MICROFILM DIVIDER

OMB/RECORDS MANAGEMENT DIVISION
SFN 2053 (2/85) 5M

ROLL NUMBER

DESCRIPTION

4033

2007 SENATE NATURAL RESOURCES

SCR 4033

2007 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. SCR 4033

Senate Natural Resources Committee

☐ Check here for Conference Committee

Hearing Date: February 23, 2007

Recorder Job Number: # 3779

Committee Clerk Signature Janet James

Minutes:

Senator Stanley Lyson, Chairman of the Senate Natural Resources Committee opened the hearing on SCR 4033 directing the Legislative council to study federal-state initiative to aid the energy industry in its efforts to control carbon emissions and pollutants to maintain North Dakota's good air quality.

All members of the committee were present.

Senator Tracy Potter of District 35 sponsor of SCR 4033 introduced the resolution (see attachment #A)

Mary Mitchell representing the Dakota Resources Council testified in support of SCR 4033 presenting charts to the committee (see attachment #1). She further stated that some states have already passed some carbon caps and the US senate has a study calling for carbon regulations. All new coal fired power plants purposed for North Dakota and elsewhere are all conventional plants and will not sequest carbon dioxide. We have heard a lot about clean coal technology which is a long way off and it is not known if the IGC process will be successful. Therefore it is a good idea to look at options and this study will do that.

Senator Lyson asked for testimony in opposition SCR 4033 and hearing none asked for neutral testimony.

Terry O'Clair, Director of the Air Quality Division of the North Dakota State Health Department testified on SCR 4033 in a neutral position stating the department works very closely with the citizens and the industry. The Air Quality Division was the first in the nation to come forward with regional haze rules to fast track the older facilities to put controls on sooner than required. Currently the utility industry emits approximately 140, 000 tons a year of sulfur oxide down from 180,000 tons in 1988. After the regional haze rules are developed it is expected to drop to around 50, 000 tons per years. We should be proud of North Dakota's air quality and now we can make it even better. North Dakota is one of a few states that meet the National Quality Standards.

Sandy Tabor representing the Lignite Energy Council testified on SCR 4033 (See attachment # 2). She also presented to the committee an amendment to remove "carbon emission" (See attachment #3). She made one other comment as to whether the study is necessary as what can the study bring to light that is not already known.

Senator Ben Tollefson asked that although she referenced lignite, is all coal included.

Sandy Tabor answered that certainly all coal is included but is lignite is the focus because it is the primary resource in North Dakota

Senator Constance Triplett asked for clarification that after SCR 4033 is amended, to kill the study because it is not necessary

Sandy Tabor agreed.

Senator Lyson closed the hearing on SCR 4033.

2007 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. SCR 4033

Senate Natural Resources Committee

☐ Check here for Conference Committee

Hearing Date: February 23, 2007

Recorder Job Number: # 3789

Committee Clerk Signature Janet James

Minutes:

Senator Stanley Lyson, Chairman of the Senate Natural Resources Committee brought the committee to order for committee work on SCR 4033.

Senator Constance Triplett made a motion to adopt the amendment as proposed.

Senator Layton Freborg second the motion.

Senator Joel Heitkamp stated the sponsor of the resolution wanted it to be about carbon and would prefer it to be without the amendment.

Senator Triplett withdrew the amendment.

Senator Ben Tollefson made a motion for a Do Not Pass of SCR 4033.

Senator Layton Freborg second the motion

A roll call vote for a Do Not Pass of SCR 4033 was taken indicating 6 Yeas, 0 Nays and 1 absent.

Senator Lyson will carry SCR 4033

Date: 2-23

Roll Call Vote #: 1

2007 SENATE STANDING COMMITTEE ROLL CALL VOTES

BILL/RESOLUTION NO. 4033

Senate **Natural Resources** Committee

☐ Check here for Conference Committee

Legislative Council Amendment Number

Action Taken I adopt Amendment

Motion Made By Triplett Seconded By Freborg

Senators	Yes	No	Senators	Yes	No
Sen. Stanley Lyson, Chairman			Sen. Joel Heitkamp		
Sen. Ben Tollefson, ViceChairman			Sen. Jim Pomeroy		
Sen. Layton Freborg			Sen. Constance Triplett		
Sen. Herbert Urlacher					

Total (Yes) No

Absent

Floor Assignment

If the vote is on an amendment, briefly indicate intent:

Date: 2-23

Roll Call Vote #: 2

2007 SENATE STANDING COMMITTEE ROLL CALL VOTES

BILL/RESOLUTION NO. 4033

Senate **Natural Resources** Committee

☐ Check here for Conference Committee

Legislative Council Amendment Number

Action Taken Do Not Pass

Motion Made By Tollefson Seconded By Freborg

Senators	Yes	No	Senators	Yes	No
Sen. Stanley Lyson, Chairman			Sen. Joel Heitkamp		
Sen. Ben Tollefson, ViceChairman			Sen. Jim Pomeroy		
Sen. Layton Freborg			Sen. Constance Triplett		
Sen. Herbert Urlacher					

Total (Yes) 6 No 0

Absent 1

Floor Assignment Lyson

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SCR 4033: Natural Resources Committee (Sen. Lyson, Chairman) recommends **DO NOT PASS** (6 YEAS, 0 NAYS, 1 ABSENT AND NOT VOTING). SCR 4033 was placed on the Eleventh order on the calendar.

