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

TOM HILLSTROM

On Behalf of

APPLICANT

NORTHERN STATES POWER COMPANY, A MINNESOTA CORPORATION

April 18, 2011

Exhibit _____

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I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND EMPLOYMENT ADDRESS.

A. My name is Tom Hillstrom, and my business address is 414 Nicollet Mall, Minneapolis, Minnesota 55401.

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

A. I am employed as the Supervisor, Siting and Permitting by Xcel Energy Services Inc., the service company provider for Northern States Power Company, a Minnesota corporation ("Xcel Energy" or the "Company"). In my current position, I am responsible for the permitting of the Hampton to Rochester to La Crosse 345 kilovolt ("kV") Transmission Project ("Hampton – Rochester – La Crosse Project" or "Project").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I earned a Bachelor of Science degree in biology from the University of Minnesota in 1988. Since then, I have held several different positions in the environmental field. I have experience analyzing environmental impacts from roadway and electric transmission projects and developing environmental review documents such as environmental assessment and environmental impact studies. My experience also includes obtaining permits for these types of projects. As the Supervisor of Siting and Permitting for Xcel Energy Services Inc., I am responsible for managing siting and permitting efforts for high voltage transmission line projects. 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 SCHEDULES ARE ATTACHED TO YOUR TESTIMONY?

A.
- Schedule 1: Resume of Tom Hillstrom
- Schedule 2: Map of Modified Preferred Route, Alternative Route, and Highway 42 Route for the 345 kV line
- Schedule 3: Summary of Application of Routing Criteria to Modified Preferred and Alternative 345 kV Routes for the North Rochester to Mississippi River 345 kV Section
- Schedule 4: Map of Increased Route Width Requested for Highway 42 Route
- Schedule 5: Map of Preferred and Alternate Routes for 161 kV Line
- Schedule 6: Summary of Application of Routing Criteria to Preferred and Alternative 161 kV Routes
- Schedule 7: Visual Assessment of Route Alternative Impacts on Great River Road
- Schedule 8: Xcel Energy's Updated House Counts Analysis
- Schedule 9: Map showing both the 5 foot and 25 foot alignments along US-52
- Schedule 10: Diagram of the Hampton Substation, including the conceptual alignments for the transmission line interconnections
- Schedule 11: Map of North Rochester Substation showing alternative configurations
- Schedule 12: Diagram of North Rochester Substation at Preferred Substation Siting Area, including conceptual alignments for transmission line interconnections

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

A. The purpose of my testimony is to provide an overview of the environmental and routing considerations for the proposed Hampton – Rochester – La Crosse Project. I am also testifying regarding proposed route and segment alternatives that were suggested in the environmental impact statement ("EIS") scoping process and included in the Minnesota Department of Commerce, Division of Energy Resources ("Department") Scoping Decision, dated August 6, 2010. Additionally, my testimony addresses issues related to Minnesota Department of Transportation ("Mn/DOT") permitting for the Project and certain issues raised in the Draft Environmental Impact Statement ("DEIS") that was issued on March 21, 2011.

Q. WERE YOU INVOLVED IN THE PREPARATION OF THE ROUTE PERMIT APPLICATION IN THIS PROCEEDING?

A. Yes. I contributed to the overall compilation of the Route Permit Application (the "Application") and I was primarily responsible for identifying Xcel Energy's proposed routes.

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

A. Yes. I am testifying in support of Chapter 1 (Introduction), Chapter 4 (Route Selection Process), Chapter 5 (Rationale for Selection of Preferred Routes, 345 kV Line and 161 kV Line), Chapter 6 (Description of Project Components), Chapter 7 (Hampton – North Rochester 345 kV Section), Chapter 8 (North Rochester – Mississippi River 345 kV Section), Chapter 9 (North Rochester to

Northern Hills 161 kV Transmission Line), Chapter 10 (Associated Facilities), Chapter 11 (Permits and Approvals); and Chapter 12 (Federal and State Agency, Local Government and Public Involvement) and Appendices A-R. I am also supporting portions of Chapter 2 including Sections 2.1 (Project Proposal), 2.2 (Project Location), and 2.3 (Route Width and Alignments) portions of Chapter 3, including Sections 3.1 (Transmission Line Structure Engineering, Design and Right-of-Way Requirements), Section 3.2 (Substation Design), Section 3.3 (Design Options to Accommodate Future Expansion); Section 3.4.1 (Right-of-Way and Land Acquisition), Section 3.6 (Electric and Magnetic Fields), Section 3.7 (Stray Voltage), and Section 3.8 (Farming Operations, Vehicle Use, and Metal Buildings Near Power Lines).

Q. PLEASE DESCRIBE THE PROCEDURAL HISTORY OF THE COMPANY'S ROUTE PERMIT APPLICATION.

A. The Application was submitted to the Minnesota Public Utilities Commission (the "Commission") on January 19, 2010. The Commission held a hearing on to determine if the Application was complete, if the Commission should appoint a public advisor, and if the Commission should authorize an advisory task force. In an order dated March 16, 2010, the Commission accepted the Application as complete and authorized the Department to process the Application under the full review process, to name a public advisor in this case, and to establish two advisory task forces. The Department held six public information and EIS Scoping meetings between May 4 and May 6, 2010, at three different locations along the proposed Project routes: Plainview, Pine Island, and Cannon Falls, Minnesota. The Department established two geographically-based Advisory Task Force ("ATF") which each focused on

approximately half of the project area: the Hampton to Northern Hills ATF and the North Rochester to Mississippi River ATF. The two ATFs each met three times between June and August 2010 and made several recommendations for considerations in the EIS. In August, the Department issued its EIS Scoping decision dated August 6, 2010. On March 21, 2011, the Department released its DEIS.

II. PROJECT OVERVIEW

Q. WHAT IS THE GENERAL DESCRIPTION OF THE HAMPTON – ROCHESTER – LA CROSSE 345 KV TRANSMISSION LINE PROJECT?

A. The Project consists of a 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 345 kV double-circuit capable transmission line from the proposed Hampton Substation near Hampton, Minnesota, to a proposed North Rochester Substation to be located between Zumbrota and Pine Island, Minnesota;
- A new double-circuit capable 345 kV transmission line from the proposed North Rochester Substation to the proposed Mississippi River crossing near Alma, Wisconsin;
- 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.

The Wisconsin portion of the Project will be subject to separate review and approval by the Public Service Commission of Wisconsin ("PSCW").

Q. WHAT IS THE PURPOSE OF THE PROJECT?

A. The Project will serve three needs: regional reliability, generation outlet and local community service in the Rochester and Winona/La Crosse areas and surrounding rural areas, including customers of Rochester Public Utilities, Peoples Electric Cooperative and Xcel Energy.

Q. HAS THE COMMISSION ISSUED A CERTIFICATE OF NEED FOR THE PROJECT?

A. Yes. The Commission determined that the Project is needed in the CapX2020 Certificate of Need proceedings. Order Granting Certificates of Need with Conditions, In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the CapX 345 kV Transmission Projects, Docket No. ET-2, E-002, et al./CN-06-1115 (May 22, 2009 as modified August 9, 2009).

A North Rochester – Chester 161 kV line was also approved by the Commission in the Certificate of Need proceeding but it is not part of this Route Permit proceeding. Routing for this line will be permitted separately.

The Commission determined that the Project is needed and also concluded that the facilities should be "upsized" to accommodate future growth. The upsized configuration consists of constructing the 345 kV sections of the Project as one 345 kV circuit complete for the initial installation and the capability to add a second circuit to the same poles in the future when conditions warrant.

Q. HOW WILL THE 345 KV SECTIONS OF THE PROJECT BE BUILT TO FACILITATE A FUTURE SECOND CIRCUIT?

A. The Project will consist of constructing one 345 kV single circuit transmission line on double circuit, self-weathering steel structures. The poles will include a second set of davit arms that could carry a second circuit.

