STATE OF MINNESOTA

OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE ROUTE PERMIT APPLICATION FOR THE CAPX2020 HAMPTON – ROCHESTER – LA CROSSE 345 KV TRANSMISSION LINE	PUC DOCKET NO. E002/TL-09-1448 OAH DOCKET NO. 7-2500-20283-2

DIRECT TESTIMONY OF

GRANT STEVENSON

On Behalf of

APPLICANT

NORTHERN STATES POWER COMPANY, A MINNESOTA CORPORATION

April 18, 2011

Exhibit _____

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND QUALIFICATIONS

Q. STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Grant Stevenson and my business address is 414 Nicollet Mall, Minneapolis, MN 55401.

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

A. I am employed as a Senior Transmission Project Manager at Xcel Energy Services Inc., the service company provider for Northern States Power Company, a Minnesota corporation ("Xcel Energy" or the "Company"). As part of my responsibilities in this position, I am the project manager for the Hampton to Rochester to La Crosse 345 kilovolt ("kV") Transmission Project ("Hampton – Rochester – La Crosse Project" or "Project") and am primarily responsible for capital project scope, cost, schedule, and risk management of the Project.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.

A. I graduated from the University of Minnesota in 1986 with a Bachelor's degree in Mechanical Engineering. After graduation, I joined Northern States Power Company as a Mechanical Engineer at the Sherburne County generating plant in Becker, Minnesota. I was responsible for managing projects to improve productivity, efficiency, and safety at the company's largest generating plant. I also managed contractors, plant operations, maintenance, and technical personnel. Since 1986, I have held positions with Xcel Energy with increasing responsibility.

I became a Transmission Project Manager in September 2000. In my role as Transmission Project Manager, I was a project manager for Xcel Energy's 825 megawatt ("MW") wind outlet transmission projects in southwestern Minnesota from 2003 until 2006. The project included more than 500 miles of transmission lines and affected 29 substations. In August 2006, I was promoted to Senior Transmission Project Manager. This is the fifth transmission line proceeding I have participated in. My resume is attached as Schedule 1.

Q. FOR WHOM ARE YOU TESTIFYING?

A. I am providing testimony on behalf of Xcel Energy, the Applicant for a Route Permit in this proceeding.

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

A. The purpose of my testimony is to provide information regarding the Project, including engineering design, costs and schedule.

Q. WERE YOU INVOLVED IN THE PREPARATION OF XCEL ENERGY'S ROUTE PERMIT APPLICATION IN THIS PROCEEDING?

A. Yes. I contributed to the engineering and project management sections of the Route Permit Application ("Application") and was involved in the routing analysis and development. I have participated in all aspects of the Project's public outreach, including public open houses, agency meetings, the Department of Commerce scoping meetings and advisory task force meetings.

Q. WHAT SCHEDULES ARE ATTACHED TO YOUR TESTIMONY?

A. Schedule 1: Resume of Grant Stevenson

Q. ARE YOU AVAILABLE TO PROVIDE TESTIMONY IN SUPPORT OF PARTICULAR SECTIONS OF THE ROUTE PERMIT APPLICATION?

A. Yes. I am testifying in support of portions of Chapter 2 including Section 2.4 (Project Schedule) and Section 2.5 (Project Costs) and those portions of Chapter 3 (Section 3.1 Transmission Structure Engineering, Design, Section 3.4.2 Construction Procedures, 3.4.3 Transmission Line Construction, Section 3.4.4 Restoration Procedures, 3.5 Maintenance Procedures) relating to project design, construction and maintenance.

II. PROJECT OVERVIEW

Q. PLEASE PROVIDE A GENERAL DESCRIPTION OF THE PROJECT.

A. The Project consists of 345 kV transmission line facilities and substation connections between the Hampton Substation and a new substation in the La Crosse, Wisconsin area and a 161 kV transmission line between the proposed North Rochester Substation and the existing Northern Hills Substation. The Minnesota portion of the Project consists of the following:

- A new 345 kV transmission line from the Hampton Substation near Hampton, Minnesota (permitted as part of the Brookings County—Hampton 345 kV Project) to a proposed North

Rochester Substation to be located between Zumbrota and Pine Island, Minnesota;

- A new 345 kV transmission line from the proposed North Rochester Substation to the proposed Mississippi River crossing near Kellogg, Minnesota.
- A new 161 kV transmission line between the proposed North Rochester Substation and the existing Northern Hills Substation, located in northwest Rochester, Minnesota; and
- Construction of the proposed North Rochester Substation and improvements to the Hampton and Northern Hills substations.

