CapX 2020 Transmission Projects & Planning

Ensuring Reliability

U of MN Renewable Energy Workshop

October 12, 2006

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Today's topics

- Background & the Initial Projects
- Implementing the Projects
- Planning for Future

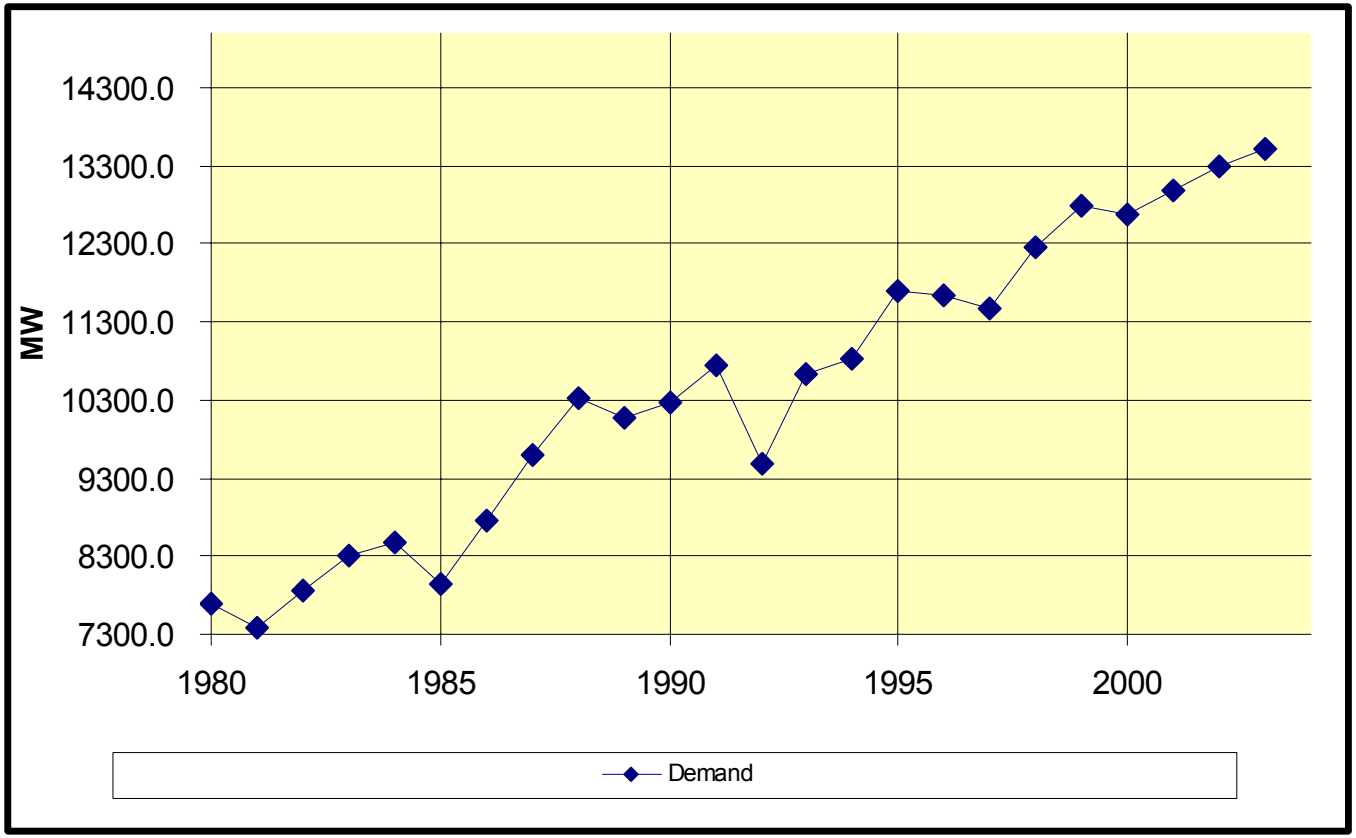
CapX 2020: *Capacity Expansion Needed by 2020*

- **Formed Spring 2004**
- **An alliance of 11 electric cooperatives & municipal and investor-owned utilities**

