DORSEY™
DORSEY & WHITNEY LLP

B. ANDREW BROWN
(612) 340-5612
FAX (612) 340-8800
brown.andrew@dorsey.com

November 8, 2011

VIA U.S. MAIL AND EMAIL

Mr. Darrell Nitschke
Director of Administration/Executive Secretary
North Dakota Public Service Commission
State Capitol Building
600 East Boulevard Dept. 408
Bismarck, ND 58505

The Honorable Al Wahl
Administrative Law Judge
Office of Administrative Hearings
138 East Edmonton Drive
Bismarck, ND 58503

Re: Montana Dakota Utilities Co., a Division of MDU Resources Group, Inc. and Otter Tail Power Company, Application for An Advance Determination of Prudence, Big Stone Air Quality Control System Project
Docket Nos. PU-11-165, PU-11-163
OAH File No. 20110276

Judge Wahl and Commission:

Enclosed please find the rebuttal testimony of Applicants Otter Tail Power Company and Montana-Dakota Utilities Company in the above-referenced dockets.

Please contact me if you have any questions.

Very truly yours,

B. Andrew Brown

BAB:sl
Enclosures

cc: Mark Bring, Otter Tail Power Company, by email
Daniel S. Kuntz, Montana-Dakota Utilities Co., by email
Mark E. Grumann, Public Services Commission Advocacy Staff, by email

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-165

REBUTTAL TESTIMONY

WARD L. UGGERUD

ON BEHALF OF

OTTER TAIL POWER COMPANY

November 8, 2011

TABLE OF CONTENTS

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ward Uggerud. My business address is Otter Tail Power Company, 215 South Cascade Street, Fergus Falls, Minnesota, 56538-0496.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am the Senior Vice President for Otter Tail Power Company ("Otter Tail" or the "Company").

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND CURRENT RESPONSIBILITIES.

A. I am a 1971 graduate of North Dakota State University and have a degree in electrical engineering. I began working for Otter Tail in 1971 as an engineer in the Engineering Computer Services Department, where I worked on engineering software applications for our system operations. From 1974-1978, I worked on transmission, substation and protective relaying activities as an engineer in our System Engineering Department. From 1979-1988, I was the Manager of the System Operations Department. From 1988 to the present, I have been an Executive Officer supervising our Generation, Environmental Engineering and Wholesale marketing activities. I am currently Senior Vice President for Otter Tail. During my career, I have also served in various positions with the Mid-Continent Area Power Pool ("MAPP") and with the North American Electric Reliability Council (now the North American Electric Reliability Corporation) ("NERC"), including as Chairman of the Operating Committees of both organizations.

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Otter Tail.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I am responding to the testimony of Richard S. Hahn regarding proposed conditions on the Advance Determination of Prudence ("ADP") and potential alternatives to the Big Stone Air Quality Control System ("AQCS").

III. PROPOSED CONDITIONS

Q. WHAT IS YOUR GENERAL REACTION TO MR. HAHN'S TESTIMONY?

A. Mr. Hahn and the Applicants agree on the ultimate issue: the proposed AQCS project is the "preferred option." There may be differences regarding the economic analysis that compares the proposed AQCS project and the alternatives – especially the inputs used in that analysis – but Mr. Hahn and the Applicants agree the Commission should issue the ADP.

Q. DOES OTTER TAIL AGREE WITH MR. HAHN'S PROPOSAL ON PAGE FOUR OF HIS TESTIMONY THAT A CONDITION SHOULD BE ATTACHED THAT LIMITS THE COVERAGE OF THE ADP TO "FINAL ACTUAL COSTS WITHIN 10% OF THE COSTS ESTIMATED BY THE COMPANIES IN ITS APPLICATION INCLUDING ESCALATION, AFDUC, AND FINANCING COSTS?"

A. Otter Tail has no objection to this condition. As Otter Tail understands the recommendation, the cost cap applies to overall project costs, so in effect the ADP will cover costs up to $585 million. Otter Tail also understands the cost cap does not prevent the Company from seeking recovery for costs associated with the AQCS in excess of $585 million, provided the Company can demonstrate such costs are prudent. Otter Tail further understands this condition will not prevent the Company from seeking recovery of costs associated with the implementation of the AQCS prior to the completion of the project.

Q. DOES OTTER TAIL AGREE WITH MR. HAHN'S PROPOSAL THAT A CONDITION SHOULD BE ATTACHED THAT PROVIDES THE ADP IS EFFECTIVE ONLY IF THE U.S. EPA APPROVES THE SOUTH DAKOTA REGIONAL HAZE STATE IMPLEMENTATION PLAN ("SIP") IN "THE SAME FORM AS CURRENTLY PROPOSED"?

A. Provided this condition does not delay the issuance of the ADP, Otter Tail has no objection.

Q. DOES OTTER TAIL AGREE WITH MR. HAHN'S RECOMMENDATION THAT THE COMPANIES PROVIDE PERIODIC REPORTS TO THE COMMISSION?

A. Yes, Otter Tail supports an ADP condition that would require periodic reports on the status of project costs and EPA's review of the South Dakota Regional Haze SIP.

Q. MR. HAHN RECOMMENDS ON PAGE 34 THAT THE PROPOSED ACTIVATED CARBON INJECTION ("ACI") SYSTEM FOR MERCURY CONTROL SHOULD NOT BE INCLUDED IN THE ADP. WHAT IS OTTER TAIL'S RESPONSE?

A. Otter Tail would support a conditional ADP approval of the ACI system subject to finalization of the utility MACT rule by the EPA.

IV. ALTERNATIVES TO THE BIG STONE PLANT WITH THE AQCS

Q. MR. HAHN SUGGESTS AN ALTERNATIVE TO THE PROPOSED PROJECT SHOULD INCLUDE MARKET PURCHASES. DO YOU AGREE?

A. No. Otter Tail did not evaluate an alternative involving market purchases because greater reliance on the market would expose our customers to an unreasonable risk of price volatility, as Mr. Hahn concludes on page 29 of his testimony. Otter Tail is also aware that members of the Commissions in the states we serve (North Dakota, South Dakota and Minnesota) are concerned about market risk. Given the importance of the Big Stone Plant as a baseload generation resource, Otter Tail did not propose replacing it with more market purchases that carry greater price volatility risk.

V. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-165

REBUTTAL TESTIMONY

OF

ANDREA L. STOMBERG

ON BEHALF OF

MONTANA-DAKOTA UTILITIES CO.

November 8, 2011

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?

A. Yes. My name is Andrea L. Stomberg, and my business address is 400 North Fourth Street, Bismarck, North Dakota 58501.

Q. WHAT IS YOUR POSITION WITH MONTANA-DAKOTA UTILITIES CO.?

A. I am the Vice President of Electric Supply for Montana-Dakota Utilities Co. ("Montana-Dakota"), a Division of MDU Resources Group, Inc.

Q. WHAT ARE YOUR RESPONSIBILITIES AS THE VICE PRESIDENT OF ELECTRIC SUPPLY?

A. My responsibilities include power production and transmission, system operations and planning, environmental, NERC compliance and electric dispatch.

Q. WOULD YOU PLEASE OUTLINE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?

A. I graduated from the University of Washington with a bachelor's degree in Geology, from Oregon State University with a Master of Science degree in Soils, and from the University of Mary, Bismarck, with a masters in business management. I worked for the North American Coal Corporation for ten years in surface mine permitting, reclamation planning and oversight. I worked for Montana-Dakota for about 15 years in the environmental field prior to my current position.

Q. HAVE YOU TESTIFIED IN OTHER PROCEEDINGS BEFORE REGULATORY BODIES?

A. Yes, I have testified before this Commission and I have filed written testimony with the Montana Public Service Commission and the Minnesota and South Dakota Public Utilities Commissions.

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Montanta-Dakota Utilities Co.

Q. DOES MONTANA-DAKOTA AGREE WITH MR. HAHN'S RECOMMENDATION THAT THE COMMISSION ISSUE AN ADVANCE DETERMINATION OF PRUDENCE CONDITIONAL ON THE EPA APPROVAL OF THE SOUTH DAKOTA STATE IMPLEMENTATION PLAN ("SIP") AS CURRENTLY CONFIGURED?

A. An advance determination of prudence conditional upon EPA approval of the South Dakota State Implementation Plan as currently proposed would be acceptable to Montana-Dakota. Issuance of a conditional determination would support continuance of preliminary work on the project, and provide project engineers and vendors with additional schedule assurance to help keep this complex project progressing pending EPA approval of the South Dakota SIP. Montana-Dakota would be very concerned, however, if the Commission adopted Mr. Hahn's alternative recommendation to delay issuance of an advance determination of prudence until after the EPA approval is issued.

