

**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**

**DIRECT TESTIMONY**

**OF**

**RANDALL M. STUEFEN**

**PROFESSOR EMERITUS**

**UNIVERSITY OF SOUTH DAKOTA**

**MARCH 15, 2006**



1  
2  
3  
4  
5  
6  
7

**TESTIMONY OF RANDALL STUEFEN**

**TABLE OF CONTENTS**

I. INTRODUCTION ..... 1

II. PURPOSE AND SUMMARY ..... 2

III. ECONOMIC IMPACTS ..... 3

IV. EMPLOYMENT IMPACTS ..... 9

1           **BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

2                           **DIRECT TESTIMONY OF RANDALL STUEFEN**

3   **I.     INTRODUCTION**

4   **Q:     Please state your name and business address.**

5   A:     Randall M. Stuefen, 813 Valley View Drive, Vermillion, South Dakota 57069.

6   **Q:     By whom are you employed and in what capacity?**

7   A:     My current university status is Professor Emeritus at the University of South Dakota. I  
8   retired from the Business Research Bureau, University of South Dakota in December of 2004.  
9   From 1983 to 2004, I served as either Associate Director of the Business Research Bureau or  
10   Director of Research at the Business Research Bureau. I now own and conduct research as  
11   Stuefen Research, LLC. (Stuefen Research, LLC, was Stuefen Research at the time the analysis  
12   for the Big Stone II Application was conducted.) Stuefen Research, LLC is located in  
13   Vermillion, South Dakota.

14   **Q:     Describe your educational background.**

15   A:     I earned a Bachelor of Science degree from South Dakota State University in economics  
16   in 1975, and earned a Master of Science Degree from South Dakota State University in  
17   economics in 1980.

18   **Q:     What is your employment history?**

19   A:     While at the University, it was my task to contract with government agencies,  
20   organizations and businesses to conduct research as needed on a project basis. I would  
21   participate in all aspects of each project. I also taught marketing and statistics in the mid 1980s  
22   at the School of Business. I currently work on and contract for projects under the entity Stuefen

1 Research, LLC. Stuefen Research, LLC partners with the Business Research Bureau on selected  
 2 projects for the purpose of conducting research.

3 **Q: What work experience have you had that is relevant to your testimony?**

4 A: I have conducted a broad range of survey research that falls under the headings of issue  
 5 research, marketing research, prevalence of problem gambling surveys, employee, constituency  
 6 or customer satisfaction surveys, fair market rents in housing, bank entry statistical analysis and  
 7 management research. I have conducted economic impact analysis for the state's Small Business  
 8 Development Center, University of South Dakota, the state's nursing home industry, ethanol  
 9 related agricultural industries, child day care services and the Big Stone II project.

10 **Q: What classes and other training have you taken related to the subject of your**  
 11 **testimony?**

12 A: I have attended the basic and advanced training sessions conducted by Minnesota  
 13 IMPLAN Group, Inc. ("MIG, Inc."), which provides training, tools and resources for statistical  
 14 economic analysis. MIG, Inc. holds regularly scheduled IMPLAN® training sessions for both  
 15 beginning and advanced IMPLAN users. The introductory workshop covers basic input-output  
 16 economics, impact analysis, and the IMPLAN software. The advanced course reviews the  
 17 introductory course and continues building on the users' modeling skills.

18 **II. PURPOSE AND SUMMARY**

19 **Q: What is the purpose of your testimony?**

20 A: The purpose of my testimony is to explain the potential economic impacts of the  
 21 proposed Big Stone Unit II. I prepared a written report estimating the economic impacts on the  
 22 South Dakota economy and the economy of a four county area including Grant and Codington

1 counties in South Dakota, and Big Stone and Lac Qui Parle counties in Minnesota. The  
 2 Minnesota counties were chosen for inclusion because of their close proximity and likelihood of  
 3 economic participation. Codington County was chosen because it is the largest trade center in  
 4 the area and it is expected to benefit from the plant's construction.

5 **Q: Please summarize your testimony.**

6 A: Both the state and the local communities are expected to experience job growth and  
 7 economic growth during the construction of the proposed Big Stone Unit II and for the long term  
 8 during its operation and maintenance. This is a large construction project that will impact the  
 9 area over a four year period. The ongoing increase in plant operations employment will benefit  
 10 the area for years to come. There appear to be no material adverse effects on economic or  
 11 employment factors as related to the construction and operation of the proposed Big Stone Unit  
 12 II.

13 **III. ECONOMIC IMPACTS**

14 **Q: What was your involvement in the application process for the proposed Big Stone**  
 15 **Unit II?**

16 A: I was tasked with estimating the four county local and state economic impact of  
 17 constructing the Big Stone II power plant. In addition, a longer-term or ongoing four county  
 18 economic impact of new employees being hired to operate the plant was estimated.

19 **Q: Did you prepare any written studies/work product that is reflected in the**  
 20 **Application?**

1 A: Yes. I prepared a report titled the "Economic Impact of Constructing the Big Stone II  
 2 Power Plant" and a one page summary titled the "Economic Impact Highlights of Big Stone II  
 3 Power Plant Construction," both of which are included as Exhibit C of the Application.

