

Direct Testimony
Walter T. Grivna

Before the North Dakota Public Service Commission
State of North Dakota

In the Matter of the Application of
Northern States Power Company, a Minnesota Corporation

For Authority to Increase Rates for
Electric Service in North Dakota

Case No. PU-07-____
Exhibit____

Transmission

December 7, 2007

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2
3 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

4 A. My name is Walter Grivna. My business address is 250 Marquette Avenue,
5 Minneapolis, Minnesota 55401.

6
7 Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

8 A. I am employed by Northern States Power Company, a Minnesota corporation
9 (“NSP-Minnesota”) as Manager, Transmission Reliability Assessment in the
10 transmission division. My responsibilities include: (i) supervising department
11 engineers in planning the electric transmission systems for NSP-Minnesota
12 and Northern States Power Company, a Wisconsin corporation (“NSP-
13 Wisconsin”) (jointly the “NSP Operating Companies”) in Minnesota, North
14 Dakota, South Dakota, Wisconsin and the Upper Peninsula of Michigan; (ii)
15 overseeing the development of local and regional transmission system plans,
16 including coordinated joint planning with the Midwest Independent
17 Transmission System Operator, Inc. (“MISO”), the Mid-Continent Area
18 Power Pool Regional Transmission Committee (“MAPP RTC”) and other
19 utilities to ensure reliable transmission service; (iii) recommending the
20 construction of such plans to Xcel Energy Inc. management and the MISO;
21 (iv) participating in and supporting MISO sponsored transmission service
22 studies, generation interconnection studies, long range regional plan
23 development, load service planning and other transmission planning activities
24 required by MISO to perform its obligations under the MISO Open Access
25 Transmission and Energy Markets Tariff (“TEMT”) and the MISO
26 Transmission Owner’s Agreement (“TOA”); and (v) providing technical

1 support for regulatory aspects of transmission system planning activities and
2 contract development for the NSP Operating Companies.

3
4 Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.

5 A. I received a bachelor's degree in Electrical Engineering from the University of
6 Minnesota in 1977, and a master's degree in Business Administration from the
7 University of St. Thomas in 1981. I started full-time with the former
8 Northern States Power Company, the predecessor to Xcel Energy Inc., as an
9 engineer in 1977 and advanced to positions of increasing responsibility over
10 my 30-year tenure. I have held my current position since May 2002.

11
12 Q. FOR WHOM ARE YOU TESTIFYING?

13 A. I am testifying on behalf of NSP-Minnesota operating in North Dakota ("Xcel
14 Energy or the "Company").

15
16 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

17 A. Over recent years, the Company has invested significant capital in various
18 transmission assets in order to meet the growing needs of our customers,
19 maintain the integrity of the existing transmission system to ensure safe,
20 reliable service to our customers while, at the same time, supporting our
21 initiatives to improve and protect the environment. My testimony provides an
22 overview of these investments, including the benefits they bring to our
23 customers and the environment. I conclude my Direct Testimony by sharing
24 our plans to continue to invest in the expansion of our transmission system
25 over the next few years.

26
27

1 **II. TRANSMISSION SYSTEM INVESTMENTS**

2

3 Q. PLEASE PROVIDE AN OVERVIEW OF THE COMPANY’S TRANSMISSION SYSTEM.

4 A. The NSP Operating Companies are vertically integrated jurisdictional electric
5 utilities that own and operate electric transmission facilities in five upper
6 Midwestern states: Minnesota, North Dakota, South Dakota, Wisconsin, and
7 the Upper Peninsula of Michigan. The NSP Operating Companies operate as
8 an integrated transmission system ("NSP System") of approximately 7,100 line
9 miles of transmission facilities, operate a Balancing Authority (an entity
10 responsible for maintaining a balance between load and energy supply within
11 its designated Balancing Authority area), and is certified by the North
12 American Electric Reliability Corporation ("NERC") serving approximately
13 1.3 million retail and wholesale customers. The NSP Operating Companies
14 conduct planning for the integrated NSP System to serve all NSP System
15 loads, including the loads of investor owned utilities, cooperatives and
16 municipal load serving entities ("LSE’s") connected to the NSP System, on a
17 comprehensive basis.

18

19 The NSP Operating Companies serve approximately 1200 MW of
20 transmission-only loads compared to a peak native load of approximately 9000
21 MW, and the NSP system is interconnected with more than 50 other
22 transmission systems and LSE’s, including ten neighboring Balancing
23 Authorities.