Q. WHY WOULD A CONDITIONAL APPROVAL BE PREFERABLE TO SIMPLY A DELAY PENDING THE SIP APPROVAL?

A. Montana-Dakota would be concerned about a delay in the issuance of an advance determination of prudence. Not only is such a delay not contemplated under the advance determination of prudence statute, if the plant owners felt it necessary to suspend preliminary project work due to the perceived risk of non-recovery of expenditures, it could delay completion of the project for a period significantly longer than the time expected until issuance of the EPA approval. For instance, the tie-in of the equipment should be coordinated with other essential plant work and regional outages for economic efficiencies identified in the rebuttal testimony of Mr. Mark Rolfes.

With a multi-faceted and complex project of this magnitude, it is unlikely that all regulatory, permitting and engineering tracts could ever be timed perfectly. However, knowing that the Commission has approved the project pending only the formal approval of the SIP provides a critical level of assurance for Montana-Dakota and Otter Tail as we continue to expend the funds needed to keep the project on track.

Q. WHAT IS MONTANA-DAKOTA'S POSITION REGARDING THE ADDITIONAL RECOMMENDED CONDITIONS REGARDING PRUDENCE APPROVAL OF TOTAL PROJECT COSTS, EXCLUDING THE MERCURY PROJECT, OF $585 MILLION AND SUBMITTAL OF PERIODIC PROJECT COST REPORTS?

A. Montana-Dakota does not object to providing periodic cost updates to the Commission; however, some clarification is necessary regarding the recommendation of approval based on current capital cost estimates. It is my

understanding that an advance determination of prudence is a determination that a project is needed and prudent for future rate making purposes based upon information reasonably available at the time of determination. Montana-Dakota, Otter Tail and Mr. Hahn have all concluded that the Big Stone AQCS is a needed and prudent project based on information reasonably available at this time. It is also my understanding that an advance determination of prudence is not a determination for ratemaking purposes that all costs actually incurred are reasonable nor does it establish the estimated project cost as either a cap or a floor for ratemaking purposes. Montana-Dakota would not object to conditions that clarify that actual costs, whether above or below estimated costs, are subject to review in a rate proceeding, nor to advising the Commission any time it becomes evident that project costs will materially exceed the estimate. Montana-Dakota would strongly disagree, however, with a recommendation that a project determined prudent in this proceeding could later be held imprudent if its capital costs exceeded the Company's best estimates of the capital costs of the project at the time of this proceeding.

Q. WOULD AN ADVANCE DETERMINATION OF PRUDENCE ORDER THAT EXCLUDED THE CONTEMPLATED MERCURY CONTROLS BE ACCEPTABLE TO MONTANA-DAKOTA?

A. While I take some issue with Mr. Hahn's characterization of the operation of the North Dakota environmental externalities statute, an advance determination of prudence that conditioned the inclusion of the mercury controls upon the finalization of the mercury control requirement would be acceptable to Montana-Dakota. Montana-Dakota believes that there will be efficiencies gained with the installation of mercury controls concurrently with the AQCS that will overall reduce costs of the mercury control installation. Montana-Dakota would expect to

recover the costs for this equipment under the environmental tracker or with other appropriate regulatory filings.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes, it does.

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
	)	DOCKET NO. PU-11-165
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	

REBUTTAL TESTIMONY

OF

MARK A. ROLFES, P.E.

ON BEHALF OF

OTTER TAIL POWER COMPANY

and MONTANA-DAKOTA UTILITIES CO.

November 8, 2011

TABLE OF CONTENTS

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Mark A. Rolfes, P.E. My business address is Otter Tail Power Company, 215 South Cascade Street, Fergus Falls, Minnesota, 56538-0496.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am the Manager, Generation Development for Otter Tail Power Company ("Otter Tail" or the "Company").

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND CURRENT RESPONSIBILITIES.

A. I have a Bachelor of Science Degree in Mechanical Engineering from North Dakota State University. I am a Professional Engineer licensed in Minnesota and South Dakota. I have worked in the power generation business for over 34 years and for Otter Tail for all of my professional career. I have particular experience with coal fired generation as the manager of the Big Stone and the Hoot Lake coal fired plants. I have also been extensively involved in the development of new power generation projects. I have served on the Governor's Citizens' Advisory Committee on Hazardous Waste Management in South Dakota and represented Otter Tail on numerous Electric Power Research Institute and Edison Electric Institute committees.

Currently, I am the acting project manager for the Big Stone Air Quality Control System ("AQCS") project, with overall responsibility for project development and the construction and implementation of the project. My main focus on the project is to supervise the engineering work and assist with regulatory compliance activities.

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Otter Tail and Montana-Dakota Utilities, Co. ("Montana-Dakota").

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I am responding to the testimony of Richard S. Hahn. I will explain why the delay in issuance of the ADP is likely to result in significantly higher costs for Otter Tail and Montana-Dakota customers and why the Applicants did not evaluate an alternative scenario involving significant market purchases.

III. COSTS ASSOCIATED WITH DELAY

Q. MR. HAHN SUGGESTS AT PAGE 10 THAT THE AQCS PROJECT WILL NOT BE ADVERSELY AFFECTED IF AN ADP IS DELAYED UNTIL AFTER EPA APPROVAL OF THE SOUTH DAKOTA STATE IMPLEMENTATION PLAN ("SIP"). DO YOU AGREE?

A. Not necessarily. Both the current project schedule and anticipated costs could be upset by a delay in the issuance of the ADP. For example, a delay in the issuance of the ADP may cause some vendors to increase their costs or even hesitate to bid. As the time of delay increases, so does the chance that the project will be more costly. If the Companies are not able to maintain the current project schedule, project costs are likely to increase significantly.

Q. WHY WILL PROJECT COSTS INCREASE IF THE PROJECT IS DELAYED?

A. In addition to ensuring compliance with the South Dakota Regional Haze Rule, the project schedule was designed to reduce project costs by taking advantage of favorable market conditions while demand for pollution retrofit is relatively stable and by enabling the AQCS equipment to be tied in to the plant during a scheduled outage in 2015.

New federal mandates, like the Regional Haze Rule, often cause a bubble in demand. In the next few years, the Cross-State Air Pollution Rule and the proposed Utility MACT Rule for hazardous air pollutants are likely to drive up prices. There are a limited number of vendors that supply the materials and labor necessary to construct the AQCS. A one-year delay in the project could lead to an increase in the cost of materials and services by 20%, as seen during previous demand spikes.

There are also significant cost savings if the AQCS equipment can be tied in to the plant during the 2015 outage. Plant outages generally occur every three to five years. They are expensive and usually planned several years in advance. The planned outage at the Big Stone Plant will occur in 2015 even if the AQCS project is not ready for tie-in because other scheduled maintenance needs must be addressed. If the tie-in cannot occur during the 2015 outage, an additional outage will need to be scheduled when the AQCS project is ready to be tied-in. Based on a 45-day outage and a conservative output at Big Stone of 9,000 MW per day, 405,000 MW may need to be purchased at market price. The exact cost of an additional outage is hard to predict because it is dependent on the cost of replacement power at the time of the outage.

Q. WHAT IS THE CURRENT PROJECT SCHEDULE?

A. To take advantage of favorable market conditions and to coordinate tie-in of the AQCS with the scheduled 2015 outage, Co-owners have filed a request for a construction permit, and detailed design engineering and initial procurement are underway.

Under the current schedule, in 2012 the specifications for the erection of the project will be completed, and the Co-owners will issue an RFP to select a contractor for this work so that construction can begin in 2013. In early 2013, the Co-owners plan to award the contract for the construction of the project, and construction will start as soon as possible thereafter. Construction is planned to continue through 2013 and 2014.

Construction is scheduled to be completed by spring of 2015 so that the equipment can be tied in during a scheduled shutdown at the Big Stone Plant in the spring to early summer of that year. Commissioning and testing will follow, with the intention that the unit will be ready for commercial operation by the close of 2015.

IV. SELECTION OF ALTERNATIVES

Q. MR. HAHN PROPOSES AT PAGE 18 THAT BURNS & MCDONNELL SHOULD HAVE CONSIDERED THE MISO MARKET AS AN ALTERNATIVE SCENARIO. DO YOU AGREE?