As currently proposed, the 345 kV sections of the Project in Minnesota will be constructed as a single circuit on double-circuit capable poles.

The Wisconsin portion of the Project will be permitted in a separate proceeding before the Public Service Commission of Wisconsin.

Q. WHAT DOES IT MEAN FOR POLES TO BE "DOUBLE CIRCUIT CAPABLE"?

A. It means that the poles are designed to support two 345 kV circuits. For this particular project, the davit arms for both circuits will be installed during initial construction but only one circuit will be installed except as noted below.

Q. DOES THE CERTIFICATE OF NEED REQUIRE DOUBLE CIRCUIT CAPABILITY?

A. Yes. The Commission's Certificate of Need Order approved double circuit capability for 345 kV portions of the Hampton – Rochester – La Crosse Project to address future demand growth. Docket No. E-002/CN-06-1115,

Order Granting Certificates of Need With Conditions (May 22, 2009) ("Order"). The Commission noted that:

> The obligation to build a single transmission line to meet short- and medium-term needs provides an opportunity to anticipate a longer-term need. In exchange for incurring the incremental cost of the Upsized Alternative in the short term - a cost estimated at $200 million for all three [345 kV] projects - Applicants would receive for decades to come the benefits of increased flexibility and avoided costs associated with building new transmission towers in certain areas. Given these advantages, MISO states that building single transmission lines on double-circuit towers has become standard practice.

Order at 29. The Commission therefore authorized the Applicants "to implement their plans for making optimum use of the resulting capital investments" by building double circuit capable poles. *Id.* at 30.

Q. WHAT ARE THE BENEFITS OF DOUBLE CIRCUIT CAPABILITY?

A. A double circuit line can occupy the same width of right-of-way as a single circuit line. Therefore, constructing a double-circuit capable line has the potential to reduce the overall number of transmission corridors.

Q. DESCRIBE THE ROUTES PROPOSED FOR THE NEW 345 KV LINE.

A. The Company proposed two routes in the Application for the new 345 kV line, the Preferred Route and the Alternative Route. Both routes start at the Hampton Substation near Hampton, Minnesota and end at a Mississippi River crossing at Alma. In addition, the Company identified two route options to provide flexibility at the Zumbro River Crossing ("Zumbro Dam Route

Option") and through the McCarthy Lake Wildlife Management Area ("WMA") ("McCarthy Lake Route Option"). During the Environmental Impact Statement Scoping Process, another route option was proposed to avoid impacts to the McCarthy Lake WMA that follows State Highway 42 to a point south of Kellogg, Minnesota ("Highway 42 Route Option"). A map showing these routes and route options is included as Schedule 2 to Tom Hillstrom's Direct Testimony.

Q. DESCRIBE THE ROUTES PROPOSED IN THE APPLICATION FOR THE NEW 161 KV LINE.

A. The Company also proposed two routes for the new 161 kV line, the Preferred Route and the Alternative Route. Both of the 161 kV routes start at the proposed site of the new North Rochester Substation between Zumbrota and Pine Island and end at the existing Northern Hills Substation in Rochester. A map showing these two routes is included as Schedule 5 to Tom Hillstrom's Direct Testimony.

III. TRANSMISSION STRUCTURE DESIGN AND CONSTRUCTION

Q. WHAT TYPE OF STRUCTURES DOES THE COMPANY PROPOSE TO USE FOR THIS PROJECT?

A. For the Project's proposed 345 kV line, Xcel Energy proposes to primarily use single pole, self-weathering steel double-circuit structures. For the North Rochester – Northern Hills 161 kV line, Xcel Energy proposes to use single-pole, self-weathering steel, single circuit structures. Single steel pole structures

are typically placed on large pier foundations of cast-in place, reinforced concrete. Specialty structures, including H-frame structures and other multiple pole, may be required in certain limited circumstances. For example, H-frame structures are sometimes required near environmentally sensitive areas when longer spans are required. H-frame structures consist of two steel poles with cross bracing. If soil conditions are poor, a deeper foundation, piling or other type of foundation may be required. Two-pole structures may also be required when the alignment turns at a 45- to 90-degree angle to reduce foundation size and aid constructability.

