Fredrikson & BYRON, P.A.

November 1, 2011

Dr. Burl Haar
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East
Suite 350
St. Paul MN 55101-2147

Re: 2011 Biennial Report
Docket No. E999/-11-445

Dear Dr. Haar:

Enclosed please find the 2011 Minnesota Transmission Projects Report prepared by the Minnesota Transmission Owners pursuant to Minnesota Statutes § 216B.2425. The MTO has also filed a copy electronically with the Commission.

The Biennial Report contains the information required by the statute and the PUC rules. It also contains the information the Commission directed the MTO to include in the 2011 Biennial Report when it issued its Order approving the 2009 Report.

The MTO will make a CD of the 2011 Biennial Report and serve that on those persons and organizations that are required to be served under Minnesota Rules part 7848.1800, subp. 1. In addition, the 2011 Report will be posted on the webpage maintained by the MTO: www.minnelectrans.com

The MTO looks forward to participating in the Commission's review of the 2011 Minnesota Biennial Transmission Projects Report.

Thank you very much.

/s/ *Alan R. Mitchell*

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2011 Minnesota Biennial Transmission Projects Report

November 1, 2011

American Transmission Company, LLC

Dairyland Power Cooperative

East River Electric Power Cooperative

Great River Energy

Hutchinson Utilities Commission

ITC Midwest LLC

L&O Power Cooperative

Marshall Municipal Utilities

Minnesota Power

Minnkota Power Cooperative

Missouri River Energy Services

Northern States Power Company

Otter Tail Power Company

Rochester Public Utilities

Southern Minnesota Municipal Power Agency

Willmar Municipal Utilities

TABLE OF CONTENTS

1.0 Executive Summary

The 2011 Biennial Report has been prepared pursuant to Minnesota Statutes § 216B.2425, which requires utilities that own or operate electric transmission facilities in the state to report by November 1 of each odd numbered year on the status of the transmission system, including present and foreseeable inadequacies and proposed solutions.

This is the sixth round of reports. Reports were filed in 2001, 2003, 2005, 2007, and 2009. All biennial reports are available on a webpage maintained by the utilities specifically for the purpose of providing information about transmission planning. That webpage is:

http://www.minnelectrans.com

This Report is a joint effort of the Minnesota Transmission Owners – those utilities that own or operate high voltage transmission lines in the state of Minnesota. These utilities include the following:

American Transmission Company, LLC
Dairyland Power Cooperative
East River Electric Power Cooperative
Great River Energy
Otter Tail Power Company
Rochester Public Utilities
Southern Minnesota Municipal
Minnesota Power
Willmar Municipal Utilities
Minnkota Power Cooperative
Missouri River Energy Services
Northern States Power Company,
Hutchinson Utilities Commission
ITC Midwest LLC
L&O Power Cooperative
Marshall Municipal Utilities
Power Agency

A major purpose of the Biennial Report is to provide information about all present and reasonably foreseeable transmission inadequacies in the transmission system that have been identified. An "inadequacy" is essentially a situation where the present transmission infrastructure is unable or likely to be unable in the foreseeable future to perform in a consistently reliable fashion and in compliance with regulatory standards. In addition, the Biennial Report provides information about the transmission planning process and about the utilities that own transmission lines in the state.

The following is a summary of each subsequent chapter of the 2011 Biennial Report.

Chapter 2 describes the biennial reporting requirements. This includes a discussion of the specific information the Public Utilities Commission directed the utilities to include in the 2011 Biennial Report.

Chapter 3 is entitled Transmission Studies. A lengthy table of studies that have been completed in the past two years is included. Also, the utilities describe a number of ongoing studies, both regional ones and load-serving ones. Section 3.6 describes several other studies that are underway.

Chapter 4 summarizes the efforts the utilities have made to keep the public advised of ongoing planning activities and transmission inadequacies. This chapter provides information on how to keep advised of ongoing transmission planning activities by the utilities and the Midwest Independent Transmission System Operator (MISO). Because the Public Utilities Commission has granted a variance from the requirement in the rules to hold a public meeting in each transmission planning zone, there is no summary of any such meetings. However, the utilities do report that a webinar will be held before the end of 2011 to allow interested persons to learn about and comment upon the 2011 Biennial Report.

Chapter 5 provides general information about the six transmission planning zones in the state: the Northwest Zone, the Northeast Zone, the West Central Zone, the Twin Cities Zone, the Southwest Zone, and the Southeast Zone. This chapter is essentially identical to the information in the 2009 Report since the zones have not changed.

Chapter 6 is where all the transmission inadequacies are identified. The Report identifies well over 100 separate inadequacies across the state. Each inadequacy is assigned a Tracking Number. The Tracking Number reflects the year the inadequacy was identified and the zone in which it is located.

In past reports information about each Tracking Number was included in the Report itself. This year, however, rather than include complete information in the body of this Report about each Tracking Number, references are provided to where the information can be found in an annual report prepared by MISO, called the MISOt Transmission Expansion Plan (MTEP) Report. The 2011 MTEP Report, for example, would be called MTEP11.

For each of the transmission planning zones across the state, Chapter 6 provides a table that cross-references each Tracking Number to a MTEP number and a MTEP Report in which detailed information about the project described in the Tracking Number can be found. The MTEP Report referenced in the table will contain the kind of information about the project, such as alternatives, costs, and a schedule, as was previously set forth in the Biennial Report. Chapter 6 also presents comprehensive instructions on how to find on the Internet the appropriate MTEP Report containing the desired information. The utilities have also attempted to indicate whether a Certificate of Need (CON) from the Public Utilities Commission might be required for a particular project selected to address a named inadequacy.

Not all of the reporting utilities that are participating in this Report are members of MISO (the utilities that belong to MISO are identified in section 6.1), but nearly every inadequacy that has been identified falls within the responsibility of a utility that is a member. Therefore, there are only a couple of inadequacies reported where complete information is included in this Report. Of course, for those Tracking Numbers that were reported in a previous Biennial Report, that older Report can also be examined for information about a particular Tracking Number.

Certain projects have been completed since the 2009 Report was filed two years ago. These completed projects are listed in a table in the discussion for each zone in Chapter 6. Once a project has been completed and an inadequacy addressed, the matter is closed and that particular Tracking Number is no longer reported. The practice is to permanently close a matter only after the selected alternative has been constructed and placed into service. In a few cases, a project has been moved to the completed table because a change in demand has eliminated the inadequacy.

Chapter 7 focuses on the 16 utilities that are jointly filing this report. A brief description of each utility and the name and address of a contact person are provided. Information provided in the 2009 Report on miles of transmission line has been updated.

Chapter 8 provides an analysis of the utilities' progress toward compliance with state Renewable Energy Standards and the transmission needs that might be required to assure compliance with upcoming RES milestones. Not all utilities that own transmission lines are subject to the state Renewable Energy Standards, and some utilities that are not required to participate in the Biennial Report must meet the RES milestones.   All utilities subject to the RES participated in providing information for this part of the report.

For the past several reporting periods, and again this year at the direction of the PUC, the utilities subject to the RES have provided a Gap Analysis. A Gap Analysis is an estimate of how many more megawatts of renewable generating capacity a utility will require beyond what is presently available to meet an upcoming RES milestone of a certain percentage of retail sales from renewables. Generally, the Gap Analysis shows that the utilities are in compliance with present standards and expect to have enough generation and transmission to meet RES milestones through 2016, although demands of neighboring states for renewable energy will undoubtedly affect what resources will be required.

Upon receipt of this Report, the Public Utilities Commission will solicit comments from the Department of Commerce, interested parties, and the general public about the Report. Any person interested in commenting on the Report or following the comments of others, should check the efiling docket for this matter or in some other manner contact the Public Utilities Commission. The Docket Number is E-999/M-11-445.

2.0 Biennial Report Requirements

2.1 Generally

Minnesota Statutes § 216B.2425 requires any utility that owns or operates electric transmission lines in Minnesota to submit a transmission projects report to the Minnesota Public Utilities Commission by November 1 of each odd numbered year. The statute identifies a number of items that are to be included in the report, primarily the identification and analysis of present and reasonably foreseeable future inadequacies in the transmission system.

The Minnesota Public Utilities Commission (MPUC) has adopted rules that govern the content of the transmission projects report and establish procedures for reviewing the report. Those rules are codified in Minnesota Rules chapter 7848. Over the years, in response to experiences with the rule requirements, the PUC has modified the application of these rules in a number of ways, including methods of soliciting public input and reporting on transmission inadequacies. The utilities have followed the applicable procedures and reporting requirements for each report.

In addition to the statute and the rules, the Public Utilities Commission has over each reporting cycle established specific requirements that utilities must address in the report. For example, in response to PUC direction, the 2009 Biennial Report contained a discussion of each reporting utility's transformer capability and the 2007 Biennial Report identified the miles of transmission line owned by each utility. The PUC has also established specific requirements for the 2011 Report, and these are discussed in the next section below.

2.2 Specific Reporting Requirements for 2011

The Minnesota Transmission Owners (MTOs) submitted the 2009 Biennial Report on November 1, 2009. The Public Utilities Commission afforded interested persons an opportunity to submit comments regarding the completeness of the Biennial Report. After considering all comments that were filed, on May 28, 2010, the Commission issued its Order Accepting Reports, Granting Variance, and Setting Future Filing Requirements. PUC Docket No. E-999/M-09-602

One provision of the Commission's May 28, 2010, Order directs the reporting utilities to address efforts the utilities have undertaken to solicit input on transmission planning issues from the public and local government officials. The PUC directed the utilities to modify the Internet site maintained by the utilities to report on transmission planning efforts at:

http://www.minnelectrans.com

The utilities have reported on their efforts in this regard in Chapter 4 of this report.

Another aspect of the Commission's Order relates to transmission planning. The Commission directed the utilities to discuss in some detail how they conduct strategic planning and to identify those projects that the utilities believe warrant designation as priority projects. The utilities have addressed this aspect of the Commission's Order in Chapter 3. The Commission specifically asked for discussion of the system considerations that affect the timing of the Corridor Upgrade Project. This discussion is found in Chapter 8.

One continuing obligation that has been required of the utilities since 2007 is to report on their status with regard to compliance with Minnesota Renewable Energy Standards. In this report, as in the 2007 and 2009 reports, the utilities have provided a Gap Analysis showing their upcoming needs for renewable energy to meet RES milestones. A Gap Analysis is an estimate of how many more megawatts of renewable generating capacity a utility will require beyond what is presently available to meet an upcoming RES milestone of a certain percentage of retail sales from renewables. This Gap Analysis is found in Chapter 8.

One significant change approved by the Public Utilities Commission for the 2011 Biennial Report is the manner in which the utilities report on the transmission inadequacies that have been identified. In past reports, all the information required for a particular transmission inadequacy was contained in the Biennial Report. This year, however, utilities that are members of the Midwest Independent Transmission System Operator (MISO) will simply make reference to where in the annual report prepared by MISO the information about a particular inadequacy can be found. That annual report is called the MISO Transmission Expansion Planning (MTEP) Report. The Commission determined that it was unnecessary to repeat in this report the information that already is in the MTEP Report.

All transmission owning members of MISO are obligated under the Transmission Owners Agreement (TOA) they signed with MISO to participate in the MISO transmission planning process. These planning obligations are detailed in the MISO *Business Practices Manual BPM-20 – Transmission Planning*, and they require similar information about planned projects that is required in this Biennial Report. Any information required in this report that is not required in the MTEP Report is now being added by the utilities to their project descriptions in the MTEP Report. MISO has also agreed to add an additional data field to their projects-reporting spreadsheet beginning with the MTEP12 Report to show the unique “Tracking Number” from the biennial reporting process for each of the MTO Minnesota projects.

For the 2011 Biennial Report, a cross reference table is provided to show where each Tracking Number can be found in a MTEP report for projects identified by MISO utilities.

A further explanation of the MTEP planning process and where in the annual reports information about a particular transmission inadequacy can be found is provided in Chapter 6. For those utilities that are not part of MISO, full information about those utilities’ transmission inadequacies continues to be found in this document.

2.3 Reporting Utilities

Minnesota Statutes § 216B.2425 applies to those utilities that own or operate electric transmission lines in Minnesota. The PUC has defined the term “high voltage transmission line” in its rules governing the Biennial Report to be any line with a capacity of 200 kilovolts or more and any line with a capacity of 100 kilovolts or more and that is either longer than ten miles or that crosses a state line. Minn. Rules part 7848.0100, subp. 5. Each of the entities that is filing this report owns and operates a transmission line that meets the PUC definition. Information about the utility and transmission lines owned by each utility is provided in Chapter 7 of this Report. In addition, a contact person for each utility is included in Chapter 7.

The statute allows the entities owning and operating transmission lines to file this report jointly. The Minnesota Transmission Owners (MTO) have elected each filing year to submit a joint report and do so again with this report. The utilities jointly filing this report are:

American Transmission Company, LLC
Dairyland Power Cooperative
East River Electric Power Cooperative
Great River Energy
Hutchinson Utilities Commission
ITC Midwest LLC
L&O Power Cooperative
Marshall Municipal Utilities
Minnesota Power
Minnkota Power Cooperative
Missouri River Energy Services
Northern States Power Company d/b/a Xcel Energy
Otter Tail Power Company
Rochester Public Utilities
Southern Minnesota Municipal Power Agency
Willmar Municipal Utilities

Of the above utilities, East River Electric Power Cooperative, Hutchinson Utilities Commission, L&O Power Cooperative, Marshall Municipal Utilities, Minnkota Power Cooperative, Rochester Public Utilities and Willmar Municipal Utilities are not members of MISO; all the others are.

2.4 History of Biennial Reports

The Minnesota Legislature created the biennial reporting requirement in 2001 when it adopted Minnesota Statutes § 216B.2425. The 2011 Biennial Report is the sixth such report filed by the MTO. All of the Biennial Reports are available on the webpage maintained by the utilities at:

http://www.minnelectrans.com

The Biennial Reports can also be found on the PUC edockets webpage using the Docket Number from the table below. Visit:

http://www.edockets.state.mn.us

Biennial Report	PUC Docket Number	PUC Order
2011	E-999/M-11-445	
2009	E-999/M-09-602	May 28, 2010
2007	E-999/M-07-1028	May 30, 2008
2005	E-999/TL-05-1739	May 31, 2006
2003	E-999/TL-03-1752	June 24, 2004
2001	E-999/TL-01-961	August 29, 2002

2.5 Certification Requests

Minnesota Statutes § 216B.2425, subd. 2, provides that a utility may elect to seek certification of a particular project identified in the Biennial Report. According to subdivision 3, if the Commission certifies the project, a separate Certificate of Need (CON) under section 216B.243 is not required.

On May 31, 2011, the MTO advised the Commission that there would be no certification requests included with the 2011 Biennial Report.

2.6 Renewable Energy Standards

The 2007 Biennial Report included an entirely separate report called the Renewable Energy Standards Report, which was required by the Legislature as part of the 2007 Renewable Energy Act to be submitted to the Commission by November 1, 2007. This requirement was a one-time obligation and the 2009 Biennial Report did not include a separate RES Report. However, the 2009 Biennial Report did include a Gap Analysis and a discussion of various studies that were underway related to transmission needs related to renewable energy.

The Public Utilities Commission has directed the MTO to continue to address in the Biennial Report transmission issues relating to meeting the RES milestones. Thus, the 2011 Biennial Report also contains a Gap Analysis and a discussion of ongoing transmission studies that affect the utilities' abilities to obtain necessary amounts of renewable energy. This analysis and discussion are found in Chapter 8.

3.0 Transmission Studies

3.1 Introduction

The Public Utilities Commission requires that the utilities include in each Biennial Report a "list of studies that have been completed, are in progress, or are planned that are relevant to each of the inadequacies identified" in the Report. Minnesota Rules part 7848.1300, item F. In the 2005 Biennial Report, the utilities not only identified completed, ongoing, and planned studies but also described in general terms the transmission planning process. In the 2007 Report, the utilities again described the relevant studies and in addition, pursuant to legislative directive, described planning processes and studies related to compliance with Renewable Energy Standards.

In this 2011 Biennial Report, the utilities follow the approach utilized in the 2009 Biennial Report to first identify in Section 3.2 a number of studies that have been completed that either address expansion of the transmission network to address generation expansion, in particular renewable energy, or address local inadequacy issues (noted with a Tracking Number). Section 3.3 describes ongoing regional studies that focus on expansion of the bulk electric system to address broad regional reliability issues and support expansion of renewable in the upper Midwest. Section 3.4 focuses on ongoing load serving studies that are attempting to resolve local inadequacy issues. Section 3.6 is a new section describing certain studies at the national level that are underway.

3.2 Completed Studies

The following studies have been completed and where specific transmission projects have been identified, a Tracking Number is provided. The Tracking Number identifies the year the project was first considered for inclusion in a Biennial Report and the zone where the project is located.

Study Title	Year Completed	Utility Lead	Description
LaCrosse to Madison 345 kV Transmission Line	2010	ATC	Preliminary studies are complete for the 345 kV, $425 million Badger-Coulee line (also referred to as the La Crosse-Madison line), which would address electric system reliability issues in Wisconsin and Minnesota, provide economic savings and support renewable energy policy. The project was submitted to the MISO Transmission Expansion Plan in 2011 and is referred to as project #3127 in MTEP. The line also has been identified by MISO as a Candidate MVP (Multi-Value Project) and is expected to be presented to the MISO Board for approval in December. Project information and economic analysis information is available at www.badgercoulee.com.
Regional Outlet Generation Study (RGOS)	2010	MISO	Renewable Portfolio Standards (RPS), passed by most MISO member states, mandate that increasing amounts of statewide electrical energy come from renewable energy sources. MISO recognized that implementing RPSs would require regionally compliant transmission portfolios. The Regional Generator Outlet Study (RGOS) objectives included 1) analyzing and planning for each state's renewable portfolio standards, 2) setting goals for meeting load-serving entities' renewable portfolio standards, 3) balancing distribution of wind zones to consider local desires, optimal wind conditions and distances from load, 4) providing consumers with energy solutions at the least-possible cost, 5) identifying transmission expansion starter projects. Details can be found at misoenergy.org. Click on "Planning" then on "Study Repository".

Study Title	Year Completed	Utility Lead	Description
SMARTransmission Study	2010	Electric Transmission America, LLC	The Strategic Midwest Area Renewable Transmission Study, or SMARTransmission Study, was a comprehensive study of the transmission needed in the Upper Midwest to support renewable energy development and to transport that energy to consumers. SMARTransmission was sponsored by Electric Transmission America – a transmission joint venture of subsidiaries of American Electric Power and MidAmerican Energy Holdings Company – American Transmission Company, Exelon Corporation, NorthWestern Energy, MidAmerican Energy Company – a subsidiary of MidAmerican Energy Holdings Company – and Xcel Energy. The sponsors retained Quanta Technology LLC to evaluate extra-high voltage transmission alternatives and provide recommendations for new transmission development in the Upper Midwest, including North Dakota, South Dakota, Iowa, Indiana, Ohio, Illinois, Minnesota and Wisconsin. Quanta conducted an analysis of transmission alternatives, and analyzed the impact and quantified the economic benefits of several transmission options. More information about the study is located at www.smartstudy.biz
Minnesota Transmission Assessment and Compliance Team 2010 Transmission Assessment (2010 – 2020)	2010	MTO	This report is an annual transmission assessment investigating near-term, mid-term, and long-term transmission conditions. This purpose of this study is to develop an understanding of the transmission system topology, behavior, and operations to determine if existing and planned facility improvements meet the North American Electric Reliability Corporation (NERC) Transmission Planning Standards TPL-001 through TPL-004.

Study Title	Year Completed	Utility Lead	Description
Enbridge Transmission Study	2010	OTP	This study investigated the capability of the existing transmission system to serve increased load projections for the various Enbridge Pump Stations located in Northwest Minnesota (see 2003-NW-N2 and 2007-NW-N3 for more details).
Fergus Falls Area Transmission Study	2010	OTP	The analysis performed for this study focused on the challenges with serving the Fergus Falls area load from Audubon and the resultant voltage and loading concerns on the system. The results of the study had indicated that the energization of the new Fergus Falls SE 115/12.5 kV substation transferred enough load from the Edgetown 115/12.5 kV substation to sufficiently resolve the transmission issues in the near-term timeframe (see 2009-NW-N1 for more details).
Gwinner Capacitor Bank Study	2010	OTP	Voltage concerns near Gwinner during outage of the Forman – Gwinner 115 kV line prompted the need for additional voltage support in the Gwinner area. A short study was completed to recommend the appropriate capacitor bank size and configuration to support voltages in this area when being served from Buffalo.
Browns Valley Area Study	2010	OTP	The 41.6 kV system between Hankinson, Browns Valley, and Summit has been shown to have N-1 contingency concerns during winter peak conditions. This study investigated different transmission alternatives to support this area. The recommendations from this study involve adding a new 115 kV source into the 41.6 kV system in this area.

