

2.0 Overview of Transmission Planning

2.1 Biennial Report Requirements

2.1.1 The Statute

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 Minnesota Legislature enacted Minnesota Statutes § 216B.2425 in 2001 as part of the Energy Security and Reliability Act. The law became effective on August 1, 2001.

The major purposes of the transmission planning requirement are to inform the public of transmission issues in the region and to enable regulators and the public to track development of solutions to these transmission issues. Another purpose of the statute is to expedite approval of projects that do not raise significant issues.

Minnesota Statutes § 216B.2425, subd. 1, provides that the transmission projects report must contain the following information:

- (1) specific present and reasonably foreseeable future inadequacies in the transmission system in Minnesota;
- (2) alternatives for addressing each alternative;
- (3) general economic, environmental, and social issues associated with each alternative; and
- (4) a summary of public input the utilities have gathered related to the list of inadequacies and the role of local government officials and other interested persons in assisting to develop the list and analyze alternatives.

2.1.2 The PUC Rules

In June 2003 the Minnesota Public Utilities Commission adopted rules that govern the content of the transmission projects report and established procedures for reviewing the report. Those rules are codified in Minnesota Rules chapter 7848.

Minn. Rules part 7848.1300 sets forth a list of categories of information that must be included in a transmission projects report.

Each biennial transmission projects report, whether or not it seeks certification of a high-voltage transmission line, must contain at least the following information:

- A. contact person for each utility.
- B. copy of most recent regional load and capability report of MAPP or other regional reliability council.

- C. copy of most recent regional transmission plan produced by the appropriate regional transmission organization.
- D. list of inadequacies currently affecting reliability and list of reasonably foreseeable future inadequacies over next ten years.
- E. list of all alternative means of addressing each inadequacy, including nontransmission alternatives.
- F. list of studies that have been completed, are in progress, or are planned that are relevant to each of the inadequacies identified.
- G. general description of the economic, environmental, and social issues raised by each alternative.
- H. an account of the measures taken to gather public input and to involve local government officials, tribal government officials, and other interested persons.
- I. report on the number of members of the public who provided input.
- J. report on the number of local and tribal government officials who provided input.
- K. list and description of every transmission project the utility considers necessary now or in the next ten years to remedy any transmission inadequacies identified in the report.
- L. a list and description of every nontransmission project the utility considers necessary now or in the next ten years to remedy any transmission inadequacies identified in the report.
- M. statement as to whether the utility seeks certification of any transmission project or the time frame within which it plans to file a certificate of need application.
- N. approximate time frame for filing a certificate of need application for any nontransmission project identified as necessary.

2.1.3 The PUC Order

The Minnesota Transmission Owners submitted the 2005 Report on November 1, 2005. The Public Utilities Commission afforded interested persons an opportunity to submit comments regarding the completeness of the Report. After considering all comments that were filed, the Commission issued its Order Accepting Biennial Transmission Projects Report and Requiring Further Action on May 31, 2006. PUC Docket No. E-999/TL-05-1739.

As part of its May 31 Order accepting the Report, in Ordering paragraph 2, the Commission directed the Minnesota Transmission Owners to ensure that the 2007 Biennial Report provided information regarding transmission upgrades necessary for the relevant individual utilities to

meet their good faith efforts under the Renewable Energy Objective. In the 2007 legislative session, the Minnesota Legislature passed a law establishing new Renewable Energy Standards. Minn. Laws 2007, chapter 3, sec. 1, codified as Minn. Stat. § 216B.1691, subd. 2a.

The PUC also directed the MTO to prepare a study of Community Based Energy Development in the West Central Zone.

All of those matters are reported on in this document – Part I is the Biennial Report and Part II relates to the Renewable Energy Standards.

2.2 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 April 25, 2007, the Minnesota Transmission Owners advised the Commission that there would be no certification requests included with the 2007 Biennial Report.

