

7.6 Southwest Zone

The following table provides a list of transmission needs identified in the Southwest Zone and the map following the table shows the location of each item in the table. Each need is discussed in the sections following the map.

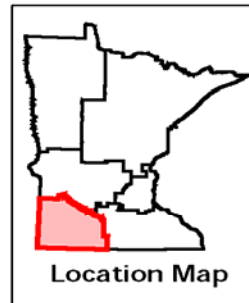
Southwest Zone

Tracking Number	Description	Projected In-Service Year	Need Driver	Section No.
2003-SW-N1	Jackson Area	2008	Jackson low voltage	7.6.2
2003-SW-N2	St. James Area	2009	St. James low voltage	7.6.3
2003-SW-N3	Marshall Area	2010	Marshall low voltage	7.6.4
2005-SW-N1	Worthington Area	2007	Reliability; Line overloads	7.6.5
2005-SW-N2	BRIGO 115 kV additions		Wind outlet	7.6.6
2005-CX-1	CapX 2020 Vision Plan Buffalo Ridge – Metro 345 kV			7.6.7
2007-SW-N1	Storden Wind Generation Interconnection	2010	130 MW IPP wind interconnection	7.6.8
2007-SW-N2	Dotson Area Load Serving	2010	Load growth and new ethanol plants	7.6.9
2007-SW-N3	New Ulm Transmission Service	2010	Request firm network transmission service	7.6.10

Map ID	Tracking Number	Description
A	2003-SW-N1	Jackson Area
B	2003-SW-N2	St. James Area
C	2003-SW-N3	Marshall Area
D	2005-SW-N1	Worthington Area
E	2005-SW-N2	BRIGO 115 kV additions (Encompasses entire area: Not Shown)
F	2005-CX-1	CapX 2020 Vision Plan Buffalo Ridge – Metro 345 kV
G	2007-SW-N1	Storden Wind Generation Interconnection
H	2007-SW-N2	Dotson Area Load Serving
I	2007-SW-N3	New Ulm Transmission Service

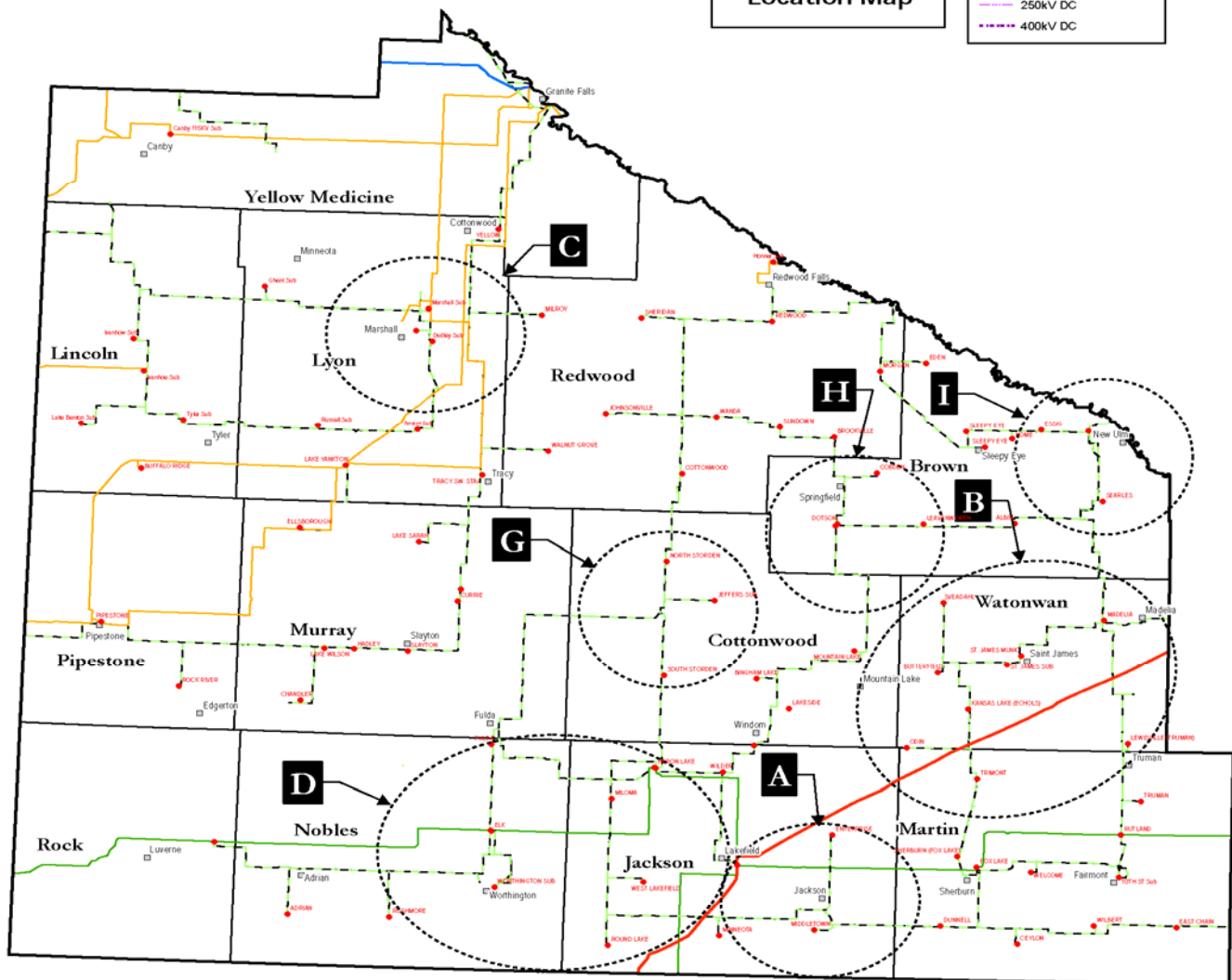
Minnesota Transmission >69kV Southwest Planning Zone