24

25 The NSP Operating Companies are members of the MISO, a Federal Energy
26 Regulatory Commission (“FERC”) approved Regional Transmission Operator
27 (“RTO”). The NSP Operating Companies transferred functional control of

1 their high voltage transmission facilities (100kV and above) to MISO effective
2 February 1, 2002. Access to the NSP System is available through the MISO
3 Transmission and Energy Market Tariff (“TEMT”).

4
5 As members of MISO, the NSP Operating Companies fully participate in the
6 annual MISO Transmission Expansion Planning (“MTEP”) process. Approval
7 of the MTEP by the MISO Board certifies the MISO’s plan to meet the
8 transmission needs of all stakeholders, subject to any required regulatory
9 approval. The MTEP is developed and discussed with MISO stakeholder
10 committees in all the stages of its development, and incorporates all
11 transmission plans for facilities above 100 kV for member utilities. All recent
12 and future transmission investments by the NSP Operating Companies have
13 been, and will continue to be, approved through this process.

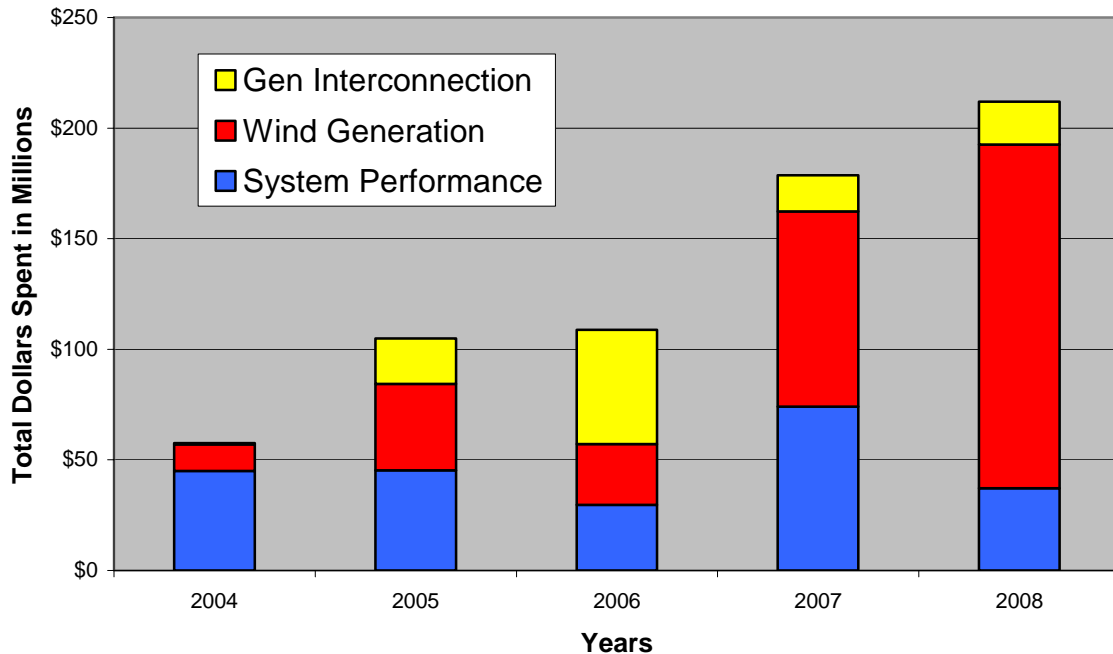
14
15 Q. PLEASE DESCRIBE HOW TRANSMISSION INVESTMENTS ARE IMPACTING THE
16 NEED FOR THIS REQUESTED INCREASE IN RATES.

17 A. Since our last electric rate case in 1992, the Company has made significant
18 investments in our transmission system. However, since 2005 the level of
19 investment has increased substantially from previous years. Since 2005, our
20 transmission investments have resulted in an increase to rate base of
21 approximately \$21.4 million, contributing to our rate case deficiency by
22 approximately \$2.8 million.

23
24 I have categorized our transmission investments into three separate groups:
25 system performance investments, generation interconnection investments, and
26 wind supporting transmission investments. Table 1 summarizes the

1 Company's annual transmission investments in these categories from 2004
2 through the 2008 test year.

3
4 Table 1



5
6 **A. System Performance Investments**

7
8 Q. PLEASE EXPLAIN THE SYSTEM PERFORMANCE INVESTMENTS.