As part of the 2005 Biennial Report, certification requests for two 115 kilovolt transmission lines in the Northeast Zone were included. One certification request was for a line in the Tower – Ely – Babbitt area – the Tower Project (Tracking No. 2003-NE-N1) – and the other was for a line between Pequot Lakes and Badoura and Long Lake – the Badoura Project (Tracking No. 2003-NE-N3 and 2005-NE-N1). The PUC certified both lines on May 25, 2006, when it issued its Order Certifying For Need and Designating as Priority Electric Transmission Projects in PUC Docket No. E-015/TL-05-867.

2.3 Past Biennial Reports

The 2007 Biennial Report is the fourth such report filed by the Minnesota Transmission Owners. The first one was filed on November 1, 2001 in PUC Docket No. E-999/TL-01-961. The 2003 report is PUC Docket No. E-999/TL-03-1752. The 2005 Report is PUC Docket No. E-999/TL-05-1739. The 2007 Report is PUC Docket No. E-999/M-07-1028. The reports and other documents relating to the Commission's consideration of the reports can be found on the PUC's efilings webpage using the above docket numbers.

<https://www.edockets.state.mn.us/EFiling/search.jsp>

All three past reports and this report are also available on the webpage maintained by the utilities at:

<http://www.minnelectrans.com/>

2.4 Minnesota Transmission Owners

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 are filing this report owns and operates a transmission line that meets the PUC definition. Specifics about the transmission lines owned by each individual entity are contained in Section 8 of this Report.

The statute allows the entities owning and operating transmission lines to file this report jointly. The Minnesota Transmission Owners 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
- Interstate Power and Light Company d/b/a Alliant Energy
- 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

The name and address of a contact person for each of the utilities is provided at the end of this document.

2.5 Renewable Energy Standards

In addition to the specific instruction from the PUC in its May, 2006 Order approving the 2005 Biennial Report to address transmission upgrades required to ensure compliance with Minnesota’s Renewable Energy Standards in the 2007 Report, there are other statutory provisions directing utilities to plan for new transmission infrastructure necessary for transmitting energy from renewable energy facilities.

Minnesota Statutes § 216B.2425 – the statute requiring this report – provides in subdivision 7 that each entity subject to this statute must determine necessary transmission upgrades to support development of renewable energy resources required to meet the Renewable Energy Objectives.

The 2007 Renewable Energy Act – Minnesota Laws 2007, chapter 3 – established new renewable energy standards and milestones requiring utilities to obtain a certain percentage of their retail electric sales from renewable energy sources. That new law also requires utilities to submit a report to the PUC by November 1, 2007, describing activities the utilities have undertaken to ensure adequate transmission to meet the Renewable Energy Standard milestones that the Legislature just adopted. Minn. Laws 2007, chapter. 3, section 2. That provision reads in part:

Minnesota electric utilities, as defined by Minnesota Statutes, section 216B.1691, subdivision 1, paragraph (b), must study and develop plans for the transmission network enhancements necessary to support the renewable energy standards and milestones established in Minnesota Statutes, section 216B.1691, subdivision 2a. The study process must be designed to identify and optimize delivery of that renewable energy to Minnesota retail customers while maintaining system reliability.

In Section 8 of this Report, the utilities that are subject to the RES have provided information regarding their status with regard to compliance with the Renewable Energy Standards. In addition, the report required under the RES statute set forth above is included in this document as Part II. There is some overlap between Part I – the Biennial Report – and Part II – the RES Report – and both reports must be considered to provide a complete picture of the utilities' efforts to plan for new transmission upgrades to meet the Renewable Energy Standards.

Not every utility that owns and operates transmission in Minnesota and is therefore required to participate in this Biennial Report is subject to the Renewable Energy Standards. American Transmission Company, Hutchinson Utilities Commission, Marshall Municipal Utilities, Rochester Public Utilities, and Willmar Municipal Utilities – who all own and operate transmission in the state – do not fall within the definition of “electric utility” in section 216B.1691 and are not subject to the Renewable Energy Standards. The PUC on at least two occasions has identified those utilities that are subject to the RES, and these five utilities do not fall within the definition. *See* Initial Order Detailing Criteria and Standards for Determining Compliance with Minn. Stat. § 216B.1691 and Requiring Customer Notification by Certain Cooperative, Municipal, and Investor-Owned Distribution Utilities (June 1, 2004), PUC Docket No. E-999/CI-03-869 and Order Directing Participation In and Implementation of a Wind Integration Study (July 22, 2005) PUC Docket No. E-999/CI-05-973.

