

OTP/MDU Witness

Jeffrey Greig

General Manager

Business & Technology Services

Burns & McDonnell

Summary

OTP/MDU Exhibits 326, 327 & 336



LEVELIZED BUSBAR ANALYSIS

NOVEMBER 2007

- Levelized life-cycle \$/MWh cost comparisons for comparable baseload alternatives
 - Big Stone II (500 MW, 580 MW, 630 MW)
 - Combined-cycle Gas Turbine (CCGT) (500 MW)
 - Combination of CCGT (500 MW) plus wind
- **Focused primarily on a 500 MW Big Stone II**
 - Represents worst case: Corresponding costs for larger, 580 MW or 630 MW sizes would be even lower than for 500 MW.

ASSUMPTIONS

- Capital Costs for Each Alternative
- Wind Purchased
- Production Tax Credit – both with and without
- \$9/ton for all tons of carbon dioxide
- Other Assumptions same as previous

2008 UPDATE

- Determine effect of potential carbon costs
- Provide information requested by Terry Deason
- Respond to allegations by David Schlissel

2008 UPDATE

- Same Alternatives
- Assumed carbon costs of \$4/ton to \$32 ton
- Costs applied to all tons of emissions
- Production Tax Credit – with and without
- Various wind assumptions – low cost, market rate, transmission costs

CONCLUSIONS

- Big Stone II lowest levelized busbar costs
 - With no carbon costs
 - With carbon costs of \$30/ton for all tons without a Production Tax Credit
 - A 500 MW Big Stone II has a break even cost with a gas-wind combination at \$17/ton carbon cost:
 - IF every one of five conservative assumptions are all true.
 - IF any of these conservative assumptions proves false, the break even cost for carbon would be higher than \$17/ton.