4 **Q: Do you want to make any changes to your initial report, entitled the "2004  
 5 Economic Impact of Constructing the Big Stone II Power Plant" by Stuefen Research and  
 6 Business Research Bureau and is Exhibit C of the Application?**

7 A: Yes.

8 **Q: What are the changes?**

9 A: The statistical model assumes that a certain amount of architectural design work  
 10 comprises the employment created by the project. However, the jobs performed by Burns and  
 11 McDonnell should be excluded from the calculations for the number of jobs and economic  
 12 impact, because those jobs are based in Kansas City, Missouri, not South Dakota. Also, the  
 13 treatment of inflation as it pertains to state employment calculations was corrected, so that the  
 14 2008 dollars were deflated to 2001 dollars to properly fit the data in the model and calculate the  
 15 employment multiplier. An updated "Economic Impact Highlights of Big Stone II Power Plant  
 16 Construction, Updated February 15, 2006" is attached to the end of this testimony as Applicants'  
 17 Exhibit 26-A.

18 **Q: Why are the changes necessary?**

19 A: Data for Burns and McDonnell was included in my original, previously submitted  
 20 calculations. When I was reviewing my data and calculations for preparation of this testimony, I  
 21 realized that the Burns and McDonnell jobs should be excluded because they are based in Kansas

1 City and not at the Big Stone II site in South Dakota. I also realized that the 2008 dollars had not  
 2 been deflated to 2001 which would have the effect of inflating the employment multiplier.

3 **Q: What is the effect of these changes to your calculations?**

4 A: The local four-county economic impact during construction was originally estimated at  
 5 \$675 million; the revised estimate is \$672.8 million, which is a difference of \$2.2 million. The  
 6 local job growth was originally estimated at 1,997 full and part time jobs in the local  
 7 communities; the revised calculation is 1,844 full and part time jobs, which is a difference of 153  
 8 jobs. The average number of jobs was originally estimated at 1,137 per year for each of four  
 9 years; the revised number is 1,098, a difference of 39.

10 The revised numbers for the state benefit during construction is an economic impact of  
 11 \$745.1 million, compared to the original estimate of \$788 million, a decrease of \$42.9 million.  
 12 The state benefit for job growth of full and part time jobs during construction is estimated at  
 13 2,291, originally estimated at 3,322. The long term local benefits remain unchanged.

14 **Q: Do the changes affect the results of your analysis in a material way?**

15 A: No. These changes are not significant for purposes of an overall analysis. The net result  
 16 for job creation and economic impact is overall still positive.

17 **Q: What general sources of information were used to identify the time frame for  
 18 constructing the plant and the expected workforce number for doing the work?**

19 A: The time frame for constructing the facility was identified in an Otter Tail Power  
 20 Company news release dated October 11, 2004. It states that the power plant will require a four-  
 21 year construction period and that it is expected to be on line in 2011. Otter Tail Power Company  
 22 projected the start of construction in April 2007 with an expected completion date of April 2011.

1 While construction is expected to get underway in 2007, it is assumed that the peak employment  
 2 year will not be 2007. It is assumed that the peak year of construction will be in 2008 or begin in  
 3 2008 and extend into 2009. Because of this assumption, the study refers to dollar cost estimates  
 4 in 2008 dollars.

5 **Q: Did you have information regarding the number of people to be directly involved in**  
 6 **the construction of the plant?**

7 A: Yes, I used two sources of information regarding construction employment numbers. The  
 8 October 11, 2004 press release indicated that approximately 625 people would be employed over  
 9 the four year period yielding a total of 2,500 workers. The press release indicated that in the  
 10 peak year a workforce of 1,500 people will be employed. Additional information provided by  
 11 Burns & McDonnell, through representatives of Otter Tail Power Company, supported a four  
 12 year workforce of 2,550 using 2000 paid hours in a typical 2080 hour work year. The 2,550  
 13 employee estimate is used in the analysis.

14 **Q: Do you expect that all people employed to construct the Big Stone II power plant**  
 15 **will be from the four county area near the Plant?**

16 A: No, workers from outside the area are expected to work on the project. No estimate of  
 17 the proportion of workers to expect from outside the area of interest was attempted. It is  
 18 assumed in the impact estimates that fifty percent of the workers will be from outside these areas  
 19 and spend their income outside the four county area and outside the state of South Dakota. No  
 20 historical data was found to support the assumption.

21 **Q: What were the primary sources of construction information?**



1 A: Burns & McDonnell is the primary source of construction cost information used in the  
 2 analysis. The information was provided to me through a representative of Otter Tail Power  
 3 Company. In addition, the company's web site was a good source of information. The staffing  
 4 information for the ongoing operations was estimated in the October 11, 2004 press release  
 5 previously mentioned at thirty to forty employees. After further discussion with a representative  
 6 of the Otter Tail Power Company, the number thirty-five ongoing employees was used to  
 7 formulate the estimates.