Q. WHAT IS THE CURRENT STATUS OF THE WISCONSIN PROCEEDING?

A. The Company submitted a Certificate of Public Convenience and Necessity application to the PSCW for the Wisconsin portion of the Project in January 2011. The application is currently undergoing a completeness review by the PSCW.

Q. IS THE PROJECT CURRENTLY UNDERGOING ANY OTHER STATE OR FEDERAL REVIEW?

A. Yes. One of the potential owners of the Project, Dairyland Power Cooperative ("DPC"), intends to seek federal funding from the Rural Utilities Service ("RUS") of the U.S. Department of Agriculture Rural Development Utilities Programs, for its anticipated ownership interest in the Project. RUS funding of the proposed Project would constitute a federal action subject to National Environmental Policy Act analysis and Section 106 of the National Historic

Preservation Act. RUS determined that an Environmental Impact Statement ("EIS") was necessary to assess the potential for significant impacts prior to making a decision regarding whether to fund DPC's ownership interest in the Project.

Q. WHAT IS THE CURRENT STATUS OF THE RUS ENVIRONMENTAL REVIEW?

A. The RUS issued its scoping report in February 2010. The RUS is currently preparing a Draft EIS which is expected to be released this summer.

III. 345 kV ROUTES

Routes Proposed in the Application

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

A. The Company proposed two routes in the Application for the new 345 kV line, the Route Permit Application ("RPA") 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.

Routes are analyzed in the Route Permit Application and the DEIS in three sections, corresponding to the geographic regions between the Project's substations. All three of these sections come together at the proposed North Rochester Substation. The three sections are: (1) Hampton to North Rochester 345 kV Section; (2) North Rochester to Mississippi River 345 kV Section and (3) North Rochester to Northern Hills 161 kV Section.

Q. CAN YOU PROVIDE A HIGH LEVEL OVERVIEW OF THE COMPANY'S PREFERRED AND ALTERNATE ROUTES FOR THE HAMPTON TO NORTH ROCHESTER 345 KV SECTION?

A. In the Hampton to North Rochester 345 kV Section, the Company's Preferred Route follows US Highway 52 ("US-52"), a high volume highway that Mn/DOT plans to convert to a freeway in the future. Xcel Energy's Alternate Route follows field divisions and property boundaries through agricultural land west of US-52. The Preferred 345 kV Route in the section is 36 miles long while the Alternate 345 kV Route is 47 miles long.

Q. CAN YOU PROVIDE A HIGH LEVEL OVERVIEW OF THE COMPANY'S PREFERRED AND ALTERNATE ROUTES FOR THE NORTH ROCHESTER TO MISSISSIPPI RIVER 345 KV SECTION?

A. In the North Rochester to Mississippi River 345 kV Section, the Company's Preferred 345 kV Route starts at the North Rochester Substation Preferred Siting Area and the Alternative 345 kV Route starts at the Alternative Siting Area. From the North Rochester Substation both routes head east and branch off into three potential Zumbro River crossings. The northern alternative for crossing the Zumbro River along the Alternative 345 kV Route does not utilize an existing infrastructure corridor ("North Crossing"). The central crossing alternative utilizes the Zumbro Dam ("Zumbro Dam Crossing") and the southern alternative utilizes a bridge over the Zumbro River ("White Bridge Road Crossing"). The three Zumbro River crossings and their associated routes were compared using the routing and siting criteria outlined in Table 5.1-3 of the Application. This comparison did not yield a sufficient reason to eliminate any of these three Zumbro River crossings. Rather the data leaned

slightly toward the White Bridge Road Crossing, therefore Xcel Energy deemed this crossing part of the Preferred 345 kV Route. East of the Zumbro River, the three river crossing options converge into two potential routes through relatively flat agricultural land. The Preferred Route for the 345 kV follows property boundaries and field lines for a greater percentage of its length than the Alternative 345 kV Route. The Preferred Route and Alternative Route again converge into a common segment following an existing transmission line through rugged, wooded terrain of blufflands west of the Mississippi River. In the Application, the Company also analyzed a route option that would deviate from the existing transmission line route to avoid the McCarthy Lake Wildlife Management Area ("WMA") ("McCarthy Lake Route Option').

Q. CAN YOU PROVIDE A HIGH LEVEL OVERVIEW OF THE COMPANY'S PREFERRED AND ALTERNATE ROUTES FOR THE NORTH ROCHESTER TO NORTHERN HILLS 161 KV SECTION?

A. The Preferred and Alternative 161 kV routes in the North Rochester to Northern Hills Section follow various combinations of roads, existing transmission lines, recreational trails and property boundaries.

Q. WHY DID THE COMPANY IDENTIFY ONE ROUTE AS PREFERRED?

A. Minnesota statutes and rules require an applicant to provide at least two proposed routes for a project and to state a preference for one of the proposed routes. Minn. Stat. § 216E.03, subd. 3; Minn. R. 7850.1900, Subp. 2(c). After consideration of numerous possibilities, the RPA Preferred Route and Alternative Route were developed to comply with this provision. The Company identified the RPA Preferred Route as the preferred because based

on the Company's best judgment and analysis of State routing criteria. Ultimately, the route for this Project will be decided by the Commission.

Modified Preferred Route—345 kV Line

Q. SINCE THE FILING OF THE ROUTE PERMIT APPLICATION, HAS THE COMPANY CONTINUED TO ANALYZE THE RPA PREFERRED ROUTE AND ALTERNATIVES PROPOSED IN THE ROUTE PERMIT PROCEEDING?

A. Yes. Since submitting the Route Permit Application in January 2010, the Company has continued to assess route alternatives. Based on this on-going analysis and public input during the scoping process, the Company has incorporated new segments in the North Rochester to Mississippi River 345 kV section of the RPA Preferred Route to develop a Modified Preferred Route.

Q. WHAT CHANGES WERE MADE TO THE RPA PREFERRED ROUTE FOR THE 345 KV LINE TO DEVELOP THE MODIFIED PREFERRED ROUTE?

A. There is one segment consolidation and one route alternative that the Company incorporated into the RPA Preferred Route to develop the Modified Preferred Route. The segment consolidation would shift the Preferred 345 kV Route approximately ½ mile to the north through a two mile segment east of US-52 near the North Rochester Substation siting area. In general, this alternative consolidates the preferred 345 kV and 161 kV routes in one corridor heading east from US-52 for two miles along the south side of 500th Street. At County Road 11, the Modified Preferred Route continues as it turns south for one half mile. This consolidation would place the 345 kV and 161 kV structures adjacent to each other along 500th Street and one half mile south on County Road 11.

The route alternative incorporated into the Modified Preferred Route is the route alternative referred to as 3P-002 in the DEIS. This route alternative is one and three quarters mile in length and is located just east of the previous consolidation alternative. Route Alternative 3P-002 follows half section lines as opposed to quarter section lines.

A map showing the Company's Modified Preferred Route and the Alternative Route are attached to my testimony as Schedule 2. The map of the Modified Preferred Route also shows the incorporation of these two changes.

Q. HOW DO THE MODIFIED PREFERRED ROUTE AND THE ALTERNATIVE ROUTE COMPARE BASED ON THE STATE ROUTING CRITERIA?

A. In the Hampton to North Rochester 345 kV Section, the Modified Preferred Route was selected because it has a higher percentage of corridor sharing. The Alternative Route in the Hampton to North Rochester 345 kV Section, is primarily located in agricultural areas, where emphasis was placed on following property boundaries and field lines to minimize impact to farmland. The Modified Preferred Route is approximately 11 miles shorter than the Alternative Route. Table 7.6-1 of the Application summarizes the analysis of the state routing factors for the Modified Preferred and Alternative routes for the Hampton to North Rochester 345 kV Section. I would note that the house counts contained in Table 7.6-1 have been updated as discussed later on in my testimony.

