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May 21, 2008

VIA REGULAR MAIL & EMAIL

Illona Jeffcoat-Sacco
Executive Secretary
North Dakota Public Service Commission
State Capitol
Bismarck, ND 58505

**Re: Montana Dakota Utilities Co., and Otter Tail Corporation; Advance
Determination of Prudence, Big Stone II Generating Station
Case Nos. PU-06-481 and PU-06-482**

Dear Ms. Jeffcoat-Sacco:

Enclosed for filing in the above matter please find an original and seven copies of the Applicants' Post-Hearing Brief and Proposed Findings of Fact, Conclusions of Law and Order along with an Affidavit of Service.

For our proposed Findings, we have used as a starting point draft Findings that Staff had prepared in August, 2007 and which the Commission considered in at least two working sessions prior to staying this proceeding. We have included both a black-line draft which shows proposed changes from the August 2007 draft, along with a clean version. Reply Briefs are due Friday, May 30, 2008.

Please direct any questions to Montana-Dakota's Mr. Daniel Kuntz (701-530-1016), Otter Tail's Mr. Mark Bring (218-998-7152), or to the undersigned.

Thank you for your consideration.

Very truly yours,



Todd J. Guerrero

TJG/kas
cc: Attached Service List (w/encl.)

**STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION**

Montana-Dakota Utilities Co., and
Otter Tail Corporation;
Advance Determination of Prudence
Big Stone II Generating Station

Case No. PU-06-481

Case No. PU-06-482

**POST- HEARING BRIEF OF APPLICANTS
MONTANA-DAKOTA UTILITIES CO. AND
OTTER TAIL CORPORATION**

May 21, 2008

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I. INTRODUCTION

In June 2007 the North Dakota Public Service Commission held three days of hearing to consider the application by Otter Tail Corporation d/b/a Otter Tail Power Company (Otter Tail) and Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc. (Montana-Dakota) (collectively “Applicants”) for an advance determination of prudence for the companies’ participation and ownership interest in the Big Stone Unit II project. Before the Commission could render a final decision, however, the Applicants announced that two of the original seven participants in the project – Great River Energy and Southern Minnesota Municipal Power Agency – had decided to withdraw from participation in the project.

Given the withdrawal, the Applicants determined that it was necessary to stay the pending proceeding and, along with each of the remaining project owners,¹ conduct additional resource planning to determine whether a slightly downsized unit – 500 MW to 580 MW – remained a prudent, cost effective resource alternative. Applicants presented the results of their updated analyses in their supplemental testimony and during the April 28-30, 2008, hearings. Those analyses, along with other factors Applicants considered, confirmed that constructing a supercritical pulverized coal plant at Big Stone City, South Dakota, remains a prudent, cost effective resource for the Applicants to meet their need for additional baseload generating capacity by 2013.

While the supplemental analysis was necessary, the results should not be surprising. Demand for electricity in North Dakota continues to grow and the Applicants’ forecasts continue to show a need for additional resources. There have been

¹ Missouri River Energy Services (Sioux Falls, SD), Central Minnesota Municipal Power Agency, (Blue Earth, MN) and Heartland Consumers Power District (Madison, SD).

no baseload units built in the region in more than 20 years. No party is contesting the Applicants' need for both energy and capacity. Similar to the 2007 proceeding, Intervenor Dakota Resource Council and Mark Trechock point generally to a wind and natural gas alternative, but once again are forced to concede they are unable to advance a specific plan that addresses the Applicants' needs more cost-effectively or reliably.

Advocacy Staff continues to conclude that the project is cost-effective and prudent, subject to certain conditions acceptable to Applicants.

While the Big Stone site is captive to a sole fuel supply shipper, Applicants have demonstrated via the testimony of its witness Thomas Crowley,² a pre-eminent expert with thirty years experience in fuel supply and rail transportation, that the coal and freight forecasts Applicants have conducted are reasonable.

Pursuant to the Commission's notice of hearing delineating the issues to be considered in these matters, and for the reasons described in more detail below, the Applicants have confirmed they have need for additional generating resources and related transmission interconnection facilities, that the alternatives that may exist for meeting the additional baseload generation needs are not preferable substitutes, and that therefore Applicants' participation in Big Stone II and related transmission facilities is reasonable and prudent.

² See OTP/MDU Ex. 328 (Crowley).

II. THE APPLICABLE SCOPE AND STANDARD.

In its January 10, 2007 Notice of Hearing, the Commission identified the following three issues to be addressed in this matter:

1. Whether the resource addition is reasonable and prudent;
2. Whether Applicants have need for additional generating resources; and
3. What alternatives exist for meeting additional generation needs?

Analysis of the second and third questions will inform in large part the answer to the first. Because this matter marks the first time the Commission has considered a request under N.D.C.C. § 49-05-16 regarding a proposed resource addition, it is helpful to repeat the standard by which the Commission should judge the prudence of the Applicants' proposed investment. That standard is essentially as follows:

“[M]anagers of a utility have broad discretion in conducting their business affairs and in incurring costs necessary to provide services to their customers. In performing our duty to determine the prudence of specific costs, the appropriate test to be used is whether they are costs which a reasonable utility management (or that of another jurisdictional entity) would have made, in good faith, under the same circumstances, and at the relevant point in time.

New England Power Co., Opinion No. 231, 31 FERC ¶61,084, *reh. denied*, Opinion No. 231-A, 32 FERC ¶61,112 (1985), *aff'd sub nom. Violet v. FERC*, 800 F.2d 280 (1st Cir. 1986).³ Both Advocacy Staff⁴ and the Intervenors⁵ agree this is the applicable standard. Thus, the standard by which this Commission should judge this case is not whether the Commission believes it would have picked a different resource alternative. Instead, it is

³ See also, *West Ohio Gas Co., v. Ohio*, 294 U.S. 63, 72 (1935) (“Good Faith is presumed on the part of the managers of a business.... In the absence of a showing of inefficiency or improvidence, a court will not substitute its judgment for theirs as to the measure of a prudent outlay.”)

⁴ See, Advocacy Staff Post-Hearing Brief, August 3, 2007, pp. 4-6.

⁵ Q: Do you find any fault with that particular [prudence] standard, Mr. Schlissel?
A: No. . . . I think that this is a reasonable enunciation of the general standard.”
Tr. Vol. II, p. 1220, l. 4-9 (Schlissel).

whether the utilities, proceeding in good faith, acted reasonably.⁶ Under this standard, the Commission is compelled to conclude that Applicants' proposed investment in Big Stone II and related transmission lines is reasonable and prudent.

III. APPLICANTS' NEED FOR ADDITIONAL RESOURCES IS UNCONTESTED.

In the 2007 proceeding, the Applicants submitted a great deal of evidence regarding their forecasts and need for energy and capacity.⁷ Applicants established that each requires additional generating capacity and energy to meet their needs. Given the fact that almost another year has elapsed since the Commission first heard this matter, the need for additional generation has only become more acute.

The Applicants confirmed in the April 2008 hearings that this need for additional baseload generation resources remains. Mr. Bryan Morlock, Otter Tail's experienced resource planner, presented the results of his updated analyses showing Otter Tail's most recent load forecast predicts a slight increase in demand and energy requirements compared to the 2007 forecast, based in part on new large industrial loads, including the Cassleton, North Dakota ethanol plant.⁸ Mr. Morlock testified that collectively the five Big Stone II co-owners have a total need for Big Stone II in 2013 of 516 MW to 556 MW.⁹

⁶ As Advocacy Staff's expert Terry Deason clarified last summer, a prudence decision is based on whether the utility attempted to find a most reliable and economic resource for its customers. The particular state in which the investment is to be made is largely irrelevant. ("... let me say that I believe that the role of a utility regulator is to look at the prudence of decisions, to look at the way a utility can most reliably and cost-effectively provide service to its customers. If that means building a facility within the confines of the state, or even outside the state, so be it. I believe the economic future of the citizens of a state are best served by the least-cost, most reliable source of generation, regardless of where the source is located.") Tr. Vol. III, p. 704, lines 1-12 (Deason).

⁷ See, e.g., Applicants' Post-Hearing Brief, August 3, 2007, pp. 7-8.

⁸ OTP Exhibit 117, p. 2, l. 25-26 and p. 3, l. 1-2 (Morlock).

⁹ *Id.*, p. 12, l. 6-7.

Montana-Dakota, like Otter Tail, is expecting slightly more growth than forecast in 2007. James Heidell, testifying on behalf of Montana-Dakota, testified that Montana-Dakota's new econometric forecast shows a slightly higher growth rate for both demand and energy.¹⁰

In fact, the entire Midwest region, including North Dakota, faces looming power deficits.¹¹

There is really no dispute that Otter Tail and Montana-Dakota need additional generating capacity. The Commission's Advocacy Staff recognized this growing need during the 2007 hearing.¹² Advocacy Staff witness Terry Deason came to the same conclusion in this supplemental proceeding.¹³

Nor did the Intervenors in either proceeding contest the fact that additional generation is required:

- Q. You're [Mr. Schlissel] not challenging Otter Tail's forecast of need for resources; that's correct?
- A. That's correct.
- Q. And you're not challenging Montana-Dakota's need for resources; that's correct?
- A. That's correct. We're not challenging the need to do something.
- Q. And that's both with respect to their need for energy?
- A. Correct.
- Q. And for capacity?
- A. Correct.¹⁴

Thus, the question is whether the Applicants, proceeding in good faith, acted reasonably in determining that the alternatives that may exist for meeting the additional

¹⁰ MDU Exhibit 214, p. 8, l. 18-19 (Heidell).

¹¹ OTP Exhibit 112, p. 2, l. 8 to p. 3, l. 8 (Uggerud).

¹² See Advocacy Staff Post-Hearing Brief at p. 13 ("There are differences of opinion on how to meet the forecasted needs, but no one disagreed with MDU's or OTP's forecasts.")

¹³ See Ex. PSC 4, p. 3, l. 6-7 (Deason).

¹⁴ Tr. Vol. II, p. 1171, l. 23 to p. 1172, l. 11.

baseload generation needs are not better substitutes for the identified baseload generation resource.

IV. THERE ARE NO ALTERNATIVES TO BIG STONE UNIT II THAT CAN MEET THE APPLICANTS' ADDITIONAL GENERATION NEEDS IN A MORE COST-EFFECTIVE MANNER.

Similar to the 2007 proceeding, the Applicants in this new round of hearings conducted exhaustive examinations of their generation alternatives. The Commission can be assured that Applicants have no interest in making a proportionate investment in new facilities costing \$1.5 billion without first having determined through extensive resource planning and other evaluation that they have no better alternative to this project. Based on this review of alternatives, the Applicants have reasonably and prudently selected the Big Stone Unit II generation and transmission facilities as the most cost-effective solution to meet their respective baseload needs for electric energy.

A. Big Stone II Is the Most Prudent Baseload Alternative.

Otter Tail and Montana-Dakota in late 2007, and again in early 2008, conducted additional capacity expansion modeling to determine whether Big Stone II, as a slightly downsized plant, remained the least-cost resource option. Each company based its analysis on reasonable, updated assumptions incorporating certain statutory requirements.¹⁵

As they explain in their testimony, in every scenario modeled, their analysis indicated that participating in Big Stone II remains an integral component of their least cost expansion plan. In Otter Tail's case, its resource planning modeling demonstrated that it has a need for up to 170 MWs of Big Stone II, though it has decided to limit its

¹⁵ OTP Exhibit 117, p. 2, l. 7-21 (Morlock) and MDU Exhibit 214, p. 6, l. 11-21, and p. 7, l. 1-6 (Heidell).

participation in the project to no more than 130 MWs.¹⁶ Mr. Heidell testified that Montana-Dakota's approximately 130 MW share of the project made sense in addition to a plan that, like Otter Tail's plan, already includes conservation, renewable resources, and additional natural gas peaking units.¹⁷ While Applicants obviously do not rely exclusively on the results of "capacity expansion" modeling to base their resource decisions,¹⁸ it is nonetheless telling that under every set of assumptions modeled by the Applicants, the models show Big Stone II remains a part of the least-cost mix.

Advocacy staff witness Terry Deason raised a number of questions about the Applicants' modeling assumptions, but Applicants adequately addressed his concerns in their responses to Staff information requests and rebuttal testimony.¹⁹ Mr. Deason, who has more than 30 years of professional experience evaluating utility resource selection decisions, concluded that Big Stone II remained a prudent resource acquisition for both companies:

My review concludes that the applicants have demonstrated that a downsized version of Big Stone II is a cost-effective means to meet their need for additional baseload generation subject to conditions and additional explanation and clarification.²⁰

As Mr. Deason testified in 2007, there are risks and uncertainties inherent in any resource option, and the resource planning process involves weighing the advantages and disadvantages of each respective resource option.²¹ Given his expertise, Mr. Deason is uniquely qualified to pass judgment on the prudence of the Applicants' proposal. Mr. Deason's unbiased conclusion is that the Big Stone Unit II proposal should be approved,

¹⁶ Late Filed Ex. PSC 7.

¹⁷ MDU Ex. 214, p. 1, l. 20-23 (Heidell).

¹⁸ See OTP Exhibit 117, p. 9, l. 18-23, and p. 10, l. 1-3 (Morlock).

¹⁹ Tr. Vol. III, p. 1489, l. 7 to p. 1491, l. 24 (Deason).

²⁰ Tr. Vol. III at p. 1488 (Deason).

²¹ PSC Ex. 1, p. 44, l. 18-22; p. 45, l. 1-10 (Deason).

subject to several reasonable conditions that are acceptable to Applicants.²² Given Mr. Deason's salient perspective as a former commissioner of the Florida Public Utilities Commission, his response to a question from Commissioner Cramer was particularly perceptive and germane: Commissioner Cramer asked, "What should we be looking out for that's maybe not obvious?" Mr. Deason responded:

[A]s a regulator, I would suggest that you take some degree and comfort -- some degree of comfort that the applicants have brought to you a project which is not the easy course of action. I would think a regulator should be skeptical of a project which seems to be the easy course of action, one that is -- would receive less scrutiny from a number of intervenors, less scrutiny -- would be less capital intensive so that it would put less pressure on their financial statements, one that perhaps would -- that they would be perhaps more assured of cost recovery because it is not so controversial and because it is not subject to a greater degree of construction risk, that being a longer construction time and perhaps the materials and labor involved in that.

I think the applicants here are exposing themselves to some degree, but I think, you know, based upon my review, their motivations are because they're doing this because they believe it is what is in the best interest of their customers. Certainly they're doing it with an idea that it is -- in the long term it's going to be in the best interest of their stockholders, as well.

But as a regulator, I was always suspicious of projects which were -- took less time to construct, more dependent upon fuels that could fluctuate widely, and I'm talking about natural gas projects, and particularly in the State of Florida -- and I'm not so sure of the fuel adjustment process in North Dakota, but in Florida there is a fuel adjustment process, and while there is a great deal of review of those costs, generally the vast majority of all fuel costs get passed through to customers. So with utility management realizing that, the easy course or the natural inclination would be to go forward with a project that has a low capital cost, perhaps high fuel cost because they're going to get recovery, anyway, and they do not expose their stockholders to the level of risk that these applicants are coming forward and trying to get approval to proceed.

So while any project has to have a great deal of review, the fact that this project is not the easy course of action, I think as a regulator you should -- obviously you should not just approve it because it's not the easy course of action, but I think the fact that they're willing to go forward with this project should provide some degree of comfort, because the motivation is to get savings in the long term, and those savings are going

²² PSC Ex. 1, p. 46, l. 18-19 (Deason).

to be -- if projections go forward as planned, which we know they're going to be different to some degree, but as projected, the savings are going to be in the long term, and the savings are going to be achieved through lower fuel cost and the fact that this plant is dispatchable and there could be the opportunity for off-system sales, as I refer to them, and that the life of this plant is going to be an extremely long plant, and that once the depreciated value reaches to a point to where -- and they're still operating efficiently and effectively, there are going to be savings for the customers, but it's going to be long-term savings.²³

Given the presumed “dash to gas” in the electric power sector, it should indeed be comforting to this Commission that Applicants have thus far resisted taking the “easy path” for shareholders, but one that would likely be very rocky for ratepayers, despite a tremendous amount of pressure being exerted to do exactly that.

Last, while transmission did not take up much of the supplemental hearing,²⁴ new transmission has to be built to connect Big Stone Unit II to the grid. The Applicants described last summer how they employed a thorough screening analysis to evaluate the various transmission alternatives that were identified through the study process required by the Midwest Independent Transmission System Operator.²⁵ MISO supports the transmission project as the preferred alternative.²⁶ In the supplemental hearings, transmission expert Tim Rogelstad clarified that no change has been proposed to the transmission facilities as a result of downsizing the plant from 630 MW to 500 MW or 580 MW. As he clarified, essentially any generation facility larger than 150 MW at the Big Stone site would require something more than the existing 115 kV system.²⁷ The proposed 230 kV line to Morris, Minnesota and the 345 kV line to Granite Falls, Minnesota remain the best choice for interconnecting a 500 – 580 MW facility at Big

²³ Tr. Vol. III, P. 1512, l. 20 to p. 1515, l. 18.

²⁴ Intervenor filed no testimony on the transmission interconnection facilities proposed by Applicants.

²⁵ OTP/MDU Ex. 312, p. 7, l. 19-21, p. 8 l. 1-11 (Rogelstad).

²⁶ PSC Ex. 1, p. 31, l. 13 (Deason).

²⁷ OTP/MDU Ex. 325, p. 2, l. 10-12.

Stone. Importantly, there are more than 50,000 MWs of interconnection requests in the MISO queue in the tri-state region that were filed after Big Stone II's interconnection request. There are 59 projects, accounting for nearly 11,000 MW, in North Dakota alone.²⁸ The fact is that the region needs a significant amount of new transmission to serve future resource needs; the Big Stone transmission lines are a necessary step in that direction.

Applicants respectfully submit that they have demonstrated that the proposed transmission facilities are reasonable and prudent.

B. No More Reasonable Alternative to Big Stone II Has Been Suggested or Identified.

At no time in this proceeding has any party come forward with a specific alternative that could be even arguably considered a replacement for the baseload generation resource to be provided by Big Stone II. The best that the Intervenors can recommend is “that OTP and MDU investigate and implement portfolios of alternatives to Big Stone II Project that would include energy efficiency, more renewable resources, and to the most limited extent necessary, the addition of new natural gas-fired capacity.”²⁹ Notwithstanding that both OTP and MDU are in fact already addressing resource needs through investment in energy efficiency and renewables, the theoretical “wind plus gas” alternative suggested by the Intervenors does not demonstrate that a more reasonable alternative exists.