8 **Q: What are the expected construction costs for building Big Stone Unit II?**

9 A: The total project cost of plant construction is estimated at approximately one billion  
 10 dollars but not all construction costs will impact on the local or state economies. Out-of-state  
 11 expenditures on the procurement of equipment and component parts and money set aside for  
 12 escalation in the procurement process are not included in the local or state economic impact  
 13 estimates except as specifically identified. Construction costs associated with the plant are  
 14 estimated by Burns and McDonnell to be over six hundred and sixteen (616.3) million dollars.  
 15 In addition, the Engineering and Management fee of thirty-eight (38.0) million dollars will be  
 16 spent outside of South Dakota or the local economy including two counties in Minnesota. This  
 17 money is treated in the economic impact analysis as were the procurement expenditures which is  
 18 a deduction from construction costs. Also, escalation funds are excluded because the money  
 19 does not directly result in construction activity. The forty-six and one half (46.5) million dollars  
 20 are held in reserve to pay for construction expenses resulting from inflation or errors in the  
 21 estimated cost of an activity over the life of the construction project. Escalation funds are not  
 22 considered when calculating the number of jobs that the project creates. Direct construction

1 costs were estimated at five hundred thirty-one million seven hundred thousand dollars  
 2 (\$531,700,000). A summary of findings follows.

3 **Q: Can you summarize the estimates of economic activity associated with the**  
 4 **construction of Big Stone Unit II?**

5 A: Yes, the general model inputs and economic activity associated with the plants  
 6 construction are as follows:

7 **General Model Inputs**

8 Project Construction Period: April 2007 – April 2011

9 Total Project Cost: Approximately \$1 billion

10 Direct Construction Costs: Approximately \$531.7 million

11 *Local Four County Benefit During Construction (2008 dollars)*

12 **(Updated)** Local Economic Impact: \$672.8 million during construction

13 State Benefit During Construction (a broader perspective in 2008 dollars)

14 **(Updated)** South Dakota Economic Impact: \$745.1 million during construction

15 *Long-Term Local Benefit (2004 dollars)*

16 **(Updated)** Long term local economic impact: \$3.6 million / year of new income to the four  
 17 county area not including on-going contractor support for plant activities

18 **Q: Why is the estimation of economic activity or economic impact analysis important?**

19 A: Economic impact analysis is important in that it shows the financial benefit of a project  
 20 such as the construction of Big Stone Unit II to other businesses in the defined area and the  
 21 households of not only people that work directly in the construction of the plant but also the  
 22 benefit to other sectors within an economy and the people that have jobs and work in the area. It

1 shows that the final impact of the financial injection is greater than the initial investment in the  
2 plant as the money makes its way through the economy.

3 **Q: Does your economic impact analysis consider the factors set forth in ARSD**  
4 **20:10:22:23 (Community Impact)?**

5 A: Yes, as presented in Section 5.1 and Exhibit C of the Application, and in regard to the  
6 two levels of geography addressed in the study – the four county area and the state. The four  
7 counties selected for the area are those that would be impacted by the proposed Big Stone Unit II  
8 project and could be defined as a “Greater Community” serving the people participating in  
9 construction activities.

10 **Q: Did you review other studies or work product in making your evaluation and**  
11 **conclusions?**

12 A: Other economic impact studies were reviewed but no other study was relied upon for this  
13 analysis.

14 **Q: Does this plant pose an economic threat to the four county area or the state of South**  
15 **Dakota?**

16 A: No.

17 **IV. EMPLOYMENT IMPACTS**

18 **Q: Did you prepare any written studies/work product that are reflected in the**  
19 **Application relating to employment impacts?**

20 A: Yes, as presented in Section 5 and Exhibit C of the Application.

21 **Q: Did your analysis consider the factors set forth in ARSD 20:10:22:24?**

1 A: Yes. I looked at the estimated number of jobs, the job classifications, the estimated  
 2 employment expenditures, both for the period of construction and for the estimated operating life  
 3 of the proposed facility. I considered the adequacy of local labor resources to meet temporary  
 4 and permanent job requirements for both construction and operation of the proposed Big Stone  
 5 Unit II, and I considered that outside labor forces not permanently located in South Dakota might  
 6 be utilized as well for the construction of the proposed Big Stone Unit II. I also analyzed the  
 7 types of jobs and special skills that would be required.

8 **Q: Describe the results of your work.**

9 A: The estimation of employment impacts is a function of the direct cost of construction and  
 10 available employment information about the project. The direct cost of construction for the Big  
 11 Stone Unit II is 531.7 million dollars which is the amount used in the economic activity analysis.

12 **Local Four County Benefit During Construction (2008 dollars)**

13 Local Job Growth: 2,550 Full Time Equivalent positions during construction  
 14 1,844 Full and part time jobs in the communities  
 15 An average of 1,098 per year for four years

16 *State Benefit During Construction (a broader perspective in 2008 dollars)*

17 State Job Growth: 2,550 Full Time Equivalent positions during construction  
 18 2,291 Full and part time jobs in the communities  
 19 An average of 1,210 per year for four years

20 *Long-Term Local Benefit (2004 dollars)*

21 Long term local job growth: 35 Full Time Equivalents employed in operations  
 22 29 Full and part-time positions in the communities

1 **Q: Where did you obtain information relevant to your work?**

2 A: The cost data provided by Burns & McDonnell is the information base for the following  
3 economic impact analysis. Other information was obtained from the Otter Tail Power  
4 Company's website and representatives of Otter Tail. The construction cost information from  
5 these sources and staffing information from Otter Tail Power Company was used in an IMPLAN  
6 model to formulate the employment estimates.

7 **Q: What sectors of the economy will benefit from the economic activity resulting from**  
8 **the construction of the plant?**

9 A: The top fifty sectors that are expected to benefit from the economic activity measured by  
10 full and part time employment impacts is attached as Applicants' Exhibit 26-B. The table  
11 presents the estimated indirect impacts and the induced impacts from that economic activity.