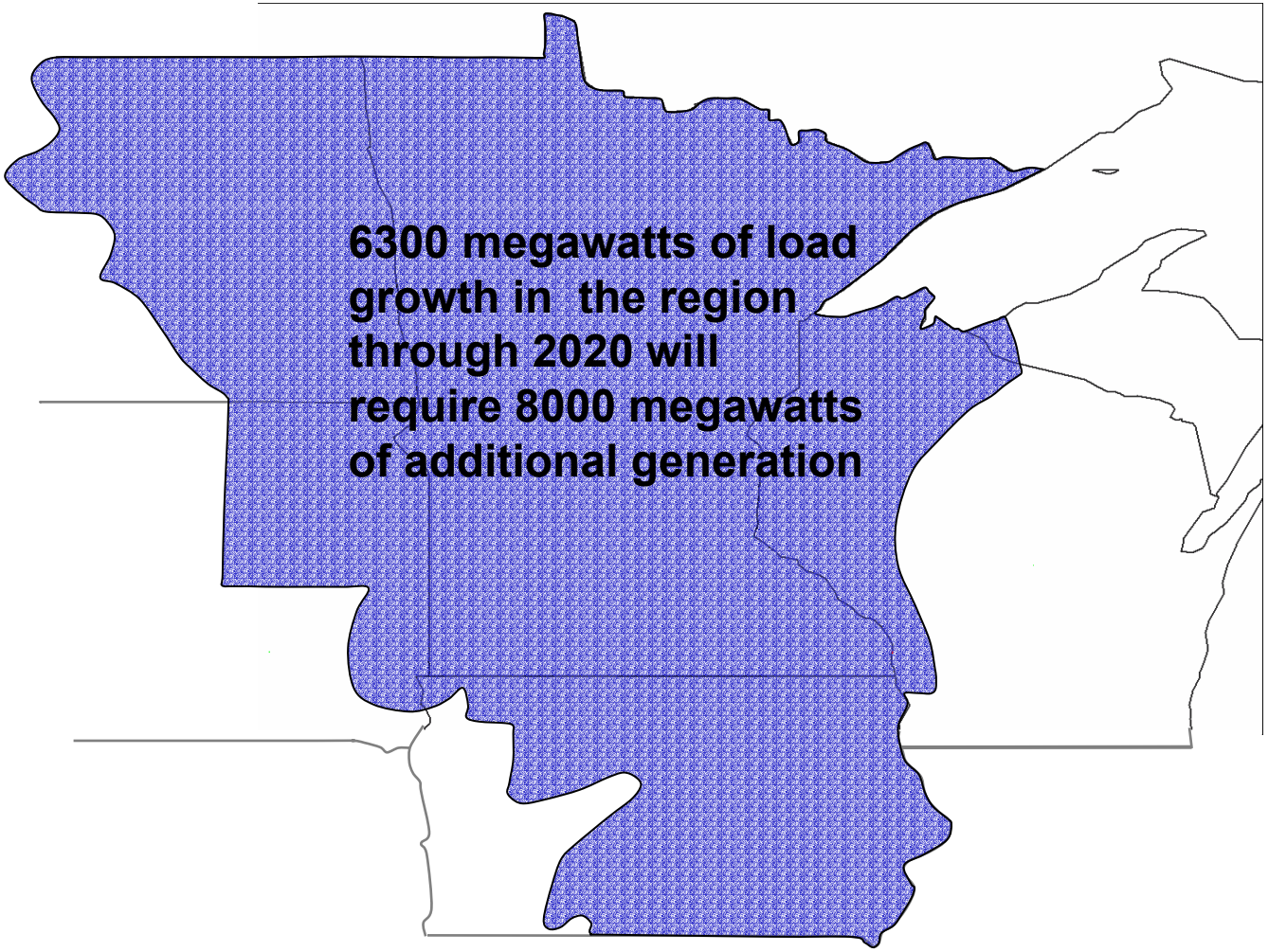
- **Participating utilities**
  - Dairyland Power Cooperative
  - Great River Energy
  - Midwest Municipal Transmission Group
  - Minnesota Power
  - Minnkota Power Cooperative
  - Missouri River Energy Services
  - Otter Tail Power Company
  - Rochester Public Utilities
  - Southern Minnesota Municipal Power Agency
  - Wisconsin Public Power Incorporated
  - Xcel Energy

Customer Use Is Growing

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



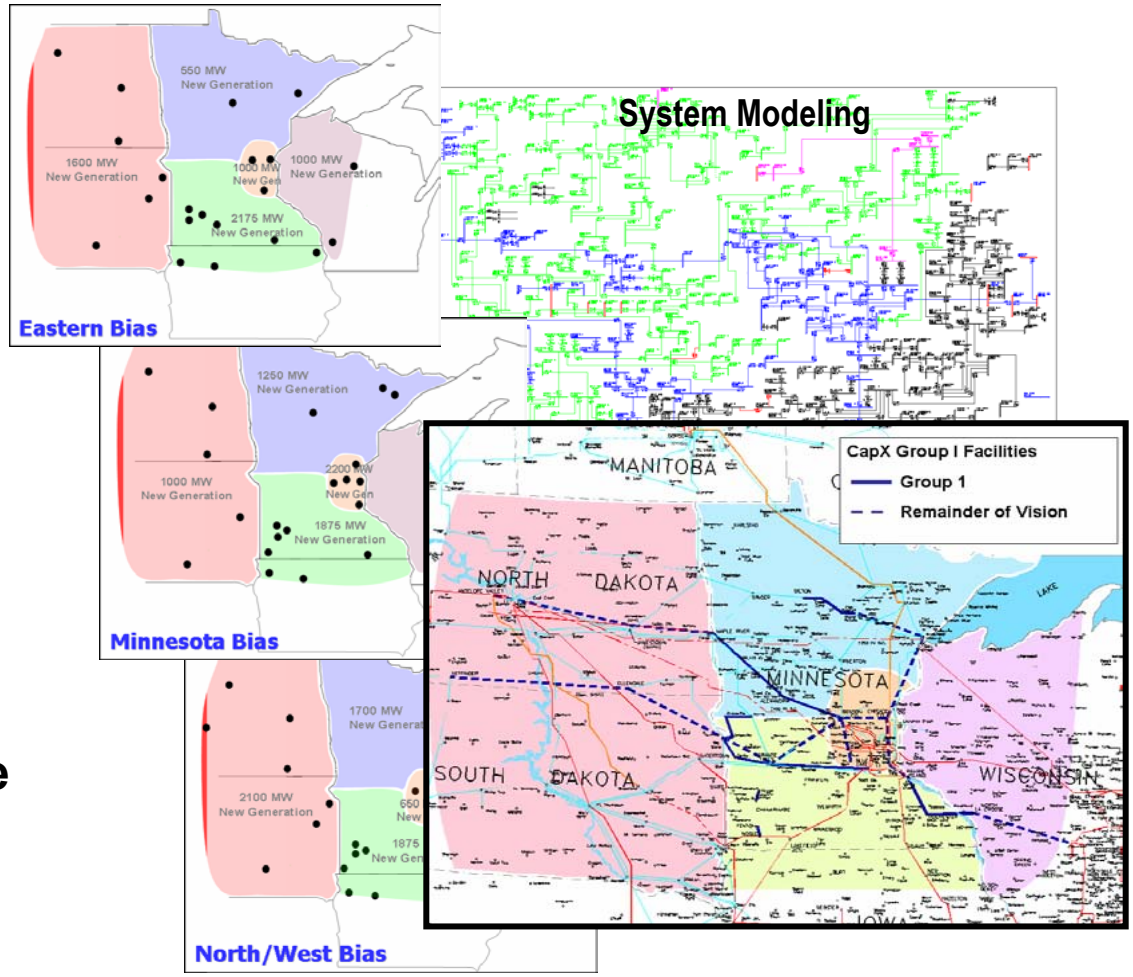
CapX 2020 Utilities Serve Minnesota and the Region