In the North Rochester to Mississippi River 345 kV Section, the Modified Preferred Route was selected because it minimizes impacts to land use by following existing transmission lines, roads, railroads and property boundaries. Both the Modified Preferred and Alternative routes minimize impacts to residences. Comparatively, the Modified Preferred Route does have five more homes within 300 feet of the proposed route centerline. Nevertheless, the Company recognized other factors such as following linear features or minimizing impacts to other resources as a rationale for selecting the Modified Preferred Route. Schedule 3 attached to my testimony summarizes the analysis of the state routing factors set forth in Minn. R. 7850.4100 for the Modified Preferred and Alternative Routes for the North Rochester to Mississippi River 345 Section.

Q. ARE THERE ANY OTHER 345 KV ROUTE ALTERNATIVES THAT THE COMPANY EXAMINED THAT IT BELIEVES WARRANT FURTHER CONSIDERATION?

A. The Company would support a further evaluation of a route alternative designated as 3B-003 in the DEIS. This route alternative was proposed to avoid impacts to the McCarthy Lake WMA by following State Highway 42 to a point south of Kellogg, Minnesota ("Highway 42 Route Option"). This route alternative is shown on Schedule 2.

Q. WHY DOES THE COMPANY SUPPORT FURTHER EVALUATION OF THIS ROUTE?

A. Both the Modified Preferred and Alternative Route for the 345 kV line share a common alignment of approximately nine miles along the existing Dairyland

Power Cooperative's Q3 line from slightly south of County Highway 14 to the Mississippi River. The Highway 42 Route Option offers another route alternative in this area that follows an existing infrastructure corridor.

Q. HOW DOES THE HIGHWAY 42 ROUTE OPTION COMPARE TO THE MODIFIED PREFERRED 345 KV ROUTE IN THE Q3 CORRIDOR WITH RESPECT TO IMPACTS ON HUMAN SETTLEMENT AND THE ENVIRONMENT?

A. With respect to human settlement, there are more homes located within 300 feet of the Highway 42 Route than the Modified Preferred 345 kV Route in the Q3 Corridor. The table presented below compares numbers of homes along the Company's Modified Preferred 345 kV Route and the Highway 42 route segment.

Residences	**Modified Preferred 345 kV Route Segment**	**Highway 42 Route Segment**
Residences 0-75 feet from route centerline	0	2
Residences 76-150 feet from route centerline	1	5
Residences 151-300 feet from route centerline	2	9
Total number of residences 0-300 feet from route	3	16
Density (residences/linear mile within 300 feet of route centerline)	0.2	1.0
Length		
Total length of route segment	14.4 miles	15.3 miles

While there are more homes along the Highway 42 Route, this route segment would, however, avoid impacts to the McCarthy Lake WMA. The Highway 42

Route also avoids impacts to the Snake Creek Management Area and would require less tree clearing compared to the Modified Preferred Route.

Q. IN EVALUATING THE HIGHWAY 42 ROUTE OPTION, ARE THERE OTHER CONSIDERATION THAT SHOULD BE EVALUATED?

A. Yes. The route selection in this area will impact the future build out of the system. As detailed in the Direct Testimony of Grant Stevenson, at such time a second 345 kV circuit is needed, the costs associated with adding that line differ based on the route segment selected for the east end of the Project.

Q. WHAT ROUTE WIDTH IS PROPOSED FOR THE 345 KV LINE?

A. The proposed route width for the 345 kV transmission line is 1,000 feet wide for the majority of its length, but the Company requests a route width of up to 1.25 miles in certain locations along US-52 on the Modified Preferred Route. These locations include portions of US-52 where Mn/DOT is considering building new highway infrastructure such as interchanges. The Company also requests a wider route width north of Cannon Falls and east of US-52 for approximately 1 mile where Farmland Natural Areas Program ("FNAP") easements exist adjacent to the preferred side of the highway.

For the Modified Preferred Route and the Alternative 345 kV Route, the Company is also requesting additional route width at the proposed North Rochester Substation siting area. Approximately 40 acres will be necessary for the substation, adequate buffer area, and to allow for transmission lines to connect to the substation.

For the Alternative 345 kV Route, the Company requests additional route width in the vicinity of the proposed North Rochester siting area. The Company requests a routing area of approximately 3,600 feet wide east to west and approximately 3.75 miles long north to south. The western boundary is 500 feet west of the existing Prairie Island – Byron 345 kV line and the eastern boundary is 500 feet east of the centerline of US-52.

If Highway Route 42 were selected, the Company also requests additional route width at the north end of the route near Kellogg. Additional route width would be required here to accommodate steep wooded slopes. At the widest point, the Company is requesting a route width of 1,400 feet. A map of the additional route width that would be needed in this area is presented as Schedule 4.

Maps of the other areas where the Company is requesting a wider route width are shown on maps in Appendix M of the Application.

Q. WHAT ARE FNAP EASEMENTS?

A. FNAP easements are conservation easements granted in favor of Dakota County and the U.S. Department of Agriculture and generally prohibit the placement of transmission lines within the easement area.

Q. WHAT ALIGNMENT OPTIONS ARE AVAILABLE IN THE AREAS WHERE THE FNAP EASEMENTS ARE LOCATED?

A. Two alignment options are available in these locations. First, if an agreement is reached between the Company and Dakota County, the U.S. Department of

Agriculture, and the affected landowners the line could be located close to US-52 within the FNAP easement area. The other alignment option is to place the line in away from US-52 in agricultural fields at the outer edge of the FNAP easements.

Q. HAS THE COMPANY HAD ANY FURTHER DISCUSSIONS WITH LANDOWNERS AND DAKOTA COUNTY REGARDING THE FNAP EASEMENTS?

A. Yes. Since the filing of the Application, the Company has had discussions with landowners and Dakota County regarding possible release of portions of the FNAP easements to allow for an alignment along US-52. These discussions are ongoing.

IV. 161 kV PREFERRED AND ALTERNATIVE ROUTES

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 161 kV Route and the Alternative 161 kV Route. Both of the 161 kV routes start at the designated siting area for the new North Rochester Substation between Zumbrota and Pine Island and end at the existing Northern Hills Substation in Rochester. Within the larger Northern Hills Substation siting area, Xcel Energy has identified an Alternative Siting Area to the north and a Preferred Siting Area which is two miles to the south. The Preferred 161 kV Route begins at the North Rochester Preferred Siting Area and the Alternate 161 kV Route begins at the Alternative Siting Area. A map from the

Application showing both the Preferred and Alternative routes for the 161 kV line is attached as Schedule 5 to my testimony.

Q. WHY DID THE COMPANY IDENTIFY THE PREFERRED ROUTE FOR THE 161 KV LINE AS PREFERRED?

A. The Preferred 161 kV Route was selected because it follows existing infrastructure corridors (transmission lines or roads) for greater percentage of its length when compared with the Alternative 161 kV Route. Ninety-nine percent of the Preferred 161 kV Route follows existing transmission lines (3 percent), roads (86 percent) or property lines (10 percent). In comparison, eighty-nine percent of the Alternative 161 kV Route follows existing transmission lines (32 percent), roads (45 percent) or property lines (12 percent). The Preferred 161 kV Route also is shorter than the Alternative 161 kV Route. Generally, a shorter route causes fewer impacts to land use and resources and would result in lower overall Project costs.

While the Preferred 161 kV Route follows more existing corridors, the Preferred 161 kV Route impacts 54 homes within 300 feet of the route centerline compared to the Alternative Route which has 33 homes within 300 feet of the route width.