Q. ARE THERE ANY OTHER STRUCTURE TYPES THAT ARE PROPOSED FOR THIS PROJECT?

A. Yes. The crossing of the Mississippi River presents unique considerations that will require the use of triple circuit specialty structures. A portion of this crossing is on Upper Mississippi River Wildlife Refuge lands ("Refuge") managed by the U.S. Fish and Wildlife Service ("USFWS") and a Special Use Permit from the USFWS will be required to cross the Refuge. An existing 161/69 kV double-circuit transmission line crosses the Mississippi River and Refuge at the Project's proposed crossing location. The existing line crosses approximately 0.5 mile of Refuge lands and includes two structures on Refuge property. The proposed triple-circuit specialty structures will be constructed to carry two 345 kV circuits and a 161 kV circuit but will be operated at 345/161/69 kV. In Appendix E of the Application, the Company identified four possible design options for the proposed river crossing that which have

trade-offs between structure height, easement width, and the number of planes of conductors while maintaining only three structures on Refuge land.

Q. WHICH STRUCTURES TYPE DOES THE COMPANY PROPOSE TO USE FOR THE CROSSING?

A. The Company is continuing to work with USFWS on the most appropriate design. After the Route Permit was filed, USFWS requested a fifth alternative, labeled Option E. Option E is depicted on Map 8.4.1-06 on page 181 of the Draft Environmental Impact Statement. This design utilizes structures with two horizontal planes of conductors on USFWS lands, the widest structure type that can be accommodated on the existing permitted 180 feet right-of-way. On the Wisconsin side of the crossing, Option E would require a right-of-way width of 270 feet to accommodate structures with a single horizontal plane of conductors. The Company will work closely with the USFWS to identify the most appropriate structure design for this crossing.

Q. ARE THERE ANY OTHER AREAS WHERE THE COMPANY IS PROPOSING TRIPLE-CIRCUIT STRUCTURES?

A. Yes, Xcel Energy is proposing triple-circuit structures in two other areas where there are existing transmission lines: (1) on portions of the Preferred Route for the Hampton – North Rochester 345 kV section along U.S. Highway 52 ("US-52") between Cannon Falls and Zumbrota where there is an existing 69 kV line; and (2) on the Preferred Route for the North Rochester – Mississippi River 345 kV section near Plainview where there is an existing 69 kV line. The proposed triple-circuit structures would hold one 345 kV circuit, provide a

location for a future 345 kV circuit and carry an existing 69 kV circuit underbuild. These structures would range in height from 135 to 185 feet and have spans of approximately 500 to 1,000 feet. The triple-circuit structures will require an additional pole mid-span to support the 69 kV circuit.

Q. ARE THERE ANY AREAS WHERE TWO CIRCUITS WILL BE STRUNG ON THE DOUBLE CIRCUIT CAPABLE STRUCTURES AT THE TIME OF CONSTRUCTION?

A. Yes. At crossings of US-52, Xcel Energy proposes to install conductors and insulators on both sides of the poles during initial construction to facilitate the addition of a second circuit in the future. Installation of both sets of conductors will avoid future construction related conflicts and disruptions to highway operations when the second circuit is warranted. Xcel Energy also requests flexibility to install both sets of conductors at the crossings of the Zumbro River in areas of difficult access.

The Modified Preferred 345 kV Route and Alternate 345 kV Route follow the Dairyland Power Cooperative's Q3 Rochester to Alma 161 kV line for 9 to 11 miles to the Mississippi River. For these routes, the Company proposes installing 345 kV conductors and insulators on both circuits. The segment would be energized at 345/161 kV to carry the new line and the existing Q3 line. No additional 345 kV circuit capacity would be created in any of these configurations.

If the Highway 42 segment is selected, the route would not follow the existing Q3 and there would be no co-location.

Q. WOULD THE STRINGING OF THE SECOND SET OF CONDUCTORS AND INSULATORS AS YOU PROPOSE AFFECT THE CAPACITY OF THE 345 KV LINE?

A. No. At crossings of US-52 the two sets of wires would be tied together and would operate as a single circuit. At that Zumbro River crossing the second set of conductors and insulators would be installed but not energized. For sections collocated with Dairyland Power Cooperative's Q3 line, the second set of conductors would be energized at 161 kV to carry the existing Q3 circuit.

Q. ARE THERE ANY AREAS WHERE THE SECOND SET OF CONDUCTORS THAT WOULD EXCEED 1,500 FEET?

A. Yes. At the Zumbro River crossing, the second set of conductors may be installed to avoid later construction activities in areas of difficult or sensitive construction access. At this location, the length of the second set of conductors would likely be longer than 1,500 feet, however, the second set of conductors would not be energized.