A. No. We did not consider an increase in MISO purchases for the same reason that Mr. Hahn eventually gives for rejecting this option on page 29 of his testimony: increased reliance on the market "would expose customers in North Dakota to unacceptable risks."

Q. PLEASE EXPLAIN THE PROCESS UNDERTAKEN BY OTTER TAIL TO IDENTIFY THE ALTERNATIVES TO INSTALLING THE AQCS?

A. The South Dakota Regional Haze Rule requires installation of the AQCS project for continued operation of the Big Stone Plant. To understand the potential alternatives to the continued operation of Big Stone as a coal fired generator, it is important to consider the role the Plant currently serves in the region. The Big Stone Plant is a traditional baseload unit, which means it provides reliable energy and capacity, and it has the ability to respond to load changes on a daily basis. Thus, any replacement resource to the Big Stone Plant will need to have the same attributes: reliability, capacity, and load following. There are a limited number of options that meet these requirements. In order to protect our customers from exposure to market fluctuations, we did not select an alternative with a MISO market component. A new coal fired plant, nuclear plant, or hydro resource could not be considered, as these options cannot be constructed within the required timeframe for compliance with the South Dakota Regional Haze Rule. In addition, a biomass option for a 475 MW unit would not be a low cost option given the limited availability and high cost of fuel. Based on these considerations, a natural gas fired option is the only realistic alternative if the Big Stone Plant is retired or repowered.

V. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-165

REBUTTAL TESTIMONY

OF

TERRY GRAUMANN

ON BEHALF OF

OTTER TAIL POWER COMPANY

and MONTANA-DAKOTA UTILITIES CO.

November 8, 2011

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Terry Graumann. My business address is Otter Tail Power Company, 215 South Cascade Street, Fergus Falls, Minnesota, 56538-0496.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am the Manager, Environmental Services for Otter Tail Power Company ("Otter Tail" or the "Company").

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I graduated in 1972 from Tabor College, Hillsboro, Kansas, with a Bachelor of Arts Degree in Natural Sciences. I began my employment with Otter Tail in 1973, providing environmental compliance support in Otter Tail's Power Production Department. My responsibilities included review and implementation of environmental regulations, development of compliance strategies, data collection and development of permit applications. I was given additional responsibilities in 1978 as the Supervisor of Environmental Engineering. In 1994, I was named Manager of the Environmental Services Department, which is my current role. During my tenure, I have personally completed or supervised numerous permit applications and permit renewals in the areas of air quality, solid waste, and water quality, including permitting for the existing Big Stone Generating Plant ("Big Stone Plant" or "Big Stone").

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Otter Tail and Montana-Dakota Utilities Co.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My testimony is offered in response to the testimony of Mr. Richard Hahn, submitted on behalf of the North Dakota Public Service Commission's Advocacy Staff. I will discuss the existing regulations that require the implementation of the proposed Big Stone Plant Air Quality Control System ("AQCS") project and why the issuance of the Advance Determination of Prudence ("ADP") is justified before the U.S. EPA completes its review of the South Dakota Regional Haze State Implementation Plan ("SIP").

III. REGULATORY STANDARDS REQUIRING AQCS

Q. MR. HAHN HAS TESTIFIED AT PAGES 6-7 THAT THE OWNERS OF THE BIG STONE PLANT ARE NOT CURRENTLY REQUIRED TO INSTALL THE AQCS. DO YOU AGREE?

A. No. The installation of the AQCS is currently required under the South Dakota Regional Haze Rule, Administrative Rules of South Dakota chapter 74:36:21 at 74:36:21:07. (A copy of the South Dakota Regional Haze Rule was included as Attachment 3 to Otter Tail's petition.) The South Dakota Board of Minerals and Environment issued an order adopting the South Dakota Regional Haze Rule on September 15, 2010, imposing strict emission limits for nitrogen oxides, sulfur dioxides and particulate matter. The Rule also required electric generating units placed into operation between 1962 and 1977, like the Big Stone Plant which began commercial operation on May 1, 1975, to install Best Available Retrofit Technology ("BART"). Under the South Dakota Regional Haze Rule, the upgrades are required to be made "as expeditiously as practicable" but no later than five years after U.S. EPA's approval of South Dakota's Regional Haze SIP. Thus, the Big Stone owners are currently obligated under South Dakota law to implement the AQCS if the Big Stone Plant is to continue in operation.

Q. WHY IS BART REQUIRED BY THE STATE OF SOUTH DAKOTA?

A. Both the emission limits and the BART requirements established under the South Dakota Regional Haze Rule are necessary to comply with the requirements of the federal Clean Air Act ("CAA"). The CAA establishes a national goal of remedying and preventing impairment of visibility from man-made air pollution in specified "Class I" areas of the United States. These Class I areas include the Theodore Roosevelt National Park. Under the federal Regional Haze Rule promulgated pursuant to the CAA, (40 C.F.R.§§ 51.300 to 51.309, CAA § 169A(b)(2)), state environmental agencies are required to submit State Implementation Plans ("SIPs"), which consist of strategies to reduce emissions contributing to regional haze and progress benchmarks toward meeting the goal of no man-made visibility impairment in Class I areas by 2064.

Q. WHO IS RESPONSIBLE FOR DEVELOPING AND IMPLEMENTING THE SOUTH DAKOTA REGIONAL HAZE SIP?

A. The South Dakota Department of Environment and Natural Resources ("DENR") is responsible for developing the South Dakota SIP. Based on extensive technical analysis, the South Dakota DENR determined the following control technology constitutes BART for the Big Stone Plant: a Selective Catalytic Reduction with Separated Overfire Air ("SCR/SOFA") for control of nitrogen oxide, a semi-dry or dry Flue Gas Desulfurization ("FGD") for reducing sulfur dioxide, and a baghouse to control particulate matter. The proposed AQCS consists of the control technology identified as BART by the South Dakota DENR.

Q. HAS THE SOUTH DAKOTA DENR SUBMITTED THE SOUTH DAKOTA REGIONAL HAZE SIP TO EPA?

A. Yes. The South Dakota Regional Haze SIP was submitted to EPA on January 21, 2011.

Q. HAS THERE BEEN A RESPONSE BY EPA TO THE REGIONAL HAZE SIP SUBMITTED BY SOUTH DAKOTA?

A. Yes. EPA Region 8 made comments regarding certain technical issues. In response, the South Dakota DENR submitted a revised Regional Haze SIP to EPA on September 19, 2011. The revisions clarified testing, monitoring, and recordkeeping requirements; and reporting requirements relating to periods of startup, shutdown and malfunction. The revisions do not impact South Dakota's BART determination or control technology selection that make up the AQCS.

Q. HAS EPA PROVIDED ANY INDICATION OF ITS EVALUATION OF THE SOUTH DAKOTA DENR'S BART DETERMINATION?

A. Yes. In an August 2011 email, EPA staff advised me that EPA is "supportive of the State's [BART] determination." The August email is attached as Exhibit ___ (TG-1) to my testimony. In addition, the EPA did not offer any opposition to South Dakota's control technology selection in the comments it filed with the DENR, as discussed above.

Q. DO YOU HAVE ANY EXPECTATION ABOUT WHEN EPA WILL ACT ON THE SOUTH DAKOTA REGIONAL HAZE SIP?

A. Yes. In the same August email, EPA staff stated the agency plans to finalize its action on the South Dakota SIP by March 29, 2012.

Q. BY WHAT DATE WILL THE AQCS NEED TO BE INSTALLED AT THE BIG STONE PLANT?

A. Based on the information provided by EPA in the August 2011 email referenced above, the latest date by which the owners of Big Stone can achieve BART compliance will likely be early 2017. However, according to the South Dakota Regional Haze Rule, the

Big Stone owners are required to make the necessary upgrades "as expeditiously as practicable."

IV. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

From: Morales.Monica@epamail.epa.gov
Sent: Thursday, September 01, 2011 4:07 PM
To: TGraumann@otpco.com
Subject: Re: South Dakota Regional Haze SIP Approval

Mr. Graumann,

Our schedule for acting on South Dakota's Regional Haze State Implementation Plan is to propose our action by November 29, 2011 and finalize our action by March 29, 2012. A lawsuit was filed by several environmental groups against EPA on August 29, 2011, directing EPA to move forward with actions on state Regional Haze plans. As you are aware, we made no adverse comments concerning South Dakota's Best Available Control Technology determination for nitrogen oxides (NOx) of selective catalytic reduction (SCR) for Otter Tail Power Company's Big Stone Unit 1 during any of the State's public comment periods. Thus, we are supportive of the State's determination.