The Intervenors did not try to identify actual, real-world resource plan options for either Otter Tail or Montana-Dakota. Indeed, in an attempt to show that alternative resource plans exist for Montana-Dakota, the Intervenors attempted only to introduce an

²⁸ OTP/MDU Ex. 325, p. 3, l. 11-13.

²⁹ Ex. 110 at p. 7 l. 23-24 (Schlissel). *See also* Tr. Vol. II, pp. 1174-1176.

alternative resource plan summary that it had prepared for Montana-Dakota in the Minnesota transmission certificate of need/route permit docket relying on various carbon dioxide costs, contrary to NDCC § 49-02-23. Most of that part of Intervenors' testimony, however, was actually struck from the record.

While the Intervenors would have this Commission believe that Applicants should simply do more conservation and more renewables, the record demonstrates that Applicants' baseload needs will not be met relying solely on conservation and renewable resources. Applicants are already pursuing renewable resources. To meet baseload needs, they will need to build thermal resources, and the most likely alternative to supplant the baseload power Big Stone II would provide the Applicants is increased natural gas generation, either as a primary or backup fuel supply, or as power purchased from the MISO market. Applicants believe that would be a pricey mistake.

Applicants presented testimony from Mr. Daniel Klein, president of a consulting firm with 30 years experience in the energy field.³⁰ As Mr. Klein testified, "Natural gas prices remain high and volatile."³¹ . . . Longer-term, the price outlook for natural gas consumers continues to worsen."³² Indeed, if Big Stone II were replaced with gas-fired capacity, an increase in gas prices of only \$1/MMBtu would increase generation costs by as much as \$28,000,000 in a single year,³³ and that assumes a natural gas price of approximately \$8.00/MMBtu. Natural gas prices are currently in the range of \$11.50/MMBtu. On May 15, 2008, Henry Hub futures prices were \$12.16/MMBtu for November 2008 delivery and \$12.53/MMBtu for December 2008 delivery.

³⁰ OTP/MDU Ex. 341 (Klein).

³¹ *Id.*, p. 7 l. 14 (Klein).

³² *Id.*, p. 7 l. 20 (Klein).

³³ OTP/MDU Ex. 341, p. 4, l. 15-17 and Tr. Vol. III, p. 1434, l. 4-12.

It is unlikely the Commission needs an expert to understand that burning natural gas for electricity generation presents a risky proposition. As the April 18, 2008 *Wall Street Journal* reported,³⁴ natural gas prices in the U.S. have risen 93% since late August. Since April 18, 2008, natural gas prices have risen an additional 8.8%, or approximately 110% since last August. Because even the prospect of future carbon regulation is likely to contribute to increased demand for natural gas, volatility will only increase.³⁵ With domestic natural gas production and imports from Mexico and Canada declining, the country is already beginning to rely more heavily on imported, overseas liquefied natural gas, with prices set in a world context and tied to global oil prices.³⁶

Accordingly, it is not difficult to understand both the economic and security risk such a situation presents. According to testimony provided by Applicants' witness Mr. Klein:

A map of proven world gas reserves, shown in the bottom half of OTP/MDU Exhibit 346, shows a similarly worrisome situation for natural gas. Out of 6,044 trillion cubic feet of proven gas reserves, over 80 percent are located in the Middle East, Eastern Europe and former USSR countries, and Africa. In fact, a look at natural gas reserves by country shows that at the beginning of this year, the U.S. ranked sixth in world gas reserves, with 3.1 percent of proven reserves. The nine other top-ten countries in gas reserves are Russia, Iran, Qatar, Saudi Arabia, Abu Dhabi, Nigeria, Algeria, Venezuela, and Iraq. These other nine countries, several of whom at best are reluctant business partners with the U.S., hold gas reserves that collectively account over three-fourths of the world's total. With the bulk of world gas reserves concentrated in a few key countries, many of whom are not especially friendly to U.S. interests, this growing dependence poses both economic and national security risks. Added to that the fact that China, India, Japan, and Western Europe are *not* among the large holders of oil and gas reserves, and we can easily appreciate how

³⁴ OTP/MDU Ex. 350 "Surge in Natural Gas Stoked by New Global Trade," by Ann Davis and Russell Gold, *The Wall Street Journal*, April 18, 2008, page 1.

³⁵ OTP/MDU Ex. 341, p. 12, l. 22 – p. 13, l. 13 (Klein).

³⁶ OTP/MDU Ex. 341, p. 9, l. 17 – p. 11, l. 3.

global competition for oil and natural gas will continue to underlie international trade and security concerns.³⁷

While the Intervenors recognize that natural gas prices are volatile,³⁸ they conveniently downplay the significance of this phenomenon. In their role as critics, they are immune from the gravity of the obligation to serve the public, a task that the Applicants and this Commission know well. The Intervenors' only response to the issue of natural gas risk is that it's "complicated."³⁹ On that issue, we can agree.

There is no better baseload generation alternative to Big Stone II. The record convincingly supports the conclusion that Big Stone Unit II is a reasonable and prudent baseload generation resource addition.

V. APPLICANTS' FORECASTS OF COAL AND FREIGHT ARE REASONABLE.

Applicants acknowledge that construction of Big Stone Unit II, like all major utility investments, carries certain risks. One risk factored in by the Applicants that is of concern to the Commission is the fact the Big Stone site is captive to the Burlington Northern Santa Fe Railroad ("BNSF") for fuel delivery. That the Big Stone site is presently a captive shipper to the BNSF, however, does not justify a finding that Big Stone II and associated transmission facilities are imprudent. First, Applicants have undertaken a number of measures to minimize the risks related to fuel supply and delivery and, importantly, have testified that the conditions recommended by Advocacy Staff's expert Terry Deason are acceptable.⁴⁰

³⁷ OTP/MDU Ex. 341, p. 14, l. 4-18 (Klein).

³⁸ Tr. Vol. III, p. 1240, l. 2 (Schlissel).

³⁹ Tr. Vol. III, p. 1242, l. 2-3 (Schlissel).

⁴⁰ OTP Ex. 119, p. 19, l. 15-19 and Tr. Vol. I p. 852, l. 5-23 (Uggerud).

In response to the Commission's concerns regarding freight issues, the project has continued its discussions with BNSF. Applicants have received a recent proposal from the BNSF offering to jointly agree on a rate and execute a long-term contract for Big Stone II. Such a contract would have a normal rail inflation adjustor and coal train surcharge. While Applicants will certainly consider the offer, they continue to believe that entering into a long-term contract is not necessarily advisable at this time.⁴¹

Applicants have also addressed the Commission's concerns from last summer regarding Applicants' coal forecasts, sponsoring the testimony of preeminent coal and rail expert Thomas Crowley. Mr. Crowley independently prepared a *delivered* coal price forecast for the Big Stone II plant, finding a high level of similarity to the Applicants' original 2006 forecast. Significantly, Mr. Crowley testified that his forecast is lower than the Applicants' 2007 forecast (the forecast Applicants used in this proceeding) with the greatest divergence occurring during the time period 2019 to 2025. Mr. Crowley concluded, therefore, that Applicants' 2007 forecast is actually conservative (*i.e.*, favors alternatives other than Big Stone II); nevertheless the analysis demonstrates Big Stone II is needed relative to other baseload generation alternatives.⁴²

Thus, Applicants have established their forecast for coal and freight for years is reasonable, and provides the Commission with a conservative and reliable approach to assessing future coal and freight costs. The Intervenors did not sponsor any testimony on this issue, and there is no contradictory evidence in the record.

⁴¹ See OTP Ex. 112, p. 9, l. 17 to p. 10, l. 4 (Uggerud) and Tr. Vol. II, p. 1138 l. 1 to p. 1139, l. 18 (Crowley).

⁴² OTP/MDU Ex. 328, p. l. 16-21.

VI. THE APPLICANTS DO NOT OBJECT TO THE INCLUSION OF CONDITIONS IN THE COMMISSION'S PRUDENCE ORDER TO ENSURE THAT THE COMMISSION IS KEPT APPRISED OF DEVELOPMENTS.

The Applicants have consistently stated that they do not object to the conditions suggested by Mr. Deason on behalf of the Advocacy Staff. Mr. Deason specified five conditions in his testimony in the first round of hearings and added one more in this supplemental hearing.⁴³ To follow are conditions recommended by Advocacy Staff.⁴⁴

1. Applicants shall advise the Commission quarterly beginning January 1, 2009, of the progress in obtaining all necessary approvals, permits, and licenses from other regulatory bodies and of the anticipated date of commencement of construction.
2. Applicants shall advise the Commission when construction of Big Stone Unit II actually commences.
3. Applicants shall provide a forecasted budget for construction costs for the upcoming year beginning on January 1, 2009. Each subsequent report filed on January 1 shall include an analysis of any deviations from the forecasted budget and the actual expenditures for the year and an explanation of changes in forecasts for future years.
4. Applicants shall immediately advise the Commission of any decision by the Applicants not to go forward with construction of Big Stone Unit II and of any factors that jeopardize the viability or continuation of the project.
5. Applicants shall continue their present operational practices for management of the coal that is burned at Big Stone. Applicants will maintain reports regarding implementation of these practices and will provide these reports to the Commission upon request.
6. Applicants shall conduct a study of the number of rail cars necessary to serve Big Stone II and do a cost benefit analysis of whether any additional railcars should be light weight aluminum railcars. Applicants shall submit the results of that study to the Commission by January 1, 2011.

⁴³ Ex.PSC 4, at p. 28, l. 1-3 (Deason).

⁴⁴ These conditions are essentially the same as the conditions the Applicants included in their draft findings submitted in August 2007 after the first round of hearings, with slight changes to update some deadlines and to address the new condition suggested by Mr. Deason to report on carbon dioxide regulations and new cost estimates.

7. Applicants shall conduct a study to calculate the costs and impacts of maintaining a higher coal inventory level. Applicants shall compare the costs of maintaining a higher level of coal with the costs and likelihood of future curtailments of shipments of coal from inadequate fuel deliveries. Applicants shall submit the results of the study to the Commission with a recommendation on the appropriate inventory level by January 1, 2011.

8. Applicants shall continue to monitor potential carbon dioxide regulations and provide an update of the cost-effectiveness of Big Stone II prior to commencement of construction.

VII. CONCLUSION

Applicants have carefully analyzed their need for additional generation resources to serve their customers. Resources need to be built. Constructing a highly efficient supercritical pulverized coal plant at a time when any kind of fossil fuel plant is under close scrutiny is not without controversy. But every resource selection comes with risks and uncertainties. Big Stone II is the least-cost alternative to meet the Applicants' baseload need under all reasonable scenarios.

Big Stone II is not the only project these Applicants are undertaking to address need. They will each be increasing their commitments to conservation and renewables. Those efforts, however, are not a substitute for addressing Applicants' baseload need.

Applicants have demonstrated that they have need for additional generating resources (along with the transmission to interconnect the resources), that the alternatives that may exist for meeting the additional baseload generation needs are not preferable substitutes for the identified baseload generation resource, and therefore, that their investment in Big Stone II is prudent and reasonable.

The Applicants respectfully request that the Commission issue an order so finding.

Date: May 21, 2008

Respectfully submitted,

**Montana-Dakota Utilities, Co. a division of Otter Tail Corporation
MDU Resources Group, Inc.**

By: _____

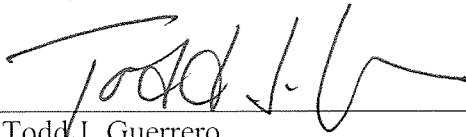
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STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Corporation
Advance Determination of Prudence
Application

Case No. PU-06-481

Montana-Dakota Utilities Co., a Division
of MDU Resources Group, Inc.
Advance Determination of Prudence
Application

Case No. PU-06-482

PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

_____, 2008

Appearances

Commissioners Susan E. Wefald, Kevin Cramer and Tony Clark.

Todd J. Guerrero, Attorney at Law, Lindquist and Vennum, P.L.L.P., 4200 IDS Center, 80 South Eighth Street, Minneapolis, MN 55402 and Mark Bring, Associate General Counsel, Otter Tail Corporation, 215 South Cascade Street, Fergus Falls, MN 56537, on behalf of Otter Tail Corporation.

Daniel S. Kuntz, Associate General Counsel, MDU Resource Group, Inc., PO Box 5650, Bismarck, ND 58506-5650, on behalf of Montana-Dakota Utilities Co.

William Binek, Chief Counsel, Public Service Commission, State Capitol, 600 E Boulevard Ave., Bismarck, North Dakota 58505, on behalf of the Public Service Commission advocacy staff.

Jack William Breen Jr., Attorney-at-Law, 717 Williams Street, Bismarck, ND 58501-2483 and Carrie LaSeur, Attorney-at-Law, 319 3rd St NW, Mount Vernon, IA 52314 on behalf of Intervenor Mark Trechock and Dakota Resource Council.

Al Wahl, Administrative Law Judge, Office of Administrative Hearings, 1701 North Ninth Street, Bismarck, North Dakota 58501-1882.

Preliminary Statement

On November 14, 2006, Otter Tail Corporation doing business as Otter Tail Power Company (Otter Tail) filed an application under North Dakota Century Code Section 49-05-16 for advance determination of prudence of Otter Tail's participation and ownership interest in the Big Stone II Generating Plant, Case No. PU-06-481.

On November 15, 2006, Montana-Dakota Utilities Co. (Montana-Dakota) filed an application under North Dakota Century Code Section 49-05-16 for advance determination of prudence of Montana-Dakota's participation and ownership interest in the Big Stone II Generating Plant, Case No. PU-06-482.

On December 1, 2006, Otter Tail and Montana-Dakota (Applicants) each filed direct testimony in support of its application.

On December 29, 2006, the Commission issued a Notice of Filing and Notice of Intervention Deadline in both cases setting February 15, 2007 as the intervention deadline.

On January 10, 2007, the commission issued a Notice of Hearing scheduling a hearing for April 17, 2007. The Commission identified the following issues in its Notice of Hearing:

1. Whether the resource addition is reasonable and prudent.
2. Whether the applicants have need for additional generating resources.
3. What alternatives exist for meeting additional generation needs?

On January 24, 2007, the Commission issued a Notice of Public Input Sessions. The Commission held Public Input Sessions February 5, 2007 in Bismarck and February 12, 2007 in Jamestown.

On February 15, 2007, Mark Trechock, as a ratepayer and as Staff Director of the Dakota Resource Council (DRC) and DRC filed a Petition to Intervene in both dockets.

On February 23, 2007, the Commission granted the Petition to Intervene.

On March 7, 2007, the Commission issued a Notice of Rescheduled Hearing scheduling the hearing for May 29, 2007.

On April 10, 2007, the Applicants filed a Motion in Limine to Exclude Evidence on Environmental Externality Values and Request to Amend Scheduling Order.

A Prehearing Conference was held on April 20, 2007 to hear oral argument of, consider, and rule upon Applicants' Motion in Limine and to revise the schedule for testimony, briefs, hearing dates, and proposed orders.

The Administrative Law Judge granted the Motion in Limine on April 25, 2007 prohibiting the introduction of any evidence of "environmental externality values."

Interveners waived the requirement for the Commission to issue an order within seven

months of filing on April 30, 2007. Otter Tail waived the requirement on May 1 and Montana-Dakota on April 30.

The Commission issued a second Notice of Rescheduled Hearing on May 16, 2007 scheduling the hearing for June 26, 2007.

On May 31, 2007 Commission Advocacy Staff and the Intervenors filed direct testimony in both cases.

On June 13, 2007 Applicants moved to strike portions of the testimony of David A. Schlissel. On June 22, 2007 the Administrative Law Judge issued his Order Upon Motion to Strike.

The Commission held a hearing on both cases June 26, 27, and 28, 2007 in the Commission Hearing Room. Administrative Law Judge Alan Wahl presided at the technical hearing.

On September 17, 2007, prior to a final Commission decision, the Applicants wrote to the Commission and advised that two of the Big Stone II co-owners, Great River Energy and Southern Minnesota Municipal Power Agency, had withdrawn from the project and requested that the matter be suspended until the Applicants could re-analyze the situation and determine how to proceed.

On January 21, 2008, Applicants wrote to Judge Wahl and requested that supplemental hearings be held on the Applicants' prudence application.

On February 1, 2008, Judge Wahl issued his Order Scheduling Proceedings for Supplemental Hearings, establishing dates for the submission of pre-filed written testimony and scheduling three days of hearing on April 28, 29, and 30, 2008.

On April 15, 2008, Applicants filed a motion to strike portions of the pre-filed testimony of Intervenors' witness David A. Schlissel. On April 22, 2008, Judge Wahl granted Applicants' Motion in part, striking certain portions of the Schlissel testimony.

The Commission held a hearing on both cases on April 28, 29, and 30, in the Commission hearing room. Administrative Law Judge Alan Wahl presided at the hearing.

Advance Determination of Prudence and Environmental Externality Laws

North Dakota Century Code Section 49-05-16 provides that a public utility proposing to construct an energy conversion facility for the purpose of ensuring reliable electric service to its customers may file an application with the Public Service Commission for an advance determination that an electric resource addition is reasonable and prudent. Section 49-05-16 states:

Advance determination of prudence. A public utility proposing to construct, lease, or make improvements to an energy conversion facility, renewable energy facility, transmission facility, or proposed energy purchase contract from another entity or person for the purpose of ensuring reliable

electric service to its customers may file an application with the commission for an advance determination of prudence regarding the proposal. The commission may order that expenses associated with investigating the application made by the public utility for prudence of a resource addition be paid by the public utility in accordance with section 49-02-02.

