Xcel Energy - North
Transmission Plans and Updates

prepared for
Wholesale Customer Appreciation Conference

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Manager, Siting & Land Rights
Xcel Energy - North
Presentation Outline

- Service Territory / Geographic Focus
- New Projects - Transmission / Substation
- Major Projects
  - Southwest Minnesota Wind
  - BRIGO
  - MN-WI 345 kV Rebuild
  - Chisago
  - CapX 2020
- New Legislative Initiatives
Xcel Energy - North Service Territory
Overview - New Projects

Regulatory Approvals / Land Rights Acquisition

Total transmission line projects: 29*
Total substation projects: 23*
Total miles: 850

*Some of these projects are rebuilds, some are new
Major Projects

- Southwest Minnesota Wind
- BRIGO Project
- 345kV Rebuild
- Chisago
- CapX 2020
Southwest Minnesota Wind Energy Development

Largest wind energy development outside of California - key developers: FPL, enXco, PPM

Over 500 MW of installed wind turbine capacity - approximately 500 turbines

850 MW of Power Purchase Agreements signed

Another 400+ MW in competitive bid process currently - anticipate 1125 MW by 2010
Southwest Minnesota Wind Transmission Project

Severely constrained transmission outlet capacity requires significant new infrastructure

Near-term projects planned to achieve outlet capacity of 825 MW - 22 projects in total
**SW MN Transmission Project (cont.)**

**501 Total Miles of Transmission**

**Xcel Total – 423 Miles**

<table>
<thead>
<tr>
<th>Miles</th>
<th>Total</th>
<th>Xcel</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>New lines, new ROW</td>
<td>209</td>
<td>209</td>
<td>0</td>
</tr>
<tr>
<td>Rebuilds of Existing Lines</td>
<td>192</td>
<td>154</td>
<td>38</td>
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<tr>
<td>Upgrades of Existing Lines</td>
<td>100</td>
<td>60</td>
<td>40</td>
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</table>

**27 Substations Impacted**

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Xcel</th>
<th>Others</th>
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</thead>
<tbody>
<tr>
<td>New subs</td>
<td>8</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Modified subs</td>
<td>19</td>
<td>11</td>
<td>8</td>
</tr>
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</table>
SW MN Transmission Project (cont.)

4 Major Projects

- Lakefield Junction to Fox Lake 161kV - 25 miles - in service 2006
- Split Rock to Lakefield Junction 345kV - 94 miles - in service 2007
- Nobles to Chanarambie 115kV - 30 miles - in service 2007
- Buffalo Ridge to White 115kV - 26 miles - in service 2007
**SW MN Transmission Project (cont.)**

**Status**

- **Lakefield Jct. - Fox Lake**
  - In construction
  - Complete Fall 2006

- **Split Rock - Lakefield Jct. 345kV**
  - EQB approval June 2005
  - SD Permit expected Summer 2006
  - Construction start expected June 2006

- **Buffalo Ridge - White**
  - EQB route permit March 2005
  - SD permit approval expected June 2006
  - Western Area Power Administration approval expected July 2006

- **Right-of-Way acquisition started in 2005**
Three 115kV projects to increase transmission system wind outlet capability to over 1000 MW

Certificate of Need - filing Summer 2006

Route Permit filing - specific dates not yet determined
345kV Rebuild
MN / WI

- Structure/Insulator replacement
- 3 line sections - Prairie Island to Adams (MN), Eau Claire to King, Eau Claire to Rocky Run
- 2 PSCW Certificate of Authority applications: approved 9/05 and 1/06
- Several hundred temporary easements required
- This line is critical to keep in service - all work to be done with conductors energized
Minnesota: 69kV & 115kV - Existing Right of Way from Lawrence Creek to Chisago

Wisconsin: 161kV & 69kV - Double Circuit from St. Croix to Apple River Substation

CPCN Approved in Wisconsin June 2001

Certificate of Need in Minnesota to be filed Fall 2006
CapX 2020 Transmission Plan: Realizing the Vision

CapX = Capacity Expansion
Background

CapX
- Formed Spring 2004
- Now eight utility partners
- Focused on serving growing load in our service territories; generation outlet, reliability, market efficiency
- Collaborative effort: utilities, legislators and other stakeholders
Background

- CapX 2020 Vision Study completed
  - 15-year high-level plan
  - Integrated multiple planning studies
  - Detailed studies completed on first anticipated projects
- Moving to implementation
  - Project Group 1
Transmission concept plan – January 2005

Preliminary
CapX utilities serve Minnesota and the immediate region

- 8,000 MW new generation to serve 6,300 MW load forecast through 2020

- CapX plans will accommodate additional 2,400 MW of wind capacity in support of the Renewable Energy Objective
Conservative load growth estimates based on historical trends

Historical Growth from 2000-2004: 2.64%
CapX Growth 2009-2020: 2.49%
Constraints

Constrained Paths
Modeling resulted in sequenced list of transmission projects for development

**Process**

- Three different generation scenarios were modeled
- Required transmission assessed for each scenario
- Many facilities common for all three scenarios
- Established Project Groups sequence, by timing and priority of need
<table>
<thead>
<tr>
<th>Project Group</th>
<th>Expected In-Service</th>
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<tbody>
<tr>
<td><strong>Group I</strong></td>
<td></td>
</tr>
<tr>
<td>CapX SE Twin Cities-Rochester-La Crosse / 345kV</td>
<td>2011</td>
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<tr>
<td>CapX Bemidji-North Central MN / 230 kV</td>
<td>2011</td>
</tr>
<tr>
<td>CapX Fargo-St. Cloud area / 345kV</td>
<td>2012</td>
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<tr>
<td>CapX Brookings, SD-SE Twin Cities / 345 kV</td>
<td>2012</td>
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<td>**Group II – Around the Twin Cities **</td>
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<td>Benton County to Chisago / 345kV</td>
<td>2014 to 2020</td>
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<tr>
<td>Benton County to Granite Falls / 345kV</td>
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<tr>
<td>Benton County to St. Boni / 345kV</td>
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<tr>
<td>Chisago to Prairie Island / 345kV</td>
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<tr>
<td>**Group III – Remote Generation Outlet **</td>
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<tr>
<td>Antelope Valley to Maple River / 345kV</td>
<td>2014 to 2020</td>
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<tr>
<td>Arrowhead to Chisago / 345kV</td>
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</tr>
<tr>
<td>Columbia to North LaCrosse / 345kV</td>
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<tr>
<td>Forbes to Arrowhead / 345kV</td>
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CapX S.E. Twin Cities – Rochester - La Crosse

- Reliability for south metro, Rochester, La Crosse
- Scope – 140 miles (est), 345 kV
- Expected In-Service 2011
CapX Fargo – St. Cloud area
- Fargo, Central MN regional reliability and some outlet for ND generation
- Scope – 170 miles (est), 345 kV
- Expected In-Service – 2012

CapX Bemidji – N. Central MN
- Enhance reliability for Bemidji and the surrounding north central MN region
- Scope – 70 miles (est), 230 kV
- Expected In-Service – 2011
CapX Brookings, SD – S.E. Twin Cities

- Buffalo Ridge – Metro to provide for additional incremental wind outlet capacity and south metro reliability
- Scope – 180 miles (est), 345 kV
- Expected In-Service 2012
Preliminary

CapX Group I Facilities

- Group 1
- Remainder of Vision
New Regulatory Initiatives

- Landowner Compensation Issues
- Eminent Domain Issues
- Crop Damage Issues
Questions?