

Analysis of Baseload Generation Alternatives

Big Stone Unit II

September 2005
39561



- The additional staffing required for the PC units was estimated and added to the existing Big Stone Unit I staff. Half of the total staff from both units was included in the O&M cost estimates for Big Stone Unit II. This results in 52 staff members attributed to Unit II.
- The additional staffing required for the biomass option was estimated and added to the existing Big Stone Unit I staff. The staff was allocated such that 10% of the total staff is allocated to Unit II. This results in 9 staff members attributed to Unit II.
- The variable O&M includes makeup water, water disposal, limestone, ammonia, SCR replacements, solid waste disposal (on-site landfill), and other consumables not including fuel.
- All O&M cost estimates are provided in 2005 dollars.
- It is assumed that 80% of the flyash is sold to market at \$3/ton. The other 20% of the flyash, bottom ash, and scrubber sludge is landfilled.
- The O&M cost of on-site waste landfilling is estimated at \$5.24/ton and includes hauling, labor, and development of future landfill cells.
- Delivered limestone cost is included at \$14/ton.
- Delivered ammonia cost is included at \$535/ton.

The O&M estimates do not include fuel, property tax, insurance, or emissions allowance costs. These costs are incorporated separately in the economic modeling analyses.

3.5 EMISSION ASSUMPTIONS AND CLARIFICATIONS

The following assumptions are the basis for the emission estimates provided in the Study:

- The Best Available Control Technology (BACT) levels estimated for this Study are not definitive. BACT emission levels change with time, unit type, and fuel type. These emission rates represent B&McD's estimated BACT levels taking into account technology limitations and current expected guaranteed performance levels.
- The mercury emissions provided in the Study are the limits set by the Clean Air Mercury Rule, 40 CFR, Section 60.45 Da.
- The Clean Air Mercury Rule requires mercury emissions for a PC unit with a wet scrubber and firing PRB coal to be limited to 42×10^{-6} lb/MWh. It is not anticipated that additional mercury control is required when firing an average mercury content PRB coal combined with a wet scrubber/baghouse. Therefore, the use of activated carbon injection is not included.

5.4 FINANCING AND ECONOMIC ASSUMPTIONS

The following financing and economic assumptions were utilized in the economic model analysis. The economic model analyses were prepared under two distinct ownership and cost of capital structures: investor owned utility and public power utility. Of the seven participating utilities, OTPCo and MDU are investor owned utilities. CMMPA, GRE, MRES, HCPD and SMMPA are public power utilities. Note that each of the seven participating utilities will have its own financing plan, capital structure, rate of return, tax rate, and depreciation schedule for its share of the BSPH Project, and the specific cost of capital assumptions will vary. The following assumptions are used to represent the relative difference in capital cost financing for the different ownership structures.

- Financing Assumptions (Investor Owned Utility):

Interest Rate	7.5%
Term	20 years
Debt/Equity Percentage	50%/50%
Return on Equity	12.0%
Construction Financing Fees	0.50%
Permanent Financing Fees	1.00%
Construction Financing	48 months for PC and IGCC 30 months for Biomass 24 months for CCGT

- Financing Assumptions (Public Power):

Interest Rate	6.0%
Term	30 years
Debt/Equity Percentage	100%/0%
Return on Equity	N/A
Construction Financing Fees	0.50%
Permanent Financing Fees	1.00%
Construction Financing	48 months for PC and IGCC 30 months for Biomass 24 months for CCGT