0 2.5 5 10 15 20 Miles



Legend

- Transmission Substation
- Cities
- Project Location
- 69kV AC
- 115kV AC
- 138kV AC
- 161kV AC
- 230kV AC
- 345kV AC
- 500kV AC
- 250kV DC
- 400kV DC



7.6.1 Completed Projects

Some inadequacies in the Southwest Zone that were identified in the 2005 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, and those matters will be removed from the list of inadequacies that are discussed in the 2007 Report. More detailed information about these projects and inadequacies can be found in the 2005 Report and in the PUC Docket for the matter if the project fell within the jurisdiction of the Public Utilities Commission, in which case the Docket Number is shown below. Also, additional information is available by contacting the designated person for the utility that was responsible for constructing the project.

Tracking Number	Utility	Description	PUC Docket	Date Completed
2003-SW-N4	Xcel Energy	Four new transmission lines in the Buffalo Ridge area	CN-01-1958 Lines permitted by Environmental Quality Board	2008 Three 115kV lines complete, 345kV line to be energized in mid-2008.

7.6.2 Jackson Area

Tracking Number. 2003-SW-N1

Utility. Great River Energy

Inadequacy. This area is served by a 69 kV transmission system with sources at Fox Lake and Heron Lake. Some of these transmission lines have very low thermal ratings, resulting in low voltage conditions even with the system intact. During contingency situations, thermal overloads would occur and the voltages would fall off even more.

Alternatives. A number of alternatives were identified several years ago involving tapping into either the existing 161 kV line between Fox Lake and Lakefield Junction (owned by Alliant Energy) or a new 161 kV line between the same two substations (owned by Xcel Energy).

Analysis. Because the new Xcel Energy line runs through the City of Jackson, the most logical solution is to tap into the new 161 kV line. This new line went into service in November 2006.

Schedule. The City of Jackson load is presently scheduled to be converted to a 161 kV tap in the summer of 2008.

7.6.3 St. James Area

Tracking Number. 2003-SW-N2

Utility. Great River Energy

Inadequacy. The St. James area is characterized by a relatively large municipal load located a long distance (electrically) from the 69 kV lines that serve the area. There are two concerns: (1) low voltages, even with the system intact, and (2) line overloads, which are exacerbated in contingency situations.

A map of the area is shown on the following page.

Alternatives. Eleven alternatives were presented in the 2005 Report. Most involved construction of a new 115 kV line into the area. Distributed generation was also one of the alternatives. It now appears that a broader solution must be identified, one that not only addresses the St. James' voltage concerns but also takes into account other developments in the area, including new ethanol plants and wind projects. A possible solution for the St. James area and the additional needs in the Dotson, Storden, and New Ulm areas is a new Heron Lake – Storden – Dotson – New Ulm 161 kV line and associated substation upgrades. See Tracking Numbers 2007-SW-N1 and 2007-SW-N2 and 2007-SW-N3.

Analysis. In 2005 and 2006 GRE implemented certain operational changes that made St. James less susceptible to low voltage under certain contingencies. While there is still a need to determine a long-term solution for St. James, identifying an appropriate solution will require additional study that takes into account these other possible developments in the area.