Study Title	Year Completed	Utility Lead	Description
Cass Lake Capacitor Bank Study	2010	OTP	Near-Term studies of the Bemidji area had identified voltage concerns at Cass Lake for an outage of the Bemidji – Helga 115 kV line or the Helga – Nary 115 kV line. OTP completed a study to determine the appropriate capacitor bank size and configuration to support voltages in the area when being served from Badoura (prior to the Bemidji – Grand Rapids 230 kV line being energized). More details can be found under tracking number 2007-NW-N2.
Cromwell-Wrenshall-Mahtowa-Floodwood Area	2010	MP/GRE	Area load-serving need for tracking #2003-NE-N2, MTEP Project ID 2634
Duluth Area 230 kV & 15 Line Upgrade	2010	MP	Duluth Area Transmission Reliability Study tracking #2007-NE-N1 & 2011-NE-N2, MTEP Project ID 2548 & 2549
9 Line Upgrade	2011	MP	9 Line capacity requirements & upgrade requirements, tracking # 2011-NE-N1, MTEP 3373
25L Tap	2011	MP	Transmission to serve Mining Resources LCC Tracking # 2011-NE-N7, MTEP 3532
Transmission Service Related Upgrades	2011	MPC	MPC performed a delivery study to grant transmission service to a number of requests in the MPC OASIS delivery queue. The study identified the need for a number of network upgrades. Details of the results are reported in “Minnkota Power Cooperative Generation Study Report for Service to Native Load”. Facilities identified for upgrade include the Richer – Roseau – Moranville 230 kV line and the Winger 230/115 kV transformer. The Winger transformer had been previously identified for upgrade to address load serving issues.

Study Title	Year Completed	Utility Lead	Description
Buffalo – Casselton 115 kV Project Study	2011	OTP	The transmission system between Buffalo, Fargo, and Wahpeton has been shown to have emerging issues due to N-1 contingencies. This study investigated these concerns and tested various transmission alternatives to meet acceptable loading and voltage concerns. The recommendation of this study is to construct a new 115 kV line from Buffalo to Casselton to address the load serving concerns in this area.
Interconnection Study for Bemidji – Grand Rapids 230 kV Line	2011	MPC	Transmission system studies have identified the Bemidji area as being increasingly susceptible to post-contingent voltage collapse conditions. These studies identified the Bemidji to Grand Rapids 230 kV line (i.e. Wilton – Boswell) as the best alternative to address the system inadequacies in the Bemidji area and the northern Red River Valley. As part of the project, the new line will be tapped at Cass Lake to address voltage issues and growing demand on the 115 kV loop from Wilton to Badoura. Other mitigations were also identified in studies evaluating performance of the Wilton – Cass Lake – Boswell 230 kV line (see list below). The "Bemidji – Grand Rapids 230 kV Line System Impact Study" was completed in 2011 as part of the MAPP approval process. The Bemidji – Grand Rapids project is being constructed by MPC and the CapX2020 group. Project completion is expected to be in late 2012. The project includes: • Boswell – Cass Lake 230 kV line • Cass Lake – Wilton 230 kV line • Cass Lake 230/115 kV transformer • New breakered 115 kV substation at Nary

			• Bemidji – Helga – Nary 115 kV line uprate • Nary – Cass Lake 115 kV line uprate • Temporary operating guide to protect Nary – Laporte 115 kV line prior to other planned transmission improvements The Bemidji – Grand Rapids project is also listed in MTEP Appendix A under projects 279 and 3156.
Minnesota Transmission Assessment and Compliance Team 2011 Transmission Assessment (2011 – 2021)	2011	MTO	This report is an annual transmission assessment investigating near-term, mid-term, and long-term transmission conditions. This purpose of this study is to develop an understanding of the transmission system topology, behavior, and operations to determine if existing and planned facility improvements meet NERC Transmission Planning Standards TPL-001 through TPL-004.
Ramsey Transformer Study	2011	OTP	This study investigated the long-term load serving needs of the Devils Lake area. Specifically, the analysis focused on the appropriate transformer capacity for the Ramsey 230/115 kV substation, which had originally been identified as an overload in the Langdon Wind Interconnection Study (see 2003-NW-N2 for additional information).
Otter Tail Power Company / Central Power Electric Cooperative Long Range Transmission Study	2011	OTP	OTP has worked extensively with Central Power Electric Cooperative (CPEC) to develop detailed models of the joint 41.6 kV system for current year, 10-year, and 20-year winter peak timeframes. A detailed review of the joint OTP/CPEC 41.6 kV system has identified some transmission projects needed for the upcoming 10 year time horizon that will be coordinated between OTP and CPEC.

Study Title	Year Completed	Utility Lead	Description
Oakes – Forman 230 kV Line Rebuild	2011	OTP	A short study was completed by OTP to determine the most optimal conductor to use for rebuilding approximately 7 miles of 230 kV line between Oakes (ND) and Forman (ND) that was damaged due to storms during the summer of 2011.

3.3 Regional Studies

While every study that is undertaken adds to the knowledge of the transmission engineers and helps to determine what transmission will be required to address long-term reliability and to transport renewable energy from various parts of the state to the customers, some studies are intentionally designed to take a broader look at overall transmission needs. Regional studies analyze the limitation of the regional transmission system and develop transmission alternatives that support multiple generation interconnect requests, regional load growth, and the elimination of transmission constraints that adversely affect utilities' ability to deliver energy to the market in a cost effective manner. Many of these studies are especially important for focusing on transmission needs for complying with upcoming Renewable Energy Standards.

3.3.1 MISO Transmission Expansion Plans

The Midwest Independent Transmission System Operator (MISO) engages in annual regional transmission planning and documents the results of its planning activities in the MISO Transmission Expansion Plan (MTEP). The MTEP process is explained in detail in chapter 6 since the latest MTEP reports are being relied on to provide information about the transmission inadequacies identified in this Report. For convenience, the following brief description of the latest MTEP reports is presented.

MTEP09 Report

The 2009 MISO Transmission Expansion Plan was approved by the MISO Board of Directors on December 3, 2009. The subtitle of the report is "Energizing the Heartland." The MTEP09 Report identifies those projects required to maintain reliability for the ten year period through the year 2019 and provides a preliminary evaluation of projects that may be required for economic benefit up to twenty years in the future.

At the first page in the Executive Summary, MISO states that MTEP09 recommends 274 new projects totaling $903 million of investment in transmission. The addition of these projects brings the total number of projects in Appendix A to 576 with total investment of $4.3 billion. Since the first MTEP cycle that closed in 2003, transmission investment totaling $7.2 billion has been approved, $2.7 billion of which is associated with projects already in-service.

MTEP10 Report

The 2010 MISO Transmission Expansion Plan was approved by the MISO Board of Directors on November 30, 2010. The subtitle of the report continues from 2009 – "Energizing the Heartland." At page 1 of the Executive Summary, the Report states:

> MTEP 10 recommends $1.22 billion in new transmission expansion through the year 2020 for inclusion in Appendix A. This is part of a continuing effort to ensure a reliable and efficient electric grid that keeps pace with energy demands.

The MTEP10 Report identifies those projects required to maintain reliability for the ten year period through the year 2020 and recommends 231 new projects for inclusion in Appendix A.

MTEP11 Report

The 2011 MISO Transmission Expansion Plan is still being finalized. The following language from pages 3-4 of the Executive Summary in the draft MTEP11 Report explains the purpose of this planning activity.

> MTEP11, the eighth edition of this publication, is the culmination of more than 18 months of collaboration between MISO planning staff and stakeholders. The primary purpose of this and other MTEP iterations is to identify transmission projects that:
>
> - Ensure the reliability of the transmission system over the planning horizon.
> - Provide economic benefits, such as increased market efficiency.
> - Facilitate public policy objectives, such as meeting Renewable Portfolio Standards.
> - Address other issues or goals identified through the stakeholder process.
>
> MTEP11 recommends $6.5 billion in new transmission expansion through the year 2021 for inclusion in Appendix A and construction. This is part of a continuing effort to ensure a reliable and efficient electric grid that keeps pace with energy and policy demands. Key findings and activities from the MTEP11 cycle include:
>
> - Recommendation of the first Multi Value Project portfolio for approval by the MISO Board of Directors.
> - Recommendation of 198 new Baseline Reliability, Generation Interconnection, or Other projects totaling $1.4 billion for approval by the MISO board of directors.
> - Economic assessment of transmission expansion.
> - Confirmation of Long-Term Generation Resource Adequacy.
> - Determination of the potential impacts of EPA regulations on generation retirements.
> - Full implementation of a regional transmission planning approach.

The MTEP11 Report should be finalized for approval by the MISO board of directors before the end of 2011. The MISO Expansion Plans are available on the MISO webpage. Visit http://www.misoenergy.org and click on "Planning."

3.3.2 Manitoba Hydro-Electric Board Transmission Service Request

MISO continues to process generation interconnection requests and transmission service requests on the transmission system that they operate. These studies could result in the need for new transmission in Minnesota. It is difficult to predict which projects, if any, will actually move forward, as the decision to move forward on a transmission project that is related to generation interconnection and transmission service is up to the generation developer and Power Purchase Agreement (PPA) recipient. There are a series of transmission service requests that involve the possible construction of transmission in Minnesota.

One group of these transmission service requests involves an increase in the ability to transfer power from Manitoba into the United States by 1100 MW. Several transmission options with variations have been identified for accommodating this series of transmission service requests. One option involved a 500 kV line between Winnipeg and the Twin Cities via Northeast Minnesota, the second option involved a 500 kV line between Winnipeg and the Twin Cities via the Red River Valley (Fargo) and another option consisted of a 500 kV line between Winnipeg and Fargo and potentially extending as far south as Sioux Falls, SD, with possible termination points at select 345 kV substations in between. A second transmission service request involves a 250 MW PPA between Manitoba Hydro and Minnesota Power. A 230 kV transmission line from the Winnipeg area to the Iron Range area of Minnesota is being studied as one possible way to enable this PPA (MTEP Project ID# 3562). The MTO utilities continue to actively participate in MISO studies evaluating transmission options to accommodate these transmission service requests.

3.3.3 Manitoba Hydro Wind Synergy Study

At the prompting of Manitoba Hydro (MH) and the potential customers (including GRE) of output from their new hydro dams, MISO is undertaking a market study to determine the value of increasing hydro storage in combination with MISO wind generation. MISO will be using a new study tool to analyze these Ancillary Services benefits. MH has over 2000 MW of new hydro generation development possible between 2012 and 2023+, in addition to about 5000 MW on their system now. This synergy study will be under full MISO stakeholder review, with scoping occurring this fall. The analysis is planned to be completed next year and the final report will be published in the fall of 2014.

3.3.4 Multi-Value Project Portfolio

In July 2010, MISO submitted tariff revisions to the Federal Energy Regulatory Commission (FERC) to establish a new category of transmission projects. The new Multi-Value Project (MVP) tariff provisions provide broad cost allocation for a portfolio of projects that meet at least one of the following three criteria:

1. Enable the transmission system to deliver energy in support of public policy requirements (such as Renewable Energy Standards)

2. Provide reliability and economic benefits in excess of project costs

3. Address transmission issues associated with projected NERC violations and at least one economic–based transmission issue that provides economic benefits in excess of project costs across multiple pricing zones

FERC approved the MISO MVP tariff (and related tariff provisions related to generation interconnection costs) in December 2010, and FERC denied all requests for rehearing in October 2011. FERC Docket No. ER10-1791-000 *Order Conditionally Accepting Tariff Revision* (Dec. 16, 2010).

MISO is currently considering 17 projects in the Upper Midwest for MVP certification, including the CapX2020 Brookings County-Hampton line. Other Upper Midwestern lines include proposed projects in Iowa, North Dakota, South Dakota and Wisconsin.

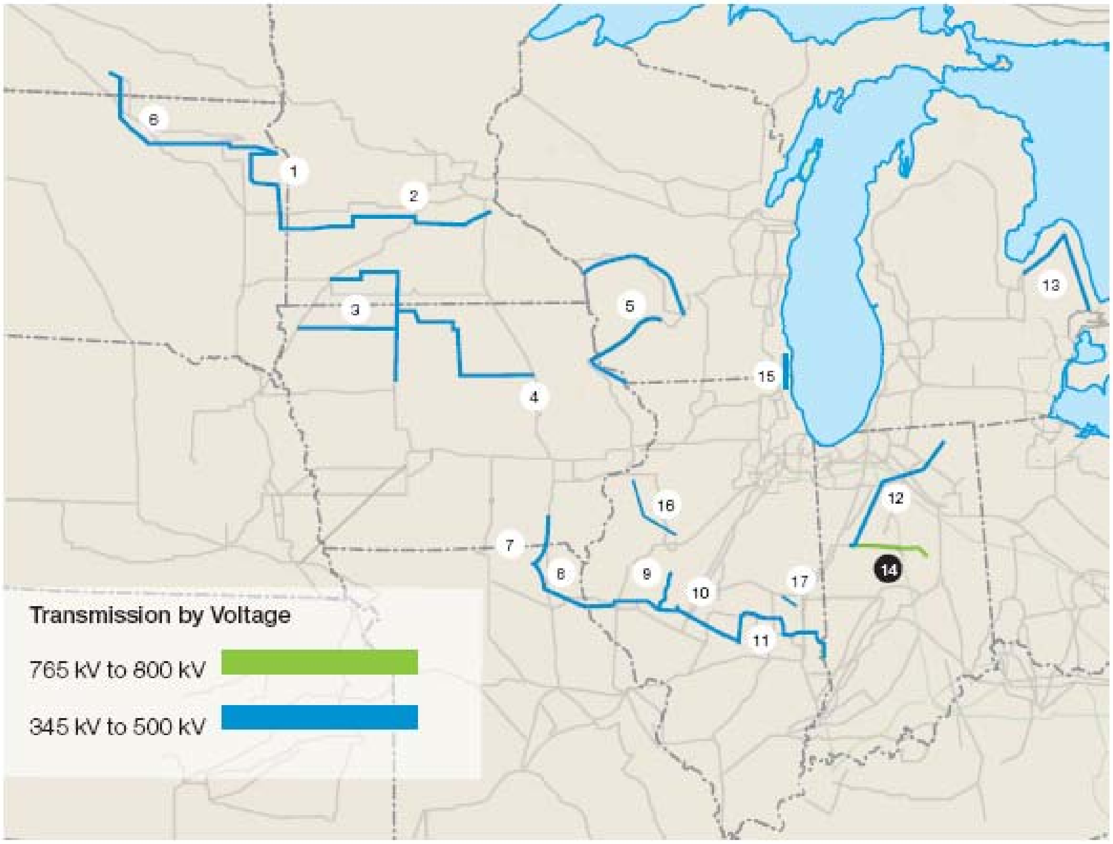
Brookings County-Hampton (CapX2020 project) received conditional MVP approval in June 2011; all 17 candidate MVP projects will be considered by the MISO board of directors for approval as a portfolio in December 2011.

MISO has completed a business analysis that demonstrates all MISO members will benefit from construction of the MVP projects in excess of project costs. The benefits range from 1.8 to 5.8 times the total cost of all projects. In other words, for every dollar spent on construction, MISO members will receive benefits between $1.80 and $5.80.

Overall, the proposed MVP portfolio enables the delivery of 41 million megawatt hours of renewable energy annually.

MISO analysis also identifies significant reliability benefits that will be realized from the MVP projects by strengthening the overall transmission system. The candidate MVP portfolio resolves approximately 500 thermal overloads for approximately 6,400 system conditions, and resolves 150 voltage violations for approximately 300 system conditions.

The map on the following page shows the 17 MVP projects.



Proposed Multi-Value Projects

Project Name	State(s)	Voltage
1. Big Stone – Brookings	SD	345 kV
2. Brookings – SE Twin Cities	SD/MN	345 kV
3. Lakefield Jct.-Winnebago – Winco – Burt area & Sheldon – Burt area – Webster	MN/IA	345 kV
4. Winco – Lime Creek – Emery -Blackhawk – Hazleton	IA	345 kV
5. N. LaCrosse-N. Madison-Cardinal & Dubuque Co.-Spring Green-Cardinal	WI	345 kV
6. Ellendale – Big Stone	ND/SD	345 kV
7. Adair – Ottumwa	IA/MO	345 kV
8. West Adair – Palmyra Tap	MO	345 kV
9. Palmyra-Quincy-Meredosia-Ipava & Meredosia-Pawnee	MO/IL	345 kV
10. New Pawnee-Pana	IL	345 kV
11. Pana-Mt. Zion-Kansas-Sugar Creek	IL	345 kV
12. Reynolds-Burr Oak-Hiple	IN	345 kV
13. Michigan Thumb Loop Expansion	MI	345 kV
14. New Reynolds-Greentown	IN	765 kV
15. Pleasant Prairie-Zion Energy Center	WI/IL	345 kV
16. Fargo-Oak Grove	IL	345 kV
17. Sidney-Rising	IL	345 kV

MISO

3.4 Load Serving Studies

Load serving studies focus on addressing load serving needs in a particular area or community. Since many of the inadequacies in Chapter 6 are load serving situations, many of these studies relate to specific Tracking Numbers.

Study title	Anticipated completion	Utility lead for Study	Description
Otter Tail Power/Minnkota Power Cooperative Long Range Transmission Study	2012	OTP	Otter Tail Power Company (OTP) has worked with Minnkota Power Cooperative (MPC) to perform a detailed transmission planning study of the joint 41.6 kV and 69 kV system for current year, 10-year, and 20-year winter peak timeframes. Transmission planning studies are currently underway to determine which areas of the joint system have challenges in meeting loading and voltage criteria. Deficiencies and future projects to address these deficiencies are expected to be identified during 2012.
Otter Tail Power/Great River Energy Long Range Transmission Study	2012	OTP	Similar to the OTP/MPC Long Range Transmission Study, OTP is working with Great River Energy (GRE) to perform a detailed transmission planning study of the joint 41.6 kV system for current year, 10-year, and 20-year winter peak and summer peak timeframes. Transmission planning studies are currently underway to determine which areas of the joint system have challenges in meeting loading and voltage criteria. Deficiencies and future projects to address these deficiencies are expected to be identified during 2012.
Otter Tail Power High Voltage Transmission Study	2012	OTP	As a result of the transmission assessments completed by the MN TACT for NERC TPL compliance, OTP has initiated a high voltage transmission study to investigate reliability concerns that have been identified in the mid- to out-year timeframes. The study work is planning to be coordinated with neighboring utilities and is expected to identify deficiencies and proposed mitigations to solve these deficiencies during 2012.

Study title	Anticipated completion	Utility lead for Study	Description
Deer River Area Reliability	2012	MP	Load serving study of Deer River area 2009-NE-N2, MTEP 3531 and 2551
Wrenshall area	2012	MP	MP 23L upgrade alternatives 2011-NE-N12, MTEP 3756
Keewatin Area	2012	MP	Keewatin area load serving needs
Austin Area Load Serving Study	2013	SMP	An Austin Area Transmission Study was conducted to investigate different alternatives for increasing load serving capability in the Austin area. The study identified two alternatives as the best options for increasing load serving capability and for satisfying reliability requirements. The preferred option is the construction of a new 161/69 kV substation in northwest Austin, MN. Tracking Number 2011-SE-N5
Xcel Energy 10-Year Plan Load Serving Study	2010, updated annually	NSP	NSP completes an annual load serving study for the Minnesota, North and South Dakota and Wisconsin territories. A slide presentation summarizing the most recent study and results is at the following link: http://www.xcelenergy.com/staticfiles/xe/Corporate/Corporate%20PDFs/NSP%202010%20transmission%20plan%20-FINAL.pdf
Audubon Area Load Serving Study	2012	MRES	This study is evaluating the need for more voltage/reactive support in the Audubon/Detroit Lakes area. Further work will be completed to more accurately determine timing and scope of upgrades. The preliminary conclusion is that capacitor bank(s) need to be installed in the Detroit Lakes area within the next 5-6 years.

3.5 MAPP Load & Capability Report

Since the 2009 Biennial Report, the Mid-Continent Area Power Pool (MAPP) has stopped supporting the MAPP Load & Capability Report. The most recent Load & Capability Report is dated May 1, 2009. The following introduction to the 2009 Load & Capability Report provides an overview of what the report was intended to do:

> The MAPP Load and Capability Report is prepared in response to the requirement set forth in the MAPP Agreement and the MAPP Generation Reserve Sharing Pool Handbook for a two-year monthly and a ten-year seasonal load and capability forecast from each MAPP Participant. The report contains actual and forecast monthly load and capability data for the period of May 2008 through December 2011 and seasonal load and capability data for the ten-year period Summer 2009 through Winter 2018-19.

3.6 Other Studies

3.6.1 Eastern Interconnection Planning Collaborative

In June of 2009, the United States Department of Energy (DOE) issued a Funding Opportunity Announcement (FOA), DE-FOA0000068, alerting the public that the DOE was prepared to provide funding for analysis of transmission requirements under a broad range of alternative futures. The DOE FOA covered two specific topics. Topic A was to fund Interconnection-level analysis and planning work while Topic B was to fund cooperation among States on electric resource planning and priorities. The DOE anticipated issuing three awards under each Topic corresponding to the three geographic areas served by the three interconnections (Eastern, Western, and Texas).