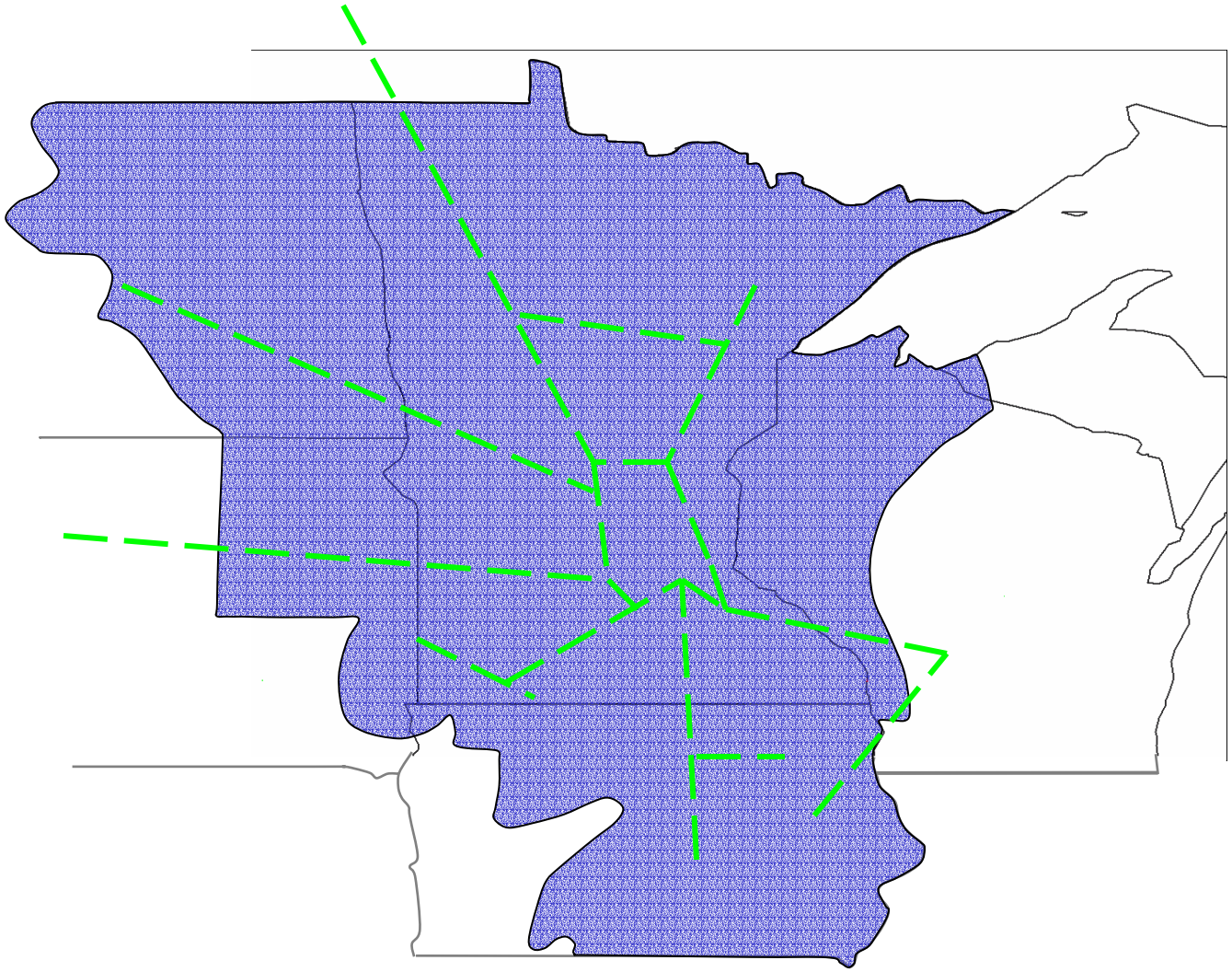
Rigorous Process Yielded Flexible Plan

Process

- Modeled three scenarios of where generation facilities might be developed
- Assessed transmission required under each scenario
- Many facilities were common to all three scenarios
- Established best sequence for project groups
- Total capital cost for transmission estimated - ~ $3 billion



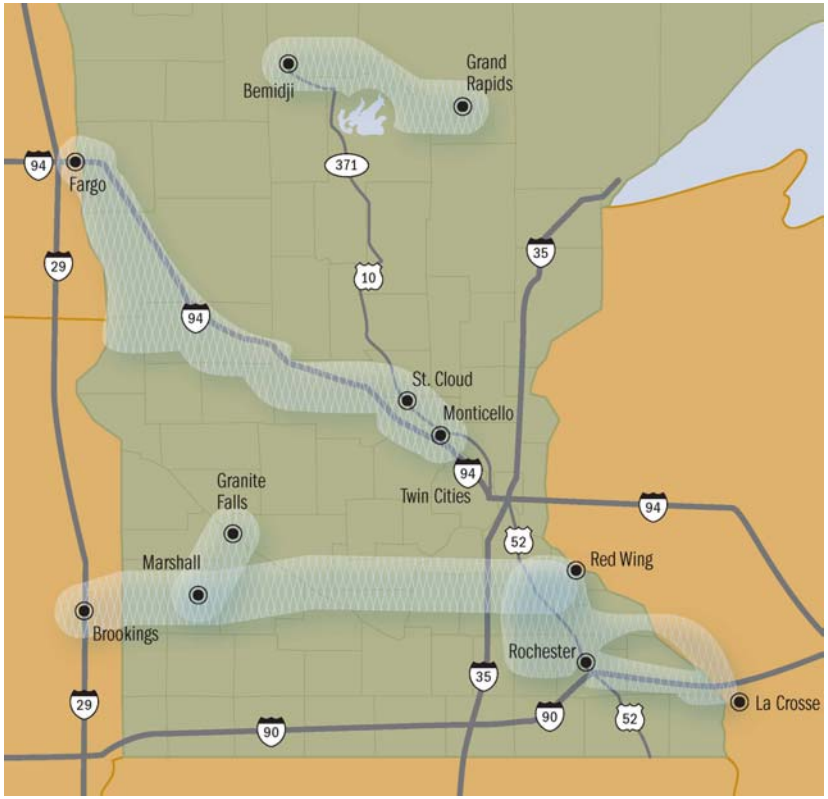
Initial Vision Study - Need for 345-kV Backbone System by 2020



