

NoCapX 2020
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Information Request # 3-8

Docket Number: E002, ET2/CN-06-1115

Date of Request: April 24, 2008

Requested From: MISO - Christopher Sandberg – Lockridge, Grindal, Nauen
MISO - Keith Beall, Midwest ISO Legal Dept.

Party Requesting Information: Carol A. Overland for NoCapX 2020

Type of Inquiry: ... Financial ... Rate of Return ... Rate Design
 ... Engineering ... Forecasting ... Conservation
 ... Cost of Service ... CIP ... Other:

If you feel your responses are trade secret or privileged, please indicate this on your response.

Request No.	
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3. Please see attached MISO powerpoint, Assumptions for Combined West Regional Study. Slide 5, Overlapped Transmission Upgrades and Slide 6, Consolidation of West Regional Study. Explain impact of consolidation of various studies/system upgrades into MTEP.
4. Slide 6 refers to an Economic Study for Consolidated West Regional Plan. Provide copy of that economic study.
5. Slide 7 refers to 3,741MW of coal/gas generation in MISO queue.
 - a. Of that 3,741MW, how much is coal?
 - b. Identify MW of coal in MISO queue, state by state for MN, SD, ND, IA and WI, as of the date of your response to this question?
6. Regarding slide 8, Map of MISO Queue, provide updated map of MISO queue as of the date of response to this question, identifying coal and wind generation.
7. Slide 17 refers to “ISMN Exploratory.” Please provide a copy of this study.
8. Explain differences between transmission maps on p. 14, Map for CapX Upgrades, and the map on p. 18, Transmission Scenario for West Regional Study.

Response by: _____

List sources of information:

Title: _____

Department: _____

Telephone: _____



Assumptions for Combined West Regional Study

- West Regional Study Group
May 12, 2006

● **Studies in West Region**

- Big Stone II interconnection/delivery
- CapX 2020
- Buffalo Ridge Incremental Generation Outlet (BRIGO)
- Southwest Minnesota to Twin Cities EHV Development
- Southeastern Minnesota – Southwestern Wisconsin Reliability Enhancement
- ATC Access
- NW Exploratory study
- Iowa-Southern Minnesota exploratory study
- MN Wind Integration Study

Different Future Generation

● Assumption

- CapX – NW bias, MN bias, Eastern bias
- BRIGO & SW MN to TC EHV Development – Buffalo Ridge
- NW Exploratory - 2000 MW wind and coal generation expansion in North Dakota and South Dakota
- Iowa-Southern MN exploratory – 2700 to 3500 MW wind in Iowa/S. MN

● **Different Geographic Focus**

- **NW Exploratory – Dakotas to TC**
- **Iowa-Southern MN Exploratory – N. Iowa, S. MN, TC, SW WI**
- **BRIGO & SW MN to TC EHV Development – Buffalo Ridge to TC**
- **ATC Access - Wisconsin**

Overlapped Transmission

● Upgrades

- LaCrosse - Columbia: CapX, ATC, ISMN
- Hampton Corners – LaCrosse: CapX, ATC, SE_MN-SW_WI, ISMN
- Brookings Co - Lyon Co: SW_MN-TC, CapX, ISMN
- Lyon Co – Franklin: SW_MN-TC, CapX, ISMN
- Franklin – Helena: SW_MN-TC, CapX, ISMN
- Salem - N Madison: ATC, ISMN