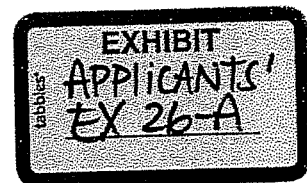
12 **Q: Does this conclude your testimony?**

13 A: Yes.

## Leading Sector Estimates of Employment Impacts In Four County Area

(100% Induced and 50% Induced Employment Presented)

|  | Indirect | 100% of Induced | 50% of Induced | Indirect Plus 50% Induced |
|--|----------|-----------------|----------------|---------------------------|
| Food services and drinking places                | 16.5     | 198.7           | 99.4           | 115.9                     |
| Food and beverage stores                         | 78.0     | 58.1            | 29.0           | 107.0                     |
| Automotive repair and maintenance- except ca     | 90.3     | 27.7            | 13.9           | 104.2                     |
| Wholesale trade                                  | 81.6     | 33.1            | 16.5           | 98.1                      |
| General merchandise stores                       | 44.0     | 55.9            | 28.0           | 72.0                      |
| Accounting and bookkeeping services              | 64.2     | 21.4            | 10.7           | 74.9                      |
| Nondepository credit intermediation and relat    | 51.4     | 27.0            | 13.5           | 64.9                      |
| Hospitals  | 0.0      | 73.1            | 36.5           | 36.5                      |
| Motor vehicle and parts dealers                  | 25.6     | 40.8            | 20.4           | 46.1                      |
| Civic- social- professional and similar organiz  | 36.7     | 27.5            | 13.7           | 50.5                      |
| Building material and garden supply stores       | 42.4     | 21.3            | 10.6           | 53.0                      |
| Miscellaneous store retailers                    | 35.8     | 26.0            | 13.0           | 48.8                      |
| Commercial machinery repair and maintenanc       | 57.9     | 2.3             | 1.1            | 59.0                      |
| Real estate                                      | 23.1     | 36.8            | 18.4           | 41.5                      |
| Nursing and residential care facilities          | 0.0      | 59.7            | 29.9           | 29.9                      |
| Health and personal care stores                  | 40.8     | 17.4            | 8.7            | 49.5                      |
| Insurance carriers                               | 36.7     | 20.6            | 10.3           | 47.0                      |
| Truck transportation                             | 36.8     | 12.0            | 6.0            | 42.8                      |
| Offices of physicians- dentists- and other healt | 0.0      | 46.0            | 23.0           | 23.0                      |
| Securities- commodity contracts- investments     | 22.8     | 22.3            | 11.2           | 33.9                      |
| Legal services                                   | 11.1     | 31.9            | 15.9           | 27.0                      |
| Monetary authorities and depository credit intr  | 14.8     | 27.6            | 13.8           | 28.6                      |
| Nonstore retailers                               | 15.7     | 25.7            | 12.8           | 28.6                      |
| Clothing and clothing accessories stores         | 14.6     | 23.0            | 11.5           | 26.1                      |
| Services to buildings and dwellings              | 29.7     | 7.9             | 4.0            | 33.6                      |
| Electronics and appliance stores                 | 24.2     | 8.9             | 4.5            | 28.6                      |
| Other amusement- gambling- and recreation in     | 0.7      | 32.1            | 16.0           | 16.7                      |
| Insurance agencies- brokerages- and related      | 20.5     | 11.5            | 5.8            | 26.2                      |
| Business support services                        | 19.4     | 11.8            | 5.9            | 25.3                      |
| Gasoline stations                                | 12.0     | 17.2            | 8.6            | 20.6                      |
| Private households                               | 0.0      | 23.4            | 11.7           | 11.7                      |
| Hotels and motels- including casino hotels       | 9.0      | 9.2             | 4.6            | 13.7                      |
| Furniture and home furnishings stores            | 5.3      | 12.1            | 6.1            | 11.4                      |
| Sporting goods- hobby- book and music stores     | 11.2     | 6.1             | 3.1            | 14.3                      |
| Other State and local government enterprises     | 6.4      | 9.7             | 4.9            | 11.3                      |
| Maintenance and repair of nonresidential builc   | 11.7     | 4.2             | 2.1            | 13.8                      |
| Social assistance- except child day care servic  | 0.0      | 15.8            | 7.9            | 7.9                       |
| Other educational services                       | 8.6      | 6.9             | 3.5            | 12.1                      |
| Office administrative services                   | 13.7     | 1.6             | 0.8            | 14.5                      |
| Telecommunications                               | 8.5      | 5.5             | 2.7            | 11.2                      |
| Child day care services                          | 0.0      | 13.3            | 6.6            | 6.6                       |
| Couriers and messengers                          | 9.4      | 3.0             | 1.5            | 10.9                      |
| Advertising and related services                 | 7.4      | 5.0             | 2.5            | 9.9                       |
| Postal service                                   | 5.7      | 5.7             | 2.8            | 8.5                       |
| Newspaper publishers                             | 6.4      | 4.7             | 2.4            | 8.8                       |
| Management consulting services                   | 8.0      | 3.1             | 1.5            | 9.6                       |
| Other ambulatory health care services            | 0.0      | 10.3            | 5.2            | 5.2                       |
| Personal care services                           | 0.0      | 10.2            | 5.1            | 5.1                       |
| Household goods repair and maintenance           | 7.9      | 2.1             | 1.0            | 8.9                       |
| Sign manufacturing                               | 5.9      | 3.9             | 1.9            | 7.8                       |



