



Transmission Planning for Wind Generation

Presented by Tom Mielnik of MidAmerican
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Transmission Plans for Large Generator Interconnection Requests

- TranServ International is MidAmerican's independent transmission service coordinator
- TranServ conducts/leads OATT System Impact Studies and Facility Studies to determine required interconnection facilities and transmission network upgrades
- Approx. 1,200 MW of wind generation currently connected to MidAmerican's transmission system
- Approx. 3900 MW of wind generation (0 MW of other types of generation) currently in MidAmerican's large generator study queue

MidAmerican's Local Area Transmission Planning Process

- Carried out pursuant to FERC Order No. 890
- Open and transparent with active stakeholder input
- Includes long-term transmission reliability studies to meet NERC reliability standards
- Includes two stakeholder-defined economic planning studies per year
- One 2008 Economic Planning Study evaluated two transmission expansion plans (Plans A and B) to accommodate future wind generation

2008 Wind Economic Planning Study

Assumptions

- 1,500 MW of new wind generation by 2012
- 1,500 MW of additional new wind generation by 2017
- Wind generation to serve MidAmerican network load
- Wind farm additions at several locations in northern & western Iowa
- Transmission plans: approx. 330 miles of new 345 kV line, 110 miles of new 161 kV line & several new substations
- Estimated transmission plan cost for Plans A and B, respectively, by 2017: \$772 million & \$898 million

2008 Wind Economic Planning Study

- PROMOD simulations run to evaluate adjusted production cost savings
- Sensitivity cases run to evaluate carbon tax and MISO/MAPP/SPP membership assumptions
- Production cost savings compared to annualized transmission plan costs
- Benefit/cost ratios for Plans A and B, respectively, approx. 0.4 and 0.5 in 2017 with 3,000 MW of wind gen.
- Benefit/Cost ratios for Plans A and B, respectively, increased to 0.6 and 0.7 in 2017 with \$25/ton carbon tax

Wind Economic Planning Study

Next Steps

- Stakeholders may request Phase II of Wind Economic Planning Study in 2009
- Refine transmission configuration, generation size & location or other assumptions
- Participation in regionally beneficial projects offered for subscription rights by MAPP under cost allocation provisions of MidAmerican's Attachment M



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