

7.0 Transmission-Owning Utilities

7.1 Introduction

In the 2007 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, maintenance expenses, and compliance with upcoming renewable energy milestones for each utility. In this chapter in the 2009 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 2007 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 can be found. In addition, a Contact Person is identified for each utility.

Transformer Availability

Some MTO utilities are required under Minnesota Statutes § 216B.16, subd. 7 and Minnesota Rules parts 7825.2390 through 7825.2920 to make detailed filings supporting the automatic adjustment of their retail rates to reflect fluctuations in prices of electricity they produce or purchase for delivery to ratepayers. In the most recent Annual Automatic Adjustment of Charges proceeding (for reporting year 2006-2007), in PUC Docket No. E,G999/AA-07-1130, the Public Utilities Commission ordered the affected utilities to include in the 2009 Biennial Report certain information about the number of transformers in use and the availability of spare transformers. Specifically, in its August 31, 2009, Order Acting on Electric Utilities' Annual Reports and Requiring Additional Filings, the Commission ordered:

18. ITC Midwest LLC and all electric utilities required to file annual automatic adjustment reports, with the exception of Dakota Electric, shall include in their 2009 Biennial Transmission Projects Reports the following information:
 - a. the number of transformers exceeding 100 kilovolts on their system and the size of each transformer;
 - b. an analysis as to whether they are maintaining in inventory or otherwise have reasonable access to a reasonable number of spare transformers in different sizes so as to avoid excessive replacement power costs during outages.

The utilities participating in this 2009 Biennial Report that have to provide the information about transformers are Northern States Power Company, Minnesota Power, Otter Tail Power Company, and ITC Midwest. For those four utilities, the requested information is provided in the section relating to that utility.

Transmission Line Ownership

The utilities provided in the 2007 Report information on the miles of transmission owned by each utility. The table on the next page 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	0.00	0.00	0.00	12.00	0.00
Dairyland Power Cooperative	401.07	148.00	0.00	0.00	0.00
East River Electric Power Cooperative	158.13	45.74	0.00	0.00	0.00
Great River Energy	2989	448	523	145	436
Hutchinson Utilities Commission	8.00	9.00	0.00	0.00	0.00
ITC Midwest LLC	731.68	277.82	0.00	19.77	0.00
L&O Power Cooperative	44.52	8.52	0.00	0.00	0.00
Marshall Municipal Utilities	0.00	18.10	0.00	0.00	0.00
Minnesota Power	0.22	1290.30	605.18	8.35	0.00
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	1808.23	1556.15	365.5	1101.3	0.00
Otter Tail Power Company	1298.75	544.66	111.54	0.00	0.00
Rochester Public Utilities	0.00	40.51	0.00	0.00	0.00
Southern Minnesota Municipal Power Agency	128.69	116.32	16.84	0.00	0.00
Willmar Municipal Utilities	21.50	0.00	13.50	0.00	0.00
Totals:	8582.16	4859.13	1895.30	1286.42	436.00

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 500 employees working in Wisconsin, Michigan, and Washington, D.C.

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 9,400 circuit miles of transmission lines and wholly or jointly owns 510 substations in portions of four states – Wisconsin, Michigan, Illinois, and Minnesota. ATC has \$2.5 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 ReliabilityFirst Corporation (RFC).

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

<http://www.atcllc.com>

Contact Person: Robert McKee

Manager, Planning Policy Analysis & Methodology

American Transmission Company, LLC
P.O. Box 47
Waukesha, WI 53187-0047
Ph: (262) 506-6700
Fax: (608) 877-3606
e-mail: rmckee@atcllc.com

Transmission Lines. ATC owns approximately 9,400 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.

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
401.07	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 consumers 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: Jim Edwards
 Assistant General Manager – Operations
 East River Electric Power Cooperative
 P.O. Box 227
 Madison, SD 57042
 Ph: (605) 256-4536
 Fax: (605) 256-8058
 e-mail: jedwards@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
158.13	45.74	0	0	0

7.5 Great River Energy

Background Information. Great River Energy (“GRE”) is a generation and transmission electric cooperative with headquarters in Maple Grove, Minnesota. GRE provides electrical energy and related services to 28 member distribution cooperatives in Minnesota and Wisconsin. These member cooperatives distribute electricity to more than 600,000 homes, businesses and farms. The service territories of GRE’s 28 members stretch from the southwest corner to the northeast corner of Minnesota, with one member serving a small part of northwestern Wisconsin.

