² supports.

Objective

The primary objective of this effort is to assess activities in North Dakota that have resulted in encouraging or prohibiting the use of CCPs in an environmentally appropriate manner. As a result of this effort, it is anticipated that recommendations will be developed to encourage the expanded use of CCPs and significantly impact future CCP use guidelines in North Dakota. Results can also be applied to other states.

Methodology

The following methodology for the proposed effort is described in the following tasks.

Task 1 – Establish Administrative Team

An EERC project administrative team will be established to perform the majority of administrative work, including compiling findings, writing reports, and organizing project activities. Ms. Tera Buckley, EERC Marketing Research Specialist, will act as team leader, with assistance from Ms. Debra Pflughoeft-Hassett, EERC Senior Research Advisor. The administrative team will participate in the state review, obtain data and information for the reviews, and formulate all information produced from this review.

Task 2 – Form Advisory Board

A second team, the project advisory board, will assist the administrative team in premeeting preparations and aid the administrative team in understanding what the findings mean. Potential advisory board members include representatives from the North Dakota Industrial Commission (NDIC), the Western Region Ash Group, the ACAA, EPA, DOE, the Federal Highway Administration (FHWA), and the Office of Surface Mining.

Task 3 – Assemble Review Team

A select group of individuals from the advisory board and the administrative team will comprise the review team. Some people may serve in more than one capacity during the review. The primary role of the review team is to administer the meetings at the review. The review team will pose a list of predetermined, open-ended questions and ensure each question is answered within the allotted time frame. In addition, the review team may interject additional questions as needed during the review to make sure all applicable information is gleaned from each meeting.

Each review team member will be asked to complete a trip report and submit it to the administrative team.

Task 4 – Plan Site Visit Logistics

The project administrative team and advisory board will identify key state agencies and contacts in North Dakota to participate in the review. Those contacts will be asked if they are willing to participate as an interviewee in the state review. A package of presite visit information will be sent to each interviewee, including a formal letter invitation, an agenda, list of review team members, and a list of questions that will be asked during the review. The site visit is expected to take 2–4 working days to complete, depending on the number of interviewees and scheduling conflicts.

Task 5 – Conduct Review

The review team will be in North Dakota to visit various state agencies and other key players involved in CCP utilization. Five primary discussion groups will be formed to answer various questions posed by the review team. Discussion groups include the following:

- Government agencies – directors and other key personnel of state or regional transportation, environmental, and economic development agencies
- CCP generators – utilities/producers of CCPs
- Marketers/end users – state highway engineers, ready-mix suppliers, abrasive manufacturers
- Mining companies
- Special interest – environmental, citizen, and academic groups

Five different sets of questions will be posed to each discussion group. It is anticipated that within each discussion group one to three different meetings will be scheduled. It is important

that groups are composed of three to ten people, not including members of the review team, in order to facilitate the meeting in an orderly fashion. Each discussion group session will take about 2–3 hours to complete. An open meeting may also be scheduled for people who cannot attend their scheduled meeting or who do not fit into any of the groups listed above. Written comments will also be accepted.

Task 6 – Prepare and Distribute Final Report

At the conclusion of the review, review team members will meet to discuss the review. In addition, members of the review team will be asked to submit a trip report. The project team will assemble a draft summary report that will be reviewed by the review team, advisory board, project sponsors, and interviewees before finalization and submittal to NDIC. The final report will include, but is not limited to, the following sections:

1. Summary on the production and use of CCPs in North Dakota
2. Keys to successful CCP utilization in North Dakota
3. Reported barriers to increasing CCP utilization in North Dakota
4. Potential threats that could impact future CCP utilization in North Dakota
5. Actions that could be taken to increase CCP use in North Dakota

Target audiences for the final report include CCP industry representatives, state agency groups and individuals, and current and potential users of CCPs. Results from the proposed effort will be presented at a state conference or symposium, such as the North Dakota Solid Waste and Recycling Association symposium. Information gleaned from this study may also be presented at national forums; however, those presentations will not be funded through this effort.

Anticipated Results/Impact

In order for environmental and economic impacts resulting from decreasing the amount of CCPs sent to disposal to be achieved, barrier-breaking activities must first be reported. This will allow federal, state, and local agencies; trade associations; and industry to target their attention on actions that will make the greatest impact to increasing utilization.

