MONTANA-DAKOTA UTILITIES CO.
A Division of MDU Resources Group, Inc.

Before the Public Service Commission of North Dakota

Case Nos. PU-13-83 and PU-13-85

Direct Testimony
of
Andrea L. Stomberg

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, communications, environmental 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 master's degree in business management. I worked for the North American Coal

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Exhibit MDU-3 from Sept. 16 formal hearing
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34 PU-13-83 Filed 09/17/2013 Pages: 10
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33 PU-13-79 Filed 09/17/2013 Pages: 10
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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. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to explain why the costs and expenses that have been and will be incurred by Montana-Dakota for the Air Quality Control System ("AQCS") at the Big Stone Plant are prudent. Mr. Rolfes is providing testimony explaining how the Owners have managed the AQCS project, as well as the current status of the project, to demonstrate that the costs and expenses incurred by the BSP owners are reasonable.

Q. Do your responsibilities as Vice President- Electric Supply include responsibilities related to the Big Stone Plant?

A. Yes. Montana-Dakota owns 22.7 percent of the Big Stone Plant. In my position as Vice President-Electric Supply, I serve on the Big Stone Plant Engineering and Operating (E&O) Committee along with Alan Welte, Generation Director for Montana-Dakota. I have served on this committee since 2003. The E&O committee jointly makes significant decisions regarding plant operations.

Q. Can you explain your understanding of the EPA's Regional Haze Rule and how it affects the Big Stone Plant?

A. The Clean Air Act, 42 U.S.C. §7479, mandates a national goal of remedying and preventing visibility impairment from man-made air pollution in specified Class I areas of the United States which include national parks and wilderness areas. In 1999, EPA promulgated the Regional Haze Rule (40 CFR Part 51), which was revised in 2005, to implement this requirement of the Clean Air Act. The Regional Haze Rule includes the requirement to install the Best Available Retrofit Technology (BART) on major generating sources, including existing electric generating units that were placed into operation between 1962 and 1977. Because the Big Stone Plant began commercial operation on May 1, 1975, it was subject to the requirements of the Regional Haze Rule for the installation of BART.

Q. How was it determined if the Big Stone Plant would be required to install BART?

A. Under the Regional Haze Rule, state environmental agencies are authorized to submit a State Implementation Plan (SIP) to EPA for review and approval, outlining how the state intends to bring affected sources subject to jurisdiction into compliance with the rule. If a state does not propose a SIP, EPA will develop a plan to control emissions from sources within that state that are shown to contribute to visibility impairment. South Dakota, like North Dakota, elected to pursue adoption of a SIP

through its state agency, in this case the South Dakota Department of Environmental and Natural Resources (DENR).

In response to the Regional Haze Rule, Otter Tail, as the operator of the Big Stone Plant, performed an evaluation of the visibility impact of the plant's operations on seven Class 1 areas in four states. Based on this evaluation, the South Dakota DENR determined the Big Stone Plant's emissions contribute to impairment of visibility in multiple Class 1 areas and therefore the plant was subject to the BART requirements of the Regional Haze Rule.

Q. How was BART determined for the Big Stone Plant?

A. Otter Tail, as agent for the owners, proposed that separated over-fired air (SOFA) technology be deployed as BART for the Big Stone Plant in its BART Technology analysis (Appendix C to the SD SIP). On September 15, 2010, the South Dakota DENR, Board of Minerals and Environment, adopted Administrative Rules of South Dakota chapter 74:36:21 which imposed limits on nitrogen oxides, sulfur dioxides, and particulate matter that were substantially lower than those in the existing Big Stone Plant permit. The South Dakota Regional Haze SIP included the following as BART technologies applicable to the Big Stone Plant:

- Selective catalytic reduction technology (SCR) with separated over-fired air for control of NOx.
- Semi-dry flue gas desulfurization for control of SO2.
- A baghouse for control of particulate matter.

On January 21, 2011, the South Dakota DENR submitted its SIP to the EPA for review and approval. On March 29, 2012, the EPA approved the South Dakota SIP and the final rule was published on April 26, 2012. Under the South Dakota Regional Haze Rule, the Big Stone Plant must achieve BART compliance expeditiously but no later than five years after EPA's approval of the South Dakota SIP, or April 26, 2017.

Q. Would the Big Stone Plant be forced to close without these environmental upgrades?

A. Yes. The plant could not operate using coal as its fuel source after April 26, 2017 without the environmental upgrades adopted in the South Dakota SIP.

Q. What did the Owners consider when deciding whether to pursue installation of the BART at the Big Stone Plant?

A. The Owners obtained a cost estimate from the engineering firm of Sargent & Lundy for the installation of the BART technology identified in the South Dakota SIP at the Big Stone Plant. The estimate of a BART compliant AQCS was $489,397,400 in 2015 dollars, with an accuracy of plus or minus 20 percent. The Owners then compared the construction and operation costs of Big Stone with the AQCS to several other generation alternatives. These alternatives and the assessment results were discussed in Montana-Dakota's application for Advance Determination of Prudence for the AQCS (Docket No. PU-11-163). In

each instance, the assessment concluded that Big Stone with the AQCS was the least cost option.

Q. Did Montana-Dakota conduct any analysis of the Big Stone AQCS and other generation alternatives specific to its generation needs?