2007 TESTIMONY

SCR 4033

TESTIMONY OF SEN. TRACY POTTER Attachment A
SENATE NATURAL RESOURCES 2-23-07

There are two issues to air. One is health and the other is economic.

When the headlines say that North Dakota has the three dirtiest coal plants in America and when we can see the brownish – purplish stain in the air following the Missouri River to and through Bismarck from the northwest, it's natural that our constituents wonder if there is a health problem.

While we know that perception in politics, like in marketing … that perception is the reality, the facts are less troubling than the headlines. Actually those plants, Leland Olds, Milton R. Young and Coyote, are far from the dirtiest plants. What the headlines were citing were Environmental Policy Institute studies about the rate of emissions per mwh generated of four gases – three of which are pollutants – SO2, Mercury and NOx, - the one responsible for the visible pollution … and a fourth gas, CO2, which is not a pollutant … we can breathe it – growing things love it with only the minor problem of contributing to global warming, the melting of the glaciers and the ice caps and the flooding of low lying-islands and coastlines.

Our plants do not contribute nearly so much tonnage of pollution to the environment as some in other states. It's merely in the emission rates per mwh that these plants fail.

North Dakota air quality still is among the finest in the country – and seems to meet all federal standards. I'm still comfortable walking outside and taking a deep breath … and it sure smells better right next to a coal-fired electrical generating facility than miles away from a potato processing plant or sugar beet plant in spring.

Initially I had thought we should investigate the actual health implications: asthma, emphysema, other respiratory diseases and

various forms of environmentally-caused cancers. But those kinds of studies seem to be unnecessary – we already know that mercury in the water causes birth defects; we know that NOx causes respiratory disease, we know that SO2 causes acid rain … we know we want to reduce these emissions – we know that … and so do our friends in the energy industry.

That's why – or at least one of the reasons – they are committing hundreds of millions of dollars to cleaning up the old plants … it's why their plans for new plants include state-of-the-art emission controls.

So, that brings us around to economics.

The federal EPA, our own Health Dept. and the perception and politics of our main market for the export of electricity … all combine to place a huge burden on our coal industry. … The perception and politics in Minnesota threaten the continued growth of our industry.

But America needs the energy we can produce. And America breathes our air.

America should help us pay for the clean-up. North Dakota should help this homegrown industry – which has done so much for North Dakota –

I know that much is already being done and that state government and the energy industry do work together.

This study will aid in that effort and bring the legislature closer to helping solve the problem confronting all of us. This will give a new direction to our partnership.

It's worth some study.

DRC testimony #1
Support - SB 4033
2-23-07

North Dakota Power Plants
Air Pollution - 2005

Plant	County	Owner/utility	Initial Year
RM Heskett	Morton County	Montana Dakota Utility	1954[1]
LeLand Olds	Mercer	Basin Electric Power	1965[1]
Stanton	Mercer	Great River Energy	1966[1]
Milton R Young	Oliver	Minnkota Power Coop	1970[1]
Coal Creek	McLean	Great River Energy	1979[1]
Coyote	Mercer	Ottertail Power Co	1981[1]
Antelope Valley	Mercer	Basin Electric Power Coop	1983[1]

Sulfur Dioxide - Tons of SO_2 - 2005 data[1]

RM Heskett	2189	
LeLand Olds	47399	Emission Rank - 35th of 50 of America's most polluting power plants[2]
Stanton	10022	
Milton R Young	28565	
Coal Creek	24428	
Coyote	14069	
Antelope Valley	13863	

Nitrogen Oxides – Tons of NOx - 2005 data[1]

RM Heskett	918.0	
LeLand Olds	13765.0	Emission Rank - 24th of 50 of America's most polluting power plants[2]
Stanton	3099.0	
Milton R Young	22845.0	Emission Rank - 3rd of 50 of America's most polluting power plants[2] Tons Rank - 23th of 50 of America's most polluting power plants[2]
Coal Creek	10354.0	
Coyote	13173.0	Emission Rank - 6th of 50 of America's most polluting power plants[2]
Antelope Valley	11793.0	

Carbon Dioxide - Tons of CO_2 - 2005 data[1]