2.6 Distributed Generation

Minnesota Statutes § 216B.2426 provides:

The Commission shall ensure that opportunities for the installation of distributed generation, as that term is defined in section 216B.169, subdivision 1, paragraph (c), are considered in any proceeding under section 216B.2422, 216B.2425, or 216B.243.

Section 216B.169, subd. 1(c) defines “High-efficiency, low-emissions, distributed generation” to mean “a distributed generation facility of no more than ten megawatts of interconnected capacity that is certified by the commissioner under subdivision 3 as a high-efficiency, low-emissions facility.”

In 2005 some interested parties raised the concern that the 2005 Biennial Report did not adequately consider the possibility of distributed generation as a solution to certain needs that had been identified. In response the utilities undertook two steps: (1) they prepared a *White Paper on Distributed Generation*, and (2) they conducted a *Community Based Energy Development Transmission Study for the West Central Transmission Planning Zone*. These efforts are described below.

2.6.1 White Paper on Distributed Generation

The *White Paper on Distributed Generation* was completed in February 2006 and submitted to the Public Utilities Commission. The White Paper is available on the PUC eFiling webpage under the 05-1739 Docket Number at:

<https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=2757788>

The utilities defined the term “distributed generation” for purposes of the White Paper as “small generating facilities that can be operated to provide electric power to consumers without the need for high voltage transmission lines.” This is essentially the same definition that was given in the 2005 Biennial Report at section 4.2, page 22.

As part of the White Paper the utilities examined all of the needs listed in the 2005 Biennial Report by Tracking Number and identified those where it was appropriate to consider a distributed generation alternative in addition to transmission options. The utilities discuss a distributed generation option in the body of the 2007 Report for those needs where such an option may be possible. Where distributed generation is not viable, that fact is mentioned in the discussion also.

2.6.2 Community Based Energy Development

Community Based Energy Development, often referred to as CBED, includes generation facilities that not only satisfy the distributed generation definition generally but also have certain ownership aspects promoting local ownership of the facilities and are supported by local officials. See Minn. Stat. § 216B.1691, subd. 2. It is the policy of the state of Minnesota to promote CBED projects. Minn. Stat. § 216B.1612.

In the fall of 2005 a number of the utilities participating in the Biennial Report who are also part of the CapX 2020 projects committed to undertake an initial study to determine what transmission upgrades might be necessary to implement CBED projects in Minnesota. The CapX 2020 utilities, with the concurrence of the Department of Commerce and other interested parties, determined that the West Central Transmission Planning Zone would be the appropriate area to focus on. The West Central CBED study was completed in January 2007. A copy of the study is available on the Internet at:

<http://capx2020.com/Images/CBED%20Final%20Report-20070118.pdf>

The West Central CBED study was a high level study that looked at the types and amounts of impacts to the high voltage transmission system that might be encountered with the addition of dispersed generation in the West Central Planning Zone while reducing peak generation in Minnesota and surrounding states. The study showed that installation of dispersed generation facilities could indeed impact existing facilities – some facilities could be overloaded while in certain situations local reliability could be improved. Importantly, the study did not actually determine what effect a specific CBED generator would have on the transmission system, and an interconnection study would be required to determine what transmission upgrades might be required in each specific instance.

A valuable tool developed during the study is a map of the West Central Zone showing the transmission system, the wind resource levels, and the location and size of substation load on substations in the zone.

2.6.3 Dispersed Renewable Generation

In 2007 the Minnesota Legislature passed a law requiring those utilities subject to the Renewable Energy Standards to participate collaboratively with the Department of Commerce in a two-phase statewide study of dispersed generation projects that can be developed in Minnesota. Minn. Laws 2007, chapter 136, article 4, sec. 17. The first phase of the study involves an analysis of the impacts of the addition of 600 MW of dispersed generation projects distributed throughout all the transmission planning zones in the state other than the Twin Cities Zone. The Department of Commerce has been directed to submit a report to the Legislature of the findings and recommendations of the first phase of the study by June 15, 2008.