Outcome – Specific Projects & Sequence

Project Group	Desired In-Service
Group 1	
SE Twin Cities-Rochester-LaCrosse / 345kV	2011
Bemidji-Grand Rapids/ 230 kV	2011
Fargo-St. Cloud/Monticello area / 345kV	2012
Brookings, SD-SE Twin Cities / 345 kV	2012
Group 2 – Around the Twin Cities	
New 345 KV transmission loop around the Twin Cities	2014 to 2020
Group 3 – Remote Generation Outlet	
As needed and generation projects developed	2014 to 2020

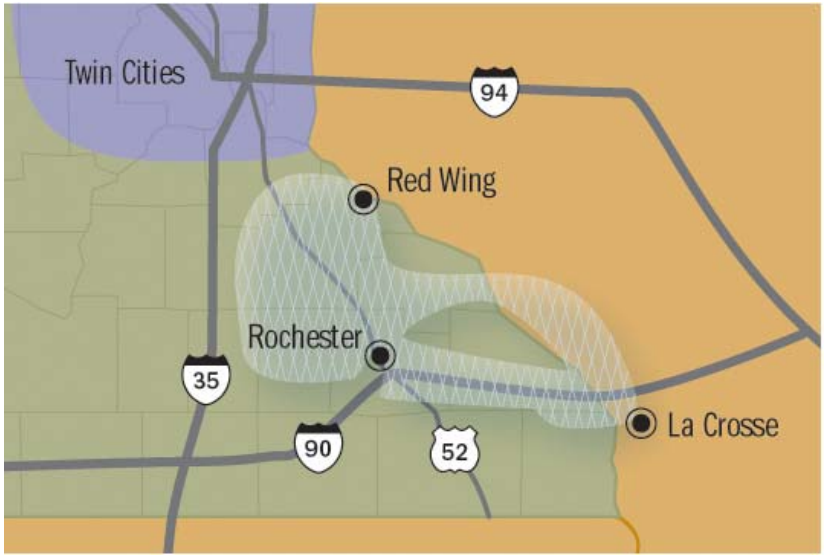
Group 1 Projects



(These corridors are preliminary)

- **Four lines work together to ensure reliability for the region**
- **Lines meet most urgent need**
- **Lines will serve as outlet for whatever generation resources are built**

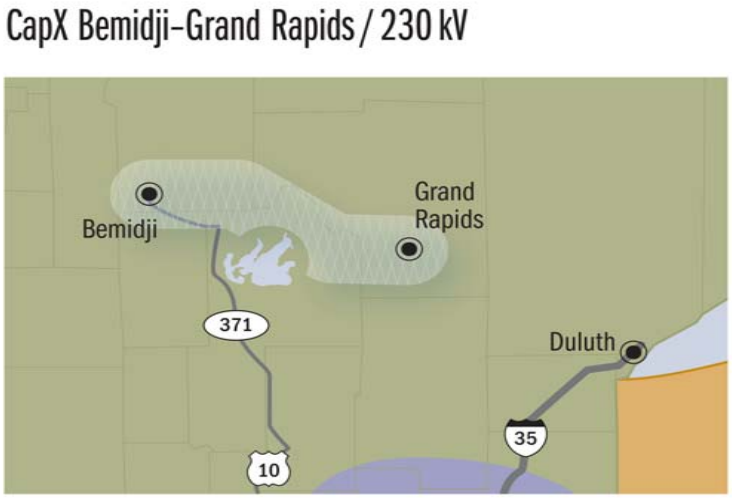
Group 1 Project



CapX S.E. Twin Cities – Rochester - LaCrosse

- Improves reliability for south metro Twin Cities, Rochester and LaCrosse areas; improves access to generation in south and east
- Scope: approx. 110 miles, 345 kilovolt
- Desired in-service: 2011

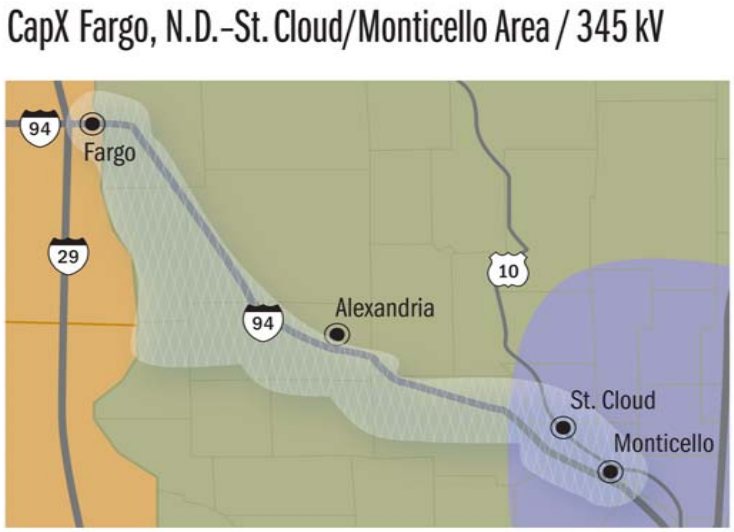
Group 1 Project



CapX Bemidji – Grand Rapids

- Improves reliability for Red River Valley, Bemidji and North Central Minnesota
- Scope: approx. 70 miles, 230 kilovolt
- Desired in-service: 2011