More information about Great River Energy is available at:

<http://www.greatriverenergy.com>

Contact Person: Gordon Pietsch
 Director, Transmission Planning & Operations
 Great River Energy
 12300 Elm Creek Blvd
 Maple Grove, MN 55369-4718
 Ph: (800) 445-5000
 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
2989	448	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

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.

More information about ITC Midwest and ITC Holdings Corp. can be found at www.itctransco.com

Contact Person: David Grover
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

Transformers.

ITC Midwest owns and operates nine transmission substations in Minnesota with voltages exceeding 100 kV and owns transformers at seven of these substations. The ITC Midwest transmission system is planned, designed, and operated to comply with North American Energy Regulatory Commission (“NERC”), Midwest Reliability (“MRO”), and ITC Midwest Planning Criteria. The various criteria include a demonstration that ITC Midwest’s transmission system is designed such that no loss of firm load will occur, except for load served from radial facilities, for the loss of any single transformer.

Although the reliability of individual transformers is very high, outages can occur which affect replacement power costs during outages. ITC Midwest spare transformers are intended to minimize replacement power costs, and ITC Midwest performs periodic review to determine if additional spare transformers are needed. At this time, ITC Midwest is maintaining a sufficient and reasonable number of spare transformers to avoid incurring excessive costs arising from system disturbances.

A listing of ITC Midwest’s transformers 100 kV and greater that are operating in Minnesota is provided in the table below. Only ITC Midwest-owned spare transformers with operating voltages available for use in Minnesota are identified in the list.

Substation Location	Equipment ID	Primary (kV)	Secondary (kV)	Rating (MVA)
FOX LAKE	012-1229	161	69	74.7
FOX LAKE	FOX LAKE 161/69 KV	161	69	75
ELK	016-1271	161	69	30
ELK	016-1271	161	69	30
HAYWARD	007-1242	161	69	74.7
HAYWARD	007-1242	161	69	74.7
HERON LAKE	009-1230	161	69	56
HERON LAKE	009-1230	161	69	56
LAKEFIELD JUNCTION	009-1268	345	161	336
LAKEFIELD JUNCTION	009-1268	345	161	336
LAKEFIELD JUNCTION	009-1268	161	69	74.7
MAGNOLIA	MAGNOLIA 161/69 KV	161	69	56
WINNEBAGO JUNCTION	005-1244	161	69	30
WINNEBAGO JUNCTION	005-1244	161	69	74.7
SPARE	XCS71591	161	69	65

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	277.82	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:

www.landopowercoop.com

Contact Person: Curt Dieren
 Manager
 L&O Power Cooperative
 P.O. Box 511
 1302 S. Union Street
 Rock Rapids, IA 51246
 Ph: (712) 472-2556
 Fax: (712) 472-2710
 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, 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 141,000 retail customers and wholesale electric service to 16 municipalities.

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

<http://www.mnpower.com>

Contact Person: David Van House
Engineer
Minnesota Power
30 West Superior Street
Duluth, MN 55802
Ph: (218) 355-2514
e-mail: dvanhouse@mnpower.com

Transformers

Background

Minnesota Power has several autotransformers for which all load serving windings are greater than 100 kV. Minnesota Power's backbone transmission system is 230 kV with underlying 115 kV which serve distribution substations. All of the transformation between the 230 kV and 115 kV system is accomplished with autotransformers. Additionally, Minnesota Power is interconnected at 115 kV, 138 kV, 345 kV, as well as 500 kV. All of these higher voltage transformations (greater than 100 kV), except for the 115 kV, are accomplished by autotransformers. (An autotransformer is simply a special connection/winding of a transformer which is useful to reduce the complexity and therefore cost of the transformer.) Minnesota Power does have autotransformers in this class that connect separate portions internal to the Minnesota Power grid and form no interconnection externally.

Station and Transformer Redundancy

At Minnesota Power sites, there are two typical designs or arrangements for this transformation: Firm Capacity and Non Firm. In the Firm Capacity Stations there is adequate redundancy. This is accomplished by the use of two transformers each with a capacity equal to or greater than the substation's normal peak loading patterns. In a scheduled or unscheduled outage of one transformer, all load can continue to be served via the second unit (transformer).