The second phase of the study involves the analysis of at least another 600 MW of dispersed generation projects across the same five transmission planning zones. The Department of Commerce must report the results of the second phase by September 15, 2008.

Because of this legislatively mandated study being coordinated by the Department of Commerce, the utilities do not have any independent dispersed generation studies underway. The utilities have participated in the study efforts to date and will continue to work with the Department and others in completing both phases of the study in a timely manner.

2.7 Transmission Planning

In the 2005 Biennial Report the MTO included a separate section on transmission planning. That discussion will not be repeated here, and the reader is referred to Section 4 of the 2005 Report for an additional explanation of transmission planning. In addition, the reader is referred to Section 3 of the RES Report (Part II of this document) for further explanation of transmission planning.

The overall goal of transmission planning, of course, is to ensure the reliable operation of the transmission system to meet the demand for power by a utility's customers at the lowest reasonable cost. Planning can involve a number of objectives, including local load serving issues, interconnection requests for new generation facilities, system upgrades, elimination of constraints, and compliance with applicable goals like the Renewable Energy Standards.

Planners use sophisticated computer models that simulate the operation and performance of the transmission grid under various scenarios. Typically, the planners attempt to determine how the system will perform under peak load and high transfer situations, although normal operating conditions and off-peak conditions are also examined. The planners also look at how the system will operate under contingency situations, such as when a transmission line or generation facility is taken out of service by a storm effort or other unexpected occurrence or during planned maintenance outages. In addition to the modeling results, the utilities also have to take into account such factors as costs, environmental impacts, social impacts, and national standards.

The utilities work together and with the Midwest Independent Transmission System Operator (MISO or Midwest ISO) and the Mid-Continent Area Power Pool (MAPP) to conduct their transmission planning. Much of this planning is conducted in an open forum, with attendance by staff of the PUC and the Department of Commerce and by other interested persons and organizations.

One recent development regarding transmission planning that has occurred since the 2005 Biennial Report was prepared is the issuance of Order No. 890 by the Federal Energy Regulatory Commission (FERC), which requires FERC-jurisdictional transmission providers such as the MISO and MAPP and/or transmission owners -- including several MTO members -- to file transmission planning procedures as part of their Open Access Transmission Tariff (OATT) on file with FERC. *See* 72 Federal Register at 12266 (March 15, 2007). Order No. 890 sets forth nine transmission planning principles with which local and regional transmission planning processes must comply. (The nine principles are: coordination, openness, transparency, information exchange, comparability, dispute resolution mechanism, regional participation, cost allocation, means for economic planning studies, and a cost allocation process.)

A transmission provider either must propose a newly developed planning process that complies with the nine principles or show that a current transmission planning process is consistent with or superior to what is required in Order No. 890. MISO and MAPP each posted a transmission planning "strawman" for review in May 2007, discussing how the MISO and MAPP regional planning processes comply with the nine principles. Several MTO members also posted planning strawmen to describe, among other things, how the Minnesota biennial transmission

planning process coordinates with the MISO Transmission Expansion Plan (MTEP) and MAPP subregional planning group (SPG) processes to comply with the nine FERC planning principles.

FERC requirements will continue to guide regional and state planning activities.

2.8 Inadequacies in the Transmission System

Minnesota Statutes § 216B.2425 – the statute requiring the filing of this biennial report – requires the utilities to identify “present and reasonably foreseeable future inadequacies in the transmission system in Minnesota.” Neither the statute nor the PUC rules define the term “inadequacy.”

As with the 2005 Report, the utilities interpret “inadequacy” to be a situation where the existing transmission system is presently unable or is likely in the foreseeable future to be unable to perform in a consistently reliable fashion and in compliance with regulatory standards. This means that certain developments, such as potential load growth, a generation interconnection request, or a possible contingency event, require additional electrical infrastructure to maintain or provide reliable service. To clarify, that while this report is a transmission planning report, an “inadequacy” could perhaps be addressed by something other than an upgrade or new transmission. The utilities attempt in the discussion below of the specific inadequacies to identify those situations where a dispersed generation facility or other nontransmission alternative is possible and should be considered.