Monica S. Morales, Unit Chief
Air Quality Planning Unit
Air Program (8P-AR)
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129
phone (303) 312-6936
fax (303) 312-6064

From: <TGraumann@otpco.com>
To: Monica Morales/R8/USEPA/US@EPA
Date: 08/23/2011 02:22 PM
Subject: South Dakota Regional Haze SIP Approval

Ms. Morales:

I would appreciate an update on the EPA schedule for approval of the South Dakota Regional Haze State Implementation Plan.

Thank you

Regards,

Terry Graumann
Terry Graumann
Manager, Environmental Services
Otter Tail Power Company
P.O. Box 496
215 S. Cascade
Fergus Falls, MN 56538-0496
Telephone: 218-739-8407 Fax: 218-739-8629
E-Mail: tgraumann@otpco.com

PUBLIC VERSION—TRADE SECRET DATA HAS BEEN EXCISED

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-165

REBUTTAL TESTIMONY

OF

JEFFREY T. KOPP

ON BEHALF OF

MONTANA-DAKOTA UTILITIES CO.

and

OTTER TAIL POWER COMPANY

November 8, 2011

PUBLIC VERSION—TRADE SECRET DATA HAS BEEN EXCISED

TABLE OF CONTENTS

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jeffrey ("Jeff") T. Kopp. My business address is Burns & McDonnell Engineering Company, 9400 Ward Parkway, Kansas City, Missouri, 64114.

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am employed by Burns & McDonnell Engineering Company ("Burns & McDonnell"). I am the Manager of Project Development within the Energy Consulting Department of the Business & Technology Services Division.

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS AND EXPERIENCE.

A. I received a Bachelor of Science degree in civil engineering from the Missouri University of Science and Technology in 1999. I received a Master of Business Administration degree from the University of Kansas in 2004. I am a registered professional engineer in the State of Missouri. I have 11 years of engineering experience, with 10 of those years in power generation. I have provided engineering and consulting support to investor-owned utilities, independent power producers, municipalities, and electric cooperatives.

As the manager of the Project Development group, I oversee the development activities for various new power generation resources, including feasibility studies, economic analysis, preliminary engineering design, due diligence reviews, cost estimates, and other development activity support. I have worked on and overseen development and consulting activities on coal, natural gas, wind, solar, and biomass power generation facilities. This experience has included preparing and reviewing economic analysis comparing power generation from various resource alternatives. These economic analyses have included comparing the relative economics of coal, natural gas, and wind

alternatives, similar to the analysis presented. My resume is attached to this testimony as Exhibit ___ (JTK-1).

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Montana-Dakota Utilities Co. ("Montana-Dakota") and Otter Tail Power Company ("Otter Tail").

II. PURPOSE

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. My testimony responds to the direct testimony of Mr. Richard S. Hahn, a witness for the North Dakota Public Service Commission Advocacy Staff.

III. UPDATED FUEL FORECASTS

Q. AT PAGE 1 OF HIS DIRECT TESTIMONY, MR. HAHN CONTENDS IT WAS NOT REASONABLE FOR OTTER TAIL TO BASE ITS LEVELIZED COST ANALYSIS ON A DECEMBER 2009 NATURAL GAS FORECAST. WHY WERE THE DECEMBER 2009 FUEL FORECASTS USED IN THE LEVELIZED COST ANALYSIS PREPARED BY BURNS & MCDONNELL FOR OTTER TAIL?

A. Burns & McDonnell used the same natural gas forecast and coal forecast included in Otter Tail's Integrated Resource Plan ("IRP") filing before the Minnesota Pubic Utilities Commission. This was done so the findings in the Strategist modeling for the IRP would be comparable to the levelized cost analysis performed for the ADP petition.

Q. IN ITS LEVELIZED COST ANALYSIS, DID BURNS & MCDONNELL TAKE INTO ACCOUNT THE POSSIBILITY OF FUTURE FUEL PRICE CHANGES?

A. Yes. Burns & McDonnell's sensitivity analyses evaluated the resulting levelized busbar costs for the AQCS project and each natural gas alternative over a range of fuel costs from 20% lower than the base case to 20% higher than the base case. The fuel cost sensitivity analysis confirms the proposed AQCS project is the least cost project should natural gas or coal prices increase or decrease by 20%.

Q. WHO PREPARED THE FUEL FORECASTS RELIED UPON BY BURNS & MCDONNELL?

A. Wood Mackenzie, a global energy research and consulting firm.

Q. HOW DID BURNS & MCDONNELL OBTAIN WOOD MACKENZIE'S FUEL FORECASTS FOR USE IN THIS CASE?

A. The forecasts were provided to Burns & McDonnell by Otter Tail.

Q. HAS OTTER TAIL PROVIDED BURNS & MCDONNELL WITH ANY FUEL FORECASTS OTHER THAN THE DECEMBER 2009 FORECASTS THAT BURNS & MCDONNELL RELIED UPON TO PREPARE ITS LEVELIZED COSTS ANALYSIS?

A. Yes. In August 2011, Otter Tail obtained and provided Burns & McDonnell with updated fuel forecasts prepared by Wood Mackenzie. Otter Tail provided Wood Mackenzie's North America Power Service - Long Term View for natural gas and coal, which was released in April 2011. For both the 2009 and 2011 coal price forecasts, Otter Tail modified the Wood Mackenzie forecast to reflect the specific coal transportation costs from the Powder River Basin to the Big Stone Plant.

Q. HOW DO THE UPDATED WOOD MACKENZIE FUEL FORECASTS COMPARE TO THE FUEL FORECASTS USED IN BURNS & MCDONNELL'S LEVELIZED COST ANALYSIS?

A. The updated Wood Mackenzie natural gas price and coal price forecasts are both lower than the fuel forecasts used in our levelized costs analysis. However, both current price forecasts fall within the range of fuel costs evaluated in Burns & McDonnell's sensitivity analyses, i.e. both fall within the 20% sensitivity range below the base case.

Q. UNDER THE REVISED FUEL FORECASTS, IS THE BIG STONE PLANT WITH THE AQCS PROJECT THE MOST ECONOMICALLY ATTRACTIVE OPTION?

A. Yes. As previously presented in the fuel forecast sensitivity analysis, the Big Stone Plant with the AQCS project remains the least cost alternative under a range of fuel costs from 20% lower than the base case to 20% higher than the base case. Since the updated fuel forecasts fall within this range, it does not change our conclusions.

IV. COSTS OF WIND POWER

Q. MR. HAHN SUGGESTS THE BISON 2 AND BISON 3 WIND PROJECTS PROVIDE A GOOD APPROXIMATION OF THE LIKELY COSTS OF FUTURE WIND POWER. DO YOU AGREE?

A. No. Bison 2 and Bison 3 will utilize the Siemens SWT-3.0-101 direct-drive wind turbines. These will be the first production class Siemens SWT-3.0-101 units installed in the world. Manufacturers commonly offer significantly discounted turbine pricing for the first production units installed. Based on publicly available information, the total installed cost of Bison 2 is $157 million for 105 MW[1], and the total installed cost of

[1] David Phelps, *Bison 2 Wind Farm in N.D. Gets PUC's Go-Ahead*, Star Tribune, Sept. 1, 2011, *available at* http://www.startribune.com/business/128904833.html.

Bison 3 is also $157 million for 105 MW[2]. This results in an installed capital cost of $1495/kW. Given these very low capital costs, the Bison 2 and Bison 3 projects are unique, and they are not a reasonable approximation of the future cost of wind power.

Q. AT PAGE 15 OF HIS TESTIMONY, MR. HAHN REPORTS THE LAWRENCE BERKELEY NATIONAL LABORATORY ("LBNL") HAS RECENTLY SEEN PPAs IN THE HEARTLAND REGION IN THE LOW $40 PER MWH OR LOWER. HOW DO THESE VALUES FOR PURCHASED WIND COMPARE TO THE VALUES USED BY BURNS & MCDONNELL?

