SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

CASE NO. EL05-022

IN THE MATTER OF THE APPLICATION BY OTTER TAIL POWER COMPANY
ON BEHALF OF THE BIG STONE II CO-OWNERS
FOR AN ENERGY CONVERSION FACILITY SITING PERMIT FOR THE
CONSTRUCTION OF THE BIG STONE II PROJECT

PREFILED REBUTTAL TESTIMONY

OF

BRYAN MORLOCK
MANAGER OF RESOURCE PLANNING
OTTER TAIL POWER COMPANY

JUNE 9, 2006

PREFILED REBUTTAL TESTIMONY OF BRYAN MORLOCK

TABLE OF CONTENTS

BEFORE THE SOUTH DAKOTAPUBLIC UTILITIES COMMISSION

PREFILED REBUTTAL TESTIMONY OF

BRYAN MORLOCK

I. INTRODUCTION

Q: Please state you name and business address.

A: Bryan Morlock, 215 South Cascade Street, Fergus Falls, Minnesota 56548-0496

Q: Did you previously submit testimony in this proceeding?

A: Yes. I submitted direct testimony as Applicants' Exhibit 10. My qualifications were provided previously as Applicants' Exhibit 10-A. I also submitted direct testimony in the related transmission certificate of need proceeding in Minnesota.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q: What is the purpose of your testimony?

A: I will respond on behalf of all the Applicants to the May 19, 2006 testimony of Minnesota Center for Environmental Advocacy (MCEA) witness Marshall Goldberg with regard to economic development and employment impacts of wind energy. I will also address the testimony of South Dakota Public Utilities Commission (SDPUC) Staff witness Dr. Olesya Denney with regard to resource planning topics and the use of environmental externalities.

Q: Please summarize your testimony.

A: Wind energy alone is not an equivalent, "apples-to-apples" alternative to the Big Stone Unit II development, because of the variability of the wind resource. Wind energy may result in more employment per unit of average annual energy output than Big Stone Unit II, but that is not the point. Energy alternatives must be cost-effective, regardless of how many jobs they may create. The Applicants are proposing to use wind energy at cost-effective levels; not maximizing

it in the interest of purely creating jobs. Any jobs that may result from achieving cost-effective levels of wind energy are a side benefit; not a driving-point decision factor.

The Applicants have provided ample and complete information to SDPUC Staff and intervenors with regard to forecasting models. The Applicants have included demand-side management (DSM) impacts in their resource plans. Some of the impacts are included in their forecasts, while future DSM programs are treated as a capacity addition applied to the forecasts; that is, as a supply-side resource. Either way, the Applicants have included DSM in their planning efforts. Finally, the MCEA witnesses' and the California Public Utilities Commission's externality values for analysis of energy resource alternatives are not applicable to, and thus are inappropriate for, this proceeding.

III. EMPLOYMENT IMPACTS OF WIND ENERGY

Q: MCEA witness Goldberg's testimony talks about a 1,320 MW quantity of wind energy. Is this an "apples-to-apples" equivalent alternative to Big Stone Unit II?

A: No.

Q: Why isn't it an equivalent alternative?

A: 1,320 MW of nameplate installed wind capacity may theoretically produce a similar amount of annual energy compared to the 600 MW, Big Stone Unit II. But, because of the variability of the wind resource, it has entirely different performance and reliability characteristics. As a result, 1,320 MW of wind alone is not a viable alternative to Big Stone Unit II. The wind generation will have impacts on other generating facilities located on the system, changing cost patterns and economic dispatch considerations. It will likely impact the ability of the utilities to meet reliability control performance criteria, and consequently will increase costs

associated with compliance to those criteria. Ray Wahle discusses these items in his rebuttal testimony.

Q: Why are these differences important?

A: In the case of the wind development, they have the potential for very adverse system reliability impacts.

On days when the wind blows at rated wind speeds, the 1,320 MW of nameplate wind capacity would have a maximum output of 1,320 MW. Then, when the wind dies the next day or only hours or minutes later, the 1,320 MW would have a total output of zero MW. So, although this quantity of wind capacity may produce, on the average, an amount of annual energy similar to Big Stone Unit II, it would not be delivered in a predictable, dispatchable basis.

Compared to the intended operation of Big Stone Unit II at a constant 600 MW of baseload all hours of every day, Mr. Goldberg's hypothetical wind energy development would either produce far more energy on a windy day, or nothing at all on a still day. So, on any particular day you could either have far more output than you need, or blackouts or other generating system contingencies of the scale of hundreds of Megawatts, because installing the 1,320 MW of wind capacity alone without any reliability backup would result in insufficient generating capacity reserves in the system.

Saying the 1,320 MW of wind capacity is equivalent, on average, to Big Stone Unit II is the same as the proverbial frog who, with one leg in a pan of boiling water and the other frozen in a block of ice, is on the average comfortable. Simply, wind energy needs some form of reliable capacity backup to be equivalent to Big Stone Unit II, as Mr. Schlissel of MCEA recognizes in his May 26 testimony.

