

**BEFORE THE SOUTH DAKOTA
PUBLIC UTILITIES COMMISSION**

**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**)
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Case No. EL05-022

**PROPOSED
FINDINGS OF FACT AND
CONCLUSIONS OF LAW**

FINDINGS OF FACT

1. Applicants seek permission to construct a new 600 MW pulverized coal plant on the eastern border of South Dakota.

2. Applicants represent seven different utilities serving load in North Dakota, Minnesota, and Iowa as well as South Dakota. Two of the Applicants, Otter Tail Power Company and Montana-Dakota Utilities, which together propose to own about forty percent of the plant's output, are investor-owned utilities whose South Dakota retail sales are subject to rate regulation by this Commission. Great River Energy, Missouri River Energy Services, Central Minnesota Municipal Power Agency, Heartland Consumer Power District, and Southern Minnesota Municipal Power Agency are a mix of cooperative and municipal utilities, some of which provide power in South Dakota but which are not rate-regulated.
Carbon Dioxide Emissions

5. According to Applicants, if built, Big Stone II would emit approximately 4.7 million tons of carbon dioxide (CO₂) per year. Applicants' Exhibit 29 at 6, l. 9-10. Assuming an operating lifetime for Big Stone II of 50 years, the plant will emit over 225 million tons of CO₂ before it closes. Exhibit JI-2 at 26, l. 25-26.

6. CO₂ is a heat-trapping gas that is a major contributor to global warming. Exhibit JI-2 at 5, l. 10-15.

7. Big Stone II is proposed to be built when scientists, policy-makers, and businesses are growing increasingly apprehensive about the impact of global warming, and when the federal government is debating various policy responses, all of which target CO₂ emissions from coal plants. Exhibit JI-2 at 6-11; JI-1 at 5-6.

8. Scientific academies of 11 nations, including the National Academy of Sciences in the U.S., recently issued a joint statement urging all nations "to acknowledge that the threat of

climate change is clear and increasing” and to “take prompt action to reduce the causes of climate change.” Exhibit JI-2-D (Joint Science Academies Statement).

9. The Intergovernmental Panel on Climate Change (IPCC), representing the world’s leading researchers in the field of climate science, brought together to assess the science and advise the world’s policymakers. See Exhibit JI-2 at 6-9. The IPCC finds that the planet is currently experiencing unnatural warming, predicts much more serious warming ahead if current energy trends continue, and identifies a range of likely harmful consequences. Exhibit JI-2, Exhibit JI-2-B (IPCC Working Group I Summary for Policymakers); and Exhibit JI-2-C (IPCC Working Group II Summary for Policymakers).

10. Among the serious negative impacts associated with this predicted warming are rising sea levels, damaged or lost ecosystems, greater species extinction, expansion of disease and pest vectors, greater heat waves, more intense precipitation causing more flooding, landslides and erosion, and in continental interiors like South Dakota, increased summer drying causing more droughts, reduced crop yields, and reduced water availability and quality. Exhibit JI-2 at 18, l. 17-29. The more CO₂ emitted, the more severe the impacts are likely to be. Id. at 18, l. 30-32.

11. In South Dakota, global warming is predicted to manifest itself in decreased soil moisture likely to harm both crops and natural vegetation; greater morbidity and mortality from heat stress; increased summer drought; displacement of today’s plant and animal species; more agricultural pests and diseases; and increased storm intensity, causing greater flooding, water pollution, and erosion. Exhibit JI-2 at 21-22. The region’s Prairie Pothole Region, is particularly vulnerable to climate warming, threatening the ducks and other migratory waterfowl for which the region is a critical breeding ground. Id. at 23-24.

12. The evidence in this record establishing the gravely serious nature of the global warming threat is overwhelming and wholly unrebutted.

13. The recent statement from the U.S. National Academy of Sciences and its counterpart academies from 10 other nations calls it “vital” to take immediate steps to reduce CO₂ emissions now because “[f]ailure to implement significant reductions in net greenhouse gas emissions now, will make the job much harder in the future.” Exhibit JI-2-D. Action taken now to reduce greenhouse emissions will lessen the rate and magnitude of climate change ahead; the academies note that a lack of full scientific certainty about some aspects of climate change is “not a reason for delaying an immediate response that will, at a reasonable cost, prevent dangerous anthropogenic interference with the climate system.” Id.

14. Applicants have not attempted to rebut any of the evidence that global warming is a tremendous problem, that coal plants are a major cause of it, or that Big Stone II will greatly increase South Dakota’s contribution to it for many decades to come (indeed centuries, considering the lingering impact of its emissions).

15. Commission Staff’s analysis of the environmental damage caused by Big Stone II’s CO₂ emissions shows that Big Stone II will cause from tens of millions to billions of dollars worth of environmental damage. Staff Exhibit 2, at 38, l. 4-8 and Table 6A and 7A.