Q. IF A PORTION OF THE 345 KV LINE WERE CO-LOCATED WITH THE Q3, HOW WOULD A SECOND 345 KV CIRCUIT LIKELY BE ACCOMMODATED?

A. At such time deployment of a second 345 kV circuit is warranted, the Q3 line would need to be routed to a new 345/161 kV substation located in the Plainview area to maintain community service reliability. In addition, a new 345/161 kV substation may be required near Alma to maintain outlet capability of Dairyland Power Cooperative's generating plant. In contrast, these facilities would not be required to add a second 345 kV circuit if the Project were

constructed along the Highway 42 Route. The difference in costs for construction and adding a second 345 kV circuit are shown in the table below.

Costs, 2009 Dollars (millions)			
Route Alternative	**Initial Construction**	**2nd 345 kV Circuit**	**Total**
Hwy 42 Route	$20.7	$2	$22.8
Q3 Route	$18.7	$16 to 31.3	$34.7 to 50

Q. WHAT CONDUCTORS DOES THE COMPANY PROPOSE TO USE FOR THE PROJECT?

A. Each phase of the 345 kV transmission line will consist of bundled conductors composed of two 954 kcmil 54/7 Cardinal Aluminum Conductor Steel Supported ("ACSS") cables or conductors of comparable capacity. Each phase of the 161 kV transmission line will consist of a single conductor using 795 ACSS cables or conductors of comparable capacity. Typically, only one circuit (three pairs of bundled conductors) will be installed on three davit arms.

Q. WHAT ARE THE ANTICIPATED SPAN LENGTHS FOR THE PROJECT?

A. Spans would typically be 600 to 1,000 feet between structures for the majority of the 345 kV line Project. The 161 kV structures will be spaced approximately 400 to 700 feet apart.

Q. WILL FIBER OPTIC CABLES ALSO BE INSTALLED?

A. Yes. The shield wires on the 345 kV and 161 kV transmission line facilities will include fiber optic cable that allows a path for substation protection equipment to communicate with equipment at other terminals on the transmission line.

Q. DESCRIBE THE RIGHT-OF-WAY THAT WILL BE REQUIRED FOR THE PROJECT.

A. Generally, a right-of-way cleared of obstructions is required for the safe operation of the facilities. A 150-foot wide right-of-way will be needed for the majority of the 345 kV transmission line. In some limited instances, where specialty structures are required for long spans or in environmentally sensitive areas, a larger, 180-foot wide, right-of-way may be required. A 80-foot wide right-of-way will be required for the 161 kV transmission line.

Q. CAN YOU PROVIDE AN OVERVIEW OF THE CONSTRUCTION TECHNIQUES THE COMPANY EXPECTS TO EMPLOY?

A. The general construction techniques for transmission line and substation construction are contained in the Route Permit Application. Application at p. 3-13 to 3-20. To reduce the time of construction and minimize ground disturbing impacts, Xcel Energy may use helicopters for conductor installation and some hardware installation.

In addition, Xcel Energy may use implosive connectors to join conductors and deadend hardware rather than hydraulic splices. Implosive connectors use a specific controlled detonation to fuse the conductors and hardware together. The process creates noise equivalent to a clap of thunder or commercial fireworks, which lasts only an instant. The implosive process provides for a specific engineered connection, which improves the strength and quality of the connections that can be a potential failure point in the transmission system. In

addition, it takes less time than installing hydraulically-compressed connectors and reduces the number of set up areas required on the ground. This further reduces ground-disturbing activities.

Both of these construction techniques are currently being used to construct the CapX2020 Monticello to St. Cloud 345 kV Transmission Line Project. The Company will coordinate with the Minnesota Department of Transportation to develop a traffic management plan to minimize interference with the operation of the highway.

IV. PROJECT SCHEDULE AND COST

Q. WHAT IS THE TIME SCHEDULE FOR COMPLETING THE PROJECT?

A. An overview of the expected permitting and construction schedule for the Project was included in the Application in Section 2.4 and is provided below. Additionally, Project completion by the second quarter of 2015:

HAMPTON –ROCHESTER –LA CROSSE 345 kV PROJECT SCHEDULE	
ACTIVITY	**TIMEFRAME**
Minnesota Route Permit Granted	Fall 2011
Wisconsin Certificate of Public Convenience and Necessity	Spring 2012
Federal Environmental Impact Statement	Spring 2012
Pre-Construction Activities	Spring 2012
Construction Underway	Fourth Quarter 2012 to Second Quarter 2015