The Alternative 161 kV Route makes use of the existing Douglas Trail corridor for 3.5 miles. The segments of the Alternative 161 kV Route that parallel the Douglas Trail may require tree removal along the trail. While the Douglas Trail is an existing linear corridor that is seen as a routing opportunity, the potential impact to forested areas along the trail is a disadvantage for the Alternative 161

kV Route. A summary of the application of the routing factors to the Preferred and Alternative 161 kV Routes is attached as Schedule 6 to my testimony. I would note that the route length for the Alternative 161 kV Route included in Schedule 6 includes the two mile distance between the North Rochester Alternative and Preferred siting areas.

Q. WHAT ROUTE WIDTH IS PROPOSED FOR THE 161 KV LINE?

A. The route width proposed for the Preferred Route for the 161 kV is 1,000 feet.

V. ANALYSIS OF OTHER PROPOSED ROUTES

Q. DID THE COMPANY REVIEW ALL THE ROUTE ALTERNATIVES CONTAINED IN THE DEIS?

A. Yes. The Company reviewed the 62 route alternatives described in the DEIS. The Company has determined that none of the route alternatives are clearly superior to the Modified Preferred Route for the 345 kV line or the Preferred 161 kV Route.

Q. WHAT FACTORS LED THE COMPANY TO THIS CONCLUSION?

A. The Company based its conclusion primarily on impacts to human settlement, land use and natural resources.

Q. WERE ANY ROUTES INCLUDED IN THE DEIS SCOPING DECISION THAT WERE NOT ANALYZED IN THE DEIS?

A. Yes. There are two route segment alternatives that were in the Scoping Decision but were not analyzed in the DEIS: route alternative 2P-002 and

route alternative 2P-001. Route alternative 2P-002 is a variation on the Preferred 161 kV Route. Route alternative 2P-002 is shown on Figure 5 of the Scoping Decision. Route alternative 2P-002 is adjacent to US-52 through Oronoco. In this area, there are significant constructability concerns including three homes within 40 feet of the route alternative that potentially could require displacement and Lake Shady occupies approximately ¾ mile of 2P-002 immediately adjacent to the highway embankment. Based on the additional 2.4 miles of length, the constructability issues and the increased number of homes along 2P-002 compared to the Preferred 161 kV Route, the Company does not support this route alternative. A summary table comparing 2P-002 to the Preferred 161 kV Route is provided below.

Residences	**Preferred 161 kV Route Segment**	**Route Alternative 2P-002**
Residences 0-40 feet from route centerline	0	3
Residences 0-75 feet from route centerline	4	4
Residences 76-150 feet from route centerline	15	15
Residences 151-300 feet from route centerline	40	49
Total number of residences 0-300 feet from route	59	68
Density (residences/linear mile within 300 feet of route centerline)	3.8	3.8
Length		
Total length of route segment	15.4 miles	17.8 miles

Route alternative 2P-001 was also included in the Scoping Decision but was not evaluated in the DEIS. This route alternative is an alternative to the

Preferred 161 kV Route and is shown on Figure 5 of the Scoping Decision. Route alternative 2P-001 is approximately 1.5 miles in length and is located approximately ¼ mile east of the Preferred 161 kV Route just south of US-52. While the Preferred 161 kV Route follows an existing road, 2P-001 goes through an area that is slated to be developed as part of the Elk Run development, a 2,325-acre master planned development in Pine Island, Minnesota. Route alternative 2P-001 would also create a new crossing of the Zumbro River while the Preferred 161 kV Route crosses the Zumbro River at an existing road. Based on the increased impacts on the Zumbro River and the potential conflict with future development, the Applicant does not support route alternative 2P-001.

VI. DEIS COMMENTS

A. Mississippi River Bird Flyway

Q. THE DEIS SAYS THAT THERE MAY BE IMPACTS TO THE MISSISSIPPI FLYWAY AT THE MISSISSIPPI RIVER CROSSING, BUT THAT THESE IMPACTS CAN BE MITIGATED. DESCRIBE HOW THESE IMPACTS WILL BE MITIGATED.

A. Both the Modified Preferred and Alternative 345 kV Route cross the Mississippi River east of Kellogg, Minnesota across the US Fish and Wildlife Service ("USFWS") managed Upper Mississippi National Wildlife and Fish Refuge, to a location in Alma, Wisconsin. This stretch of the Mississippi River is one of the four primary bird migration routes in North America. There is an existing 161/69 kV line which crosses the river at this location. The Company has been and continues to work with the USFWS, Minnesota Department of Natural Resources, and Wisconsin Department of Natural Resources on

designing river crossing structures to minimize potential avian impacts. Based on coordination to date, five potential structure designs have been produced, as set forth in Section 8.4 of the DEIS. The Company and agencies have arrived at an informal and general consensus that the preferable configuration is one that minimizes structure height and consolidates crossing wires in the fewest number of horizontal planes. It is the Company's view that the potential for avian interaction with electrical facilities at the Kellogg Mississippi River crossing area will be reduced because of construction of the Project.

Q. HOW WILL THE PROJECT REDUCE THE POTENTIAL FOR AVIAN IMPACTS AT THE MISSISSIPPI RIVER CROSSING?

A. Currently there is a double circuit 161/69 kV transmission line that crosses the river at this location. This line has three sets of wires stacked vertically in addition to a shield wire, thus creating four horizontal planes of wires. Depending on which configuration is selected, the Company's proposed structures would reduce the number of horizontal planes of wires from four to as few as two over the river thereby lowering the likelihood of avian collisions.

B. <u>Great River Road</u>

Q. THE DEIS STATES THAT THE PREFERRED AND ALTERNATIVE ROUTES WILL IMPACT THE GREAT RIVER ROAD (PG. 18). CAN YOU DESCRIBE THE POTENTIAL IMPACTS?

A. The Great River Road is a National Scenic Byway that parallels the Mississippi River from Northern Minnesota to southern Mississippi. The Modified Preferred and Alternative 345 kV routes share a common segment where they cross the Great River Road south of Kellogg where the existing DPC Q3 line is

located. At the Great River Road crossing point, both the Modified Preferred and Alternative Routes would place the existing DPC Q3 161 kV transmission line on new structures with the new 345 kV line. Both of these routes would minimize impacts to the Great River Road, as the crossing of the Great River Road would be perpendicular and utilize an existing transmission line corridor in an area that is shielded from view by trees.

Q. HOW WOULD OTHER ROUTE OPTIONS IMPACT THE GREAT RIVER ROAD?

A. The McCarthy Lake Route Option avoids crossing the WMA by going around its northern edge. While this route option minimizes impacts to the WMA, the McCarthy Lake Route Option runs parallel to the Great River Road along a new transmission corridor, thus resulting in more of an aesthetic impact to the Great River Road. Another route alternative follows State Highway 42, Highway 42 Route Option, to a point just south of Kellogg, Minnesota. This route similarly avoids a crossing of the McCarthy Lake WMA, and would create a new, perpendicular crossing of the Great River Road in an area that is relatively open but currently has smaller distribution line and buildings.

Q. WHAT IS THE COMPANY'S OVERALL ASSESSMENT OF POTENTIAL IMPACTS TO THE GREAT RIVER ROAD?

A. The Company does not believe that there would be a significant impact to the Great River Road regardless of which route alternative is selected. Photo simulations have been prepared for the three potential Great River Road crossing alternatives. These photo simulations are attached as Schedule 7.

C. House Counts

Q. WHAT PROCESS DID THE COMPANY FOLLOW TO ASSESS THE NUMBER OF HOMES WITHIN 300 FEET OF A ROUTE ALIGNMENT?

A. The Company reviewed maps and GIS files and then refined this data through field reviews. When reviewing the routes, we stayed on public land, which in some cases may not have provided adequate views of structures. As a result, it is possible that buildings not visible from aerial photography or public lands were omitted from our assessments.