The anticipated results for this effort include:

- Identification of keys to successful CCP use in North Dakota
- Formal identification and reporting of barriers to increased CCP use in North Dakota
- Examination of potential threats that could impact future CCP use in North Dakota
- Development of a list of action items that need to be taken to increase CCP use in North Dakota

STANDARDS OF SUCCESS

The proposed effort is difficult to measure quantitatively, but some qualitative measures can be made, as was done with the 1993 and 1999 barriers reports (Pflughoeft-Hassett et al., 1999). The 1993 barriers report identified barriers to CCP utilization, and the 1999 report provided an update on the success of government and industry activities directed toward removal of the barriers. DOE implemented recommendations made in the 1993 report by supporting research, development, and demonstration of CCP utilization technologies; by developing and providing information for federal, state, and local government agencies; and by working with industry to make CCPs from emerging conversion technologies more useful or readily disposal. Industry also responded through a variety of activities, including research and demonstration efforts, standards and specification development, development and submission of CCP utilization

information to government agencies and the public, and review of legal and regulatory issues. It is important to note that these changes took a number of years to come to fruition, and the impact of the 1993 effort is still felt today.

Although it will be difficult to directly measure the impact of the proposed effort, the following three measurements can be used to evaluate the standards of success:

1. The success of this effort will be qualitatively measured by evaluating the CCP production and utilization rates before and after the review. Because several factors will impact the production and utilization rates of these materials, the percentage of material used can only serve as a performance indicator.
2. The final report will include a list of recommended actions that the state reviewed and other states can follow to increase utilization. Implementation of those actions will be a tangible result of the state review.
3. Subsequent positive changes to state and federal solid waste regulations are expected to occur as a result of the proposed effort.
4. Federal agencies will become aware of the state's status on CCP use.

BACKGROUND

To address different CCP utilization situations across the United States, the EERC was given a grant by EPA and Headwaters Resources, LLC, to conduct a pilot review of state regulations, standards, and practices related to the use of CCPs. Texas was selected as the pilot state because of its progressive approach to CCP utilization. A subsequent grant was awarded by EPA and DOE to conduct a second state review. Florida was selected as the second state to review primarily because it is undergoing changes to its CCP regulations. The final reports from

the Texas and Florida state reviews can be accessed online at www.undeerc.org/carrc/html/review.html. The EERC received a third grant from EPA, DOE, and ACAA to perform a state review in a third state. Pennsylvania was selected primarily because of its success in using CCPs in mine settings and other beneficial use applications. The Pennsylvania review will be conducted in December 2006.

Immediately following the completion of the Pennsylvania review, EPA and DOE have funded the EERC to prepare a synthesis report that will take the results from the previous state reviews (Texas, Florida, and Pennsylvania) and transfer the results into a national perspective.

As represented by the financial contributions toward this proposed effort by North Dakota's coal-fired electric utilities, industry supports conducting a similar review in North Dakota and believes that the previous state reviews yielded valuable information.

QUALIFICATIONS

Ms. Tera Buckley, EERC Marketing Research Specialist, will act as Project Manager for this effort with support from Ms. Debra Pflughoeft-Hassett, EERC Senior Research Advisor. Both have experience working with North Dakota lignite ash producers and users and are familiar with the national and international CCP industry.

Ms. Buckley has expertise in planning, designing, and carrying out technical and marketing research and technology transfer related to CCPs. Her principal areas of interest and expertise include developing and conducting research studies, promoting CCP utilization, conducting feasibility assessments, and producing marketing materials.

Ms. Pflughoeft-Hassett has several years' experience in management of technical research projects with an emphasis on investigation of the utilization of CCPs, including lignite ash. She

also has experience in the environmental and engineering aspects of CCP utilization projects and has participated in project teams evaluating the economic aspects of CCP utilization.

VALUE TO NORTH DAKOTA

This project offers numerous environmental and economic benefits to North Dakota through expanding the use of CCPs. The benefits to using CCPs include:

- A decrease in the demand for landfill space.
- Conservation of natural resources.
- A cleaner and safer environment.
- Reduced carbon dioxide emissions.
- Significant economic savings for end users.
- A boost in economic development.
- Reduced overall cost of generating electricity.