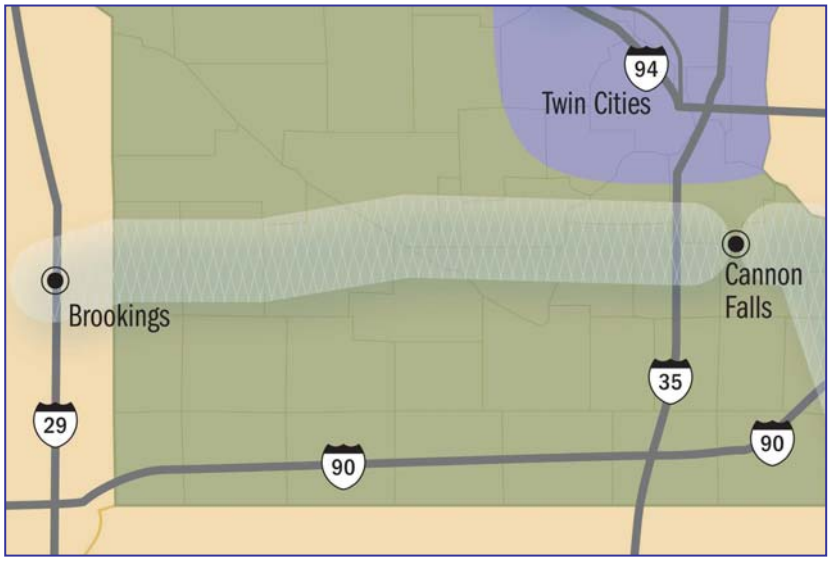
Group 1 Project



CapX Fargo – St. Cloud/Monticello Area

- Improves reliability in Red River Valley, North Central Minnesota and St. Cloud area, provides some access to new generation
- Scope: approx. 210 miles, 345 kilovolt
- Desired in-service: 2012