1. The commission may issue an order approving the prudence of an electric resource addition if:
 - a. The public utility files with its application a projection of costs to the date of the anticipated commercial operation of the electric resource addition;
 - b. The commission provides notice and holds a hearing, if appropriate, in accordance with section 49-02-02; and
 - c. The commission determines that the resource addition is reasonable and prudent. For facilities located or to be located in this state the commission, in determining whether the resource addition is reasonable and prudent, shall consider the benefits of having the energy conversion facility, renewable energy facility, transmission facility, or facility generating the energy to be purchased located in this state.
2. The commission order must be rendered no later than seven months after the public utility files its application requesting a prudence determination of an electric resource addition.
3. A resource addition approved by the commission is subject to annual reporting requirements until commercial operation of the resource addition.
4. The commission's order determining prudence of the resource adjustment is binding for ratemaking purposes.
5. If at any time following an initial commission order, the commission, following a subsequent hearing, determines that continuation of a project is no longer prudent or that its prior order should be modified, the public utility may recover in its rates, and in a timely manner consistent with the public utility's financial obligations, the amounts the public utility already has expensed, incurred, or obligated on a project, including interest expense and a return on equity invested in the project up to the time the new order is entered even though the project may never be fully operational or used by the public utility to serve its customers.
6. There is a rebuttable presumption that an energy conversion facility, renewable energy facility, transmission facility, or facility generating the energy to be purchased which is located in the state is prudent.

North Dakota Century Code Section 49-02-23 governs the use, by the Commission or the electric utility, of environmental externality values when considering electric resources or

electric rates. Section 49-02-23 states:

Consideration of environmental externality values prohibited. The commission may not use, require the use of, or allow electric utilities to use environmental externality values in the planning, selection, or acquisition of electric resources or the setting of rates for providing electric service. Environmental externality values are numerical costs or quantified values that are assigned to represent either:

1. Environmental costs that are not internalized in the cost of production or the market price of electricity from a particular electric resource; or
2. The alleged costs of complying with future environmental laws or regulations that have not yet been enacted.

Having allowed all interested persons an opportunity to be heard and having heard, reviewed and considered all testimony and evidence presented, the Commission makes the following:

Findings of Fact

The Parties

1. Otter Tail Corporation is a Minnesota corporation authorized to do business in the State of North Dakota as a foreign corporation. Otter Tail is doing business in the State of North Dakota as a public utility. Otter Tail operates an integrated electric system in portions of Minnesota, North Dakota, and South Dakota. Approximately 43% of Otter Tail's customers are in North Dakota.

2. Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc., is a Delaware corporation authorized to do business in the State of North Dakota as a foreign corporation. Montana-Dakota is doing business in the State of North Dakota as a public utility. Montana-Dakota operates an integrated electric system in portions of Montana, North Dakota, and South Dakota. Approximately 65% of Montana-Dakota's customers are in North Dakota.

3. DRC is an environmental group organized in the state of North Dakota and a ratepayer of Montana Dakota Utilities Co. Mark Trechock is Staff Director of the DRC and is a ratepayer of Montana-Dakota.

The Proposed Resources

4. Otter Tail and Montana-Dakota along with three other utilities are proposing to construct a 500 MW nominal capacity supercritical, pulverized-coal electric generating plant (Big Stone II) to be located adjacent to the existing plant in Big Stone City, South Dakota. The existing Big Stone I site is approximately two miles northwest of Big Stone City, 1.7 miles from the nearest point of Big Stone lakeshore, and approximately two miles from the Minnesota border.

5. The Applicants could decide at a later time to increase the size of the plant to a nominal 580 MW to accommodate an additional owner or owners who are brought into the project.
6. The proposed energy conversion facility will not be located in North Dakota so the rebuttable presumption in N.D.C.C. Section 49-05-16 (6) does not apply.
7. Otter Tail resource planning shows that it has a need for up to 170 MW of Big Stone II but that they intend to own up to 130 MW, and Montana-Dakota intends to own up to 133 MW. These amounts could change slightly if the plant size is increased from 500 to 580 MW.
8. The Applicants testified that Big Stone II would cost approximately \$1.272 billion in actual dollars with a startup date of mid-2013. Costs are escalating due to inflation at about 6% annually.
9. The co-owners also propose to construct two new high voltage transmission lines to interconnect Big Stone II to the transmission grid. A 48-mile line from Big Stone 230 kilovolt (kV) Substation to the Morris Substation near Morris, Minnesota, line to be constructed at 230 kV. A 90-mile line from Big Stone 345 kV Substation to Granite Falls, Minnesota, to be constructed at 345 kV but operated initially at 230 kV.
10. The transmission facilities will not be located in North Dakota so there is not a rebuttable presumption that the facility is prudent.
11. The Applicants state that the transmission interconnection and delivery service facilities would cost approximately \$249 million.
12. Big Stone II is designed to be a baseload facility. A baseload facility is one that is intended to be operated 24 hours a day, 365 days per year. A baseload facility is dispatchable, therefore, output can be controlled to meet system needs. Big Stone II is expected to have an 88 percent capacity factor.
13. Fuel for Big Stone II would be Powder River Basin sub-bituminous coal from a number of mines located in Wyoming and Montana, the same fuel and fuel source used at Big Stone I.
14. Big Stone II and Big Stone I will share one wet flue gas desulfurization system (wet scrubber) to control sulfur dioxide emissions. Big Stone II will also incorporate a fabric filter house to control small particle emissions and mercury and a selective catalytic reduction to control emissions of nitrogen dioxide.
15. The co-owners intend to own Big Stone II as tenants in common, with each utility having an undivided interest in the entire project. Under an Operating and Maintenance Agreement, Otter Tail would operate and maintain Big Stone II. The agreement allows for future change of an operating agent if the owners choose.

Otter Tail's Need for Electric Resources

16. Otter Tail is a winter peaking utility but its baseload capacity needs are being driven by summer season demand.

17. Otter Tail currently serves the electric requirements of its customers with company-owned generation resources at Big Stone I; Coyote Station in Beulah, North Dakota; Hoot Lake Station near Fergus Falls, Minnesota; and a number of peaking units including Jamestown, North Dakota, and other locations in South Dakota and Minnesota. These facilities combined have a nominal capacity approaching 700 MW.

18. As of the June 2007 hearings, Otter Tail provided approximately 244 MW of summer capacity from Big Stone I; approximately 149 MW of summer capacity from the Coyote Station near Beulah, North Dakota; approximately 143 MW of summer capacity from the Hoot Lake Station near Fergus Falls, Minnesota; peaking units totaling 43 MW of summer capacity at Jamestown, North Dakota, a unit at Lake Preston, South Dakota totaling 19.74 MW of summer capacity, a unit at Solway, Minnesota totaling 45 MW of summer capacity, approximately 4.2 MW of small baseload hydro in Minnesota, and several smaller diesel units that total approximately 3 MW of summer capacity.

19. Otter Tail resources include a variety of owned and purchased resources, including but not limited to 2 MW of coal-fired generation in western North Dakota, approximately 85 MW nameplate capacity of wind generation, and a number of customer-owned diesel units under contract for peaking duty totaling approximately 8.4 MW of summer capacity.

20. Otter Tail also contracts for 50 MW of Manitoba Hydro capacity. This contract expires in 2011. An additional purchase of power from Manitoba Hydro is not an option since Manitoba Hydro has informed Otter Tail that it no longer has capacity and energy available.

21. Otter Tail has contracted for short-term capacity for the 2008 summer and the 2008 winter seasons to cover capacity deficits.

22. On November 26, 2007, the Commission issued Certificate of Public Convenience and Necessity No. 5336 to Otter Tail in Case No. PU-07-607 for 40.5 MW of the Langdon wind project. It is presently considering a partial transfer of the Certificate of Site Compatibility to Otter Tail in Case No. PU-08-159. The Otter Tail 40.5 MW portion of the Langdon wind project became fully operational in January 2008.

23. Otter Tail's forecast indicates energy requirements increasing annually from over 4,500,000 MWh in 2008 to over 5,000,000 MWh in 2014.

24. Otter Tail's forecast indicates a winter season capacity deficit of 15 MW in 2007 and increasing to approximately 160 MW by 2012 and 193 MW by 2014. The capacity deficit is increasing due to a combination of events, including system load growth, the expiration of certain purchased power contracts, and the closing of a customer owned generator. In addition, Otter Tail has been selected to provide power to the new Tharaldson Ethanol Project, which could require as much as 22 MW of generating capacity.

Montana-Dakota's Need for Electric Resources

25. Montana-Dakota is a summer peaking utility.
26. Montana-Dakota currently serves the electric requirements of its customers with approximately 366 MW of coal generation from five units, and approximately 110 MW of gas or gas and oil fired combustion turbines for peaking requirements. In addition, it has purchase agreements for summer capacity up to 100 MW.
27. Montana-Dakota had a long-term power purchase agreement with Basin Electric Power Cooperative for 66.4 MW of generation that expired October 31, 2006.
28. Montana-Dakota operates a 20 MW wind farm in Montana.
29. Montana-Dakota's peak long-term load obligation is expected to grow at approximately 1% per year. Montana-Dakota's long-term forecast projects that energy use will grow at an average annual rate of 1.2%.
30. Montana-Dakota currently has a capacity deficit of approximately 83 MW between its forecasted summer peak obligation during 2007 and its owned generation capacity. Montana-Dakota is currently meeting that capacity deficit through a capacity purchase agreement that could be extended through 2012. The capacity deficit will be approximately 117 MW by 2013. MDU is currently meeting any energy deficits through purchases in the MISO energy market as needed.

Common Need for Electric Resources

31. Both utilities are currently experiencing capacity deficits at times.
32. The cost of energy from the MISO market can be uncertain and has been high for both on-peak and off-peak demand. In January and February 2002, the average price was \$20/MWh of energy. In 2007, the average price was close to \$80 per MWh. This is indicative of supply deficiencies in the MISO region.
33. There was no dispute among the parties concerning the need for additional electric system resources to ensure reliable electric service to customers of Otter Tail and Montana-Dakota.
34. The Commission finds that both Otter Tail and Montana-Dakota have a need for additional electric system resources to ensure reliable electric service to customers.

Electric Resource Alternatives

35. Both Otter Tail and Montana Dakota engage in long-term planning to identify likely courses of action to continue providing reliable, low-cost electricity to meet the electric energy needs of their customers. This planning considers load forecast, all existing supply, demand-side management and conservation assets, the financial structure of the utility, and available supply, demand-side management, and energy conservation alternatives.

36. Both Otter Tail Power and Montana-Dakota have implemented various conservation and demand-side management programs to reduce the amount of energy that is used and the generating capacity that would otherwise be required. These programs include load management incentives, rebates, discounts, and other conservation promotions.

Otter Tail Electric Resource Alternatives

37. Otter Tail issued a Request for Proposal (RFP) from Manitoba-Hydro to fill the need for resources.

38. In developing its 2005 resource plan, Otter Tail contacted all utilities in the Otter Tail area to determine whether they would have generation that could be provided in response to an RFP. The answer, other than electricity from Manitoba Hydro, was no. Otter Tail also contacted a number of independent power producers that declined to offer a generation resource proposal.

Otter Tail Demand-side Management and Conservation

39. Otter Tail includes demand-side management and conservation efforts in its forecasting and resource planning. Resource planning performs a side-by-side consideration of demand-side and supply-side resources to identify the most economic plan.

40. Approximately 13% (or more) of the capacity needs in the company's 2005 Resource Plan for the 2006 to 2020 planning period, sometimes referred to as the 2006 to 2019 planning period, is identified as coming from conservation and DSM measures.

41. Otter Tail's 2005 Resource Plan includes implementation of about 67 MW of conservation and DSM, all in Minnesota. Otter Tail has projected an incremental annual DSM energy savings over the 2006-2020 planning period of about 8 million to 11 million kWh annually.

42. Otter Tail made a late-filed exhibit that identifies several DSM programs selected for implementation prior to Big Stone II during the 2006 to 2020 planning period. Those programs total a 21.6 kW demand savings potential.

43. Otter Tail has indicated it will be implementing additional conservation measures not only in Minnesota, but in North Dakota and South Dakota as well.

44. DSM and conservation are important parts of a resource plan for Otter Tail.

45. Otter Tail significantly updated and modified the level of conservation input into the modeling following the June 2007 hearings before the Commission. Otter Tail is expecting to implement more North Dakota conservation programs in the future, has filed a conservation plan in South Dakota, and has a new statutory directive to reduce retail sales in Minnesota. Otter Tail attempted to account for all these reductions in energy consumption in its modeling.

46. With regard to North Dakota and South Dakota, Otter Tail incorporated energy savings equal to about 0.5% of annual retail sales in those two states. With regard to Minnesota

sales, the model was scaled up to realize conservation savings of 1.5% of Minnesota retail sales averaged over the previous three years as specified by the new Minnesota law. Historically, Otter Tail has obtained conservation savings of approximately 0.6% - 0.7% of annual Minnesota kWh sales, so this assumption was quite conservative.

Montana-Dakota Electric Resource Alternatives

47. Montana-Dakota considered several supply options at the loss of the 66.4 MW contract with Basin Electric. The options considered included an extension of the Basin Electric contract, a lignite plant at Gascoyne, gas turbines, participation in Big Stone II, RFP for supply, and purchases from the MISO market.

48. In 2004, Montana-Dakota issued a Request for Proposal (RFP) to fill the void left by the expiration of the contract with Basin Electric. Montana-Dakota received three responses of which one was a qualified bid. Montana-Dakota stated it rejected the bid because it only offered a small portion of the needed capacity.

49. In 2006, Montana-Dakota issued another RFP for baseload coal capacity and energy for the 25 to 35-year periods beginning June 1, 2011 and June 1, 2016. Montana-Dakota received two proposals. Montana-Dakota stated it rejected one because it did not meet Montana-Dakota's requirements and the other due to uncertain delivery.

50. Montana-Dakota's expansion modeling in 2003 selected gas turbines. Montana-Dakota did not consider this a viable option due to cost to customers.

51. Montana-Dakota requested PA Consulting Group, Inc. (PA) to perform a capacity expansion modeling analysis to help evaluate an overall optimal resource plan for Montana-Dakota.

52. The record indicates PA based its expansion analysis upon input assumptions from a variety of resources including Montana-Dakota, PA, and the joint project sponsors.

53. The record indicates the expansion analysis completed by PA was an independent analysis prepared on behalf of Montana-Dakota; assumptions were not jointly developed with Otter Tail or other project co-owners.

54. The record indicates PA's expansion analysis assumed no off-system sales from Big Stone II in its test for the least cost mix of resource alternatives.

Montana-Dakota Demand-side Management and Conservation

55. Montana-Dakota includes demand-side management and conservation efforts in its forecasting and resource planning. Resource planning performs a side-by-side consideration of demand-side and supply-side resources to identify the most economic plan.

56. Montana-Dakota has implemented interruptible rates and launched a number of DSM programs, including a program promoting high-efficiency residential air conditioning and a

commercial lighting retrofit program estimated to provide a demand reduction of 11 MW as reflected in Montana-Dakota forecasted requirements. Montana-Dakota has identified nine separate programs, including appliance rebates for new efficient appliances, expanded interruptible service arrangements, and commercial air conditioner cycling efforts, that it has implemented or is in the process of implementing in its integrated electric system, including North Dakota, and that are expected to provide additional annual demand reductions of 13.8 MW. Montana-Dakota states that annual energy reductions of approximately 6 million kWh are associated with all the measures.

57. DSM and conservation are important parts of a resource plan for Montana-Dakota.

Big Stone II Energy Facility

Facility Cost

58. Black and Veatch, engineer and construction manager for the Big Stone II Project, was retained in the summer of 2005 to develop plant system design, provide engineering and construction services, and obtain competitive quotations on five major plant components (boiler, turbine, fabric filter, wet scrubber, and chimney). A project cost estimate was prepared after the definition of plant arrangements and configuration were developed in sufficient detail, and after the design criteria for all equipment and material were developed and agreed to by the Big Stone II co-owners.

59. Equipment costs include materials and services for all plant components. Construction contracts include labor, materials, and services necessary to erect the plant equipment. Indirect costs include owner's costs including engineering and construction management as well as escalation and reserves allocation.

60. The cost estimate prepared by Black and Veatch was based on the following:

- Pricing of all major equipment and systems including receipt of detailed competitive bids for five major components and indicative price quotes for approximately 17 other major pieces of equipment and systems.
- Estimates of cost and quantity of individual construction commodities.
- Estimates of cost and quantity of individual construction labor hours. Local labor rates for the various union crafts (building trades) were obtained and used.
- Estimates of project indirect costs including engineering, construction management, unit startup, property tax, financing, insurance, contingencies, and others as required.
- Inclusion of all other co-owner costs including transmission costs as well as for the Big Stone II personnel and other indirect costs.

61. In the summer of 2006, Black & Veatch was retained by the co-owners to provide an up-to-date estimate of the costs of Big Stone II. Cost increases were attributed to global growth in demand for generating plants, increased cost of fabricated materials and specialty engineered equipment, construction commodity cost increases, and labor rate escalation.

62. Montana-Dakota witness Rita Mulkern testified at the June 2007 hearings that once Big Stone II goes online, a reduction in its fuel costs is expected.

63. The Applicants testified at the June 2007 hearings that the Big Stone II project will be executed on a multiple contract basis, with approximately 110 specific contracts.

64. The Commission finds that both Otter Tail and Montana-Dakota have filed a projection of costs to the date of anticipated commercial operation for the proposed electric resource additions as required under North Dakota Century Code Section 49-05-16.

65. The planned Commercial Operation Date (COD) for the Big Stone II project is now 3rd quarter 2013. The Applicants chose to examine two plant sizes as part of their updated analysis – a nominal 500 MW facility and a nominal 580 MW facility. Costs for these plant size alternatives were developed based on project data gathered to-date, commonly-used industry methods, and other factors including expert judgment. A 500 MW plant is estimated to cost \$1.272 billion. A 580 MW plant is estimated to cost \$1.411 billion. The plant efficiency and emissions rates for this range of plant sizes will not be appreciably different from the 630 MW plant size contemplated earlier.

Transmission Alternatives

66. The existing transmission system limited capacity to add new generation sources. Planning for interconnection of Big Stone II to the electric transmission grid began with a Preliminary Screening Study to evaluate eleven different options for interconnecting Big Stone II to the electric transmission grid. The study was designed to compare alternatives on the basis of capital cost, reliability, system power losses, and impacts to known constrained interfaces in the region. The eleven alternatives were narrowed to five, and then ultimately to two alternatives - (1) a new line from Big Stone to Morris, Minnesota, and a new line from Big Stone to Granite Falls, Minnesota, or (2) a new line from Big Stone to Willmar, Minnesota, and a new line from Big Stone to Granite Falls, Minnesota.