A. If we were to take the LBNL cost ($40/MWh (2011 dollars)) and levelize it, the LBNL value is consistent with the cost of wind Burns & McDonnell used in its analysis. This is achieved by taking the $40/MWh (2011 dollars), escalating it 2.5% per year up to 2016, further escalating at 2.5% per year throughout a 20-year PPA term, and then levelizing these costs over the 20-year PPA term at Otter Tail's discount rate of **[TRADE SECRET DATA BEGINS... ...TRADE SECRET DATA ENDS]**. The result is a levelized cost of wind of $60.98 in 2016 dollars. If we perform the same calculation using a 2011 starting PPA price of $44.02 (which falls within the low-to-mid $40/MWh range published by LBNL), the result is a levelized cost of wind of $67.11, which is the price used in Burns & McDonnell's analysis. These calculations demonstrate that the value used in Burns & McDonnell's analysis is reasonable and consistent with the information in the LBNL report.

---

[2] Paul Dvorak, *Bison 3 Gallops Along in North Dakota*, Windpower Engineering & Development, Sept. 7, 2001, *available at* http://www.windpowerengineering.com/construction/bison-3-gallops-along-in-north-dakota/.

Q. HOW DO YOU RESPOND TO MR. HAHN THAT BURNS & MCDONNELL INCORRECTLY HANDLED THE PRODUCTION TAX CREDIT IN ITS ANALYSIS?

A. I believe Mr. Hahn is overstating the value of the PTC. Burns & McDonnell used an estimated impact of the PTC on the levelized cost of wind in PPA pricing of $20/MWh in 2009 dollars. This value is based on our experience with economic modeling of wind projects with and without the PTC. While we agree with Mr. Hahn's contention that tax rates can impact the value of the PTC in an individual project, there are other considerations that lower the value of the PTC. These considerations include the possibility that a project cannot take advantage of the full PTC if the project does not have sufficient tax liabilities to be offset by the tax credits. The resulting potential tax partner structures, transactional costs, etc. would reduce the value of the PTC available to the wind farm. When considering these factors, we believe that a $20/MWh impact to levelized wind PPA pricing in 2009 dollars is a reasonable assumption. Burns & McDonnell's estimated value of the PTC is further verified by the fact that our levelized wind PPA pricing with the PTC is consistent with the LBNL published values, as discussed above. Even assuming a higher value of the impact of the PTC, as Mr. Hahn suggests, the difference would not be material in the analysis. This is because a higher value of the PTC would only increase the price of our assumed PPA pricing of wind without the PTC, rather than decrease the PPA price of wind with the PTC.

V. STRANDED COSTS

Q. MR. HAHN CONTENDS IT WAS UNREASONABLE FOR BURNS & MCDONNELL TO CONSIDER STRANDED COSTS IN ITS MODELING OF THE ALTERNATIVE OPTIONS. WHAT IS YOUR RESPONSE?

A. Burns & McDonnell did not consider stranded costs in its base case or any of the sensitivity analyses presented in Figures 1-3 of Appendix 9. Rather, Burns & McDonnell

modeled the impact of the stranded costs in a single sensitivity case, reported in Table 2 of Attachment 9, under the line titled "Stranded Asset Cost Scenario Adder." The impact of stranded costs was not taken into account in any of Burns & McDonnell's conclusions regarding the economic benefits of the AQCS over the other alternatives considered. Even when they are considered, stranded costs are not material in the comparison of the proposed AQCS and the alternatives, and the conclusion that the AQCS project is the least cost option remains the same.

VI. ALTERNATIVES CONSIDERED

Q. MR. HAHN PROPOSES THAT BURNS & MCDONNELL SHOULD HAVE EVALUATED AN ALTERNATIVE OPTION BASED ON MISO PURCHASES. WHAT IS YOUR RESPONSE?

A. In our analysis, Burns & McDonnell evaluated alternatives for a baseload resource. MISO market purchases do not meet this criteria. In practical terms, the reliance on MISO purchases to replace a substantial portion of the energy provided by the Big Stone Plant would expose Montana-Dakota and Otter Tail and their customers to significant market risk. Since the MISO market pricing is set by the marginal unit, or the last unit to come online, Otter Tail and Montana-Dakota customers would be subject to pricing set by the unit with the highest variable cost dispatched to the market at any given time. This risk is reduced by maintaining generation resources with known efficiencies and variable costs, rather than being at the mercy of purchasing power based on pricing from the least efficient unit at any given point in time.

Q. MR. HAHN ALSO PROPOSES BURNS & MCDONNELL SHOULD HAVE CONSIDERED A SIMPLE CYCLE NATURAL GAS COMBUSTION TURBINE AS A POTENTIALLY CHEAPER MEANS TO PROCURE CAPACITY. WHY WAS THIS OPTION NOT EVALUATED?

A. Since our analysis was based on alternative baseload generation resources, simple cycle alternatives were not considered because this technology is generally utilized as a peaking resource, rather than a baseload resource. While simple cycle technology has the least installed cost and cheapest capacity cost, it also has the highest energy cost. In the alternative proposed by Mr. Hahn, he gives the wind energy portion of the alternative a 10% capacity factor, and therefore, reduces the size of his simple cycle unit by 47.5 MW to an installed capacity of 427.5MW. The simple cycle unit is then dispatched at a capacity factor of approximately **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]**. Wind generation is assumed to operate at a **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]** capacity factor and the remainder of the energy comes from market purchases. Of the total energy provided in this alternative, **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]** is provided by the simple cycle unit, **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]** is provided by wind energy, and 34% comes from market purchases. Therefore, approximately one third of the energy previously provided by BSP would now be purchased from the market. This would result in significant reliance on purchases of market energy – especially during peak demand in the summer months when wind resources may be idle – exposing the Applicants to unreasonable market risk. As a result, we did not include this alternative in our analysis.

VII. COST-OF-SERVICE MODELING

Q. MR. HAHN CLAIMS THE SPREADSHEET MODEL USED BY BURNS & MCDONNELL FOR ITS BUSBAR CALCULATION DOES NOT ACCURATELY SIMULATE THE COST OF SERVICE MODEL USED IN UTILITY RATE-SETTING PROCESSES. DO YOU AGREE?

A. The spreadsheet model used by Burns & McDonnell to calculate the busbar costs include the cost of depreciation, return, interest, fuel, fixed O&M, variable O&M, and taxes. Our model calculates the revenue requirements for each alternative based on a buildup of these costs. Although there are some differences in the details of the modeling, both models are based on building up revenue requirements, using the same major costs categories and the conclusions are consistent.

Q. WHAT ARE THE DIFFERENCES BETWEEN THE SPREADSHEET MODEL USED BY BURNS & MCDONNELL AND THE COST OF SERVICE MODEL FAVORED BY MR. HAHN?

A. There are two major differences. Burns & McDonnell used a simplified assumption of basing the equity return on a book value calculated using straight-line depreciation, rather than the **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]** to calculate rate base used in the La Capra modeling. La Capra also calculated interest costs based on the **[TRADE SECRET DATA BEGINS TRADE SECRET DATA ENDS]**, while Burns & McDonnell's model used a more straightforward method of calculating interest costs based on a debt payment stream calculated based on the debt terms.

Q. ARE THE MODELING DIFFERENCES SIGNIFICANT IN THIS CASE?

A. No, I don't believe so. Burns & McDonnell evaluated the proposed AQCS and the alternatives by the same spreadsheet method. In addition, the differences in the La Capra model result in a levelized cost of the AQCS option of $2.03/MWh lower than the values calculated by Burns & McDonnell and a levelized cost of the combined cycle plus wind option of $3.71/MWh lower than the values calculated by Burns & McDonnell. This reduces the differential cost between these two alternatives by $1.68. These differences do not change the conclusion that the AQCS option is the least cost alternative and this conclusion remains robust over multiple modeling evaluations.

VIII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

Jeffrey T. Kopp, PE

Manager, Project Development

Expertise

- Due Diligence Evaluations
- Feasibility Studies
- Pro forma Analysis
- Site Retirement Estimates
- Site Layouts
- Siting Assessments
- Site Evaluations
- Preliminary Engineering Design

Education

- B.S. in Civil Engineering, University of Missouri-Rolla, 1999
- MBA, University of Kansas, 2004

Organizations

- American Society of Civil Engineers

Registration

- Professional Engineer, Missouri

Total Years of Experience

12

Years With Burns & McDonnell

10

Start Date

June 2001

Mr. Kopp manages the Project Development group in Burns & McDonnell's Business & Technology Services Division specializing in development of energy projects including energy facility siting, feasibility studies, pro forma analysis, project development services, due diligence reviews and preliminary engineering design.

