II. Joint Exhibit 2 - REASONABLENESS OF BIG STONE AQCS PROJECT

The South Dakota DENR is the state agency responsible for implementing federal CAA requirements to reduce emissions that may contribute to regional haze from emitting facilities located in South Dakota, including the Big Stone Plant. After conducting a thorough analysis of pollution control options, the DENR determined that the control technologies in the AQCS Project must be required. As a result, the Big Stone Plant Co-Owners must design, construct, install and operate the AQCS by the compliance deadline established by the DENR, or the Plant will not be able to continue operation.

OTP, on behalf of the Co-Owners, has prepared an assessment of alternative scenarios that may be available to respond to the anticipated environmental regulations.[28] OTP developed four response scenarios and evaluated the comparative costs under each scenario using a 20-year levelized cost analysis:

1. Implementing the Big Stone AQCS Project, as Co-Owners have proposed;
2. Repowering Big Stone boiler with natural gas;
3. Retiring/Replacing Big Stone with a CCGT Plant; and
4. Retiring/Replacing Big Stone with a CCGT Plant and purchased wind power.

As shown in Table 2, the AQCS Project is the most economical scenario under all analyses in the Base Case.[29] The analysis of these alternative scenarios was carried out for a Base Case, which also considered the anticipated environmental costs for mercury control and coal ash disposal, as well as the cost of the stranded asset if one of the retirement/replacement options were to be implemented. Table 2 below presents a comparison of the alternative scenarios under the Base Case analysis, including an analysis that incorporates the cost to cover the stranded asset costs ("Stranded Asset Cost Scenario"), and an analysis that includes an additional $5 million in capital cost and $2 million in annual O & M cost for mercury removal and $6.66 million in annual O & M cost for handling coal ash if it is characterized as a hazardous waste ("High Environmental Cost Scenario").

Table 2 – Estimated Levelized Energy Cost (2016$/MWh)

	Big Stone + AQCS	CCGT + Wind	CCGT	Big Stone with Natural Gas
Combined Levelized Energy Cost - (Base Case)	$70.89	$100.43	$103.38	$117.25
Total Energy Cost Including	$70.89	$104.24	$107.19	$117.25

[28] Response scenarios that would not be available in the required timeframe, or could not replace the characteristics that Big Stone provides were not further analyzed. The selection of response scenarios that may be viable is fully explained in Joint Exhibit 3.

[29] Attachment 9 (Big Stone Pro Forma Economic Analysis) at 5-6.

Stranded Asset Cost				
Total Energy Cost Including High Environmental Costs	$74.56	$100.43	$103.38	$117.25

The Base Case analysis comparing installation of the AQCS with various options for repowering or retiring and replacing the Plant with natural gas shows that the AQCS is the most cost-effective option, with the cost of the other options at least $29 per MWh or 41% higher than the levelized MWh cost of the proposed AQCS.[30] The AQCS remains the most cost-effective option under several sensitivity analyses concerning capital cost (+/-30%), fuel cost (+/-20%), and O & M cost (+/-20%).

[30] Attachment 9 at 6.