MANAGEMENT

As with the previous state reviews, the EERC proposes that Ms. Tera Buckley lead the project team. Her responsibilities will be to manage the administration of the project, including contracting, budget control, and reporting. EERC support offices and staff will assist Ms. Buckley in all of these activities. Ms. Buckley will also be the primary contact for the project advisory board and the review team. She will take on the responsibility of working with these groups to ensure project deadlines are met, that all participating groups are engaged throughout the project, and that final report and project documentation deadlines are met. Ms. Pflughoeft-Hassett will support Ms. Buckley.

TIMETABLE

The period of performance for the proposed effort is January 1 – December 31, 2007. All timetable assumptions are based on the proposed period of performance. Table 1 indicates the proposed project schedule detailing task initiation and completion. Project reports will include quarterly reports, a draft final report, and a final report.

Table 1. Timetable for North Dakota State Review

Task	Task Description	Work Schedule by Quarters			
		1	2	3	4
Task 1	Establish Administrative Team	*			
Task 2	Form Advisory Board	*			
Task 3	Assemble Review Team		*		
Task 4	Plan Site Visit Logistics		*	*	
Task 5	Conduct Review			*	
Task 6	Prepare Final Report				*

BUDGET

The total project cost is estimated to be \$36,000. A detailed budget is included with budget notes for reference.

The project costs will be provided from multiple sources. Industrial cash contributions in the amount of \$3,000 each will be provided by Basic Electric Power Cooperative, Great River Energy, and Minnkota Power Cooperative, Inc. An additional \$3,000 contribution is being solicited from Montana–Dakota Utilities Company. The EERC will request \$12,000 from the EERC’s U.S. Department of Energy Jointly Sponsored Research Program (JSRP) with the Coal Ash Resources Research Consortium[®] (CARRC[®]). The EERC requests \$12,000 from the North Dakota Industrial Commission.

MATCHING FUNDS

This proposal is requesting \$12,000 in support from NDIC through the Lignite Research Council to match \$12,000 in industrial funds anticipated from Basic Electric Power Cooperative, Great River Energy, Minnkota Power Cooperative, Inc., and Montana–Dakota Utilities Company contributing \$3000 each. Letters of support for the industrial cash contribution are included in Appendix A. Montana–Dakota Utilities Company’s contribution is pending at this time and, therefore, a letter of support is not included. Further funding will be requested from the EERC–DOE JSRP with CARRC[®]. The total cost of this project will be \$36,000.

TAX LIABILITY

The EERC is part of UND, a tax-exempt entity.

CONFIDENTIAL INFORMATION

There is no confidential information contained in this proposal.

REFERENCES

American Coal Ash Association. *2004 Coal Combustion Product Production and Use Survey*; Sept 2005.

American Coal Ash Association. *State Solid Waste Regulations Governing the Use of Coal Combustion Products (CCPs)*; Aug 1998.

Dockter, Bruce A.; Jagiella, Diana M. *Engineering and Environmental Specifications of State Agencies for Utilization and Disposal of Coal Combustion Products*; Final Report Prepared

for the Combustion By-Products Recycling Consortium; CBRC Project No. 02-CBRC-W12,
EERC Publication No. 2005-EERC-07-04; July 2005.

Pflughoeft-Hassett, D.P.; Sondreal, E.A.; Steadman, E.N.; Eylands, K.E. Dockter, B.A. *Barriers to the Increased Utilization of Coal Combustion/Desulfurization By-Products by Government and Commercial Sectors – Update 1998*; Topical Report for U.S. Department of Energy National Energy Technology Center Cooperative Agreement No. DE FC21-93MC30097; EERC Publication No. 99-EERC-07-08; July 1999.

REVIEW OF ND REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS
 NDIC-LIGNITE ENERGY COUNCIL
 PROPOSED START DATE: 1/1/07
 EERC PROPOSAL #2007-0046