Mr. Kopp has provided assistance on the following projects:

Repower Assessment, Confidential Client
North Dakota, 2011
Mr. Kopp is currently assisting a client with an evaluation comparing the economic viability of retrofitting an existing coal-fired power plant with air quality control system equipment in comparison to replacing the plant with new natural gas fired generation. The project includes preparing capital cost estimates, operating and maintenance cost estimates, and determining the net present value of each alternative evaluate the relative economic attractiveness of each alternative.

Decommissioning Study, Confidential Client
East Coast, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a decommissioning study for the entire fleet of power generating facilities owned by an Electric Utility on the East Coast. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included several coal-fired plants, as well as several natural gas-fired and fuel oil-fired units.

Decommissioning Study, Confidential Client
Upper Midwest, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a decommissioning study for several power generating facilities in the Upper Midwest. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included coal and biomass-fired facilities.

Strategic Site Selection Study, Confidential Client
Virginia, Maryland, Pennsylvania, Delaware, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a strategic site selection study for a 750 MW combined cycle facility. The study resulted in the identification of multiple viable site alternatives to support the natural gas-fired generation option under consideration.

Due Diligence Evaluation, Confidential Client
Pennsylvania, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation of a 2-on-1 combined cycle facility being offered for sale by Liberty Electric in Pennsylvania. The client was considering acquiring the assets from the current owner. The evaluation included a technical, environmental, and contractual review of the combined cycle generation facility.

Due Diligence Evaluation, Tyr Energy
Florida, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation of a biomass power generating facility under development by American Renewables. The client was considering an equity investment in the facility. The evaluation included a 100 MW bubbling fluidized bed boiler and steam turbine.

Jeffrey T. Kopp, PE
(continued)

Due Diligence Evaluation, Confidential Client
Maryland, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation of a combined cycle facility under development in Maryland. The client was considering acquiring the site and all the development rights for installation of a 2-on-1 combined cycle facility. The evaluation included a review of existing agreements and permits in place to facilitate development of the generation resource.

Decommissioning Study, Tampa Electric Company
Florida, 2011
Mr. Kopp served as the Burns & McDonnell project manager on a decommissioning study for the power generating facilities owned by Tampa Electric Company. The evaluation was performed to determine the costs to demolish the units and restore the sites at the end of their useful lives. The evaluation included a coal-fired plant, an integrated gasification combined cycle plant, and several natural gas-fired units.

Site Retirement Evaluation, Confidential Client
Illinois, 2011
Mr. Kopp served as the project manager for a site retirement evaluation to help determine the cost to retire a 600 MW coal-fired project in Illinois at the end of its useful life. Estimates for demolition and site restoration were included in the evaluation.

Repower Assessment, Confidential Client
Minnesota, 2010
Mr. Kopp assisted a client with an evaluation comparing the economic viability of retrofitting an existing coal-fired power plant with air quality control system equipment in comparison to replacing the plant with new natural gas fired generation. The project includes preparing capital cost estimates, operating and maintenance cost estimates, and determining the net present value of each alternative evaluate the relative economic attractiveness of each alternative.

Biomass Plant Site Selection Study, Confidential Client
Texas, 2010
Mr. Kopp served as the project manager for a Site Selection Study for a Biomass project to be located in Texas. The project included ranking of candidate sites to determine a preferred site for development of a 20 MW biomass power generating facility.

Due Diligence Evaluation, Tyr Energy
Multiple Locations, 2010
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for several natural gas-fired facilities being offered for sale by Tenaska. The client was considering an equity investment in the facilities. The evaluation included four combined cycle facilities and one simple cycle facility

Power Plant Valuation Assessment, Basin Electric Power Cooperative
North Dakota, 2010
Mr. Kopp is currently serving as the Burns & McDonnell project manager to provide a valuation assessment of the Antelope Valley Station Unit 2, which is being considered for purchase by Basin Electric Power Cooperative. The project includes valuing the 25 year old 450 MW coal fired unit in current dollars and at specified dates in the future.

Jeffrey T. Kopp, PE
(continued)

Wind Farm Evaluation, Minnesota Power
North Dakota, 2010
Mr. Kopp is currently serving as the Burns & McDonnell project manager to provide an evaluation of a proposed wind farm development in central North Dakota. The project includes wind resource assessments, conceptual engineering design, capital cost estimates, and estimated busbar costs for development of wind farm project in phases on the land currently under contract.

Site Retirement Cost Evaluations, Horizon Wind Energy
Midwest, 2008-2010
Mr. Kopp served as the Burns & McDonnell project manager on multiple site retirement cost evaluations for several proposed wind energy facilities under development by Horizon Wind Energy. The evaluations were performed to support permitting activities on the facilities.

Due Diligence Evaluation, Tyr Energy
Hawaii, 2010
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a biomass gasification generating facility under development in Hawaii. The client was considering the facility for investment. The evaluation included a Primenergy gasifier with a net plant output of approximately 12 MW.

Project Development Assistance, Tradewind Energy
Kansas, 2009-2010
Mr. Kopp is currently serving as the Burns & McDonnell project manager to provide development assistance on a wind farm facility in Southern Kansas. The development assistance includes support on land acquisition efforts for the project, transmission line routing and preliminary design, power collection system preliminary design, and general project development assistance.

Project Development Assistance, Tradewind Energy
Missouri, 2007-2010
Mr. Kopp is currently serving as the Burns & McDonnell project manager to provide development assistance on two wind turbine facilies in Northern Missouri. The development assistance includes support on land acquisition efforts for the project, transmission line routing and preliminary design, power collection system preliminary design, and general project development assistance.

Site Retirement Cost Evaluation, Progress Energy Florida
Florida, 2008-2009
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement cost evaluation for all the fossil fuel-fired power generating facilities owned by Progress Energy in the state of Florida. The evaluation was performed to determine the costs to demolish the units and restore the sites and included a natural gas-fired steam plants, fuel oil-fired steam plants, natural gas-fired combustion turbines, coal-fired facilities, and combined cycle generating facilites. Subsequent to the study, Mr. Kopp provided direct testimony in Progress Energy Florida's rate case in regards to the study findings.

Site Retirement Cost Evaluation, Northern Indiana Public Service Co.
Indiana, 2008
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement cost

Jeffrey T. Kopp, PE
(continued)

evaluation for several generating facilities owned by NIPSCO. The evaluation was performed to determine the costs to demolish the units and restore the sites and included several coal-fired facilities and a combined cycle generating facility.

Due Diligence Evaluation, Grays Harbor Public Utility District
Washington, 2008
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a biomass-fired cogeneration facility being offered for sale in Washington. The facility evaluated was a paper mill that had been shutdown for several years. The facility included a wood waste fired boiler that provided steam to a steam turbine for electric power generation as well as providing plant process steam.

Due Diligence Evaluation, Tyr Energy
New Mexico, 2008
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a natural gas-fired power generating facility being offered for sale in New Mexico. The evaluation included two Mitsubishi 501F combustion turbines operating in combined cycle mode.

Site Retirement Cost Evaluation, Horizon Wind Energy
Illinois, 2008
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement cost evaluation for a wind farm being proposed by Horizon Wind Energy in Illinois. The evaluation was performed to determine the costs to demolish the units and restore the sites to meet the county zoning requirements.

Due Diligence Evaluation, Tyr Energy
Western US, 2008
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for several natural gas-fired power generating facilities being offered for sale throughout the western United States. The evaluation included several GE LM6000 combustion turbines operating in simple cycle mode, several GE LM6000 combustion turbines operating in combined cycle mode, one GE 7EA combustion turbine operating in combined cycle mode, and one GE 7FA combustion turbine operating in simple cycle mode.

Due Diligence Evaluation, Tyr Energy
Virginia, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Virginia. The evaluation included 7 GE LM6000 fuel oil fired combustion turbines operating in simple cycle mode.

Due Diligence Evaluation, Tyr Energy
Colorado, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for 5 GE LM6000 combustion turbines operating in combined cycle cogeneration mode with 2 steam turbines. The facility includes a greenhouse that serves as the plant's thermal host for cogeneration operations.

Project Development Assistance, Mesa Wind Power
Texas, 2007

Jeffrey T. Kopp, PE
(continued)

Mr. Kopp is currently providing development assistance on a 4,000 MW wind turbine facility located in the panhandle of Texas. The development assistance includes pro forma economic modeling of the project.

Due Diligence Evaluation, Kelson Energy
Ohio, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Ohio. The evaluation included a partially constructed 2x1 Siemens Westinghouse 7FA combined cycle generating facility.

Due Diligence Evaluation, Grand River Dam Authority
Oklahoma, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Oklahoma. The evaluation included a 4x2 GE 7FA combined cycle generating facility.