In August of 2009, the Planning Authorities in the Eastern Interconnection reached final agreement on the formation of the Eastern Interconnection Planning Collaborative (EIPC). Under the construct of the collaborative, these Planning Authorities in the Eastern Interconnection intended to "roll-up" their respective regional expansion plans, which were developed under FERC Order 890 approved regional planning processes, to form a model of the Eastern Interconnection. This model would provide a basis for interconnection-wide analysis that would feed information back into regional planning processes and allow EIPC members to identify any inconsistencies among the established regional plans while also allowing members to identify opportunities for potential transmission enhancements to increase the ability to move power or reduce costs. The core objectives served as the foundation for a proposal that EIPC submitted in August 2009 to perform the Topic A work under the DOE FOA. All twenty-six (26) EIPC members support the work prescribed for Topic A. Eight (8) of the twenty-six members are designated as Principal Investigators who bear additional responsibilities under the DOE FOA with respect to project management and reporting. PJM serves as the lead Principal Investigator under the proposal. PJM is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 eastern states and the District of Columbia, comparable to what MISO does in the Midwest.

The 39 states (plus the District of Columbia and the City of New Orleans) in the Eastern Interconnection, including Minnesota, formed the Eastern Interconnection States Planning Council (EISPC) and, at the same time that EIPC was crafting its proposal, submitted a proposal for the Topic B work under the DOE FOA. On December 18, 2009; the DOE announced that EIPC and EISPC had been selected to perform the Eastern Interconnection work under Topic A and Topic B, respectively, with a total of $16 million in funds made available to EIPC and a total of $14 million in funds made available to EISPC. As part of its proposal, EIPC had retained Whiteley BPS Planning Ventures LLC to support project management, The Keystone Center (Keystone) to support stakeholder process facilitation, and Charles River Associates (CRA) to support macroeconomic analysis and production cost studies.

The EIPC proposal incorporated a Statement Of Project Objectives (SOPO) as required under the terms of the DOE FOA. The SOPO was originally submitted as part of the proposal in August 2009 and was then revised during contract negotiations with the DOE in February 2010.

The first objective was to establish processes for aggregating the modeling and regional transmission expansion plans of the entire Eastern Interconnection and to perform interregional analyses to identify potential conflicts and opportunities between regions. This interconnection-wide analysis was to serve as a reference case for modeling various alternative grid expansions based on the scenarios developed by stakeholders.

The second objective was to perform scenario analysis as guided by a broad stakeholder input and the consensus recommendations of a stakeholder committee formed under the proposal. The analysis would serve to aid federal, state and provincial regulators as well as other policy makers and stakeholders in assessing interregional options and policy decisions.

The scope of work proposed by the EIPC in the SOPO was divided into 13 tasks with two distinct parts or phases. Phase 1 included the following tasks:

- Task 1 – Initiate Project (January – October 2010)
  - EIPC to meet with Topic B Awardee (EISPC) to discuss approach for interaction between entities and to gather feedback on Stakeholder Steering Committee (SSC) structure.
  - The Keystone Center to facilitate the formation of the SSC and any necessary subgroups.

- Task 2 – Integrate Regional Plans (January – December 2010)
  - EIPC to generate Roll-up Model using regional plans for year 2020.
  - EIPC to perform inter-regional analysis on Roll-up Model.
  - EIPC to indentify conflicts between plans and/or opportunities for regional plan improvement.

- Task 3 – Production Cost Analysis of Regional Plans (Task was eliminated after original scope of work was developed)
  - CRA to perform production cost analysis on Roll-up Model.

- Task 4 – Macroeconomic Futures Definition (January – May 2011)
  - SSC to reach consensus on eight Futures (each Future having up to nine Sensitivities totaling 80 cases).

- Task 5 – Macroeconomic Analysis (March – September 2011)
  - CRA to perform macroeconomic analysis and report on each Future and Sensitivity.
  - EIPC to produce high level transmission cost estimates for each of the 8 Futures scenarios.

- Task 6a – Expansion Scenario Concurrence (September – November 2011)
  - EIPC to assist SSC in selecting three scenarios from the Task 5 work as options for the transmission expansion, analysis, and costing work in Phase 2 of the project.

- Task 6b – Interim Report (July – December 2011)
  - EIPC to produce interim project report on Phase 1 activities.

Phase 2 of the project proposed building and analyzing transmission expansion options for the three scenarios selected by the Stakeholder Steering Committee in Task 6a at the end of Phase 1. For each of the three scenarios selected, the work in this phase proposed the following tasks with the following timeframes:

- Task 7 – Interregional Transmission Options Development (January – June 2012)
  - EIPC to modify power flow models built in Task 2 to create interregional transmission expansion models for each scenario.

- Task 8 – Reliability Review (June – August 2012)
  - EIPC to perform reliability analysis consistent with NERC reliability criteria on each scenario.

- Task 9 – Production Cost Analysis of Interregional Expansion Options (July – September 2012)
  - CRA to perform economic analysis using production cost modeling for each scenario.

- Task 10 – Generation and Transmission Cost Estimates (July – October 2012)
  - EIPC to perform high level cost estimates for transmission expansion options for each scenario.
  - Costs associated with resource additions and retirements will be developed by CRA for each scenario.

- Task 11 – Review of Results (August – November 2012)
  - EIPC to produce a draft report on the Phase 2 effort.
  - EIPC to present the results of the analysis, respond to questions, and solicit input from stakeholders.
  - SSC to provide consensus-based comments on the draft report.

- Task 12 – Phase 2 Report (September – December 2012)
  - EIPC, with CRA providing technical support, to review the input received from the SSC and address it in the final report.

A Phase I report will be filed with the Department Of Energy in December of 2011. Phase II work is expected to be completed by the end of 2012, at which time a Phase II report will also be filed with the Department Of Energy.

MTO utilities participate directly in the EIPC effort representing our customer's interests, and MISO participates as a Planning Authority, on behalf of utilities in the MISO area.

More information on the EIPC effort can be found at:

http://www.eipconline.com

3.6.2 NERC Facility Ratings Alert

The North American Electric Reliability Corporation (NERC) is requiring Transmission Owners and Generator Owners of bulk electric system facilities across the country, including those joining in this Biennial Report, to review their current facility ratings methodology for their transmission lines. Each owner must verify that the methodology used is based on actual field conditions and determine if their ratings methodology will produce appropriate ratings when considering differences between design and field conditions. For additional information see:

http://www.nerc.com/filez/facility_ratings_alert.html

By January 18, 2011, these Transmission Owners were required to submit to NERC their plans to complete such an assessment of all their transmission lines, with the highest priority lines to be assessed by December 31, 2011, medium priority lines by December 31, 2012, and the lowest priority by December 31, 2013. The MTO utilities will comply with the December 2011 deadline. For information on NERC line prioritization categories follow this link:

http://www.nerc.com/docs/alerts/Assessment_Plan_Review_Criteria_20110511.pdf

At the conclusion of each year, each Transmission Owner and Generator Owner must report to its Regional Entity a summary of the assessments and identification of all transmission facilities where as-built conditions are different from design conditions (resulting in incorrect ratings) and their associated mitigation timelines. For the MTO utilities, the Regional Entity is the Midwest Reliability Organization (MRO). Remediation is expected to be complete within one year from identification of an issue or on a schedule approved by the Regional Entity if longer than a year. Owners are also expected to coordinate with their respective Reliability Coordinator (RC) and Planning Authority (PA) to coordinate interim mitigation strategies. For MTO who are MISO members, the Midwest Independent Transmission System Operator serves as the RC and PA. For the MTO members who are not MISO members, the Mid-Continent Area Power Pool (MAPP) serves as the PA and Midwest Independent Transmission System Operator serves as the RC.

If discrepancies are found, various alternative methods could be used for remediation. These could be as simple as de-rating the transmission line, upgrading its capacity by increasing clearance, reconductoring or rebuilding the line or construction of new transmission facilities to reduce loading on the identified transmission element. The alternative of choice will be dependent the outcome of an engineering analysis that will take into account future expected transmission needs and cost.

3.6.3 Eastern Renewable Generation Integration Study

The National Renewable Energy Laboratory (NREL) has kicked off an Eastern Renewable Generation Integration Study (ERGIS) which is a follow-up to two previous wind integration studies: the Joint Coordinated System Plan and the Eastern Wind Integration Transmission Study. This study objective of ERGIS is to explore transmission grid planning and operations with significant amount of installed renewable generation in order to answer new questions/concerns such as regional and inter-regional impacts as well as mitigation. The transmission options, developed in the earlier two studies, will be refined and used in this study assumption. New study tools will be used to better simulate real time system operations. Stakeholders have been invited to participate on a Technical Review Committee and the study is expected to be complete in the spring of 2013.

3.7 Strategic Planning

As part of the PUC's consideration of the 2009 Biennial Report, it rejected the suggestion by the Department of Commerce staff that it provide greater direction to the MTO regarding how to set priorities for competing transmission projects. Instead, in its May 28, 2010, Order approving the 2009 Report, the Commission directed the MTO to discuss the issue of strategic planning in the 2011 Biennial Report and to include a list of projects that the MTO believes warrant designation as priority projects.

The MTO is unsure how to describe the concept of strategic planning. Each utility, of course, must constantly be cognizant of demands on its system, to ensure that customers have a reliable source of power. The utilities have in the last several Biennial Reports identified the load-serving studies that are underway or have been completed in the past reporting period. Section 3.4 of this Report describes a number of load-serving studies that are underway. Each utility must prioritize its efforts on these kinds of issues by determining how imminent the problem is and how severe the situation is. Obviously, efforts will be devoted to problems that must be addressed in the near term. Any of the load-serving projects with Tracking Numbers that need to be completed within a few years are higher priority than those with a longer timeframe.

While each utility must continue to be aware of these local issues, there are other factors outside the direct control of the utility that affect planning efforts. The Renewable Energy Standards that the Minnesota Legislature has established, along with similar standards in many other states, affect the planning efforts of all utilities. At the same time, since MISO is responsible for operating the transmission grid in Minnesota and surrounding states, much of the transmission planning that is undertaken is established by MISO and conducted under their control.

Nationally, the Department of Energy and the Federal Energy Regulatory Commission often take action that affects transmission planning, through the offering of funding and the establishment of cost allocation mechanisms. The MTO has described some of these studies in this Report and mentioned in the 2009 Report that cost allocation was a significant issue that affected the scope of planning and the prioritizing of projects.

Nor is it possible to develop a specific list of priority projects. The 2009 Biennial Report in section 8.10 contains a list of transmission projects that the utilities identified as high priority projects for achieving the RES milestones, and several of these projects have been completed. The MTO utilities have maintained for years that the CapX2020 projects are high priority for a lot of reasons, and these lines are included in that list.

To assist the Commission in prioritizing transmission projects across the Midwest, the 17-projects included in the Multi-Value Project Portfolio study described in section 3.3.4 are as good a place to start as any. These 17 projects can be considered as priority projects for the MISO region and Minnesota as they are deemed necessary for the MISO states to meet the year 2026 renewable standards in the most efficient manner. This suite of projects are inter-related in that they allow for the reliable integration of approximately 9 GW of new renewable generation into the MISO market. These projects are expected to constructed and in-service between 2015 and 2020.

One of the CapX2020 projects (Brookings to the Twin Cities) is one of these projects. While this CapX2020 project is the only MVP project entirely in Minnesota, two others are along the border and all of them are significant for achieving the renewable energy utilities across the Midwest needed to meet upcoming RES milestones.

The most important and essential projects beyond the CMVPP have yet to be determined. However, there are multiple study efforts in preliminary stages of development that could affect the region and the entire Eastern Interconnect. These analyses will serve to provide a vision for the necessary transmission expansion in the 2020 timeframe and beyond. Because these analyses have not been completed, or even begun in some cases, it is not possible with any certainty to identify the next transmission projects that warrant the greatest priority. Further, project details such as endpoints, configurations, in-service dates and even voltages are unknown. Additionally, given the much delayed need for additional wind generation for MN RES purposes, the locations for future wind farms are unknown and thus the associated transmission expansions are also unknown.

The most certain information with regard to future generation sources is the sale of 250 MW of power by Manitoba Hydro to Minnesota Power beginning in 2020. The transmission project(s) to support this transfer along with others may be determined in the MISO MH Wind Synergy Study or in the TSR examination by MISO. Once these studies are completed, the transmission projects and associated in-service dates will become more defined. Once any project is identified, it will be beneficial to examine it with a wide stakeholder group and alongside any load serving issues in the region and other generation market needs in order to develop a coordinated and synergetic build out of the high voltage grid.

4.0 Public Participation

4.1 Generally

Both the statute – Minnesota Statutes § 216B.2425 – and the PUC rules – Minnesota Rules part 7848.0900 – emphasize the importance of providing the public and local government officials with an opportunity to participate in transmission planning. In the past, in accordance with PUC rule part 7848.0900, the utilities held public meetings across the state in each transmission planning zone to advise the public of potential transmission projects and to solicit input regarding development of alternative solutions to various inadequacies. These public meetings were poorly attended, with little input being offered.

As a result, the PUC granted a variance from the obligation to hold zonal meetings in 2008 and 2009. Instead, in September 2009, with PUC approval, the utilities held six webinars, one for each transmission planning zone, to report on the transmission inadequacies identified in the 2009 Report. These webinars were not any better attended than the zonal meetings were in previous years. Few questions and comments were generated.

In its May 28, 2010, Order approving the 2009 Report, the Commission extended the variance from the obligation to hold the zonal meetings. As a result, no such public meetings were held in any of the zones in 2010 or 2011. Nor has any webinar been held as of the date of submission of this Report, but as explained below, one will be scheduled before the end of this year during which the utilities can discuss the matters in this Report and solicit public input into all aspects of transmission planning and into the transmission inadequacies identified across the state.

To replace the public meetings, the PUC directed the utilities to develop more effective means of securing input into transmission planning issues. One specific tool the PUC directed the utilities to utilize was the Internet. The PUC also directed the utilities to meet with developers of renewable energy. The efforts the utilities have employed in the past two years to involve the public in transmission planning and in addressing transmission inadequacies are described below.

4.2 Transmission Planning

For those utilities that are members of the Midwest Independent Transmission System Operator (MISO), much of the transmission planning that is undertaken is conducted through MISO. As explained elsewhere in this Report, particularly in Chapter 6, MISO conducts an annual MISO Transmission Expansion Planning (MTEP) process. This process begins in September, when utility members submit their newly proposed projects to MISO for planning purposes and for development of the annual MTEP report. MISO normally takes until the following July to complete the draft MTEP Report, which is usually approved by the MISO Board in December.

During this yearly planning process, MISO provides ample opportunities for the public to be involved. Interested persons and groups are able to log onto the MISO webpage and register their names to get notice about future planning meetings. MISO holds Subregional Planning Meetings (SPMs) and establishes Technical Review Groups (TRGs) that also hold meetings.

These meetings are normally open to the public. Individuals can subscribe to the mailing lists maintained by the Planning Advisory Committee (PAC), which conducts high-level planning discussions, and the Planning Subcommittee (PSC), which carries out more technical evaluations and conducts more detailed study efforts about specific projects. Even if an individual does not register to get notice of a particular PAC or PSC meeting, notice of all meetings is published on the MISO website.

Those utilities that are not part of MISO also provide opportunities for the public to be involved in their transmission planning activities.

Local officials and members of the general public are interested in projects that are likely to impact their local area or property. When it comes to general transmission planning and system evaluation and identifying potential inadequacies, most stakeholders expect utilities to evaluate those issues as part of ongoing utility activities. The experience of Minnesota utilities has shown that unless a project has been identified and includes a general area where the project is needed (such as an overall area of the state or specific issues between substation locations or municipalities), stakeholders are uninterested in the process.

Utilities do make a great effort to describe activities related to ensuring the reliable delivery of electricity both when projects are identified and when outages have occurred, such as after weather-related events. For example, several Great River Energy cooperatives (and other Minnesota utilities) experienced outages related to severe weather during the summer of 2011. After service was restored to these areas, many presentations were made to interested stakeholders. Runestone Electric Association in Alexandria, to name one, met with the cooperative's Member Advisory Council and described the hour-by-hour process in which the utility managed outage response and how service was restored to members. All utilities work closely with local governments during issues such as severe weather (particularly coordination with emergency services and public works). If outages happen to be related to or exacerbated by planning-oriented issues, those are raised with local stakeholders as needed.

4.3 MTO Website

The Minnesota Transmission Owners have maintained a website (www.minnelectrans.com) for several years now, on which interested persons can obtain various information about ongoing transmission planning efforts. Every Biennial Report, for example, is available on that website, as are many different transmission-related studies.

In 2009, Minnesota Transmission Owners significantly expanded information on the website, as well as made it easier to find information in the report and ask questions of utilities. The Biennial Report was broken into sections to make downloading faster. Additional HTML coding was added to enable users to hover their computer's cursor over a map and pop-up boxes would appear that noted inadequacies that had been identified in the area.

A contact form was implemented that enabled visitors to send questions or comments in to the MTO. In the two years between filing the 2009 report and the writing of this document, there were exactly 16 comments or questions submitted, the majority of which were from construction contractors asking to be added to requests for proposals; others asked for hard copies of the 2009 Biennial Report or asked questions about the CapX2020 project.

For the 2011 Biennial Report filing, the website is being updated to describe how stakeholders can access information on the MISO website about proposed projects and planning issues.

Additionally, some utilities have increased the information provided about projects on their websites. In many cases, information and regulatory documents are posted, along with opportunities for public input and historical opportunities for input.

4.4 Specific Projects

Local officials and the general public are generally only interested in transmission issues that impact their local community. Utilities routinely meet with local officials to describe potential transmission needs and projects affecting their community. Utilities around the state have close relationships with city and county staff in their service areas. Many local transmission needs are identified by local utility staff.

Local officials and the public are primarily interested in the routing of specific transmission projects. Numerous steps are taken by the utilities to advise interested persons of proposed transmission lines. Even with the smallest of transmission projects, such as a 69 kV line or a 115 kV line, utilities provide information and solicit participation from local stakeholders ranging from elected officials, local government staff and, importantly, potentially affected landowners.

It is standard practice in the utility industry, particularly in Minnesota, to host open houses to explain to local stakeholders the need for new projects and how to participate in the route development and regulatory processes. At these meetings, utility personnel answer questions and solicit feedback on potential route options in the area. Meetings are generally publicized through advertisements in local newspapers, as well as direct mailings to local governments and potentially affected landowners.

Local governments are often heavily involved in projects affecting their locality. Project developers work with local staff, including planning and environmental personnel, as well as elected officials. In addition to formal public outreach, it is common to hold meetings with county and city staff where the utilities present plans and request feedback from local officials.

For example, on the Xcel Energy and Great River Energy Hollydale project (2009-TC-N6 and PUC Docket No. TL-11-152) two public information meetings were held in the project area prior to a Route Permit application being filed. The following project schedule is posted on the Xcel Energy website:

- August-September, 2010: Project Notice Letter sent to Local Governmental Units (LGUs) and Agencies
- Fall 2010: Early discussions with LGU's
- September 15, 2010: First Public Information Meeting hosted by Xcel Energy
- October 22, 2010: Landowner Public Meeting

- November 23, 2010: Second Public Information Meeting hosted by Xcel Energy
- February 14, 2011: Notification of Intent by Xcel Energy and Great River Energy to File a Route Permit Application Under the Alternative Permitting Process
- June 30, 2011: Route Permit Application for the Hollydale Project filed with the Minnesota Public Utilities Commission
- July 12, 2011: Published Notice of filing of the Route Permit Application in two local newspapers
- July 13, 2011: Project Notice of filing of the Route Permit Application mailed to potentially affected landowners
- July 22, 2011: Project Notice of filing of the Route Permit Application mailed to potentially affected landowners

This type of outreach has become standard procedure for transmission line projects in Minnesota.

4.5 2011 Webinar

In 2011, the MTO will host one webcast soon after the filing of the Biennial Report on November 1 to explain how transmission planning is conducted, describe the details about the information in the 2011 Report, direct stakeholders on how to participate in future transmission planning activities, and answer questions about specific transmission line projects.

Interested persons and various state and local officials will be notified by email about the webcast and given instructions on how to participate. Additionally, a statewide newspaper ad will be placed detailing the webcast.

4.6 Contacts with Developers

The Public Utilities Commission directed the utilities to reach out to developers of generating facilities, particularly renewable energy facilities, to discuss future transmission needs. Utilities consistently meet with energy developers, particularly renewable energy companies, to describe how to work more effectively to deliver new renewable energy resources onto the transmission grid. Because the projects under consideration by energy developers are generally confidential, it would be inappropriate to describe the meetings in detail in this public forum.

Utilities generally take information from developers and identify transmission deficiencies that can enable additional renewable energy development while not adversely impacting the transmission system’s need to serve customers.

Significant examples of transmission projects that will enable new generation interconnections are the Buffalo Ridge Incremental Generation Outlet (BRIGO) in southwest Minnesota, the CapX2020 Brookings County-Hampton project, and the Rochester Interconnection Generation Outlet (RIGO) projects in southeast Minnesota. All of these projects have helped connect additional renewable energy projects to the transmission grid, and were partially spurred from conversations with wind developers and other stakeholders who encouraged additional transmission in the region.

The Commission specifically directed the utilities to meet with American Renewable Energy Solutions, LLC, a small Minnesota company that filed comments in the 2009 proceeding suggesting that the utilities expedite construction of transmission facilities in the West Central Transmission Planning Zone to handle anticipated new wind projects. A MTO representative discussed with ARES the construction of transmission facilities during the meeting for the West Central Zone on Sept. 17, 2009. ARES inquired as to how to reserve capacity for their clients' projects. In response, the MISO interconnection process was explained, including the following:

- ARES clients need to follow the MISO interconnection process as do all other generators (including utility developed projects) in the MISO footprint.
- The MISO interconnection process determines, based on the project's queue position, which project will receive rights to any available transmission capacity.
- Neither utilities nor project developers have rights to reserve available transmission capacity and must allow any excess transmission capacity to remain for the next project in the queue.
- Therefore, there is no method for reserving transmission capacity for the customers of ARES.