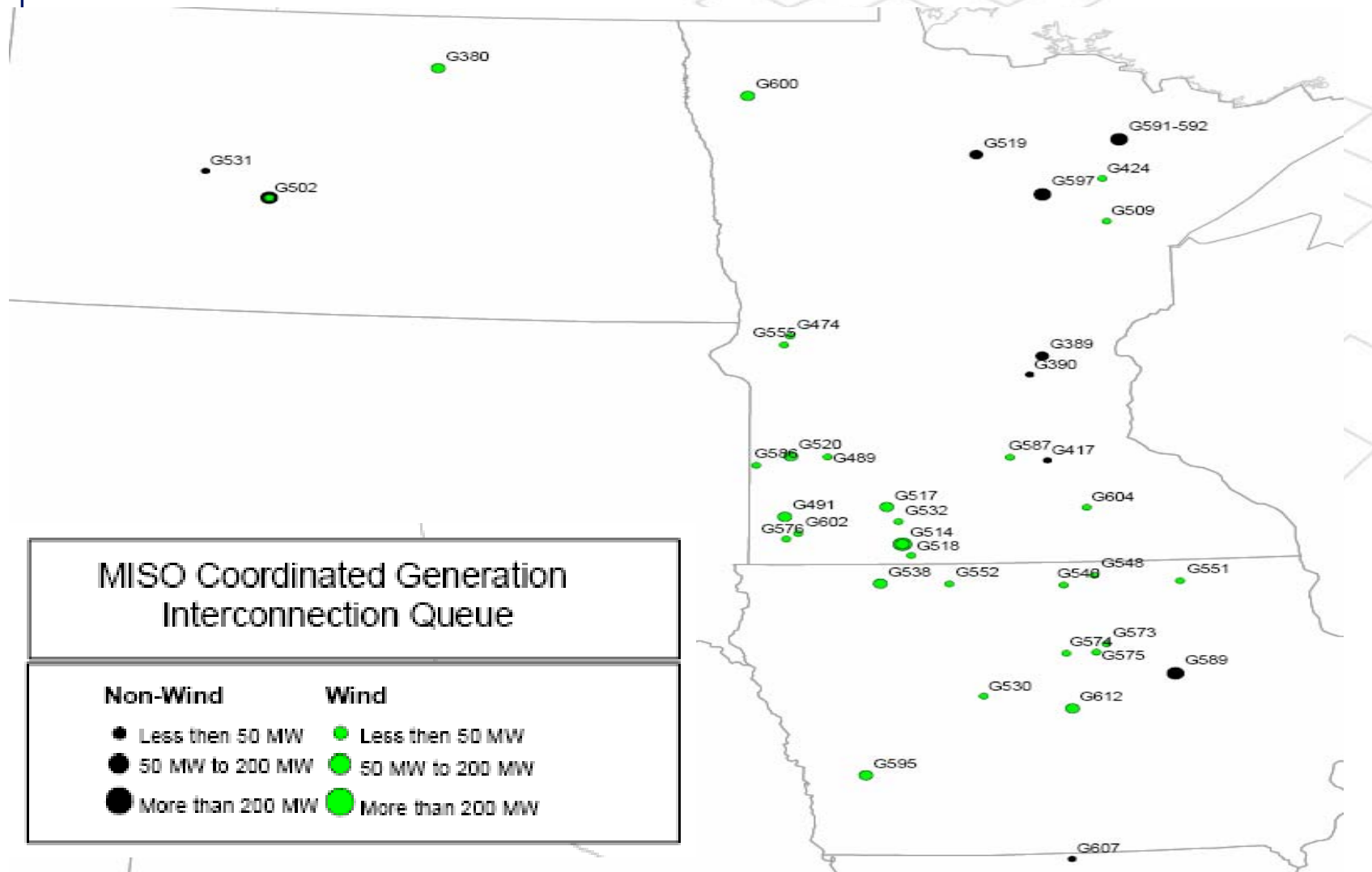
● Consolidation of West Regional Study

- Economic Study for a Consolidated West Regional Plan
- Generation Requests in MISO Queue
- Most likely and Common Transmission Upgrades are first Included as Start Point
- More Transmission Upgrades to be Identified in the Study
- Focus on 200 kV and above HV/EHV system

● **Generation Assumption**

- **Total 6689 MW Generation in MISO Queue**
 - IA: 750 MW coal, 1285 MW wind
 - MN: 2286 MW coal/gas, 1463 MW wind/RE
 - ND: 705 MW coal, 200 MW wind
- **Total 3741 MW Coal/Gas Generation**
- **Total 2948 MW Wind/RE Generation**

Map of MISO Queue



● Other Generation Additions

- 6689 MW Not Enough for 2020
- How We Consider Other Generation Additions?
 - Add some wind generation recommended in MN Wind Integration Study? By how much?
 - Include generation queue in WI?
 - Include generation queue in MH?
 - What else?