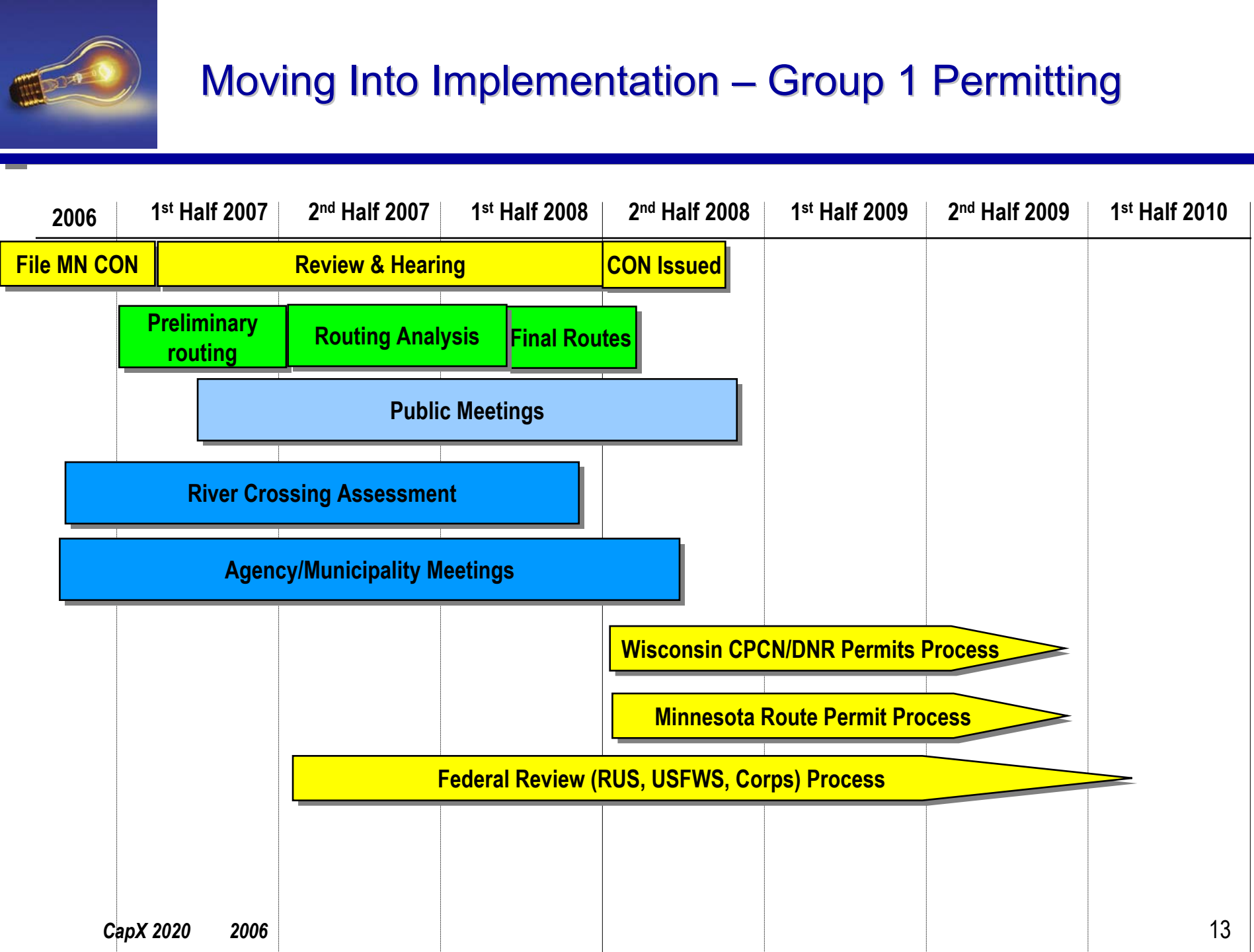
Group 1 Project



CapX Brookings, SD – SE Twin Cities

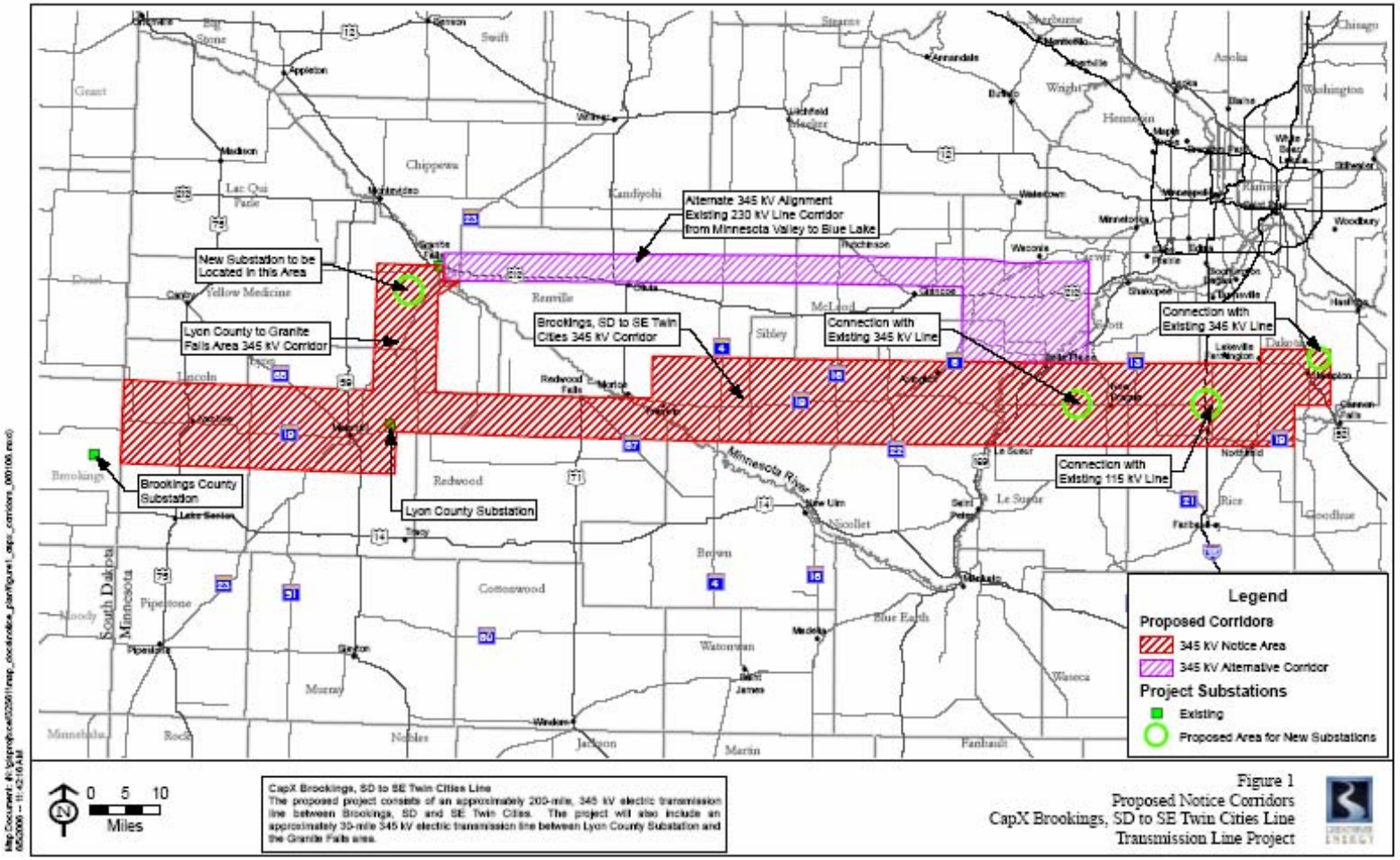
- Improves reliability in West Central Minnesota and Twin Cities; access to new generation, including wind
- Scope: approx. 250 miles, 345 kilovolt
- Desired in-service: 2012

Moving Into Implementation – Group 1 Permitting



Moving Into Implementation – Certificate of Need

Brookings, SD – SE Twin Cities project – proposed notice area



Implementation – Need for CapX "Standards"

- Define best practices and consistently follow them
  - ✓Permitting Activities
  - ✓Public Affairs Plan
  - ✓General Communications
  - ✓Contractual Agreements
  - ✓Design & Construction
  - ✓Procurement

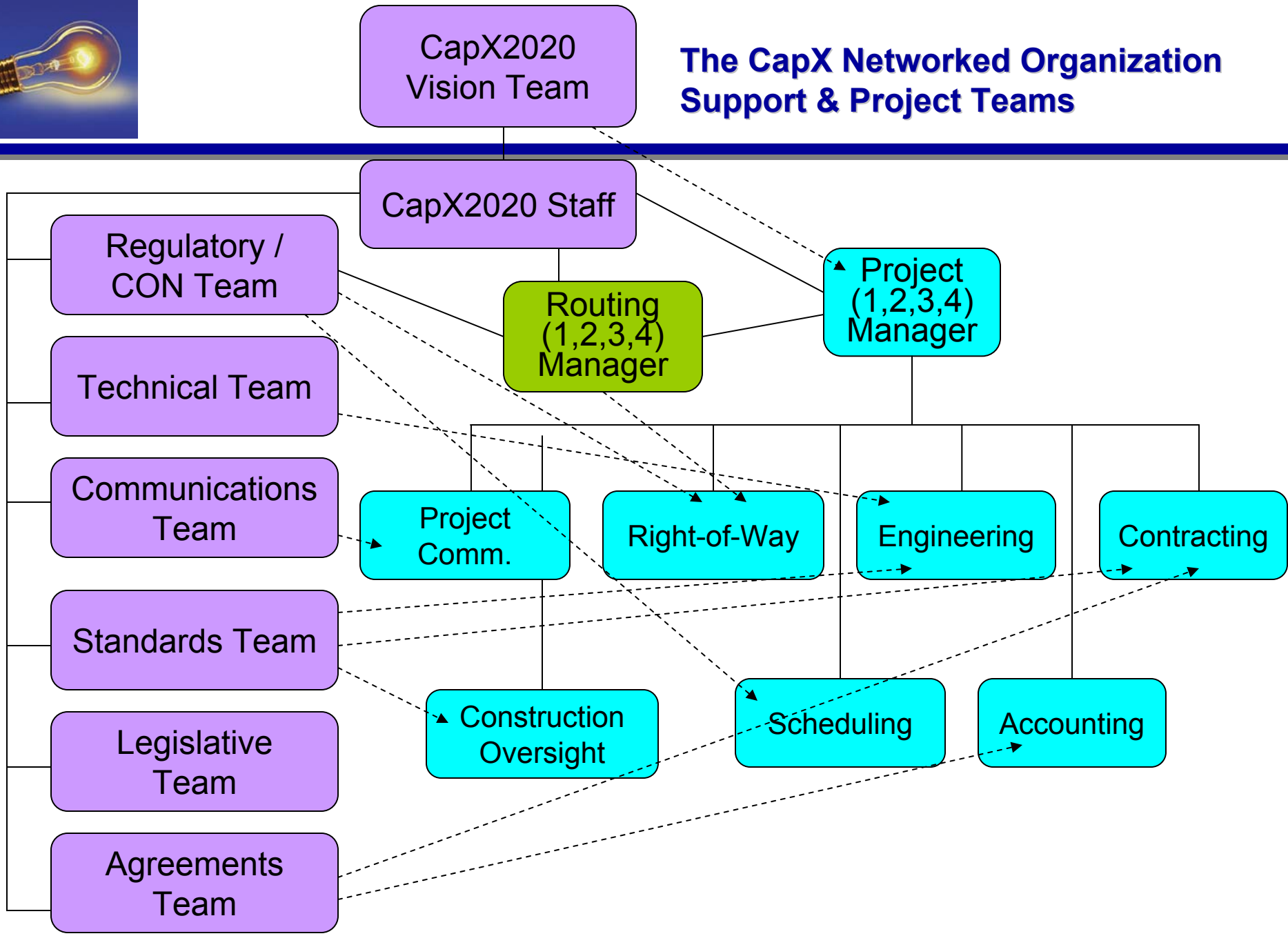
Implementation – Integrating Multiple Projects