67. The co-owners then submitted a generation interconnect request to the Midwest Independent Transmission Operator (MISO) and MISO asked Otter Tail Power to perform an Interconnection Study. The Interconnection Study showed that either of the two options would work to interconnect the Big Stone Plant provided proper system enhancements were made within the direct area of the interconnection. Both of the options involved construction of new lines at 230 kV capability. The co-owners prefer the Big Stone to Morris option over the Big Stone to Willmar option (along with a Big Stone to Granite Falls line that is part of either option). Compared to the Willmar line, the Morris line is shorter, less costly, has lower line losses, and utilizes an existing transmission line corridor.

68. The new transmission lines would improve stability in the region. Constructing the Granite Falls line at 345 kV capability would provide more stability than at 230 kV. The

Applicants propose to design the Granite Falls line to be capable of operating at 345 kV but will initially operate at 230 kV.

69. The Granite Falls initial operation at 230 kV is adequate to provide for interconnection of Big Stone II and Big Stone I. While the 230 kV capability of the Granite Falls line appears to have greater benefit to local utilities, the incremental capability of a 345 kV Granite Falls line appears to have greater system-wide or regional benefit.

70. The Applicants estimate the incremental cost of constructing a 345 kV Granite Falls line rather than a 250 kV Granite Falls line is \$25 million to \$30 million. The allocation of the transmission costs will be according to a MISO tariff approved by the Federal Energy Regulatory Commission. The allocation of transmission line costs has not been finalized.

71. Otter Tail's witness Timothy Rogelstad testified at the June 2007 hearings that MISO agrees with the proposal for the 230 kV Big Stone to Morris line and the 345 kV Big Stone to Granite Falls.

72. Mr. Rogelstad testified at the April 2008 hearings that the change in size of the Big Stone Unit II facility does not affect the need for the proposed transmission interconnection lines. Any generation facility larger than 150 MW at the Big Stone II site would require more than a 115 kV system. The proposed lines to Morris and to Granite Falls remain the best choice for interconnecting the 500 MW facility.

73. The Commission finds that the proposal to construct the 230 kV Big Stone to Morris line and the construction of the Big Stone to Granite Falls line with 230 kV capacity are reasonable and prudent for purposes of interconnecting the proposed Big Stone II to the electric transmission grid.

74. The Commission finds that the proposal to construct the Big Stone to Granite Falls line with 345 kV capacity will enhance the potential for development of generation resources on a regional basis and is prudent and reasonable.

Fuel Supply

75. Fuel for Big Stone II would be Powder River Basin sub-bituminous coal. Powder River Basin coal is the fuel currently used by Big Stone I. The Powder River Basin is the world's largest single deposit of low-sulfur coal. The Applicants testified at the June 2007 hearings that Powder River Basin coal is the lowest cost delivered coal for electric generators. With the addition of Big Stone II, coal delivery requirements to the Big Stone plants will more than double. Approximately 4-7 coal trains will be required per week once Big Stone II is in operation.

76. Burlington Northern Sante Fe Railway (BNSF) is the only company that transports coal to the Big Stone site. In 2006, coal deliverability problems, such as structural failure of rail roadbeds, required that Big Stone I use its reserve coal inventory, and eventually, Big Stone I had to curtail operations. Standard coal inventory at Big Stone I is approximately 30 days.

77. In response to coal delivery problems, BNSF has added locomotives, coal cars, additional rail, and other infrastructure, has upgraded other facilities, and increased the number of shipments. BNSF invested \$235 million in 2005 and more than \$600 million in 2006. It was unclear from BNSF whether any of these expenditures have been included in existing tariff rates, but BNSF did indicate that the total cost of the capital expenditures in the long-run is unknown. BNSF indicated that future transportation services will be priced at market rates.

78. Commission Advocacy Staff witness Terry Deason testified at the June 2007 hearings that there are a number of operational measures that Otter Tail, the operating agent of Big Stone II and current operating agent of Big Stone I, could implement to minimize coal delivery problems. These measures include monitoring cycle times, monitoring actual numbers of cars per train to compare with a target numbers of cars per train, the use of lightweight aluminum railcars, and scheduling shipments far in advance. Otter Tail has implemented some of these measures. Otter Tail and Montana-Dakota agree with the recommendations of Mr. Deason.

79. Standard coal inventory maintained at Big Stone II will be between 30 and 45 days. Mr. Deason recommended 45 days of on-site coal inventory. The cost of 15 days additional coal inventory would be shared by the Big Stone II co-owners. Otter Tail's and Montana-Dakota's contribution to that cost would be approximately \$600,000. Mr. Deason testified at the June 2007 hearings that the carrying cost of this amount, including income taxes, would be less than \$100,000 per year. Otter Tail's incremental cost of replacement power during the 2006 curtailment period was \$1 million to \$1.7 million.

80. Montana-Dakota commits to provide periodic informational filings regarding measures to enhance the timely and efficient delivery of coal, a study on rail cars necessary to serve the plant, and a study to determine the most cost effective coal inventory level. These were the recommendations of Commission Advocacy Staff and Terry Deason. Otter Tail also agrees to comply with all recommendations of Commission Advocacy Staff and Mr. Deason. Mr. Deason concluded that advance prudence granted for Big Stone II should be conditioned upon the recommendations.

81. Otter Tail is currently purchasing BNSF coal delivery under a tariff price filed with the Surface Transportation Board. Otter Tail is exploring the possibility of a long-term contract with BNSF for the future delivery of coal to the Big Stone plants.

82. The Commission finds that the recommendations of Advocacy Staff and Mr. Deason are reasonable and appropriate, and the advance determination of prudence for the proposed Big Stone II and associated transmission facilities should be conditioned upon those recommendations of Advocacy Staff and Mr. Deason.

Fuel Transportation Cost

83. Otter Tail witness Ward Uggerud indicated that approximately 65 to 70 percent of the delivered cost of fuel for Big Stone I or for the Big Stone plant is transportation cost and that the cost assumptions for Big Stone II are predicated on the tariffed BNSF rate in place at the time of filing.

84. The Applicants' witness Thomas Crowley testified at the April 2008 hearing that he had independently prepared a delivered coal price forecast for the Big Stone II plant. Mr. Crowley's forecast was lower than Applicants' 2007 forecast. The potential effects of the 2007 forecast on Applicants' modeling were conservative.

85. The current tariff rates for rail transportation reflect the maximum rate allowed by the Surface Transportation Board. Big Stone II is a captive shipper solely reliant on BNSF for rail transportation of PRB coal. If BNSF attempted to unreasonably increase these transportation rates, the STB would act as a backstop and allow Applicants to seek relief.

86. The Applicants estimate that any regulatory changes to BNSF rate levels would result in stationary or marginally lower rates than the rates currently charged for shipments to Big Stone II.

87. At the April 2008 hearings, Mr. Crowley presented an independent rail rate transportation forecast to address the expected future cost of rail transportation of PRB coal to Big Stone II. In developing the forecast, Mr. Crowley considered the rail rate itself, the assumed fuel surcharge BNSF will apply to the rail rate, and the cost of acquiring and maintaining rail cars for the transport of coal from the PRB.

88. At the April 2008 hearings, Mr. Crowley also presented an independent price forecast based on his experience in pricing in coal markets. The forecast considers future demand for coal as well as the impact on demand for PRB coal vis a vis anticipated Clean Air Act, mercury and likely carbon dioxide regulation. The forecast also considers PRB capacity and production limitations, employment growth and inflation.

89. According to witness Brautovich, BNSF spent over \$600 million in 2006 and is on pace to spend \$600 million in 2007 on capital expenditures to haul Powder River Basin coal. This is an increase of \$300 million over, or a doubling of, 2005 spending, which was the previous average capital expenditure baseline. In addition, the workforce has expanded recently by thousands. In large part, this appears to be in response to the "catastrophic" coal supply problems that plagued the railroad in 2005-06.

90. Witness Brautovich believes these dramatic spending increases will find their way into tariffed rates.

91. Demand for Powder River Basin coal is increasing.

92. Witness Brautovich declined to deny that rate increases could be as high as double digits, but indicated that transportation rates would be driven by the market for other sources. We believe this means the BNSF intends in the future to capture a greater portion of the margin between the commodity price of coal and the delivered price of other higher priced fuel sources.

93. The 2006 average BNSF rate increase was 11 percent.

94. The Commission finds that the Applicants have accurately forecast the future delivered cost of fuel for Big Stone II.

95. Applicants' late filed exhibit following the June 2007 hearings discloses that the cost to Otter Tail's customers associated with coal supply disruptions to Big Stone I in 2006 was estimated at \$2,836,500 in total. The cost to Montana-Dakota's customers associated with those disruptions was estimated at \$1,018,000 in total.

96. The Commission finds that the cost of delivered fuel is a significant factor in determining whether the proposed Big Stone II is reasonable and prudent.

97. An important aspect of determining prudence is a reasonable comparison of the costs of electricity from competing generation resources. The delivered price of fuel is a critical component of that analysis. Applicants have met their burden.

Future Carbon Regulation

98. A concern raised primarily by Intervenors is that the Applicants failed to consider the costs associated with future regulation of carbon emissions.

99. The parties agree that the U.S. Congress may, at some time in the future, establish regulations for the control of carbon dioxide from power plants around the country burning coal and other fossil fuels. However, neither we nor the Applicants can predict what those regulations will require.

100. Montana-Dakota witness Andrea Stomberg testified that there are currently no known commercial or economical applications for post-combustion removal of carbon dioxide from supercritical pulverized coal electric generating plants.

101. In accordance with North Dakota Century Code Section 49-02-23, Applicants have not utilized prohibited environmental externality costs for carbon dioxide regulation in this proceeding, however, they have considered the possibility of future carbon dioxide regulation.

102. Supercritical and ultra-supercritical technologies for coal-fired generation are more efficient than previous technologies for coal-fired plants, using less coal per unit of electricity generated. In addition, the Applicants plan to include various forms of renewable generation and various conservation and demand-side management programs in their future resource mix.

103. The Commission finds that regulation of carbon dioxide would likely result in an increase in the cost of coal-fired electric energy. However, the costs of most kinds of generation will also likely increase. The Commission gives weight to the fact that economic risks associated with regulation of carbon dioxide are significant.

Other Big Stone II Energy Facility Findings

104. Otter Tail is receptive to a variety of approaches to address issues concerning its off-system sales, including crediting asset-backed, off-system sales margins to its customers. In accordance with the Commission's rate order in Case No. PU-399-03296, Montana-Dakota credits credit 85% of asset-backed, off-system sales margins to its customers.

105. Big Stone II has not gone through financial close.

Alternative Electric Facilities and Technologies

106. Montana-Dakota and Otter Tail, along with the other co-owners, examined a number of technologies for generating electricity before proposing a supercritical pulverized coal plant at Big Stone. In 2005 the co-owners hired Burns & McDonnell to evaluate in detail several generation technologies, including subcritical pulverized coal, supercritical pulverized coal, natural gas-fired combined cycle gas turbine, wind plus gas-fired combined cycle gas turbine, integrated coal gasification combined cycle, and 100% biomass plant (only 50 MW). Burns & McDonnell was retained to perform the analysis again in October 2006 after the co-owners had obtained Black & Veatch's 2006 cost estimate for the more refined plant design. The September 2005 report was entitled "Analysis of Baseload Generation Alternatives" and the October 2006 report was entitled "Revised Analysis of Baseload Alternatives."

107. Burns & McDonnell was asked again in the fall of 2007 to conduct another update of its analysis to reflect the fact that two of the utilities had withdrawn from the project and the remaining utilities were considering the possibility of downsizing the plant. Burns & McDonnell also updated many of the factors that go into the analysis. Burns & McDonnell evaluated six different generation options, including a 500 MW supercritical PC plant, a 580 MW supercritical PC plant, and a 500 MW combined cycle gas turbine with wind purchases. In November 2007 Burns & McDonnell presented its results in a written report entitled "Updated Economic Evaluation of Baseload Generation Alternatives."

108. The November 2007 Update confirmed that Big Stone Unit II represents the lowest cost baseload generation operation of those evaluated on a life-cycle basis considering capital and operating costs. The Burns & McDonnell estimate of the levelized busbar cost per kWh over the 2013 to 2031 period for Big Stone II is \$77.65/MWh. The busbar cost for a combined cycle gas turbine with wind purchases was 11% higher.

Ultra-supercritical Plant Technology

109. The difference between a supercritical pulverized coal plant and an ultra-supercritical pulverized coal plant is related to the operating pressure and temperature of the steam cycle and the resulting efficiency of the plant. The boiler of a supercritical plant has an operating temperature of approximately 1,085 degrees Fahrenheit at a pressure of approximately 3800 pounds per square inch. A new supercritical plant has a thermal efficiency of approximately 38 percent and a heat rate of 8,988 British Thermal Units (BTUs) per kilowatt-hour. An ultra-supercritical plant boiler operates with higher temperatures than a supercritical

plant and at pressures near 1400 degrees Fahrenheit for a one percent gain in efficiency compared to a supercritical plant boiler.

110. Montana-Dakota witness Duane Steen testified that the cost of an ultra-supercritical plant could be \$2 million to \$10 million higher than that of a supercritical plant.

111. The record shows that there are approximately 160 existing supercritical plants in the United States and over 500 worldwide. There are approximately 15 ultra-supercritical plants operating worldwide, most are in Japan where the fuel delivery cost is very high. The ultra-supercritical plants in operation today do not have long-term operating experience.

112. The Big Stone II co-owners are considering the choice between the ultra-supercritical technology and the supercritical technology for the Big Stone II project and that decision will not adversely affect the basic design of the plant.

Wind Generation and Gas-Fired Generation

113. If Big Stone II is not built, an alternative means of acquiring baseload resources will be required. Likely alternatives to supply 500 MW of baseload power are few, and increased natural gas generation would be a probable result, either as a primary or backup fuel supply, or as power purchased from the pool.

114. Natural gas (and petroleum) prices are much more volatile than coal prices. Because of this, regions with more coal-fired power in their generation mix tend to have more stable power rates.

115. Natural gas markets are increasingly becoming international, and increasingly subject to many of the same types of price spikes and volatility as seen with petroleum.

116. While CO₂ requirements and/or pricing would affect the costs of using coal at Big Stone II, it would also affect the costs of using natural gas. Gas costs would be affected both by the direct effect of CO₂ pricing on natural gas' CO₂ emissions, and also by the potential rise in market price and volatility for the fuel.

117. The volatility of natural gas prices creates a highly significant risk factor for an electric generation resource that relies on natural gas. If Big Stone II were replaced with gas-fired capacity, an increase in gas prices of only \$1/MMBtu would increase generation costs by as much as \$28,000,000 in a single year.

118. North Dakota's participation in the Midwest ISO exposes it to a natural gas price volatility risk that is much larger than its actual percentage of generation.

119. North Dakota households are at greater risk from natural gas price spikes than most other states. Non-electric residential energy uses in North Dakota indicate higher than average natural gas and petroleum consumption, even while household income is lower than average. Accordingly, if natural gas supplies are constrained in supply and/or subjected to price spikes, residences can be hit twice – once in their direct consumption of fuel, and again in their use of natural gas-fueled electricity.

120. The Applicants testified that the cost difference for an investor owned utility between wind and other forms of generation is utility specific and project specific.

121. Electricity from wind driven generation facilities is not currently considered a resource for baseload energy. Baseload resources are required to be dispatchable, meaning they can be scheduled to run at a specified load for a given duration. Since the wind blows intermittently and at different velocities, wind power cannot be dispatched like a coal plant can.

122. The record discloses that wind turbines are typically capable of achieving capacity factors in the range of 30-40%. A coal plant like Big Stone II approaches a 90% capacity factor. In MAPP, wind generation is generally accredited for reserve obligation purposes between 5 and 20 percent. Under the MISO formula, at least 300 megawatts of wind generation capacity would need to be installed in order to provide 60 megawatts of baseload resource.

123. Otter Tail accredits wind generation at about 15 percent in the summer peak month and 20 percent in the winter peak month.

124. Burns & McDonnell's analysis assumes the co-owners would not own wind turbines, but would have power purchase agreements for 600 megawatts of wind. Although the Burns & McDonnell analysis does include sensitivity analysis that assumes extension of the federal production tax credit, they assume no extension of the federal production tax credit. Burns & McDonnell assumes a price of \$60 per megawatt-hour for wind and assumes no costs for transmission.

125. Applicants' witness Jeff Greig, representing Burns & McDonnell, testified at the June 2007 hearings that Burns & McDonnell compared Big Stone II and two baseload alternatives incorporated wind into a comparison of baseload alternatives. Greig testified that the Big Stone II coal-fired project was compared with a gas-fired combined-cycle gas turbine plant supplemented with wind to reduce the need to dispatch higher cost gas generation when wind is available. Greig described the alternative as gas-fired capacity with supplemental non-firm wind to lower energy costs. Greig concluded that the proposed Big Stone II was the lower cost baseload alternative than the CCGT + Wind alternative wind. Because wind power is not able to be dispatched and is not a baseload resource, it is necessary to include another source of generation when the wind is calm. The other source of generation often considered with wind generation is a natural gas combined cycle plant. Natural gas plants are more expensive to operate than supercritical coal plants and the cost of natural gas is more volatile than the cost of coal. Further, operation and maintenance costs for gas plants due to continued turbine-cycling stresses.

126. For purposes of analyzing combined wind plus gas generation, the Burns & McDonnell analysis assumes a gas cost of \$7.60 per million BTU. Burns & McDonnell calculated a busbar cost for wind plus combined-cycle gas turbine of \$80.78 per megawatt-hour.

127. Whether a natural gas plant is considered as a replacement for Big Stone II or a backup source for wind generation resources, this option is more costly than Big Stone II.

128. Under a renewable portfolio standard in the State of Montana for 2010, Montana-Dakota constructed the Diamond Willow wind project, a 20 MW wind farm in Montana. Witness Duane Steen stated at the June 2007 hearings that the Montana-Dakota's least-cost planning model did not pick wind generation as a least cost resource option and that any wind generation included in the current least cost planning model is forced to be part of Montana-Dakota's resource mix.