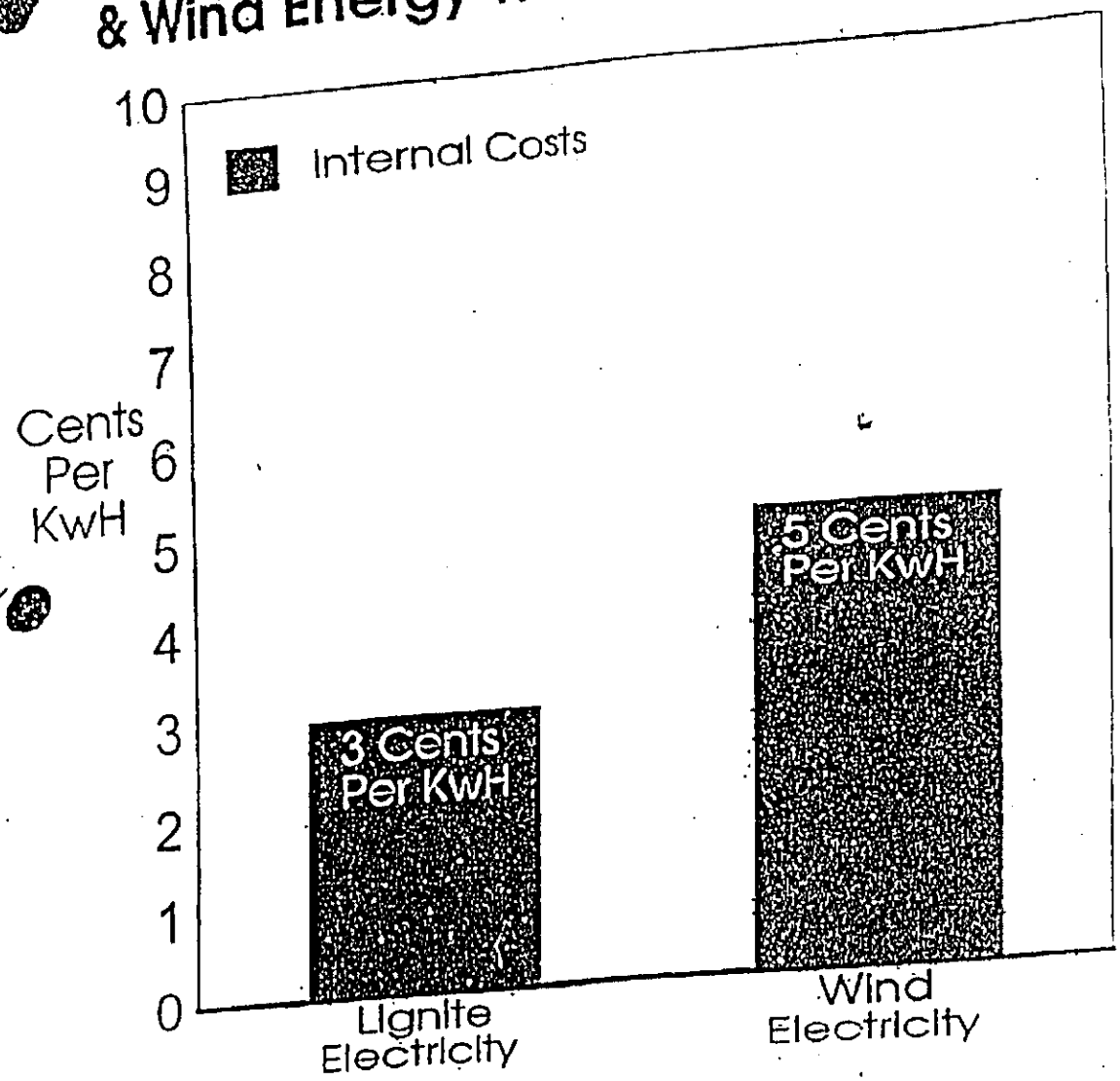
RM Heskett	657287	
LeLand Olds	5969285	Emission Rank - 19th of 50 of America's most polluting power plants[2]
Stanton	1678354	
Milton R Young	3165648	Emission Rank - 42th of 50 of America's most polluting power plants[2]
Coal Creek	10587048	Emission Rank - 15th of 50 of America's most polluting power plants[2]
Coyote	3948732	Emission Rank - 13th of 50 of America's most polluting power plants[2]
Antelope Valley	7931145	Emission Rank - 24th of 50 of America's most polluting power plants[2]

Mercury Air Emissions – Hg – Pounds of Hg - 2005 data[1]

RM Heskett	22	
LeLand Olds	336	Emission Rank - 37th of 100 of America's most polluting power plants[2]
Stanton	112	
Milton R Young	408	Emission Rank - 16th of 100 of America's most polluting power plants[2]
Coal Creek	660	Emission Rank - 15th of 100 of America's most polluting power plants[2] Tons Rank - 20th of 50 of America's most polluting power plants[2]
Coyote	294	Emission Rank - 31st of 100 of America's most polluting power plants[2]
Antelope Valley	380	Emission Rank - 45th of 100 of America's most polluting power plants[2]

1. Clear the Air, www.cleartheair.org, 2006
2. Dirty Kilowatts America's Most Polluting Power Plants, Environmental Integrity Project, July 2006