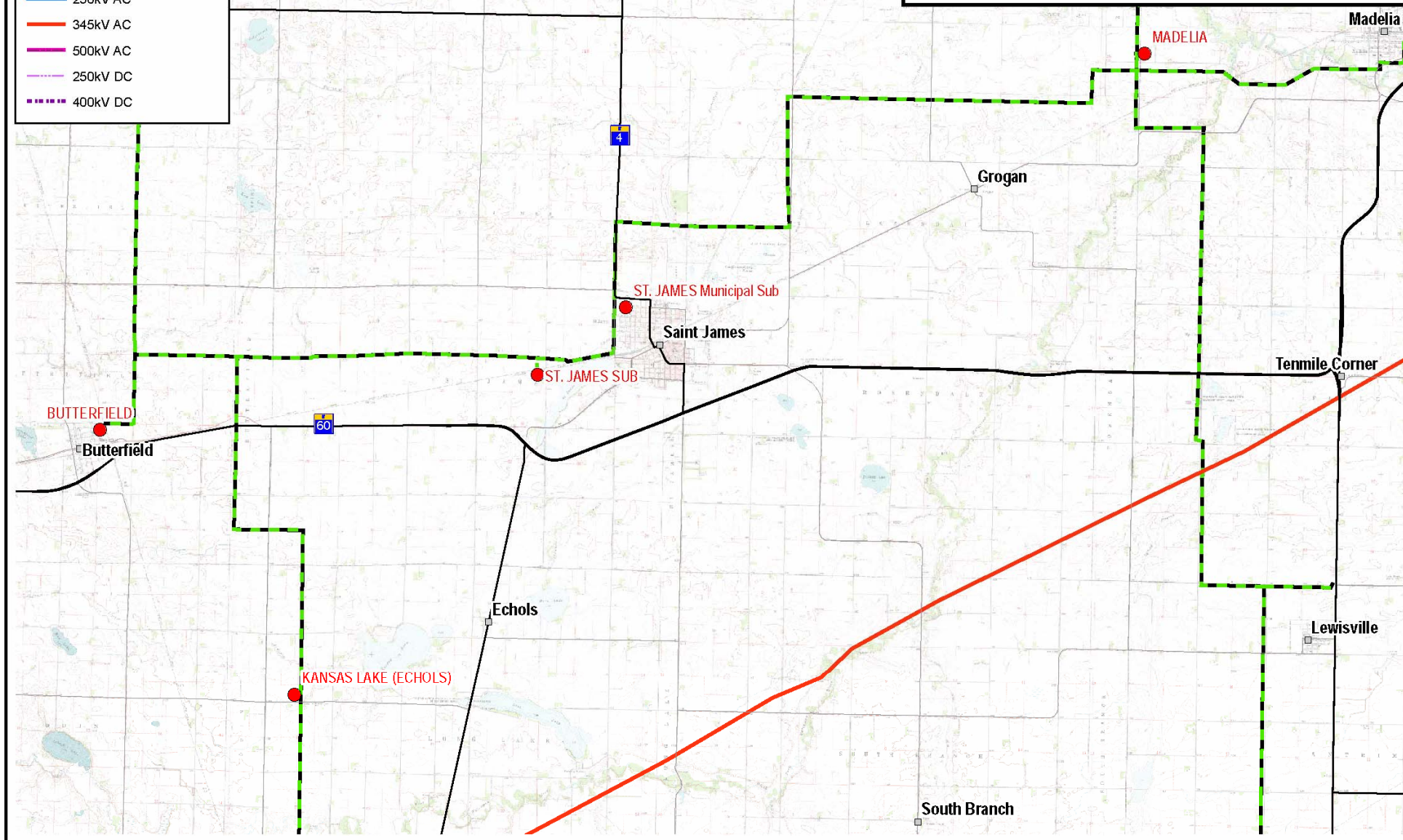
Schedule. Additional study is expected to be completed by mid-2008 so that a new 161 kV line can be inservice by late 2010.

Legend

- Transmission Substation
- Cities
- 69kV AC
- 115kV AC
- 138kV AC
- 161kV AC
- 230kV AC
- 345kV AC
- 500kV AC
- 250kV DC
- 400kV DC

Minnesota Transmission >69 kV Southwest Planning Zone 03-SW-N2: St. James Area

0 1 2 4 Miles



7.6.4 Marshall Area

Tracking Number. 2003-SW-N3

Utility. Xcel Energy and Missouri River Energy Services

Inadequacy. Marshall Municipal Utilities (“MMU”) owns and operates a 115 kV loop around the City of Marshall for load serving. There are two existing sources serving Marshall – one from the Lyon County substation and the other from the Granite Falls substation. Both of these 115 kV lines are relatively close together. One storm event could possibly take out both lines.