SUMMARY BUDGET

CATEGORY	TOTAL		NDIC SHARE		INDUSTRY SPONSORS SHARE		EERC JSRP SHARE	
	HRS	\$COST	HRS	\$COST	HRS	\$COST	HRS	\$COST
TOTAL DIRECT LABOR	434	\$ 13,730	131	\$ 4,081	136	\$ 4,345	167	\$ 5,304
FRINGE BENEFITS		<u>\$ 7,002</u>		<u>\$ 2,081</u>		<u>\$ 2,216</u>		<u>\$ 2,705</u>
TOTAL LABOR		\$ 20,732		\$ 6,162		\$ 6,561		\$ 8,009
OTHER DIRECT COSTS								
TRAVEL		\$ 881		\$ 881		\$ -		\$ -
SUPPLIES		\$ 75		\$ -		\$ 75		\$ -
FEES		\$ 420		\$ 140		\$ 250		\$ 30
COMMUNICATION - PHONES & POSTAGE		\$ 450		\$ 105		\$ 265		\$ 80
OFFICE (PROJECT SPECIFIC SUPPLIES)		\$ 450		\$ 205		\$ 240		\$ 5
GENERAL (FREIGHT, FOOD, MEMBERSHIPS)		<u>\$ 500</u>		<u>\$ 199</u>		<u>\$ 301</u>		<u>\$ -</u>
TOTAL OTHER DIRECT COST		<u>\$ 2,776</u>		<u>\$ 1,530</u>		<u>\$ 1,131</u>		<u>\$ 115</u>
TOTAL DIRECT COST		\$ 23,508		\$ 7,692		\$ 7,692		\$ 8,124
FACILITIES & ADMIN. RATE - % OF MTDC	VAR	<u>\$ 12,492</u>	56%	<u>\$ 4,308</u>	56%	<u>\$ 4,308</u>	47.7%	<u>\$ 3,876</u>
TOTAL PROJECT COST		<u><u>\$ 36,000</u></u>		<u><u>\$ 12,000</u></u>		<u><u>\$ 12,000</u></u>		<u><u>\$ 12,000</u></u>

NOTE: Due to limitations within the University's accounting system, the system does not provide for accumulating and reporting expenses at the Detailed Budget level. The Summary Budget is presented for the purpose of how we propose, account, and report expenses. The Detailed Budget is presented to assist in the evaluation of the proposal.

REVIEW OF ND REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS
 NDIC-LIGNITE ENERGY COUNCIL
 PROPOSED START DATE: 1/1/07
 EERC PROPOSAL #2007-0046

DETAILED BUDGET

LABOR	LABOR CATEGORY	HOURLY		TOTAL		NDIC SHARE		INDUSTRY SPONSORS SHARE		EERC JSRP SHARE	
		RATE	HRS	\$	\$	HRS	\$	HRS	\$	HRS	\$
BUCKLEY, T.	PROJECT MANAGER	\$ 24.42	251	\$ 6,129	81	\$ 1,978	70	\$ 1,709	100	\$ 2,442	
PFLUGHOEFT-HASSETT, D.	PRINCIPAL INVESTIGATOR	\$ 44.52	125	\$ 5,565	41	\$ 1,825	50	\$ 2,226	34	\$ 1,514	
-----	SENIOR MANAGEMENT	\$ 59.15	13	\$ 769	-	\$ -	-	\$ -	13	\$ 769	
-----	RESEARCH TECHNICIAN	\$ 21.80	17	\$ 371	-	\$ -	-	\$ -	17	\$ 371	
-----	TECHNICAL SUPPORT SERVICES	\$ 17.70	28	\$ 496	9	\$ 159	16	\$ 283	3	\$ 54	
			434	\$ 13,330	131	\$ 3,962	136	\$ 4,218	167	\$ 5,150	
ESCALATION ABOVE CURRENT BASE		3%		\$ 400		\$ 119		\$ 127		\$ 154	
TOTAL DIRECT LABOR				\$ 13,730		\$ 4,081		\$ 4,345		\$ 5,304	
FRINGE BENEFITS - % OF DIRECT LABOR		51%		\$ 7,002		\$ 2,081		\$ 2,216		\$ 2,705	
TOTAL LABOR				\$ 20,732		\$ 6,162		\$ 6,561		\$ 8,009	
<u>OTHER DIRECT COSTS</u>											
TRAVEL				\$ 881		\$ 881		\$ -		\$ -	
SUPPLIES				\$ 75		\$ -		\$ 75		\$ -	
COMMUNICATION - PHONES & POSTAGE				\$ 450		\$ 105		\$ 265		\$ 80	
OFFICE (PROJECT SPECIFIC SUPPLIES)				\$ 450		\$ 205		\$ 240		\$ 5	
GENERAL (FREIGHT, FOOD, MEMBERSHIPS)				\$ 500		\$ 199		\$ 301		\$ -	
GRAPHICS SUPPORT				\$ 420		\$ 140		\$ 250		\$ 30	
TOTAL OTHER DIRECT COST				\$ 2,776		\$ 1,530		\$ 1,131		\$ 115	
TOTAL DIRECT COST				\$ 23,508		\$ 7,692		\$ 7,692		\$ 8,124	
FACILITIES & ADMIN. RATE - % OF MTDC		VAR		\$ 12,492	56%	\$ 4,308	56%	\$ 4,308	47.7%	\$ 3,876	
TOTAL PROJECT COST				\$ 36,000		\$ 12,000		\$ 12,000		\$ 12,000	