16. Although there is a wide range of quantified CO₂ environmental damages Staff reviewed and applied to Big Stone II, depending on the CO₂ cost value chosen and the discount rate applied, the environmental damages of Big Stone II are enormous even when one focuses analysis on the lower end of Staff's range of values. For example, the low EPA value for annual CO₂ damages (\$1.50 per ton) associated with Big Stone II (at 4.36 million tons CO₂ per year), yields \$50,098,876 in CO₂ damages over 40 years of plant operation at a 10% discount rate. Applying a 3% discount rate, these minimum EPA-quantified damages increase to \$154,043,273. The highest level of damages Staff reviewed (EPA's \$51 value) represents five billion dollars worth of cumulative harm caused by the CO₂ emissions of this one plant.

Mercury Emissions

17. During its first three years of operation, Big Stone II will greatly exceed the EPA's 144-lbs. annual mercury emissions allocation for South Dakota, and indeed, during that time period, the Applicants do not commit to emissions of less than 210 pounds of mercury per year for just the new Big Stone II unit, plus that emitted by Big Stone Unit I, which in 2004 was about 189 lbs., for a site total of about 400 lbs. Exhibit A-34 at 2-3.

18. According to Commission Staff witness Dr. Denney, the average cost of the annual environmental damage associated with Big Stone's mercury emissions is equal to \$3,953,015, meaning that Big Stone project's mercury emissions will cost \$11,859,045 worth of environmental damage over its first three years of operation. Based on the Commission Staff's higher cost scenario of mercury emissions damages, costs could run as high as \$22,203,525 over these first three years.

Wind Potential

19. South Dakota has one of the best wind resources in the nation. According to the American Wind Energy Association, South Dakota ranks third in the nation among states with the best wind resource. Exhibit JI-4 at 9, 1. 8-11. And yet South Dakota lags behind its less windy neighbors in its development of that wind resource. T. at 713-714, and see, Department of Energy National Renewable Energy Laboratory web site, http://www.eere.energy.gov/windandhydro/windpoweringamerica/wind_installed_capacity.asp.

20. Now that utilities in the region are looking to expand their energy supplies, South Dakota has a natural opportunity to substantially develop its wind resource, and as the record shows, wind is not just a viable option to Big Stone II, but a financially preferable one. Exhibit JI-3 at 6-11.

21. If the 600 MW of additional supply that Applicants say they need are met with Big Stone II, those 600 MW of need cannot be met with a wind-based alternative. That market share – and the investment sunk into Big Stone II – will be lost to the regional wind industry as long as Big Stone II operates. T. 712, 1. 11-20.

CONCLUSIONS OF LAW

1. Under SDCL 49-41B-22 (2), Big Stone II Applicants must prove that the plant will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area.
2. SDCL 49-41B-22 (2) does not give this Commission legal authority to attempt to “net” environmental damage caused by a proposed facility against estimated economic development benefits. In other words, this statutory requirement not to threaten the environment with serious injury is unqualified.
3. In addition, under Commission rules, ARSD 20:10:22:13, Applicants are required to provide “estimates of changes in the existing environment which are anticipated to result from construction and operation of the proposed facility, and identification of irreversible changes which are anticipated to remain beyond the operating lifetime of the facility.” Specifically, Applicants are required to calculate Big Stone II’s environmental effects “to reveal and assess demonstrated or suspected hazards to the health and welfare of human, plant and animal communities which may be cumulative or synergistic consequences of siting the proposed facility in combination with any operating energy conversion facilities, existing or under construction.” ARSD 20:10:22:13.
6. Applicants failed to provide the estimates required by ARSD 20:10:22:13, but such information is included in testimony and exhibits submitted by Joint Intervenors regarding the effects of the proposed facility’s CO₂ emissions, and in Staff’s testimony. Staff’s calculations of environmental damages demonstrate that Big Stone II poses a threat of serious injury to the environment even under the most optimistic of assumptions for both CO₂ emissions and mercury emissions. Tens of millions to billions dollars in damages from carbon dioxide is a “serious threat” to the environment and public health. Eleven million to \$22 million in environmental damage from mercury is a “serious threat” to the environment and public health.
7. Applicants have not met their burden under SDCL 49-41B-22 (2), and indeed, the record shows that the proposed Big Stone II plant poses a threat of serious injury to the environment as a result of both mercury and carbon dioxide emissions.
8. Under SDCL 49-41B-22(4), Big Stone II Applicants must prove that the facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.
9. SDCL 49-41B-22 (4) essentially requires the Commission to consider alternative forms of economic development that the region might expect, and consider how the proposed plant might interfere with that development. The most obvious alternative path of economic development that Big Stone II interferes with is the exploitation of South Dakota’s ample – and as yet almost completely undeveloped – wind resource. Testimony in this proceeding shows that the development of Big Stone II would likely interfere with realizing full development potential of South Dakota’s wind resource, an industry that brings with it substantial and sustainable economic development benefits.