For a long, complex, multi-party effort, clearly defining accountability & authority is important

Project Team Leadership *While* Acquiring Need Permits

Project Team Leadership *After* Acquiring Need Permits

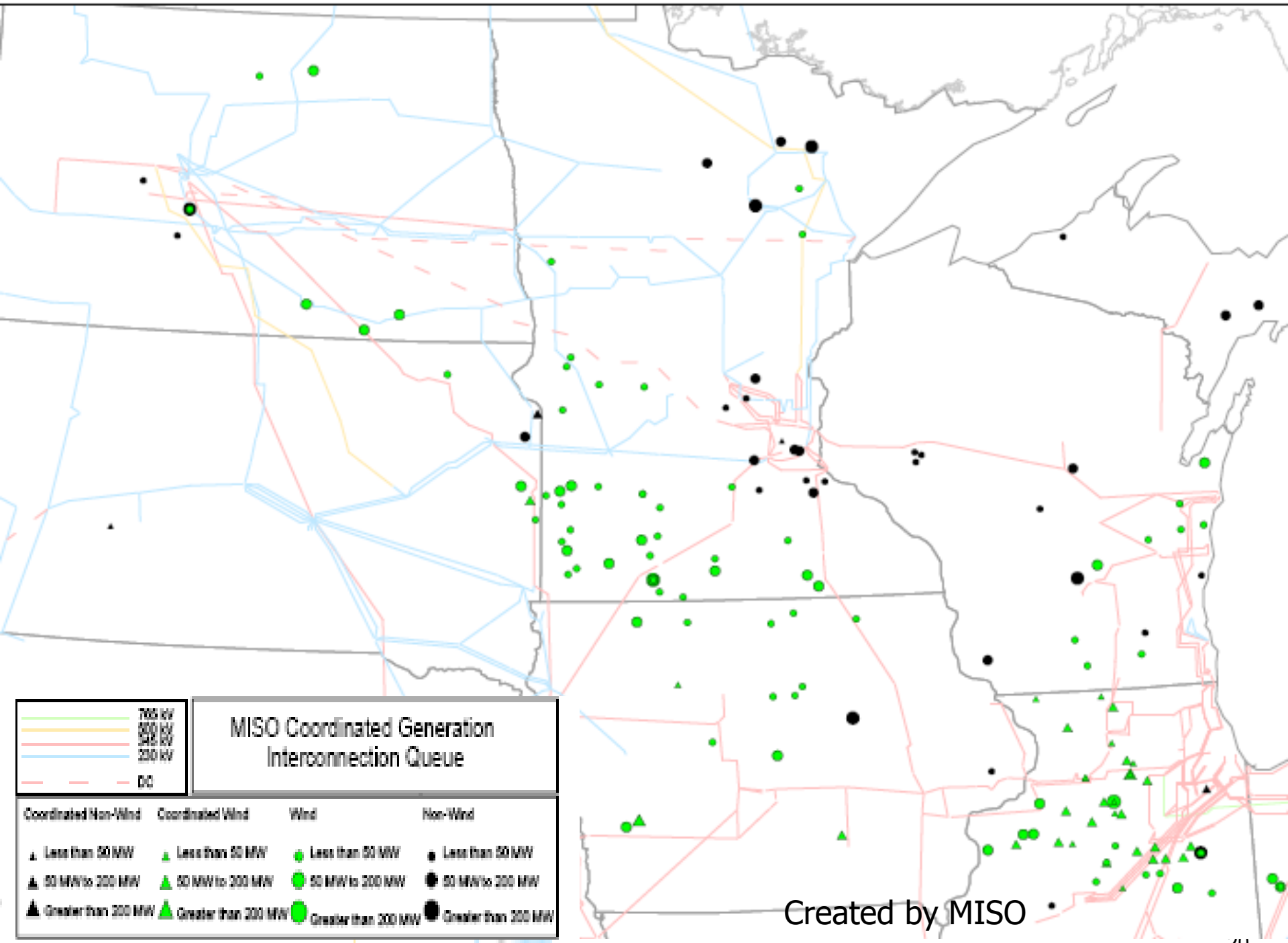
The CapX Networked Organization
Support & Project Teams



Implementation – Issues for the "Build" Phase

- Beginning investigation of an optimal model for detailed engineering, procurement, construction management
- Need to analyze availability of skilled trades labor
- Develop plan for sequencing construction of individual facilities