Even under normal conditions, MMU has experienced operating conditions that have been less than ideal over the past several years. These operating conditions have ranged from dynamic voltage dips due to transmission switching on the Buffalo Ridge, to low voltage due to the outage of one of the 115 kV lines into Marshall, to overload conditions under other contingencies. Typically, MMU internal voltage regulation has been able to adjust for these situations, however, the situation is becoming more critical as load grows. Some of these operating issues have caused retail load customers within MMU to drop load.

A map of the area is shown on the following page.

Alternatives. Three system alternatives were identified in a study performed by Missouri River Energy Services. Each alternative involves the addition of a new 115 kV line tied into the existing MMU transmission loop with the goal of improving the voltages in Marshall during contingencies. Each of the options would likely terminate in a new Southwest Substation that MMU is building for load serving purposes.

Distributed generation was considered as an alternative but was dismissed for several reasons. Most importantly, it was dismissed because the problem in the city of Marshall is not one that is generation-related. This particular situation arises from not having enough transmission to move the existing southwest Minnesota wind generation to the load. Also, the city of Marshall already owns a diesel peaking generator and is in the process of installing a small wind farm. These facilities are not capable of meeting the City’s load-serving needs into the future. All things considered, transmission is the most economical, longest-lasting solution available.

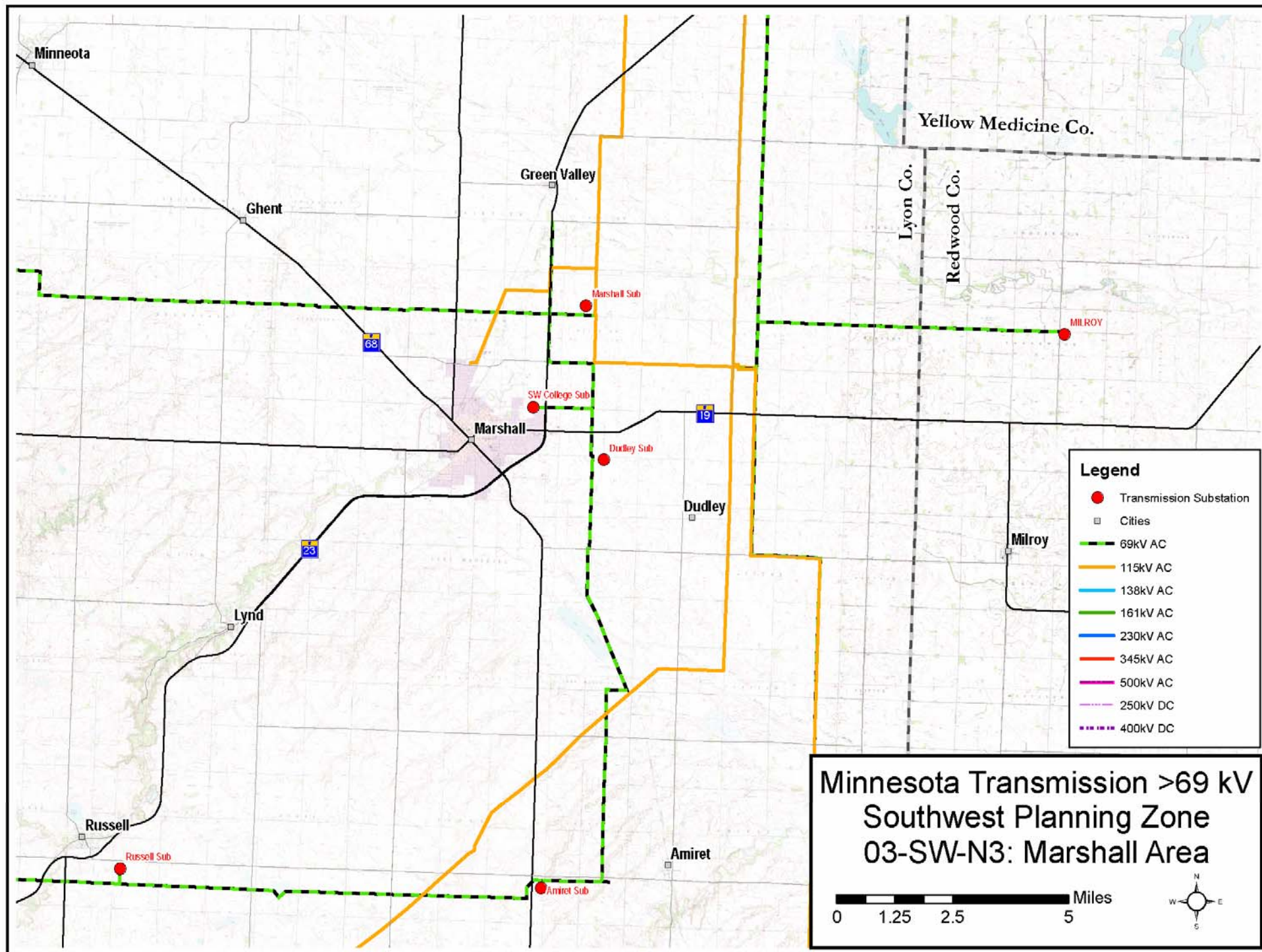
Analysis. Xcel Energy determined as part of the BRIGO study that a new 115 kV line from Lake Yankton would not only address the load serving issue in Marshall but would assist in wind outlet from the Buffalo Ridge area as well. In December 2006 Xcel Energy applied for a Certificate of Need for several new lines including the Lake Yankton-Marshall line.