4.7 PUC Procedures

Some of the transmission projects described in this Report will require a Certificate of Need and a Route Permit from the Public Utilities Commission. The utility or utilities proposing a specific project will comply with all the requirements established by the PUC for providing notice to the public about a proposed project. While this notice may come well after the transmission planning has been completed that identified the project as one that should be constructed, there will still be opportunities for interested persons and local officials to participate in the process and have input into the final decision.

5.0 Transmission Planning Zones

5.1 Introduction

Minnesota has been divided geographically into the following six Transmission Planning Zones:

- Northwest Zone
- Northeast Zone
- West Central Zone
- Twin Cities Zone
- Southwest Zone
- Southeast Zone

The map below shows the six Zones.

Chapter 5 of the 2011 Report describes each of the Transmission Planning Zones in the state. The counties in the zone and the major population centers are identified. The utilities that own high voltage transmission lines in the zone are listed. Much of the information included in this chapter is reprinted from the 2009, 2007 and 2005 Biennial Reports.

Chapter 6 describes the needs that have been identified for each zone by non-MISO utilities. Needs identified by MISO utilities can be found in the MTEP Report and Chapter 6 includes instructions on how to find that information. For the couple of needs identified by non-MISO utilities, complete information about the inadequacy (by Tracking Number) is included in this report. A table identifying these needs in each zone is provided at the start of the discussion. A separate table showing the projects that have been completed in the last two years is also included for each zone.

Transmission systems in one zone are highly interconnected with those in other zones and with regional transmission systems. A particular utility may own transmission facilities in a zone that is outside its exclusive service area, or where it has few or no retail customers. Different segments of the same transmission line may be owned and/or operated by different utilities. A transmission line may span more than one zone, and transmission projects may involve more than one zone.

5.2 Northwest Zone

The Northwest Planning Zone is located in northwestern Minnesota and is bounded by the North Dakota border to the west and the Canadian border to the north. The Northwest Planning Zone includes the counties of Becker, Beltrami, Clay, Clearwater, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Otter Tail, Pennington, Polk, Red Lake, Roseau, and Wilkin.

Primary population centers within the Northwest Planning Zone (population greater than 10,000) include the cities of Bemidji, Fergus Falls, and Moorhead.

The following utilities own transmission facilities in the Northwest Zone:

- Great River Energy
- Minnkota Power Cooperative
- Missouri River Energy Services
- Otter Tail Power Company
- Xcel Energy

A major portion of the transmission system that serves northwestern Minnesota is located in eastern North Dakota. Two 230 kV lines and one 345 kV line reach from western North Dakota to substations in Fargo, North Dakota, and four 230 kV lines reach out to Audubon, Morris, and Winger, Minnesota, and Wahpeton, North Dakota. The 230 kV system supports an underlying 115 kV system. Much of the load in the zone is actually served by 69 kV and 41.6 kV transmission lines.

5.3 Northeast Zone

The Northeast Planning Zone covers the area north of the Twin Cities suburban area to the Canadian border and from Lake Superior west to the Walker and Verndale areas. The zone includes the counties of Aitkin, Carlton, Cass, Cook, Crow Wing, Hubbard, Isanti, Itasca, Kanabec, Koochiching, Lake, Mille Lacs, Morrison, Pine, St. Louis, Todd, and Wadena counties.

The primary population centers in the Northeast Planning Zone include the cities of Brainerd, Cambridge, Cloquet, Duluth, Ely, Grand Rapids, Hermantown, Hibbing, International Falls, Little Falls, Long Prairie, Milaca, Park Rapids, Pine City, Princeton, Verndale, Virginia, and Walker.

The following utilities own transmission facilities in the Northeast Zone:

- American Transmission Company, LLC
- Great River Energy
- Minnkota Power Cooperative
- Minnesota Power
- Southern Minnesota Municipal Power Agency
- Xcel Energy

The transmission system in the Northeast Planning Zone consists mainly of 230 kV, 138 kV and 115 kV lines that serve lower voltage systems comprised of 69 kV, 46 kV, 34.5 kV, 23 kV and 14 kV. American Transmission Company's 345 kV line runs between Duluth, Minnesota, and Wausau, Wisconsin. A new 230 kV line between the Bemidji area in the Northwest Zone and the Grand Rapids area in the Northeast Zone (The Capx2020 Bemidji-Grand Rapids project) is currently under construction.The 345 kV and 230 kV system is used as an outlet for generation and to deliver power to the major load centers within the zone. From the regional load centers, 115 kV lines carry power to lower voltage substations where it is distributed to outlying areas. In a few instances, 230 kV lines serve this purpose.

A +/- 250 kV DC line runs from Center, North Dakota to Duluth, which currently serves mainly as a generator outlet for lignite-fired generation located in North Dakota. In May 2009 Minnesota Power petitioned the Public Utilities Commission for approval to purchase this line. PUC Docket No. E-015/PA-09-526. This was approved by the PUC and the purchase was finalized in December 2009. Minnesota Power plans to over time reduce transmission of lignite-fired energy and increase transmission of wind energy from the Dakotas over this line to its customers in Minnesota. In addition, a 500 kV line and a 230 kV line provide interconnections with Manitoba and a 115 kV line interconnects with Ontario at International Falls. The interconnections with Canada provide for generation resource sharing as well as seasonal and economic power interchanges between Minnesota and Canada.

5.4 West Central Zone

The West Central Transmission Planning Zone extends from Sherburne and Wright counties on the east, to Traverse and Big Stone counties on the west, bordered by Grant and Douglas counties on the north and Renville County to the south. The West Central Planning Zone includes the counties of Traverse, Big Stone, Lac qui Parle, Swift, Stevens, Grant, Douglas, Pope, Chippewa, Renville, Kandiyohi, Stearns, Meeker, McLeod, Wright, Sherburne, and Benton.

The primary population centers in the zone include the cities of Alexandria, Buffalo, Elk River, Glencoe, Hutchinson, Litchfield, Sartell, Sauk Rapids, St. Cloud, St. Michael, and Willmar.

The following utilities own transmission facilities in the West Central Zone:

- Great River Energy
- Hutchinson Utilities Commission
- Missouri River Energy Services
- Otter Tail Power Company
- Southern Minnesota Municipal Power Agency
- Willmar Municipal Utilities
- Xcel Energy

This transmission system in the West Central Planning Zone is characterized by a 115 kV loop connecting Grant County – Alexandria – West St. Cloud – Paynesville – Willmar – Morris and back to Grant County. These 115 kV transmission lines provide a hub from which 69 kV transmission lines provide service to loads in the zone.

A 345 kV line from Sherburne County to St. Cloud and 115 kV and 230 kV lines from Monticello to St. Cloud provide the primary transmission supply to St. Cloud and much of the eastern half of this zone. Two 230 kV lines from Granite Falls – one to the Black Dog generating plant in the Twin Cities and one to Willmar – provide the main source in the southern part of the zone.

Demand in the St. Cloud area continues to grow and several individual projects are being considered to address the need for more power into this area. A new 345 kV line from Fargo to Monticello, which is part of the CapX2020 group of projects, is a significant part of the solution to transformer overloads and contingencies on the 69 kV system that are anticipated in the St. Cloud area. Portions of this line are currently under construction.

Some of the 69 kV network is becoming inadequate for supporting the growing load in the area. Solutions to the 69 kV transmission inadequacies may involve construction of new 115 kV transmission lines. Therefore, any discussion about the inadequacy of the existing system must include an analysis of parts of the existing 69 kV transmission system.

5.5 Twin Cities Zone

The Twin Cities Planning Zone comprises the Twin Cities metropolitan area. It includes the counties of Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott and Washington.

The following utilities own transmission facilities in the Twin Cities Zone:

- Great River Energy
- Xcel Energy

The transmission system in the Twin Cities Planning Zone is characterized by a 345 kV double circuit loop around the core Twin Cities and first tier suburbs. Inside the 345 kV loop, a network of high capacity 115 kV lines serves the distribution substations. Outside the loop, a number of 115 kV lines extend outward from the Twin Cities with much of the local load serving accomplished via lower capacity, 69 kV transmission lines.

The GRE DC line and 345 kV circuits tie into the northwest side of the 345 kV loop and are dedicated to bringing generation to Twin Cities and Minnesota loads. Tie lines extend from the 345 kV loop to three 345 kV lines: one to eastern Wisconsin, one to southeast Iowa and one to southwest Iowa. The other tie is the Xcel Energy 500 kV line from Canada that is tied into the northeast side of the 345 kV loop.

Major generating plants are interconnected to the 345 kV transmission loop at the Sherburne County generating plant and the Monticello generating plant in the northwest, the Allen S. King plant in the northeast, and Prairie Island in the southeast. On the 115 kV transmission system in the Twin Cities Planning Zone there are three intermediate generating plants: Riverside (located in northeast Minneapolis), High Bridge (located in St. Paul), and Black Dog (located in north Burnsville). There are also two peaking generating plants – Blue Lake and Inver Hills – interconnected on the southeast and the southwest, respectively.

5.6 Southwest Zone

The Southwest Transmission Planning Zone is located in southwestern Minnesota and is generally bounded by the Iowa border on the south, Mankato on the east, Granite Falls on the north and the South Dakota border on the west. It includes the counties of Brown, Cottonwood, Jackson, Lincoln, Lyon, Martin, Murray, Pipestone, Redwood, Rock, Watonwan, and Yellow Medicine.

The primary population centers in the Southwest Zone include the cities of Fairmont, Granite Falls, Jackson, Marshall, New Ulm, Pipestone, St. James, and Worthington.

The following utilities own transmission facilities in the Southwest Zone:

- ITC Midwest LLC
- East River Electric Power Cooperative
- Great River Energy
- L&O Power Cooperative
- Marshall Municipal Utilities
- Missouri River Energy Services
- Otter Tail Power Company
- Southern Minnesota Municipal Power Agency
- Xcel Energy

The transmission system in the Southwest Zone consists mainly of two 345 kV transmission lines, one beginning at Split Rock Substation near Sioux Falls and traveling to Lakefield Junction and the second traveling from Mankato, through Lakefield Junction and south into Iowa. Lakefield Junction serves as a major hub for several 161 kV lines throughout the zone. A number of 115 kV lines also provide transmission service to loads in the area, particularly the large municipal load at Marshall. Much of the load in the southwestern zone is served by 69 kV transmission lines which have sources from 115/69 kV or 161/69 kV substations.

The 115 kV lines also provide transmission service for the wind generation that is occurring along Buffalo Ridge. The transmission system in this zone has changed significantly in recent years with new transmission additions to enable additional generation delivery. Continuing these changes, the system will soon be enhanced by the addition of the Twin Cities – Brookings 345 kV transmission line to provide additional outlet for the wind generation in the Southwest Zone. In addition to enabling additional delivery of wind generation, these lines will provide opportunities for new transmission substations to improve the load serving capability of the underlying transmission system.

5.7 Southeast Zone

The Southeast Planning Zone includes Blue Earth, Dodge, Faribault, Fillmore, Freeborn, Goodhue, Houston, Le Sueur, Mower, Nicollet, Olmsted, Rice, Sibley, Steele, Wabasha, Waseca, and Winona Counties. The zone is bordered by the State of Iowa to the south, the Mississippi River to the east, the Twin Cities Planning Zone and West Central Planning Zone to the north, and the Southwest Planning Zone to the west.

The primary population centers in the zone include the cities of Albert Lea, Austin, Faribault, Mankato, North Mankato, Northfield, Owatonna, Red Wing, Rochester, and Winona.

The following utilities own transmission facilities in the Southeast Zone:

- Dairyland Power Cooperative
- Great River Energy
- ITC Midwest LLC
- Rochester Public Utilities
- Southern Minnesota Municipal Power Agency
- Xcel Energy

The transmission system in the Southeast Planning Zone consists of 345 kV, 161 kV, 115 kV and 69 kV lines that serve lower voltage distribution systems. The 345 kV system is used to import power to the Southeast Planning Zone for lower voltage load service from generation stations outside of the area. The 345 kV system also allows the seasonal and economic exchange of power from Minnesota to the east and south from large generation stations that are located within and outside of the zone. The 161 kV and 115 kV systems are used to carry power from the 345 kV system and from local generation sites to the major load centers within the zone. From the regional load centers and smaller local generation sites, 69 kV lines are used for load service to the outlying areas of the Southeast Planning Zone.

6.0 Needs

6.1 Introduction

Chapter 6 contains information on each of the present and reasonably foreseeable future inadequacies that have been identified in the six transmission zones. A brief explanation of what information is found in this chapter is included because there are some changes from what has been reported in previous reports.

Tracking Numbers
Each inadequacy is assigned a Tracking Number. This numbering system was created in 2005 and continues in this report. The Tracking Number has three parts to it: the year the inadequacy was first reported, the zone in which it occurs, and a chronological number assigned in no particular order. Tracking Number 2011-NE-N1, for example, is first identified in this report and is an inadequacy in the Northeast Zone.

For each zone, a table of present inadequacies is followed with a table showing those inadequacies that were reported in previous years that have now been addressed with some kind of action and can be removed from the list.

In previous reports, each of the pending inadequacies that were listed in the table was described in detail, and maps of each zone and each inadequacy were provided. This year, instead, for Minnesota transmission-owning utilities that are members of MISO, the table contains a cross-reference to where a particular Tracking Number can be found in another report, called the Midwest Transmission Expansion Planning (MTEP) Report. After discussions with the PUC staff, it was determined that it was unnecessary to duplicate the maps and other information that can be found in recent reports from MISO about the various Tracking Numbers identified in this Biennial Report. MISO prepares an MTEP Report each year, so the table indicates the year of the appropriate MTEP Report. More information about the MTEP Report and how it can be located is provided in the text that follows.

MISO Members
Not all transmission-owning utilities in Minnesota are members of MISO. The following utilities are members of MISO and will be relying on the MTEP Report to provide the necessary information about the inadequacies they have identified: American Transmission Company (ATC), Dairyland Power Cooperative (DPC), Great River Energy (GRE), ITC Midwest (ITCM), Minnesota Power (MP), Missouri River Energy Services (MRES), Northern States Power Company (XEL), Otter Tail Power Company (OTP) and Southern Minnesota Municipal Power Agency (SMP).

Non-MISO Members
The following utilities are not members of MISO: East River Electric Power Cooperative (EREPC), Hutchinson Utilities Commission (HUC), L&O Power Cooperative (L&O), Marshall Municipal Utilities (MMU), Minnkota Power Cooperative (MPC), Rochester Public Utilities (RPU), and Willmar Municipal Utilities (WMU).

Each of these non-MISO utilities will continue to report full information about its inadequacies in this Report. This will include information about which utility is involved, what alternative means of addressing each inadequacy are under consideration, what analysis has occurred, and what the possible schedule is. However, these utilities have only two inadequacies to report, both in the Northwest Zone, Tracking Numbers 2007-NW-N3 and 2011-NW-N5.

The MTEP Report

The MISO Transmission Expansion Planning Report is prepared annually by the Midwest Independent Transmission System Operator (MISO) and each utility that is a member of MISO must participate in the MTEP process. The utilities have referenced the MTEP Reports in previous Biennial Reports, as required by PUC rule 7848.1300.C.

Each report is referred to by the year it is adopted. Thus, the most recent report is MTEP11. It is expected to be adopted by the MISO board of directors in December 2011. The latest MTEP Reports are available on the MISO webpage at:

> http://www.midwestiso.org (Click on "Planning.")

Each of the MTEP Reports separates transmission projects into three categories and lists them in Appendices as follows:

> Appendix A – Projects recommended for approval,
> Appendix B – Projects with documented need and effectiveness, and
> Appendix C – Projects in review and conceptual projects.

Generally, when projects are first identified, they are listed in Appendix C, and then they move up to Appendix B and to Appendix A as they are further studied and ultimately brought forth for construction. Some projects never advance to the final stage of actually being approved and constructed.

The MTEP process is ongoing at all times at MISO. Generally utilities submit a list of their newly proposed projects in September. MISO staff evaluates these projects over the next several months, and prepares a draft of the annual MTEP Report around July of the following year. After review by utilities and other interested parties, the MISO board of directors usually approves the report in December. The process continues with another report finalized the following December.

There are good reasons to rely on the MTEP Report and not repeat all of that information in the Biennial Report. Reasons include:

- The MTEP Report is prepared annually so it provides more timely information. The Biennial Report is prepared every other year.
- The MISO planning process is comprehensive. MISO considers all regional transmission issues, not just Minnesota transmission issues.
- MISO conducts an independent analysis of all projects to confirm the benefits stated by the project sponsor. This adds further verification of the benefits of projects.

- MISO holds various planning meetings during the year at which stakeholders can have input into the planning process so there are more frequent opportunities for input (see next paragraph.)
- All completed projects are listed on the MISO webpage.
- Not duplicating the MTEP Report will save ratepayers money. It is costly to require the utilities to redo all the information that is found in the MTEP Report.

Participating in Meetings

Throughout each MTEP cycle, meetings are conducted to help projects progress and to keep stakeholders informed. Importantly, MISO provides numerous opportunities for the utilities, interested persons, and the general public to keep advised of these proceedings and to actually participate in transmission planning discussions. Anyone interested in the annual planning process can contact MISO at clientrelations@misoenergy.org and arrange to get information in the future. Anyone can subscribe to mailing lists for Planning Advisory Committee and Planning Subcommittee meetings.

Subscribing to Mailing Lists

- Planning Advisory Committee (PAC) - The Planning Advisory Committee conducts high level discussions about broad transmission issues. Learn more and sign up for the mailing list at:

  https://www.midwestiso.org/StakeholderCenter/CommitteesWorkGroupsTaskForces/PAC/Pages/home.aspx

- Planning Subcommittee (PSC) – The Planning Subcommittee conducts more specific studies and addresses technical issues. Learn more and sign up for the mailing list at:

  https://www.midwestiso.org/StakeholderCenter/CommitteesWorkGroupsTaskForces/PSC/Pages/home.aspx

6.2 Finding Information about Specific Projects

Since information about inadequacies identified by the MTO utilities who are MISO members will be found in the MTEP Reports, it is necessary to describe how to actually find that information.

Project Information

MTEP Appendices A, B and C provide general public information about a project including the utility or utilities proposing the project, the reason the project is needed and when the project is expected to be required, as well as other general information. The example below describes the process for finding information about most projects identified in the tables located in Section 6.4 through 6.8 in Appendices A, B and C.

The following example, using the Savanna-Cromwell project in the Northeast Zone, Tracking Number 2003-NE-N2, shows how to find the information about that project in the MTEP Report. First, the table shows the corresponding MTEP Project Number and in which MTEP Report and which Appendix the project can be found. The table also contains entries identifying the utility or utilities leading the project and indicating whether or not a Certificate of Need (CON) is required for the project from the Minnesota Public Utilities Commission (MPUC).

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2003-NE-N2	2011/A	2634	Yes	MP/ GRE	Savanna Project, 115 kV Savanna switching station and Savanna-Cromwell and Savanna-Cedar Valley 115 kV lines, St. Louis Co., MN Docket #CN-10-973

Tracking Number 2003-NE-N2 corresponds to MTEP Number 2634. Information about the project can be found in Appendix A of the MTEP11 Report by following these steps:

Step 1: Select the MTEP11 Report. To find MTEP Appendix information about this project, follow the link below:

> https://www.midwestiso.org/Planning/TransmissionExpansionPlanning/Pages/TransmissionExpansionPlanning.aspx

Step 2: Select the most recent MTEP Report, which at the time of this writing is the MTEP11 Report. Click on the “MTEP11 Appendices ABC” link to download the Appendices as an Excel spreadsheet. (NOTE: depending on the point in the MTEP cycle at which you view this document, the appendix may still be in draft format, but it will contain the most up-to-date information on projects the utilities have planned or are proposing.)

Step 3: Select the “Projects” tab at the bottom of the spreadsheet which was just downloaded.

Step 4: Hold down the “Ctrl” key and press the “F” key to bring up the “Find” dialog box. Enter the MTEP Project #, which is “2634” in this example, in the dialog box and select “Find Next” to find the cell containing this project #. Information about the project can then be read from the row the MTEP Project # was found in during this search.

Project Facilities

Appendices A, B and C also contain information on facilities (such as transmission lines, substations, etc.) that are part of a specific project. The steps below show how to find this information for the example project.

Step 1: To find information on specific facilities (transmission lines, substations etc.) that are part of a project click on the "Facilities" tab located at the bottom of the spreadsheet that was downloaded in the above example.

Step 2: Hold down the "Ctrl" key and hit the "F" key to bring up the "Find" dialog box. Enter the MTEP Project #, which is "2634" in this example, in the dialog box and then click on "Find All". The rows containing information about the facilities that are part of this project will be identified (in this example, there are 4 rows). Clicking on the found items will bring you to the row in the spreadsheet with information on each facility associated with this project.

This same procedure can be used to find information for other projects and their associated facilities for the projects listed in the tables in Chapter 6.