Q. THE DEIS CONTAINS INFORMATION REGARDING THE NUMBER OF HOUSES THAT ARE LOCATED WITHIN 300 FEET OF THE PREFERRED AND ALTERNATIVE 345 KV AND 161 KV ROUTES PRESENTED IN THE APPLICATION. HAVE YOU REVIEWED THESE HOUSE COUNTS?

A. Yes. I have reviewed the DEIS house counts and these counts differ from the house counts provided in the Application. We have further analyzed the routes and determined that in some instances, the DEIS identifies houses that were omitted from the Company's count and in other instances, the DEIS includes non-residential structures. A summary of the Company's house count analysis and revised house counts for the Preferred and Alternative 345 and 161 kV routes is attached as Schedule 8.

VII. OTHER AGENCY PARTICIPATION

Q. WILL THE PROJECT REQUIRE OTHER PERMITS PRIOR TO CONSTRUCTION?

A. Yes. Table 11.0-1 of the Route Permit Application lists the agencies and types of approvals that will be required. The Company has been meeting with all of

these agencies throughout the routing process to discuss the Project and to receive agency input on routes.

Q. ONCE A ROUTE PERMIT APPLICATION IS FILED, WHAT ROLE DO STATE AGENCIES HAVE IN ROUTING PROCEEDINGS?

A. State agencies authorized to issue permits required for the construction of high voltage transmission lines have a statutory obligation to participate in the routing proceedings, including public hearings, and state whether the proposed routes and design under consideration for approval will be in compliance with its standards, rules or policies. Minn. Stat. § 216E.10, subd. 3(a). The Company understands that the purpose of this participation is to ensure that permitting concerns are addressed in a timely fashion and that stakeholders, including landowners, have a single forum in which they may question or comment on proposals or issues. Bringing all state permitting authorities into a single forum also minimizes the potential for conflicting or inconsistent outcomes, because once the Commission issues a Route Permit, that permit is binding on other state agencies. Minn. Stat. § 216E.10, subd. 1.

A. Minnesota Department of Transportation

Q. IF THE COMMISSION APPROVES ANY OF THE ROUTES PRESENTED IN THE DEIS, WILL A UTILITY PERMIT FROM MN/DOT BE REQUIRED BEFORE CONSTRUCTION?

A. Yes. The Company will need to obtain Utility Permits from Mn/DOT to occupy state trunk highway right-of-way, for crossings and potentially longitudinal installations. Minn. R. 8810.330, Subp. 1. The Modified Preferred 345 kV Route from the Hampton Substation to the North Rochester

Substation follows US-52, a state trunk highway, for approximately 27 miles. A Utility Permit from Mn/DOT will be required to place the center of the transmission line closer than 75 feet from the edge of the road right-of-way.

Q. WHAT POLICIES AND RULES GENERALLY PERTAIN TO UTILITY OCCUPANCY OF MN/DOT RIGHTS-OF-WAY?

A. Mn/DOT owns or otherwise controls all state trunk highways. Mn/DOT's rules governing the use of state trunk highway right-of-way are included in Minnesota Rules Chapter 8810.3100-3600 and the Mn/DOT "Accommodation Policy" that applies when it issues Utility Permits.

Q. WHAT ALIGNMENT DID THE COMPANY PROPOSE IN THE APPLICATION FOR THE SEGMENT OF THE RPA PREFERRED 345 KV ROUTE ALONG US-52?

A. The Company presented information about a potential alignment along US-52 that is near the right-of-way (approximately 5 feet). With this alignment, an easement of approximately 80 feet would be required of the adjacent landowner and 70 feet of the transmission line easement would be shared with road right-of-way.

Q. HAS THE COMPANY ANALYZED ANY OTHER ALIGNMENTS ALONG US-52?

A. Yes. Based on discussions with Mn/DOT, it is the Company's understanding that Mn/DOT's future plan for US-52 is to make this highway a full control access highway. Mn/DOT has stated that this upgrade would result in construction of new interchanges along US-52 and the construction of frontage roads alongside US-52, and would require all maintenance of the transmission lines to be conducted from frontage roads as opposed to the highway. Based

on these future plans, Mn/DOT requested that the Company analyze alignments that minimize potential conflicts with road right-of-way. As a result, we have studied an alignment that is 25 feet off of the highway right-of-way for the Modified Preferred 345 kV Route.

Q. CAN A 25-FOOT ALIGNMENT BE ACCOMMODATED ALL ALONG US-52?

A. A 25-foot alignment could be utilized for the majority of the route and would facilitate maintenance activities in the future. There are a couple locations where given the short distance between highway right-of-way and buildings or other structures, there is not enough room for a 25-foot alignment. In these areas, a 5 foot alignment is proposed. A map showing an illustration of both the 5 foot and 25 foot alignments along US-52 is attached as Schedule 9.

Q. HOW GENERALLY DO THE IMPACTS OF THE ALIGNMENTS COMPARE?

A. Different alignments within the 1,000 foot-wide route width have different impacts on the adjacent land use. Generally, the farther away the poles are from the road right-of-way, the larger the easement that must be acquired from the landowner. This increases the amount of vegetation management required and reduces the distance to buildings/structures adjacent to the right-of-way. Placement of poles farther from the road right-of-way also increases the impacts to agricultural and commercial operations due to the placement of poles farther into adjacent landowners' properties.

Q. HAS THE COMPANY HAD ANY RECENT MEETINGS WITH MN/DOT TO DISCUSS THE ALIGNMENT OPTIONS ALONG US-52?

A. Yes. The Company met with representatives from Mn/DOT on April 6, 2011 to discuss the alignment options along US-52. During this meeting, Mn/DOT agreed to provide information that would aid the Company in developing proposed alignments along US-52. This information includes the following:

(1) Preliminary design layout for the US-52 and CSAH 47 interchange;

(2) A general diamond interchange template for future interchanges along US-52 that are not in the design stages;

(3) Electronic files showing Mn/DOT's right-of-way along US-52;

(4) Preliminary design plan for a three-quarters interchange at US-52 and CR 86;

(5) A conceptual plan for a future progressive railroad overpass along US-52 north of Cannon Falls;

(6) Information regarding the clear zone for an area between US-52 and a frontage road in Cannon Falls;

(7) Current design plans for the US-52 and Highway 19 interchange; and

(8) A clear zone assessment of whether a pole maybe placed in the highway right-of-way just north of 415th Street along US-52.

The Company anticipates that further refinements to the proposed alignments along US-52 will be made as this information is provided by Mn/DOT. The

Company also anticipates that Mn/DOT will participate in the routing proceeding to provide additional information about its permitting requirements so that all stakeholders can evaluate the relevant rules, policies, and impacts.

B. Minnesota Department of Agriculture

Q. THE APPLICATION STATES AN AGRICULTURAL IMPACT MITIGATION PLAN ("AIMP") FOR THIS PROJECT. IS THIS CORRECT?

A. Yes. In collaboration with the Minnesota Department of Agriculture, the Company and other CapX2020 utilities developed an AIMP that identifies the measures the Company will take to avoid or mitigate any negative agricultural impacts that may result from transmission line construction. The AIMP addresses mitigation actions, where possible, restoration of damaged tiles, removal of construction debris, and restoration of soil to existing pre-construction conditions. A copy of the AIMP for this Project is included in the Route Permit Application as Appendix G.

Q. HAS THE MINNESOTA DEPARTMENT OF AGRICULTURE APPROVED THE CAPX2020 AIMP FOR THIS PROJECT?

A. Yes. The Minnesota Department of Agriculture approved the AIMP in September 2009. It is anticipated that the final plan would be incorporated into the Route Permit upon issuance.

Q. DOES THE AIMP DISCUSS IRRIGATION SYSTEMS?

A. Yes.

Q. HOW ARE IRRIGATION SYSTEMS TREATED ACCORDING TO THE AIMP?

A. If transmission line and/or temporary work areas interest an operational (or soon to be operational) spray irrigation system, the Company will establish with the landowner or tenant, and acceptable amount of time the irrigation system may be out of service.