In its CON application, Xcel Energy addressed the possibility of installing generation rather than the proposed line, but determined that the Lake Yankton line, along with other BRIGO lines, was the best alternative based on factors such as capital cost, technical performance, and construction time. Also, generation would not alleviate the need for more transmission on Buffalo Ridge.

Xcel Energy and Missouri River Energy Services will continue to monitor the Marshall situation and determine whether additional transmission upgrades are necessary.

Schedule. In September 2007 the Public Utilities Commission granted a Certificate of Need for the new 115 kV line between Lake Yankton and the new Marshall Southwest Substation as part of the BRIGO docket. Xcel Energy expects to file an application for a Route Permit for the line in November 2007.

PUC Docket Number. CN-06-154 (Certificate of Need)



7.6.5 Worthington Area

Tracking Number. 2005-SW-N1

Utility. Alliant Energy, Missouri River Energy Services, and Xcel Energy

Inadequacy. Worthington is located in southwestern Minnesota, about 42 miles from the South Dakota – Minnesota border. The city is served from the Elk 161/69 substation north of the city. During an outage of either of two transformers at the Elk substation, or of the 161 kV lines leading to the Elk substation, switching can be performed to serve Worthington from a 69 kV system through Fulda, but low voltage has been observed when that occurs. Moreover, the summer peak load in Worthington has been growing and is expected to continue to grow, which will exacerbate the situation.

A map of the area is shown on the following page.

Alternatives. Because the Worthington load serving study has not been completed yet, no specific alternatives for addressing the concern have been identified. Below are the same conceptual alternatives that were identified in the 2005 Report.

Alternative 1: Build new transmission lines from Xcel Energy's planned Nobles County substation to Worthington. (The Nobles County substation is scheduled to be on line in November of 2007).