Finding Specific Utility Projects in the Appendices

If you are interested in finding what projects an individual utility has submitted to MISO, you can also sort the Appendices to show all projects for that utility, (or, depending on the version of Excel you are using, a group of utilities.) To do this, click on the down arrow located in the column C heading "Geographic Location by TO Member System," and then select the code for the individual utility you are interested in from the drop-down list (NOTE: some versions of Excel will allow you to select multiple utilities).

Utility	MISO Geographic Code
American Transmission Company, LLC	ATC LLC
Dairyland Power Cooperative	DPC
Great River Energy	GRE
ITC Midwest LLC	ITCM
Minnesota Power	MP
Missouri River Energy Services	MRES
Otter Tail Power Company	OTP
Southern Minnesota Municipal Power Agency	SMP
Xcel Energy	XEL

You can also sort other columns in the Appendices in a similar manner. For example, you can sort it to show only projects or facilities in Appendix A by clicking on the arrow in Column A and selecting the desired choice from the drop-down list.

Detailed Project Information

Starting in 2008, the MTEP Reports also included detailed public information on projects that are either approved or recommended for approval by the MISO board of directors (Appendix A Projects). This information is located in Appendix D1 in the MTEP Report for the year the project was approved by MISO. For large projects, this information includes a project map, project justification and information about the system inadequacy that the project is intended to correct. For smaller projects, a subset of this information is included. Starting with the MTEP08 Report, projects located in Minnesota are contained in the "West Region Project Justifications" portion of Appendix D1 in the MTEP Report year that the project was approved or recommended for approval. For information on Minnesota projects approved by MISO prior to 2008, see the appropriate year Minnesota Biennial Transmission Projects Report for the appropriate year.

The example below describes the process for finding detailed information about any project that was slated to be moved to Appendix A (approved by the MISO board of directors) since 2008. For this example, the Southwest Zone (SW) project extracted from the tables in section 6.7 shown below will be used.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-SW-N10	2009/A	2156	No	XEL	1) New 345/115/69 kV Sheas Lake substation between Wilmarth and proposed Helena substation 2) One mile of 69 kV double circuit to connect the existing LeSueure 69kV lines into proposed Sheas Lake substation

Step 1: To find MTEP Appendix D information about this project, follow the link below:

> https://www.midwestiso.org/Planning/TransmissionExpansionPlanning/Pages/TransmissionExpansionPlanning.aspx

Step 2: If the MTEP Report that you are looking for is not shown on this page (for this example it is not shown because you are looking for the MTEP09 Report), go to Step 4. If it is listed, continue on to Step 3.

Step 3: Scroll down to either "Appendix D" or "Appendices" and click on it. Scroll down and select "Appendix D1-Project Justification West" to download this appendix. Then go to Step 8.

Step 4: If the appropriate year MTEP Report is not shown at the link above, which is the case for this example, then follow the link below where previous year MTEP Reports are located.

> https://www.midwestiso.org/Planning/Pages/StudyRepository.aspx

Step 5: Click on the "Appendices" link under the appropriate MTEP Report year, MTEP09 in this case, and select "Open" to start downloading the Appendices.

Step 6: Depending on the software installed on your computer, the file will either be downloaded directly or a “Zipped File” dialog box will appear. If file was downloaded directly, go to Step 8. If a Zipped dialog appears select “I agree.” Then select “WinZip Classic” and then double click on the file containing “Appendix_D1.” Then go to Step 7.

Step 7: In the “Zipped File” dialog box select “I agree,” then select “WinZip Classic” and double click on the “Appendix D1 Project Justifications” PDF file or the Appendix D1 “Project Justifications West” file if files for more than one region are shown. In this example you would click on “Appendix D1_New App A Project Justifications.pdf.” Then follow the WinZip dialog as before to download the file.

Step 8: Once the desired Appendix D1 is downloaded, use the PDF search tools to find “2156” to locate information on this project.

This same procedure can be used to find more detailed information on most projects shown in the tables in Sections 6.3 through 6.8 that have moved to MISO Appendix A since 2008. In addition, if you search for a specific utility’s name, you can find information on projects that utility has submitted and have been or are being considered for approval by the MISO board of directors.

6.3 Northwest Zone

6.3.1 Needed Projects from non-MISO Members

a) Load Expansions in Northwestern Minnesota

Tracking Number. 2007-NW-N3

Utilities. Minnkota Power Cooperative (MPC) and Otter Tail Power Company (OTP)

Inadequacy. The Northwestern Minnesota area is served by a network of 115 kV lines with three 230 kV sources at Drayton, Grand Forks, and Winger. Loss of any one source forces the load to be served from the remaining two sources.

Alternatives. Several different transmission alternatives were developed as part of an Enbridge Transmission Study to assess the ability of the transmission system to serve the anticipated load increase for the Enbridge pipeline. These included:

- a new Oslo 230/115 kV substation developed near Oslo where the existing 230 kV line from Drayton to Prairie is closest to the existing 115 kV system,
- a new Winger – Thief River Falls 230 kV line,
- a new Winger – Clearbrook – Thief River Falls 230 kV line, or
- a capacitor bank / system rebuild alternative.

The options above will be reconsidered and compared with a transformer replacement to determine an appropriate course of action.

Analysis. The Winger 230/115 kV transformer was identified in the Enbridge Transmission Study performed by OTP. The option implemented from the Enbridge Transmission Study was to install capacitor banks, with the recognition that the Winger 230/115 kV transformer may need to be replaced as soon as 2013 depending on how the load in the region develops (not only at Enbridge pumping stations but across the northwestern Minnesota region).

Firm delivery service for the Ashtabula Wind Project was evaluated in the “Minnkota Power Cooperative Generation Study Report for Service to Native Load”, which was performed by MPC. The study showed that a fault on the Grand Forks – Falconer 115 kV line caused an overload on the Winger 230/115 kV Transformer. The study demonstrated a final upgrade requirement of 199 MVA, to be completed by 2013.

Schedule. Both study efforts mentioned above determined that an upgrade to mitigate loading on the Winger 230/115 kV transformer must be completed by the winter of 2013. A schedule will be developed as definite mitigation plans are determined.

b) Richer – Roseau – Moranville 230 kV Line Uprate

Tracking Number. 2011-NW-N5

Utility. Minnkota Power Cooperative (MPC)

Inadequacy. The Langdon Wind Project is a 200 MW wind farm located approximately 10 miles south of Langdon, ND. The project was built in two stages, Langdon 1 (160 MW) and Langdon 2 (40 MW). The generation is delivered to the Langdon 115 kV Substation via a 10 mile 115 kV line.

As part of the Upper Midwest Wind Initiative, MPC is building an approximately 250 mile 345 kV line from the Center 345 kV substation to the Prairie 345 kV substation. The new line will facilitate the delivery of the output from the Milton R. Young #2 generator over the AC system. The energy produced by Young #2 will also be transferred in increasing shares from Minnesota Power to MPC.

These projects, in conjunction with increasing load in northern Minnesota and a reduction in the schedule of the Square Butte DC line due to Young #2 transitioning to the AC system, are expected to cause additional north to south flows on the 230 kV line connecting the Winnipeg, MB area to the Duluth, MN area. As a result of these increased flows, overloads on the transmission system may occur, namely along the Richer – Roseau – Moranville 230 kV line.

The Richer – Roseau – Moranville 230 kV Line and the substation equipment are owned by Manitoba Hydro, Xcel Energy, and MPC. The current line rating was assigned due to voltage concerns on the line. It was found that at high flow levels, the voltage drop on the line per MW of flow added became increasingly severe.

Alternatives. An investigation has not yet been performed to evaluate mitigation options. The line conductor rating is sufficient to handle the higher flows, so the mitigation will likely be in the form of reactive support. There may also be some work required on the line relays.

Analysis. Firm delivery service for the previously mentioned projects was evaluated in the "Minnkota Power Cooperative Generation Study Report for Service to Native Load", which was performed by MPC. The study showed that a fault on the Forbes – Chisago 500 kV line, along with corresponding cross trip of the Dorsey – Roseau – Forbes 500 kV line and Manitoba DC reductions, caused an overload on the Richer – Roseau – Moranville 230 kV Line, which runs approximately parallel with the 500 kV line. The study demonstrated a final upgrade requirement of 239 MVA.

Schedule. Per "Minnkota Power Cooperative Generation Study Report for Service to Native Load," the line upgrade must be completed by the summer of 2017. A facility study has not yet been performed.

6.3.2 Needed Projects from MISO Members

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2003-NW-N2	2010 / B	2824	No	OTP/ MPC	Add capacitor banks (2 x 15 MVAR) on the 115 kV system at the Hensel Substation in Pembina County, North Dakota to support voltages in the Northern Valley Area. (Also reference 2007-NW-N3)
2003-NW-N3	2008 / A 2010 / B	1033 585	No No	GRE OTP	Add new Silver Lake 230/41.6 kV Substation along Fergus Falls – Henning 230 kV Line in Otter Tail County to support 41.6 kV system in the area. Convert existing 41.6 / 12.5 kV Substation in Pelican Rapids (Otter Tail County) to 115/12.5 kV Substation to mitigate 41.6 kV system issues

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2005-NW-N2,	2006 / A	279	Yes	CapX/MPC	Add new 230 kV Line between Boswell and Wilton (Bemidji – Grand Rapids 230 kV Line) to support the Bemidji area and the Red River Valley during winter peak conditions. This project is located in both the Northwest and Northeast zones. PUC Docket No. TL-07-1327
2005-CX-1	2008 / A	286	Yes	CapX	Add new 345 kV Line between Monticello and Fargo to support the Red River Valley and other growing towns along the Interstate 94 corridor during peak load conditions. This project is located in both the Northwest & West Central zones. PUC Docket Nos. TL-09-246 and TL-09-1056
2007-NW-N3	2010 / A	2826	No	OTP/ MPC	Add capacitor to the 115 kV transmission system in northwest Minnesota at the Karlstad Substation in Roseau County (2 x 8 MVAR), Clearbrook Substation in Clearwater County (2 x 17 MVAR) and the Thief River Falls Substation in Pennington County (1 x 15 MVAR) to support the increasing loads in this area.
2009-NW-N2	2010/A	2670	No	GRE	Voltage problems in the Frazee area are planned to be addressed by the addition of a new Schuster Lake 115/41.6 kV Substation near Frazee in Otter Tail County to support the 41.6 kV system in this area.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2009-NW-N3	2011/A	2643	No	GRE	The existing GRE 41.6/12.5 kV Substation at Parkers Prairie in Otter Tail County will be converted to 115/12.5 kV by tapping an existing 115 kV line between Miltona and Elmo to alleviate voltage and loading concerns in this area for an outage of the 115/41.6 kV source at Miltona. PUC Docket No. TL-11-867
2009-NW-N6	2009 / C	3204	Yes	OTP	The 45-mile Sheyenne – Audubon 230 kV Line in Clay and Becker counties needs to be upgraded to a higher capacity due to the interconnection of wind generation at the Maple River Substation in Cass County, North Dakota.
2009-NW-N7	2010 / A	3156	Yes	CapX	As part of the Bemidji – Grand Rapids 230 kV Project (see 2005-NW-N2 and 2005-CX-1), studies have shown that an additional 230/115 kV delivery is needed at the Cass Lake Substation (Cass County) to support the area during contingencies. Along with this new transformer at Cass Lake, studies have shown that the Cass Lake – Nary 115 kV Line will need to be reconductored to accommodate the expected post-contingent flows once Bemidji – Grand Rapids is in-service. Furthermore, a new 115 kV switching station is being added at Nary (Hubbard County) as part of the Bemidji – Grand Rapids project to increase the reliability of the transmission system.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-NW-N1	2011 / A	3466	No	OTP	Add a new three-way switch on the Doran – Doran Tap 41.6 kV line to facilitate the interconnection of a new 5 MW wind farm near Doran (Wilkin County, MN). This project has a signed Generator Interconnection Agreement (GIA) as MISO Project J035 and is planned to be in-service during the fall of 2012.
2011-NW-N2	2012 / A	3464	No	OTP	Add a new three-way switch on the Donaldson – Donaldson Town 41.6 kV line to facilitate the interconnection of a new 20 MW wind farm near Donaldson (Kittson/Marshall Counties, MN). This project has a signed Generator Interconnection Agreement (GIA) as MISO Project G873 and is planning to be in-service by the end of 2012.
2011-NW-N3	2012 / A	3465	No	OTP	The existing Donaldson 115/41.6 kV Substation will have the 115 kV portion of the substation updated in order to accommodate the interconnection of a new 80 MW wind farm near Donaldson (Kittson/Marshall Counties, MN). This project has a signed Generator Interconnection Agreement (GIA) as MISO Project G875 and is planning to be in-service by the end of 2013.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-NW-N4	2011 / A	3462	No	OTP	A new three-breaker 115 kV ring bus will be established between the existing Karlstad Substation and Viking Substation in order to allow for the interconnection of a 100 MW wind farm near Viking, MN (Marshall County). This project has a signed Generator Interconnection Agreement (GIA) as MISO Project G968 and is planning to be in-service by the end of 2012.

6.3.3 Completed Projects

Some inadequacies in the Northwest Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2007-NW-N2	OTP	Addition of two new 15 MVAR capacitor banks on the 115 kV system at Cass Lake Replacement of the existing 115/69 kV transformer at Cass Lake with a larger transformer	Not required	Transformer Replacement, 2009 Capacitor Bank Installation, 2010
2007-NW-N4, 2009-NW-N1	OTP	Fergus Falls SE 115/12.5 kV Substation (South Cascade Substation) Addition of a third 115/12.5 kV Substation in the Fergus Falls area along Hoot Lake – Grant County 115 kV Line	Not required	2010
2009-NW-N1	GRE	Tamarac Substation Addition of 115 kV Circuit Breaker and 20 MVAr Capacitor Bank	Not required	2009
2009-NW-N4	MPC	Helga Substation	Not required	2008
2009-NW-N5	OTP	Bemidji 115 kV Substation Replacement of a 115 kV breaker at Bemidji on the Wilton line to increase the rating of the line.	Not required	2010

6.4 Northeast Zone

6.4.1 Needed Projects

The following table provides a list of transmission needs identified in the Northeast Zone by MISO utilities. There were no projects identified in this zone by non-MISO utilities.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2003-NE-N2	2011/A	2634	Yes	MP/ GRE	Savanna Project, 115 kV Savanna switching station and Savanna-Cromwell and Savanna-Cedar Valley 115 kV lines, St. Louis Co., PUC Docket Nos. CN-10-973 and TL-10-1307
2003-NE-N4	2005/A	600	No	GRE/ MP	Southdale-Scearcyville 115 kV line (aka Baxter-Southdale) and Scearcyville Substation, project under construction
2003-NE-N5	2010/A	1018	No	GRE/ MP	MP Little Falls to GRE Little Falls 115 kV line PUC Docket No. TL-11-318
2003-NE-N6	NA	NA	Yes	GRE	Taconite Harbor-Grand Marais 69 kV rebuild to 115 kV. This project has been delayed indefinitely due to drop in load growth.
2003-NE-N9	2011/B 2012/A	2569	No	GRE	Shoal Lake 115 kV distribution
2005-NE-N2	2007/A	1025	No	Excelsior Energy[1]	Mesaba IGCC Generator outlet lines, Grand Rapids area, Itasca Co.

[1] [1] Excelsior Energy is an independent energy development company that has proposed to construct and operate the Mesaba Energy Project and is not a MTO member. See Section 6.3.8 of the 2009 Biennial Report for more information.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2005-CX-1	2006 / A	279	Yes	CapX	Add new 230 kV Line between Boswell and Wilton (Bemidji – Grand Rapids 230 kV Line) to support the Bemidji area and the Red River Valley during winter peak conditions. This project is located in both the Northwest and Northeast zones. PUC Docket No. TL-07-1327
2007-NE-N1	2009/C	2548	Yes	MP	New 230/115 kV transformer & transmission line upgrade to 230 kV, Duluth area, St. Louis Co. Recent study indicates this project is not needed until the 2020 timeframe.
2007-NE-N2	2010/A	2547	No	MP	Transmission for Essar Steel, Grand Rapids-Nashwauk areas, Itasca Co., under construction PUC Docket No. TL-09-512
2007-NE-N3	2011/A	2571	Maybe	GRE	MN Pipeline-Menahga 115 kV line (operated at 34.5 kV) This project is impacted by pipeline pumping station voltage drop issues. The line may have to be extended to Hubbard or to RDO-Osage 34.5 kV line, unless voltage drop issues can be corrected. Either option may put line over 10 miles requiring a CON.
2007-NE-N5	2010/A	2576	No	GRE	Pokegama 115 kV distribution substation
2007-NE-N6	2012/B	2632	No	GRE	Onigum 115 kV conversion Line is currently less than 10 miles, however CON may be required if route is altered.
2009-NE-N1	2009/A	2552	No	MP	3 mile Skibo-Hoyt Lakes 138 kV transmission line, Hoyt Lakes area, St. Louis Co.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2009-NE-N2 2009-NE-N2	2012/C 2012/B	2551 3531	No Yes	MP MP	Put 28L Tap on own breaker and rebuild to higher capacity, Cohasset – Deer River, Itasca Co. alternative to MTEP Project #3531. Construct 230/115 kV Substation in Deer River, Itasca Co. Project needed due to load growth and to improve reliability in the Deer River area. An alternative to this project is MTEP Project #2551.
2009-NE-N3	2010/A	3091	No	MP	Relocate line, Nashwauk area, Itasca Co.
2009-NE-N4	NA	NA	Yes	GRE	Macville-Blind Lake 115 kV line and Macville 230/115 kV substation. This project has been delayed indefinitely due to drop in load growth.
2009-NE-N5	2010/A	2621	No	GRE	Effie 230/69 kV Substation
2009-NE-N6	NA	NA	Maybe	GRE	Shamineau Lake 115 kV substation and 115 kV line. This project has been delayed indefinitely due to drop in load growth.
2009-NE-N7	2010/A 2012/B	2566 2566	No No	GRE	Potato Lake 115 kV distribution sub and 115 kV line. Mantrap 115 kV conversion. This project is projected to be in-service in 2015 depending on load growth. PUC Docket No. TL-10-86
2009-NE-N8	NA	NA	No	GRE	Barrows distribution substation and 115 kV line. This project has been delayed indefinitely due to drop in load growth.
2009-NE-N9	2011/A	2599	No	GRE	Shell Lake 115 kV distribution substation and 115 kV line. This line will be built at 69 kV.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2009-NE-N10	NA	NA	No	GRE	Iron Hub distribution substation and 115 kV line. This project has been delayed indefinitely due to drop in load growth.
2009-NE-N11	NA	NA	Yes	GRE	Rush City-Milaca 230 kV line and Dalbo 230/69 kV source. This project has been delayed indefinitely due to drop in load growth.
2011-NE-N1	2011/A	3373	Yes	MP	Rebuild 9 line to higher Capacity Blackberry – Meadowlands, St. Louis & Itasca Co.
2011-NE-N2	2011/A	2549	No	MP	Rebuild 15 Line to higher capacity, Fond-du-Lac Duluth area, St. Louis Co.
2011-NE-N3	2010/A	2762	No	MP	New Swan Lake load serving Substation, Duluth, St. Louis Co.
2011-NE-N4	2009/A	2763	No	MP	Add LSPI 34.5 kV Transformer, Duluth, St. Louis Co.
2011-NE-N5	2010/A	2761	No	MP	Construct Dunka Rd Substation to serve Polymet, Hoyt Lake area, St. Louis Co.
2011-NE-N6	2011/A	3374	No	MP	Re-energize existing Substation, Taconite MN area, Itasca Co.
2011-NE-N7	2012/A	3532	No	MP	25L tap, Construct 115/34.5 kV substation, Hibbing MN area, St. Louis Co.
2011-NE-N8	2012/A	1292	No	MP	Rebuild 18 Line to higher capacity, Forbes area, St. Louis Co.
2011-NE-N9	2012/A	3534	No	MP	Increase transformer capacity at existing Verndale Substation, Verndale, Wadena Co.
2011-NE-N10	2009/A	2759	No	MP	Increase transformer capacity at existing Laskin Substation, Hoyt Lakes area, St. Louis Co.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-NE-N11	2012/C	3533	Yes	MP	Expansion of the Savanna Substation in the Floodwood area, St Louis Co., to 230 kV. Initial review indicates this project will reduce loading on other area transmission lines and improve system reliability. A more detailed electric performance and economic analysis will need to be completed to verify that this project is a viable alternative to increasing the capacity of existing transmission lines in the area.
2011-NE-N12	2012/C	3756	No	MP	Develop new 115/46 kV substation near Wrenshall, MN, in Carlton Co. This project is needed to improve reliability in eastern Carlton Co. The project will eliminate the need for existing distribution circuits that would otherwise need to be rebuilt due to age and condition and is also a lower cost alternative.
2011-NE-N13	2012/C	3562	Yes	MP	230 kV transmission connection to Manitoba, which would be located in St. Louis, Itasca, Koochiching, Lake of the Woods, & Roseau Co. This project is one of several alternatives being evaluated for delivery of a 250 MW PPA between MP and Manitoba Hydro (see Section 3.3.2).