129. Based on updated modeling results presented at the April 2008 hearings, Montana-Dakota's least cost planning model includes the Big Stone Unit II project, a new 43.5 MW gas peaking resource, a combination of energy-efficiency programs, and the 20 MW Diamond Willow wind project.

130. In the updated resource modeling, Montana-Dakota incorporated 219 MW of wind capacity or 40% of peak demand for 2015 and 25 percent to 35 percent of energy sales in 2015 (based upon a 38 percent or 52 percent capacity factor for the wind generation).

131. The cost of wind generation is approximately \$2,000 per kilowatt. A gas-fired turbine to back up the wind generation costs about \$900 per kilowatt. Wind generation would also require transmission facilities that accommodate approximately 100 percent of the wind generation capacity even though the wind generation is credited only a 20 percent capacity factor.

132. Otter Tail's resource plan includes about 160 MW of new wind resources. Otter Tail already has a number of purchase power agreements in place now. Montana-Dakota entered into several power purchase agreements for wind power in the past few years but the project developers failed to construct the turbines.

133. DRC witness David Schlissel testified at the June 2007 hearings that Otter Tail has biased the results to the disadvantage of wind by failing to properly consider the production tax credit and by limiting the amount of wind the model could determine. Mr. Schlissel also testified that assuming that any future wind power would be purchased rather than owned biased the results against wind.

134. PA's model used in the optimal resource study for Montana-Dakota allowed up to almost 200 MW for analysis. PA's analysis included two wind resources installed by 2012 and prior to Big Stone II and the model continued to select the same resources including Big Stone II.

135. DRC witness Mr. Schlissel testified that Otter Tail and Montana-Dakota have not studied the amount of wind their systems could accommodate given their existing gas peaking plants.

136. The Commission finds that, even though a natural gas combined cycle/wind generation facility is not currently the least cost resource, the resource planning activities by Otter Tail and Montana-Dakota indicate that wind generation should be a part of the future addition of generation resources for both companies.

Integrated Gasification Combined Cycle (IGCC) Technology

137. Montana-Dakota witness Stomberg testified that IGCC plants are being proposed around the country and that there are two IGCC plants in the United States functioning commercially for generation of electricity. Ms. Stomberg testified that the IGCC technology is in the developmental stage and may become more economical in the future.

Other Alternative Electric Facilities and Technologies Findings

138. The Big Stone co-owners examined such renewable options as hydro, solar, geothermal, landfill gas, fuel cells, and micro-turbines.

139. The Commission finds that it is reasonable and prudent to select either a supercritical or ultra-supercritical pulverized coal baseload electric generating station in combination with demand-side management and energy conservation programs that prove more cost effective than such plant.

Alternative Electric Facility Sites

140. The Big Stone co-owners conducted an initial screening and identified 38 potential sites in Minnesota, South Dakota, and North Dakota, the primary service territories that will be served by the new generating plant. Eight primary locations were selected based on infrastructure for coal delivery, electric transmission from the plant, and water resources for generating facility operation. Two of those sites were eliminated because of nearby residences and lack of available land.

141. The six sites selected for further consideration by project participants were:

- Big Stone, Grant County, South Dakota
- Coyote, Mercer County, North Dakota
- Fargo, Cass County, North Dakota
- Dickinson, Wright County, Minnesota
- Glenham, Walworth County, South Dakota
- Utica Junction, Yankton County, South Dakota

142. The criteria and criteria weighting used to evaluate and score the sites were:

- Water Supply - 20%
- Fuel Lines - 20%
- Transmission - 20%
- Environmental - 15%
- Air Quality - 15%
- Other -10%

143. The Big Stone site received the highest weighted score mostly due to existing infrastructure. The existing pump house and pipeline used for Big Stone I are adequate to supply the cooling water needed for Big Stone II without any changes. With the exception of some concern during drought years, Big Stone Lake, the water source for Big Stone I, has adequate

water availability. The existing rail line and coal unloading facilities are adequate for Big Stone II without any modifications. For solid waste, an existing disposal area has adequate storage for both units for a number of years.

144. The site benefits also include existing roadways and existing plant staff. Use of existing transmission corridors will minimize the impact of transmission additions.

145. Big Stone I and Big Stone II will share a single common wet scrubber for controlling SO₂ emissions. With the new scrubber, sulfur dioxide emissions may be less from the two units than the current sulfur dioxide emissions from Big Stone I.

146. A concern about the Big Stone site is that coal delivery is by a single rail carrier.

147. The Applicants considered the possibility of building a new generating facility at the Coyote Station site in North Dakota. They state the site is viable for generation expansion and has an adequate water supply through a pipeline from the Missouri River.

148. Advocacy staff witness Terry Deason identified three low ratings that may be unwarranted for the Coyote site including air space, water supply, and highway access. He increased those scores and recalculated the site rating to find that the Coyote site attains the second highest score and only 12.6 points below the Big Stone site. He testified that if more weight were given to the Fuel Lines criteria (fuel delivery competition), the Big Stone site advantage over the Coyote site is reduced to less than 5 points.

149. Mr. Deason concluded that the Coyote site should remain a viable candidate site for future generation expansion plans.

150. Montana-Dakota considered the option of participating in the Lignite Vision 21 Program. The goal of the Lignite Vision 21 Program is to construct a coal-fired electrical generating plant in North Dakota employing North Dakota coal and the latest clean-coal technology. The North Dakota Industrial Commission has matching funds available up to \$10 million for the investigation and construction of a lignite-fired plant. Montana-Dakota worked with other utilities to investigate the feasibility of a 500 MW lignite fired plant at Gascoyne, North Dakota.

151. Unable to locate a utility interested in joining in a 500 MW lignite facility in North Dakota, Montana-Dakota considered downsizing a lignite plant to 175 MW. However, Montana-Dakota determined that a 175 MW coal-fired generating facility at the Gascoyne site would be more expensive than a plant at the Big Stone site, which offers existing unit train coal unloading facilities, water treatment, roads, mobile equipment, control room, operators and maintenance employees and a fuel oil system.

152. In 2006, Strategist® modeling used by Montana-Dakota determined that Big Stone II would be approximately 30% less costly than a Gascoyne plant.

153. The Commission finds that it is reasonable and prudent to construct a baseload generating facility at the Big Stone site.

From the foregoing Findings of Fact, the Commission makes the following:

Conclusions of Law

1. Any of the foregoing Findings of Fact more properly designated as Conclusions of Law are hereby adopted as such.
2. The North Dakota Public Service Commission has jurisdiction over this matter pursuant to N.D. Cent. Code § 49-05-16.
3. The Applicants have established the need for additional generating resources of Big Stone Unit II facility and associated transmission facilities as required by N.D. Cent. Code § 49-05-16.
4. The Applicants have fully considered alternatives to building Big Stone Unit II as required by N.D. Cent. Code § 49-05-16.
5. The Applicants' resource addition of Big Stone Unit II is reasonable and prudent pursuant to N.D. Cent. Code § 49-05-16.
6. The Applicants' Application for an Advance Determination of Prudence should be granted.

From the foregoing Findings of Fact and Conclusions of Law, the Commission makes the following:

Order

The Commission orders:

1. Otter Tail Corporation's request for advance determination of prudence for ownership of up to 130 MWs in the proposed Big Stone II, and associated transmission, is granted subject to the following conditions:
 - a. Otter Tail shall implement the demand-side management and conservation programs that are more economic resources than Big Stone II (Table OTP-1 and Table OTP-2 in Exhibit 227)
 - b. Within 180 days, Otter Tail shall file tariffs in North Dakota, for Commission approval, with supporting documentation, to implement the demand-side management and conservation programs contained in Table OTP-1 and Table OTP-2 in Exhibit 227.
2. Montana-Dakota Utilities Co.'s request for advance determination of prudence for ownership of up to 133 MWs in the proposed Big Stone II, and associated transmission, is granted subject to the following conditions:

- a. Montana-Dakota shall implement the demand-side management and conservation programs, identified in Montana-Dakota's most recent integrated resource plan, that are more economic resources than Big Stone II.
- b. Within 180 days, Montana-Dakota shall file tariffs in North Dakota, for Commission approval, with supporting documentation, to implement the demand-side management and conservation programs.

3. The Applicants shall file a report with the Commission, prior to construction, on the decision of whether to build a supercritical coal unit or an ultra supercritical coal unit. The report shall include information regarding savings on fuel costs, savings on CO₂ emissions, differences in costs between the two types of plants, as well as other factors included in the decision making process.

4. Otter Tail and Montana-Dakota each shall file reports, as required by North Dakota Century Code Section 49-32-04, annually on the State renewable and recycled energy objective in North Dakota Century Code Section 49-02-28. These renewable reports shall also include information on renewable and recycled energy purchased specifically within the State of North Dakota.

5. The Applicants shall advise the Commission quarterly beginning January 1, 2009, of the progress in obtaining all necessary approvals; permits, and licenses from other regulatory bodies and of the anticipated date of commencement of construction.

6. The Applicants shall advise the Commission when construction of Big Stone II actually commences.

7. The Applicants shall provide a forecasted budget for construction costs for the upcoming year beginning on January 1, 2009. Each subsequent report filed on January 1 shall include an analysis of any deviations from the forecasted budget and the actual expenditures for the year and an explanation of changes in forecasts for future years.

8. The Applicants shall immediately advise the Commission of any decision by the Applicants not to go forward with construction of Big Stone II and of any factors that jeopardize the viability or continuation of the project.

9. The Applicants shall continue present operational practices for management to the coal burned at Big Stone. The Applicants will maintain reports regarding implementation of these practices and will provide these reports to the Commission upon request.

10. The Applicants shall conduct a study of the number of rail cars necessary to serve Big Stone II and do a cost benefit analysis of whether any additional railcars should be lightweight aluminum railcars. The Applicants shall submit the results of that study to the Commission by January 1, 2011.

11. The Applicants shall conduct a study to calculate the costs and impacts of maintaining a higher coal inventory level. The Applicants shall compare the costs of

maintaining a higher level of coal with the costs and likelihood of future curtailments of shipments of coal from inadequate fuel deliveries. The Applicants shall submit the results of the study to the Commission with a recommendation on the appropriate inventory level by January 1, 2011.

12. Otter Tail shall continue to monitor potential carbon dioxide regulation and provide an update of the cost-effectiveness of Big Stone II prior to commencement of construction.

PUBLIC SERVICE COMMISSION

Tony Clark
Commissioner

Susan E. Wefald
Commissioner

Kevin Cramer
Commissioner

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Corporation
06-481
Advance Determination of Prudence
Application

Case No. PU-

Montana-Dakota Utilities Co., a Division
of MDU Resources Group, Inc.
Advance Determination of Prudence
Application

Case No. PU-06-482

PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER

_____, 2007
_____, 2008

Appearances

Commissioners Susan E. Wefald, Kevin Cramer and Tony Clark.

Todd J. Guerrero, Attorney at Law, Lindquist and Vennum, P.L.L.P., 4200 IDS Center, 80 South Eighth Street, Minneapolis, MN 55402 and Mark Bring, Associate General Counsel, Otter Tail Corporation, 215 South Cascade Street, Fergus Falls, MN 56537, on behalf of Otter Tail Corporation.

Daniel S. Kuntz, Associate General Counsel, MDU Resource Group, Inc., PO Box 5650, Bismarck, ND 58506-5650, on behalf of Montana-Dakota Utilities Co.

William Binek, Chief Counsel, Public Service Commission, State Capitol, 600 E Boulevard Ave., Bismarck, North Dakota 58505, on behalf of the Public Service Commission advocacy staff.

Jack William Breen Jr., Attorney-at-Law, 717 Williams Street, Bismarck, ND 58501-2483 and Carrie LaSeur, Attorney-at-Law, 319 3rd St NW, Mount Vernon, IA 52314 on behalf of Intervenors Mark Trechock and Dakota Resource Council.

Al Wahl, Administrative Law Judge, Office of Administrative Hearings, 1701 North Ninth Street, Bismarck, North Dakota 58501-1882.

Preliminary Statement

On November 14, 2006, Otter Tail Corporation doing business as Otter Tail Power Company (Otter Tail) filed an application under North Dakota Century Code Section 49-05-16 for advance determination of prudence of Otter Tail's participation and ownership interest in the Big Stone II Generating Plant, Case No. PU-06-481.

On November 15, 2006, Montana-Dakota Utilities Co. (Montana-Dakota) filed an application under North Dakota Century Code Section 49-05-16 for advance determination of prudence of Montana-Dakota's participation and ownership interest in the Big Stone II Generating Plant, Case No. PU-06-482.

On December 1, 2006, Otter Tail and Montana-Dakota (Applicants) each filed direct testimony in support of its application.

On December 29, 2006, the Commission issued a Notice of Filing and Notice of Intervention Deadline in both cases setting February 15, 2007 as the intervention deadline.

On January 10, 2007, the commission issued a Notice of Hearing scheduling a hearing for April 17, 2007. The Commission identified the following issues in its Notice of Hearing:

1. Whether the resource addition is reasonable and prudent.
2. Whether the applicants have need for additional generating resources.
3. What alternatives exist for meeting additional generation needs?

On January 24, 2007, the Commission issued a Notice of Public Input Sessions. The Commission held Public Input Sessions February 5, 2007 in Bismarck and February 12, 2007 in Jamestown.

On February 15, 2007, Mark Trechock, as a ratepayer and as Staff Director of the Dakota Resource Council (DRC) and DRC filed a Petition to Intervene in both dockets.

On February 23, 2007, the Commission granted the Petition to Intervene.

On March 7, 2007, the Commission issued a Notice of Rescheduled Hearing scheduling the hearing for May 29, 2007.

On April 10, 2007, the Applicants filed a Motion in Limine to Exclude Evidence on Environmental Externality Values and Request to Amend Scheduling Order.

A Prehearing Conference was held on April 20, 2007 to hear oral argument of, consider, and rule upon Applicants' Motion in Limine and to revise the schedule for testimony, briefs, hearing dates, and proposed orders.

The Administrative Law Judge granted the Motion in Limine on April 25, 2007 prohibiting the introduction of any evidence of "environmental externality values."

Intervenors waived the requirement for the Commission to issue an order within seven months of filing on April 30, 2007. Otter Tail waived the requirement on May 1 and Montana-Dakota on April 30.

The Commission issued a second Notice of Rescheduled Hearing on May 16, 2007 scheduling the hearing for June 26, 2007.

On May 31, 2007 Commission Advocacy Staff and the Intervenors filed direct testimony in both cases.

On June 13, 2007 Applicants moved to strike portions of the testimony of David A. Schlissel. On June 22, 2007 the Administrative Law Judge issued his Order Upon Motion to Strike.

The Commission held a hearing on both cases June 26, 27, and 28, 2007 in the Commission Hearing Room. Administrative Law Judge Alan Wahl presided at the technical hearing.

On September 17, 2007, prior to a final Commission decision, the Applicants wrote to the Commission and advised that two of the Big Stone II co-owners, Great River Energy and Southern Minnesota Municipal Power Agency, had withdrawn from the project and requested that the matter be suspended until the Applicants could re-analyze the situation and determine how to proceed.

On January 21, 2008, Applicants wrote to Judge Wahl and requested that supplemental hearings be held on the Applicants' prudence application.

On February 1, 2008, Judge Wahl issued his Order Scheduling Proceedings for Supplemental Hearings, establishing dates for the submission of pre-filed written testimony and scheduling three days of hearing on April 28, 29, and 30, 2008.

On April 15, 2008, Applicants filed a motion to strike portions of the pre-filed testimony of Intervenors' witness David A. Schlissel. On April 22, 2008, Judge Wahl granted Applicants' Motion in part, striking certain portions of the Schlissel testimony.

The Commission held a hearing on both cases on April 28, 29, and 30, in the Commission hearing room. Administrative Law Judge Alan Wahl presided at the hearing.

Advance Determination of Prudence and Environmental Externality Laws

North Dakota Century Code Section 49-05-16 provides that a public utility proposing to construct an energy conversion facility for the purpose of ensuring reliable electric service to its customers may file an application with the Public Service Commission for an advance determination that an electric resource addition is reasonable and prudent. Section 49-05-16 states:

Advance determination of prudence. A public utility proposing to construct, lease, or make improvements to an energy conversion facility,

renewable energy facility, transmission facility, or proposed energy purchase contract from another entity or person for the purpose of ensuring reliable electric service to its customers may file an application with the commission for an advance determination of prudence regarding the proposal. The commission may order that expenses associated with investigating the application made by the public utility for prudence of a resource addition be paid by the public utility in accordance with section 49-02-02.

1. The commission may issue an order approving the prudence of an electric resource addition if:
 - a. ~~a.~~ The public utility files with its application a projection of costs to the date of the anticipated commercial operation of the electric resource addition;
 - b. ~~b.~~ The commission provides notice and holds a hearing, if appropriate, in accordance with section 49-02-02; and
 - c. ~~c.~~ The commission determines that the resource addition is reasonable and prudent. For facilities located or to be located in this state the commission, in determining whether the resource addition is reasonable and prudent, shall consider the benefits of having the energy conversion facility, renewable energy facility, transmission facility, or facility generating the energy to be purchased located in this state.
2. The commission order must be rendered no later than seven months after the public utility files its application requesting a prudence determination of an electric resource addition.
3. A resource addition approved by the commission is subject to annual reporting requirements until commercial operation of the resource addition.
4. The commission's order determining prudence of the resource adjustment is binding for ratemaking purposes.
5. If at any time following an initial commission order, the commission, following a subsequent hearing, determines that continuation of a project is no longer prudent or that its prior order should be modified, the public utility may recover in its rates, and in a timely manner consistent with the public utility's financial obligations, the amounts the public utility already has expensed, incurred, or obligated on a project, including interest expense and a return on equity invested in the project up to the time the new order is entered even though the project may never be fully operational or used by the public utility to serve its customers.
6. There is a rebuttable presumption that an energy conversion facility, renewable energy facility, transmission facility, or facility generating the energy to be purchased which is located in the state is prudent.

North Dakota Century Code Section 49-02-23 governs the use, by the Commission or the electric utility, of environmental externality values when considering electric resources or electric rates. Section 49-02-23 states:

Consideration of environmental externality values prohibited. The commission may not use, require the use of, or allow electric utilities to use environmental externality values in the planning, selection, or acquisition of electric resources or the setting of rates for providing electric service. Environmental externality values are numerical costs or quantified values that are assigned to represent either:

1. Environmental costs that are not internalized in the cost of production or the market price of electricity from a particular electric resource; or
2. The alleged costs of complying with future environmental laws or regulations that have not yet been enacted.