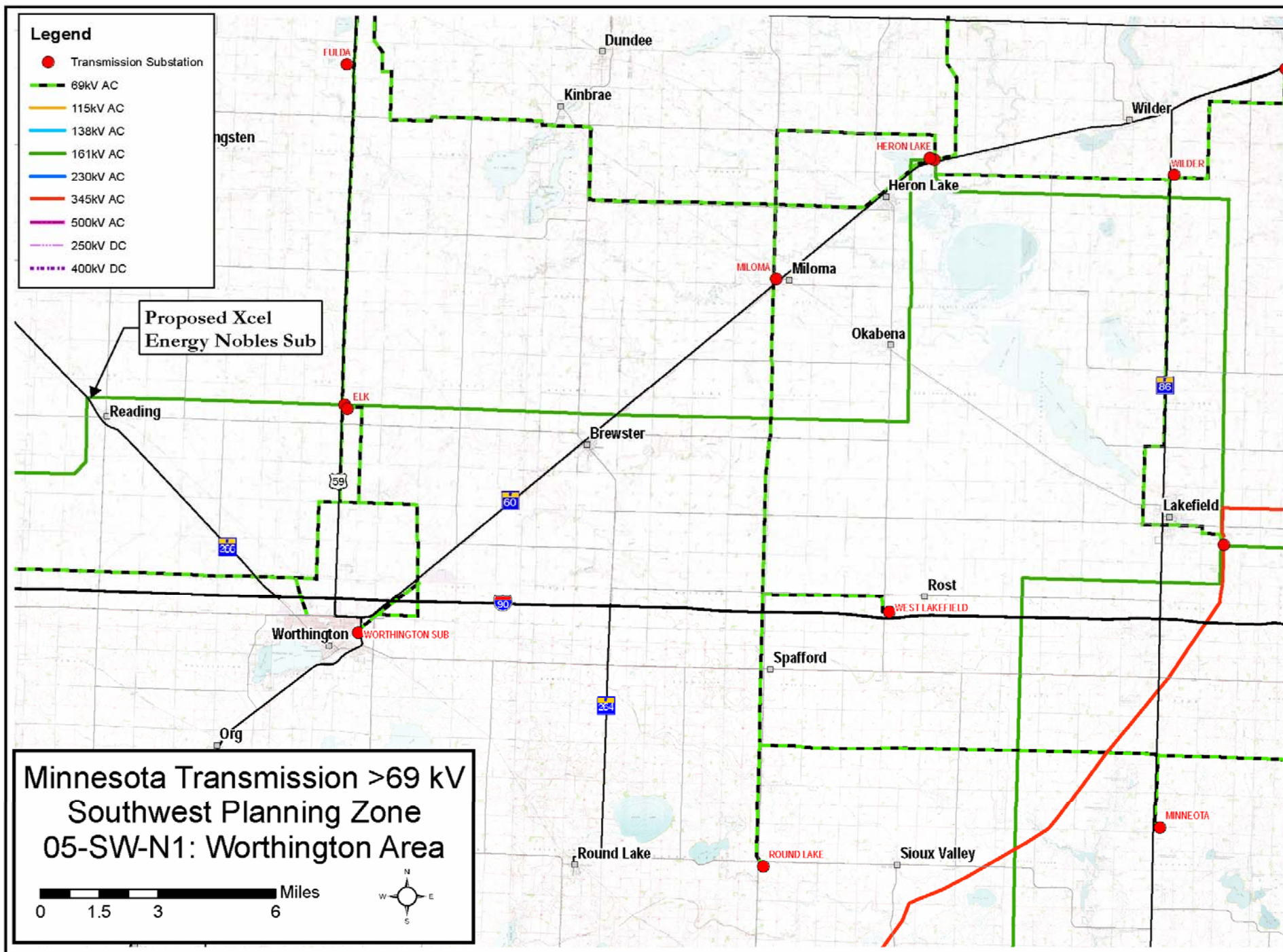
Alternative 2: Build new 161 or 69 kV connections to the Lakefield Jct. 161/69 substation.

Alternative 3: Reinforce the existing connections to the 161/69 system in the Elk and Brewster area (north of Worthington).

Common to all alternatives will be the concept of creating a loop around the city. System voltage of such a loop could be 161 kV, 115 kV or 69 kV. There may be various combinations of alternatives that could be pursued as well.

Analysis. The load serving study is still being conducted. The study is intended to identify potential problems with staying with the existing system and possible system enhancements that can help solve any problems there might be. The study will address the possibility of a distributed generation alternative. The goal is to ensure N-1 reliability for Worthington load. This will provide a good energy foundation for the addition of new loads in the municipal service area, enhancing the City's ability to locate new businesses.

Schedule. The Worthington load serving study is currently scheduled for completion in late 2007. All activities will be coordinated with regional utilities, the Midwest ISO, and the Northern MAPP sub-regional planning group.



7.6.6 BRIGO 115 kV Additions

Tracking Number. 2005-SW-N2

Utility. Xcel Energy

Inadequacy. Xcel Energy has recently completed construction of three (and a fourth will be energized in mid-2008) new transmission lines in western Minnesota designed to provide outlet capacity for 825 MW of wind. See Tracking Number 2003-SW-N4. The BRIGO projects are designed to be a relatively modest expansion of the 115 kV system in western Minnesota to provide additional outlet capacity for smaller increments of wind.

Alternatives. In December 2006 Xcel Energy applied for a Certificate of Need for three new lines:

Alternative 1: A new 115 kV line in Lyon County between Lake Yankton Substation near Balaton, Minnesota, and a new substation near Marshall, Minnesota.

Alternative 2: A new 115 kV line in Murray and Nobles Counties between Fenton Substation near Chandler, Minnesota, and the Nobles County Substation northwest of Worthington, Minnesota.

Alternative 3: A new 115 kV line in Lincoln County between the Yankee Substation south of Hendricks, Minnesota, and the Minnesota/South Dakota border near Brookings County Substation near Brookings, South Dakota.

Analysis. The reasons for selecting the three lines are explained in the Certificate of Need application. The Public Utilities Commission granted the Certificate of Need in September 2007.