Q: Do you think Mr. Goldberg intended to suggest that 1,320 MW of wind is actually an equivalent alternative to Big Stone Unit II?

A: No. Although it is hard to tell from his testimony, we do not believe he is actually proposing such an alternative. For purposes of discussing economic development and employment impacts of resource additions, he had to start somewhere. For the reasons I described earlier, 1,320 MW of wind is not an economically viable alternative. The South Dakota PUC should not infer such a conclusion from Mr. Goldberg's testimony, either.

Q: What is your conclusion from Mr. Goldberg's testimony?

A: Wind energy may result in more local employment per unit of average annual energy output than Big Stone Unit II. However, that is not the important point. Anyone can produce more jobs by simply spending more money. If we take Mr. Goldberg's premise to the illogical end that MCEA witnesses are implying, if the pharaohs of ancient Egypt were alive today, they would still decide to continue to build the pyramids by hand, rather than using modern machinery, because it would result in more jobs.

Instead, the Applicants believe cost-effectiveness of a resource is more important than the employment levels that resource entails. That is, the cost of electricity to consumers and businesses in South Dakota and surrounding states is a more important measure for comparison in selecting energy resources than any incremental differences in employment between those resources. Mr. Goldberg's analysis does not take into account the potential for jobs lost due to increased electricity prices.

Q: Does Mr. Goldberg offer a comparison of relative cost-effectiveness between the selection of wind energy and Big Stone Unit II?

A: No.

Q: Have the Applicants performed such a comparison?

A: Yes. I will address that comparison in my rebuttal of MCEA witnesses Schlissel and Sommers, to be submitted on June 16.

Q: Do you have any other comments with regard to Mr. Goldberg's testimony?

A: Yes. To the extent the amount of wind energy implemented by the Applicants is cost-effective compared to other alternatives, the employment impacts of such developments described by Mr. Goldberg are indeed beneficial. On the other hand, if those wind developments are not cost-effective, then consumers and businesses will be paying electric rates that are too high compared to other, more cost-effective alternatives that should be implemented instead. This would have adverse economic development and employment impacts of its own, which Mr. Goldberg's testimony does not address. Daniel Klein addresses the impacts of increased energy prices on consumers in his rebuttal testimony.

The Applicants have found that significant levels of wind energy are cost-effective on their systems. Accordingly, they plan to accomplish those levels. In that context, the economic development and employment benefits of wind energy that Mr. Goldberg describes are good news. However, as I will discuss further in my June 16 rebuttal testimony, additional levels of wind energy development beyond that already included in the Applicants' plans are not a cost-effective alternative to Big Stone Unit II.

IV. FORECASTING AND DEMAND-SIDE MANAGEMENT (DSM)

Q: At Page 10, lines 17 through 20, and Page 11, lines 1 through 16, SDPUC Staff witness Denney states that the Applicants have not provided the Commission with a user-friendly and exhaustive summary of forecasting models supporting demand estimates. Please update the Applicants' forecasting information.

A: Applicants believe that the forecast modeling information contained in response to the Staff's 3rd Set of Data Requests has met the requirement for complete and understandable forecast documentation.

Q: At Page 11, lines 17 through 19, and Page 12, lines 1 through 12, Denney states that the forecasts of some Applicants are inaccurate because they do not properly account for Demand-Side Management ("DSM"). Do you agree?

A: No. While it is true as Dr. Denney states that the Applicants do not include all DSM impacts in their forecasts, that is only part of the answer. These forecasts, based on historical data, include the impacts of historical DSM programs. The balance of planned DSM impacts, particularly the impacts of future DSM programs, is included in the resource planning process that is performed subsequent to development of the forecast. So, the Applicants include the entire impact of their DSM efforts, both historical and future, through a combination of their forecasts and their resource planning. They are not erroneously leaving anything out, as Dr. Denney's testimony suggests.

Q: At Page 12, footnote 18, Denney says that Otter Tail Power's forecast is inaccurate because controllable load programs are not included in their demand forecasts, while other DSM programs are included in the forecast. Do you agree?

A: No. We agree with Dr. Denney that Otter Tail's peak demand forecast represents "unmanaged" peak demands, without the impacts of the Company's controllable load programs. We also agree that the forecast does include the effects of historical energy conservation programs. But again, that is not the entire answer.

We disagree with Dr. Denney's implication that because some, but not all, DSM is in the forecast means there is an error in the analysis. In the resource evaluation process, the effects of

the expected future control of interruptible loads and future new conservation programs are compared to supply alternatives to develop a series of optimized resource plans. The resulting optimized load control and conservation programs are then applied to the forecast in a manner similar to supply options. Through this approach, all impacts of both conservation and load control DSM projects are include in our planning -- their impacts are just not all in the forecast alone. Dr. Denney is apparently assuming that all DSM impacts need to appear in the load forecast, and that is not the case.

V. ENVIRONMENTAL EXTERNALITIES

Q: At Pages 23 to 43 of her testimony, Dr. Denney uses various values for environmental externalities to compare benefits and costs of the Applicant's plans for Big Stone Unit II. What do these externality values represent?