A. Yes. Montana-Dakota separately analyzed the cost effectiveness of the Big Stone AQCS project as part of its 2011 Integrated Resource Plan ("IRP"). Montana-Dakota modeled sensitivity scenarios surrounding the AQCS and various alternatives. Even when the modeled cost of the AQCS was nearly doubled from its original estimate, it was still selected as part of Montana-Dakota's resource plan recommended in its 2011 IRP.

Q. What was Montana-Dakota's next step in response to the results of these analyses?

A. Because of the substantial cost of the AQCS and the impact of those costs on customers, Montana-Dakota applied for an Advance Determination of Prudence from this Commission on May 20, 2011. In its Findings of Fact, Conclusions of Law and Order dated May 9, 2012 in Case No. PU-11-163, the Commission found "the continued operation of Big Stone is prudent and a least cost alternative to securing alternative generation" and concluded "the continued operation of the Big Stone Plant is prudent."

Q. In its order in Case No. PU-11-163, the Commission stated no determination was made "regarding the prudence of using either

SCR or SNCR technology in the AQCS". What NOx control technology is included in the AQCS?

A. As stated previously and as noted on page 102 of the South Dakota's Regional Haze State Implementation plan developed by the DENR, along with ARSD Chapter 74:36:21, the South Dakota SIP required the installation of SCR technology as BART for the Big Stone Plant. Accordingly, SCR is the NOx control technology included in the AQCS suite of air quality controls.

Q. Could the Big Stone Plant Owners have instead installed SNCR or SOFA as the NOx control technology?

A. Not if the Owners wanted to continue operation of the Big Stone Plant after April 2017. The South Dakota DENR prescribed SCR as the BART for NOx control at Big Stone.

Q. What NOx control technology did North Dakota adopt in its Regional Haze Rule SIP for lignite coal-fired electric generation located in this state?

A. North Dakota adopted SNCR control technology as BART for NOx control of cyclone fired boilers.

Q. Considering that North Dakota adopted SNCR control technology for NOx in its SIP approved by the EPA, why didn't the Big Stone Owners use SNCR as BART for the Big Stone Plant?

A. The North Dakota SIP identifies NOx control technology for lignite fired generation. Big Stone is fueled by subbituminous coal. The

feasibility and effectiveness of NOx control technologies differs for lignite and subbituminous coal generation because of the chemistry of the coal. Significant problems using SCR for NOx control on lignite fired plants have been demonstrated, particularly for cyclone boilers, and so SCR has not been found to be an effective NOx control technology for lignite fueled generation. These issues do not exist for generation fueled by subbituminous coal. More importantly, however, the Big Stone Plant is located in South Dakota and therefore the Plant must operate in compliance with federal and state regulations applicable to plants located in South Dakota. The Owners do not have the luxury to decide which rules to comply with even if they disagree with the rationale or wisdom of a particular rule. South Dakota had the authority, subject to EPA review and approval, to determine BART for control of NOx for coal fueled plants located in South Dakota, including Big Stone. If the Big Stone Owners want to continue operation of the Big Stone Plant, which they, as well as this Commission, have determined is prudent, installation of SCR technology is mandatory and neither SOFA alone, nor SNCR technology is an option. I want to stress the AQCS is not a situation in which the Owners have adopted an environmental control option that is more stringent or more expensive than that required for continued operation of the plant; they have adopted the specific control technology that is legally mandated for continued operation of the plant.

Q. In light of the South Dakota SIP, would use of anything other than SCR for the control of NOx as part of the AQCS have been prudent?

A. No. Although use of SOFA alone or SNCR rather than SCR technology would have reduced the cost of the AQCS, it would not have allowed continued operation of the Plant which in this case is the threshold of prudence review of the selected technologies and incurred costs. Installation of SOFA or SNCR at Big Stone as part of the AQCS project, in lieu of the required SCR technology, would have been a useless expenditure when made and therefore clearly imprudent.

Q. Is it fair and reasonable that North Dakota customers of Montana-Dakota should be required to pay for the cost of environmental controls adopted by another state?

A. Yes. Customers are receiving the benefit of electricity from this cost effective base load generation facility, so it is fair and reasonable that the price they pay for that electricity includes the costs of operating the generation plant including the costs of compliance with the laws applicable to operation of the facility. As determined by the Commission in Case No. PU-11-163, continued operation of the Big Stone Plant, even considering the requirements of the South Dakota SIP, was a least cost and prudent decision.

Q. Are you aware of other types of situations in which the policies and laws of one state affect the operation and cost of facilities in that

state that are then included within prices paid by customers in other states?

A. Any product that is produced in one state and sold to customers in another state likely has cost components reflective of where it was produced; some of which may be more expensive and some of which may be less expensive than a similar product produced elsewhere. For example, property taxes on generation facilities are included in the price of electricity sold not only outside the boundaries of the local taxing authority within the state but in the price of electricity sold outside the state. North Dakota's production taxes on generation or severance taxes on coal and natural gas production are reflected in the price of electricity sold throughout the Midwest, including South Dakota, when produced by generating facilities located in the State. Specifically, with regard to environmental regulations, North Dakota has adopted coal reclamation regulations and coal ash disposal regulations that in some instances are more stringent than what might be required by federal law or the laws of other states. The cost of compliance with those regulations is part of the cost of generating electricity in North Dakota and it is fair and reasonable that customers in other states that benefit from that electric generation bear the cost of full compliance rather than just customers in North Dakota.

Q. Does this complete your testimony?

A. Yes, it does.