If, as a result of the transmission line construction activities, an irrigation system interruption results in crop damages, either on the right-of-way or off the right-of-way, the AIMP provides a method for determining compensation. *See* AIMP, Section 12.

If feasible and mutually acceptable to the Company and the landowner or tenant, temporary measures will be implemented to allow an irrigation system to continue to operate across land on which the transmission line is also being constructed. AIMP at p. 5.

C. <u>Minnesota Department of Natural Resources</u>

Q. HAS THE COMPANY CONSULTED WITH THE MNDNR?

A. Yes. The Company has consulted with the MnDNR to review permitting requirements for the Project. The Company provided additional engineering information to MnDNR for locations of environmental sensitivity to assist the MnDNR in their review of environmental impacts of the Project. The MnDNR has not provided the Company with any specific feedback on the proposed routes.

VIII. SUBSTATION DESIGN

Q. WHAT SUBSTATION FACILITIES WILL BE CONSTRUCTED OR MODIFIED AS PART OF THE MINNESOTA PORTION OF THIS PROJECT?

A. This Project includes the construction of one new substation and modifications to one existing substation. The proposed new substation is the North Rochester Substation. The existing substation being modified is the Northern Hills Substation. The Project also includes connections at the proposed Hampton Substation which was approved by the Commission as part of the Brookings County – Hampton 345 kV Transmission Project (Docket No. E002/TL-08-1474).

Q. WHAT MODIFICATIONS TO THE HAMPTON SUBSTATION WERE APPROVED BY THE COMMISSION TO ACCOMMODATE THIS PROJECT?

A. The Commission approved construction of the Hampton Substation as part of the Brookings County – Hampton 345 kV Transmission Project. As approved by the Commission, the Hampton Substation will allow for in and out connections to the existing Prairie Island – Blue Lake 345 kV transmission line. To accommodate the connection of the 345 kV transmission line associated with this Project, equipment at the Hampton Substation will include one circuit breaker, two switches and associated bus and additional relaying in the control building. Diagrams of the Hampton Substation, including conceptual alignments for transmission line interconnections is attached as Schedule 10.

Q. DESCRIBE THE PROPOSED SITES FOR THE NORTH ROCHESTER SUBSTATION.

A. The Company has identified a 3.5-square mile siting area for the North Rochester Substation between Zumbrota and Pine Island. Within the larger Northern Hills Substation siting area, Xcel Energy has identified a Preferred Siting Area to the south, and an Alternative Siting Area to the north. The Company's Modified Preferred 345 kV Route connects at the Preferred Siting Area and the Company's Alternative 345 kV Route connects at the Alternative Siting Area. Thus, if the Modified Preferred 345 kV Route were selected, the Preferred Substation Siting area must also be selected. However, both the Preferred and Alternative 161 kV routes can be accommodated at either substation siting area. As shown on Schedule 11, if the Alternative Substation Siting Area were selected and the Preferred 161 kV Route were selected, the Preferred 161 kV Route would exit the siting area to the east and then follow US-52 south to 500th Street where it joins the Preferred 161 kV Route.

Q. WHAT EQUIPMENT WILL BE INSTALLED IN THE NORTH ROCHESTER SUBSTATION?

A. The North Rochester Substation must accommodate interconnections with the 345 kV line and the 161 kV that are part of this Project. The North Rochester Substation also must accommodate interconnections with the existing Prairie Island – Byron 345 kV transmission line. The accommodate these interconnections the new substation will include six 345 kV circuit breakers, a 345/161 kV transformer, three 161 kV circuit breakers, a control house and associated line termination structures, switches, buswork, controls, and associated equipment. The total required substation area will be 40 acres.

A diagram of the North Rochester Substation, including conceptual alignments for transmission line interconnections, is attached as Schedule 12. This layout could be used at either substation siting location.

Q. WHAT MODIFICATIONS TO THE EXISTING NORTHERN HILLS SUBSTATION ARE PROPOSED FOR THIS PROJECT?

A. The Project will require an approximately 0.5 acre expansion of the graded and fenced area of the Northern Hills Substation to accommodate the new 161 kV transmission line and related equipment. No additional property will be required to construct the expansion. Improvements would include expansion of the existing graded area by approximately 30 feet and the addition of 161 kV equipment, including one circuit breaker and associated line termination switches and controls. Construction would include the associated line switches, foundations, steel structures and control panels.

IX. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PREFILED DIRECT TESTIMONY?

A. Yes.

3788645v1

Thomas G. Hillstrom
Xcel Energy
Supervisor – Siting and Permitting
Office Phone (612) 330-6538

Professional Experience

Transmission Line Permitting, Xcel Energy **2004 to Present**

- **Permitting and Siting** – Managed and led siting and permitting efforts for five new high voltage transmission lines. Led permitting for numerous high voltage transmission rebuild and upgrade projects. Managed compliance efforts for several transmission line construction projects. Currently leading siting and permitting efforts for a 150 mile 345 kV interstate transmission line.

Associate, SRF Consulting Group **1997 to 2004**

- **Project Facilitation** – Coordinated environmental review and permitting for transportation projects including Federal EIS preparation. Prepared scope, methods and presented results of technical studies to regulatory agencies and project proposers. Organized and attended meetings, presented and interpreted results of environmental studies. Applied for permits and negotiated permit conditions.
- **Management –** Supervised staff of environmental scientists. Prepared proposals, prepared and monitored budgets, assigned and scheduled work. Reviewed documents for quality control.
- **Environmental Studies –** Analyzed environmental impacts resulting from proposed projects.

Project Manager, Nova Environmental Services **1993 to 1997**

- **Site Investigation and Remediation –** Managed projects involving soil and ground water investigation and clean-up. Designed and implemented corrective action plans. Supervised staff of field technicians. Prepared project budgets, proposals and safety plans. Hired and administered subcontractors. Acted as client liaison to regulatory agencies.
- **Wetlands –** Performed wetland delineations and prepared wetland mitigation plans.
- **Health And Safety –** Prepared and instructed hazardous waste operations training course.

Wetland Scientist, Minnesota Department of Natural Resources
(temporary position) **June 1995 to October 1995**

- Identified and characterized plant communities growing in and around experimental tailing basin, wetland plots.

- Measured and compared plant growth in experimental plots.
- Maintained and operated weather and hydrologic recording instruments.
- Identified and evaluated several non-disturbed wetland ecosystems for comparison with the test plots.