Project Completion	Second Quarter 2015

Q. WHAT IS THE PROJECTED CAPITAL COST OF THE PROJECT?

A. The total cost of the Project, which includes the survey, engineering, materials, construction, right-of-way, and project management associated with the transmission line and substations, is dependent, in significant part, on the design of the transmission line facilities. The Project (Minnesota portion) will cost $229 million to $253 million (in 2009 dollars), depending on the route selected, as summarized in the tables below. I would note that the costs for the Hampton Substation are listed as zero as this substation is being permitted and constructed as part of the CapX2020 Brookings County – Hampton 345 kV Transmission Project (Docket No. E002/TL-08-1474).

345 kV Route Alternative	**Cost (Millions)**
Modified Preferred Route	$194
Alternative Route	$202
Modified Preferred Route with McCarthy Lake Route Option	$199
Modified Preferred Route with Zumbro Dam Route Option	$191
Modified Preferred Route with Highway 42 Route Option	$196
Alternative Route with McCarthy Lake Route Option	$207
Alternative Route with Highway 42 Route Option	$202

161 kV Route Alternative	Cost (Millions)
Preferred Route	$16
Alternative Route	$17

Substation	Cost (Millions)
North Rochester Substation	$22
Northern Hills Substation	$2

V. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

3788636v1

Grant David Stevenson, PMP

Xcel Energy
414 Nicollet Mall – MP8A
Minneapolis, MN 55401

612-330-6330
grant.stevenson@xcelenergy.com

Experience

Project Manager, Senior Project Manager **2000 to present**
Transmission Business Unit, Xcel Energy, Minneapolis, MN

- Provide strategic leadership to multidisciplinary teams on various high-profile transmission and substation projects.
- Work with planning, engineering, siting, construction, consultants and contractors to define scope of work, produce project estimates, gain capital spending authorization, establish project schedules, track and reconcile expenditures, gain permits, design, bid and construct capital projects to that meet budgets and in-service dates.
- Work extensively with the public and state regulatory officials during project permitting phases to locate new transmission lines in areas that balance issues of land use, cost, impact to people and impact to the natural environment. Participate and lead public meetings and provide testimony in permit proceedings.
- Recent project portfolio has included:
  - Since 2006, project manager for CapX 2020 Fargo and LaCrosse projects.
  - Project manager of Southwest Minnesota 825 MW wind transmission project, 2003 – 2006. This $250 million project involved construction of 200 miles of new transmission lines, the reconstruction of 300 miles of existing lines, and impacted 29 substations. The project also required project agreements with 11 electric utilities.
  - SE Metro project, a rebuild of an existing 115 line to double circuit 115.
  - Bloomington relocation project, including 115 kV double circuit underground construction.

Sales and Customer Service Manager **1999 to 2000**
Electric Sales and Customer Service, Northern States Power Company, Minneapolis, MN

- Successfully led team of 10 account representatives to meet goals in sales, customer service, demand side management and customer satisfaction.
- Managed projects to improve customer satisfaction and team effectiveness.
- Hired, trained and coached employees on energy management, conservation, distribution reliability.

Energy Management Engineer, Account Executive **1990 to 1999**
Northern States Power Company, Minneapolis, MN

- Provided effective technical support to key industrial customers and NSP sales representatives regarding energy conservation programs and initiatives.
- Assumed role of Account Executive in 1995, managing NSP's relationship with several demanding strategic customers.
- Led multidisciplinary teams to solve customer-specific electric reliability, power quality, capacity, and distribution construction problems.

Plant Project Engineer **1986 to 1990**
Sherburne County Generating Plant, Northern States Power Company, Becker, MN

- Managed contractors, directed work of plant operations, maintenance and technical personnel.
- Managed projects to improve productivity, efficiency and safety at NSP's largest generating plant.
- Identified electrical and mechanical problems and recommended corrective repairs.

Professional Certification

Certified Project Management Professional (PMP) by Project Management Institute, 2007

Education

Project Management Institute Project Management Professional Training, 2007

Minnesota Management Institute, University of Minnesota School of Management, 2000
Intensive, condensed MBA-level business management curriculum.

Minnesota Management Academy, University of Minnesota School of Management, 1998
Management principles and skills for front-line managers.

Post-graduate coursework at University of St. Thomas and University of Minnesota in economics, business law, marketing, manufacturing.

Bachelor of Mechanical Engineering, University of Minnesota, 1986