Comparison of Lignite Energy & Wind Energy Without Externality Cost

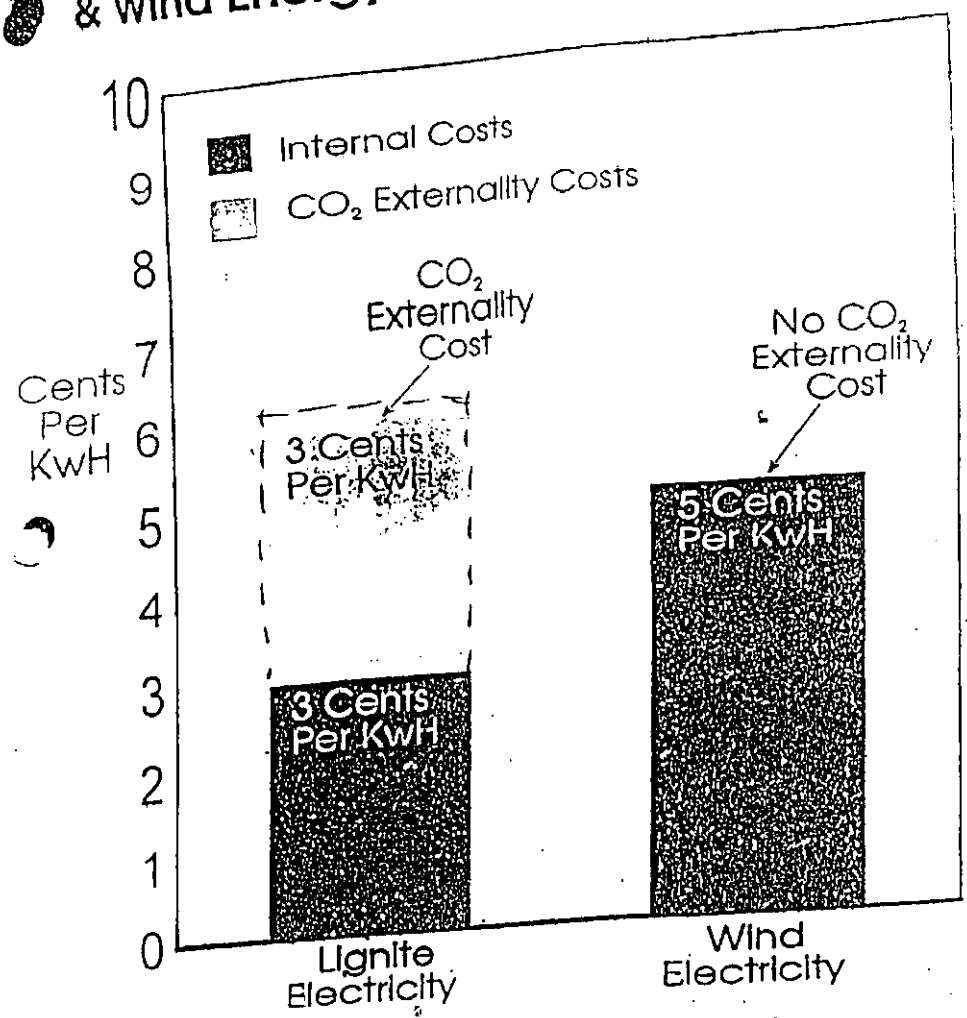


Without Externalities, Lignite Wins

Exhibit 1

1/16/95

Comparison of Lignite Energy & Wind Energy With CO_2 Externality Cost



With Externalities, Lignite Loses

Exhibit 2

Attachment #2

Testimony of Sandi Tabor
Lignite Energy Council

SCR 4033
February 23, 2007

You have heard much in the news recently about global warming and legislative initiatives being pursued in Minnesota. The Lignite Energy Council takes these initiatives seriously. In fact, our board of directors approved the following resolution as our policy regarding global warming and climate change.

> **The Lignite Energy Council *supports* energy policies that encourage cost-effective *global* greenhouse gas emission reductions rather than regional or national mandates.**
>
> **The Lignite Energy Council *supports* public and private investment in research and development on greenhouse gas emission reduction technologies.**

In light of these policies we are supporting research projects dealing with air quality and carbon capture issues that are being conducted by the Energy & Environmental Research Center (EERC) in Grand Forks. I have included a list of the projects funded by the Lignite Research Council during the past biennium. As you can see, air quality and carbon emissions are a high priority. These studies are funded by the dollars appropriated from the coal severance tax to the Lignite Research Council. During the present biennium approximately $2.8 million will be spent on research activities. It is important to note that the industry matches this investment dollar for dollar. In fact, in many cases industry's investment is as high as 6 to 1.

Through these efforts, North Dakota is one of only 12 clean air states. In addition, our sulfur dioxide (SO_2) emissions have dropped significantly since 1998, and we anticipate an even greater decrease by 2013.