Having allowed all interested persons an opportunity to be heard and having heard, reviewed and considered all testimony and evidence presented, the Commission makes the following:

Findings of Fact

The Parties

1. Otter Tail Corporation is a Minnesota corporation authorized to do business in the State of North Dakota as a foreign corporation. Otter Tail is doing business in the State of North Dakota as a public utility. Otter Tail operates an integrated electric system in portions of Minnesota, North Dakota, and South Dakota. Approximately 43% of Otter Tail's customers are in North Dakota.

2. Montana-Dakota Utilities Co., a division of MDU Resources Group, Inc., is a Delaware corporation authorized to do business in the State of North Dakota as a foreign corporation. Montana-Dakota is doing business in the State of North Dakota as a public utility. Montana-Dakota operates an integrated electric system in portions of Montana, North Dakota, and South Dakota. Approximately 65% of Montana-Dakota's customers are in North Dakota.

3. DRC is an environmental group organized in the state of North Dakota and a ratepayer of Montana Dakota Utilities Co. Mark Trechock is Staff Director of the DRC and is a ratepayer of Montana-Dakota.

The Proposed Resources

4. Otter Tail and Montana-Dakota along with ~~five~~^{three} other utilities are proposing to construct a ~~630~~⁵⁰⁰ MW nominal capacity supercritical, pulverized-coal electric generating plant (Big Stone II) to be located adjacent to the existing plant in Big Stone City, South Dakota.

The existing Big Stone I site is approximately two miles northwest of Big Stone cityCity, 1.7 miles from the nearest point of Big Stone lakeshore, and approximately two miles from the Minnesota border.

5. The Applicants could decide at a later time to increase the size of the plant to a nominal 580 MW to accommodate an additional owner or owners who are brought into the project.

6. ~~5-~~The proposed energy conversion facility will not be located in North Dakota so the rebuttable presumption in N.D.C.C. Section 49-05-16 (6) does not apply.

7. ~~6-~~Otter Tail and Montana-Dakota each plan to contribute 19.33 percent of Big Stone II, which is 121.8 megawatts (MW) nominal capacity each. Otter Tail and Montana-Dakota would also each contribute 19.33 percent of the proposed transmission facilities.resource planning shows that it has a need for up to 170 MW of Big Stone II but that they intend to own up to 130 MW, and Montana-Dakota intends to own up to 133 MW. These amounts could change slightly if the plant size is increased from 500 to 580 MW.

8. ~~7-~~The Applicants testified that Big Stone II would cost approximately \$1.4421.272 billion in actual dollars with an in-service ~~start~~ startup date of mid-2012-2013. Costs are escalating due to inflation at about 6% annually.

9. ~~8-~~The co-owners also propose to construct two new high voltage transmission lines to interconnect Big Stone II to the transmission grid. A 48-mile line from Big Stone 230 kilovolt (kV) Substation to the Morris Substation near Morris, Minnesota, line to be constructed at 230 kV. A 90-mile line from Big Stone 345 kV Substation to Granite Falls, Minnesota, to be constructed at 345 kV but operated initially at 230 kV.

10. ~~9-~~The transmission facilities will not be located in North Dakota so there is not a rebuttable presumption that the facility is prudent.

11. ~~10-~~The Applicants state that the transmission interconnection and delivery service facilities would cost approximately \$238249 million.

12. ~~11-~~Big Stone II is designed to be a baseload facility. A baseload facility is one that is intended to be operated 24 hours a day, 365 days per year. A baseload facility is dispatchable, therefore, output can be controlled to meet system needs. Big Stone II is expected to have an 88 percent capacity factor.

13. ~~12-~~Fuel for Big Stone II would be Powder River Basin sub-bituminous coal from a number of mines located in Wyoming and Montana, the same fuel and fuel source used at Big Stone I.

14. ~~13-~~Big Stone II and Big Stone I will share one wet flue gas desulfurization system (wet scrubber) to control sulfur dioxide emissions. Big Stone II will also incorporate a fabric filter house to control small particle emissions and mercury and a selective catalytic reduction to control emissions of nitrogen dioxide.

15. ~~14-~~The co-owners intend to own Big Stone II as tenants in common, with each utility having an undivided interest in the entire project. Under an Operating and Maintenance Agreement, Otter Tail would operate and maintain Big Stone II. The agreement allows for future change of an operating agent if the owners choose.

Otter Tail's Need for Electric Resources

16. ~~15-~~Otter Tail is a winter peaking utility but its ~~base load~~baseload capacity needs are being driven by summer season demand.

17. Otter Tail currently serves the electric requirements of its customers with company-owned generation resources at Big Stone I; Coyote Station in Beulah, North Dakota; Hoot Lake Station near Fergus Falls, Minnesota; and a number of peaking units including Jamestown, North Dakota, and other locations in South Dakota and Minnesota. These facilities combined have a nominal capacity approaching 700 MW.

18. ~~16-~~Otter Tail currently serves the electric requirements of its customers with company-owned generation resources of approximately 699 MW including As of the June 2007 hearings, Otter Tail provided approximately 244 MW of summer capacity from Big Stone I; approximately 149 MW of summer capacity from the Coyote Station near Beulah, North Dakota; approximately 143 MW of summer capacity from the Hoot Lake Station near Fergus Falls, Minnesota; peaking units totaling 43 MW of summer capacity at Jamestown, North Dakota, a unit at Lake Preston, South Dakota totaling 19.74 MW of summer capacity, a unit at Solway, Minnesota totaling 45 MW of summer capacity, approximately 4.2 MW of small baseload hydro in Minnesota, and several smaller diesel units that total approximately 3 MW of summer capacity.

19. ~~17-~~Under contract, Otter Tail resources include a variety of owned and purchased resources, including but not limited to 2 MW of coal-fired generation from the Minnkota Power Center No. 1 plant in western North Dakota, approximately 2585 MW nameplate capacity of wind generation, and a number of customer-owned diesel units under contract for peaking duty totaling approximately 8.4 MW of summer capacity.

20. ~~18-~~Otter Tail also contracts for 50 MW of Manitoba Hydro capacity. This contract expires in 2011. An additional purchase of power from Manitoba Hydro is not an option since Manitoba Hydro has informed Otter Tail that it no longer has capacity and energy available.

21. Otter Tail has contracted for short-term capacity for the 2008 summer and the 2008 winter seasons to cover capacity deficits.

22. ~~19-~~Otter Tail testified that a wind project at Langdon project would provide Otter Tail with an additional 60 MW. Subsequent to the hearing, Otter Tail filed an application for Public Convenience and Necessity, Commission Case No. PU-07-607, requesting authority for 40.5 MW from the Langdon Wind Energy Center. On November 26, 2007, the Commission issued Certificate of Public Convenience and Necessity No. 5336 to Otter Tail in Case No. PU-07-607 for 40.5 MW of the Langdon wind project. It is presently considering a partial transfer of

the Certificate of Site Compatibility to Otter Tail in Case No. PU-08-159. The Otter Tail 40.5 MW portion of the Langdon wind project became fully operational in January 2008.

23. ~~20-~~ Otter Tail's forecast indicates energy requirements increasing at an average annual rate of 2.4%, from approximately 4,000,000 annually from over 4,500,000 MWh in 2005 to approximately 5,100,000 2008 to over 5,000,000 MWh in 2014.

24. ~~21-~~ Otter Tail's forecast indicates a winter season capacity deficit of 15 MW in 2007 and increasing to approximately 160 MW by 2012 and 193 MW by 2014. The capacity deficit is increasing due to a combination of events, including system load growth, the expiration of certain purchased power contracts, and the closing of a customer owned generator. In addition, Otter Tail has been selected to provide power to the new Tharaldson Ethanol Project, which could require as much as 22 MW of generating capacity.

22. ~~22-~~ Otter Tail's 19.33% share of Big Stone II is 121.8 MW.

Montana-Dakota's Need for Electric Resources

25. ~~23-~~ Montana-Dakota is a summer peaking utility ~~but its peak is for a very short time period.~~

26. ~~24-~~ Montana-Dakota currently serves the electric requirements of its customers with approximately 366 MW of baseload coal generation from five units, and approximately 110 MW of gas or gas and oil fired combustion turbines for peaking requirements. In addition, it has purchase agreements for summer capacity up to 100 MW.

27. ~~25-~~ Montana-Dakota had a long-term power purchase agreement with Basin Electric Power Cooperative for 66.4 MW of generation that expired October 31, 2006.

28. ~~26-~~ Montana-Dakota is ~~constructing~~operates a 20 MW wind farm in Montana.

29. ~~27-~~ Montana-Dakota's peak long-term load obligation ~~grows at 5%~~ is expected to grow at approximately 1% per year. ~~Montana-Dakota forecasts's long-term forecast projects that energy use will grow at an average annual rate of 1.3% over the next twenty years. [Check this- 5%]~~ 1.2%.

30. ~~28-~~ Montana-Dakota currently has a capacity deficit of approximately 83 MW between its forecasted summer peak obligation during 2007 and its owned generation capacity. Montana-Dakota is currently meeting that capacity deficit through a capacity purchase agreement that could be extended through 2012. The ~~energy~~capacity deficit will be approximately 117 MW by 2013. MDU is currently meeting any energy deficits through purchases in the MISO energy market as needed.

29. ~~29-~~ Montana-Dakota's 19.33% share of Big Stone II is 121.8 MW.

Common Need for Electric Resources

31. ~~30-~~Both utilities are currently experiencing capacity deficits at times.

32. ~~31-~~The cost of energy from the MISO market can be uncertain and has been high for both on ~~u~~peak and off-peak demand. In January and February 2002, the average price was \$20/MWh of energy. In 2007, the average price was close to \$80 per MWh. This is indicative of supply deficiencies in the MISO region.

33. ~~32-~~There was no dispute among the parties concerning the need for additional electric system resources to ensure reliable electric service to customers of Otter Tail and Montana-Dakota.

34. ~~33-~~The Commission finds that both Otter Tail and Montana-Dakota have a need for additional electric system resources to ensure reliable electric service to customers.

Electric Resource Alternatives

35. ~~34-~~Both Otter Tail and Montana- Dakota engage in long-term planning to identify likely courses of action to continue providing reliable, low-cost electricity to meet the electric energy needs of their customers. This planning considers load forecast, all existing supply, demand-side management and conservation assets, the financial structure of the utility, and available supply, demand-side management, and energy conservation alternatives.

36. ~~35-~~Both Otter Tail Power and Montana-Dakota have implemented various conservation and demand-side management programs to reduce the amount of energy that is used and the generating capacity that would otherwise be required. These programs include load management incentives, rebates, discounts, and other conservation promotions.

Otter Tail Electric Resource Alternatives

37. ~~36-~~There is no evidence in the record that Otter Tail issued Requests a Request for Proposal (RFP) from Manitoba-Hydro to fill the fill the need for resources or that Otter Tail retained a consultant to perform an independent analysis regarding resource alternatives.

38. ~~37-~~Otter Tail witness Brian Morloek testified that, in developing its 2005 resource plan, Otter Tail ~~contracted~~contacted all utilities in the Otter Tail area to determine whether they would have generation that could be provided in response to an RFP. The answer, other than electricity from Manitoba Hydro, was no. Otter Tail also contacted a number of independent power producers that declined to offer a generation resource proposal.

Otter Tail Demand-side Management and Conservation

39. ~~38-~~Otter Tail includes demand-side management and conservation efforts in its forecasting and resource planning. Resource planning performs a side-by-side consideration of demand-side and supply-side resources to identify the most economic plan.

40. ~~39-~~ Approximately 13% (or more) of the capacity needs in the company's 2005 Resource Plan for the 2006 to 2020 planning period, sometimes referred to as the 2006 to 2019 planning period, is identified as coming from conservation and DSM measures.

41. ~~40-~~ Otter Tail's 2005 Resource Plan includes implementation of about 67 MW of conservation and DSM, all in Minnesota. Otter Tail has projected an incremental annual DSM energy savings over the 2006-2020 planning period of about 8 million to 11 million kWh annually.

42. ~~41-~~ Otter Tail made a late-filed exhibit that identifies several DSM programs selected for implementation prior to Big Stone II during the 2006 to 2020 planning period. Those programs total a 21.6 kW demand savings potential.

43. ~~42-~~ Otter Tail has indicated it will be implementing additional conservation measures not only in Minnesota, but in North Dakota and South Dakota as well.

44. ~~43-~~ DSM and conservation are important parts of a resource plan for Otter Tail.

45. Otter Tail significantly updated and modified the level of conservation input into the modeling following the June 2007 hearings before the Commission. Otter Tail is expecting to implement more North Dakota conservation programs in the future, has filed a conservation plan in South Dakota, and has a new statutory directive to reduce retail sales in Minnesota. Otter Tail attempted to account for all these reductions in energy consumption in its modeling.

46. With regard to North Dakota and South Dakota, Otter Tail incorporated energy savings equal to about 0.5% of annual retail sales in those two states. With regard to Minnesota sales, the model was scaled up to realize conservation savings of 1.5% of Minnesota retail sales averaged over the previous three years as specified by the new Minnesota law. Historically, Otter Tail has obtained conservation savings of approximately 0.6% - 0.7% of annual Minnesota kWh sales, so this assumption was quite conservative.

Montana-Dakota Electric Resource Alternatives

47. ~~44-~~ Montana-Dakota considered several supply options at the loss of the 66.4 MW contract with Basin Electric. The options considered included an extension of the Basin Electric contract, a lignite plant at Gascoyne, gas turbines, participation in Big Stone II, RFP for supply, and purchases from the MISO market.

48. ~~45-~~ In 2004, Montana-Dakota issued a Request for Proposal (RFP) to fill the void left by the expiration of the contract with Basin Electric. Montana-Dakota received three responses of which one was a qualified bid. Montana-Dakota stated it rejected the bid because it only offered a small portion of the needed capacity.

49. ~~46-~~ In 2006, Montana-Dakota issued another RFP for baseload coal capacity and energy for the 25 to 35-year periods beginning June 1, 2011 and June 1, 2016. Montana-Dakota received two proposals. Montana-Dakota stated it rejected one because it did not meet Montana-Dakota's requirements and the other due to uncertain delivery.

50. ~~47-~~Montana-Dakota's expansion modeling in 2003 selected gas turbines. Montana-Dakota did not consider this a viable option due to cost to customers.

51. ~~48-~~Montana-Dakota requested PA Consulting Group, Inc. (PA) to perform a capacity expansion modeling analysis to help evaluate an overall optimal resource plan for Montana-Dakota.

52. ~~49-~~The record indicates PA based its expansion analysis upon input assumptions from a variety of resources including Montana-Dakota, PA, and the joint project sponsors.

53. ~~50-~~The record indicates the expansion analysis completed by PA was an independent analysis prepared on behalf of Montana-Dakota; assumptions were not jointly developed with Otter Tail or other project co-owners.

54. ~~51-~~The record indicates PA's expansion analysis assumed no off-system sales from Big Stone II in its test for the least cost mix of resource alternatives.

Montana-Dakota Demand-side Management and Conservation

55. ~~52-~~Montana-Dakota includes demand-side management and conservation efforts in its forecasting and resource planning. Resource planning performs a side-by-side consideration of demand-side and supply-side resources to identify the most economic plan.

56. ~~53-~~Montana-Dakota has implemented interruptible rates and launched a number of DSM programs, including a program promoting high-efficiency residential air conditioning and a commercial lighting retrofit program estimated to provide a demand reduction of 11 MW as reflected in Montana-Dakota forecasted requirements. Montana-Dakota has identified nine separate programs, including appliance rebates for new efficient appliances, expanded interruptible service arrangements, and commercial air conditioner cycling efforts, that it ~~will implement~~has implemented or is in the process of implementing in its integrated electric system, including North Dakota, and that are expected to provide additional annual demand reductions of 13.8 MW. Montana-Dakota states that annual energy reductions of approximately 6 million kWh are associated with all the measures.

~~54. PA's expansion analysis included additional demand-side management in 2014 and 2015, after Big Stone II.~~

57. ~~55-~~DSM and conservation are important parts of a resource plan for Montana-Dakota.

Big Stone II Energy Facility

Facility Cost

58. ~~56-~~Black and Veatch, engineer and construction manager for the Big Stone II Project, was retained in the summer of 2005 to develop plant system design, provide engineering

and construction services, and obtain competitive quotations on five major plant components (boiler, turbine, fabric filter, wet scrubber, and chimney); ~~—~~ A project cost estimate was prepared after the definition of plant arrangements and configuration were developed in sufficient detail, and after the design criteria for all equipment and material were developed and agreed to by the Big Stone II co-owners.

59. ~~57-~~ Equipment costs include materials and services for all plant components. Construction contracts include labor, materials, and services necessary to erect the plant equipment. Indirect costs include owner's costs including engineering and construction management as well as escalation and reserves allocation.

60. ~~58-~~ The cost estimate prepared by Black and Veatch was based on the following:

- Pricing of all major equipment and systems including receipt of detailed competitive bids for five major components and indicative price quotes for approximately 17 other major pieces of equipment and systems.
- Estimates of cost and quantity of individual construction commodities.
- Estimates of cost and quantity of individual construction labor hours. Local labor rates for the various union crafts (building trades) were obtained and used.
- Estimates of project indirect costs including engineering, construction management, unit startup, property tax, financing, insurance, contingencies, and others as required.
- Inclusion of all other co-owner costs including transmission costs as well as for the Big Stone II personnel and other indirect costs.

61. ~~59-~~ In the summer of 2006, Black & Veatch was retained by the co-owners to provide an up-to-date estimate of the costs of Big Stone II. Cost increases were attributed to global growth in demand for generating plants, increased cost of fabricated materials and specialty engineered equipment, construction commodity cost increases, and labor rate escalation.

62. ~~60-~~ Montana-Dakota witness Rita Mulkern testified at the June 2007 hearings that once Big Stone II goes online, a reduction in its fuel costs is expected.

63. ~~61-~~ The Applicants testified at the June 2007 hearings that the Big Stone II project will be executed on a multiple contract basis, with approximately 110 specific contracts.