Planning for the Future



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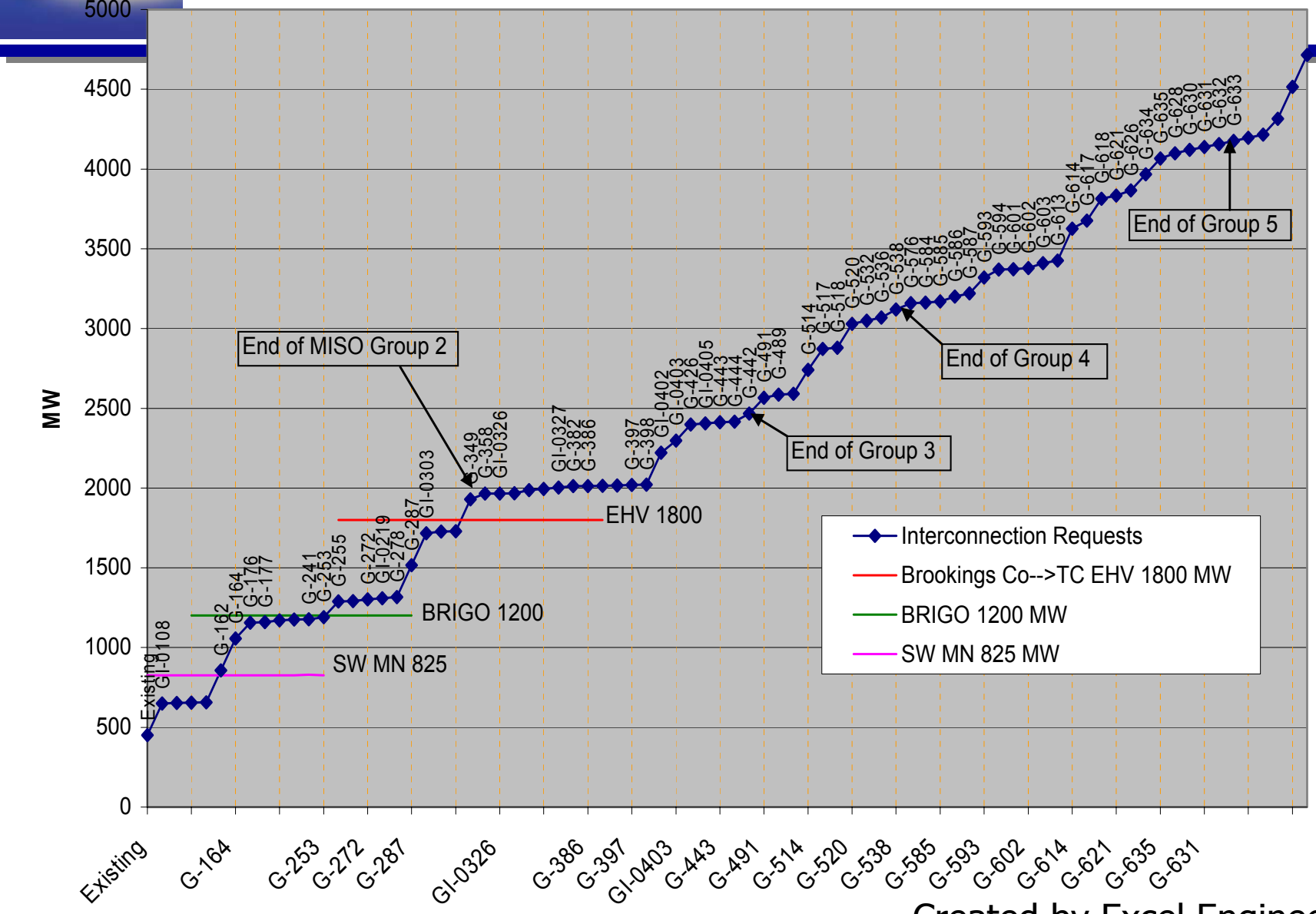
Buffalo Ridge Area Generation Interconnection Requests
(SW MN & SE SD)



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CapX2020 Area

Sponsoring Utilities

- Great River Energy
- Midwest Municipal Transmission Group
- Minnesota Power
- Missouri River Energy Services
- Otter Tail Power Company
- Rochester Public Utilities
- Southern Minnesota Municipal Power Agency
- Wisconsin Public Power Inc.
- Xcel Energy

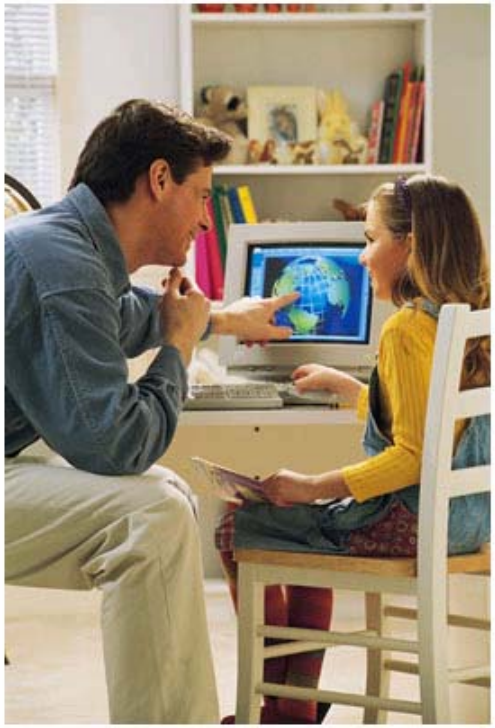
Ensuring Electric Reliability in Minnesota and the Surrounding Region

CapX 2020 represents an innovative joint initiative to ensure long term electric reliability for Minnesota and the surrounding region in the future. It began as a collaborative planning effort by the state's largest transmission owners (including cooperatives, municipals and investor-owned utilities) to assess the current system and project the growth in customer demand for electricity through 2020.

Studies show that customer demand for electricity will grow by 6,300 megawatts by 2020, resulting in the need to build 8,000 megawatts of new generation to account for required reserves and energy lost during transmission. To accommodate this growth in customer demand for new power, the transmission backbone will require major upgrades and expansion to ensure reliability.

An expanded CapX 2020 group has now entered the project phase to meet this demand. In 2006, the CapX utilities will begin seeking regulatory approval for approximately 600 miles of 345 kilovolt lines in Minnesota with short segments in North Dakota, South Dakota and Wisconsin. Regulatory filings for a smaller, 230 kilovolt line in north-central Minnesota also are planned.

CapX 2020, which originally stood for "Capital Expenditures by the Year 2020" -- to make sure the capital would be available to meet the need -- has now become "Capacity Expansion by the Year 2020" -- as the group moves



Thank you!

Questions, comments, *suggestions*