We are also an active participant in the carbon-related research sponsored by the Department of Energy through the Plains CO_2 Carbon Reduction Partnership, better known as PCOR. The PCOR program is focusing on carbon sequestration issues. This program is funded through a combination of federal, state and private dollars.

We have also joined forces with Canadian public and private stakeholders to work on CO_2 reduction strategies. As part of its mission, the Canadian Clean Power Coalition is conducting research on coal gasification as a clean coal technology that may work with North Dakota lignite. The lignite industry has joined the coalition to support its research into gasification, advanced combustion and retrofit carbon dioxide capture technology. By so doing, our industry will gain access to the results of the coalition's research enabling our utilities to integrate the new data into

existing operations to further reduce CO_2 emissions either by retrofitting or by moving to new combustion technologies.

The lignite industry has a history of working to solve environmental issues, and we will continue our efforts. Just Wednesday the industry met with Senator Dorgan to discuss the federal carbon legislation. As our policy emphasizes, the carbon issue is one that must be dealt with at global level. It is far too complicated to have each state attempt to piecemeal a solution. As such, we believe that our work on carbon controls should be focused, and that it makes more sense to work with the Congressional delegation on this issue. As part of our cooperative effort, we will work to secure federal funding for research initiatives involving lignite coal. For that matter we will continue our partnership with the state to jointly fund research initiatives.

SCR 4033 calls for a study of federal-state initiatives to aid the energy industry in its efforts to control carbon emissions. While we appreciate the intent behind this resolution, we feel that our efforts must be focused on a federal initiative. As such, we are proposing to delete the references to carbon emissions from the bill.

Summary of 2005 - 2007 Research Projects

FY01-XXXVII (37)-105 **"Pilot Scale Study of Mercury Oxidation Catalysts at Coal Creek Station"** Program Funding: $50,000; Total Project Costs: $1,184,600. Objective: To evaluate the effectiveness of catalyst materials to oxidize elemental mercury content in the flue gas from coal-fired power plants. A goal is to convert elemental mercury to ionic mercury permitting mercury removal in conventional flue gas desulfurization systems.

FY02-XLIV (44)-110 **"Biomass Impacts on SCR Performance"** Program Funding: $120,000; Total Project Costs: $400,000. Objective: To determine fundamental mechanisms of NOx reduction and potential blinding of selective catalytic reduction catalysts using biomass and lignite.

FY02-XLV (45)-113 **"Anaerobic Treatment of Dakota Gasification Company Stripped Gas Liquor"** Program Funding: $130,000; Total Project Costs: $380,000. Objective: To develop a more efficient method to remove organics from stripped gas liquor effluent. Specific objectives are to develop an anaerobic biological process to degrade organic impurities to reduce heat exchanger fouling thereby reducing cooling tower odors and drift.

FY03-XLVIII (48)-117 **"Mercury and Air Toxic Element Impacts of Coal Combustion By-Product Disposal and Utilization"** Program Funding: $37,500; Total Project Costs: $1,600,000. Objective: Evaluate potential impacts of mercury and other air toxic elements on the management of coal combustion by-products (long-term storage and utilization products).

FY03-XLIX (49)–118 **"Mercury Control Technologies for Electric Utilities Burning Lignite Coals – Phase II, Field Testing of Slipstream Technology"** Program Funding: $200,000; Total Project Costs: $1,100,000. Objective: Using a slip-stream baghouse (up to nominal 10 MW), demonstrate a low-cost mercury control using activated char at SaskPower's lignite-fired Poplar River Power.

FY03-LRC–XLIX (49)–122 **"Thermal Pre-Combustion Mercury Removal Process for Low Rank Coal-Fired Power Plants"** Program Funding: $139,403; Total Project Costs: $956,962. Objective: Evaluate a precombustion thermal-based technology for the removal of mercury from low rank coals, both subbituminous and lignite.

FY04-LRC-L (50)–124 **"Enhancing Carbon Reactivity in Mercury Control in Lignite-Fired Systems"** Program Funding: $600,000; Total Project Costs: $5,732,195. Objective: Substantially enhance the capability of carbon sorbents to remove Hg from lignite combustion flue gas to achieve a high level of cost-effective control in full-scale field tests.

FY-04-L (50)-125 **"Large-Scale Mercury Control Technology Testing for Lignite-Fired Utilities—Oxidation Systems for Wet FGD"** Program Funding: $172,500; Total Project Funding: $2,150,767. Objective: Demonstrate a mercury "chemical addition" oxidation process in flue gas upstream of pollution control equipment, specifically, electrostatic precipitators followed by wet scrubbers. Host sites are Minnkota Power Cooperative MYR (*cyclone-fired*, ESP wet scrubber) Unit 2 and Texas Utilities Monticello (*wall-fired*, ESP, wet scrubber) Unit 3.