9 A. System performance investments are the investments required to keep the
10 transmission system operating reliably and safely while addressing load
11 growth, infrastructure aging, obsolescence, deterioration, and other
12 performance related issues. Some of the larger investments we have made to
13 improve or maintain system performance include:

- 14
15 1. ***Sherburne County/St. Cloud Project*** This investment includes
16 construction of a new 345/115kV transmission source at the Sherburne
17 County substation in the far northwestern suburb of the Twin Cities, and

1 upgrades the capacity of 22 miles of the 115V line to St. Cloud, in central
2 Minnesota. This project was necessary to mitigate unacceptable
3 transmission line loadings during transmission outages. The cost of the
4 project was approximately \$16 million.

5
6 2. ***Southeast Metro Project*** This investment includes the re-construction
7 of 6 miles of 115 kV to high capacity double circuit transmission between
8 the Red Rock and Rogers Lake substations just south of St. Paul,
9 Minnesota. This project was necessary to mitigate unacceptable
10 transmission line loadings during transmission outages. The cost of this
11 project was approximately \$11.1 million.

12
13 3. ***Minnesota/Wisconsin 345 kV Rebuild Project*** This project restored
14 degraded portions of the King-Eau Claire 345 kV line, spanning between
15 the eastern suburbs of Saint Paul, MN and Eau Claire, Wisconsin and the
16 Prairie Island-Pleasant Valley 345 kV line in Southeast Minnesota.
17 Approximately 1/3 of the 144 miles of transmission line and structures
18 were replaced. The Company's cost of this project was approximately
19 \$11 million.

20
21 4. ***Lawrence-Lincoln County, South Dakota Project*** This investment
22 upgrades the capacity of the Lawrence -Lincoln County 115 kV line and
23 associated substations in Sioux Falls, South Dakota. This 11 mile upgrade
24 was necessary to mitigate unacceptable transmission line loadings during
25 transmission outages. The cost of this project was approximately \$7.2
26 million.

27

1 5. ***Maple River-Red River, North Dakota Project*** This project increases
2 the capacity of the 6 mile Maple River-Red River 115 kV line and
3 includes the installation of a second 187 MVA 230/115 kV transformer
4 at Maple River Substation, near Fargo, North Dakota. This upgrade was
5 necessary to accommodate load growth in the City of Fargo metropolitan
6 area, and prevent overloads during transmission line outages. The cost of
7 this project was \$5.8 million.

8
9 **B. Generation Interconnection Investments**

10
11 Q. PLEASE EXPLAIN THE GENERATION INTERCONNECTION INVESTMENTS.

12 A. Generation interconnection investments include the investments in
13 transmission facilities that are necessary to interconnect a generator to the
14 transmission grid, as well as any capacity upgrades necessary to allow
15 generation to operate without placing a reliability risk on the rest of the
16 transmission system.

17
18 Since 2004, a number of generators have been added to the NSP System,
19 requiring significant investments in transmission facilities. Following is a list of
20 the new generation facilities and the transmission facilities or upgrades
21 necessary to support them:

22
23 1. ***Blue Lake Generator # 7 and # 8 Interconnection Project*** This
24 generation project added two combustion turbines for a combined
25 increase of 385 MW to the Blue Lake Natural Gas Generating Plant, in
26 Shakopee, Minnesota. It became operational in 2005. The transmission
27 investment provides for additional substation interconnection facilities at

1 the Blue Lake substation, bringing the existing McLeod County - Black
2 Dog 230 kV line into the Blue Lake substation and upgrading the
3 capacity of the 10-mile section to the Black Dog substation. The total
4 cost of this project was approximately \$11.3 million.

5
6 2. ***Angus Anson Generator # 4 Interconnection Project*** This generation
7 project added a 180 MW combustion turbine at the Angus Anson
8 Peaking Plant located near Sioux Falls, South Dakota, and became
9 operational in 2005. The transmission investment provides for 115 kV
10 substation equipment and .3 miles of 115 kV transmission line at Split
11 Rock Substation adjacent to the peaking plant. The total cost of this
12 project was approximately \$1.7 million.

13
14 3. ***Faribault Energy Park Interconnection Project*** This project
15 addresses the construction of two combustion turbines (300 MW) at the
16 Faribault Energy Park located just north of Faribault, Minnesota
17 (approximately 30 miles south of the Twin Cities metropolitan area). The
18 first unit became operational in 2006, and the second unit is planned to
19 become operational in the second quarter of 2008. The transmission
20 investment includes building a new substation, and increasing the
21 capacity of 25 miles of 115 kV transmission and 13 miles of 69 kV
22 transmission. The total cost of this project is approximately \$33.8 million.