Emergency Backup

In the case where the station is not firm capacity as described above, other responses are necessary. Minnesota Power would utilize one of the transformers from a Firm Capacity station for the Non Firm Capacity substations. The unit (transformer) would be moved to and installed

at the non firm substation in place of the failed unit. In emergency situations this could be accomplished in less than one week.

Spare Units

Minnesota has a spare, unenergized autotransformer (115kV/138kV) for use on our internal 138 kV system. The spare unit (transformer) would be moved and installed in place of the failed unit. In emergency situations this could be accomplished in less than one week.

Station Autotransformer Census

Minnesota Power has four stations in which the design and number of autotransformers meet the Full Capacity criteria. There are another six sites which have a single autotransformer. This does not include the internal 115/138kV system.

Phase Shift Transformers

Minnesota Power also has two phase shifting transformers which have all their load serving windings above 100 kV. These units (transformers) are installed (in series) essentially providing a Firm Capacity transformation. Under normal conditions one phase shifter is adequate to meet the anticipated phase shift and power flow adjustments. Each unit has a bypass circuit as well.

Transmission level transformers inventory (greater than 100 kV on the low side)

Station Name	Unit No.	High Voltage (kV)	Low Voltage (kV)	Rating (KVA)
SYL LASKIN S.E. STATION	SP	131.1	115	75,000
BADOURA 230/115 KV SUB	5	230	115	186,667
ARROWHEAD 345/230/115 KV	6	230	115	373,333
ARROWHEAD 345/230/115 KV	7	230	115	373,333
FORBES 500/230/115KV SUB	8C	288.68	132.79	224,000
FORBES 500/230/115KV SUB	8A	288.68	132.79	224,000
FORBES 500/230/115KV SUB	8B	288.68	132.79	224,000
LITTLEFORK 230/115 KV	3	218.5	116	186,667
SYL LASKIN S.E. STATION	20	134.55	115	186,667
TACONITE HARBOR 138/115	4	138	115	186,667
HILLTOP 230/115 KV SUB	1	230	115	187,000
MINN TAC 230/115 KV	1	230	115	373,000
MINN TAC 230/115 KV	2	230	115	373,000
FORBES 500/230/115KV SUB	3	230	115	373,000
BLACKBERRY 230/115KV SUB	1T	230	115	373,000
BLACKBERRY 230/115KV SUB	2T	230	115	373,000
INTERNATIONAL FALLS-115/	10	120	120	180,000
INTERNATIONAL FALLS-115/	11	120	120	180,000
SHANNON 230/115 KV SUB	2	230	115	187,000
RIVERTON 230/115 KV SUB	6	230	115	187,000
MUD LAKE 230/115KV SUB	1	230	115	187,000
SHANNON 230/115 KV SUB	1	230	115	187,000

Transmission Lines. The number of miles of transmission in Minnesota owned by Minnesota Power is shown in the following table. In addition, Minnesota Power is seeking approval from the Public Utilities Commission to purchase approximately 465 miles of a +/- 250 kV high voltage direct current transmission line between the Square Butte Substation in Center, North Dakota, and Minnesota Power's Arrowhead Substation near Duluth. PUC Docket No. E015/PA-09-526 and FERC Docket No. EC09-108-000.

Minnesota Power Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
0.22	1,290.3	605.18	8.35	0

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: Dale Sollom
 Planning Manager
 Minnkota Power Cooperative, Inc.
 P.O. Box 13200
 Grand Forks, ND 58208-3200
 Ph: (701) 795-4315
 Fax: (701) 795-4214
 e-mail: dsollom@minnkota.com

Transmission Lines. The Joint System owns 1,384.93 miles of transmission line in Minnesota and 1,641.76 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 (“WMPMA”), which itself was incorporated as a municipal corporation and political subdivision of the State of Minnesota. WMPMA 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 WMPMA 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.

More information about Minnesota River Energy can be found at:

<http://www.mreenergy.com>

Contact Person: Brian Zavesky
Missouri River Energy Services
3724 West Avera Drive
P.O. Box 88920
Sioux Falls, SD 57108-8920
Ph: (605) 330-6986
Fax: (605) 978-9396
e-mail: brianz@mreenergy.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, a Minnesota corporation

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'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).