● Transmission Assumptions

- Start from MTEP06 2011 Phase-2 Model
- Include Big Stone II Interconnection/Delivery Upgrades (Alternative 1)
 - Build New Big Stone – Ortonville 230 kV Line
 - Convert Ortonville – Johnson Jct. 115 kV line to 230 kV
 - Convert Johnson Jct. – Morris 115 kV Line to 230 kV
 - Build New Big Stone – Canby 230 kV Line
 - Convert existing Canby – Granite Falls 115 kV Line to 230 kV
 - Upgrade existing Big Stone – Browns Valley 230 kV Line

- **Map for Big Stone II Upgrades**



CapX 2020 Recommended Projects

Group 1 – \$1.2(+) billion (planning estimate)

* Courtesy of Gordon Pietsch

Project Group	Expected In-Service
<p>Group I</p> <ul style="list-style-type: none"> Fargo to Benton County / 345kV Hampton Corners to LaCrosse / 345kV Buffalo Ridge to Twin Cities / 345 kV Bemidji to Boswell / 230 kV 	<p style="text-align: right;">2012</p> <p style="text-align: right;">2011</p> <p style="text-align: right;">2012</p> <p style="text-align: right;">2011</p>
<p>Group II – Around the Twin Cities *</p> <ul style="list-style-type: none"> Benton County to Chisago / 345kV Benton County to Granite Falls / 345kV Benton County to St. Boni / 345kV Chisago to Prairie Island / 345kV 	<p style="text-align: right;">2014 to 2020</p>
<p>Group III – Remote Generation Outlet *</p> <ul style="list-style-type: none"> Antelope Valley to Maple River / 345kV Arrowhead to Chisago / 345kV Columbia to North LaCrosse / 345kV Forbes to Arrowhead / 345kV Hettinger to Ellendale / 345kV Ellendale to White / 345kV 	<p style="text-align: right;">2014 to 2020</p>

● Including CapX Recommended Upgrades

- CapX Recommended Upgrades for both NW & MN Bias
- Buffalo Ridge-> TC 345 kV Projects Recommended in SW MN to TC EHV Development
- Projects Recommended in BRIGO