Schedule. Xcel Energy has recently submitted an application for a Route Permit for the Nobles to Fenton line and intends to submit an application for a Route Permit for the other two lines before the end of 2007. In its Order issuing the Certificate of Need for the BRIGO facilities, the Public Utilities Commission recognized the 2010 in-service date and the associated construction schedule, but asked Xcel Energy if the lines could be placed in service in 2009. In response to the PUC request, it is expected that the lines will be placed into service in late 2009.

PUC Docket Number. CN-06-154 (Certificate of Need)
TL-07-1233 (Route Permit – Fenton to Nobles)

7.6.7 CapX 2020 Projects

Tracking Number. 2005-CX-2 (Twin Cities – Brookings County 345 kV)

Discussion. The CapX 2020 Projects are discussed in detail in Section 5. One of the three CapX lines is a 345 kV line from Brookings, South Dakota, to the Southeast Twin Cities.

7.6.8 Storden Wind Interconnection

Tracking Number. 2007-SW-N1

Utility. Interstate Power & Light Company (Alliant West)

Inadequacy. A request to be placed in the MISO interconnection queue (MISO queue #38474-01) was made in May, 2005, for the addition of 130 MW of new wind generation near the Storden substation. The existing 69 kV transmission system is inadequate for any additional generation at this location. A previously queued 50 MW generation project significantly reduced the existing interconnection capacity at Storden.

A map of the area is shown on the following page.

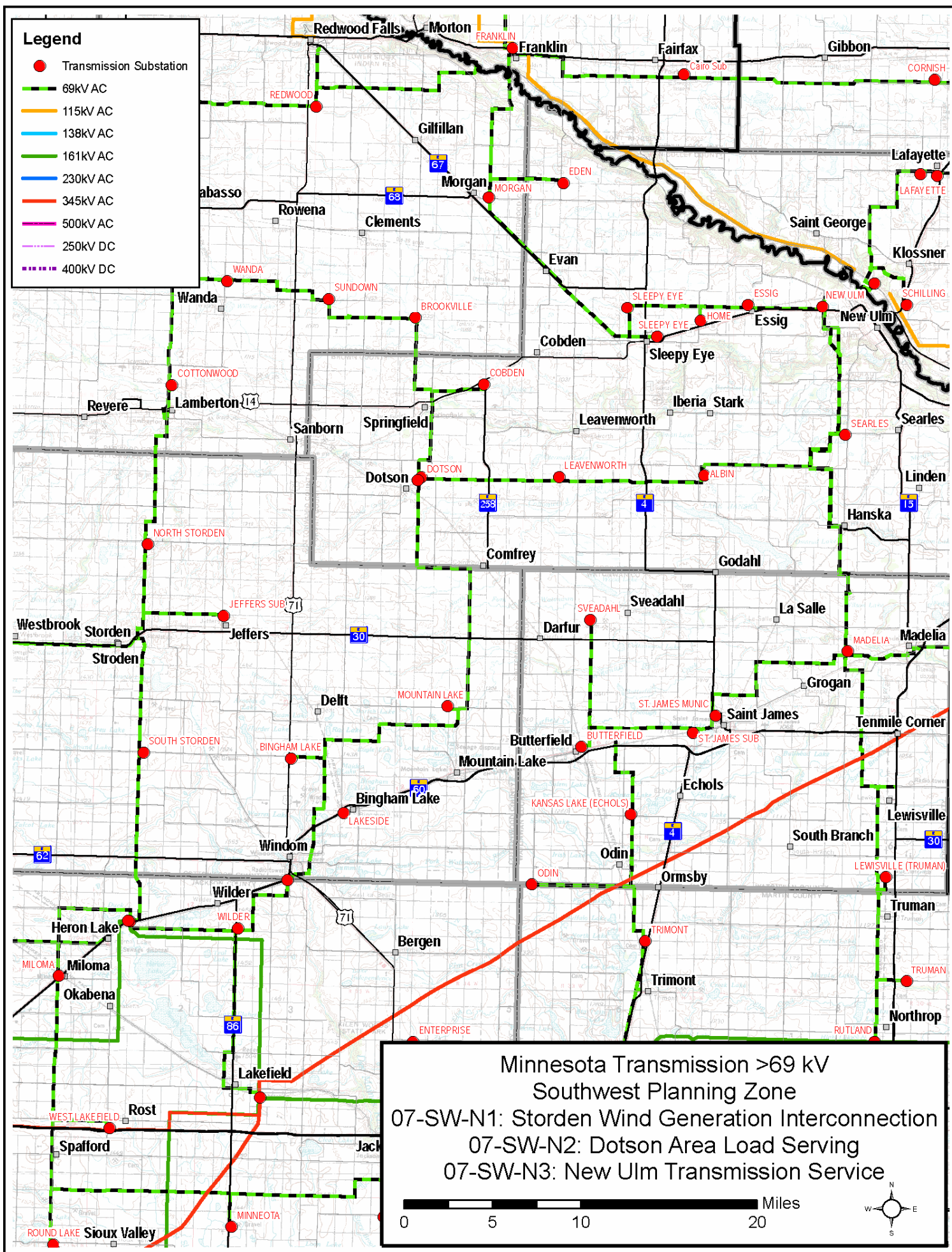
Alternatives. Two alternatives have been identified. The initially proposed alternative for interconnection of this project was identified in the MISO Group 4 System Impact Study. The study pointed to conversion of the existing 69 kV line between Heron Lake and Storden (the 50 year old line was initially constructed for use at 161 kV), to 161 kV operation and also identified construction of a second 161 kV line from Storden to Lakefield Junction as upgrades necessary for the interconnection of the project.