FY-04-L (50)-126 **"Addendum: Evaluation of Pilot Wet Scrubber in Conjunction with Mercury Oxidation Catalysts."** Program Funding: $42,000; Total Project Funding: $84,000. Objective: This effort is an amendment to contract FY01-XXXVIII-105. The combined project will evaluate wet scrubber capture efficiency of elemental mercury oxidized by low-temperature catalysts located after an electrostatic precipitator. Recent DOE data challenges the assumed high-efficiency capture of catalytically oxidized mercury in a wet scrubber.

FY-04-L (50)-127 "**Alternative Cover Demonstration Project at Coal Creek Station**" Program Funding: $250,000; Total Project Funding: $500,000. Objective: A field demonstration to evaluate and demonstrate the performance of alternative earth landfill cover designs while maintaining equal or a better level of environmental performance for long-term storage of coal combustion byproducts.

FY-04-L (50)-128 "**Plains CO_2 Reduction Partnership (PCORP)**" Program Funding: $240,000; Total Project Funding: $2,748,139. Objective: Identify cost-effective CO_2 sequestration systems in the Northern Great Plains region, including: 1) Characterize and match sources, sinks & storage options; 2) Identify and address issues for sequestration deployment; 3) Identify promising capture, sequestration and transport options; and 4) Develop public involvement & education mechanisms.

FY05-LI (51)-129 "**Lignite Coal Test at a Transport Reactor Gasification Facility in Wilsonville, AL**" Program Funding: $125,000; Total Project Funding: $250,000. Objective: Conduct short & long-term tests using an advanced IGCC Clean Coal Technology gasification system, Transport Reactor Integrated Reactor (TRIG), at a DOE facility in Wilsonville, AL. Project will ship 700 tons & 3,000 tons of lignite to the PSDF to resolve high-sodium lignite issues, followed by a 1000 hour pre-commercial test.

FY-05-LI (51)-130 "**The Health Implications of the Mercury-Selenium Interaction**" Program Funding: $50,000; Total Project Funding: $158,846. Objective: Explore interactions between mercury and selenium in experimental models designed to closely approximate human patterns of exposure. The project will examine the effects of dietary intakes of methylmercury and the protective effects of dietary selenium.

FY-05-LI (51)-131 "**Investigation of Mercury and Carbon-Based Sorbent Reaction Mechanisms**" Program Funding: $54,000; Total Project Funding: $240,870. Objective: Improve mercury capture efficiency of carbon sorbents through a better understanding of mercury-sorbent reaction mechanisms. Project will produce information to develop more effective and lower-cost sorbent to control mercury emissions.

FY05-LII (52)-134 "**North Dakota Partnership in the Canadian Clean Power Coalition (CCPC)**" Program Funding: $75,000; Total Project Funding: $150,000. Objective: Participate in studies of advanced technologies for future lignite power generation, including IGCC and advanced steam cycles such as ultra super-critical steam cycles in conventional and fluid bed combustion power plants.

FY05-LII (52)-135 "**Assessment of Mercury Control Options & Ash Behavior in Fluidized-Bed Combustion Systems**" Program Funding: $200,000; Total Project Funding: $1,000,000. Objective: Evaluate mercury control options in a Circulating Fluidized Bed Combustion (CFBC) system to evaluate Hg speciation, identify effective control approaches and evaluate impact of chemical oxidation chemicals on corrosion and ash bed agglomeration.

FY05-LII (52)-136 "**Center for Air Toxic Metals Affiliates Program – 3 Year Continuation of Membership**" Program Funding: $45,000; Total Project Funding: $3,000,000. Objective: Continue science-based research on toxic trace metals under an EPA-Industry supported Center for Air Toxic Metals (CATM) Affiliates Program to further the understanding of the behavior of potential toxic metals in coal-fired utilities, other fossil fuel systems, waste-to-energy systems and waste incinerators. A specific objective of the CATM program is the study of the fate and control of mercury emissions from coal-fired systems. This project is a continuation of Project 62, 89 and 111.

FY05-LII (52)-137 "**Mercury Oxidation via Catalytic Barrier Filters: Phase II**" Program Funding: $15,000; Total Project Costs: $245,000. Objective: Continue development of Hg emission control using baghouse filters impregnated with catalytic oxidizers to verify promising data from small-scale proof-of-concept tests. The concept would be applicable to utilities using fabric filter with capture of Hg and fly ash in a baghouse subsystem.

FY05-LIII (53)-139 **"Investigation of Mercury and Carbon-Based Sorbent Reaction Mechanism - Comparison of Surface Analysis Techniques"** Program Funding: $19,500; Total Project Costs: $60,000. Objective: This project is an extension of LRC-LI-131. Additional fundamental work will focus on bonding on carbon surfaces using two more refined techniques of x-ray photoelectron spectroscopy and x-ray absorption fine structure spectroscopy. The results will define carbon sorbent surface structural features before and after exposure to a flue gas stream, providing direction to improving effectiveness.

FY06-LIV (54)-142 **"Investigating the Importance of the Mercury-Selenium Interaction"** Program Funding: $55,000; Total Project Costs: $385,000. Objective: Study the effects of dietary intakes of methyl of animal models to evaluate the protective effects of dietary selenium in order to resolve the significance of mercury-selenium interactions.