Environmental Specialist, Nova Environmental Services **1990 to 1993**

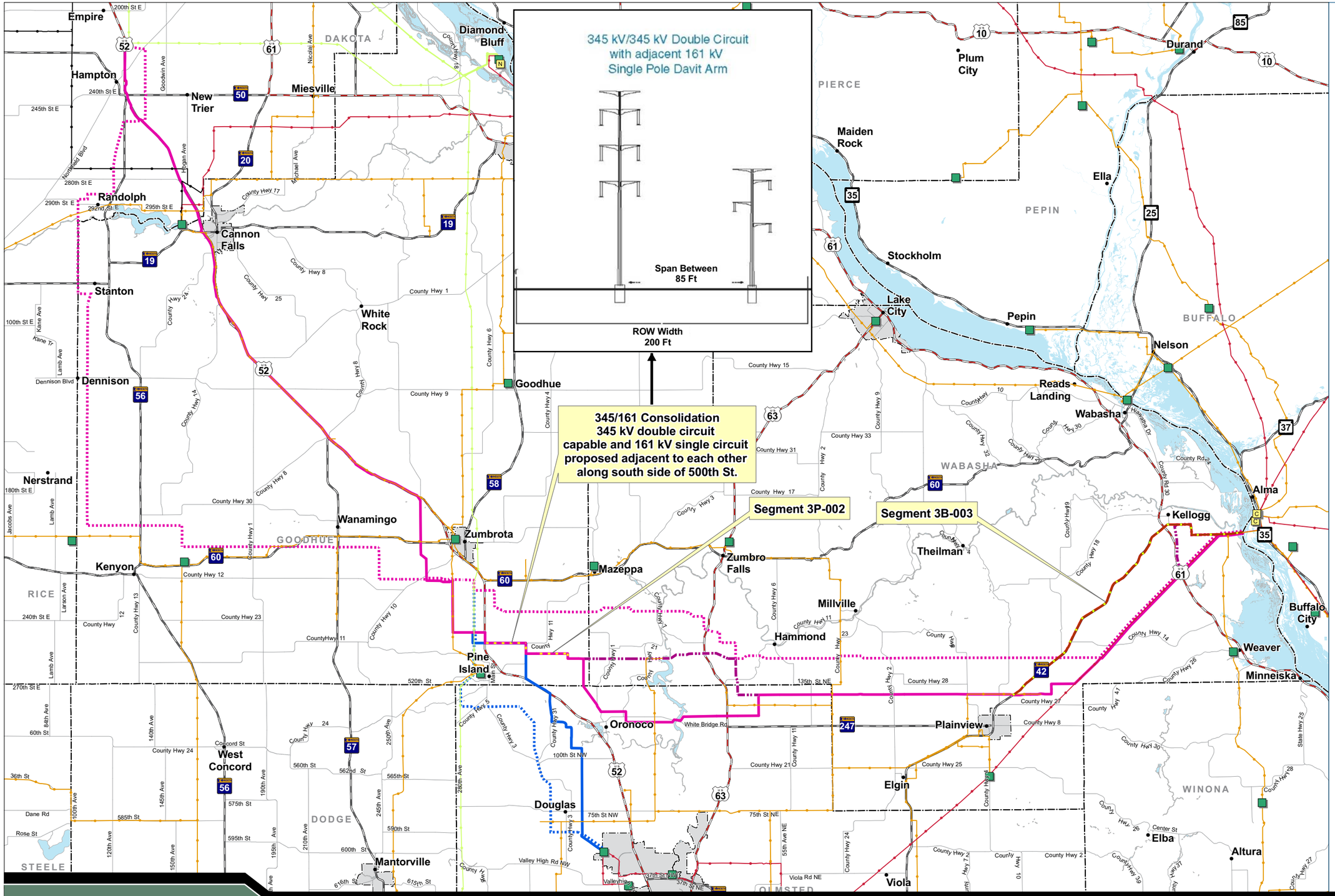
- Performed soil and ground water sampling.
- Maintained and purchased equipment.
- Oversaw and monitored environmental construction activities.
- Tabulated data and wrote portions of reports.

Environmental Technician, Precision Environmental **1989 to 1990**

- Collected ground water surface water and waste water samples.
- Maintained and repaired sampling equipment.
- Prepared monitoring reports.

Education

- Bachelors of Science, Biology, University of Minnesota, 1988
- Independent Study and Courses in Electric Utilities and Electric Transmission



Legend

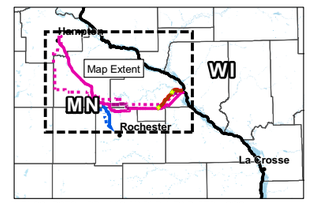
Proposed Features
- Modified Preferred 345 kV Route
- Alternative 345 kV Route
- Preferred 161 kV Route
- Alternative 161 kV Route
- Route Option

Transportation
(BTS, ESRI)
- Interstate Highway
- US Highway
- State Highway
- County Highways

Existing Transmission
(HDR, GRE)
- Substation
- Generation Facility
- 69 kV Transmission Line
- 115 kV Transmission Line
- 138 kV Transmission Line
- 161 kV Transmission Line
- 230 kV Transmission Line
- 345 kV Transmission Line

0 2 4 Miles

Scale 1:140,000 when printed at 22x34



DATA SOURCES: HDR, LMIC, MNDNR, WDNR, BTS, USGS
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Hampton • Rochester • La Crosse 345 kV Transmission Project

MN Route Permit Application
Overview Map

Summary Comparison of Impacts for North Rochester to the Mississippi River 345 kV Modified Preferred and Alternative Routes

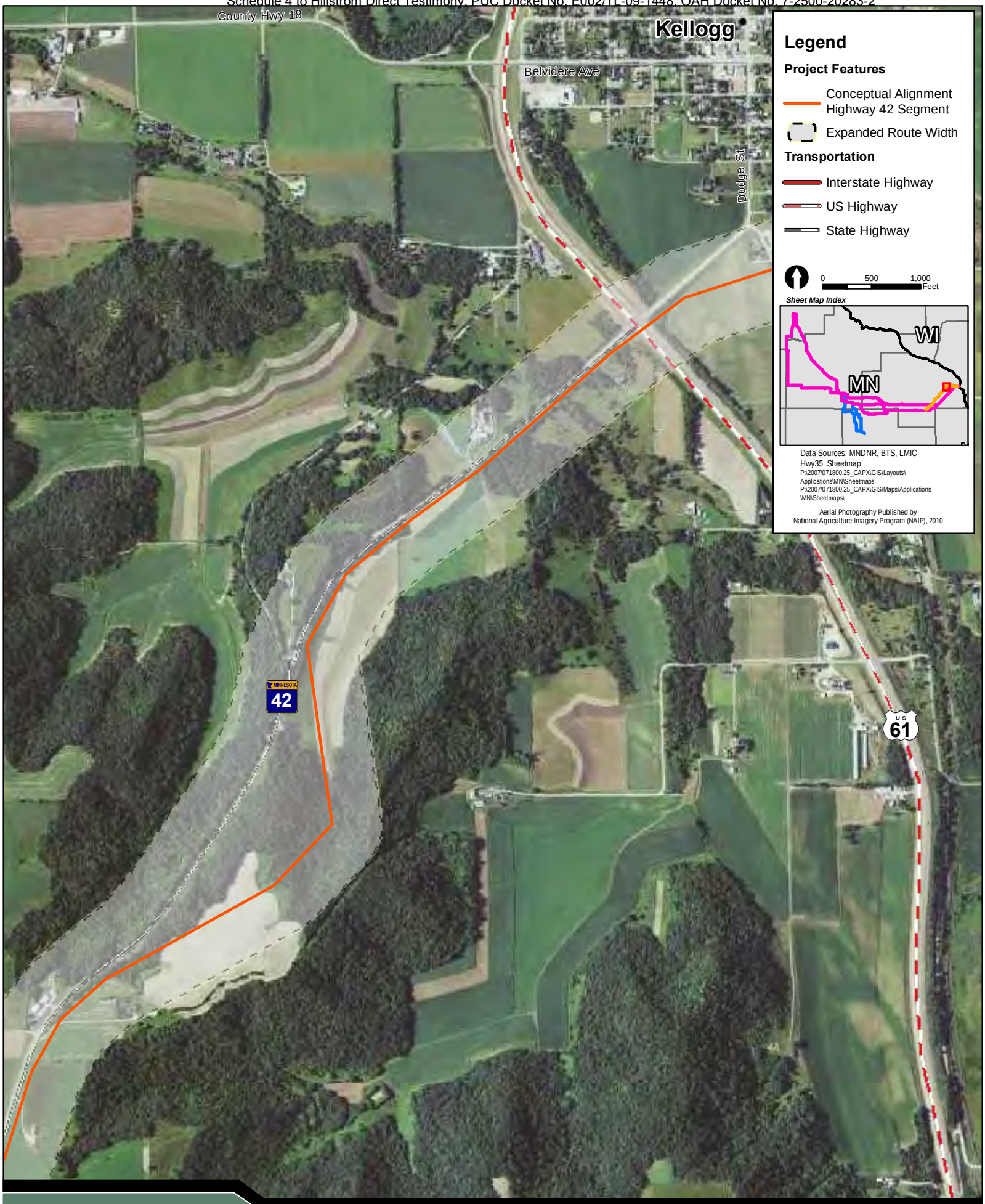
Resource Category	Modified Preferred Route	Alternative Route
Residences[2]		
Revised Number of Residences 0-75 feet from route centerline	0	0
Revised Number of Residences 76-150 feet from route centerline	2	1
Revised Number of Residences 151-300 feet from route centerline	10[1]	6
Revised Density (residences/linear mile within 300 feet of route centerline)	0.2	0.1
Use or Paralleling of existing ROW (transportation, pipeline, and electrical transmission systems) and property lines		
Total length of route (miles)	43.8	41.9
Length following Transmission Line (miles)	14.4	9.2
Percentage of route following Transmission Line	33%	22%
Length following road but not Transmission Line (miles)	4.9	1.6
Percentage of route following road but not Transmission Line	11%	4%
Length following property line but not transmission line or roads (miles)	17.2	12.4
Percentage of route following property line but not transmission line or roads	39%	29%
Total length following transmission line, roads, or property lines (miles)	36.5	23.3
Percentage of route following transmission line, roads or property lines	83%	55%
Length not following transmission line, roads or property lines (miles)	7.3	18.7
Percentage of route not following transmission line, roads or property lines	17%	45%
Archaeological and Historic Resources Sites Within 1 mile of Route Centerline		
Archaeological	9	9
Architectural		
National Register of Historic Places (NRHP)	0	0
Architectural	29	21
Natural Environment		
Water Resources		
Permanent Wetlands Impacts	<1 acre	<1 acre
Temporary Wetlands Impacts	7 acres	7 acres
Potential Tree Clearing in Wetlands	5.2	5.4
Stream Crossings	79	72
Permanent Impacts to Floodplains	<1 acre	<1 acre