A second alternative was identified in the Dotson Area Load Serving and Generation Outlet Study. This Study identified a new 161 kV line from Storden to Dotson to New Ulm with an interconnection at the Fort Ridgely Substation as a possible solution. This alternative also requires the construction of a 161 kV line from Heron Lake to Storden, requiring a complete rebuilding of the existing line along that route.

Analysis. The first alternative was dismissed for two reasons. One, the 69 kV line was re-evaluated and could not be converted to 161 kV operation and two, a new 161 kV line from Storden to Lakefield Junction was not as effective for other needs in the area.

The benefits of the second alternative are that it not only provides interconnection service for the Storden generation request (Tracking Number 2007-SW-N1), but also provides for load serving needs in the Dotson area (Tracking Number 2007-SW-N2) and transmission service needs in the New Ulm area (Tracking Number 2007-SW-N3).

Schedule. The estimated in-service date for the Heron Lake – Storden – Dotson – New Ulm 161 kV project is late 2010. A Large Generator Interconnection Agreement among MISO, Interstate Power and Light, and the Interconnection Customer has been filed with FERC, and the Agreement provides for the construction of the Heron Lake to Storden to Dotson Corner 161 kV upgrades. However, delays can be expected as the Interconnection Customer has suspended the project, which is allowed by MISO tariff. A significant delay in the wind project will likely result in further study to determine whether other alternatives may need to be developed to accommodate the other concerns in the area, namely the Dotson area load serving needs and the New Ulm transmission service request.



7.6.9 Dotson Area Load Serving Needs

Tracking Number. 2007-SW-N2

Utility. Great River Energy

Inadequacy. General load growth in the area served by the Dotson breaker station and the prospective development of new ethanol plant loads in the area will exceed the capability of the existing 69 kV system in the next two to three years. Low voltages will occur at the Springfield and Cobden busses during outage of the Dotson—Springfield 69 kV line. The addition of new ethanol loads will exacerbate the low voltages.

Alternatives. The most preferable alternative is the one identified to address the Storden wind interconnection request in Tracking Number 2007-SW-N1. If the wind developer does not proceed with the project, other alternatives will have to be developed and analyzed.

If the wind development does not proceed, it may be possible to construct some other distributed generation facility, but that alternative is not being pursued at the present time.

Analysis. See discussion for Tracking Number 2007-SW-N1 (Storden Wind Interconnection).

Schedule. If the wind project goes forward and the Heron Lake-Storden-Dotson-New Ulm 161 kV project proceeds on schedule, the line should be inservice in late 2010.

7.6.10 New Ulm Transmission Service

Tracking Number. 2007-SW-N3

Utility. Xcel Energy

Inadequacy. The City of New Ulm has requested firm transmission service to serve the City's native load. The existing transmission network is not capable of providing firm service.

Alternatives. The most preferable alternative is the one identified to address the Storden wind interconnection request in Tracking Number 2007-SW-N1. If the wind developer does not proceed with the project, other alternatives will have to be developed and analyzed.

If the wind development does not proceed, it may be possible to construct some other distributed generation facility, but that alternative is not being pursued at the present time. Also, New Ulm has not identified any potential distributed generation facility.

Analysis. See discussion for Tracking Number 2007-SW-N1 (Storden Wind Interconnection).

Schedule. If the wind project goes forward and the Heron Lake – Storden – Dotson – New Ulm 161 kV project proceeds on schedule, the line should be in service in late 2010.