# ECONOMIC IMPACT HIGHLIGHTS OF BIG STONE II POWER PLANT CONSTRUCTION <sup>1</sup>

(Updated February 15, 2006)

## *General Model Inputs*

Project Construction Period: April 2007 – April 2011

Total Project Cost: Approximately \$1 billion

Direct Construction Costs: Approximately \$531.7 million

## *Local Four County Benefit During Construction (2008 dollars)*

Local Economic Impact: \$672.8 million during construction

Local Job Growth: 2,550 Full Time Equivalent positions during construction  
1,844 Full and part time jobs in the communities  
An average of 1,098 per year for four years

## *State Benefit During Construction (a broader perspective in 2008 dollars)*

South Dakota Economic Impact: \$745.1 million during construction

State Job Growth: 2,550 Full Time Equivalent positions during construction  
2,291 Full and part time jobs in the communities  
An average of 1,210 per year for four years

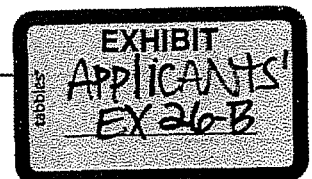
## *Long-Term Local Benefit (2004 dollars)*

Long term local job growth: 35 Full Time Equivalents employed in operations  
29 Full and part-time positions in the communities

Long term local economic impact: \$3.6 million / year of new income to four county area  
Not including on-going contractor support for plant activities

Stuefen Research  
813 Valley View Drive  
Vermillion, SD 57069-3544  
605-677-8384 / rstuefen@mchsi.com

<sup>1</sup> Summary on page 13



## **Addendum to Appendix C**

### **Economic Impact of Constructing the Big Stone II Power Plant**

February 15, 2006

---

#### **Four-County Economic Impact**

Table 1 shows the economic impact of power plant construction activity in the four-county geographic area identified as our area of interest. For every dollar spent on power plant construction at this location, 39.7 cents (0.3969) of income will be generated. The direct expenditure of one million dollars in the construction of the plant is estimated to directly result in 4.8 jobs and the creation of 396,900 dollars of income. The difference between the initial delivery of 1 million dollars of construction services and the 396,900 dollar increase ( $1,000,000 \times .3969$ ) in income is that money spent on other non-labor construction costs.

The indirect output includes those services and goods purchased from other businesses in the four-county area to complete that one million dollars of construction. It is estimated that for every one million dollars of construction completed, 170,400 dollars of goods and services will be purchased from businesses in the four-county area and those expenditures will result in an additional 87,200 dollars of income for these businesses and result in 2.2 people being employed full or part time.

Induced output is the spending of households in the economy by people employed directly in the construction of the plant and the businesses benefited indirectly by purchases related to the construction of the power plant. People taking their paychecks from work directly and indirectly related to the construction of the power plant, result in 189,600 dollars of spending for each million dollars worth of construction.

The multipliers in Table 1 are used in the analysis with an adjustment to induced spending. It is assumed that not all workers will move to the four-county area for this work. Those workers having households to support located outside the four-county area will be spending some portion of their paychecks outside our area of interest. That economic impact is not taking place in these four counties and may not be taking place in South Dakota. It is assumed that 50 percent of the induced expenditures do not take place in our areas of interest and the induced multipliers in Tables 2 and 3 are reduced to 50 percent of the initial total measure in Table 1.



**Table 1**  
**Four County Economic Impact Multipliers for Power Plant Construction**  
**Full and Partial Induced Impact**

|   | Total Output  | Value Added   | Employment |
|---|---------------|---------------|------------|
| Direct  | 1.0000        | 0.3969        | 4.8        |
| Indirect  | 0.1704        | 0.0872        | 2.2        |
| Induced   | 0.1896        | 0.1037        | 2.5        |
| <b>Total</b>                                      | <b>1.3600</b> | <b>0.5878</b> | <b>9.5</b> |
| Induced @ 50%                                     | 0.0948        | 0.0519        | 1.3        |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>1.2652</b> | <b>0.5360</b> | <b>8.3</b> |

*Source: IMPLAN regional input-output economic impact estimator, 2001 data.*

The multiplier in Table 1 states that every dollars worth of power plant construction, the estimated total impact of that dollar is one dollar and twenty-seven cents (\$1.265) in the economies of the four counties assuming 50% of expected induced spending in the four county area. That measure includes the economic activity resulting directly from construction, transactions of local businesses selling goods and services that support construction activities and the spending by the households of people employed at the construction site and the supporting businesses.

For every dollar spent on the construction of the power plant, the wealth in the four counties increases by nearly fifty-four cents (\$0.536). There will also be eight and three-tenths (8.3) jobs created in the four county area for each million dollars worth of construction activity.

The total impact of the construction activity is presented in Tables 4 and 5. Table 2 presents the impact in 2008 dollars with no consideration given to inflation or cost overruns. Table 3 presents the expected impact with the budgeted escalation money (46.5 million) added to the output and the value added estimates. The difference is a description of the project in 2008 and 2008 plus escalation dollars with the distinction being consideration given to increasing costs or inflation. The actual impact is expected to be within the range between real dollar amounts and that number where all budgeted escalation dollars are included. Job numbers remain the same for both estimates.