64. ~~62-~~ The Commission finds that both Otter Tail and Montana-Dakota have filed a projection of costs to the date of anticipated commercial operation for the proposed electric resource additions as required under North Dakota Century Code Section 49-05-16.

65. The planned Commercial Operation Date (COD) for the Big Stone II project is now 3rd quarter 2013. The Applicants chose to examine two plant sizes as part of their updated analysis – a nominal 500 MW facility and a nominal 580 MW facility. Costs for these plant size alternatives were developed based on project data gathered to-date, commonly-used industry methods, and other factors including expert judgment. A 500 MW plant is estimated to cost \$1.272 billion. A 580 MW plant is estimated to cost \$1.411 billion. The plant efficiency and emissions rates for this range of plant sizes will not be appreciably different from the 630 MW plant size contemplated earlier.

Transmission Alternatives

66. ~~63-~~The existing transmission system limited capacity to add new generation sources. Planning for interconnection of Big Stone II to the electric transmission grid began with a Preliminary Screening Study to evaluate eleven different options for interconnecting Big Stone II to the electric transmission grid. The study was designed to compare alternatives on the basis of capital cost, reliability, system power losses, and impacts to known constrained interfaces in the region. The eleven alternatives were narrowed to five, and then ultimately to two alternatives - (1) a new line from Big Stone to Morris, Minnesota, and a new line from Big Stone to Granite Falls, Minnesota, or (2) a new line from Big Stone to Willmar, Minnesota, and a new line from Big Stone to Granite Falls, Minnesota.

67. ~~64-~~The co-owners then submitted a generation interconnect request to the Midwest Independent Transmission Operator (MISO) and MISO asked Otter Tail Power to perform an Interconnection Study. The Interconnection Study showed that either of the two options would work to interconnect the Big Stone Plant provided proper system enhancements were made within the direct area of the interconnection. Both of the options involved construction of new lines at 230 kV capability. The co-owners prefer the Big Stone to Morris option over the Big Stone to Willmar option (along with a Big Stone to Granite Falls line that is part of either option). Compared to the Willmar line, the Morris line is shorter, less costly, has lower line losses, and utilizes an existing transmission line corridor.

68. ~~65-~~The new transmission lines would improve stability in the region. Constructing the Granite Falls line at 345 kV capability would provide more stability than at 230 kV. The Applicants propose to design the Granite Falls line to be capable of operating at 345 kV but will initially operate at 230 kV.

69. ~~66-~~The Granite Falls initial operation at 230 kV is adequate to provide for interconnection of Big Stone II and Big Stone I. While the 230 kV capability of the Granite Falls line appears to have greater benefit to local utilities, the incremental capability of a 345 kV Granite Falls line appears to have greater system-wide or regional benefit.

70. ~~67-~~The Applicants estimate the incremental cost of constructing a 345 kV Granite Falls line rather than a 250 kV Granite Falls line is \$25 million to \$30 million. The allocation of the transmission costs will be according to a MISO tariff approved by the Federal Energy Regulatory Commission. The allocation of transmission line costs has not been finalized.

71. ~~68.~~ Applicant Otter Tail's witness Timothy Rogelstad testified at the June 2007 hearings that MISO agrees with the proposal for the 230 kV Big Stone to Morris line and the 345 kV Big Stone to Granite Falls.

72. Mr. Rogelstad testified at the April 2008 hearings that the change in size of the Big Stone Unit II facility does not affect the need for the proposed transmission interconnection lines. Any generation facility larger than 150 MW at the Big Stone II site would require more than a 115 kV system. The proposed lines to Morris and to Granite Falls remain the best choice for interconnecting the 500 MW facility.

73. ~~69.~~ The Commission finds that the proposal to construct the 230 kV Big Stone to Morris line and the construction of the Big Stone to Granite Falls line with 230 kV capacity are reasonable and prudent for purposes of interconnecting the proposed Big Stone II to the electric transmission grid.

74. ~~70.~~ The Commission finds that the proposal to construct the Big Stone to Granite Falls line with 345 kV capacity will enhance the potential for development of generation resources on a regional basis and is prudent and reasonable.

Fuel Supply

75. ~~71.~~ Fuel for Big Stone II would be Powder River Basin sub-bituminous coal. Powder River Basin coal is the fuel currently used by Big Stone I. The Powder River Basin is the world's largest single deposit of low-sulfur coal. The Applicants testified at the June 2007 hearings that Powder River Basin coal is the lowest cost delivered coal for electric generators. With the addition of Big Stone II, coal delivery requirements to the Big Stone plants will more than double. Approximately 4-7 coal trains will be required per week once Big Stone II is in operation.

76. ~~72.~~ Burlington Northern Sante Fe Railway (BNSF) is the only company that transports coal to the Big Stone site. In 2006, coal deliverability problems, such as structural failure of rail roadbeds, required that Big Stone I use its reserve coal inventory, and eventually, Big Stone I had to curtail operations. Standard coal inventory at Big Stone I is approximately 30 days.

77. ~~73.~~ In response to coal delivery problems, BNSF has added locomotives, coal cars, additional rail, and other infrastructure, has upgraded other facilities, and increased the number of shipments. BNSF invested \$235 million in 2005 and more than \$600 million in 2006. It was unclear from BNSF whether any of these expenditures have been included in existing tariff rates, but BNSF did indicate that the total cost of the capital expenditures in the long-run is unknown. BNSF indicated that future transportation services will be priced at market rates.

78. ~~74.~~ Commission Advocacy Staff witness Terry Deason testified at the June 2007 hearings that there are a number of operational measures that Otter Tail, the intended the operating agent of Big Stone II and current operating agent of Big Stone I, could implement to minimize coal delivery problems. These measures include monitoring cycle times, monitoring actual numbers of cars per train to compare with a target numbers of cars per train to compare-

with a target number of cars per train, a system to manage train deliveries so unloading times can be minimized, scheduling shipments far in advance, and, the use of light-weight aluminum railcars, and scheduling shipments far in advance. Otter Tail has implemented some of these measures. Otter Tail and Montana-Dakota agree with the recommendations of Mr. Deason.

79. ~~75. Applicants testified that the standard~~Standard coal inventory ~~planned~~maintained at Big Stone II will be between 30 and 45 days. Mr. Deason recommended ~~the Otter Tail maintain 45 days of on-site coal inventory, with the,~~The cost of 15 days additional coal inventory would be shared by the Big Stone II co-owners. ~~Deason estimates that Otter Tail's and Montana-Dakota's contribution of 19.33% each to that cost would be approximately~~ \$600,000. Mr. Deason testified at the June 2007 hearings that the carrying cost of this amount, including income taxes, would be less than \$100,000 per year. Otter Tail's incremental cost of replacement power during the 2006 Big Stone I curtailment period was \$1 million to \$1.7 million.

80. ~~76. Montana-Dakota expressed overall agreement with Deason's recommendations and commits to provide periodic informational filings regarding measures to enhance the timely and efficient delivery of coal, a study on rail cars necessary to serve the plant, and a study to determine the most cost effective coal inventory level. These were the recommendations of Commission Advocacy Staff and Terry Deason. Otter Tail also agrees to comply with all recommendations of~~Commission Advocacy Staff and Mr. Deason. Mr. Deason concluded that advance prudence granted for Big Stone II should be conditioned upon the recommendations. ~~[testimony, findings and order have to be the same]~~

81. Otter Tail is currently purchasing BNSF coal delivery under a tariff price filed with the Surface Transportation Board. Otter Tail is exploring the possibility of a long-term contract with BNSF for the future delivery of coal to the Big Stone plants.

82. ~~77. The Commission finds that the recommendations of Advocacy Staff and Mr. Deason are reasonable and appropriate, and that~~the advance determination of prudence for the proposed Big Stone II and associated transmission facilities should be conditioned upon those recommendations of Advocacy Staff and Mr. Deason.

Fuel Transportation Cost

83. ~~78. Otter Tail witness Ward Uggerud indicated that approximately 65 to 70 percent of the delivered cost of fuel for Big Stone I or for the Big Stone plant is transportation cost and that the cost assumptions for Big Stone II are predicated on the tariffed BNSF rate in place at the time of filing.~~

79. ~~The tariffed BNSF rate has been under regulatory challenge by Otter Tail during this time period so it is reasonable to believe that BNSF chose to not implement some of the dramatic price increases that other coal-hauling utilities experienced. With the failure of Otter Tail's rate case, it is unlikely that this stability will remain in place.~~

80. ~~Otter Tail witness Uggerud believes the BNSF is essentially an unregulated monopoly.~~

84. The Applicants' witness Thomas Crowley testified at the April 2008 hearing that he had independently prepared a delivered coal price forecast for the Big Stone II plant. Mr. Crowley's forecast was lower than Applicants' 2007 forecast. The potential effects of the 2007 forecast on Applicants' modeling were conservative.

85. The current tariff rates for rail transportation reflect the maximum rate allowed by the Surface Transportation Board. Big Stone II is a captive shipper solely reliant on BNSF for rail transportation of PRB coal. If BNSF attempted to unreasonably increase these transportation rates, the STB would act as a backstop and allow Applicants to seek relief.

86. The Applicants estimate that any regulatory changes to BNSF rate levels would result in stationary or marginally lower rates than the rates currently charged for shipments to Big Stone II.

87. At the April 2008 hearings, Mr. Crowley presented an independent rail rate transportation forecast to address the expected future cost of rail transportation of PRB coal to Big Stone II. In developing the forecast, Mr. Crowley considered the rail rate itself, the assumed fuel surcharge BNSF will apply to the rail rate, and the cost of acquiring and maintaining rail cars for the transport of coal from the PRB.

88. At the April 2008 hearings, Mr. Crowley also presented an independent price forecast based on his experience in pricing in coal markets. The forecast considers future demand for coal as well as the impact on demand for PRB coal vis a vis anticipated Clean Air Act, mercury and likely carbon dioxide regulation. The forecast also considers PRB capacity and production limitations, employment growth and inflation.

89. ~~81-~~ According to witness Brautovich, BNSF spent over \$600 million in 2006 and is on pace to spend \$600 million in 2007 on capital expenditures to haul Powder River Basin coal. This is an increase of \$300 million over, or a doubling of, 2005 spending, which was the previous average capital expenditure baseline. In addition, the workforce has expanded recently by thousands. In large part, this appears to be in response to the "catastrophic" coal supply problems that plagued the railroad in 2005-06.

90. ~~82-~~ Witness Brautovich believes these dramatic spending increases will find their way into tariffed rates.

91. ~~83-~~ Demand for Powder River Basin coal ~~over the BNSF~~ is increasing.

92. ~~84-~~ Witness Brautovich declined to deny that rate increases could be as high as double digits, but indicated that transportation rates would be driven by the market for other sources. We believe this means the BNSF intends in the future to capture a greater portion of the margin between the commodity price of coal and the delivered price of other higher priced fuel sources.

93. ~~85-~~ Last year's ~~The 2006~~ average BNSF rate increase was 11 percent.

94. ~~86.~~ The Commission finds that, ~~given the foregoing, it is unreasonable to conclude that the~~ Applicants have accurately ~~calculated~~ forecast the future delivered cost of fuel for Big Stone II.

95. ~~87.~~ Applicants' late filed exhibit following the June 2007 hearings discloses that the cost to Otter Tail's customers associated with coal supply disruptions to Big Stone I in 2006 was estimated at \$2,836,500 in total. The cost to Montana-Dakota's customers associated with those disruptions was estimated at \$1,018,000 in total.

96. ~~88.~~ The Commission finds that the cost of delivered fuel is a significant factor in determining whether the proposed Big Stone II is reasonable and prudent.

97. ~~89.~~ An important aspect of determining prudence is a reasonable comparison of the costs of electricity from competing generation resources. The delivered price of fuel is a critical component of that analysis. Applicants have ~~failed to meet~~ met their burden.

90. ~~There, the Applicants failure to meet its burden of proof with regard to fuel costs is a serious matter which necessitates the Commission placing conditions on the order.~~

91. ~~A Commission determination of advance prudence for a proposed resource must be supported by a reliable estimate of the fuel cost for the resource. The evidence of record is not sufficient for us to make that determination.~~

92. ~~Evidence of a reliable estimate of the fuel cost for Big Stone II is a satisfactory long-term coal delivery contract that provides performance guarantees with appropriate penalties or nonperformance.~~

93. ?

Future Carbon Regulation

98. ~~94.~~ A concern raised primarily by Intervenors is that the Applicants failed to consider the costs associated with future regulation of carbon emissions.

99. ~~95.~~ The parties agree that the U.S. Congress may, at some time in the future, establish regulations for the control of carbon dioxide from power plants around the country burning coal and other fossil fuels. However, neither we nor the Applicants can predict what those regulations will require.

100. ~~96.~~ Montana-Dakota witness Andrea Stomberg testified that there are currently no known commercial or economical applications for post-combustion removal of carbon dioxide from supercritical pulverized coal electric generating plants.

101. ~~97.~~ Consistent In accordance with North Dakota Century Code Section 49-02-23, Applicants have not utilized prohibited environmental externality costs for carbon dioxide regulation in this proceeding. ~~They have, however,~~ they have considered the possibility of future carbon dioxide regulation.

102. ~~98. The record indicates that supercritical~~Supercritical and ultra-supercritical technologies for coal-fired generation are more efficient than previous technologies for coal-fired plants, using less coal per unit of electricity generated. In addition, the Applicants plan to include various forms of renewable generation and various conservation and demand-side management programs in their future resource mix. ~~Implementing these plans will help reduce coal consumption and therefore carbon dioxide output.~~

103. ~~99. The Commission finds that regulation of carbon dioxide would likely result in an increase in the cost of coal-fired electric energy. However, the costs of most kinds of generation will also likely increase.~~ The Commission gives weight to the fact that economic risks associated with regulation of carbon dioxide are significant.

Other Big Stone II Energy Facility Findings

104. ~~100. Otter Tail commits to credit all~~is receptive to a variety of approaches to address issues concerning its off-system sales, including crediting asset-backed, off-system sales margins to its customers. In accordance with the Commission's rate order in Case No. PU-399-03-296, Montana-Dakota credits credit 85% of asset-backed, off-system sales margins to its customers.

105. ~~101. Big Stone II has not gone through financial close.~~

Alternative Electric Facilities and Technologies

106. ~~102. Montana-Dakota and Otter Tail, along with the other co-owners, examined a number of technologies for generating electricity before proposing a supercritical pulverized coal plant at Big Stone. In 2005 the co-owners hired Burns & McDonnell to evaluate in detail several generation technologies, including subcritical pulverized coal, supercritical pulverized coal, natural gas-fired combined cycle gas turbine, wind plus gas-fired combined cycle gas turbine, integrated coal gasification combined cycle, and 100% biomass plant (only 50 MW). Burns & McDonnell was retained to perform the analysis again in October 2006 after the co-owners had obtained Black & Veatch's 2006 cost estimate for the more refined plant design. The September 2005 report was entitled "Analysis of Baseload Generation Alternatives" and the October 2006 report was entitled "Revised Analysis of Baseload Alternatives."~~

107. Burns & McDonnell was asked again in the fall of 2007 to conduct another update of its analysis to reflect the fact that two of the utilities had withdrawn from the project and the remaining utilities were considering the possibility of downsizing the plant. Burns & McDonnell also updated many of the factors that go into the analysis. Burns & McDonnell evaluated six different generation options, including a 500 MW supercritical PC plant, a 580 MW supercritical PC plant, and a 500 MW combined cycle gas turbine with wind purchases. In November 2007 Burns & McDonnell presented its results in a written report entitled "Updated Economic Evaluation of Baseload Generation Alternatives."

108. ~~103. The November 2007 Update confirmed that Big Stone Unit II represents the lowest cost baseload generation operation of those evaluated on a life-cycle basis considering capital and operating costs. The Burns & McDonnell estimate of the levelized busbar cost per kWh over a 20-year facility life for Big Stone II, assuming a capacity factor of 88 percent, is~~

\$69.62 per megawatt-hour or 6.962 cents per kilowatt-hour the 2013 to 2031 period for Big Stone II is \$77.65/MWh. The busbar cost for a combined cycle gas turbine with wind purchases was 11% higher.

Ultra-supercritical Plant Technology

109. ~~104-~~The difference between a supercritical pulverized coal plant and an ultra-supercritical pulverized coal plant is related to the operating pressure and temperature of the steam cycle and the resulting efficiency of the plant. The boiler of a supercritical plant has an operating temperature of approximately 1,085 degrees Fahrenheit at a pressure of approximately 3800 pounds per square inch. A new supercritical plant has a thermal efficiency of approximately 38 percent and a heat rate of 8,988 British Thermal Units (BTUs) per kilowatt-hour. An ultra-supercritical plant boiler operates with higher temperatures than a supercritical plant and at pressures near 1400 degrees Fahrenheit for a one percent gain in efficiency compared to a supercritical plant boiler.

110. ~~105-~~Montana-Dakota witness Duane Steen testified that the cost of an ultra-supercritical plant could be \$2 million to \$10 million higher than that of a supercritical plant.

111. ~~106-~~The record shows that there are approximately 160 existing supercritical plants in the United States and over 500 worldwide. There are approximately 15 ultra-supercritical plants operating worldwide, most are in Japan where the fuel delivery cost is very high. The ultra-supercritical plants in operation today do not have long-term operating experience.

112. ~~107-~~The Big Stone II co-owners are considering the choice between the ultra-supercritical technology and the supercritical technology for the Big Stone II project and that decision will not adversely affect the basic design of the plant.

Wind Generation and Gas-Fired Generation

~~Gas-Fired Generation~~

~~Wind Generation~~

~~Gas-Fired Generation + Wind Generation~~

113. If Big Stone II is not built, an alternative means of acquiring baseload resources will be required. Likely alternatives to supply 500 MW of baseload power are few, and increased natural gas generation would be a probable result, either as a primary or backup fuel supply, or as power purchased from the pool.

114. Natural gas (and petroleum) prices are much more volatile than coal prices. Because of this, regions with more coal-fired power in their generation mix tend to have more stable power rates.

115. Natural gas markets are increasingly becoming international, and increasingly subject to many of the same types of price spikes and volatility as seen with petroleum.

116. While CO2 requirements and/or pricing would affect the costs of using coal at Big Stone II, it would also affect the costs of using natural gas. Gas costs would be affected both by the direct effect of CO2 pricing on natural gas' CO2 emissions, and also by the potential rise in market price and volatility for the fuel.