**Summary Comparison of Impacts for
North Rochester to the Mississippi River
345 kV Modified Preferred and Alternative Routes**

Resource Category	Modified Preferred Route	Alternative Route
Flora		
Percent Cropland	62	59
Percent Grassland	23	21
Percent Shrubland	2	2
Percent Forested Land	11	16
Percent Aquatic	2	2
Fauna		
Conservation Reserve Program Lands Crossed	29	19
Conservation Reserve Enhancement Program Lands Crossed	0	0
Length of Important Bird Areas Crossed	1.9 miles	1.9 miles
Length of Grassland Bird Conservation Areas Crossed	0 mile	0 mile
Number of Federal Rare and Unique Species Known to Occur Within 1 mile of Route Centerline		
Threatened	0	0
Endangered	0	0
Candidate	1	1
Number of State Rare and Unique Species Known to Occur Within 1 mile of Route Centerline		
Threatened	12	13
Endangered	2	3
Species of Concern	29	34
DNR Rare Native Communities	1,744	2,724
Length of Outstanding Biodiversity Sites Crossed	0.5 mile	0.5 mile
Length of High Biodiversity Sites Crossed	0.9 mile	0.9 mile
Length of Moderate Biodiversity Sites Crossed	1.2 miles	0.8 mile
Estimated Costs (millions)		
Cost	$88	$101

[1] One residence within 0-75 feet of the reference centerline is also counted along the 161 kV Preferred Route and 4 residences within 151-300 feet of the reference centerline are also counted along the 161 kV Preferred Route.

[2] The house count numbers contained in this chart were revised. *See* Schedule 8 to Tom Hillstrom's Direct Testimony for additional information.



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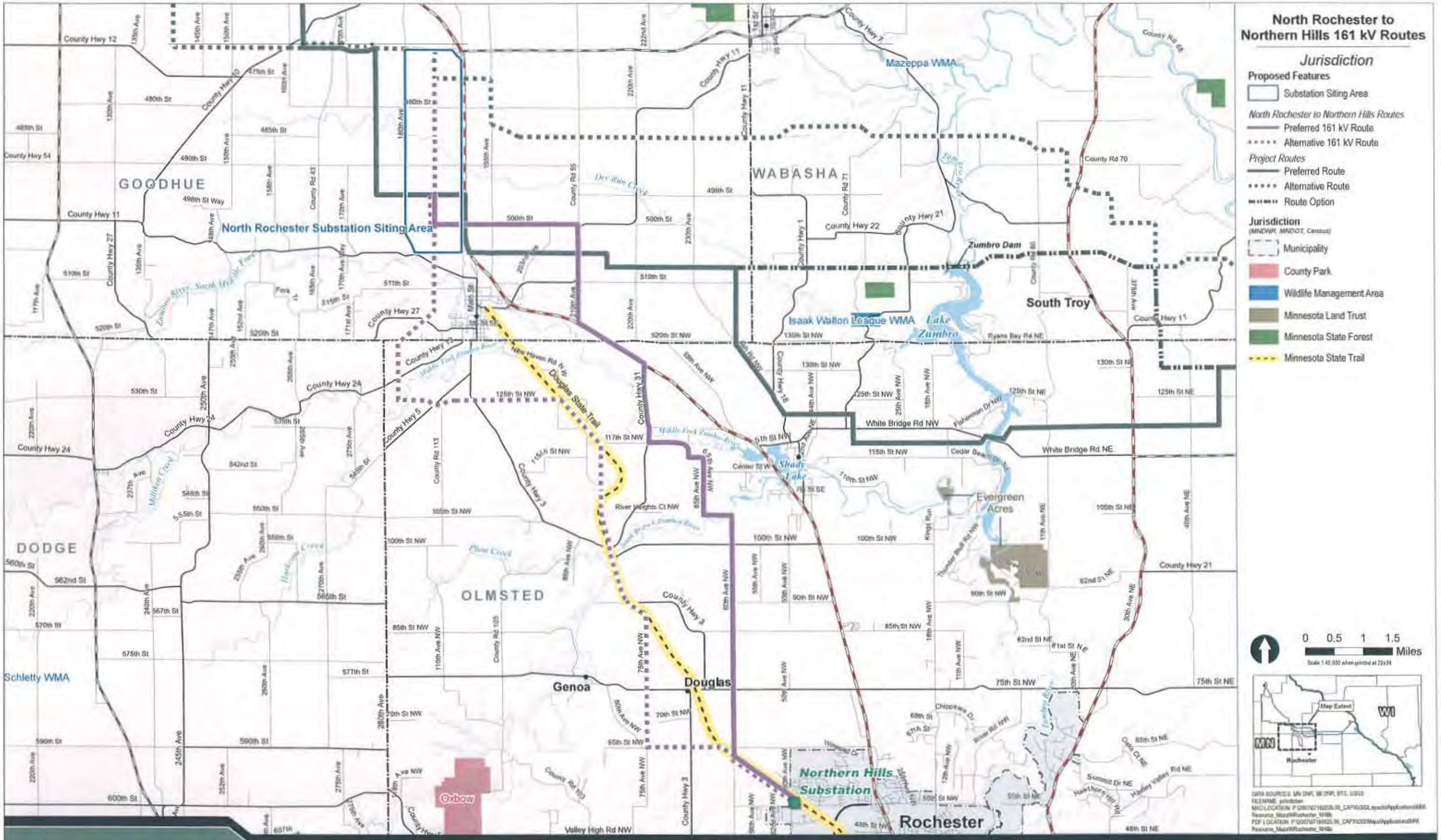
Xcel Energy • Dairyland Power Cooperative • Rochester Public Utilities • Wisconsin Public Power, Incorporated • Southern Minnesota Power Agency

Highway 42 Conceptual Alignment with Route Width



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Jurisdiction Resource Map
MN Route Permit Application

9.1-1: North Rochester - Northern Hills 161 kV Route Overview