In 2008 dollars, the value added by all labor (2,550 jobs) on the project over a four year period is 211.0 million dollars. The labor and proprietor's income in the four-county area for businesses selling goods and services to the project is 46.4 million dollars which will

employ 1,186 people.<sup>2</sup> Assuming 50% of estimated induced expenditures are local, 27.6 million dollars and 658 jobs will be the value added by people providing goods and services to the households of the workers on the construction site and in the local businesses identified as indirectly supporting the construction effort.

**Table 2**  
**Economic Impact of Construction in 2008 Dollars**  
**Assumes 50% of Induced Impact and No Escalation Money**

|   | Total Output       | Value Added        | Employment   |
|---|--------------------|--------------------|--------------|
| Direct  | 531,714,728        | 211,043,692        | 2,550        |
| Indirect  | 90,626,588         | 46,383,770         | 1,186        |
| Induced @ 50%                                     | 50,412,113         | 27,564,140         | 658          |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>672,753,430</b> | <b>284,991,602</b> | <b>4,394</b> |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

The estimates in Table 3 are the base estimates of Table 2 with escalation dollars added. Escalation dollars are added to the base cost estimates to provide for inflation and cost under estimates. The actual economic impact of the construction activities associated with the Big Stone II power plant is expected to be within a range having the 2008 dollar amounts on the low end and these base estimates plus escalation amounts on the high end.

**Table 3**  
**Economic Impact of Construction Activity**  
**Assumes 50% of Induced Impact and 46.5 Million in Escalation Money**

|   | Total Output       | Value Added        | Employment   |
|---|--------------------|--------------------|--------------|
| Direct  | 578,261,643        | 229,518,698        | 2,550        |
| Indirect  | 98,560,144         | 50,444,258         | 1,186        |
| Induced @ 50%                                     | 54,825,247         | 29,977,137         | 658          |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>731,647,034</b> | <b>309,940,092</b> | <b>4,394</b> |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

<sup>2</sup> All direct are full time equivalents paid 2000 of a standard 2080 hour work year . Indirect and Induced are full and part time jobs.

## **Other Considerations (no update)**

There is an additional category of expenses in the description of the project identified as owner costs. This category consists largely of money for contingencies and internal transfers. There is a 15.7 million dollar provision for the purchase of engineering services from existing personnel. Task reassignment has no substantial economic impact to the area. The same can be said for the operations personnel budget and the money for startup and testing. Substantial economic impact to the area is not expected as a result of existing personnel being paid from a different source of money. Money required to purchase land for the new power plant is an internal transaction and is not expected to have a substantial impact on the economies of the four counties. The other significant amounts in the budget relate to owner escalation (4.2 million) and contingency (74.1 million). These amounts are in addition to the escalation and contingency amounts budgeted for the construction of the power plant. Whether this money will be necessary to the completion of the project or how it will be spent is not clear.

## South Dakota Economic Impact

Multiplier analysis is an estimate of the business activity that takes place in a defined geography as a result of economic activity. One would expect more product offerings and business services in the larger geography of South Dakota than in the four-county area. Likewise, there will be more consumer products and services for the workers to purchase as well. These considerations suggest that the multipliers beyond the direct impact which cannot change will for the state be larger than for the four counties.

Table 4 shows the economic impact resulting from power plant construction activity for the state of South Dakota. The direct expenditure of one million dollars in the construction of the plant is estimated to directly result in 4.8 jobs and the creation of 400,100 dollars in income. The difference between the initial delivery of one million dollars of construction services and the 400,100 dollar increase in income is money spent on non-labor construction costs.

The indirect output includes those services and goods purchased from other businesses in the four-county area to conduct one million dollars of construction. It is estimated that for every one million dollars of construction, 238,600 dollars of goods and services will be purchased from businesses in the state and those expenditures will result in an additional 125,500 dollars of income for these businesses and their employees and result in 2.4 people being employed.

Induced output or household spending is estimated at 325,600 dollars of spending for each million dollars worth of construction. However, it is assumed that not all workers will be from South Dakota. Those workers having households to support located outside the state will continue to spend some portion of their paychecks in their home state. Conservatively and consistent with the county analysis, it is assumed that 50 percent of the induced expenditures do not take place in South Dakota and the induced multipliers in Tables 5 and 6 are reduced to 50 percent of the measure in Table 4.

**Table 4**  
**Economic Impact Multipliers for Power Plant Construction**  
**Full and Partial Induced Impact**

|   | Total Output  | Value Added   | Employment  |
|---|---------------|---------------|-------------|
| Direct  | 1.0000        | 0.4001        | 4.8         |
| Indirect  | 0.2386        | 0.1255        | 2.4         |
| Induced   | 0.3256        | 0.1794        | 3.8         |
| <b>Total</b>                                      | <b>1.5642</b> | <b>0.7050</b> | <b>11.0</b> |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>1.4014</b> | <b>0.6153</b> | <b>9.1</b>  |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

The total impact of the construction activity is presented in Tables 5 and 6. Table 5 presents the impact in 2008 dollars with no consideration given to inflation or cost overruns. Table 6 presents the expected impact with money budgeted for escalation added to the output and the value added estimates. The difference between these tables is a description of the project in 2008 dollars and 2008 plus escalation dollars. The actual impact is expected to be within the range between the 2008 dollar amounts and that number where all budgeted escalation dollars are included. Job numbers remain the same for both estimates.