23
24 4. ***Mankato Energy Center Interconnection Project.*** This project
25 addresses the construction of a 380 MW combined cycle plant in
26 Mankato, Minnesota. This plant became operational in 2006. The
27 transmission investment provides for upgrades to the Wilmarth 345 kV,
28 115 kV, and 69 kV substation to accommodate the interconnection. It

1 also provided three short (less than .5 miles) transmission lines, one
2 345kV and two 115kV. The total cost of this project is approximately
3 \$18.5 million.

4
5 5. ***Highbridge Generating Station Combined Cycle Plant Project***

6 This project is to interconnect a new 575 MW combined-cycle generating
7 facility at the High Bridge Generation station in St. Paul, Minnesota. This
8 generating plant is expected to become operation in 2008. The
9 transmission investment will replace the existing 115 kV substation at
10 High Bridge and upgrade the capacity of 5 miles of 2 115 kV
11 transmission circuits. This project is expected to cost approximately \$18.7
12 million.

13
14 6. ***Colville Combustion Turbine plant Interconnection Project*** This

15 project addresses construction of a 350 MW combustion turbine near
16 Cannon Falls in southeast Minnesota. This generating plant is expected to
17 become operation in 2008. The transmission investment will construct a
18 115 kV breaker substation, generator interconnection, and upgrades two
19 115-69 kV transformers. In addition, this project will upgrade the 10
20 mile 115 kV line to Empire, and the 6-mile Cannon Falls - Miesville, 14
21 mile Cannon Falls - Northfield and 5 mile Travers - GRE Travers 69 kV
22 lines. This project is expected to cost approximately \$3.8 million.

23
24 **C. Wind Support Transmission Investments**

25
26 Q. PLEASE EXPLAIN THE WIND SUPPORT TRANSMISSION INVESTMENTS.

27 A. In 1994, the Company received approval to add additional dry cask spent fuel
28 storage at its Prairie Island nuclear plant. Without the ability to store additional

1 casks, the plant would not have been able to continue to operate beyond 1995.
2 As a condition of this approval, the Company agreed to increase its use of
3 wind generation to a total of 425 MWs by 2002, and an additional 400 MW if
4 the Minnesota Public Utilities Commission (“MPUC”) found this to be
5 consistent with the least cost planning by 2012.

6
7 To accommodate the additional wind generation, the Company has primarily
8 invested in two large transmission projects. The first project provides
9 transmission facilities to support the addition of 130 MW of wind generation
10 along the Buffalo Ridge area in Southwest Minnesota. The second project
11 provides transmission capacity to incorporate the additional 400 MW of wind
12 generation along the Buffalo Ridge area, complying with our requirement of
13 825 MW in total wind production.

14
15 The following provides more detail on these two projects.

16
17 1. ***Southwest Minnesota 425 MW Project*** This investment
18 accommodates the addition of 130 MW of wind generation located along
19 the Buffalo Ridge area of Southwestern Minnesota. This investment
20 includes the construction of 54 miles of new 115 kV and 161 kV lines in
21 southwest and southern Minnesota, 53 miles of upgraded 115 kV line,
22 and several new substations to support the additional wind generation.
23 This project was completed in 2007, at a total cost of approximately \$81.5
24 million.

25
26 2. ***Southwest Minnesota 825 MW Project*** This investment
27 accommodates the addition of 400 MW of wind generation located along

1 the Buffalo Ridge area of Southwestern Minnesota. This investment
2 includes 95 miles of new 345 kV line, 64 miles of new 115 kV, and 40
3 miles of upgraded 115 kV line, as well as additional substation facilities.
4 This project is scheduled to be completed by July, 2008 at an expected
5 total cost of approximately \$229 million. Approximately \$100 million of
6 the total cost is associated with the new 345 kV line.

7
8 Q. ARE THERE BENEFITS TO THESE TRANSMISSION INVESTMENTS BEYOND THEIR
9 SUPPORT OF ADDITIONAL WIND GENERATION?

10 A. Yes. Today there is very little high capacity transmission between North
11 Dakota, South Dakota, and eastern Minnesota. These new transmission
12 facilities, particularly the new 345 kV line begins to increase the transmission
13 capacity across the state of Minnesota and will support the Company's
14 growing load in North Dakota.

15
16 **III. CAPX 2020**

17
18 Q. DOES THE COMPANY PLAN ADDITIONAL MAJOR TRANSMISSION EXPANSION?

19 A. Yes. It has been almost three decades since the electric network serving the
20 Minnesota and North Dakota region has been expanded to any large degree.
21 During this time the demand for power has continued to grow. To continue
22 to serve the growing needs of consumers in this region, large amounts of new
23 generation and transmission will need to be added.