FY06-LV (55)-143 **"Plains CO_2 Reduction Partnership - Phase II"** Program Funding: $360,000; Total Project Costs: $21,487,892. Objective: Initiate Phase II activities leading to field sequestration tests to validation eventual commercial applications that include geologic storage and coal seams (producing coal bed methane) in addition to land management practices and wetlands.

FY06-LV (55)-144 **"Gasification of Lignites to Produce Liquid Fuels, Hydrogen, and Power"** Program Funding: $100,000; Total Project Costs: $2,640,380. Objective: Provide essential information on the impacts of moisture and inorganic impurities on gasifier and gas cleanup technology performance to support power generation and coal-to-liquid processes by addressing key technical challenges facing lignite.

Summary of 2005 - 2007 Demonstration Projects (Matching Funds)

FY01-XLI (46)-107 **"MDU-Westmoreland Power Plant Project"** Program Funding: $10,000,000; Total Project Costs: $740,000,000. Objective: To evaluate the feasibility of constructing a 500 MW lignite-fired baseload power plant near Gascoyne, North Dakota.

FY03-XLIX (49)-123 **"Lignite Vision 21 Feasibility Project Phase II – Permitting, Business Development & Engineering"** Program Funding: $687,500. Total Project Cost: $1,375,000. Objective: Complete Phase II business development, transmission, permitting, and design work activities to move the project into the partnering, financing and pre-construction phases.

FY05-LI (51)-132 **"Lignite Fuel Enhancement: Dry Process Coal Cleaning"** Program Funding: $250,000; Total Project Cost: $1,331,035. Objective: Reduce lignite ash, moisture and other minerals using air and magnetic separation processes without the use of water and at the mine site.

FY05-LI (51)-133 **"Demonstrating N.D. Lignite's Profitability in Energy Production & Agricultural Processing (Lignite-Fired Ethanol Plant)"** Program Funding: $350,000; Total Project Cost: $85,255,700. Objective: Demonstrate the use of a lignite-fired Bubbling Bed Combustor to operate an ethanol processing plant.

FY05-LIII (53)-138 **"Field Demonstration of Enhanced Sorbent Injection for Mercury Control"** Program Funding: $200,000; Total Project Costs: $1,584,260. Objective: Conduct a seven-week full-scale demonstration of mercury capture at the Leland Olds Station.

FY05-LIII (53)-140 **"Activated Carbon Production for North Dakota Lignite"** Program Funding: $250,000; Total Project Costs: $770,000. Objective: Determine the feasibility to develop a commercial process for activated char (AC) production from lignite.

FY06-LIV (54)-141 **"Lignite Coal Test at a Circulating Fluid Bed Facility"** Program Funding: $275,000; Total Project Costs: $550,000. Objective: Conduct a 10-day test using a vendor CFBC and high sodium lignite (> 6%) to identify potential agglomeration or steam tube fouling. Identify operational and design parameters to define a full-scale CFBC plant for repowering of an existing pc-fired power plant.

FY06-LV (55)-146 **"Lignite Vision 21 Feasibility Project - Phase III"** Program Funding: $1,310,443; Total Project Costs: $2,620,866. Objective: This is Great Northern Power Development's Phase III for developing a 500 MW lignite-fired power plant and its associated surface mine in western North Dakota.

FY06-LVII (57)-148 **"LV21 Coal-to-Liquids"** Program Funding: $10,000,000; Total Project Costs: $50,000,000. Objective: To complete the front-end engineering and design studies, which will include permitting, pilot plant testing and basic design of gasification, liquefaction and ancillary components of the plant.

FY06-LVIII (58)-149 **"Spiritwood Energy Power Plant"** Program Funding: $2,000,000; Total Project Costs: $157,017,896. Objective: To construct and operate a beneficiated lignite-fired combined heat and power plant as part of an energy park including a malting plant and ethanol plant.

Summary of 2005 - 2007 Demonstration Projects (Non-Matching Funds)

LMFS-04-37 **"Lignite Vision 21 Program - Phase IV Engineering and Permitting of Lignite Vision 21 Projects"** Program Funding: $982,000; Objectives: 1) coordinate and assist the LV 21 participants; 2) develop and implement legal, marketing, generation, environmental and transmission strategies; 3) manage the programs in order to eliminate any potential duplication; and 4) maximize value for the State of North Dakota.

LMFS-06-39 **"Lignite Vision 21 Program - Phase V Environmental Permitting & Transmission Plan Development of Lignite Vision 21 Projects"** Program Funding: $851,000; Objectives: 1) coordinate and assist the LV 21 participants; 2) develop and implement legal and marketing strategies, develop and implement generation and environmental technologies and strategies, and develop and implement transmission strategies; 3) manage the programs in order to eliminate any potential duplication; and 4) maximize value for the State of North Dakota.