6.4.2 Completed Projects

Some inadequacies in the Northeast Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Biennial Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

Completed Projects

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-NE-N3	MP/GRE	Badoura-Long Lake	CN-05-867 TL-07-76	November 2009
2003-NE-N3	MP/GRE	Badoura-Birch Lake	CN-05-867 TL-07-76	October 2010
2003-NE-N3	MP/GRE	Badoura-Pine River	CN-05-867 TL-07-76	October 2009
2003-NE-N3	MP/GRE	Pine River-Pequot Lakes	CN-05-867 TL-07-76	December 2010

6.5 West Central Zone

6.5.1 Needed Projects

The following table provides a list of transmission needs identified in the West Central Zone by MISO utilities. There were no projects identified in this zone by non-MISO utilities.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2003-WC-N5	NA	NA	No	GRE	Spicer 230/69 kV source. This project has been withdrawn and replaced with a 69 kV project that met multiple needs.
2003-WC-N7	NA	NA	Yes	GRE	Brownton-McLeod 115 kV line This project has been delayed indefinitely due to drop in load growth.
2003-WC-N8	NA	NA	Yes	GRE	Alexandria-West St. Cloud 115 kV line. This project has been delayed indefinitely due to drop in load growth. CapX Fargo-Monticello may alter this project significantly.
2005-CX-1	2008 / A	286	Yes	CapX	Add new 345 kV Line between Monticello and Fargo to support the Red River Valley and other growing towns along the Interstate 94 corridor during peak load conditions. This project is located in both the Northwest and West Central zones. PUC Docket Nos. TL-09-1056 and TL-08-1474
2005-CX-2	2011 / A	1203	Yes	CapX	Add new 345 kV line between Brookings, South Dakota, and Southeast corner of Twin Cities. This line is located in the Southwest, West Central, and Twin Cities Zones. PUC Docket No. TL-08-1474.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2007-WC-N2	NA	NA	No	Western Area Power Admin.	Morris Transformer. No activity due to withdrawal of Big Stone Interconnection.
2007-WC-N3	NA	NA	No	OTP/ MRES	Morris-Grant County 115 kV Line. No activity due to withdrawal of Big Stone interconnection.
2007-WC-N4	NA	NA	No	Various Minn. Utilities	West Central Minnesota Generation Outlet. No activity due to withdrawal of Big Stone interconnection.
2009-WC-N1	2009 / A	2158	No	XEL	Upgrade Sauk Center – Osakis 69 kV line to a lower impedance.
2009-WX-N3	NA	NA	No	XEL	Rebuild Maynard-Kerkhoven 115 kV line
2009-WC-N4	2010/A	2564	No	GRE	Sartell 115 kV distribution substation and 115 kV line
2009-WC-N5	NA	NA	No	GRE	Watkins 115/69 kV source This project has been delayed indefinitely due to drop in load growth.
2009-WC-N6	2012/C	2691	No	GRE	Orrock 345/115 substation and HWY 10 115 kV lines to Enterprise Park and Liberty. Orrock land is currently being sought. Project will move forward as load grows on HWY 10 corridor between Anoka and Becker. Projects are expected to move within next 5 to 10 years.
2009-WC-N7	NA	NA	No	XEL	This project is to reconductor an existing 69 kV line to address low voltage along Westport to Lowrey.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-WC-N1	2011/A	3310	Yes	XEL	This project is to complete the conversion of 69 kV line between Scott County and West Waconia substation to 115 kV. The scope also involves building new West Creek distribution substation and converting the Victoria and Augusta substations to 115 kV and retiring Chaska downtown substation.
2011-WC-N2	2011/A	3312	No	XEL	This project is to upgrade the Minn Valley – Maynard – Kerkhoven tap 115 kV line to 795 ACSS conductor
2011-WC-N3	2012/A		No	XEL	New 1 mile 69 kV line from Brownton to GRE (Winthrop – Hassen) 69 kV line
2011-WC-N4	C	2177	Yes	XEL	Corridor Upgrade: Convert Minn Valley – Panther – McLeod – Blue Lake 230 kV line to Double circuit 345 kV from Hazel to McLeod to West Waconia to Blue Lake.
2011-WC-N5	2009 / A	2309	No	XEL	This project is to rebuild 20 miles of 69 kV line from Maple Lake to Watkins in West Central Minnesota
2011-WC-N6	2009 / A	2308	No	XEL	This project is to rebuild 13 miles of 69 kV line from Grove Lake switching station to Glenwood to 477 ACSR
2011-WC-N7	2009 / A	2307	No	XEL	(1) New 4 mile 115 kV line from St. Cloud tap tap to Mayhew Lake substation.(2) Convert Benton Co – St. Cloud double circuit to bifurcated line and reterminarte into Mayhew Lake substation (3) Convert St. Cloud tap to Granite City into bifurcated line (this results in single 115 kV circuit from St. Cloud to Granite City).

6.5.2 Completed Projects

Some inadequacies in the West Central Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Biennial Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-WC-N4	XEL	A 4-mile 115 kV project developed from this project. See 2011-WC-N7.	NA	NA
2003-WC-N9	GRE	Le Sauk Conversion	Not Required	March 2010
2009-WC-N2	XEL	Douglas County transformer addition	Not Required	September 2010
2009-WC-N7	XEL	Rebuild 69 kV between Grove Lake and Lawery	Not Required	2011

6.6 Twin Cities Zone

6.6.1 Needed Projects

The following table provides a list of transmission needs identified in the Twin Cities Zone by MISO utilities. There were no projects identified in this zone by non-MISO utilities.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2003-TC-N1	NA	NA	No	XEL	Upgrade not necessary at this time.
2003-TC-N10	NA	NA	NA	XEL	Twin Cities 345/115 kV transformer capacity approaching emergency loading levels. No specific project identified.
2003-TC-N12	2005/A	599	No	GRE	Crooked Lake-Enterprise Park 115 kV line. PUC Docket No. TL-11-915
2005-TC-N7	NA	NA	No	XEL	No specific needs have been identified at this time.
2005-CX-2	2011 / A	1203	Yes	CapX	Add new 345 kV line between Brookings, South Dakota, and Southeast corner of Twin Cities. This line is located in the Southwest, West Central, and Twin Cities Zones. PUC Docket No. TL-08-1474.
2005-CX-3	2008 / A	1024	Yes	CapX	Add new 345 kV line between Southeast corner of Twin Cities, Rochester, and La Crosse Wisconsin. This line is located in the Twin Cities and Southeast Zones. PUC Docket No. TL-09-1448
2007-TC-N1	2012/A	3572-GRE	Yes	XEL/ GRE	Augusta and Victoria conversion. This project is coordinated with the Xcel Scott County-West Waconia project. PUC Docket Nos. CN-09-1390 and TL-10-249

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2007-TC-N4	NA	NA	TBD	XEL	Load serving infrastructure investments needed to meet growth in area demand
2009-TC-N1	2010/A	2570	No	GRE	Ravenna 161 kV distribution substation. This project has been delayed indefinitely due to drop in load growth.
2009-TC-N2	NA	NA	Yes	GRE	Glendale-Lake Marion-Helena 115 kV plan. This project has been delayed indefinitely due to drop in load growth.
2009-TC-N3	NA	NA	No	GRE	Parkwood-Coon Creek second 115 kV circuit. This project has been delayed indefinitely due to drop in load growth. This plan is likely to be withdrawn in favor of the Orrock development to Enterprise Park to address NERC Cat C3 concerns and to provide load growth opportunities between Elk River and Anoka
2009-TC-N5	NA	NA	Maybe	GRE	Carver County-Assumption-Belle Plaine 115 kV line. This project has been delayed indefinitely due to drop in load growth. Xcel Energy's Sheas Lake project may delay the need of this project, although portions of the line may need to be rebuilt due to age.
2009-TC-N6	NA	NA	No	XEL	Rebuild 69 kV to 115 kV in cities of Plymouth and Medina. PUC Docket No. TL-11-52
2011-TC-N1	2011/A	3314	No	XEL	This project is to convert the Kohlman Lake - Long Lake 115 kV bifurcated line to double circuit with separate line terminations at Kohlman Lake and Long Lake

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-TC-N2	2011/A	3315	No	XEL	This project is to install a 2nd 345/115 kV transformer at Chisago County
2011-TC-N3	2011/A	3316	No	XEL	This project is to upgrade Riverside - Apache line to 360 MVA and upgrade Apache switch to 2000A
2011-TC-N4	2011/A	3317	No	XEL	This project is to convert the single circuit line between Goose Lake and Kohlman Lake to double circuit.
2011-TC-N5	2011/A	3318	No	XEL	This project replaces some of the 115 kV breakers at Parkers Lake with 63 kA rated breakers.
2011-TC-N6	2011/A	3321	No	XEL	This project adds two breakers at Chemolite to insure only one line at a time will be removed from service during a breaker failure.
2011-TC-N7	2011/A	3325	No	XEL	This project will move the supply for Orono from its current 69 kV supply to the 115 kV line from Medina to Crow River.
2011-TC-N8	2011/A	3326	No	XEL	This line will rebuild the 115 kV line from Black Dog to Savage to 795 ACSS conductor.
2011-TC-N9	2011/A	3454	No	XEL/ GRE	This project will upgrade the 69 kV line from GRE’s Medina to Plymouth substations. A new switching station will be added on GRE's 115 kV line between Parkers Lake and Elm Creek north or south of the Plymouth Substation depending on the permitted location. Joint project with GRE P3394 at Medina
2011-TC-N10	2012/A		No	XEL	Install 30 MVAR reactor at Kohlman Lake substation
2011-TC-N11	2012/A		No	XEL	Install 40 MVAR reactor at Chisago County substation

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-TC-N12	2012/A		No	XEL	Install 30 MVAR reactor at Red Rock substation
2011-TC-N13	2010/B	3121	No	XEL	Upgrade 13 miles of 115 kV line between Lake Marion and Burnsville to higher capacity
2011-TC-N14	2009/A	2772	Yes	XEL	New 115 kV distribution substation with four terminations tapping the Elliot Park - Southtown line, 1.25 new miles of double circuit 795 SAC to a new 115 kV distribution substation
2011-TC-N15	2008/A	675	Yes	XEL	Upgrade 14.3 miles from Westgate-Deephaven-Excelsior-Scott County from 69kV to 115 kV, Uprate 2 miles from Westgate-Eden Prairie 115kV #1 and #2 to 400 MVA. Substation work at Westgate, Deephaven, Excelsior and Scott County.
2011-TC-N16	2009/A	1952	No	XEL/ GRE	This project is to add a 10 MVAR cap bank at Plato. This project is required to convert the existing 69 kV line from Young America - Glencoe to 115 kV (part of Glencoe - West Waconia 115 kV line project).

6.6.2 Completed Projects

Some inadequacies in the Twin Cities Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Biennial Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-TC-N4	XEL	Chisago-Apple River project	TL-06-1677 CN-04-1176	June 2011
2003-TC-N8	XEL	Long Lake – Oakdale – Tanners Lake – Woodbury 115 kV line	Not required	November 2008
2003-TC-N13	Several	No project resulted following study	NA	Withdrawn? 2011
2005-TC-N6	GRE/ XEL	Yankee Doodle	Not Required	May 2010
2007-TC-N3	XEL	New project developed. New 115 kV distribution substation with four terminations tapping the Elliot Park – Southtown line. See 2011-TC-N14.	CN-10-694, TL-09-38	Withdrawn? 2011
2009-TC-N1	GRE	Ritter Park	Not Required	May 2010
2009-TC-N4	XEL	Goose Lake-Lexington 115 kV rebuild.	Not Required	2011

6.7 Southwest Zone

6.7.1 Needed Projects

The following table provides a list of transmission needs identified in the Southwest Zone.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2005-SW-N1	2012/A	3574	No	GRE/ ITCM	Worthington-Elk 69 kV rebuild to 115 kV. Upgrade Worthington Area Transformer by replacing existing 161/69 kV transformers at Elk
2005-CX-2	2011 / A	1203	Yes	CapX	Add new 345 kV line between Brookings, South Dakota, and Southeast corner of Twin Cities. This line is located in the Southwest, West Central, and Twin Cities Zones. PUC Docket No. TL-08-1474.
2007-SW-N1	B	1741	No	ITCM	MISO project G517 Storden Wind Interconnection – Specific upgrades required for project to be determined by MISO Restudy
2009-SW-N1	2009	NA	TBD	XEL	Fenton 69 kV Interconnection to serve several towns between Pipestone and Marshall.
2009-SW-N2	NA	NA	No	GRE	Lismore conversion to 115 kV This project has been delayed indefinitely due to drop in load growth and distribution cooperative prefers to be served from 24 kV system.
2009-SW-N3	2011/B	3213	No	ITCM	Lakefield Adams 345 kV system upgrade
2009-SW-N4	2010/A	2167	No	SMP	Redwood Falls Area Load Serving 115kV Project

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-SW-N1	2011/A	1203	Yes	XEL/ GRE	Construct Brookings Cty-Lyon Cty (Single Ckt 345 kV); Lyon Cty-Cedar Mountain-Helena (Double Ckt 345 kV); Helena-Lake Marion-Hampton Corner (Single Ckt 345 kV); Lyon Cty-Hazel (Single Ckt 345 kV); Hazel-Minnesota Valley (Single Ckt 345 kV, initially operate at 230 kV); Cedar Mountain-Franklin (Single Ckt 115 kV). Install 345/115 kV transformers at Lyon County, Cedar Mountain, and Chub Lake. Install two 115/69 kV transformers at Franklin substation.
2011-SW-N2	2011/A	3309	No	XEL	Upgrade the wave traps and line switches at Buffalo Ridge to 2000 A going to Lake Yankton and Pipestone. Retap the Pipestone CTs to 2000 A going to Buffalo Ridge.
2011-SW-N3	2011/A	3319	No	XEL	This project replaces some of the 115 kV breakers at Split Rock with 63 kA rated breakers.
2011-SW-N4	2011/A	3320	No	XEL	This project is needed to replace the failed 50 MVAR Split Rock reactor and associated breaker.
2011-SW-N5	2010/A	2767	No	XEL	This project is to install a new 115/69 kV transformer at Fenton substation. Break the existing 69 kV line between Chandler Tap and Lake Wilson to create an in and out to the Fenton substation.
2011-SW-N6	B	2107	No	XEL	G520: Network upgrades: Install new 3-position 115 kV substations (tapping Lake Yankton - Lyon County 115 kV line) with breakers, switches, buswork, steel, foundations, control house and associated equipment. Install new loop in-and-out tap, 3.5 miles of double circuit, 115 kV transmission line.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2011-SW-N7	B	2115	No	XEL	G491: One new 120 MVA, 118-36.2 kV transformer, three new 115 kV breakers and associated disconnect switches, one new 34.5 kV transformer low side main breaker and associated disconnect switches, control house expansion, structural steel and foundations associated with this new equipment, control and protection equipment associated with these new installations.
2011-SW-N8	2006/A	1458	No	XEL	G349 Upgrades: Located in Southwestern Minnesota around the Buffalo Ridge area. Upgrades to Yankee substation, Brookings Co 345/115 substation, Hazel Creek 53 MVAR capacitor, Brookings-Yankee 115 kV line.
2011-SW-N9	2008/A	2108	No	ITCM	New 161 kV switching station in Faribault Co. on the Winnebago to Winnco 161 line to provide interconnection facilities for MISO Project G358.
2011-SW-N10	2009/A	2156	No	XEL	1) New 345/115/69 kV Sheas Lake substation between Wilmarth and proposed Helena substation. 2) One mile of 69 kV double circuit to connect the existing LeSueure 69 kV lines into proposed Sheas Lake substation
2011-SW-N11	B	3099	No	XEL	Upgrade Franklin 115/69 kV Xfrmr 1 and 2 to 112 MVA as part of the CapX underlying system upgrade

6.7.2 Completed Projects

Some inadequacies in the Southwest Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Biennial Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-SW-N2	GRE	St. James area (Storden-Dotson-New Ulm 115 kV line). This project has been withdrawn due to load not being developed.	Not required	Withdrawn
2007-SW-N2	GRE	Dotson Area load serving needs. This project has been withdrawn due to load not being developed.	Not required	Withdrawn
2007-SW-N3	XEL	Fort Ridgely – West New Ulm 115 kV line and new West Ulm Substation	E002, TL-08-956	March 2011

6.8 Southeast Zone

6.8.1 Needed Projects

The following table provides a list of transmission needs identified in the Southeast Zone by MISO utilities. There were no projects identified in this zone by non-MISO utilities.

MPUC Tracking Number	MTEP Year/App	MTEP Project Number	CON?	Utility	Description
2005-SE-N4	NA	NA	TBD	XEL	Additional outlet for possible future wind generation
2005-CX-3	2008 / A	1024	Yes	CapX	Add new 345 kV line between Southeast corner of Twin Cities, Rochester, and La Crosse Wisconsin. This line is located in the Twin Cities and Southeast Zones. PUC Docket No. TL-09-1448
2007-SE-N3	2009	2156	No	XEL	1) New 345/115/69 kV Sheas Lake substation between Wilmarth and Proposed Helena substation. 2) 1 mile of 69kV double circuit to connect the existing LeSueure 69kV lines into proposed Sheas Lake substation.
2009-SE-N2	NA	NA	Yes	GRE	St. Clair-Loon Lake 115 kV line This project has been delayed indefinitely due to drop in load growth.
2009-SE-N5	2010/A	2166	No	SMP	St Peter Area Load Serving 69kV Project
2011-SE-N1	2011/A	3313	No	XEL	This project is to install a 69 kV 1 way switch to provide SMMPA's New Prague substation a new interconnection point. The existing interconnection would require cutting the line jumpers when the New Prague - Veslie line is out of service.

2011-SE-N2	2011/A	3474	No	XEL	Installing a 50 MVAR reactor at Adams substation on the Pleasant Valley line, along with a breaker and disconnect switch
2011-SE-N3			No	SMP	Austin MN Area Load Serving 161/69kV Substation Expect ISD June 2013. Not yet in MTEP.
2011-SE-N4	B	3195	No	ITCM	Upgrade Freeborn to Hayward 161 kV for MISO project G870
2011-SE-N5	2012/A		No	XEL	Re-build 13 miles of 69 kV line from Arlington – Green Isle
2011-SE-N6	2012/A		No	XEL	New 5.4 MVAR capacitor bank at Crystal Foods
2011-SE-N7	2008/A	1024	Yes	XEL/ SMP/ Non-MISO	Construct Hampton Corner-North Rochester-Chester-North Lacrosse 345 kV line. Add North Rochester - N. Hills 161 kV line. Add North Rochester-Chester 161 kV line. Add 345/161 kV transformers at Hampton Corner, North Rochester, and North Lacrosse.
2011-SE-N8	2009/A	2178	Yes	XEL	G362 Network upgrades: New 161 kV line from Pleasant Valley - Byron 161 kV line

6.8.2 Completed Projects

Some inadequacies in the Southeast Zone that were identified in the 2009 Biennial Report were alleviated through the construction and completion of specific projects over the last two years. Information about each of the completed projects is summarized briefly in the table below. More information about these projects and inadequacies can be found in the 2009 Biennial Report. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

MPUC Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-SE-N1	XEL	This project became the CapX2020 project listed in this report as 2011-TC-N14	TBD	TBD
2003-SE-N3	XEL	City of Mankato – 115-kV Loop project	E002,ET2-TL-08-734	May 2009
2005-SE-N5	ITCM	Mower County Wind Upgrades to 161 kV at Adams	Not required	February 2010
2007-SE-N1	DPC	Rochester-Adams 161 kV Line Reconductor 36.7 miles with 795 ACSS conductor	Not required	November 2009
2007-SE-N2	XEL	Grand Meadow Wind Interconnection project	IP6646-WS-07-839	June 2009
2007-SE-N4	ITCM	Wind Generation Upgrades – Freeborn and Mower Counties – Completed 2010	Not required	December 2010
2009-SE-N1	DPC	Harmony-Beaver Creek 161 kV Line. Reconductor 20.5 miles of 161 kV line with 795 ACSS conductor.	Not required	February 2010
2009-SE-N3	ITC	No action necessary.	Not required	2011
2009-SE-N4	SMP	Byron to Rochester Westside 161 kV line addition	Not required	2010

7.0 Transmission-Owning Utilities

7.1 Introduction

In the 2009 Biennial Report, the Minnesota Transmission Owners included a separate chapter that provided some background information about each of the reporting utilities and answered specific questions about transmission line ownership, transformer availability (for Northern States Power, Otter Tail Power, Minnesota Power, and ITC Midwest), maintenance expenses, and compliance with upcoming renewable energy milestones for each utility. In this chapter in the 2011 Report, the utilities have provided the following information.

Background Information and Contact Person

For ease of reference, the utilities have provided much of the same background information that was provided in the 2009 Report. This information relates to the history of the utility and the extent of its service territory and operations. An Internet link is provided where additional information about each utility can be found. In addition, a Contact Person is identified for each utility.

Transmission Line Ownership

The utilities provided in the 2009 Report information on the miles of transmission owned by each utility. The table below is the latest information on the transmission lines in Minnesota owned by each utility. In addition, information specific to each utility is included in the discussion for that utility.

