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Minnesota Transmission Owners

Docket No.: E999/M-15-439

Response To: MN Department of Commerce Information Request No. 1

Requestor: Michael Zajicek

Date Received: January 6, 2016

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Question:

- A. Please list all transmission needs identified in the 2015 Biennial Transmission Planning Report where the historically experienced peak demand is greater than the current, reliable supply capacity, where “reliable supply capacity” is determined using an n-1 or single contingency criterion (the amount of capacity a transmission line can safely handle during a single contingency).
- B. For each area identified in response to A, please:
  - 1. provide an estimated date by which the reliable supply capacity will be raised to a level greater than the historically experienced peak demand, and
  - 2. briefly discuss the actions to be taken to raise the reliable supply capacity.

Response:

**Northern States Power Company**

A.

- 2015-WC-N2 - Douglas County – West Union 69 kV Line Rebuild
- 2015-TC-N3 - SW Twin Cities Project
- 2015-SW-N1 - Yankee Reactor
- 2015-SW-N2 - Fenton Reactor
- 2011-SE-N5 - Arlington-Green Isle 69 kV
- 2015-SE-N4 - Line 0714 Rebuild

B.

**2015-WC-N2 - Douglas County – West Union 69 kV Line Rebuild**

- 1. The expected in-service date is April 2016.

2. Rebuild the 69 kV line to a higher capacity and moving load to another substation.

### **2015-TC-N3 - SW Twin Cities Project**

1. The expected in-service date is the end of 2016.
2. Rebuild the existing 69 kV line around Chaska to 115 kV and rebuild the existing 115 kV single circuit line into Chanhassen to a double circuit 115 kV line.

### **2015-SW-N1 - Yankee Reactor**

1. The expected in-service date is the end of 2016.
2. This capacitor will help keep the voltages in southwest Minnesota from going too high in light wind conditions.

### **2015-SW-N2 - Fenton Reactor**

1. The expected in-service date is early 2017.
2. Cutting over the existing Buffalo Ridge 321 feeder to Yankee will help with the voltage issues on the feeders.

### **2011-SE-N5 - Arlington-Green Isle 69 kV**

1. The expected in-service date is 2020.
2. Rebuild the existing 69 kV line between Arlington-Green Isle to a higher rating.

### **2015-SE-N4 - Line 0714 Rebuild**

1. The expected in-service date is 2019.
2. Rebuild 3.6 miles of 0714 69 kV line from Madelia Switching Station to Village of Madelia to 336 ACSR.

## **Minnesota Power**

A.

- 2011-NE-N2 - 15 Line Upgrade
- 2013-NE-N22 - 5 Line Upgrade
- 2015-NE-N2 - 868 Line Upgrade
- 2015-NE-N14 - 83 Line Upgrade
- 2015-NE-N15 - 95 Line Upgrade

B.

### **2011-NE-N2 - 15 Line Upgrade**

- 1 & 2. Post-contingent overloads on the Fond Du Lac – Hibbard 115 kV Line and power quality issues due to the lack of shield wire on the line are presently managed with an operating guide that allows for the

line to be taken out of service if loading is approaching the line's rated capacity or if there is severe weather in the area. The 15 Line Upgrade project will be considered for inclusion in Minnesota Power's 2017 capital budget. With the earliest construction start date being spring or summer of 2017, the earliest possible in-service date is late 2017. However, given the historical effectiveness of the operating guide for managing the issues, the project may be delayed by a year or more as other more significant needs are prioritized.

### **2013-NE-N22 - 5 Line Upgrade**

1 & 2. Post-contingent overloads on the Mud Lake – Brainerd 115 kV Line have been observed in out-year winter models in the MISO MTEP analysis, but capacity constraints in the Brainerd area have also been experienced in recent operations as well. These constraints are presently managed by an operating guide that allows for the overloaded line to be taken out of service. Power flow analysis indicates that this operating guide will cease to be effective in the 2019-2020 timeframe; therefore, Minnesota Power is planning to complete the 5 Line Upgrade project before November 2019.

### **2015-NE-N2 - 868 Line Upgrade**

1 & 2. Post-contingent overloads on the Little Falls – Langola Tap – St. Stephen Tap 115 kV Line have been observed in out-year winter models in the MISO MTEP analysis, but capacity constraints on this line have also been experienced in recent operations as well. These constraints are presently managed by an operating guide that allows for the line to be taken out of service if it is overloaded. Power flow analysis indicates that this operating guide may cease to be effective in the 2019-2020 timeframe; therefore, Minnesota Power is planning to complete the 868 Line Upgrade project before November 2019.

### **2015-NE-N14 - 83 Line Upgrade & 2015-NE-N15 - 95 Line Upgrade**

1 & 2. As a result of being derated due to previously-unidentified equipment limitations, both of the Boswell – Blackberry 230 kV lines are subject to post-contingent overloads as they are utilized to transmit power generated at Minnesota Power's Boswell Energy Center. Capacity constraints on the 230 kV transmission outlets from the Boswell Energy Center have historically been managed with a special protection system (SPS) that initiates an automatic reduction in generation output when one of the lines becomes overloaded. The Boswell SPS will continue to be an effective approach to managing capacity constraints in the area while Minnesota Power targets a 2017 in-service date for the 83 Line

Upgrade and 95 Line Upgrade projects that will restore the appropriate capacity on the two Boswell – Blackberry 230 kV lines.

## **ITC Midwest**

A.

2013-SW-N1 - Heron Lake Capacitors

B.

### **2013-SW-N1-Heron Lake Capacitors**

1. ITC Midwest currently has budgeted funds in 2018 for land acquisition, but funding for the reconstruction of existing 161 kV and 69 kV facilities associated with the capacitor addition are not within the current 5-year plan.
2. There is insufficient space at the existing Heron Lake substation to accommodate installation of the 161 kV capacitors. New substation facilities will be required as part of the capacitor addition. Construction of the new facilities for the capacitor addition will allow for reconfiguration of the 161 kV system to a ring-bus configuration to reduce loss of multiple-elements for single-element contingencies and for replacement of 69 kV facilities. Rebuild of 69 kV facilities is needed due to age and condition of existing 69 kV facilities. The Heron Lake substation rebuild and capacitor addition was approved as part of the 2015 MTEP, and annual analysis of forward-looking, 5-year cases will continue to evaluate the need for or modification of the capacitor bank upgrade at Heron Lake.

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Date: January 28, 2016

Preparer: Northern States Power Company-Jason Standing

Title: Principal Transmission Planning Engineer

Department: Transmission Planning North, Xcel Energy, Inc.

Telephone: 612-330-7768

Preparer: Minnesota Power-Christian Winter

Title: Transmission System Planning Engineer

Department: System Performance & Transmission Planning

Telephone: 218-355-2908

Preparer: ITC Midwest-Daniel Barr  
Title: Principal Engineer  
Department: Planning  
Telephone: 563-585-3640