117. The volatility of natural gas prices creates a highly significant risk factor for an electric generation resource that relies on natural gas. If Big Stone II were replaced with gas-fired capacity, an increase in gas prices of only \$1/MMBtu would increase generation costs by as much as \$28,000,000 in a single year.

118. North Dakota's participation in the Midwest ISO exposes it to a natural gas price volatility risk that is much larger than its actual percentage of generation.

119. North Dakota households are at greater risk from natural gas price spikes than most other states. Non-electric residential energy uses in North Dakota indicate higher than average natural gas and petroleum consumption, even while household income is lower than average. Accordingly, if natural gas supplies are constrained in supply and/or subjected to price spikes, residences can be hit twice – once in their direct consumption of fuel, and again in their use of natural gas-fueled electricity.

120. ~~108-~~The Applicants testified that the cost difference for an investor owned utility between wind and other forms of generation is utility specific and project specific.

121. ~~109-~~Electricity from wind driven generation facilities is not currently considered a resource for baseload energy. Baseload resources are required to be dispatchable, meaning they can be scheduled to run at a specified load for a given duration. Since the wind blows intermittently and at different velocities, wind power cannot be dispatched like a coal plant can.

122. ~~110-~~The record discloses that wind turbines are typically capable of achieving capacity factors in the range of 30-40%. A coal plant like Big Stone II approaches a 90% capacity factor. In the MISO system MAPP, wind generation is credited with a generally accredited for reserve obligation purposes between 5 and 20 percent capacity factor. Under the MISO formula, at least 300 megawatts of wind generation capacity would need to be installed in order to provide 60 megawatts of baseload resource.

123. ~~111-~~Otter Tail gives accredits wind generation a capacity value of at about 15 percent in the summer peak month and 20 percent in the winter peak month.

124. ~~112-~~Burns & McDonnell's analysis assumes the co-owners would not own wind turbines, but would have power purchase agreements for 600 megawatts of wind. Although the Burns & McDonnell analysis does include sensitivity analysis that assumes extension of the federal production tax credit, they assume no extension of the federal production tax credit. Burns & McDonnell assumes a price of \$60 per megawatt-hour for wind and assumes no costs for transmission.

125. ~~113-~~Applicants' witness Jeff Greig, representing Burns & McDonnell, testified at the June 2007 hearings that Burns & McDonnell compared Big Stone II and two baseload alternatives, incorporating wind into the comparison of baseload alternatives.

Greig testified that the Big Stone II coal-fired project was compared with a gas-fired combined-cycle gas turbine plant supplemented with wind to reduce the need to dispatch higher cost gas generation when wind is available. Greig described the alternative as gas-fired capacity with supplemental non-firm wind to lower energy costs. Greig concluded that the proposed Big Stone II was the lower cost ~~base-load~~baseload alternative than the CCGT + Wind alternative ~~with or without the extension of the federal production tax credit included in the cost of wind~~. Because wind power is not able to be dispatched and is not a baseload resource, it is necessary to include another source of generation when the wind is calm. The other source of generation often considered with wind generation is a natural gas combined cycle plant. Natural gas plants are more expensive to operate than supercritical coal plants and the cost of natural gas is more volatile than the cost of coal. Further, operation and maintenance costs for gas plants ~~tend to be higher than coal plants due to continued turbine-cycling stresses~~.

126. ~~44-~~For purposes of analyzing combined wind plus gas generation, the Burns & McDonnell analysis assumes a gas cost of \$7.60 per million BTU. Burns & McDonnell calculated a busbar cost for wind plus combined-cycle gas turbine of \$80.78 per megawatt-hour.

127. ~~45-~~Whether a natural gas plant is considered as a replacement for Big Stone II or a backup source for wind generation resources, this option is more costly than Big Stone II.

128. ~~46-~~Under a renewable portfolio standard in the State of Montana for 2010, Montana-Dakota ~~is constructing~~constructed the Diamond Willow wind project, a 20 MW wind farm in Montana. Witness Duane Steen stated at the June 2007 hearings that the Montana-Dakota's least-cost planning model did not pick wind generation as a least cost resource option and that any wind generation included in the current least cost planning model is forced to be part of Montana-Dakota's resource mix.

129. Based on updated modeling results presented at the April 2008 hearings, Montana-Dakota's least cost planning model includes the Big Stone Unit II project, a new 43.5 MW gas peaking resource, a combination of energy-efficiency programs, and the 20 MW Diamond Willow wind project.

130. In the updated resource modeling, Montana-Dakota incorporated 219 MW of wind capacity or 40% of peak demand for 2015 and 25 percent to 35 percent of energy sales in 2015 (based upon a 38 percent or 52 percent capacity factor for the wind generation).

131. ~~47-~~The cost of wind generation is approximately \$2,000 per kilowatt. A gas-fired turbine to back up the wind generation costs about \$900 per kilowatt. Wind generation would also require transmission facilities that accommodate approximately 100 percent of the wind generation capacity even though the wind generation is credited only a 20 percent capacity factor.

132. ~~48-~~Otter Tail's resource plan includes about 160 MW of new wind resources. Otter Tail already has a number of purchase power agreements in place now. Montana-Dakota entered into several power purchase agreements for wind power in the past few years but the project developers failed to construct the turbines.

133. ~~119-~~DRC witness David Schlissel testified at the June 2007 hearings that Otter Tail has biased the results to the disadvantage of wind by failing to properly consider the production tax credit and by limiting the amount of wind the model could determine. Mr. Schlissel also testified that assuming that any future wind power would be purchased rather than owned biased the results against wind.

134. ~~120-~~PA's model used in the optimal resource study for Montana-Dakota allowed up to almost 200 MW for analysis. PA's analysis included two wind resources installed by 2012 and prior to Big Stone II and the model continued to select the same resources including Big Stone II.

135. ~~121-~~DRC witness Mr. Schlissel testified that Otter Tail and Montana-Dakota have not studied the amount of wind their systems could accommodate given their existing gas peaking plants.

136. ~~122-~~The Commission finds that, even though a natural gas combined cycle/wind generation facility is not currently the least cost resource, the resource planning activities by Otter Tail and Montana-Dakota indicate that wind generation should be a part of the future addition of generation resources for both companies.

Integrated Gasification Combined Cycle (IGCC) Technology

137. ~~123-~~Montana-Dakota witness Stomberg testified that IGCC plants are being proposed around the country and that there are two IGCC plants in the United States functioning commercially for generation of electricity. Ms. Stomberg testified that the IGCC technology is in the developmental stage and may become more economical in the future. ~~[is there more for here?]~~

Manitoba Hydro

~~124. Otter Tail currently has a purchase contract for 50 megawatts of Manitoba Hydro generation that will expire in 2010. Otter Tail's integrated resource planning model selected a new 50 megawatt Manitoba Hydro purchase in addition to Big Stone II. The model had the opportunity to select a larger Manitoba Hydro purchase but did not do so. However, the model found Big Stone II cheaper and preferable to the Manitoba Hydro purchase. The model also found some demand-side management programs less expensive than a Manitoba Hydro purchase and some demand-side management programs more expensive than a Manitoba Hydro purchase.~~

~~125. A Manitoba Hydro purchase does not expand the transmission system or help to support it. Instead, a Manitoba Hydro purchase would use up existing transmission capacity.~~

~~126. Dakota Resource Council witness David Schlissel suggests that a Manitoba hydro purchase is essentially the same cost as Big Stone II. However, Otter Tail explained, Mr. Schlissel only compared costs through the year 2020. Only including data through 2020 ignores significant cost differentials between the costs of the two alternatives and makes the Manitoba Hydro proposal look more cost effective than it is over a longer period of time.~~

Other Alternative Electric Facilities and Technologies Findings

138. ~~127-~~The Big Stone-II co-owners examined such renewable options as hydro, solar, geothermal, landfill gas, fuel cells, and micro-turbines.

139. ~~128-~~The Commission finds that it is reasonable and prudent to select either a supercritical or ultra-supercritical pulverized coal baseload electric generating station in combination with demand-side management and energy conservation programs that prove more cost effective than such plant.

Alternative Electric Facility Sites

140. ~~129-~~The Big Stone co-owners conducted an initial screening and identified 38 potential sites in Minnesota, South Dakota, and North Dakota, the primary service territories that will be served by the new generating plant. Eight primary locations were selected based on infrastructure for coal delivery, electric transmission from the plant, and water resources for generating facility operation. Two of those sites were eliminated because of nearby residences and lack of available land.

141. ~~130-~~The six sites selected for further consideration by project participants were:

- Big Stone, Grant County, South Dakota
- Coyote, Mercer County, North Dakota
- Fargo, Cass County, North Dakota
- Dickinson, Wright County, Minnesota
- Glenham, Walworth County, South Dakota
- Utica Junction, Yankton County, South Dakota

142. ~~131-~~The criteria and criteria weighting used to evaluate and score the sites were:

- Water Supply - 20%
- Fuel Lines - 20%
- Transmission - 20%
- Environmental - 15%
- Air Quality - 15%
- Other -10%

143. ~~132-~~The Big Stone site received the highest weighted score mostly due to existing infrastructure. The existing pump house and pipeline used for Big Stone I are adequate to supply the cooling water needed for Big Stone II without any changes. With the exception of some concern during drought years, Big Stone Lake, the water source for Big Stone I, has adequate water availability. The existing rail line and coal unloading facilities are adequate for Big Stone II without any modifications. For solid waste, an existing disposal area has adequate storage for both units for a number of years.

144. ~~133-~~The site benefits also include existing roadways and existing plant staff. Use of existing transmission corridors will minimize the impact of transmission additions.

145. ~~134-~~Big Stone I and Big Stone II will share a single common wet scrubber for controlling ~~SO₂~~SO₂ emissions. With the new scrubber, sulfur dioxide emissions may be less from the two units than the current sulfur dioxide emissions from Big Stone I.

146. ~~135-~~A concern about the Big Stone site is that coal delivery is by a single rail carrier.

147. ~~136-~~The Applicants considered the possibility of building a new generating facility at the Coyote Station site in North Dakota. They state the site is viable for generation expansion and has an adequate water supply through a pipeline from the Missouri River.

148. ~~137-~~Advocacy staff witness Terry Deason identified three low ratings that may be unwarranted for the Coyote site including air space, water supply, and highway access. He increased those scores and recalculated the site rating to find that the Coyote site attains the second highest score and only 12.6 points below the Big Stone site. He testified that if more weight were given to the Fuel Lines criteria (fuel delivery competition), the Big Stone site advantage over the Coyote site is reduced to less than 5 points.

149. ~~138-~~Mr. Deason concluded that the Coyote site should remain a viable candidate site for future generation expansion plans.

150. ~~139-~~Montana-Dakota considered the option of participating in the Lignite Vision 21 Program. The goal of the Lignite Vision 21 Program is to construct a coal-fired electrical generating plant in North Dakota employing North Dakota coal and the latest clean-coal technology. The North Dakota Industrial Commission has matching funds available up to \$10 million for the investigation and construction of a lignite-fired plant. Montana-Dakota worked with other utilities to investigate the feasibility of a 500 MW lignite fired plant at Gascoyne, North Dakota.

151. ~~140-~~Unable to locate a utility interested in joining in a 500 MW lignite facility in North Dakota, Montana-Dakota considered downsizing a lignite plant to 175 MW. However, Montana-Dakota determined that a 175 MW coal-fired generating facility at the Gascoyne site would be more expensive than a plant at the Big Stone site, which offers existing unit train coal unloading facilities, water treatment, roads, mobile equipment, control room, operators and maintenance employees and a fuel oil system.

152. ~~141-~~In 2006, Strategist® modeling used by Montana-Dakota determined that Big Stone II would be approximately 30% less costly than a Gascoyne plant.

153. ~~142-~~The Commission finds that it is reasonable and prudent to construct a baseload generating facility at the Big Stone site.

From the foregoing Findings of Fact, the Commission makes the following:

Conclusions of Law

4.

1. Any of the foregoing Findings of Fact more properly designated as Conclusions of Law are hereby adopted as such.

2. The North Dakota Public Service Commission has jurisdiction over this matter pursuant to N.D. Cent. Code § 49-05-16.

3. The Applicants have established the need for additional generating resources of Big Stone Unit II facility and associated transmission facilities as required by N.D. Cent. Code § 49-05-16.

4. The Applicants have fully considered alternatives to building Big Stone Unit II as required by N.D. Cent. Code § 49-05-16.

5. The Applicants' resource addition of Big Stone Unit II is reasonable and prudent pursuant to N.D. Cent. Code § 49-05-16.

6. The Applicants' Application for an Advance Determination of Prudence should be granted.

From the foregoing Findings of Fact and Conclusions of Law, the Commission makes the following:

Order

The Commission orders:

1. Otter Tail Corporation's request for advance determination of prudence for 49.33-percent ownership of up to 130 MWs in the proposed Big Stone II, and associated transmission, is granted subject to the following conditions:

a. Otter Tail shall implement the demand-side management and conservation programs that are more economic resources than Big Stone II (Table OTP-1 and Table OTP-2 in Exhibit 227)

b. ~~a-~~ Within 180 days, Otter Tail shall file tariffs in North Dakota, for Commission approval proposals, with supporting documentation, to implement the demand-side management and conservation programs that are more economic resources than Big Stone II (contained in Table OTP-1 and Table OTP-2 in Exhibit 227). The proposals must include supporting documentation and proposed tariffs: 227.

- b. ~~Otter Tail shall file for Commission approval a long-term coal delivery contract.~~
- e. ~~Otter Tail shall file a report with the Commission, prior construction, on the decision of whether to build a supercritical coal unit or an ultra supercritical coal unit. The report shall include information regarding savings on fuel costs, savings on CO2 emissions, differences in costs between the two types of plants, as well as other factors included in the decision-making process.~~

1. ~~2-~~Montana-Dakota Utilities Co.'s request for advance determination of prudence for ~~49.33 percent~~ ownership of up to 133 MWs in the proposed Big Stone II, and associated transmission, is granted subject to the following conditions:

- a. Montana-Dakota shall implement the demand-side management and conservation programs, identified in Montana-Dakota's most recent integrated resource plan, that are more economic resources ~~than~~ than Big Stone II.
- b. Within 180 days, Montana-Dakota shall file tariffs in North Dakota, for Commission approval, with supporting documentation, to implement the demand-side management and conservation programs.

e. ~~Condition for railroad railcars contract.~~

2. The Applicants shall file a report with the Commission, prior to construction, on the decision of whether to build a supercritical coal unit or an ultra supercritical coal unit. The report shall include information regarding savings on fuel costs, savings on CO2 emissions, differences in costs between the two types of plants, as well as other factors included in the decision making process.

3. ~~3-~~Otter Tail and Montana-Dakota each shall file reports, as required by North Dakota Century Code Section 49-32-04, annually on the State renewable and recycled energy objective in North Dakota Century Code Section 49-02-28. These renewable reports shall also include information on renewable and recycled energy purchased specifically within the State of North Dakota.

4. ~~4-~~The Applicants shall advise the Commission quarterly beginning January 1, ~~2008, 2009,~~ of the progress in obtaining all necessary approvals, permits, and licenses from other regulatory bodies and of the anticipated date of commencement of construction.

5. ~~5-~~The Applicants shall advise the Commission when construction of Big Stone II actually commences.

6. ~~6-~~The Applicants shall provide a forecasted budget for construction costs for the upcoming year beginning on January 1, ~~2008, 2009,~~ Each subsequent report filed on January ~~1,~~ 2008 shall include an analysis of any deviations from the forecasted budget and the actual expenditures for the year and an explanation of changes in forecasts for future years.

7. ~~7-~~The Applicants shall immediately advise the Commission of any decision by the Applicants not to go forward with construction of Big Stone II and of any factors that jeopardize the viability or continuation of the project.

8. ~~8-~~The Applicants shall continue present operational practices for management to the coal burned at Big Stone. The Applicants will maintain reports regarding implementation of these practices and will provide these reports to the Commission upon request.

9. ~~9-~~The Applicants shall conduct a study of the number of rail cars necessary to serve Big Stone II and do a cost benefit analysis of whether any additional railcars should be lightweight aluminum railcars. The Applicants shall submit the results of that study to the Commission by January 1, 2011.

10. ~~10-~~The Applicants shall conduct a study to calculate the costs and impacts of maintaining a higher coal inventory level. The Applicants shall compare the costs of maintaining a higher level of coal with the costs and likelihood of future curtailments of shipments of coal from inadequate fuel deliveries. The Applicants shall submit the results of the study to the Commission with a recommendation on the appropriate inventory level by January 1, 2011.

11. Otter Tail shall continue to monitor potential carbon dioxide regulation and provide an update of the cost-effectiveness of Big Stone II prior to commencement of construction.

PUBLIC SERVICE COMMISSION

Tony Clark
Commissioner

Susan E. Wefald
Commissioner

Kevin Cramer
Commissioner

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Format changed	0
Total changes	416

STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

Otter Tail Corporation, Advance
Determination of Prudence
Application

AFFIDAVIT OF SERVICE

Montana-Dakota Utilities Co.,
a Division of MDU Resources Group,
Inc., Advance Determination of Prudence
Application

Case Nos. PU-06-481, PU 06-482

Kristen A. Swenson, of the City of Minneapolis, County of Hennepin, in the State of Minnesota, being duly sworn on oath says: that on the 21st day of May, 2008, she served the following:

Applicants' Post-Hearing Brief and Proposed Findings of Fact, Conclusions of Law and Order along with an Affidavit of Service.

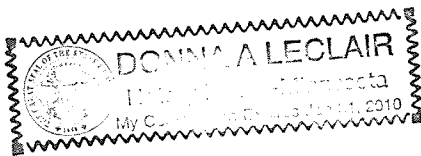
A copy has also been served upon the attached service list via electronic mail and U.S. Mail.

Kristen A. Swenson

Subscribed and sworn to before me
this 21st day of May, 2008.

Donna A. LeClair

Notary Public



STATE OF NORTH DAKOTA
PUBLIC SERVICE COMMISSION

SERVICE LIST

Otter Tail Corporation, Advance
Determination of Prudence
Application

Montana-Dakota Utilities Co.,
a Division of MDU Resources Group,
Inc., Advance Determination of Prudence
Application

Case Nos. PU-06-481, PU 06-482

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