- **Map for CapX Upgrades**

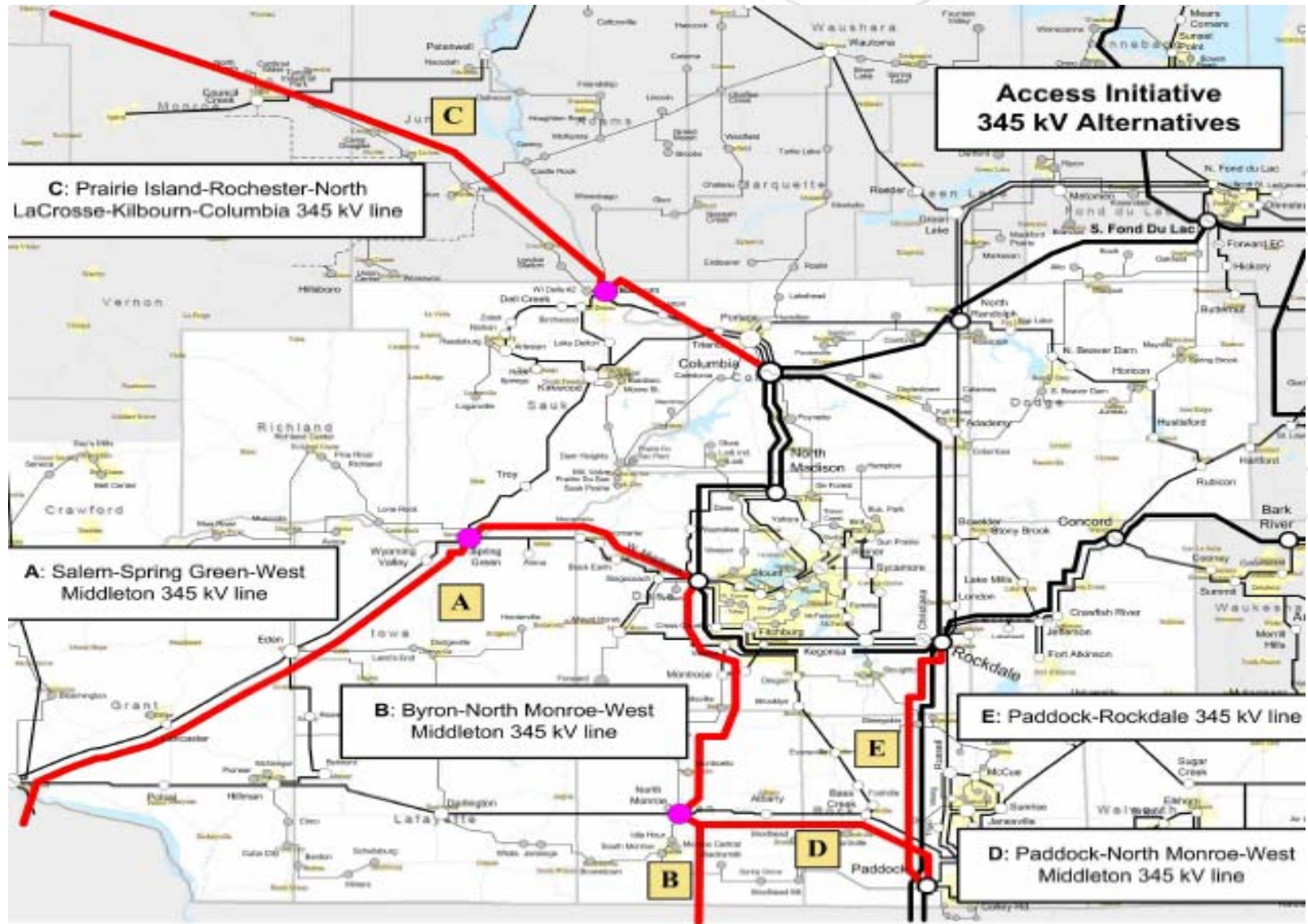


● ATC Access Projects

- Paddock-Rockdale project (P-R)
 - CON to be filed
 - Within WI
 - Included
- Prairie Island-Columbia project (PI-C)
 - Variant of CapX project. Included
- Salem-North Madison (S-NM)
 - Interconnection between IA & WI. Included
- Byron-North Madison project (B-NM)
 - Interconnection between IL & WI. Not included in this west study. To be identified further
- Low-Voltage Project
 - Variant of S-NM. Not included.

Map for ATC Access Projects

- Copied from ATC 2005 TYA



● Projects in ISMN Exploratory

■ Include Projects and Their Variants

- Hazelton – Salem: identified in early West RSG study to be necessary for significant constraints relief; In line with ATC S-NM project
- Variants: Salem-N Madison, Hampton Corners-LaCrosse-Columbia, Brookings Co-Lyon Co-Franklin-Helena-Lk Marion-Hampton Corner

■ The Following are Not Included

- Lakefield-Winnebago-Hayward-Adams: A parallel line south to Lyon Co-Franklin-Helena-Lk Marion-Hampton Corner
- Nobles Co-Wilmarth-Byron-Rochester: Major function is included in other projects
- Winnebago-Burt-Webster: mostly related to ISMN exploratory study specific generation scenario

Transmission Scenario for • Combined West Regional Study



● Other Projects

- Will be Identified/Included with ongoing Study
- Discussion

Any other transmission upgrades to be added to the start point of transmission scenario?