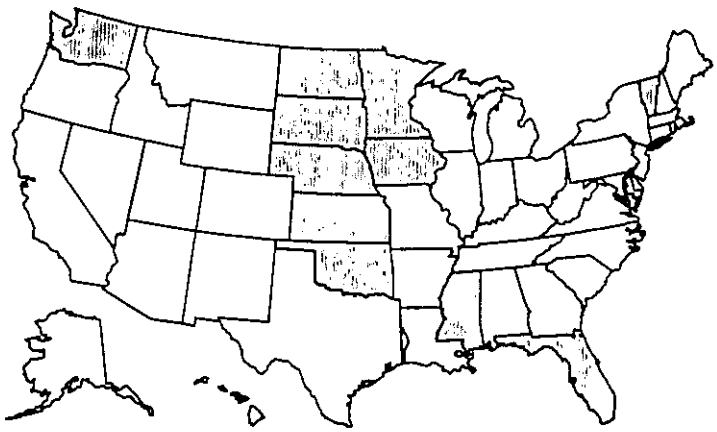
LMFS-38 **"Proposal to Submit the North Dakota FutureGen Submission"** Program Funding: $130,000; Objective: To prepare and submit a proposal to the FutureGen Industrial Alliance, on behalf of the State of North Dakota, to host the FutureGen power plant.

Summary of 2005 - 2007 Marketing Projects

FY02-XLVI-115 (46) **"Implementation of Regional Lignite Energy Marketing Plan"** Program Funding: $1,800,000; Total Project Costs: $3,600,000. Objective: Improve overall public regional image of coal and promote the use of coal as a low-cost, efficient and environmentally compatible energy source to ensure the continued utilization and growth of coal-based electrical energy.

FY06-LVI (56)-147 **"Implementation of Regional Lignite Energy Marketing Plan"** Program Funding: $2,400,000; Total Project Costs: $4,800,000. Objective: Improve overall public regional image of coal and promote the use of coal as a low-cost, efficient and environmentally compatible energy source to ensure the continued utilization and growth of coal-based electrical energy.

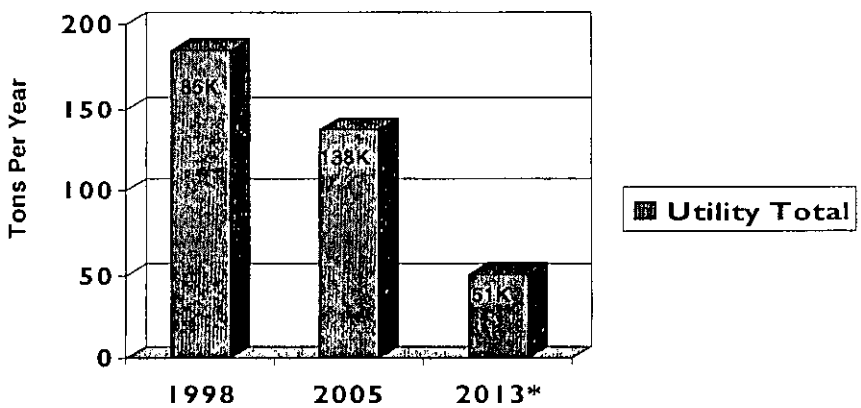
ND is 1 of 12 Clean Air States



Source: EPA, May 1, 2006

02/23/07

SO_2 Emissions Trend in ND

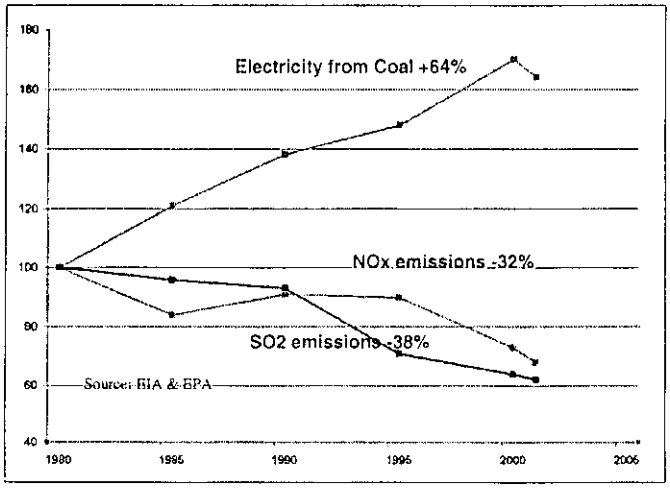


Source: ND Department of Health

** Tentative proposed reductions*

02/23/07

Air is Getting Cleaner



02/23/07

Attachment #3

Submitted by Sandi Tabor
Lignite Energy Council
February 23, 2007

PROPOSED AMENDMENTS TO SENATE CONCURRENT RESOLUTION 4033

Page 1, line 2, replace "carbon emissions and" with "criteria"
Page 1, line 7, after "production," insert "and"
Page 1, line 8, remove "and lowering carbon dioxide emissions"
Page 1, line 20, replace "carbon emissions and" with "criteria"