REVIEW OF ND REGULATIONS, STANDARDS, AND PRACTICES RELATED TO THE USE OF COAL COMBUSTION PRODUCTS
EERC PROPOSAL #2007-0046

DETAILED BUDGET - FEES

			TOTAL
GRAPHICS SUPPORT	RATE	#	\$ COST
GRAPHICS (HOURLY)	\$51	8	<u>\$ 408</u>
SUBTOTAL			\$ 408
ESCALATION		3%	<u>\$ 12</u>
TOTAL GRAPHICS SUPPORT			<u><u>\$ 420</u></u>

BUDGET NOTES

ENERGY & ENVIRONMENTAL RESEARCH CENTER (EERC)

Background

The EERC is an independently organized multidisciplinary research center within the University of North Dakota (UND). The EERC receives no appropriated funding from the state of North Dakota and is funded through federal and nonfederal grants, contracts, or other agreements. Although the EERC is not affiliated with any one academic department, university academic faculty may participate in a project, depending on the scope of work and expertise required to perform the project.

The proposed work will be done on a cost-reimbursable basis. The distribution of costs between budget categories (labor, travel, supplies, equipment, subcontracts) is for planning purposes only. The principal investigator may, as dictated by the needs of the work, reallocate the budget among approved items or use the funds for other items directly related to the project, subject only to staying within the total dollars authorized for the overall program. Escalation of labor and EERC fee rates is incorporated in the budget when a project's duration extends beyond the current fiscal year. Escalation is calculated by prorating an average annual increase over the anticipated life of the project. The current escalation rate of 5% is based on historical averages. The budget prepared for this proposal is based on a specific start date; this start date is indicated at the top of the EERC budget or identified in the body of the proposal. Please be aware that any delay in the start of this project may result in an increase in the budget.

Salaries and Fringe Benefits

As an interdisciplinary, multiprogram, and multiproject research center, the EERC employs an administrative staff to provide required services for various direct and indirect support functions. Direct project salary estimates are based on the scope of work and prior experience on projects of similar scope. Technical and administrative salary charges are based on direct hourly effort on the project. The labor rate used for specifically identified personnel is the current hourly rate for that individual. The labor category rate is the current average rate of a personnel group with a similar job description. For faculty, if the effort occurs during the academic year and crosses departmental lines, the salary will be in addition to the normal base salary. University policy allows faculty who perform work in addition to their academic contract to receive no more than 20% over the base salary. Costs for general support services such as grants and contracts administration, accounting, personnel, and purchasing and receiving, as well as clerical support of these functions, are included in the EERC facilities and administrative cost rate.

Fringe benefits are estimated on the basis of historical data. The fringe benefits actually charged consist of two components. The first component covers average vacation, holiday, and sick leave (VSL) for the EERC. This component is approved by the UND cognizant audit agency and charged as a percentage of direct labor for permanent staff employees eligible for VSL benefits. The second component covers actual expenses for items such as health, life, and unemployment insurance; social security matching; worker's compensation; and UND retirement contributions.

Travel

Travel is estimated on the basis of UND travel policies which can be found at www.und.edu/dept/accounts/employeetravel.html. Estimates include General Services Administration (GSA) daily meal rates. Travel includes scheduled meetings and conference participation as indicated in the scope of work.

Communications (phones and postage)

Monthly telephone services and fax telephone lines are generally included in the facilities and administrative cost. Direct project cost includes line charges at remote locations, long-distance telephone, including fax-related long-distance calls; postage for regular, air, and express mail; and other data or document transportation costs.

Office (project-specific supplies)

General purpose office supplies (pencils, pens, paper clips, staples, Post-it notes, etc.) are provided through a central storeroom at no cost to individual projects. Budgeted project office supplies include items specifically related to the project; this includes duplicating and printing.

Data Processing

Data processing includes items such as site licenses and computer software.