Due Diligence Evaluation, Brazos Electric Power Cooperative
Texas, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for the purchase of an equity share of a generating facility being constructed in Texas. The evaluation included an 890 MW supercritical pulverized coal fired generating facility.

Due Diligence Evaluation, Tyr Energy
Florida, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Florida. The evaluation included 3 GE 7FA combustion turbines operating in simple cycle mode.

Cost Estimate Preparation, Direct Energy
Texas, 2007
Mr. Kopp served as the Burns & McDonnell project manager for the preparation of planning level cost estimates for a new combined cycle facility to be constructed in Texas.

Due Diligence Evaluation, Tyr Energy
Various U.S. Locations, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for several generating facilities being offered for sale throughout the U.S. The evaluation included a coal, natural gas, and wind power facilities.

Owner's Engineer Services, Grays Harbor PUD
Washington, 2007
Mr. Kopp served as the Burns & McDonnell project manager on an owner's engineer project to evaluate the plans for installation of a refurbished steam turbine at a paper mill. The evaluation included the review of the design for the installation of a 7 MW steam turbine.

Site Retirement Cost Evaluation, Tyr Energy
Various U.S. Locations, 2007
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement cost

Jeffrey T. Kopp, PE
(continued)

evaluation for several generating facilities owned by Tyr Energy. The evaluation was performed to satisfy FASB 143 accounting standards and included a simple cycle and combined cycle generating facilities.

Due Diligence Evaluation, Tyr Energy
Virginia, 2006/2007
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Virginia. The evaluation included a 240 MW subcritical pulverized coal fired facility.

Due Diligence Evaluation, Brazos Electric Power Cooperative
Texas, 2006
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Texas. The evaluation included a 1x1 GE 7FA combined cycle generating facility and 2 GE 7FA combustion turbines operating in simple cycle mode.

Generation Alternatives Study, Ottertail Power Company
North Dakota, 2006
Mr. Kopp is currently serving as the Burns & McDonnell project manager on a Generation Alternatives Study for the addition of a new 600 MW coal fired unit at an existing coal fired facility. The study includes a pro forma analysis of the technologies considered.

Technology Assessment, Minnesota Power
South Dakota, 2006
Mr. Kopp is currently assisting with a technology assessment for the addition of a new 500 MW coal fired unit at an existing coal fired facility. The study includes a pro forma analysis of the technologies considered.

Technology Assessment and Feasibility Study, Ottertail Power Company
Minnesota, 2006
Mr. Kopp served as the Burns & McDonnell project manager on a feasibility study and technology assessment for the addition of a new 500 MW coal fired unit at an existing coal fired facility. The study includes conceptual site layouts, cost estimates, performance estimates, and water balances.

Project Development Assistance, Tradewind Energy
Kansas, 2005/2006
Mr. Kopp served as the Burns & McDonnell project manager to provide development assistance on a 250MW wind turbine facility in Central Kansas. The development assistance includes conceptual design and technical support for the development phase of the project.

Siting Study and Technology Assessment, Arizona Public Service
Arizona/New Mexico, 2005/2006
Mr. Kopp assisted with a siting study and technology assessment for an 1,800 MW coal fired facility in Arizona and Northwestern New Mexico. Development resulted in the identification of multiple viable site alternatives to support coal-fired generation options.

Jeffrey T. Kopp, PE
(continued)

Due Diligence Evaluation, Tyr Energy
California, 2005/2006
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for four generating facilities being offered for sale in California. The evaluation included simple cycle facilities consisting of Pratt & Whitney FT8 Twinpacs.

Waste-to-Energy Feasibility Study, CPS Energy
Texas, 2005
Mr. Kopp assisted with a feasibility study for a new waste-to-energy facility in the State of Texas. The study included a pro forma analysis of the facility considered.

Due Diligence Evaluation, Tyr Energy
Oklahoma, 2005
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Oklahoma. The evaluation included a simple cycle facility consisting of four General Electric 7EA turbines.

Due Diligence Evaluation, Cinergy
Indiana, 2005
Mr. Kopp served as the Burns & McDonnell project manager on a due diligence evaluation for a generating facility being offered for sale in Indiana. The evaluation included a simple cycle facility consisting of four Siemens Westinghouse 501D5A turbines.

Due Diligence Evaluation, kRoad Power
Various Locations, 2003/2004
Mr. Kopp served as the Burns & McDonnell project manager on due diligence evaluations for several generating facilities being offered for sale throughout the United States. The evaluations included four combined cycle plants utilizing Siemens Westinghouse 501G turbines.

Due Diligence Evaluation, kRoad Power
Various Locations, 2003
Mr. Kopp served as the Burns & McDonnell project manager on due diligence evaluations for several generating facilities being offered for sale by Duke Energy. The evaluations included two combined cycle plants and one simple cycle plant utilizing General Electric 7FA turbines and General Electric 7EA turbines respectively.

Site Retirement Evaluation, Old Dominion Electric Cooperative
Maryland/Virginia, 2002/2004
Mr. Kopp served as the Burns & McDonnell project manager on several site retirement evaluations to help determine the cost to retire the facilities at the end of their useful life. The evaluations included simple cycle plants utilizing General Electric 7FA turbines and Caterpillar Diesel Gensets. Estimates for demolition and site restoration were included.

Site Retirement Evaluation, Confidential Client
Illinois, 2004
Mr. Kopp assisted with a site retirement evaluation to help determine the cost to retire a 600 MW coal-fired project in Illinois at the end of its useful life. Estimates for

Jeffrey T. Kopp, PE
(continued)

demolition and site restoration were included in the evaluation.

Site Retirement Evaluation, Western Farmers Electric Cooperative
Oklahoma, 2004
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement evaluation to determine the approximate cost to retire the facilities, prepare demolition contract documents, and evaluate bids. The evaluation included a duel fuel genset site.

Site Retirement Evaluation, Panda Energy
North Carolina, 2003
Mr. Kopp served as the Burns & McDonnell project manager on a site retirement evaluation to help determine the cost to retire the Panda-Rosemary Project at the end of its useful life. The evaluation included a combined cycle cogeneration facility in Roanoke Rapids, North Carolina. Estimates for demolition and site restoration were included in the evaluation.

Independent Engineer's Report, Panda Energy
North Carolina, 2003/2004
Mr. Kopp produced an Independent Engineer's Report for the Panda-Rosemary Project. The report included a due diligence evaluation of plant performance and financial assessment of a combined cycle cogeneration facility in Roanoke Rapids, North Carolina.

Site Retirement Evaluation, Sempra Energy
Arizona, 2003
Mr. Kopp provided a site retirement evaluation to help determine the cost to retire the Mesquite Energy Generating Facility at the end of its useful life. The evaluation included a combined cycle plant near Phoenix, Arizona. Estimates for demolition and site restoration were included in the evaluation.

Feasibility Study, Northeast Utility Service Corp.
New Hampshire, 2004
Mr. Kopp assisted with a feasibility study to replace an existing coal-fired unit with a new coal fired unit. The study included the installation of a single 600 MW unit in New Hampshire. A pro forma analysis of the new unit was prepared and benchmarked against a pro forma analysis for the existing unit.

Technology Assessment and Feasibility Study, Ottertail Power Corp
South Dakota, 2005/2006
Mr. Kopp assisted with a technology assessment and feasibility study for a new coal-fired generation facility in South Dakota. The study included a pro forma analysis of the alternative technologies considered.

Technology Assessment and Feasibility Study, Progress Energy
Florida, 2004
Mr. Kopp assisted with a technology assessment and feasibility study for new solid fuel fired generation in the State of Florida. The study included a pro forma analysis of the alternative technologies considered.

Jeffrey T. Kopp, PE
(continued)

Project Development Assistance, Peoples Energy Resources Corporation
Oregon, 2001-2004
Mr. Kopp provided project development assistance for a 1,200 MW combined cycle power plant in Oregon. Mr. Kopp assisted in the preparation of an Energy Facility Site Certificate including preliminary engineering design, preparation and review of written exhibits, and public presentation support.

Project Development Assistance, Peoples Energy Resources Corporation
New Mexico, 2001-2004
Mr. Kopp provided project development assistance for a simple cycle power plant in New Mexico. Mr. Kopp provided preliminary engineering design and project development assistance. This included preparing preliminary site design drawings that were approved by the county zoning commission during the site design review process as well as public presentation support.

