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# Scenario Analysis for Access Initiative

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June 2, 2004



# Scenario Analyses

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## Future Scenarios

- High coal development
- High wind development
- High hydro development
- High internal generation development
- Low internal generation development



# High Coal Development

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- 1,500 MW of new coal-fired generation in by 2012
- Model at Milton Young plant in North Dakota (alternate site: southern Illinois)
- New transmission:
  - Upgrade 250 kV dc line to Arrowhead to 500 kV dc
  - New Huron-Split Rock 345 kV line



# High Wind Development

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- 1,500 MW of new wind generation in northwest Iowa and southwest Minnesota by 2012
- Model at Lakefield Jct. and Webster
- New transmission:
  - Webster-Hazelton 345 kV line
  - Hazelton-Salem 345 kV line



# High Hydro Development

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- 1,500 MW of new hydro generation by 2012
- Model at Conawapa (south of Kettle – Manitoba)
- New transmission:
  - Conawapa-Dorsey 500 kV dc line
  - Dorsey-Forbes 500 kV ac line
  - Forbes-Arrowhead 345 kV line



# High Internal Generation

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- Maintain 110% of net firm peak demand via internal generation
- Model no generation additions or retirements beyond those committed



# Low Internal Generation

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- Maintain 100% of net firm peak demand via internal generation
- Assume existing unit retirements
  - candidates include Blount St., Oak Creek, Presque Isle, Pulliam, Rock River



# AMERICAN TRANSMISSION COMPANY ACCESS INITIATIVE DECISION MATRIX

| Category   | Measure                   | Weighting |
|--|---------------------------|-----------|
|  |                           | %         |
| <b>Transfer capability</b>                           |                           |           |
| base case, with two fixes                            | MW                        |           |
| high coal scenario, committed internal generation    | MW                        |           |
| high wind scenario, committed internal generation    | MW                        |           |
| high internal generation scenario                    | MW                        |           |
| low internal generation scenario                     | MW                        |           |
| <b>Chronic limits mitigated</b>                      | list facilities           |           |
| <b>Market energy savings</b>                         | \$\$                      |           |
| <b>Loss reduction</b>                                |                           |           |
| peak   | MW                        |           |
| 80% of peak  | MW                        |           |
| 60% of peak  | MW                        |           |
| loss cost reduction                                  | \$\$                      |           |
| <b>Reliability measurements</b>                      |                           |           |
| LOLE   | probability, days/year    |           |
| reserve margin required to achieve 0.1 day/year LOLE | %                         |           |
| EUE  | MWh                       |           |
| <b>Strategic benefits</b>                            |                           |           |
| provides infrastructure                              | subjective, +/-           |           |
| access to out-of-state renewable resources           | subjective, +/-           |           |
| improves   |                           |           |
| <b>System Performance</b>                            |                           |           |
| generator stability limits                           | MW                        |           |
| voltage stability limits                             | MW                        |           |
| <b>Operating flexibility</b>                         | list anticipated benefits |           |
| <b>Capital costs</b>                                 | \$\$                      |           |
| <b>Societal impacts</b>                              |                           |           |
| corridor sharing potential                           | % of route                |           |
| new right-of-way required                            | miles                     |           |
| public/private lands traversed                       | % of route                |           |
| <b>Environmental impacts</b>                         |                           |           |
| river crossings                                      | #                         |           |
| wetlands   | miles                     |           |
| endangered species                                   | list                      |           |