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

<http://www.xcelenergy.com>

Contact Person: Paul J. Lehman
 Manager, Regulatory Administration
 414 Nicollet Mall
 Minneapolis, MN 55401
 Ph: (612) 330-7529
 Fax: (612) 573-9315
 e-mail: paul.lehman@xcelenergy.com

Transformers

Existing Transformers. NSP and NSPW presently have the following transformers on the NSP System in Minnesota and Wisconsin:

NSP System Transmission Transformers Over 100 Kv (In-Service)

	Primary Voltage Class	Secondary Voltage Class	Maximum MVA	Operating Company	Location
1	345	161	300	NSP	Adams Substation
2	345	115	448	NSP	Allen S King Substation
3	230	115	336	NSP	Benton County Substation
4	230	115	336	NSP	Benton County Substation
5	230	115	336	NSP	Blue Lake Substation
6	345	115	336	NSP	Blue Lake Substation
7	345	115	448	NSP	Brookings County Substation
8	345	115	448	NSP	Chisago County Substation
9	500	345	1200	NSP	Chisago County Substation
10	500	345	1200	NSP	Chisago County Substation

	Primary Voltage Class	Secondary Voltage Class	Maximum MVA	Operating Company	Location
11	161	115	187	NSP	Collville Substation
12	345	115	672	NSP	Coon Creek Substation
13	345	115	672	NSP	Coon Creek Substation
14	345	115	448	NSP	Eden Prairie Substation
15	345	115	448	NSP	Eden Prairie Substation
16	345	115	448	NSP	Elm Creek Substation
17	345	115	550	NSP	Inver Hills Substation
18	345	115	448	NSP	Kohlman Lake Substation
19	345	115	448	NSP	Kohlman Lake Substation
20	230	115	187	NSP	Maple River Substation
21	230	115	187	NSP	Maple River Substation
22	230	115	187	NSP	Minnesota Valley Substation
23	230	115	187	NSP	Minnesota Valley Substation
24	345	230	336	NSP	Monticello Substation
25	345	115	300	NSP	Monticello Substation
26	345	115	672	NSP	Nobles County Substation
27	345	115	450	NSP	Parkers Lake Substation
28	345	115	450	NSP	Parkers Lake Substation
29	230	115	336	NSP	Paynesville Transmission Substation
30	345	161	224	NSP	Prairie Island Substation
31	230	115	336	NSP	Prairie Substation
32	230	115	336	NSP	Prairie Substation
33	345	230	336	NSP	Red Rock Substation
34	345	115	448	NSP	Red Rock Substation
35	345	115	448	NSP	Red Rock Substation
36	345	115	448	NSP	Sherco Substation
37	230	115	187	NSP	Sheyenne Substation
38	230	115	187	NSP	Sheyenne Substation
39	161	115	187	NSP	Split Rock Substation
40	230	115	336	NSP	Split Rock Substation
41	345	115	448	NSP	Split Rock Substation
42	345	115	448	NSP	Split Rock Substation
43	345	115	672	NSP	Terminal Substation
44	345	115	672	NSP	Terminal Substation
45	161	115	187	NSP	Wilmarth Substation
46	345	115	448	NSP	Wilmarth Substation
47	161	115	186	NSPW	Crystal Cave Substation
48	345	161	300	NSPW	Eau Claire Substation
49	345	161	300	NSPW	Eau Claire Substation
50	161	115	187	NSPW	Gingles Substation
51	161	115	187	NSPW	Hydro Lane Substation
52	161	115	112	NSPW	Pine Lake Substation
53	345	161	336	NSPW	Stone Lake Substation

Spare Transformers. The following table illustrates the 2010 NSP System spare transformer inventory and planned deliveries:

Primary Voltage Class	Secondary Voltage Class	Maximum MVA	Operating Company	Location	Status
345	115	672	NSP	Maple Grove	Storage*
230	115	112	NSP	Minn Valley	Storage
230	115	50	NSP	Minn Valley	Storage
230	115	50	NSP	Minn Valley	Storage
161	115	62.5	NSPW	Pine Lake	Storage
161	115	46.7	NSPW	Tremval	Storage
345	161	336	NSP	Maple Grove	On Order
161	115	187	NSP	Maple Grove	On Order

* Note: A Transformer in Storage does not have bus work connected and could be in a yard or on a pad in a substation.