In 2008 dollars, the value added by all labor (2,550 jobs) on the project over a four year period is 212.7 million dollars. The proprietor and labor income for businesses in the four-county area selling goods and services to the project is 66.7 million dollars which will employ 1,290 people either full or part time. Assuming 50% of estimated induced expenditures are local, 47.7 million dollars and 1,001 jobs full and part time will be the value added by people providing goods and services to the households of the workers on the construction site and in the local businesses identified as indirectly supporting the construction effort.

**Table 5**  
**Economic Impact in 2008 Dollars**  
**Assumes 50% of Induced Impact and No Escalation Money**

|   | Total Output       | Value Added        | Employment   |
|---|--------------------|--------------------|--------------|
| Direct  | 531,714,728        | 212,740,413        | 2,550        |
| Indirect  | 126,860,144        | 66,749,671         | 1,290        |
| Induced @ 50%                                     | 86,570,335         | 47,698,210         | 1,001        |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>745,145,207</b> | <b>327,188,295</b> | <b>4,841</b> |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

The estimates in Table 6 are the base estimates of Table 5 with escalation dollars added. Escalation dollars are added to the base cost estimates to provide for inflation and cost under estimates. The actual economic impact of the construction activities associated with the Big Stone II power plant is expected to be within a range having the 2008 dollar amounts on the low end and these base estimates plus escalation amounts on the high end.

**Table 6**  
**Estimated Economic Impact including Escalation Funding**  
**Assumes 50% of Induced Impact and 46.5 Million in Escalation Money**

|   | Total Output       | Value Added        | Employment   |
|---|--------------------|--------------------|--------------|
| Direct  | 578,261,643        | 231,363,952        | 2,550        |
| Indirect  | 137,965,626        | 72,593,014         | 1,290        |
| Induced @ 50%                                     | 94,148,801         | 51,873,766         | 1,001        |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>810,376,070</b> | <b>355,830,732</b> | <b>4,841</b> |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

## Four-County Generation Impact (no update)

The operation of the plant will begin in 2011. Ottetail Power Company estimates that the new plant will require an additional 35 employees at a cost in payroll including benefits of approximately 2.5 million dollars at 2004 wage levels. The estimated economic impact of employing these additional people on the four-county economy is presented in Table 7. The 35 new power plant jobs are estimated to create another 28.8 jobs. The associated 2.5 million dollar payroll is expected to result in a total economic activity increase of 3.1 million dollars as these new households purchase goods and services in the area and the money makes its way through the economy. The income generated in households outside those directly employed at the power plant is an additional 1.1 million dollars.

**Table 7**  
**Economic Impact in 2004 Dollars**  
**Employing 35 People with Payroll of 2.5 Million**

| <b>2004 Dollars</b>        | <b>Total Output</b> | <b>Value Added</b> | <b>Employment</b> |
|----------------------------|---------------------|--------------------|-------------------|
| Induced Initial Impact     | 2,500,000           | 793527             | 35                |
| Induced Subsequent Impacts | 603,864             | 314460             | 9.1               |
| <b>Total</b>               | <b>3,103,864</b>    | <b>1,107,987</b>   | <b>44.1</b>       |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

In 2011, when the plant becomes operational, the number of people employed is assumed to be 35. The number of additional jobs in the economy will be that described in the table (28.8). The measure of total economic activity or output will increase by the percentage of inflation between 2004 and 2011 as will the value added to workers in local businesses as new income.

Stuefen Research  
813 Valley View Drive  
Vermillion, SD 57069-3544  
randall@stuefenresearch.com  
605-677-8384 or 605-624-9754

## Updated Summary

### Four-County Multipliers

The estimated four-county<sup>3</sup> economic output multiplier for the construction of the power plant is 1.27 assuming 50% of money earned by workers is spent in communities outside the four-county area. For each one million dollars of construction activity 4.8 full time positions will be created at the site, and 2.2 people will be employed indirectly full time or part time at businesses in the local communities. The one million dollars of economic activity and the employment of the workers (8.3) will result in the wealth of the area being increased by more than five hundred thousand dollars (0.5360 million).

Induced spending is reduced to 50% recognizing that a substantial number of workers on the project will have residences outside the four-county area and a substantial portion of their earnings will be used to support their distant households. The same is true when looking at the induced spending associated with the state estimated impacts.

**Summary Table 1**  
**Four-County Construction Economic Impact Multipliers**

|   | <b>Total Output</b> | <b>Value Added</b> | <b>Employment</b> |
|---|---------------------|--------------------|-------------------|
| Direct  | 1.0000              | 0.3969             | 4.8               |
| Indirect  | 0.1704              | 0.0872             | 2.2               |
| Induced @ 100%                                    | 0.1896              | 0.1037             | 2.5               |
| <b>Total</b>                                      | <b>1.3600</b>       | <b>0.5878</b>      | <b>9.5</b>        |
| Induced @ 50%                                     | 0.0948              | 0.0519             | 1.3               |
| <b>Total Assuming 50% of<br/>Induced Spending</b> | <b>1.2652</b>       | <b>0.5360</b>      | <b>8.3</b>        |

Source: IMPLAN regional input-output economic impact estimator, 2001 data.