BEFORE THE

PUBLIC SERVICE COMMISSION OF THE STATE OF NORTH DAKOTA

MONTANA-DAKOTA UTILITIES CO., A DIVISION OF MDU RESOURCES GROUP, INC. APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-163
OTTER TAIL POWER COMPANY APPLICATION FOR ADVANCE DETERMINATION OF PRUDENCE BIG STONE AIR QUALITY CONTROL SYSTEM PROJECT	)	DOCKET NO. PU-11-165

REBUTTAL TESTIMONY

OF

DARCY J. NEIGUM

ON BEHALF OF

MONTANA-DAKOTA UTILITIES CO.

November 8, 2011

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Darcy J. Neigum and my business address is 400 North Fourth Street, Bismarck, North Dakota, 58501.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am the System Operations and Planning Manager of Montana-Dakota Utilities Co. ("Montana-Dakota"), a Division of MDU Resources Group, Inc.

Q. PLEASE DESCRIBE YOUR DUTIES AND RESPONSIBILITIES WITH MONTANA-DAKOTA.

A. I have manager responsibility for the day-to-day operations of the Company's electric control center and system operations planning department. The system operations planning department is responsible for performing the Company's electric resource planning and expansion studies.

Q. PLEASE OUTLINE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I hold a Bachelor's Degree in Electrical and Electronics Engineering from North Dakota State University as well as a Masters of Business Administration from the University of Mary. My work experience includes four years as a nuclear plant engineer, three years of experience as a plant engineer at a coal-fired power plant in North Dakota, and thirteen years of generation development and operational responsibilities which include coal-fired, gas-fired, and renewable generation.

Q. FOR WHOM ARE YOU PROVIDING TESTIMONY?

A. I am providing testimony on behalf of Montana-Dakota.

Q. WHAT IS THE PURPOSE OF THIS REBUTTAL TESTIMONY?

A. The purposes of my rebuttal testimony is to discuss how Montana-Dakota's 2011 Integrated Resource Plan ("2011 IRP") modeling assumptions differ from those used by Mr. Richard S. Hahn with La Capra Associates testifying on behalf of the North Dakota Public Service Commission Advocacy Staff in this case.

Q. DID LA CAPRA ASSOCIATES ("LA CAPRA") SUBMIT DATA REQUESTS TO MONTANA-DAKOTA REGARDING THE MODELING ACTIVITIES FOR THE BIG STONE AIR QUALITY CONTROL SYSTEM (AQCS) PROJECT INCLUDED IN THE 2011 IRP?

A. Yes, La Capra submitted data requests to Montana-Dakota regarding the modeling analysis performed as part of the 2011 IRP which included the Big Stone AQCS project.

Q. HOW DID MONTANA-DAKOTA'S 2011 IRP MODELING TREAT THE RETIREMENT OBLIGATION "STRANDED COSTS" ASSOCIATED WITH THE BIG STONE PLANT?

A. Montana-Dakota's modeling analysis in the 2011 IRP assumed that the existing Big Stone generating plant was retired in 2015 and a new Big Stone with AQCS project was available as a new supply option at the forecasted installed cost with future operation and maintenance and fuel costs.

There were no dollars assigned with the 2015 retirement of the existing Big Stone plant's net book value as these dollars were considered sunk costs in the modeling analysis.

Q. WHAT ASSUMPTIONS DID MONTANA-DAKOTA MAKE REGARDING THE BIG STONE MERCURY CONTROL PROJECT?

A. Montana-Dakota's analysis included the forecasted capital and the on-going operations and maintenance costs of the mercury control project in the new Big Stone AQCS supply side option.

Q. WHAT ASSUMPTIONS DID MONTANA-DAKOTA MAKE REGARDING MISO ENERGY PRICES AND PURCHASES AND HOW DO THOSE COMPARE TO MR. HAHN'S ESTIMATES?

A. Up to 30 MWs of MISO energy purchases were available as a supply side energy resource in the 2011 IRP. Montana-Dakota's modeling used internally forecasted MISO energy prices for on-peak and off-peak hours based on historical pricing and future market changes that would affect pricing. This internally developed forecast has been relatively accurate as compared to actual market energy purchases.

Montana-Dakota's forecasted MISO energy prices are higher than the energy prices forecasted by Mr. Hahn who, on page 27 of his testimony, used an average market heat rate and an Annual Henry Hub Gas Forecast to develop his MISO energy pricing forecast.

Q. WHY DID THE COMPANY LIMIT THE AMOUNT OF MISO ENERGY PURCHASES IN ITS MODELING?

A. The 30 MW of MISO energy purchases represents the average annual amount of energy that Montana-Dakota historically purchases from the MISO energy market to meet its customers' requirements.

Historically, Montana-Dakota has purchased less than ten percent of its customers' energy requirements from the MISO energy market based on the resource balance and the marginal resource costs within its generation portfolio. This balance has allowed customers to benefit from lower cost market energy purchases when the prices of electricity from the MISO energy market are less than Montana-Dakota's marginal energy costs.

A greater dependency on market energy purchases subjects customers to increased pricing volatility when MISO energy market prices are high and the Company's lower cost generation resources are insufficient to meet customer energy requirements.

Q. WHY DIDN'T THE COMPANY MODEL A REPLACEMENT ALTERNATIVE TO THE BIG STONE PLANT THAT RELIED HEAVILY ON MARKET PURCHASES?

A. Over the past three years, the Big Stone Plant has supplied 25% of Montana-Dakota's customer annual energy requirements. Relying solely on market energy purchases to replace Big Stone would increase customer exposure to market fluctuations to over 30% of their energy supply requirements.

Market purchases are probably the most unreliable means of securing future customer requirements because there is no mechanism to lock-in future energy prices like with an owned resource or through a contracted pricing mechanism. Future market prices, as a supply option, place the exposure of fluctuations associated with energy prices on customers.

Also, MISO energy prices are not an infinite source of energy at a given price. As additional energy purchases are secured from off-system resources, there is an increased likelihood of constraints and redispatching costs to serve load.

Q. WHAT ASSUMPTIONS DID MONTANA-DAKOTA CONSIDER REGARDING WIND GENERATION?

A. Supply side wind generation resources were modeled as either a purchased power agreement ("PPA") at pricing Montana-Dakota received in its 2010 RFP or as a self-built option based on experience from wind generation projects that the Company recently completed.

Q. HOW DID MONTANA-DAKOTA ACCOUNT FOR ANY FEDERAL PRODUCTION TAX CREDITS ("PTCs") FOR QUALIFYING WIND GENERATION?

A. The wind PPA pricing accounted for the value of PTCs in its offered energy price. Montana-Dakota's self-built wind generating resources, constructed before the end of 2012, included a revenue requirement credit for the PTCs that were grossed up for taxes and applied as a negative variable operations and maintenance expense for the wind project.

Q. WHAT ASSUMPTIONS DID MONTANA-DAKOTA MAKE REGARDING CAPACITY FACTORS FOR WIND GENERATION?

A. Montana-Dakota utilized a 39% capacity factor for its self-built wind generation options, which is based on the Company's experience with its Diamond Willow and Cedar Hills wind projects.

Q. HOW DO THE PRICES QUOTED BY MR. HAHN FOR THE BISON 2 AND BISON 3 WIND PROJECTS COMPARE TO WIND PROJECTS IN THE AREA?

A. The prices quoted by Mr. Hahn for Bison 2 and Bison 3 seem low compared to other wind projects that we have seen in the area from recent responses to requests for proposal and based on our own experience. A review of the Minnesota Public Utilities Commission Docket for Bison 2 shows that Minnesota Power is using a 35-year life for the project with undisclosed capital upgrades required at 20 years to support a potential life extension to 35 years. There is no industry experience to show that the 35 years of useful service is operationally achievable or what sort of capital expenditures would be required for today's technology of wind turbine equipment.

Also, the $22 per MWh and $29 per MWh are likely levelized rates over the 35-year assumed life of the wind turbine equipment for Bison 2 and Bison 3 and not an actual annual revenue requirement.

Q. HOW DID THE ASSUMPTIONS IN THE BURNS & MCDONNELL STUDY AFFECT THE MODELING RESULTS THAT MONTANA-DAKOTA PERFORMED?

A. There was no effect. Montana-Dakota's 2011 IRP modeling was separate from the Burns & McDonnell study and did not rely on any assumptions or outputs from that study. In all of the scenarios modeled in the 2011 IRP, the Big Stone AQCS project was selected as a least cost resource option.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.