The NSP System maintains a reasonable number of transformers in inventory in order to: (1) maintain the reliability of the system; (2) remain consistent with NERC mandatory reliability criteria; and (3) balance the economic benefit to ratepayers. Transmission transformers typically provide high reliability performance and durability, although they do fail from time to time regardless of the efforts of the Company. Such failures may result, for example, from extreme weather conditions, exposure to excessive dust, or natural corrosion. Despite the NSP Companies' long-standing practice of improving and maintaining the transmission capability throughout the NSP System, outages of individual transformers do occur from time to time, affecting purchased energy costs. The eight transformers the NSP System has available in inventory or on order are sufficient to minimize the amount of time the NSP System would need to generate or purchase replacement power because of a transformer problem.

Transmission Lines. Northern States Power Company owns over 4,500 miles of transmission lines in the state of 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
1808.23	1556.15	365.5	1101.3	0.00

7.14 Otter Tail Power Company

Background Information. Otter Tail Power Company (“OTP”) is a public utility organized under the laws of the State of Minnesota, and is the utility division of Otter Tail Corporation, a company publicly traded on the NASDAQ Stock Market. OTP is headquartered in Fergus Falls, Minnesota. It provides electricity to approximately 127,000 residential, commercial, and industrial customers throughout Minnesota, South Dakota, and North Dakota, with approximately 58,000 customers in Minnesota. OTP was originally incorporated in 1907, and first delivered electricity in 1909 from the Dayton Hollow Dam on the Otter Tail River.

More information can be found on Otter Tail Power’s web page at:

<http://www.otpc.com>

Contact Person: Tim Rogelstad
Manager, Delivery Planning
Otter Tail Power Company
P.O. Box 496
Fergus Falls, MN 56538-0496
Ph: (218) 739-8200
Fax: (218) 739-8442
e-mail: TRogelstad@otpc.com

Transformers

Otter Tail Power Company’s transmission system is composed of transmission operated at 345 kV, 230 kV, 115 kV, and 41.6 kV. Otter Tail is interconnected with several neighboring utilities, which results in a highly integrated transmission system with joint ownership along many transmission lines and within several substations. Most of the transformers owned by Otter Tail on the transmission system are used to step down the voltage from the bulk transmission system (230 kV, 115 kV) to the local load serving transmission system (69 kV, 41.6 kV).

Availability of Spare Transformers

The transmission system is designed to withstand the loss of any transformer and still be able to reliably serve all load on the system. As a result, Otter Tail does not have any spare transformers with a low side winding of greater than 100 kV. However, at Otter Tail’s two largest generating stations (Big Stone and Coyote), there are spare generator step-up transformers available in the event of a failure to reduce the down-time of these generators.

Some of the substations within the transmission system do have redundant transformers in-service. In the event of a transformer failure at a substation, it would be possible to move a transformer from a different substation that may have redundant transformers in-service. This would be possible since many of the transformers on the transmission system are of a similar design.

Existing Transformers

Transformers on Otter Tail Power's system include:

Substation	High Voltage (kV)	Medium Voltage (kV)	Low Voltage (kV)	Size (MVA)
Maple River Transformer #1	345	230	13.8	336
Maple River Transformer #2	345	230	13.8	336
Jamestown Transformer #1	345	115	41,6	112
Jamestown Transformer #2	345	115	41,6	112
Buffalo Transformer	345	115	41,6	112
Forman Transformer	230	115	41.6	140
Rugby Transformer	230	115	13.8	125
Wilton Transformer	230	115	13.8	140
Winger Transformer	230	115	13,2	140
Big Stone Transformer	230	115	13.8	233

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

OTP Transmission Lines

<100 kV	100-199 kV	200-299 kV	>300 kV	DC
1298.75	544.66	111.54	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.

More information about SMMPA is available at:

<http://www.smmpa.com>

Contact Person: Richard Hettwer, PE, MBA
 Manager of Power Delivery
 Southern Minnesota Municipal Power Agency
 500 First Avenue Southwest
 Rochester, MN 55902-3303
 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
128.69	116.32	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.