24
25 As the North Dakota Public Service Commission is aware, transmission-
26 owning utilities in the upper Midwest area are highly interconnected, and there
27 is a long history of coordinated regional planning through the MAPP RTC and
28 various MAPP sub-regional planning groups ("SPGs") in the years prior to the

1 formation of the MISO. In that same vein, the Company has become
2 involved in an initiative of investor-owned, cooperative and municipal power
3 agency transmission-owning and transmission dependent utilities in the
4 historic MAPP region, that are planning and constructing new transmission
5 infrastructure as needed to serve regional load growth, provide the additional
6 transmission needed for new regional generation resources, and to meet
7 regional reliability needs through approximately the year 2020. This initiative
8 is referred to as the “CapX 2020 Transmission Expansion Initiative.” In 2004,
9 five regional utilities -- the NSP Operating Companies, Great River Energy
10 (“GRE”), Minnesota Power (“MP”), Missouri River Energy Services
11 (“MRES”) and Otter Tail Power Company (“OTP”) -- agreed to conduct the
12 engineering studies they believed were needed to establish a framework or
13 comprehensive plan for the development of transmission infrastructure to
14 meet the increasing demand for electricity in Minnesota and the surrounding
15 area. Since 2004, additional entities have joined the effort. They include:
16 Dairyland Power Cooperative (“DPC”), Central Minnesota Municipal Power
17 Agency (“CMMPA”), Minnkota Power Cooperative (“MPC”), Rochester
18 Public Utilities (“RPU”), Southern Minnesota Municipal Power Agency

19

1 (“SMMPA”), and Wisconsin Public Power, Inc. (“WPPI”).¹ The participants
2 in the CapX 2020 initiative include both Midwest ISO member utilities and
3 non-Midwest ISO members. In addition, other utilities have lent their
4 technical support in many of the detailed studies associated with this initiative.

5
6 The CapX 2020 participants have developed a comprehensive transmission
7 vision plan that contemplates construction of needed new transmission
8 infrastructure over a long planning horizon. More information about the
9 initiative is available at the CapX 2020 web site (www.capx2020.com).

10
11 **IV. CONCLUSION**

12
13 Q. CAN YOU PLEASE SUMMARIZE YOUR CONCLUSIONS?

14 A. Since 2005, the Company has invested significant capital funds to support the
15 transmission needs of our consumers, and to prepare for additional growth
16 and future generation. Our request for an increase in rates in this proceeding
17 will in part provide recovery of these important and necessary investments.

18
19 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

20 A. Yes.

¹ CMMPA is a joint action agency of 12 municipal members located in south central Minnesota. DPC is a generation and transmission (“G&T”) cooperative that provides the wholesale electrical requirements and other services for 25 electric distribution cooperatives and 19 municipal utilities in Wisconsin, Minnesota, Iowa and Illinois. GRE is a G&T cooperative and provides wholesale electric service to 28 distribution cooperatives in Minnesota. MP is a division of ALLETE and supplies retail electric service to 141,000 customers and wholesale electric service to 16 municipalities in Minnesota. MPC is a G&T cooperative serving 11 member-owner distribution cooperatives in eastern North Dakota and northwestern Minnesota. MRES is a joint action agency of 23 municipal members located in Iowa, Minnesota, North Dakota and South Dakota. OTP provides electricity and energy services to more than 129,000 customers in Minnesota, North Dakota, and South Dakota. RPU is the largest municipal utility in the state of Minnesota serving 45,000 electric customers in the City of Rochester. SMMPA is a joint action agency of 18 members in central Minnesota. WPPI is a municipal joint action agency serving 46 municipal utilities in Wisconsin, Iowa and Minnesota.

1 STATE OF NORTH DAKOTA
2 BEFORE THE
3 PUBLIC SERVICE COMMISSION
4

5
6 In the Matter of the Application of Northern)
7 States Power Company, a Minnesota Corporation)
8 For Authority to Increase Rates for Electric Service) Case No. PU-07-____
9 in North Dakota)
10

11
12
13 **AFFIDAVIT OF**
14 **Walter T. Grivna**
15

16
17 I, the undersigned, being duly sworn, depose and say that the foregoing is
18 the Direct Testimony of the undersigned, and that such Direct Testimony and the
19 exhibits or schedules sponsored by me to the best of my knowledge, information
20 and belief, are true, correct, accurate and complete, and I hereby adopt said
21 testimony as if given by me in formal hearing, under oath.
22

23
24 Walter T. Grivna
25 Walter T. Grivna
26

27
28
29
30 Subscribed and sworn to before me, this 5th day of December, 2007.
31

32 Judith Froemming
33 Notary Public
34
35
36