Miles of Transmission

Utility	<100 kV	100-199 kV	200-299 kV	> 300 kV	DC
American Transmission Company, LLC	0.00	0.00	0.00	12.00	0.00
Dairyland Power Cooperative	414.26	148.00	0.00	0.00	0.00
East River Electric Power Cooperative	168.217	45.74	0.00	0.00	0.00
Great River Energy	2981	468	523	145	436
Hutchinson Utilities Commission	8.00	9.00	0.00	0.00	0.00
ITC Midwest LLC	731.68	304.27	0.00	19.77	0.00
L&O Power Cooperative	44.52	8.32	0.00	0.00	0.00
Marshall Municipal Utilities	0.00	18.10	0.00	0.00	0.00
Minnesota Power	0.22	1326.72	610.18	8.35	231.56

Utility	<100 kV	100-199 kV	200-299 kV	> 300 kV	DC
Minnkota Power Cooperative	992.37	143.79	248.77	0.00	0.00
Missouri River Energy Services	0.00	212.22	10.97	0.00	0.00
Northern States Power Company d/b/a Xcel Energy	1528.06	1400.96	256.38	1075.64	0.00
Otter Tail Power Company	1304.15	544.97	111.53	0.00	0.00
Rochester Public Utilities	0.00	40.51	0.00	0.00	0.00
Southern Minnesota Municipal Power Agency	130.15	130.11	16.84	0.00	0.00
Willmar Municipal Utilities	21.50	0.00	13.50	0.00	0.00
Totals:	8324.127	4800.71	1791.17	1260.76	667.56

7.2 American Transmission Company, LLC

Background Information. American Transmission Company, LLC began operations on January 1, 2001, the first multi-state electric transmission-only utility in the country. The company is headquartered in Pewaukee, Wisconsin, with approximately 535 employees working in Wisconsin and Michigan.

At least 28 utilities, municipalities, municipal electric companies, and electric cooperatives from Wisconsin, Michigan, and Illinois have invested transmission assets or money for an ownership stake in the company. ATC is responsible for operating and maintaining the transmission lines of its equity owners. It owns approximately 9,440 circuit miles of transmission lines and wholly or jointly owns 515 substations in portions of four states – Wisconsin, Michigan, Illinois, and Minnesota. ATC has $2.9 billion in total assets.

ATC is a transmission-owning member of the Midwest Independent Transmission System Operator and its transmission system is located in both the Midwest Reliability Organization (MRO) and Reliability*First* Corporation (RFC).

More information about the company is available on its web page at:

http://www.atcllc.com

Contact Person: Sonja Golembiewski
Transmission Planning Engineer
American Transmission Company, LLC
P.O. Box 47
Waukesha, WI 53187-0047
Ph: (262) 832-8660
Fax: (262) 506-6713
e-mail: sgolembiewski@atcllc.com

Transmission Lines. ATC owns approximately 9,440 miles of transmission lines in total, twelve miles of which are located in Minnesota. The transmission line segment in Minnesota extends from the Arrowhead Substation in the Duluth area to the St. Louis River and is part of the 220-mile 345 kV Arrowhead-Weston line that extends from the Arrowhead Substation to the Gardner Park Substation in Wausau, Wisconsin. The Arrowhead-Weston line, which cost $439 million to construct, was energized in January of 2008. Arrowhead-Weston provides such benefits as improving reliability, enhancing transfer capacity between Minnesota and Wisconsin, and providing ATC and other utilities greater opportunities to perform maintenance on other parts of the electric system, which reduces operating costs.

7.3 Dairyland Power Cooperative

Background Information. Dairyland Power Cooperative, a Touchstone Energy Cooperative, was formed in December 1941. A generation and transmission cooperative, Dairyland provides the wholesale electrical requirements to 25 member distribution cooperatives and 19 municipal utilities in Wisconsin, Minnesota, Iowa and Illinois. Today, the cooperative's generating resources include coal, hydro, wind, natural gas, landfill gas and animal waste. In 2010, Dairyland Power Cooperative joined a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO).

More information about Dairyland Power Cooperative is available at:

http://www.dairynet.com

Contact Person: Steve Porter
Planning Engineer II
Dairyland Power Cooperative
3200 East Avenue South
LaCrosse, WI 54601
Ph: (608) 787-1229
Fax: (608) 787-1475
e-mail: scp@dairynet.com

Transmission Lines. Dairyland delivers electricity via more than 3,100 miles of transmission lines and nearly 300 substations located throughout the system's 44,500 square mile service area. Dairyland has the following transmission facilities in Minnesota:

Dairyland Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
414.26	148.0	0	0	0

7.4 East River Electric Power Cooperative

Background Information. East River Electric Power Cooperative ("East River"), headquartered in Madison, South Dakota, is a wholesale electric power supply and transmission cooperative serving 20 rural distribution electric cooperatives and one municipally-owned electric system, which in turn serve more than 86,000 homes and businesses. East River's 36,000 square mile service area covers the rural areas of 41 counties in eastern South Dakota and nine counties in western Minnesota.

Two of East River's member systems have service areas entirely in western Minnesota and one member system has service areas in both eastern South Dakota and western Minnesota, The remaining seventeen member systems have service areas entirely in eastern South Dakota. Approximately 7,600 of the 86,000 homes and businesses served by East River's 21 member systems are located in Minnesota. Additional information about East River is available at:

More information about East River Electric Power Cooperative is available at:

http://www.eastriver.coop

Contact Person: Mark Hoffman
Engineering Services Manager
East River Electric Power Cooperative
P.O. Box 227
211 South Harth Avenue
Madison, SD 57042
Ph: (605) 256-4536
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e-mail: mhoffman@eastriver.coop

Transmission Lines. East River delivers electricity via approximately 2,600 miles of transmission lines and 215 substations located throughout the system's 36,000 square mile service area in eastern South Dakota and western Minnesota. East River has the following transmission facilities in Minnesota:

East River Electric Power Cooperative Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
168.217	45.74	0	0	0

7.5 Great River Energy

Background Information. Great River Energy ("GRE") is a not-for-profit electric cooperative owned by 28 member distribution cooperatives. The organization generates and transmits electricity for those members, which are located from the outer-ring suburbs of the Twin Cities, up to the Arrowhead region of Minnesota and down to the farming communities in the southwest part of the state. Great River Energy's largest distribution cooperative serves more than 125,000 member-consumers, while the smallest serves approximately 2,400. Collectively, Great River Energy's member cooperatives serve approximately 645,000 member-consumers, or about 1.7 million people. In addition, Great River Energy is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO).

More information about Great River Energy is available at:

http://www.greatriverenergy.com

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Director, Transmission Planning & Operations
Great River Energy
12300 Elm Creek Blvd
Maple Grove, MN 55369-4718
Ph: (888) 521-0130, ext. (763) 445-5050
Fax: (763) 445-5050
e-mail: projects@GREnergy.com

Transmission Lines. GRE has the following transmission lines in Minnesota:

GRE Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
2981	468	523	145	436

7.6 Hutchinson Utilities Commission

Background Information. The City of Hutchinson is located 55 miles west of Minneapolis in McLeod County and has a population of approximately 14,000 people. The area is expected to continue to grow over the next decade. The Hutchinson Utilities Commission was established in 1936 by the City of Hutchinson as a municipal public utilities commission under Minn. Stat. §§ 412.321 et seq., and added a municipal natural gas operation in 1960. HUC provides electricity and natural-gas services to commercial and residential customers in Hutchinson. Its largest commercial customers are 3M and Hutchinson Technologies, Inc.

Additional information is available at:

http://www.ci.hutchinson.mn.us/util.htm

Contact Person: Michael Kumm
Hutchinson Utilities Commission
225 Michigan Street SE
Hutchinson, MN 55350
Ph: (320) 587-4746
Fax: (320) 587-4721
e-mail: mkumm@ci.hutchinson.mn.us

Transmission Lines. Hutchinson Utilities Commission owns 8 miles of a 69 kV transmission line and 9 miles of a 115 kV line in McLeod County.

7.7 ITC Midwest LLC

Background Information: ITC Midwest LLC ("ITC Midwest") is an independent transmission company subsidiary of ITC Holdings Corp. ITC Midwest purchased the transmission assets of Interstate Power and Light, a subsidiary of Alliant Energy, in December 2007. The Minnesota Public Utilities Commission approved the sale in an Order dated February 7, 2008. PUC Docket No. PA-07-540.

ITC Midwest has headquarters in Cedar Rapids, Iowa, and ITC Holdings Corp. is headquartered in Novi, Michigan. ITC Midwest also has offices in Dubuque and Des Moines, Iowa, and in St. Paul, Minnesota. Minnesota warehouses are located in Albert Lea and Lakefield, Minnesota. In addition, ITC Midwest's transmission system is part of a larger regional transmission system called the Midwest Independent Transmission System Operator (MISO.)

More information about ITC Midwest and ITC Holdings Corp. can be found at:

http://www.itctransco.com

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Manager, Regulatory Strategy (Minnesota & Illinois)
444 Cedar Street - Suite 1020
St Paul, MN 55101
Ph: 651-222-1000 extension 2308
Fax: 651-222-5544
e-mail: DGrover@itctransco.com

Transmission Lines. The ITC Midwest system includes approximately 6,800 miles of transmission lines, operating at voltages from 34.5 kV to 345 kV in Minnesota, Iowa, Illinois, and Missouri.

ITC Midwest owns approximately 1,029 miles of transmission line in the state of Minnesota, operating at voltages of 345 kV, 161 kV and 69 kV. The total miles of these transmission lines are listed by voltage class in the table below.

ITC Midwest Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
731.68	304.27	0	19.77	0

7.8 L&O Power Cooperative

Background Information. L & O Power Cooperative ("L&O"), headquartered in Rock Rapids, Iowa, is a wholesale electric power supply and transmission cooperative serving three rural distribution electric cooperatives. These member cooperatives in turn serve more than 5,600 homes and businesses across Rock and Pipestone counties in southwest Minnesota, and Lyon and Osceola counties in northwest Iowa. Approximately 2,700 of the total 5,600 total consumers served are located in Minnesota.

Additional information about L&O is available at:

http://www.landopowercoop.com

Contact Person: Curt Dieren
Manager
L&O Power Cooperative
P.O. Box 511
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Ph: (712) 472-2556
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e-mail: CDieren@dgrnet.com

Transmission Lines. L&O delivers wholesale electricity via approximately 193 miles of transmission lines and 16 substations located throughout the system's four county service area in southwestern Minnesota and northwestern Iowa. L&O has the following transmission facilities in Minnesota:

L&O Power Cooperative Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
44.52	8.32	0	0	0

7.9 Marshall Municipal Utilities

Background Information. Marshall Municipal Utilities (MMU) has been providing electric and water utility services to the City of Marshall for over 114 years. Marshall is a community of approximately 13,000 people located in Lyon County in Southwest Minnesota approximately 30 miles east of the South Dakota border and 50 miles north of the Iowa border. MMU is the second largest municipal utility in the state in terms of retail energy sales at over 602,775 MWhs sold in 2008. MMU serves over 6,400 customers and has a peak demand of more than 85 megawatts.

More information about MMU is available at:

http://www.marshallutilities.com/about

Contact Person: Brad Roos
Marshall Municipal Utilities
113 4th Street South
Marshall, MN 56258-1223
Ph: (507) 537-7005
Fax: (507) 537-6836
e-mail: bradr@marshallutilities.com

Transmission Lines. Marshall Municipal Utilities owns 18.1 miles of 115 kV transmission line.

7.10 Minnesota Power

Background Information. Minnesota Power (MP), a division of ALLETE, is an investor-owned utility headquartered in Duluth, Minnesota. Minnesota Power provides electricity in a 26,000-square-mile electric service territory located in northeastern Minnesota. Minnesota Power supplies retail electric service to 144,000 retail customers and wholesale electric service to 16 municipalities. MP's transmission and distribution components include 8,866 miles of lines and 169 substations. Minnesota Power's transmission network is interconnected with the transmission grid to promote reliability and is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO).

More information is available on the company's web page at:

http://www.mnpower.com

Contact Person: Christian Winter
Engineer
Minnesota Power
30 West Superior Street
Duluth, MN 55802
Ph: (218) 355-2908
e-mail: cwinter@mnpower.com

Transmission Lines. The number of miles of transmission in Minnesota owned by Minnesota Power is shown in the following table.

Minnesota Power Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
0.22	1326.72	610.18	8.35	231.56

7.11 Minnkota Power Cooperative

Background Information. Minnkota Power Cooperative, Inc. (Minnkota) is a regional generation and transmission cooperative serving 11 member-owner distribution cooperatives in eastern and northwestern Minnesota and northeastern North Dakota. Minnkota's service area is approximately 34,500 square miles over the two states. Minnkota is also the operating agent for the Northern Municipal Power Agency (NMPA). Together Minnkota and the NMPA comprise the Joint System.

Additional information about Minnkota is available at:

http://www.minnkota.com

Contact Person: Tim Bartel
Systems Engineering Manager
Minnkota Power Cooperative, Inc.
P.O. Box 13200
Grand Forks, ND 58208-3200
Ph: (701) 795-4314
Fax: (701) 795-4333
e-mail: tbartel@minnkota.com

Transmission Lines. The Joint System owns 1,384.93 miles of transmission line in Minnesota and 1670.44 miles in North Dakota. The miles of Minnesota transmission lines are shown in the following table:

Joint System Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
992.37	143.79	248.77	0	0

7.12 Missouri River Energy Services

Background Information. MRES began in the early 1960s as an informal association of northwest Iowa municipalities with their own electric systems that decided to coordinate their efforts in negotiating the purchase of power and energy from the United States Bureau of Reclamation of the United States Department of the Interior ("USBR"). MRES was established as a body corporate and politic organized in 1965 under Chapter 28E of the Iowa Code and existing under the intergovernmental cooperation laws of the states of Iowa, Minnesota, North Dakota, and South Dakota. Municipalities in Minnesota, North Dakota and South Dakota subsequently joined MRES pursuant to compatible enabling legislation in each state.

MRES is comprised of 60 municipally owned electric utilities in the States of Iowa, Minnesota, North Dakota, and South Dakota. The MRES member cities' service territories roughly coincide with the boundaries of the respective incorporated cities. MRES has no retail load, and all of its firm sales are made to municipal or other wholesale utilities. MRES acts as an agent for the Western Minnesota Municipal Power Agency ("WMMPA"), which itself was incorporated as a municipal corporation and political subdivision of the State of Minnesota. WMMPA provides a means for its members to secure, by individual or joint action among themselves or by contract with other public or private entities within or outside the State of Minnesota, an adequate, economical and reliable supply of electric energy. Current membership in WMMPA consists of 24 municipalities, of which 23 are MRES' members located in Minnesota, each of which owns and operates a utility for the local distribution of electricity. In addition, MRES is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO).

More information about Minnesota River Energy can be found at:

http://www.mrenergy.com

Contact Person: Brian Zavesky
Missouri River Energy Services
3724 West Avera Drive
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Sioux Falls, SD 57108-8920
Ph: (605) 330-6986
Fax: (605) 978-9396
e-mail: brianz@mrenergy.com

Transmission Lines. Missouri River Energy Services has 212.22 miles of 115 kV transmission lines and 10.97 miles of 230 kV transmission line in Minnesota.

7.13 Northern States Power Company

Background Information. Northern States Power Company, a Minnesota corporation (NSP), is a public utility organized under the laws of the State of Minnesota, and is a wholly-owned subsidiary of Xcel Energy Inc., a publicly-traded company listed on the New York Stock Exchange. NSP is headquartered in Minneapolis, Minnesota. Xcel Energy Inc.'s other utility subsidiaries are Northern States Power Company, a Wisconsin corporation (NSPW), headquartered in Eau Claire, Wisconsin, Public Service Company of Colorado, headquartered in Denver, Colorado, and Southwestern Public Service Company, headquartered in Amarillo, Texas. NSP provides electricity and natural gas to customers in a service territory that encompasses the Twin Cities, many mid-size and small towns throughout Minnesota, and also to portions of South Dakota and North Dakota. NSP and NSPW operate an integrated generation and transmission system (the NSP System). In addition, Northern States Power Company is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO.)

More information can be found on Xcel Energy's web page at:

http://www.xcelenergy.com

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Manager, Regulatory Administration
414 Nicollet Mall
Minneapolis, MN 55401
Ph: (612) 330-7529
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e-mail: paul.lehman@xcelenergy.com

Transmission Lines. Northern States Power Company owns over 4,500 miles of transmission lines in Minnesota. The miles of Minnesota transmission lines are shown in the following table.

NSP Transmission Lines

<100 kV	**100-199 kV**	**200-299 kV**	**>300 kV**	**DC**
1528.06	1400.96	256.38	1075.64	0.00

7.14 Otter Tail Power Company

Background Information. Otter Tail Power Company is an investor-owned electric utility headquartered in Fergus Falls, Minnesota, and a subsidiary of Otter Tail Corporation (NASDAQ Global Select Market: OTTR). It provides electricity and energy services to more than a quarter million residential, commercial, and industrial customers throughout Minnesota, South Dakota, and North Dakota, with approximately 60,600 customers in Minnesota. The company was originally incorporated in 1907, and first delivered electricity in 1909 from the Dayton Hollow Dam on the Otter Tail River. In addition, Otter Tail Power Company is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO.)

To learn more about Otter Tail Power Company visit www.otpco.com. To learn more about Otter Tail Corporation visit www.ottertail.com.

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Supervisor, Delivery Studies
Otter Tail Power Company
P.O. Box 496
Fergus Falls, MN 56538-0496
Ph: (218) 739-8200
Fax: (218) 739-8442
e-mail: JWeiers@otpco.com

Transmission Lines. OTP has the following transmission lines in Minnesota:

OTP Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
1304.51	544.97	111.53	0	0

7.15 Rochester Public Utilities

Background Information. Rochester Public Utilities (RPU), a division of the City of Rochester, Minnesota, is the largest municipal utility in the state of Minnesota. RPU serves over 45,000 electric customers. In 1978, Rochester joined the Southern Minnesota Municipal Power Agency (SMMPA) with City Council approval. Initially, RPU was a full-requirements member with SMMPA controlling all of Rochester's electric power. Today, RPU is a partial requirements member of SMMPA and retains control over its own generating units. All of RPU's load and generation are serviced by the Midwest Independent System Operator (MISO) through its market function.

More information about Rochester Public Utilities is available at:

http://www.rpu.org/about

Contact Person:
Gerry Steffens
Manager of System Operations/Reliability
Rochester Public Utilities
4000 East River Road NE
Rochester, MN 55906
Ph: (507) 280-1607
Fax: (507) 280-1542
e-mail: gsteffens@rpu.org

Transmission Lines. Rochester Public Utilities owns 40.51 miles of 161 kV transmission line in Minnesota.

7.16 Southern Minnesota Municipal Power Agency

Background Information. Southern Minnesota Municipal Power Agency ("SMMPA") is a not-for-profit municipal corporation and political subdivision of the State of Minnesota, headquartered in Rochester, Minnesota. SMMPA was created in 1977, and has eighteen municipally owned utilities as members, located predominantly in south-central and southeastern Minnesota. SMMPA serves approximately 92,000 retail customers. In addition, SMMPA is part of a larger regional transmission organization called the Midwest Independent Transmission System Operator (MISO.).

More information about SMMPA is available at:

http://www.smmpa.com

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Ph: (507) 292-6451
e-mail: rj.hettwer@smmpa.org

Transmission Lines. Southern Minnesota Municipal Power Agency has the following transmission lines in Minnesota:

SMMPA Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
130.15	130.11	16.84	0	0

7.17 Willmar Municipal Utilities

Background Information. Willmar, a regional center for West Central Minnesota, is located 100 miles west of the Twin Cities. It is the Kandiyohi County Seat with a population of 19,000. Willmar Municipal Utilities maintains an electric system that currently has four substations with 190 miles of distribution lines and 35 miles of transmission lines.

Additional information is available at:

http://wmu.willmar.mn.us

Contact Person: Michael Nitchals, General Manager
P.O. Box 937
700 Litchfield Avenue SW
Willmar, MN 56201
Ph: (320) 235-4422
Fax: (320) 235-3980
e-mail: wmu@wmu.willmar.mn.us

Transmission Lines. Willmar Municipal Utilities owns 21.5 miles of 69 kV transmission line and 13.5 miles of 230 kV transmission line in Minnesota.

8.0 Renewable Energy Standards

8.1 Introduction

Minnesota Statutes § 216B.2425, subd. 7, states that in the Biennial Report the utilities shall address necessary transmission upgrades to support development of renewable energy resources required to meet upcoming Renewable Energy Standard milestones. In its May 30, 2008, Order approving the 2007 Biennial Report and Renewable Energy Standards Report, the Commission said, "Future biennial transmission projects reports shall incorporate and address transmission issues related to meeting the standards and milestones of the new renewable energy standards enacted at Minn. Laws 2007, ch. 3."

In response to the Commission's direction, the utilities are reporting on their best estimates for how much renewable generation will be required in future years and what efforts are underway to ensure that adequate transmission will be available to transmit that energy to the necessary market areas. A Gap Analysis is provided to illustrate the amount of renewable generation that is already available and how much will be required in the future to meet the standard.

8.2 Reporting Utilities

It should be pointed out that the utilities that are required to submit the Biennial Transmission Projects Report are not identical to those that are required to meet the Renewable Energy Standards. The information in this chapter reflects the work of all the utilities that are required to meet RES milestones, regardless of whether they own transmission lines and are required to participate in the Biennial Report. A list of those utilities participating in the Biennial Transmission Projects Report can be found in Chapter 2.0. The utilities participating in this part of the 2011 Biennial Report on renewable energy are the following.