### State of South Dakota Multipliers

The estimated South Dakota economic output multiplier for the construction of the power plant is more inclusive than the four-county estimate. More businesses are expected to sell goods and services to the project and more workers are expected to be from South Dakota than from the four-county area. The state economic output multiplier is 1.40

<sup>3</sup> Four counties include Grant and Codington in South Dakota; Big Stone and Lac Qui Parle in Minnesota.



assuming that 50% of money earned by workers is spent outside the state of South Dakota. For each one million dollars of construction activity, 9.1 people will be employed directly, indirectly or as a result of induced spending in the state. The direct employment is in full time equivalents assuming a full working year per position. Employment associated with indirect and induced impacts include both full and part-time positions. The result of a million dollars of economic activity and the employment of the workers (9.1) is an estimated increase wealth or income of over six hundred thousand dollars (0.615 million).

**Summary Table 2**  
**South Dakota Construction Economic Impact Multipliers**

|   | Total Output  | Value Added   | Employment  |
|---|---------------|---------------|-------------|
| Direct  | 1.0000        | 0.4001        | 4.8         |
| Indirect  | 0.2386        | 0.1255        | 2.4         |
| Induced   | 0.3256        | 0.1794        | 3.8         |
| <b>Total</b>  | <b>1.5642</b> | <b>0.7050</b> | <b>11.0</b> |
| <b>Total Assuming 50% of<br/>Induced Spending</b>                                 | <b>1.4014</b> | <b>0.6153</b> | <b>9.1</b>  |
| <b>Source: IMPLAN regional input-output economic impact estimator, 2001 data.</b> |               |               |             |

#### **Four-County Economic Impact**

The construction economic impacts in 2008 dollars and with escalation money included are presented for the four-county area in Summary Table 3. The size of the construction project is defined by Burns and McDonnell as costing 531.7 million in 2008 dollars and requiring 2,550 worker years or jobs over the life of the project. The construction activity and worker spending will create an additional 1,844 full and part time jobs in the communities throughout the four-county area.

**Summary Table 3**  
**Total Four-County Construction Economic Impact**  
**Assuming 50% Induced Spending**

| <b>Direct Expenditures</b>    | <b>Total Output</b> | <b>Value Added</b> | <b>Employment</b> |
|-------------------------------|---------------------|--------------------|-------------------|
| <i>In 2008 Dollars</i>        |                     |                    |                   |
| 531,714,728                   | 672,753,430         | 284,991,602        | 4,394             |
| <i>With Budget Escalation</i> |                     |                    |                   |
| 578,261,643                   | 731,647,034         | 309,940,092        | 4,394             |

**State of South Dakota Economic Impact**

The construction economic impacts in 2008 dollars and with escalation money included are presented for the state of South Dakota in Summary Table 4. The size of the construction project is defined by Burns and McDonnell as employing 2,550 full time jobs over the life of the project and costing 531.7 million 2008 dollars. The construction activity and worker spending will create an additional 2,291 full and part time jobs in the communities throughout the state for a total of 4,841 jobs.

**Summary Table 4**  
**Total South Dakota Construction Economic Impact**  
**Assuming 50% Induced Spending**

| <b>Direct Expenditures</b>    | <b>Total Output</b> | <b>Value Added</b> | <b>Employment</b> |
|-------------------------------|---------------------|--------------------|-------------------|
| <i>In 2008 Dollars</i>        |                     |                    |                   |
| 531,714,728                   | 745,145,207         | 327,188,295        | 4,841             |
| <i>With Budget Escalation</i> |                     |                    |                   |
| 578,261,643                   | 810,376,070         | 355,830,732        | 4,841             |

**Operation of Power Plant (no update)**

The operation of the plant will begin in 2011. Ottertail Power Company estimates that the new plant will require an additional 35 employees at a cost in payroll including benefits of approximately 2.5 million dollars at 2004 wage levels. The estimated economic impact of employing these additional people on the four-county economy is presented in Summary Table 5. The 35 new power plant jobs are estimated to create another 28.8 jobs throughout the economy. The associated 2.5 million dollar payroll is expected to result in

a total economic activity increase of 3.1 million dollars as these new households purchase goods and services in the area and the money makes its way through the economy. The income generated in households outside those directly employed at the power plant is an additional 1.1 million dollars.

**Summary Table 5  
Economic Impact in 2004 Dollars  
Employing 35 People with Payroll of 2.5 Million**

| <b>2004 Dollars</b>        | <b>Total Output</b> | <b>Value Added</b> | <b>Employment</b> |
|----------------------------|---------------------|--------------------|-------------------|
| Induced Initial Impact     | 2,500,000           | 793527             | 19.7              |
| Induced Subsequent Impact: | 603,864             | 314460             | 9.1               |
| <b>Total</b>               | <b>3,103,864</b>    | <b>1,107,987</b>   | <b>28.8</b>       |

Stuefen Research  
813 Valley View Drive  
Vermillion, SD 57069-3544  
[randall@stuefenresearch.com](mailto:randall@stuefenresearch.com)  
605-677-8384 or 605-624-9754