Supplies

Supplies in this category include scientific supply items such as chemicals, gases, glassware, and/or other project items such as nuts, bolts, and piping necessary for pilot plant operations. Other items also included are supplies such as computer disks, computer paper, memory chips, toner cartridges, maps, and other organizational materials required to complete the project.

Instructional/Research

This category includes subscriptions, books, and reference materials necessary to the project.

Fees

Laboratory, analytical, graphics, and shop/operation fees are established and approved at the beginning of the university's fiscal year.

Laboratory and analytical fees are charged on a per sample, hourly, or daily rate, depending on the analytical services performed. Additionally, laboratory analyses may be performed outside the University when necessary.

Graphics fees are based on an established per hour rate for overall graphics production such as report figures, posters for poster sessions, standard word or table slides, simple maps, schematic slides, desktop publishing, photographs, and printing or copying.

Shop and operation fees are for expenses directly associated with the operation of the pilot plant facility. These fees cover such items as training, safety (protective eye glasses, boots, gloves), and physicals for pilot plant and shop personnel.

General

Freight expenditures generally occur for outgoing items and field sample shipments.

Membership fees (if included) are for memberships in technical areas directly related to work on this project. Technical journals and newsletters received as a result of a membership are used throughout development and execution of the project as well as by the research team directly involved in project activity.

General expenditures for project meetings, workshops, and conferences where the primary purpose is

dissemination of technical information may include costs of food (some of which may exceed the institutional limit), transportation, rental of facilities, and other items incidental to such meetings or conferences.

Facilities and Administrative Cost

The facilities and administrative rate (indirect cost rate) included in this proposal is the rate that became effective July 1, 2006. Facilities and administrative cost is calculated on modified total direct costs (MTDC). MTDC is defined as total direct costs less individual items of equipment in excess of \$5000 and subcontracts/subgrants in excess of the first \$25,000 for each award.

APPENDIX A
LETTERS OF SUPPORT



GREAT RIVER
ENERGYSM

Coal Creek Station • 2875 Third Street SW • Underwood, North Dakota 58576-9659 • 701-442-3211 • Fax 701-442-3726

September 18, 2006

State of North Dakota
The Industrial Commission
State Capitol
Bismarck, ND 58505
ATTN: Lignite Research Program

To Whom It May Concern:

Great River Energy (GRE) is pleased to present this letter of support for the Energy & Environmental Research Center's (EERC) proposed project entitled "Review of North Dakota Regulations, Standards, and Practices Related to the Use of Coal Combustion Products."

GRE agrees to contribute \$3,000 to the proposed effort and will participate as an interviewee in the state review.

I would be happy to speak with anyone who would like to discuss GRE's support for this effort. I can be reached by phone at (701) 442-7031 and by e-mail at achristianson@GREnergy.com.

Sincerely,

GREAT RIVER ENERGY

Al Christianson
Business Developer

**BASIN ELECTRIC
POWER COOPERATIVE**

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58503-0564
PHONE 701-223-0441
FAX: 701/224-5336



September 18, 2006

North Dakota Industrial Commission
State Capitol Building 14th Floor
600 E. Boulevard Ave., Dept. 405
Bismarck, ND 58505-0840

Subject: Lignite Research Program

To Whom it May Concern:

On behalf of Basin Electric Power Cooperative, I am pleased to present this letter of support for the University of North Dakota Energy & Environmental Research Center's proposed project entitled "Review of North Dakota Regulations, Standards, and Practices Related to the Use of Coal Combustion Products."

Basin Electric Power Cooperative agrees to contribute \$3,000 to the proposed effort and will participate as an interviewee in the state review.

Sincerely,

A handwritten signature in blue ink that reads "Vernon Laning".

Vernon Laning
Vice President of Plant Operations

/gmj

September 27, 2005

State of North Dakota
The Industrial Commission
State Capitol
Bismarck, ND 58505

ATTN: Lignite Research Program

To Whom It May Concern:

On behalf of Minnkota Power Cooperative, Inc., I am pleased to present this letter of support for the University of North Dakota Energy & Environmental Research Center (EERC) proposed project entitled "Review of North Dakota Regulations, Standards, and Practices Related to the Use of Coal Combustion Products."

Minnkota Power Cooperative, Inc. agrees to contribute \$3,000 to the proposed effort and will participate as an interviewee in the state review.

Sincerely,

MINNKOTA POWER COOPERATIVE, INC.



Luther Kvernén
Vice President-Generation

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