Investor-owned Utilities

Interstate Power and Light Company
Minnesota Power
Northern States Power Company
Otter Tail Power Company

Generation and Transmission Cooperative Electric Associations

Basin Electric Power Cooperative
Dairyland Power Cooperative
East River Electric Power Cooperative
Great River Energy
L&O Power Cooperative
Minnkota Power Cooperative

Municipal Power Agencies

Central Minnesota Municipal Power Agency
Minnesota Municipal Power Agency
Rochester Public Utilities
Southern Minnesota Municipal Power Agency
Western Minnesota Municipal Power Agency/Missouri River Energy Services

Power District

Heartland Consumers Power District

8.3 Compliance Summary

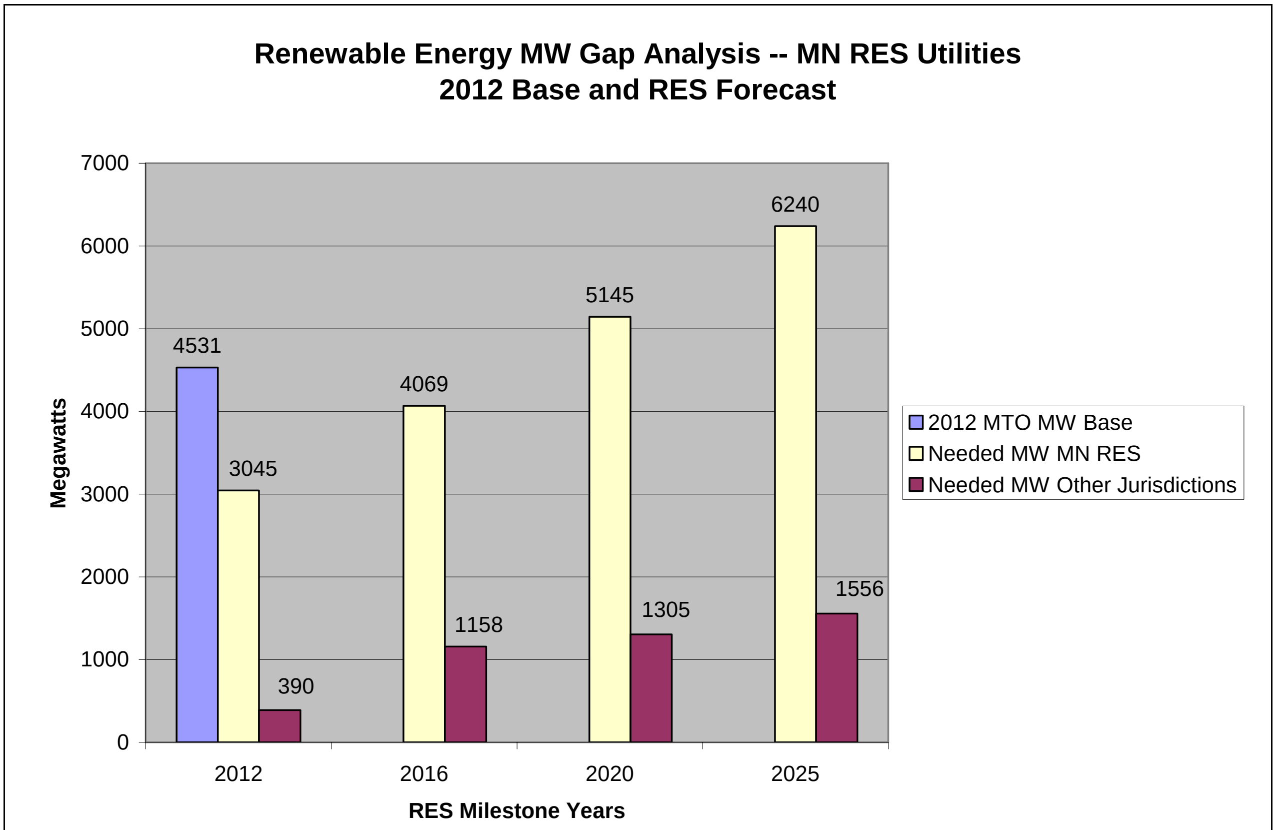
The utilities have made substantial progress with respect to meeting future RES milestones. The present analysis shows that the utilities are on course to meet the RES milestones for 2012 and 2016. The analysis continues to show that the CapX2020 Group 1 projects are crucial to meeting the 2016 Minnesota RES and non-Minnesota RES milestones. The utilities recognize that additional transmission and generation will be necessary for 2020 and beyond in Minnesota, and that other demands for renewable energy will impact Minnesota's compliance status.

8.4 Gap Analysis

A Gap Analysis is an estimate of how many more megawatts of renewable generating capacity a utility expects to need beyond what is presently available to obtain the required amount of renewable energy that must come from renewable sources at a particular time in the future. The Gap Analysis presented here, and those presented in the 2007 and 2009 Biennial Reports, is not an exercise intended to verify the validity of forecasted energy sales and associated capacity needs. It is done for transmission planning purposes only.

8.4.1 2012 Base Capacity and RES/REO Forecast

The chart below presents a system-wide overview of existing capacity in 2012 (used as a base figure throughout the various milestone periods) and forecasted renewable capacity requirements to meet Minnesota RES as well as non-Minnesota RES/REO needs. Each utility provided its own forecast of Minnesota RES and non-Minnesota RES/REO renewable energy needs, and converted such estimates into capacity based on their own mix of renewable resources (wind, biomass, hydropower) using the most appropriate capacity factors unique to their specific generating resources. Table 1 on the following page shows a more specific breakdown of each utility's Minnesota RES and non-Minnesota RES/REO capacity forecast.



<u>2012 MTO MW Base:</u> RES capacity acquired, actually installed and operational ("in the ground and running") regardless of geographic location. Does not include projects under contract but not yet under construction, and it does not include projects under construction but not yet completed.

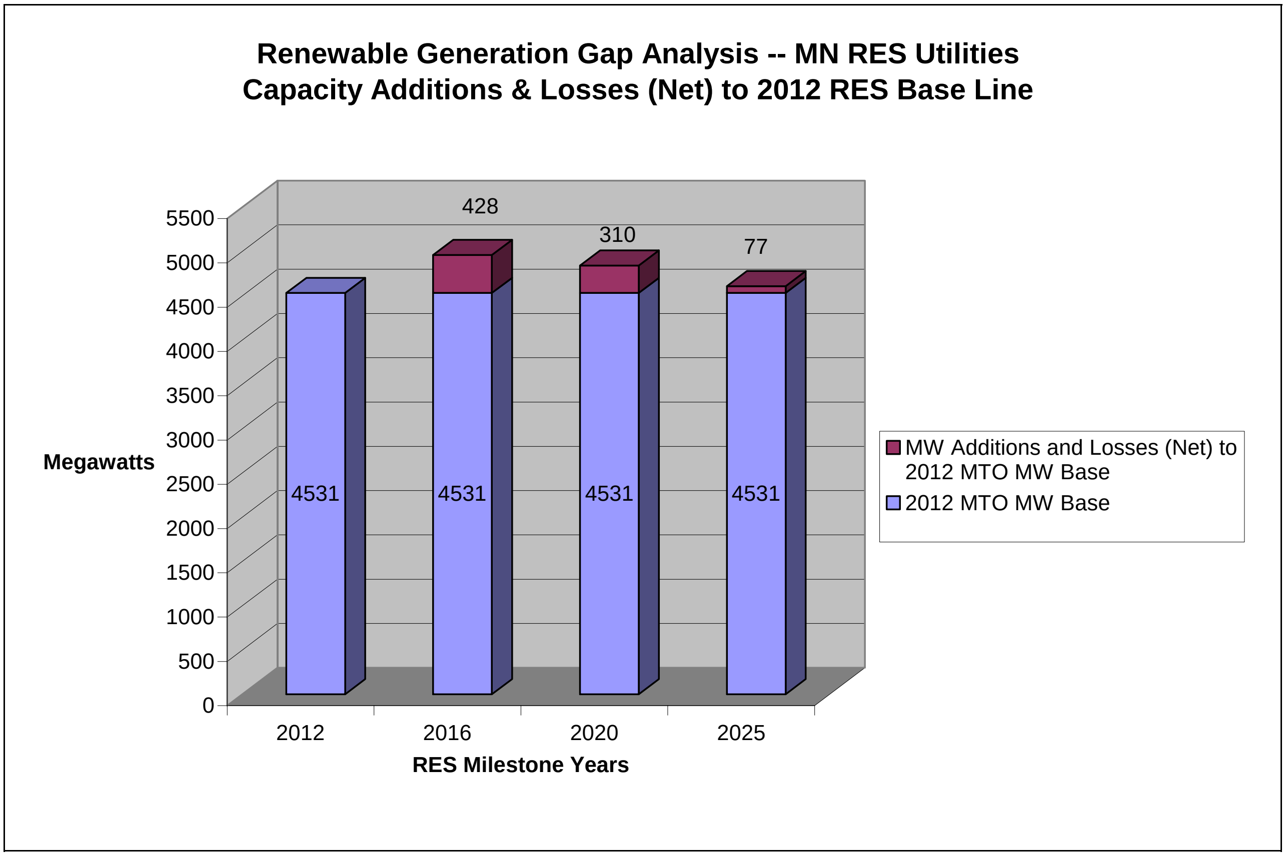
<u>Needed MW MN RES:</u> Renewable capacity required to meet the RES energy goals for each utility serving customers in Minnesota.

<u>Needed MW Other Jurisdictions:</u> Gross non-MN renewable capacity required to meet RES requirements or REO goals in states served by the reporting utility other than Minnesota.

Table 1. MN & Non-MN RES Forecast (MW)*								
Utility	**2012**		**2016**		**2020**		**2025**	
	MN RES	**Non -MN RES**	**MN RES**	**Non-MN RES**	**MN RES**	**Non-MN RES**	**MN RES**	**Non-MN RES**
Basin Electric**	39.8	14.2	65.4	361.1	88.7	430.5	130.1	534.5
CMMPA	13.8	0	21	0	28.9	0	39	0
Dairyland	19.3	109.8	32.7	167.3	41.8	194.4	50.3	260
GRE	346	0.4	486	1.5	589	1.5	800	1.5
Heartland	16.5	0	14.1	6.5	4.7	6.8	6.2	7.2
IPL	34	50	51	50	63	50	82	50
Minnkota	59	0	90	67	114	72	164	82
MN Power	368	10	537	19	646	20	832	21
MRES	44	22	79	42	110	45	141	47
SMMPA	117	0	180.5	0	229	0	308	0
Otter Tail	72	0	120.7	67.8	158.1	71.3	196.6	75.8
RPU	1.9	0	4.2	0	6.8	0	12.2	0
Xcel Energy	1,914	183.6	2,387	375.5	3,065	413.6	3,479	477.1
Total	3,045.3	390	4,068.6	1,157.7	5,145	1,305.1	6,240.4	1,556.1
* Capacity factor assumptions established by each utility **Basin Electric response includes East River Electric and L&O								

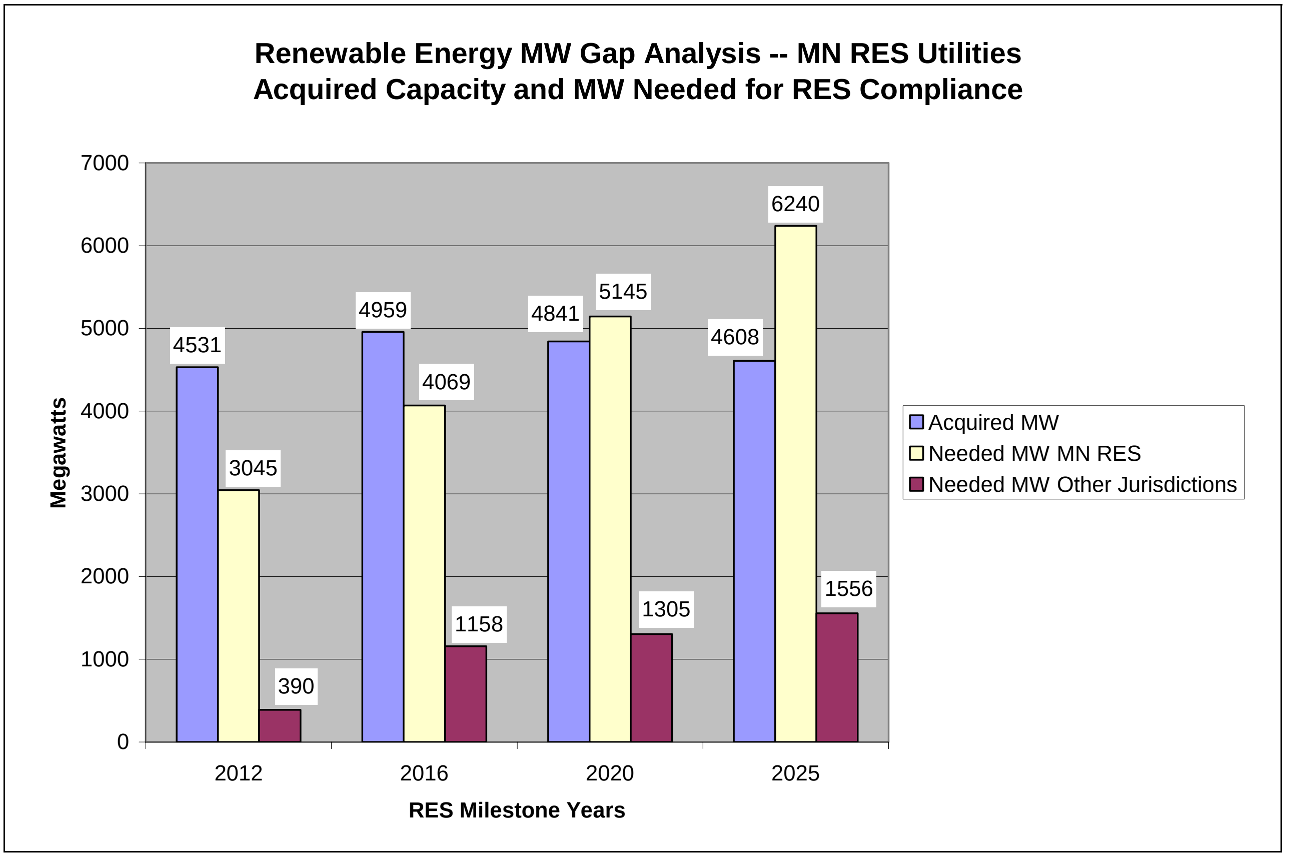
8.4.2 Capacity Acquisitions & Expirations

This chart presents a system-wide overview of additional renewable capacity that will be acquired by individual utilities beginning as early as 2012 and capacity that will expire between 2016 and 2025. Such losses are attributable primarily to the expiration of various power purchase agreements for renewable energy generation.



8.4.3 RES Capacity Acquired and Net RES/REO Need

This chart represents the total renewable capacity system-wide that will be acquired and lost between 2012 and 2025, as well as the total Minnesota RES and non-Minnesota RES/REO needs between 2012 and 2025.



As can be seen, the Minnesota RES utilities have sufficient capacity acquired to meet the Minnesota RES needs through 2016. When considering the RES needs, including other jurisdictions outside of Minnesota, the Minnesota RES utilities have almost enough capacity to meet RES needs through 2016. In addition, some utilities with less than sufficient capacity to meet the Minnesota RES need may use renewable energy credits to fulfill their requirement. Focusing back on just Minnesota RES needs, Table 2 on the following page provides a more specific breakdown of each utility's forecast.

Table 2. RES Capacity Acquired & Net MN RES Capacity Need (MW)*								
Utility	**2012**		**2016**		**2020**		**2025**	
	RES Cap Acq.	**MN RES Net**	**RES Cap Acq.**	**MN RES Net**	**RES Cap Acq.**	**MN RES Net**	**RES Cap Acq.**	**MN RES Net**
Basin Electric**	589.9	0	738.3	0	738.3	0	731	0
CMMPA	33.1	0	27.1	0	27.1	0	20.8	0
Dairyland	129.1	-110	200.1	-167	236.3	-194	310.3	-260
GRE	511	0	507	0	489	99	486	314
Heartland	36	0	36	0	36	0	36	0
IPL	26	13	26	24	24	36	22	56
Minnkota	359	-300	359	-269	359	-245	359	-195
MN Power	454	-85	636	-98	636	10	636	196
MRES	85.3	-41.3	121.4	-42.4	121.4	-11.4	121.4	19.6
SMMPA	125.6	0	125.6	0	125.6	100	125.6	200
Otter Tail	196.6	0	196.6	0	196.6	0	196.6	0
RPU	12.5	0	12.5	0	12.5	0	12.5	0
Xcel Energy	1,973	-59	1,973	414	1,839	1,226	1,551	1,927
Total***	4,531	-582.3	4,958.6	-138.4	4,840.8	1,020.4	4,608.2	2,257

*Capacity factor assumptions established by each utility
**Basin Electric response includes East River Electric and L&O
***Some utilities with less than sufficient capacity to meet the MN RES need may use renewable energy credits to fulfill their requirement

Note that the "Needed MW MN RES" bar in the bar chart in this section represents the total level of RES need in Minnesota. Conversely, the column in Table 2 that is labeled "MN RES Net" represents the additional RES capacity that is presently identified to meet RES need (a negative value means the utility has a surplus of RES capacity). The shortfall, or "gap", between MN RES need and the additional RES capacity identified points to the need for some utilities to seek additional renewable capacity and when they need to do so. Alternatively, some utilities may use renewable energy credits to fulfill their RES requirements.

8.5 Corridor Upgrade Project

In its May 28, 2010, Order, the Public Utilities Commission directed the MTO to discuss system considerations affecting the timing of the Corridor Upgrade Project. The Corridor Upgrade Project is an upgrade of the 230 kV line between the Hazel Creek Substation near Granite Falls, Minnesota, and the Blue Lake Substation in Shakopee, Minnesota to a double circuit 345 kV system.

This upgrade would provide significant new transmission capacity from the Dakotas, southwestern Minnesota and western Minnesota to the Twin Cities, at a cost estimated in 2009 to be approximately $350 million. Previously the project was expected to be needed in the 2016-

2018 timeframe based on constructability and ability to take transmission system outages as the generation delivery from SW Minnesota increased, and was expected to be the next transmission project pursued after the CapX2020 Group 1 lines.

However, the planned transmission system has changed in the last two years with the addition of the MISO MVP Group 1 portfolio of projects, expected to be approved by the MISO Board of Directors in December of 2011, as well as a shift in generation locations in the MISO queue. Based on these changes, the Corridor Upgrade study, originally completed in March 2009, was updated in the summer of 2011 to determine if the regional system changes had affected the need and/or timing of the project.

Based on the results of this re-study, it has been determined that the need for the Corridor Upgrade project has likely moved out past the 2016-2018 timeframe previously assumed. The change in timing is due mostly to the new parallel path transmission lines through Iowa as part of the MVP Group 1 portfolio which alleviates the need to construct the Corridor Upgrade before the Brookings 345 kV line is loaded. In 2012, the amount of generation installed in the Dakotas, southwestern Minnesota and western Minnesota is expected to be approximately 3,500 MW. The re-study results show that the transmission system can handle close to an additional 3,500 MW of generation in the Dakotas, southwestern Minnesota and western Minnesota before an upgrade to the 230 kV line to 345 kV is needed for that purpose. The re-study results additionally point out that if the Corridor Upgrade project is not completed, there are some transmission limitations which will need to be addressed individually or as part of another project as load and generation in the region grow. However, the cost for these upgrades is considerably less than the estimated cost for the Corridor Upgrade and on their own do not justify the rebuild. If the need for the Corridor Upgrade is triggered, similar to previous studies, the utilities anticipate there would be some curtailment risk during the time of construction of the project.

8.6 FERC Order 1000

In section 8.9.1 of the 2009 Biennial Report, the MTO identified that a key issue with regard to transmission development was the allocation of the costs of transmission. On July 21, 2011, the Federal Energy Regulatory Commission issued its Order 1000, entitled *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities.* The Order was issued in FERC Docket No. RM-10-23-000 and can be found in the August 11, 2011, Federal Register. 76 Fed. Reg. 49842. The Order became effective on October 11, 2011.

FERC Order 1000 requires that each public utility transmission provider must do the following:

- Participate in a regional transmission planning process that produces a regional transmission plan

- Amend its OATT to describe the procedures for consideration of transmission needs driven by public policy requirements in local and regional transmission planning processes

- Remove from Commission-approved tariffs and agreements a federal right of first refusal ("ROFR") to construct new transmission facilities, subject to certain limits

- Amend its OATT to improve coordination between neighboring transmission planning regions for new interregional transmission facilities

- Participate in a regional transmission planning process that has a regional cost allocation method or methods for the costs of new transmission facilities selected in a regional transmission plan for purposes of cost allocation

- Participate in a regional transmission planning process that has an interregional cost allocation method for the costs of certain new transmission facilities that are located in two or more neighboring transmission planning regions and are jointly evaluated by the regions in their interregional coordination procedures

The Order establishes deadlines for transmission providers to respond, as follows:

- Each public utility transmission provider must submit a compliance filing **within 12 months** of the effective date of the Final Rule to address the regional planning and cost allocation requirements (including elimination of ROFR). October 11, 2012

- Each public utility transmission provider must submit a compliance filing **within 18 months** of the effective date of the Final Rule to address the interregional planning and cost allocation requirements. April 11, 2013

The majority of MTO utilities do not expect that FERC Order 1000 will impact them given that they are not public utility transmission providers.