A: In theory, they are assumed penalty factors used to represent the indirect costs to society resulting from environmental impacts of various energy resource alternatives. In essence, if the penalty factors are assumed to be large enough, they can influence the choice between resource alternatives, as Dr. Denney's testimony illustrates.

Q: Do consumers and businesses pay these externality costs directly on their electric bills?

A: No. In theory, they are intended to represent indirect costs that society incurs in other ways; not directly on their electric bill. Thomas Hewson addresses these costs in more detail in his rebuttal testimony.

Q: Have the Applicants had the opportunity to review the details of Dr. Denney's calculations underlying her results on Pages 23 to 43 of her testimony?

A: No. We have sent SDPUC Staff a data request for this information, but because of time constraints we have not yet received the response. For purposes of this rebuttal testimony, subject to verification, I will assume the calculations were performed correctly.

Q: Do the Applicants agree with Denney's use of these externality values?

A: No. First, as discussed in Thomas Hewson's rebuttal testimony, the ranges of externality values that MCEA witnesses are proposing and Dr. Denney uses for a portion of her analysis are far too high. This unreasonably and inappropriately biases Dr. Denney's results against Big Stone Unit II.

Second, Dr. Denney also uses externality values promulgated by the California Public Utilities Commission (CPUC), for purposes of comparison to her results using externalities from an Environmental Protection Agency (EPA) literature survey. Although the CPUC externality values are lower than the average of the range from the EPA survey, they are also still inappropriate for use in this proceeding.

Q: Why is the use of the EPA literature survey and the CPUC's externality values inappropriate?

A: They are inappropriate because they have not been reviewed and subjected to formal rule-making or Commission approval in this region. In addition, as Thomas Hewson describes in his rebuttal testimony, the values Dr. Denney is using and the values MCEA witnesses are proposing are speculative and subject to the eventual outcomes, if any, of future federal action.

The California externality values were determined by the CPUC in their own process using conditions and assumptions unique to that state. Electric rates in California are about twice that of the nominal rates in South Dakota or the Upper Midwest. Their electric service is suffering from an infamously unsuccessful recent experiment in deregulation that left that state's

major utilities in bankruptcy. They also have significant transmission constraints that affect both the price and reliability of electric service there. So, California regulation should not be held up as the example South Dakota and its neighboring states should follow with regard to economical and reliable electric service.

Q: Do you have any other comments with regard to Ms. Denney's use of environmental externalities?

A: Yes. As Thomas Hewson discusses in his rebuttal testimony, most of the externality values Dr. Denney used in her testimony are likely to be higher than what can be supported. While we disagree with her use of the CPUC externality values, we note that the result of her analysis using those values still shows Big Stone Unit II as beneficial. We agree with the conclusion, if not the assumptions she used to reach it.

Also, Dr. Denney's analysis clearly illuminates a key element of this proceeding. That is, if you are willing to assume penalty factors large enough, you can tip the scales of any analysis comparing resource alternatives. The challenge in this proceeding is to select the appropriate factors.

Q: Do you have any other comments about Dr. Denney's testimony?

A: Yes. The analysis Dr. Denney presents on Pages 23 to 43 of her testimony with regard to environmental impacts examines various levels costs of assumed environmental impacts compared to the economic benefits of the additional jobs and other economic activity that would result from the construction operation of the plant itself. This approach understates the value of Big Stone Unit II.

Q: How does Dr. Denney's approach understate the relative value of Big Stone Unit II?

A: It understates it in two significant ways. First, the environmental costs Dr. Denney has calculated are associated with the entire output of the plant, which would include environmental effects outside South Dakota as well. However, the benefits she has calculated are for the state of South Dakota alone. This is an "apples-to-oranges" comparison that biases the results against the Big Stone Unit II plant. Nevertheless, in spite of this bias, her results still show Big Stone Unit II having a net beneficial impact for a number of combinations of assumption she uses; particularly when more appropriate externality levels are used.

Q: Does Dr. Denney acknowledge this bias of her calculations against the Big Stone Unit II Plant?

A: Yes. Although she does not quantify the exact numerical effect of this bias, she acknowledges at Pages 34 to 35 of her testimony that it causes her analysis to represent a "pessimistic" evaluation of Big Stone Unit II.

Q: What is the other way Dr. Denney's analysis understates the benefits of Big Stone Unit II?

A: By limiting her consideration to only those benefits resulting from construction and operation of the plant itself, her analysis does not consider the value to regional consumers of the electricity produced by Big Stone Unit II. After all, producing needed electricity that will be used in homes and businesses is the reason the project is being proposed in the first place.

Consequently, Dr. Denney's analysis represents only a portion of the complete story. That is, it addresses costs and benefits resulting from construction and operation of the plant, but it does not address the alternatives for and impacts on the regional electric supply system if Big Stone Unit II is *not* built. Daniel Klein addresses those kinds of impacts in his rebuttal testimony.

Q: Does this conclude your testimony?

A: Yes.